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Annual Report Number 11
Date : 3/25/14

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Town of Granby

NPDES PII Small MS4 General Permit Annual Report

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Self Assessment:

The Town of Granby continues to try and honor all of its commitments under the Stormwater Phase II permit requirements. One of the most important areas we concentrate our efforts is on the routine maintenance and operation of our storm drainage system. We try to get out early in the spring to pick up winter sand off the streets. In fact, sweeping operations are already underway. We also try to keep current with catch basin cleaning and prevent as much sediment as we can from entering our pipe systems. We also monitor our system with regular outfall inspections.

This year our outfall inspections revealed several areas where yard waste from residents was being dumped near resource areas. We have notified the Local Conservation Commission and will let them follow up in these matters.

Although our budgets are limited and we do not have funds available for large stormwater improvement projects or complete retrofits; we always try to incorporate small improvements and repairs into our work plan every year. This year we replaced a drop inlet on Burnett Street, fixed sinkholes from damaged pipe systems on Karen Drive and Pleasant Street, and replaced cross culverts and installed rip rap swales to mitigate erosion along Carver Street. We always attempt to incorporate these types of best manage practices (BMP's) into all our roadway reconstruction projects.

Once again this year we have maintained our membership in the Connecticut River Stormwater Committee. We try to be an active participant in this group and try to attend any other training and seminars on Stormwater that would assist us in managing our system. Overall, we believe that we place an appropriate level of investment and effort into this area in order to achieve compliance with our permit requirements.

Appropriateness of BMPs:

The Town of Granby continues to make improvements and investments into stormwater management. As mentioned previously, we have mapped our infrastructure with GIS. Recognizing the importance of this mapping for routine maintenance, we have acquired a small handheld Garmin GPS unit. We have converted our catchbasin GIS location data from shapefile format into a GPX format which can be downloaded onto most small GPS units and used in everyday maintenance operations. The convenience of this tool is that the low cost units can be given to almost any employee without risking damage to an expensive high end Data Collection unit.

We have maintained our membership in the Connecticut River Stormwater Committee. We fully support the efforts of this committee. We believe that it is highly effective to pool our resources with the other communities in order to accomplish a successful public education and outreach program.

As we have discussed in previous annual reports, the majority of our storm drainage system consists of small isolated systems with a few catchbasins discharging to a nearby low area, wetland or stream. Illicit discharges to a small isolated system such as this would be readily apparent and easily tracked to a source. Over the past few years, our outfall inspections have yielded only a few suspect discharges. Because of this we do not believe that illicit discharges are a significant problem within our system.

In light of the above, it is our opinion that most of the bmp's outlined in our stormwater program are reasonable and appropriate for our system.

Progress Toward Achievable Goals:

We performed our normal street sweeping operations. We completed our dry weather inspections of outfalls and cleaned nearly 100 catch basins.

As mentioned in last years report, The Town of Granby has been working with representatives of the MacDuffie School regarding the potential of a sewer extension project that would assist the school with their expansion plans. Currently, our engineers are working on a feasibility study to extend the sewer and water along the Route 202 corridor through the center of town all the way to MacDuffie School. The route through Belchertown has been placed on hold because it appears that the Route 202 corridor would be a more economically viable option.

In addition to the above we continue to invest in continuing education and training for our employees. As mentioned previously we have attended various seminars and continuing education courses throughout the year.

Specific achievements toward the various BMP's are detailed below and grouped under the individual BMP I. D. number:

- 1) The Local Storm Water regulations are in place. The proposed regulations have been reviewed by Town Counsel and the Sewer Commissioners. The sewer commissioners have incorporated the proposed regulations into the sewer regulations.
- 3) Troubled Waters brochures and posters are available at Town Hall. Posters are displayed at the Highway Department. Public outreach is also being accomplished through the Connecticut River Stormwater Committee advertising and presentations.
- 4) The Town of Granby is a member of The Connecticut River Stormwater Committee. This committee is providing outreach towards targeted groups. The DPW opened a waste oil collection center.
- 5) The Connecticut River Storm Committee has been very effective in providing public education and outreach in numerous venues. See attached report in appendix A
- 8) The Selectboard is looking for volunteers to appoint to the Connecticut and Chicopee River Watershed Councils. We have joined the Connecticut River Storm Phase II Committee. The Highway Superintendent is representing the Town on this Committee.
- 9) Household waste recycling days are held annually.
- 10) The DPW has previously enlisted the help of the local Girl Scout troop to stencil the catch basins. Their participation in this program seems to be declining therefore we will have to try to find another organizations to continue this effort.
- 11) We have also accepted community service volunteers that have been provided through the court system to pick up roadside trash and clean up at the parks. We have always encouraged and assisted any concerned residents and members of the Conservation Commission in coordinating roadside cleaning.
- 12) The Highway Department has always provided assistance for community cleanups. Also, we promptly try to pick up all large items that are dumped along the roadsides. We try not to let any accumulation occur in order to discourage and mitigate future dumping.

- 13) The Highway Department has purchased a hand held GPS unit and has mapped all storm drains and sanitary sewer systems. Data collection is complete. We have shared this data with the Conservation Commission and assisted them in establishing a GIS database for their use.
- 14) We have delivered paper maps of the stormdrain system to the Police and Fire Departments. We are continuing to work on mapping and organizing the data. We have purchased Arcgis software. Our staff has made significant progress incorporating this data into a GIS system.
- 15) We are continuing to perform annual inspections of the storm outfalls.
- 16) The proposed illicit discharge regulations have been adopted into our sewer regulations. As mentioned previously, we do not believe that the illicit discharge is a significant problem in our system, based on the information currently available.
- 19) As mentioned above, the town is working on a comprehensive wastewater management plan and a source water protection plan.
- 20) Same as above.
- 23) The Town has constructed a new DPW building. The new facility has enabled us to greatly improve our maintenance and housekeeping. We hope to begin working on a municipal operation plan in the near future as time allows.
- 24) We have purchased a catch basin cleaner. We have also created a database to better manage the maintenance of the stormdrain system. This has enabled us to substantially increase the number of catch basins that are cleaned each year.
- 25) We are planning to support training seminars for employees as time allows.
- 26) All ongoing road maintenance projects incorporate deep sump catchbasins and grass swales at a minimum.

