

Municipality/Organization: Town of Longmeadow

EPA NPDES Permit Number: MA041013

MaDEP Transmittal Number:

Annual Report Number Year 14
& Reporting Period: March 2016-March 2017

NPDES PII Small MS4 General Permit Annual Report

Part I. General Information

Contact Person: Andrew J. Krar, P.E.

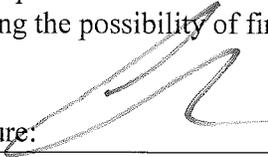
Title: Town Engineer

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Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: 

Printed Name: Andrew J. Krar, P.E.

Title: Town Engineer

Date: April 28, 2017

Part II. Self-Assessment

The Town of Longmeadow performed a review of the Town's progress on the goals for meeting the minimum control measures under the NPDES MS4 Phase II permit. The Town publicizes stormwater related issues and supports and encourages active participation by Town residents in addressing pollution and stormwater concerns. The town previously completed maps of stormwater outfalls, and continued to update the map of drainage culverts, manholes, and catchbasins. Town staff inspected outfalls, catchbasins, and culverts for potential illicit discharges. The Town has continued review of existing regulations, including the Massachusetts Wetlands Protection Act and the MADEP Stormwater Management Standards, and has previously enacted appropriate bylaws. The Town's efforts to meet the identified measurable goals including ongoing compliance efforts are briefly summarized in Part III Summary of Minimum Control Measures.

Acronyms Used in Following Pages

Con. Com. = Conservation Commission

DPW = Department of Public Works

PVPC = Pioneer Valley Planning Commission

Part III. Summary of Minimum Control Measures

1. Public Education and Outreach

| BMP ID # | BMP Description | Responsible Dept./Person Name | Measurable Goal(s) | Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any) | Additional Planned Activities |
|----------|--------------------------|-------------------------------|---|--|---|
| 1A | Hazardous Waste Day | Board of Health/DPW | Give residents opportunity to drop off hazardous waste | Hazardous Waste day was held in September of 2016. | Hazardous Waste day is scheduled for September of 2017. |
| 1B | Pet Waste Bylaw | Public Works Director | Completed | Bylaw in place. Public education included posting notice on web page. Distributed pet waste flyers prepared by PVPC. | Public education: to include posting notices through press releases. |
| 1C | Longmeadow Website | Town Engineer | NPDES Information on DPW website | The Department of Public Works has incorporated NPDES information on the town web site. | The Department of Public Works will continue to incorporate NPDES information on town web site. |
| 1D | Public Outreach | PVPC | Variety of public outreach activities | Contributed \$2,000 to participate in regional public outreach and education stormwater program. Actively participated in committee programs. | Continue to be part of PVPC's regional public outreach and education stormwater program. |
| 1E | Newspaper Press Releases | Town Engineer | Publish stormwater/ water quality info twice per year | Advertised sale of rain barrels in newspaper and submitted articles on stormwater issues. | Publish stormwater/water quality info twice per year. |
| 1F | Classroom Education | School District/Town Engineer | Incorporate water quality into curriculum | Work with school science coordinators to incorporate into curriculum. | Continue to work with school science coordinators to incorporate into curriculum. |
| 1G | Public displays/handout | Public Works Director | Post stormwater related educational posters and handouts in Town Hall | Posted stormwater related educational posters and handouts in Town Hall. Distributed "Greenscapes" materials to public. Displayed materials at "Longmeadow Days" Town Fair. Included bill stuffers on lawn care practices. | Post stormwater related educational posters and handouts in Town Hall. "Greenscapes" materials distribution to public. Post materials at Longmeadow Days. Bill stuffers on conservation and "green" topics. |
| 1H | Public Announcements | Town Engineer | Present Public Service Announcement (PSA) on local cable station | Distribution of stormwater educational pamphlets to residents at town hall. | Continue to distribute educational materials to residents and businesses. |