Next Cycle:

We are still working under our previously issued NPDES MS4 permit. At the present time, we plan to continue along the same course until a new permit is issued by the EPA. We do not foresee any need to make significant changes in the next cycle. We are planning to continue our involvement with the Connecticut River Storm Committee. Our street sweeping operations are already underway. We are planning to begin catch basin cleaning as soon as the sweeping operations are complete.

We are already looking at and planning a few repairs to catch basins that will be needed this year. We hope to begin this work as soon as the weather permits.

The DPW representatives will continue to perform dry weather inspections of stormwater outfalls and continually monitor our system for sources of illicit discharges.

Changes:

We do not anticipate any significant changes to our stormwater program in the upcoming year. We believe that the overall stormwater program appears to be effective and appropriate for our community; therefore, no significant changes are planned for the next cycle.

Reliance on Others:

Last year we attended a seminar at the Massachusetts Highway Association meeting. The seminar was given by representatives from Tata and Howard Engineers and discussed some of the work that was done for Stormwater Phase II communities in the Blackstone river watershed area. I believe some of the member communities were Leicester and Charlton. They discussed some of the data collection work and computerized forms that were developed to manage the stormwater programs for these communities. I believe that the EPA or DEP funded a grant for this work. If the computerized data collection and management software is working well, it would be helpful if the EPA and DEP could share these tools and make them available to communities throughout the area. It makes no sense for each community to reinvent the wheel and develop databases and forms for electronic data collection individually. Even if the towns had to purchase software, equipment or tools, it would be very helpful if the DEP or EPA could at least assemble and catalogue the tools that are effective and readily available.

Well, we have just experienced a long hard winter and now we all look forward to spring. However, the spring thaw this year will bring serious problems to many of us. Potholes are expected to be very severe this year due to the extreme cold temperatures and deep frost. In addition, the poor condition of our pavements will compound the problems by allowing water to seep into the cracks and further compromise the integrity of the pavement structure.

The pavement condition of roads has been declining for many years. This is occurring throughout the State because of insufficient funding of maintenance. The significance of the problem is confirmed in a report done by TRIP (a National Transportation Research Group based in Washington D.C.) showing that many cities and towns in our State are in the top 20 worst cities in the country for their size.

It is the local roads that are maintained by the cities and towns that have experienced the worst problems. The insufficient "chapter 90 allotments" together with material cost increases of over 200 percent in the last 12 years have taken their toll.

We did manage to pass a small gas tax increase last year and then the Governor proposed level funding the chapter 90 program and did not share any of this revenue with the cities and towns. It is simply unconscionable that the Governor proposes a massive rail expansion on the eastern part of the State while allowing our roadways to crumble into a severe state of disrepair. There is no regional or economic equity in this plan.

As we have mentioned in our reports over the past few years, roadway maintenance budgets have not kept pace with inflation. The result is that our local roads are falling into a severe state of disrepair. Pavement condition indexes continue to decline. This all leads to crumbling roads. We believe that the crumbling roads will become a very significant factor contributing to increased erosion and sedimentation within our storm-drainage system and watersheds in the future.

Small towns, such as ours, are heavily dependent on state assistance in the form of "chapter 90" money, to fund road maintenance budgets. The inability to raise local revenues coupled with budget constraints in other areas leaves us with little other options than to rely on the Chapter 90 assistance. The chapter 90 program must be increased significantly in order to preclude further degradation of our local transportation systems. The Massachusetts Municipal Association has studied this issue and has determined that the statewide allotment would need to be tripled from its current \$200 million dollars just to maintain our existing infrastructure. The longer we wait to deal with this issue, the more expensive it will become. It is a well documented fact that is much more cost effective to maintain pavements than to wait until they are totally destroyed and need complete reconstruction.

In light of the above, it is critical that increased State and Federal assistance be provided to the cities and towns. Without outside sources of revenue, the infrastructure will continue to deteriorate and will negatively impact water quality and become a serious impediment to the storm phase II program in the future.

Program Summary:

See chart attached

STORM WATER MANAGEMENT PROGRAM SUMMARY

Mass. Transmittal No. _____
EPA No. 041007 _____

Name: Town Of Granby
Date: 3-26-14

BMP ID.	BMP	Responsible Dept./Person	Status	Measurable Goal
Minimum Control Measure 1				
1	Create a Stormwater Program	Selectmen/DPW/Planning/Health	Stormwater regulations adopted	Present to public draft stormwater management plan
2	Create a Stormwater Program	Selectmen/DPW/Planning/Health	Stormwater Regulations adopted	Identify sources of assistance to implement plan
3	Address specific groups	DPW	Brochures available at town hall	Distribute EPA and other relevant educational brochures.
4	Target groups likely to impact stormwater	DPW	Joined Conn. River Storm Committee/ Ongoing	Brochures targeting specific audiences and activities will be available.
5	Identify alternate information	Administrative Assistant/DPW	Stormwater Regulations adopted	Present to public draft of Comprehensive Stormwater Management Plan
6	Identify alternate information	Administrative Assistant/DPW	Ongoing through Conn. River Storm Comm.	Identify funding sources and apply for assistance to implement plan including education and outreach
7	Utilize local public access channel	DPW	In process/ when appropriate	Public meeting notices and reviewing SMP
8	Develop, conduct and document educational programs	Liaison/DPW	Looking for Volunteers Joined Conn. River Storm Committee	Town will appoint a liaison to Conn. And Chicopee river watershed councils
9	Promote household waste recycling	Board of Health/ DPW	On going annually	Sponsor hazardous waste collection days
Minimum Control Measure 2				
Public Participation				
10	Storm drain stenciling	DPW	Looking for group to assist Girl Scouts	Develop a stencil program.
11	Community clean ups	Conservation commission/DPW	ongoing	Encourage stream team cleanups
12	Community clean ups	DPW	Always available on request	Provide trucks and support efforts
Minimum Control Measure 3				
IDDE				
13	Inventory and Mapping storm drain system	DPW	GIS Data Collected in -- house	Identify funding and obtain assistance
14	Mapping and identification of outfalls and	DPW/Assessors	GIS Data Collected in --	Develop and implement a plan to map outfalls to receiving waters