2. Public Involvement and Participation

| BMP ID # | BMP Description | Responsible Dept./Person Name | Measurable Goal(s) | Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any) | Additional Planned Activities |
|----------|-------------------------------|--------------------------------|---|---|--|
| 2A | Stream Cleanup and Monitoring | DPW Director and Town Engineer | Organize concerned residents to walk and clean up stream. Support interested groups by providing tools and disposing of trash bagged by participants. | Continued discussions with Con Com to develop ideas and cooperative efforts. Supported Connecticut River Cleanup activities by providing availability for participants to arrange for the Town to pick up and dispose trash bags if requested. | Continue to support interested groups by providing tools and disposing of trash bagged by participants. Providing flyers regarding disposal of dog waste. |
| 2B | Adopt a Stream | Public Works Director | Organize concerned citizens to adopt streams. Support interested groups by providing tools and disposing of trash bagged by participants. | Supported Connecticut River Cleanup activities by providing availability for participants to arrange for the Town to pick up and dispose trash bags if requested. | Continue to support interested groups by providing tools and disposing of trash bagged by participants. |
| 2C | Stormwater Committee | Board of Selectmen | Stormwater Committee formed | Previously formed stormwater committee with representation from Conservation, Board of Health, Building, Planning and DPW. | Raised issues at select board meeting to promote stormwater utility. Included in annual Engineering Report. |
| 2D | Invasive Species Removal | Public Works Director | Provide appropriate disposal area for removed vegetation | Previously provided appropriate disposal area for water chestnut vegetation removed by volunteers coordinated by EPA. | Continue to provide appropriate disposal area for removed vegetation to support efforts to eradicate invasive species. |
| 2E | Adopt-a-Triangle | Parks Dept. | Support interested groups by providing tools and disposing of trash bagged by participants. | Supported volunteer activities by picking up and disposing of trash bagged by participants. | Support interested groups by providing tools and disposing of trash bagged by participants. |

3. Illicit Discharge Detection and Elimination

| BMP ID # | BMP Description | Responsible Dept./Person Name | Measurable Goal(s) | Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any) | Additional Planned Activities |
|----------|------------------------------------|---------------------------------|---|---|--|
| 3A | Sanitary Sewer Maintenance Program | Public Works Assistant Director | Develop plan of cleaning and inspecting sewer mains | Town continued to inspect sewer interceptors along brook valleys to identify areas of breakage, erosion, or other physical conditions that may impair the integrity of the pipeline. Continued to video inspect sewer system in 2016 as deficiencies became suspected. | Continue to inspect sewer interceptors for potential impact to resource areas. Perform video inspection of sewers in 2017. Repair leaks as required. |
| 3B | Storm Drain System Map | Engineering Dept/Town Engineer | Completed development of a storm sewer system and outfall map | Outfalls have previously been located by GPS. Data has been downloaded into AutoCAD and GIS programs to produce accurate storm sewer mapping. During April 2016, engineering department began project to inspect all outfalls in Town under a new reporting system. Mapping was completed in August 2016. | Continue to maintain storm sewer GIS to organize system data and streamline maintenance efforts. |
| 3C | Non-Stormwater Bylaw | Town Engineer | Bylaw established | Town had previously approved bylaw at Town meeting. Con. Com. reviewed project for compliance with the MA Stormwater Management Standards under the MA Wetlands Protection Act. | |
| 3D | Entrance Permit | Public Works Director | Completed | Discussed options for permitting and including language in deeds making owner responsible for discharges. | Continue to work with Town Attorney and Select Board to determine best course of action. |
| 3E | Develop Illicit Discharge Program | Town Engineer | Completed | DPW has previously approved a bylaw to address illicit discharges and connections. Although no formal outfall inspection efforts took place, several outfalls were inspected as part of ongoing maintenance and service calls from residents. | Conform to approved bylaw as applicable. Hired consultant for I&I study. |
| 3F | Illegal Dumping | Public Works Director | Perform regular patrols/cleanup | DPW performed regular patrols and cleaned up illegal dumped trash. | Continue to perform regular patrols/cleanup. |

| | | | | | |
|----|-----------------|-------------|---|--|--|
| 3G | Assess Outfalls | Engineering | Assess 10% of municipal outfalls per year | Completed comprehensive outfall inspection program under new reporting protocol (August 2016). | Address known issues. Evaluate survey results and develop remediation plans. |
|----|-----------------|-------------|---|--|--|