STORM WATER MANAGEMENT PROGRAM SUMMARY

Mass. Transmittal No. _____
EPA No. 041007 _____

Name: Town Of Granby
Date: 3-26-14

receiving waters	Identification/description of problem areas	DPW	house annual inspections ongoing	Develop and implement an IDDE plan
15	Enforcement procedures addressing illicit discharges	Planning/Building/Town Council/Board of health	Ongoing	Review whether local authority is appropriate and able to respond to illicit discharges.
16	Public information program regarding hazardous waste and dumping	Board of Health/DPW	Ongoing by Board of Health	Provide educational brochures to residents promoting proper disposal of household hazardous wastes and conditions for regional collections.
17	Initiation of recycling programs	Board of Health/DPW	Ongoing By Board of Health	Apply for funding assistance in public education and recycling materials
18	Watershed assessments and studies	Board of Health/DPW/Conservation		Identify opportunities for assistance to support watershed assessment and implementation activities.
19	Watershed assessments and studies	Board of Health/DPW/Conservation		Encourage cooperation with public drinking water suppliers to develop wellhead protection plans
20				
21				
Minimum Control Measure 4				
21	Bylaw: Storm water management regulations for construction sites 1 acre or larger	Planning/Conservation/Town Council/Board of health/ZBA	Regulations adopted, Purchased software to manage permits	By law adopted
22				
Minimum Control Measure 5				
22	Bylaw: Require post-construction runoff controls	Planning/Conservation/Town Council/Board of health/ZBA DPW	Regulations adopted	By Law Adopted
23				
Minimum Control Measure 6				
23	Develop a municipal operations and Maintenance Plan	DPW	Proceeding as funding allows	Develop and update an operations plan

STORM WATER MANAGEMENT PROGRAM SUMMARY

Mass. Transmittal No. _____
 EPA No. 041007 _____

Name: Town Of Granby
 Date: 3-26-14

24	Develop a municipal operations and Maintenance Plan	DPW	Created Maintenance Database	Implement a formal inspection program
25	Develop and implement training programs for municipal employees	DPW	Ongoing	Send employees for training seminars
26	Review Storm drain infrastructure	DPW	On going	Review infrastructure in chapter 90 utilization

Connecticut River Stormwater Committee

2013 Annual Report

January 1 to December 31, 2013

The Connecticut River Stormwater Committee continued to use the NPDES MS4 draft permit as guidance in its work for 2013. Since it is clear that there will be a strong focus on green infrastructure stormwater management systems in the permit, outreach focused on providing information and education about these types of systems.

The following is a summary of the work of the Connecticut River Stormwater Committee during the 2013 calendar year:

Member Community	Committee Representative and Department
Agawam	Tracey DeMaio, Department of Public Works
Chicopee	Joe Kietner, Waste Water Treatment Division
Easthampton	Jim Gracia, DPW
Granby	Dave Derosiers, Highway Department
Holyoke	Matt Sokop, Department of Public Works
Longmeadow	Yem Lip, Department of Public Works
Ludlow	Jim Goodreau, Department of Public Works
Southwick	Richard Grannells, Department of Public Works
South Hadley	Dan Murphy, Department of Public Works
Springfield	Kevin Chaffee, Conservation Commission
West Springfield	Jim Lyons, Department of Public Works
Westfield	Casey Berube, Water Resources Department

Green Infrastructure Workshop and Pre-Workshop Survey

PVPC in partnership with EPA region 1 and the EPA Office of Research and Development (ORD) co-held a workshop entitled "Green Infrastructure for Developers, Designers, contractors, and Municipal Officials" on June 13, 2013. There were 58 attendees plus 19 EPA and PVPC staff in attendance. The full day workshop took several months of detailed planning with EPA and EPA's contractor Horsley Witten Group. The workshop was designed to provide information on design, construction, and maintenance for local and regional projects through a peer to peer format. Workshop presentations included:

- Introduction to GI and LID
- Alternative Models for GI/LID Site Design and Project Benefits: Panel Discussion
- Costs and Benefits of GI/LID
- Incorporation of GI/LID in Retrofits and Redevelopment Projects

- Importance of Construction Administration
- Resources and Tools to Get the Job Done

Of particular interest to EPA and PVPC were understanding barriers to green infrastructure implementation. Thus, ORD developed a very detailed pre-workshop survey that was sent to all registered attendees. A total of 44 attendees completed the survey and results will be used to inform future outreach and training. See attached pre workshop survey results as well as workshop flier and agenda.

Soak up the Rain Stormwater Education Campaign

Much of the work for the Connecticut River Stormwater Committee this year was devoted to working with EPA's new "Soak up the Rain" education campaign to adapt it for the Pioneer Valley. The campaign — a call to action for property owners to reduce stormwater runoff through strategies that soak up the rain — involved several major outreach efforts for the Connecticut River.

- ***Pioneer Valley Soak up the Rain Logo***

PVPC worked with the standard EPA Soak up the Rain logo to modify and adapt it for the Pioneer Valley. The logo is being used in all materials associated with stormwater education events and materials going forward. Colors of the logo are integrated with print and other elements for other products.



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

Developed over the course of several months, the Pioneer Valley Soak up the Rain website promotes a range of practices, including rain gardens, permeable pavements, dry wells, and green roofs through examples from the region, a semi weekly blog, and a library of and links to other informational resources. For the website, PVPC had an intern collect and develop narrative, images, and video on 15 local stormwater projects that are scheduled to be introduced as part of the semi weekly blog and then cataloged on the website within a local stormwater gallery feature. Property owners throughout the Pioneer Valley are invited to submit projects that they know of to feature on the website. As this website becomes further established, PVPC plans to phase out the Connecticut River Think Blue website.