4. Construction Site Stormwater Runoff Control

| BMP ID # | BMP Description | Responsible Dept./Person Name | Measurable Goal(s) | Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any) | Additional Planned Activities |
|----------|---|-------------------------------------|--|---|--|
| 4A | Stormwater Pollution Prevention Plan for Construction | Public Works Director/Town Engineer | Require pollution prevention plan for construction sites | Town previously approved bylaw at Town meeting. Con. Com. reviews project for compliance with the MA Stormwater Management Standards under the MA Wetlands Protection Act. Plan has been implemented and enforcement is in place. | Continue to work with Building department to control and contain stormwater. |
| 4B | Construction Runoff Bylaw | PB/ Con Com/ DPW | By-law enactment | Town previously approved bylaw at Town meeting. Con. Com. reviews project for compliance with the MA Stormwater Management Standards under the MA Wetlands Protection Act. Plan has been implemented and enforcement is in place. | Continue to work with Building department to control and contain stormwater. |
| 4C | Plan Review | PB/ Con Com/ DPW/BOH | Enforcement under bylaw | Continued plan review per new by-law. By-law enforcement in place. Reviewed design for numerous site development projects and enforced by-law. | Continue plan reviews and enforcement per new by-laws. |
| 4D | Inspection / Reporting | DPW/PB/ Con Com | Enforcement under bylaw | Continued inspection/reporting under existing regulations. Continue to enforce by-law. | Continue to inspect/report per existing regulations. |

5. Post-Construction Stormwater Management in New Development and Redevelopment

| BMP ID # | BMP Description | Responsible Dept./Person Name | Measurable Goal(s) | Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any) | Additional Planned Activities |
|----------|------------------------------------|-------------------------------|-------------------------|--|---|
| 5A | Post Construction Runoff Bylaw | Director DPW | Bylaw Established | Town previously approved bylaw at Town Meeting. Con. Com. reviews project for compliance with the MA Stormwater Management Standards under the MA Wetlands Protection Act. | Continue to review and enforce bylaw. |
| 5B | Construction Site Plan Review | PB/ Con. Com./ DPW | Enforcement under bylaw | Continued plan review per new regulations. | Continue plan review per new regulations. Continue bylaw enforcement. |
| 5C | Stormwater System Maintenance Plan | PB/Con. Com./ DPW | Enforcement under bylaw | Continued inspection / reporting under new regulations. | Continued inspection / reporting under new regulations. Continue bylaw enforcement. |

6. Pollution Prevention and Good Housekeeping in Municipal Operations

| BMP ID # | BMP Description | Responsible Dept./Person Name | Measurable Goal(s) | Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any) | Additional Planned Activities |
|----------|--|---|--|---|--|
| 6A | Catch Basin Maintenance | Public Works Deputy Director for Highways | Organize program for cleaning and inspecting catch basins. Clean 400 catch basins annually | Approximately 50 catch basins were cleaned and inspected. All catchbasins within paving & sewer projects were evaluated and repaired/replaced as necessary (as resources allowed). Video inspected suspect drain lines. | Anticipate cleaning approximately 50 more catchbasins this summer. Will repair and replace as necessary. |
| 6B | Street Sweeping | Public Works Deputy Director for Highways | Organize program for sweeping streets | 100% of paved town streets were swept in the month of April. Certain commercial area streets were swept two or three times. | Continue to street sweep per existing program. |
| 6C | Municipal Maintenance Activity Program | DPW Director | Evaluate and draft additional policies | Reviewed existing policies as need arose. | Continue to review existing policies. Formalize in writing and draft new policies as necessary. |
| 6D | Training of all municipal employees | DPW Director and Deputy Director for Highways | Initiate good housekeeping training | In-house training is performed for new hires or any personnel transferring within DPW. | Conduct good housekeeping training June 2017, as amended by 2017 MS4 permit. |

7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA) <<if applicable>>

| BMP ID # | BMP Description | Responsible Dept./Person Name | Measurable Goal(s) | Progress on Goal(s) – Permit Year 13 (Reliance on non-municipal partners indicated, if any) | Additional Planned Activities |
|----------|-----------------|-------------------------------|--|---|---|
| 7A | TMDL | Various | Performance of previously identified BMPs. | The BMPs described in the above tasks will also address TMDL issues in the Connecticut River. | The BMPs described in the above tasks will also address TMDL issues in the Connecticut River. |

Connecticut River Stormwater Committee

Annual Report

April 1, 2016 to March 31, 2017

The Connecticut River Stormwater Committee

The Connecticut River Stormwater Committee is an intergovernmental compact, now grown to include 17 municipalities, that is organized to collaborate in meeting NPDES MS4 permit requirements for stormwater education and outreach (Minimum Control Measure #1). Facilitated and staffed by the Pioneer Valley Planning Commission, the Committee also works together to meet other permit compliance activities where appropriate and needed. Member communities are shown in Table 1 below.