- ***Demonstration Workshops for Homeowners and Businesses - EPA Matching Funds \$7,000***

The first of two half-day workshops for homeowners and businesses was held in October in Northampton and attracted 29 participants. Led by staff from PVPC and the University of Connecticut NEMO program, the workshop covered a range of techniques appropriate for residential and commercial sites, including rain barrels and cisterns, porous pavers, rain gutter downspout diversion, rain gardens, and green roofs. As part of the workshop, participants had an opportunity to try out the new NEMO rain garden app and understand exactly how to conduct a soil perc test and cut a downspout to accommodate a rain barrel. In a post workshop evaluation, participants gave the entire event high marks. The evaluation results will be used to slightly revise a very similar workshop that will be held in Holyoke in June of 2014. In promoting the workshop, the Springfield Republican newspaper provided very high profile coverage on the front of their Home & Garden Section. See attached: flyer for workshop, agenda, Republican article, and evaluation results.

- ***Design of templates for interpretive signs at green infrastructure stormwater management facility - EPA Matching Funds \$3,000***

PVPC began working to develop a series of interpretive sign templates that will be offered to property owners for use where they would like to celebrate and highlight their best stormwater management practices, particularly rain gardens, porous paving, and green roofs. For rain gardens and porous paving, sign templates will include one version (varying in size and content) for residential use and another for commercial, municipal, or institutional use. The green roof sign will be designed in only one version as need for such a sign at the residential scale is negligible. The intent is that signs will help to not only inform people about the good practices that are around them , but also inspire additional good practices by example.

Additional Stormwater Outreach and Education Events

In 2013, the following outreach events were held:

- Saturday, April 27, 2013, Agawam Little League Jamboree and Earth Day celebration - Think Blue display booth
- Tuesday, June 11, 2013, Citizens Restoring Congamond Lakes meeting – Presentation on green infrastructure stormwater management practices for homeowners, as well as brief summary of organic lawn care.

Springfield Rain Gardens Project Planning

Matching Funds \$49,000 CWA SEP

The Pioneer Valley Regional Ventures Center (PVRVC) received mitigation funds in the amount of \$49,000 as the result of Clean Water Action's Notice of Complaint against Don Casters Inc. for use to support rain garden workshops and training and construction within the City of Springfield. PVPC initiated this project in December with a meeting of Springfield municipal officials. Work will continue into the coming year and PVPC is hoping to extend the training program into other communities in the region.

US Forest Service Urban and Community Forestry Grant Application

In partnership with the Franklin Regional Council of Governments and Massachusetts Workforce Alliance, PVPC submitted a \$187,000 grant application to the U.S. Forest Service to: work with a steering committee of stakeholders to identify market drivers for Green Infrastructure, analyze existing successful initiatives, and make recommendations for expanding and growing the green infrastructure cluster. The intended result was to be: 1) a detailed report that presents data, analyzes job opportunities and career paths, and makes recommendations to implement training and job development initiatives, and 2) a brochure in hard copy and .pdf form that summarizes key findings and recommendations and provides resources. The grant was not funded.

Appendixes

Green Infrastructure Workshop – June 13, 2013

Pre workshop survey results

Workshop flyer and agenda

Soak up the Rain Workshop for Homeowners and Businesses – October 26, 2013

Workshop flyer

Workshop agenda

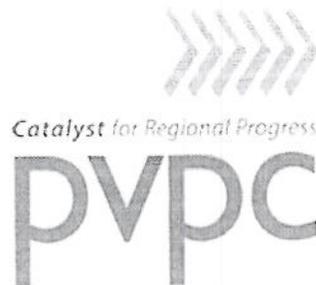
Springfield Republican newspaper article

Workshop evaluation results

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The Voice of Pioneer Valley

Summary of Results from the Pre-Workshop Exercise & Next Steps



Green Infrastructure/Low Impact Development Workshop

June 13, 2013

Pioneer Valley Planning Commission

US Environmental Protection Agency Region 1

US Environmental Protection Agency, Office of Research & Development

PVPC Responding to Participants

What We Heard & Next Steps

Thank you to everyone who took the time to complete the exercise for the 6/13 Pioneer Valley GI/LID workshop. Your input helps us plan for the future.