Table 1: Connecticut River Stormwater Committee Member Communities

| Member Community | Committee Representatives and Departments |
|------------------|---|
| Agawam | Tracey DeMaio, Department of Public Works |
| Belchertown* | Steve Williams, Department of Public Works |
| Chicopee | Quinn Lonczak, Department of Public Works |
| East Longmeadow* | Robert Peirent, Department of Public Works |
| Easthampton | Dan Murphy, Department of Public Works |
| Granby | Dave Derosiers, Highway Department |
| Hadley* | Marlo Warner, Department of Public Works |
| Holyoke | Michael McManus, Department of Public Works |
| Longmeadow | Mario Mazza, Department of Public Works |
| Ludlow | Jim Goodreau, Department of Public Works |
| Northampton | Doug McDonald, Department of Public Works |
| Southwick | Randall Brown and Richard Grannells, Department of Public Works |
| South Hadley | Melissa LaBonte, Department of Public Works |
| Springfield | Kevin Chaffee, Planning/Conservation |
| West Springfield | Jim Czach, Department of Public Works |
| Westfield | Casey Berube, Department of Public Works |
| Wilbraham* | Tonya Basch, Department of Public Works |

* Member that joined Committee this year.

Education and Outreach over the Past Year

With the rigors of the new MS4 permit requirements, the Stormwater Committee has been in a transition phase, where it has continued education and outreach under the requirements of the 2003 permit, but is also taking important steps in preparing for forthcoming requirements that begin July 1, 2017. In some cases, the work of preparing for the forthcoming permit has served to provide education and outreach under the 2003 permit.

The narrative below summarizes the work of the Connecticut River Stormwater Committee during the 2016-2017 reporting year, which includes the following:

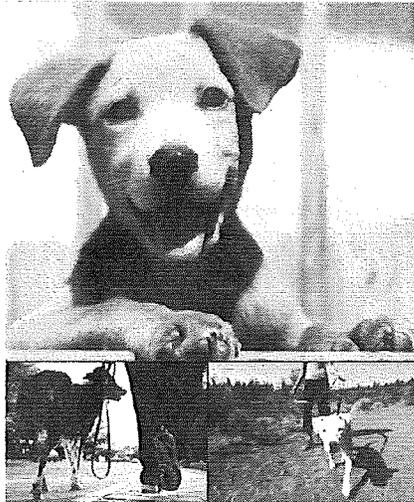
1. Reached out to dog owners on pet waste disposal practices
2. Expanded understanding about stormwater issues and permit compliance
3. Promoted Soak up the Rain stormwater education campaign
4. Defined program of effective stormwater messaging for the next five-year permit term
5. Continued planning for website education in the Pioneer Valley
6. Collaborated with Massachusetts state-wide coalition of stormwater coalitions
7. Designed and constructed demonstration rain garden at the Renaissance School in Springfield
8. Led project in Chicopee, Ludlow, and Springfield to reduce urban flows into Chicopee River
9. Led urban tree planting project in Chicopee, Holyoke, and Springfield
10. Led project in Holyoke to reduce urban flows into Day Brook

In addition to these public education and outreach activities described in fuller detail below, members of the Stormwater Committee have joined PVPC in other MS4 permit related activities, including:

- Collaborating in understanding new permit requirements through dialogue with MassDEP and U.S. EPA and through use of Committee time to review and dialogue about specific sections of the permit together. These conversations are helping members understand how they might most effectively proceed in permit compliance as individual permittees on certain elements, but also in collaboration with others for important cost savings on other elements.
- Reviewing and updating municipal land use code to comply with new MS4 permit requirements. This is occurring through both fee for service in one community and through a Massachusetts Department of Administration and Finance's Efficiency and Regionalization grant and match from District Local Technical Assistance for another nine communities.
- Preparing for Illicit Discharge Detection and Elimination and Good Housekeeping trainings for municipal staff with funding from the Massachusetts Department of Administration and Finance's Efficiency and Regionalization grant. The trainings, to be conducted this coming year, will be videotaped to enable future trainings to occur as required and needed with new staff.
- Collaborated on defining needs for integrating stormwater system mapping with data collection requirements through funding from the Massachusetts District Local Technical Assistance program. A consultant has been hired to provide this integration so that data collection (outfall screening and sampling, manhole inspections, catch basin cleaning, etc.) can occur easily in the field and then uploaded to reference with geographically specific locations within Arc GIS mapping of the storm system for analysis in defining priority catchments and annual reporting to EPA.

1. Reached out to dog owners on pet waste disposal practices

Based on the bacteria messaging research completed last year, the Committee began this year to finalize an outreach program to dog owners on proper management of pet waste. Work this year focused on working with Town Clerks/Dog Licensing Officers in each member community to distribute a survey with three questions that will enable targeting of the program in each community. This survey is being distributed through Town Clerks/Dog Licensing Officers, starting in January 2017, via a glossy flyer that accompanies dog licenses. The flyer includes a link to the electronic survey and dog owners are incentivized to take the survey with a small prize that promotes better pet waste management practices.



Tell us what you see and think about pet waste in your community!

Take a 4-question survey and get a prize from your local dog licensing officer.*

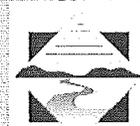
Go to:

<https://www.surveymonkey.com/r/2017PVPetWaste>

Thank you!
Connecticut River Stormwater Committee

** while supplies last*

Photos (clockwise from top): kx935.com, thedogtrainingsecret.com, thisdogslife.co



Above is an image of the glossy flyer distributed by Town Clerks/Dog Licensing Officers in member communities in issuing dog licenses. It provides a link to the electronic survey and offer of a prize for taking the survey.

At right is an image of the prize offered to those completing the survey.



The survey contains four simple questions:

- In what Town do you license your dog?
- What are specific locations or types of place sin your tonw/city where you notice accumulation of or problems with pet waste? (Town/City Parks-please specify below, along rivers/streams in town- please specify below, along streets and sidewalks- please specify below)
- What do you believe most likely happens to pet waste left on the ground in these problem areas? (decomposes into the ground, washes into streams and rivers, cleaned up by municipal officials/landowners, others)
- Which graphic/message below is most likely to encourage people to pick up their dogs' waste? (rank from 1 to 5, with 1 being most likely)

Once dog licensing is complete in member communities (there is a some variation on procedure and timetable from one municipality to another), survey results will be compiled. These results will help in providing an important base line in measuring the effectiveness of the 5-year education and outreach program to come. The Committee will likely be looking to two metrics: how much change there is in knowledge about what happens to pet waste left on the ground and the degree to which specific known problem pet waste locations within municipalities improve. The program will go hand-in-hand with a

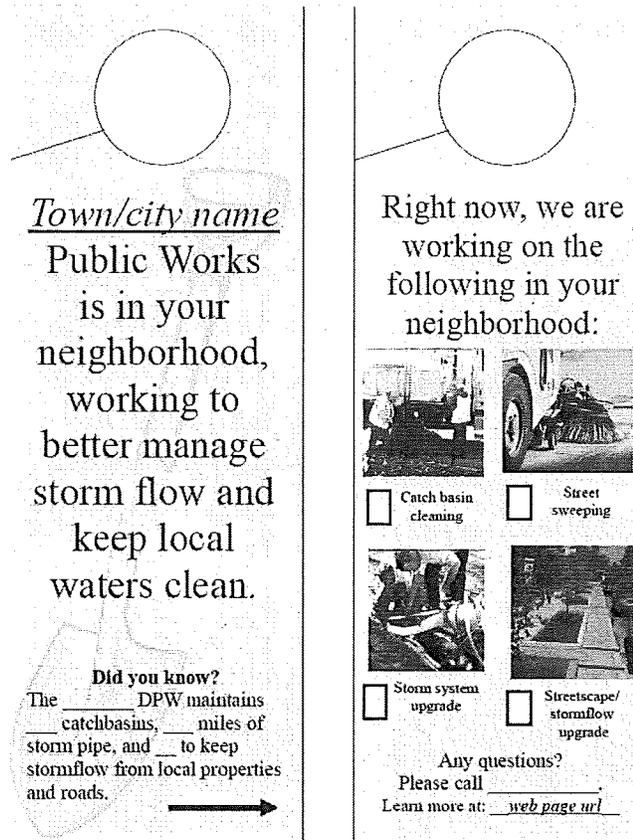
review and update of pet waste ordinances that will be referenced in educational materials during the new permit term.