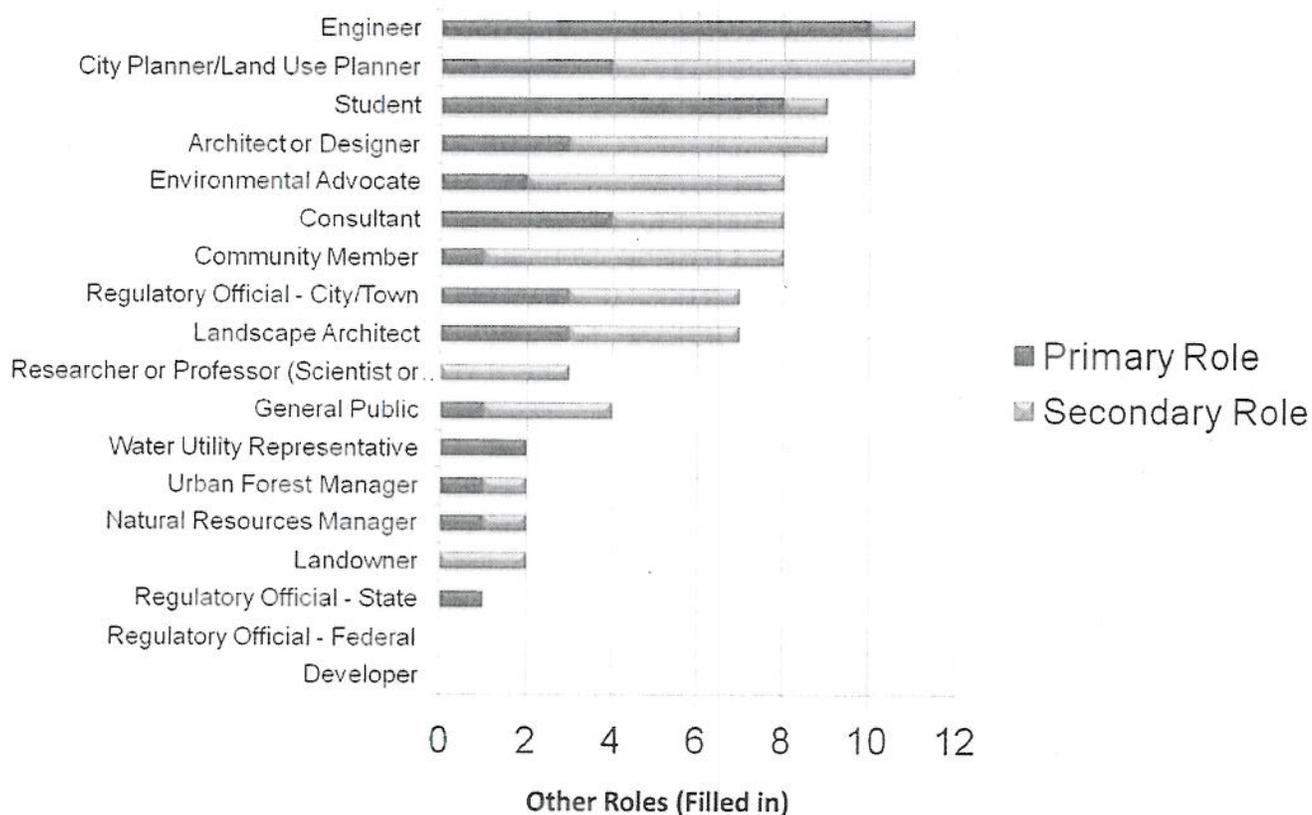
Topics of Interest to Participants

- CSO Mitigation
- Meeting MS4/NPDES permit requirements
- Cost
- Operations & Maintenance
- Removing or navigating state/federal regulations & problematic zoning or local code issues that can be an impediment to GI/LID implementation
- Proof that a given BMP works; avoiding costly mistakes
- Resource area/library of local projects
- Options for residential BMPs

Next Steps

- ⇒ Continue to seek funding sources for CSO mitigation in the region. Funding will support design and construction of GI/LID projects in the three CSO communities: Chicopee, Holyoke, and Springfield.
- ⇒ Like many communities, PVPC is in a holding pattern in anticipation of the new MS4 regulations.
- ⇒ PVPC aims to improve practitioners understanding of ways that GI/LID can save costs in both capital investment and O&M.
- ⇒ More targeted guidance on finding extra-budgetary funding sources
- ⇒ O&M presentations at the workshop were one example of PVPC's ongoing efforts to supply practitioners with the technical information that they need.
- ⇒ PVPC has produced LID code reviews for communities within Pioneer Valley, and will continue working with the state and assisting Pioneer Valley communities in efforts to improve their local code and navigating state regulations.
- ⇒ Continue to add your projects to the *Soak up the Rain Website* so that others within Pioneer Valley can learn
- ⇒ EPA's Green Infrastructure Tools & Resources Database (GITAR), once it is complete, will also provide a wealth of tools, resources, and case studies, to help you find relevant tools, resources, and case studies.
- ⇒ PVPC is currently devising a strategy for a more formalized central location for local information resources.
- ⇒ For more general resources, GITAR will be available in late 2013/early 2014.
- ⇒ PVPC, with the help of EPA Region 1, is initiating its own Soak Up The Rain campaign.

Roles of Respondents



- ◆ Tree warden, parks, commons, cemeteries, Athletic fields, pools Division Director
- ◆ Ecological Landscape Designer (self-employed, Northampton) and part-time Project Designer (Green Infrastructure Planning) for an engineering firm in Boston (Nitsch Engineering, Inc.)
- ◆ I am a community volunteer for the Northampton Board of Public Works and the city's Storm Water Ad-Hoc Advisory Task Force
- ◆ Grant Writer
- ◆ Head gardener at a 3 acre public garden surrounding Wistariahurst Museum in Holyoke. I am dealing with storm water issues from building roofs and the need to water the gardens and turf and would like to consider a cistern system to keep all of the water that falls on site.

Response Rate: 98%

41 Responses

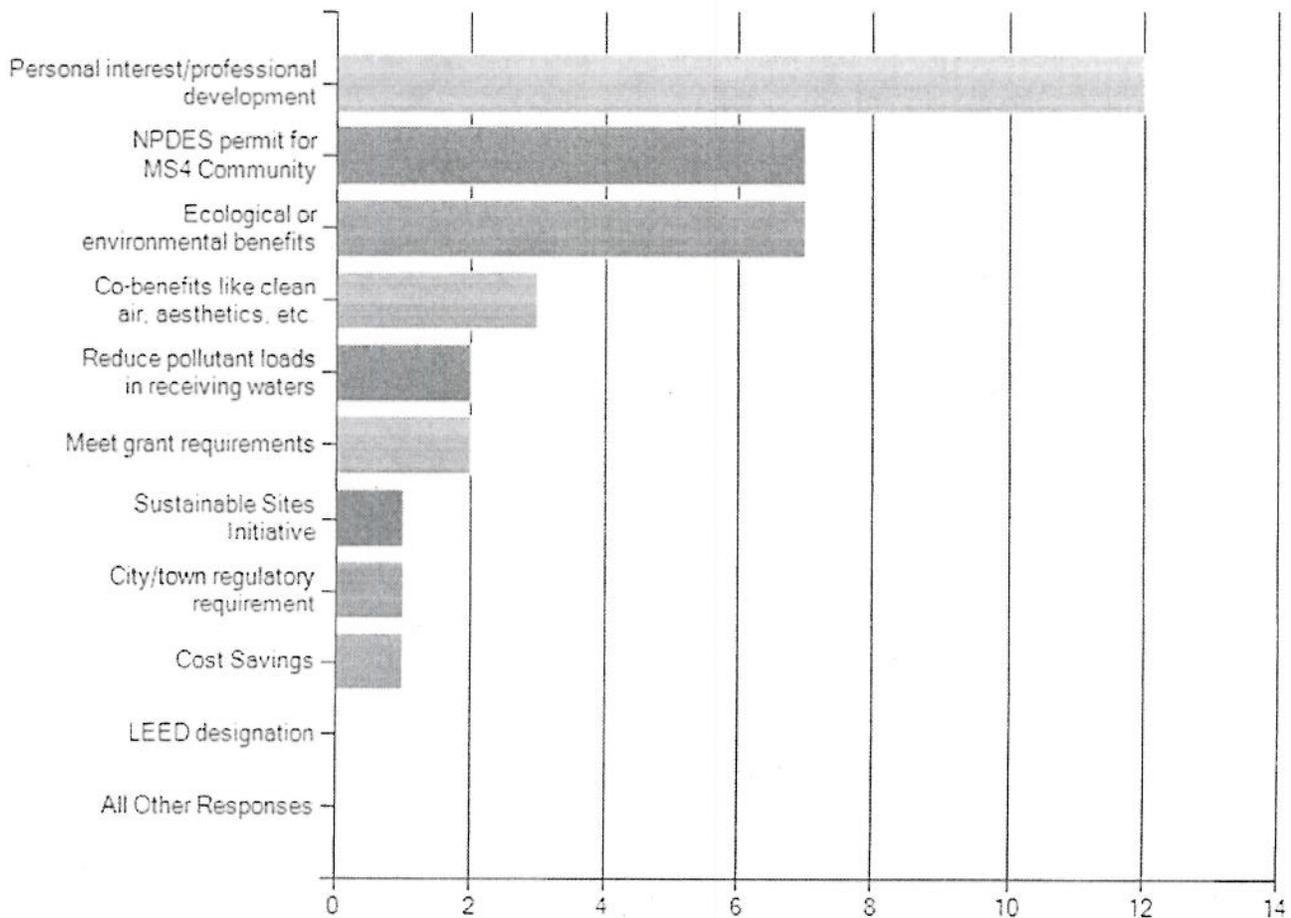
42 Participants (not including speakers)