2. Expanded understanding about stormwater issues and permit compliance

With renewed need for building understanding about stormwater issues and winning support for permit compliance budgets, the Committee undertook three activities this year to promote greater awareness in the region.

Door hanger for use in neighborhoods to highlight stormwater work

When public works or highway crews are out maintaining, fixing, or upgrading the municipal stormwater system, the work typically goes unseen. The only visible evidence to residents and businesses may be some traffic flow inconvenience around a manhole or along a trench. To highlight this “invisible” work, the Committee designed door hangers that can be used when crews are working in a given neighborhood. This idea is borrowed from Chicopee, where the simple act of using doorhangers played a vital role in helping people to understand the value of stormwater work and the need to establish dedicated funding for their program.



Door hangers, image shown above, were designed to be modified for use in each member community to elevate the visibility and increase understanding about stormwater among residents and businesses.

Understanding about stormwater and permit requirements among other local officials

For the Committee, PVPC prepared a powerpoint presentation that outlines the major requirements of the new stormwater permit and the water quality elements specific to the region. PVPC staff presented this material in May to the Valley Development Council, a group of municipal planners in Hampshire and Hampden Counties (as well as representatives of the home builders, real estate and housing communities) that meet quarterly to discuss issues and share ideas on planning and smart growth. The presentation is available to all Stormwater Committee members as they work with colleagues and constituents to move forward on discussions about stormwater issues. MassDEP Stormwater Coordinator Fred Civian has offered his assistance to Committee members in promoting understanding about permit compliance and to date has joined PVPC staff in visiting with municipal officials in Hadley.

3. Promoted "Soak up the Rain" stormwater education campaign

The Connecticut River Stormwater Committee continued to develop and promote the "Pioneer Valley Soak up the Rain" education campaign (a local version of the EPA's New England campaign). The campaign, a call to action for property owners to reduce stormwater runoff through strategies that soak up the rain, involves two outreach efforts for the Connecticut River:

Pioneer Valley Soak up the Rain Website www.pvpc.org/soakuptherain/

The Stormwater Committee continues to maintain the Pioneer Valley Soak up the Rain website, which promotes a range of practices, including tree plantings, rain gardens, permeable pavements, dry wells, and green roofs. An occasional blog that includes photos and video provides examples from the region. Property owners throughout the Pioneer Valley are also invited to submit projects that they know of to feature on the website. A "Cool resources" heading provides connection to the latest information and a "resources" menu item links to a library of informational resources. In the past year, the website had 24,164 hits with 17,115 of these hits resulting in information requests being sent to the user.

Soak up the Rain signs for rain gardens and porous paving projects

Soak up the Rain signs for rain gardens and porous paving continue to be available for municipal use and distribution to residential and commercial property owners to highlight local projects. Sign messages currently focus on "Keeping our Rivers Clean." A variation of the sign design is underway for specific use around local lakes in the region, "Keeping our Lake Clean."

4. Defined program of effective stormwater education messaging for the next five-year permit term

The Committee carefully reviewed all stormwater education and outreach requirements in the forthcoming permit and created a table that it has shared widely within the region and across the state through the state-wide coalition. Drawing on this understanding of requirements and several other resources, including research PVPC conducted last year on stormwater education messaging and a survey of Committee members on specific local issues, PVPC staff prepared a program for effective stormwater education messaging for the next five-year permit term. This plan is currently in draft form and will be finalized by Committee members in the coming months and integrated as appropriate with Notice of Intent and Stormwater Management Program Plans in each member community.

5. Continued planning for website education and outreach for the Pioneer Valley

Given the various websites/pages the Stormwater Committee communities have been using to promote work under the 2003 permit, including Think Blue and Greenscapes, and the expanded education and requirements of the forthcoming permit, PVPC has been working to retool and update web materials. This began with a newly proposed website framework under "Think Blue: Clean Water Begins with You," that attends to the various stormwater issues and audiences under the new permit. It will bring together education and outreach materials together with metrics for understanding the effectiveness of messages and movement away from behavior and practices that negatively impact the health of the Connecticut River. PVPC is currently working with its webmaster to determine how this website can be accommodated under the Commission's current website framework.