72 People registered

Note: Some responses may have come from people that registered but did not attend.

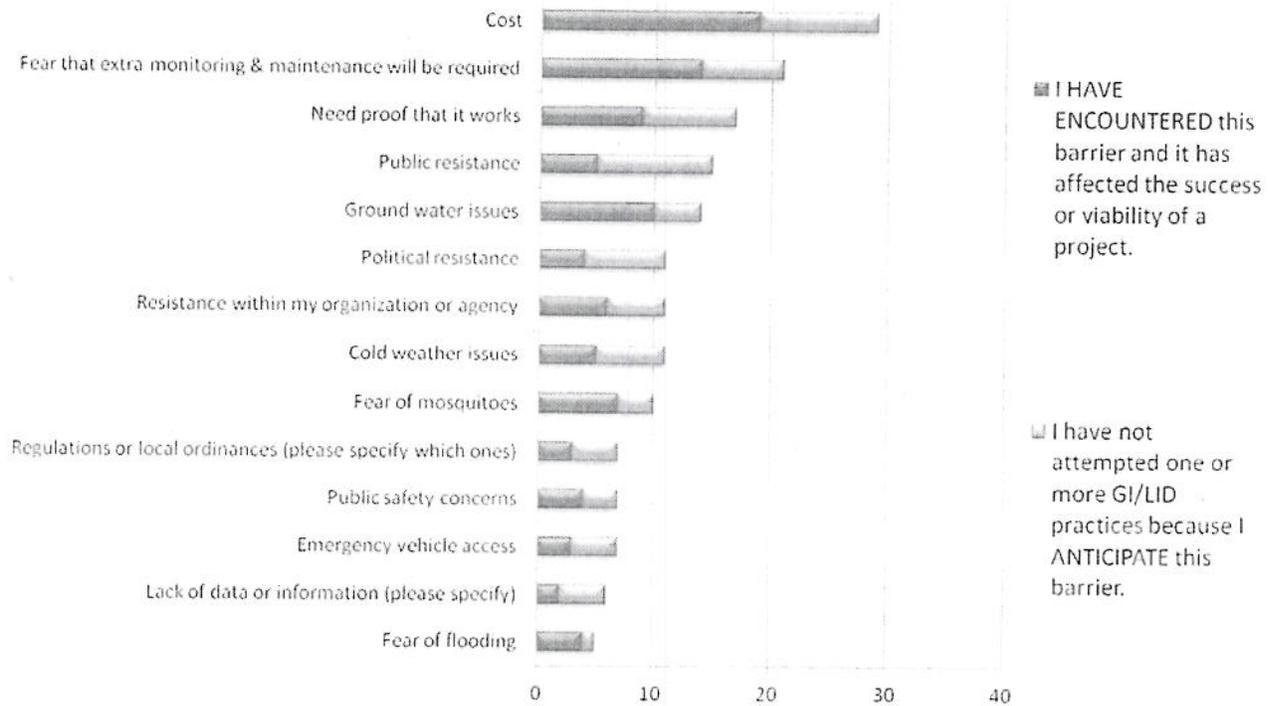
Drivers

What is the primary reason that participants are interested in GI?LID?



- ◇ "I am an engineering consultant practicing in the area of stormwater management and green infrastructure/LID"
- ◇ "Reduce peak flow rates of stormwater into wastewater collection systems in City sewersheds which have a combined sewer system, and thereby help reduce the frequency of combined sewage overflow from that sewershed into the Western MA rivers."
- ◇ "reduce stormwater flows to collection systems and improve stormwater quality"
- ◇ "Looking to develop a vision for the multi-functional landscape.
- ◇ this goes hand-in-hand with "reduce pollutant loads in receiving waters""
- ◇ "As Northampton considers the implementation of a storm water fee, we are looking at ways that residents and commercial properties might utilize GI to qualify for credits/fee reductions as part of a comprehensive incentive program."

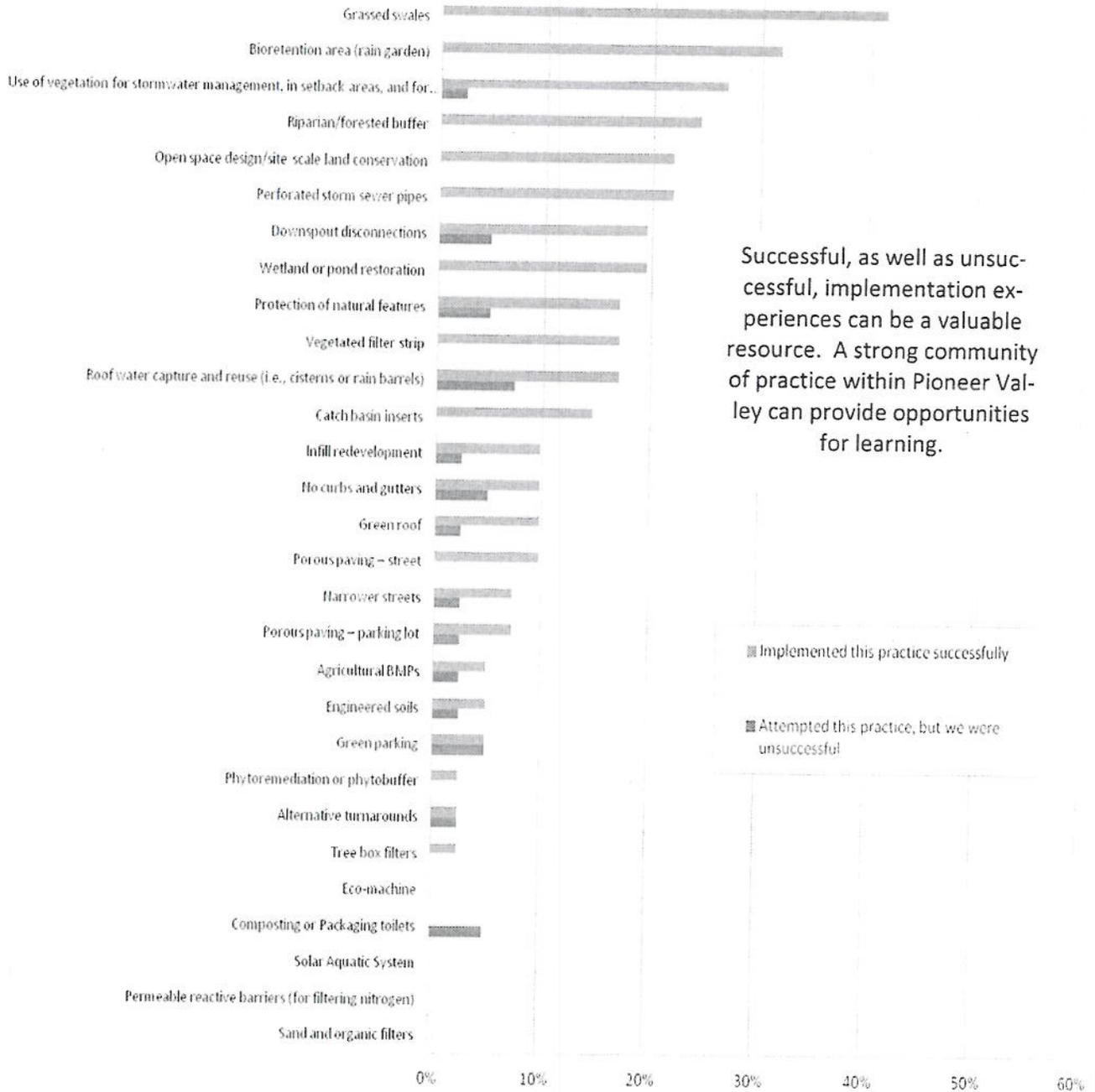
Barriers What is in the way?



Other Fill-in

- ◇ Such resources aren't widely known in my country (Brazil).
- ◇ State and Federal
- ◇ Test pits needed to determine whether ledge present (water quality swale). Extra design time & cost to implement over traditional project. Deep sump basins are easily implemented.
- ◇ Lack of experience successfully constructing GI
- ◇ Zoning, land use, etc.
- ◇ I have not implemented GI/LID practices yet