6. Collaborated with Massachusetts state-wide coalition of stormwater coalitions

On behalf of the Connecticut River Stormwater Committee, two municipal Committee representatives and PVPC staff have been attending quarterly meetings of the state-wide stormwater coalition to identify and advance efficiencies that could be achieved through state-wide collaboration on certain MS4 permit compliance activities. PVPC staff is also participating in one of the subcommittees organized to give careful examination to education and outreach compliance activities and best possibilities for state-wide collaboration. The state-wide coalition through the Central Massachusetts Regional Planning Commission has a MassDEP grant to develop some tools and resources for permit compliance.

The following three projects, while specific to certain municipalities, are expanding awareness regionally about stormwater. They also serve to build capacity and know-how in planning, design, and construction of better stormwater management practices. Each project has its own outreach and education component.

7. Designed and constructed regional demonstration rain garden at Renaissance School, Springfield

PVPC staff continued work with the Regenerative Design Group to design and construct a 4th regional demonstration rain garden. The new rain garden at the Renaissance School captures flow from a rooftop at the school's entrance. The rain garden soaks up storm flow that previously entered a catch basin tied to a pipe that empties into Abbey



Brook. Abbey Brook is impacted significantly by urban storm flows which enter the brook at high volumes and velocities whenever it rains.

Sited near the main entrance to the Renaissance School, the rain garden is highly visible. Above image shows the rain garden under construction. Image below shows students asking questions of Landscape Architect and rain garden designer Tom Benjamin.



8. Led project in Chicopee, Ludlow, and Springfield to reduce urban flows to the Chicopee River

PVPC staff collaborated with the Connecticut River Watershed Council and the Chicopee River Watershed Association to evaluate the degree to which urban storm flows are contributing to the bacteria impairment in the Chicopee River. A water quality sampling program during the summer of 2016 involved 10 volunteers who collected samples from local tributaries and storm outfalls on the mainstem during 3 dry and 3 wet weather events. Follow up entailed source tracking at locations showing high bacteria during wet weather. Those results are now in turn leading to preliminary stormwater management facility design in two locations, a park plagued by geese in Chicopee and a small mixed use neighborhood in Ludlow.

9. Led urban tree planting project in Chicopee, Holyoke, and Springfield

PVPC is leading an effort to promote urban tree planting in the region's 3 major cities in partnership with the US Forest Service, Massachusetts Executive Office of Energy and Environmental Affairs, the Valley Opportunity Council, Nuestras Raices, ReGreen Springfield, Conway School of Design, Mass DCR, and the Cities of Chicopee, Holyoke, Springfield. Aimed at reducing stormwater flows to combined sewer areas and promoting greater climate resilience, the project involves an integrated community outreach process involving multiple neighborhood workshops and workshops for public works officials. Once completed, the project will provide the following major deliverables:

- installation of 2,200 trees on local streets and yards
- final engineering design for a green streets in each municipality
- model stormwater tree rebate ordinance

The project is made possible thanks to a \$239,000 grant award to PVPC from the US Forest Service under the State and Private Forestry FY15 Northeastern Area Landscape Scale Restoration Program.

10. Led project in Holyoke to reduce urban flows into Day Brook

Through an EPA Urban Small Waters Grant PVPC is developing a green infrastructure plan for Day Brook in Holyoke, which flows from west to east, remaining above-ground from Anniversary Hill Park and Community Field before being conveyed underground beneath the City and routed through the Waste Water Treatment Plant. During large precipitation events, Day Brook's volume contributes to Combined Sewer Overflows into the Connecticut River.

Conceptual design work of this project will recommend ways to reduce inflow into Day Brook through green infrastructure stormwater facilities. The project also aims to increase awareness of this "secret stream" running unseen through the urban landscape. This fall the project began with an arts and science project at Sullivan School located close to the upper reaches of Day Brook. PVPC's partner in this project, Enchanted Circle Theater Group, led a six-week lesson series that taught third and fifth graders about stormwater and CSOs, and resulted in a mural and walk that relates the story of Day Brook in Holyokè. Both the mural and storywalk will be installed in public parks along the path of Day Brook in the summer. Meanwhile, geology students at Holyoke Community College assisted PVPC in conducting percolation tests at several publicly owned sites along the path of Day Brook to determine whether they would be suitable sites for green infrastructure stormwater installations. The City of Holyoke provided equipment and staff to aid in the perc tests, and also conducted GIS mapping of the Day Brook watershed. Next steps include holding two public workshops in the spring and summer (including unveiling the mural), a family-oriented workshop on stormwater at Beaudoin Village, and later in 2017, the development of the conceptual designs and plans.