Implementation Success

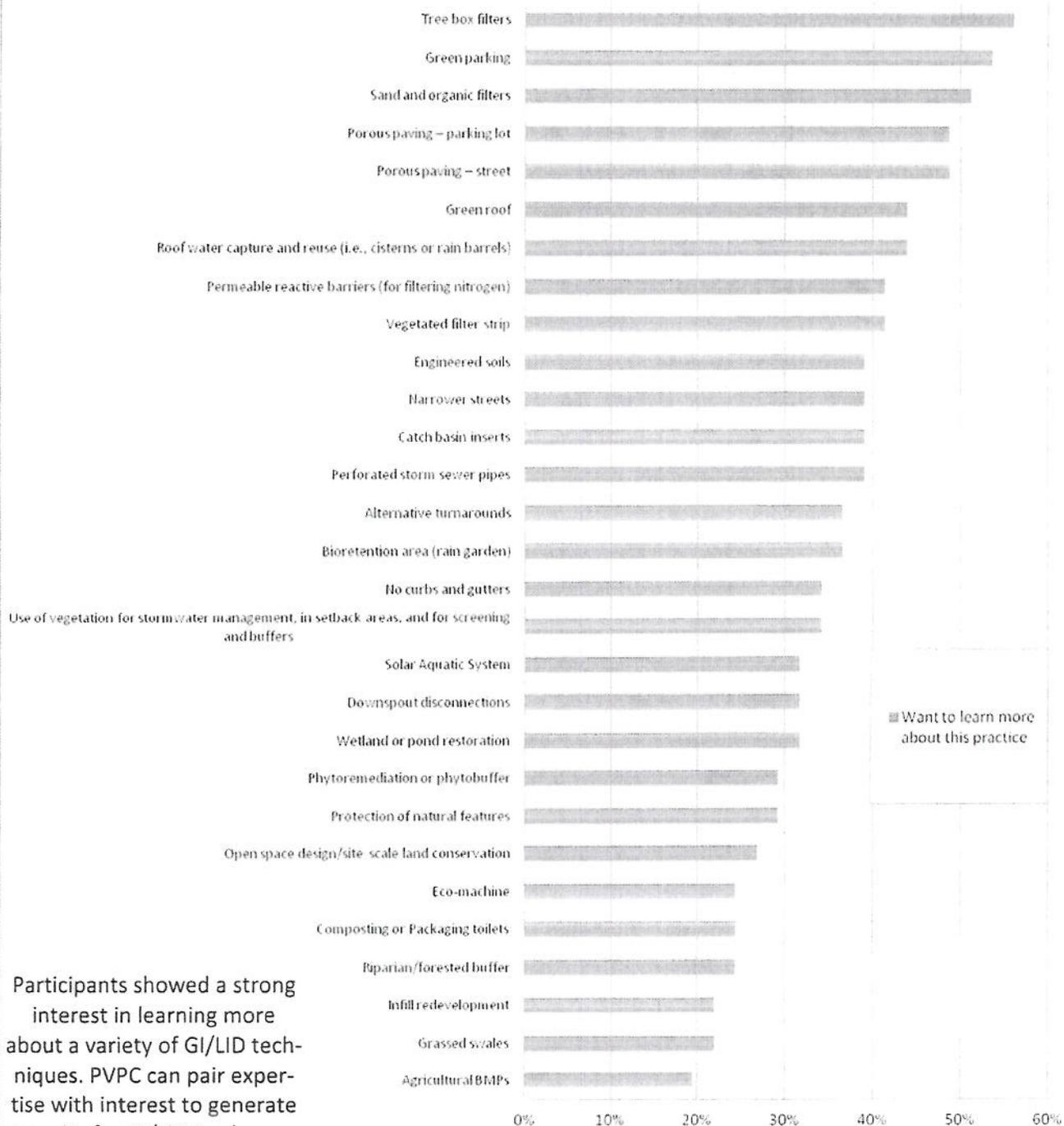


Successful, as well as unsuccessful, implementation experiences can be a valuable resource. A strong community of practice within Pioneer Valley can provide opportunities for learning.

■ Implemented this practice successfully

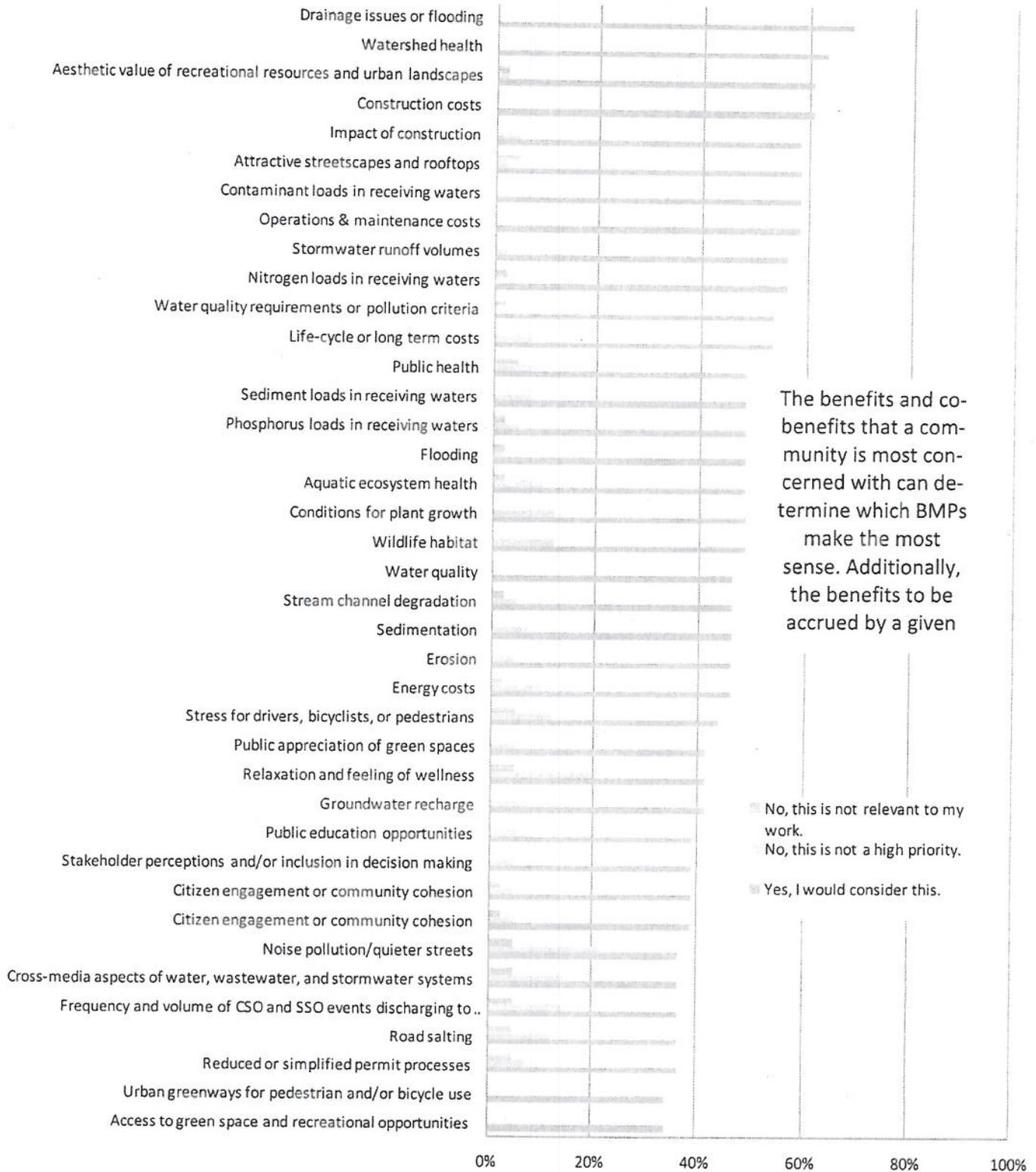
■ Attempted this practice, but we were unsuccessful

Interest in Management Practice



Participants showed a strong interest in learning more about a variety of GI/LID techniques. PVPC can pair expertise with interest to generate capacity for GI/LID implementation, maintenance, and cost reduction.

Priorities - Highest 39/78



The benefits and co-benefits that a community is most concerned with can determine which BMPs make the most sense. Additionally, the benefits to be accrued by a given

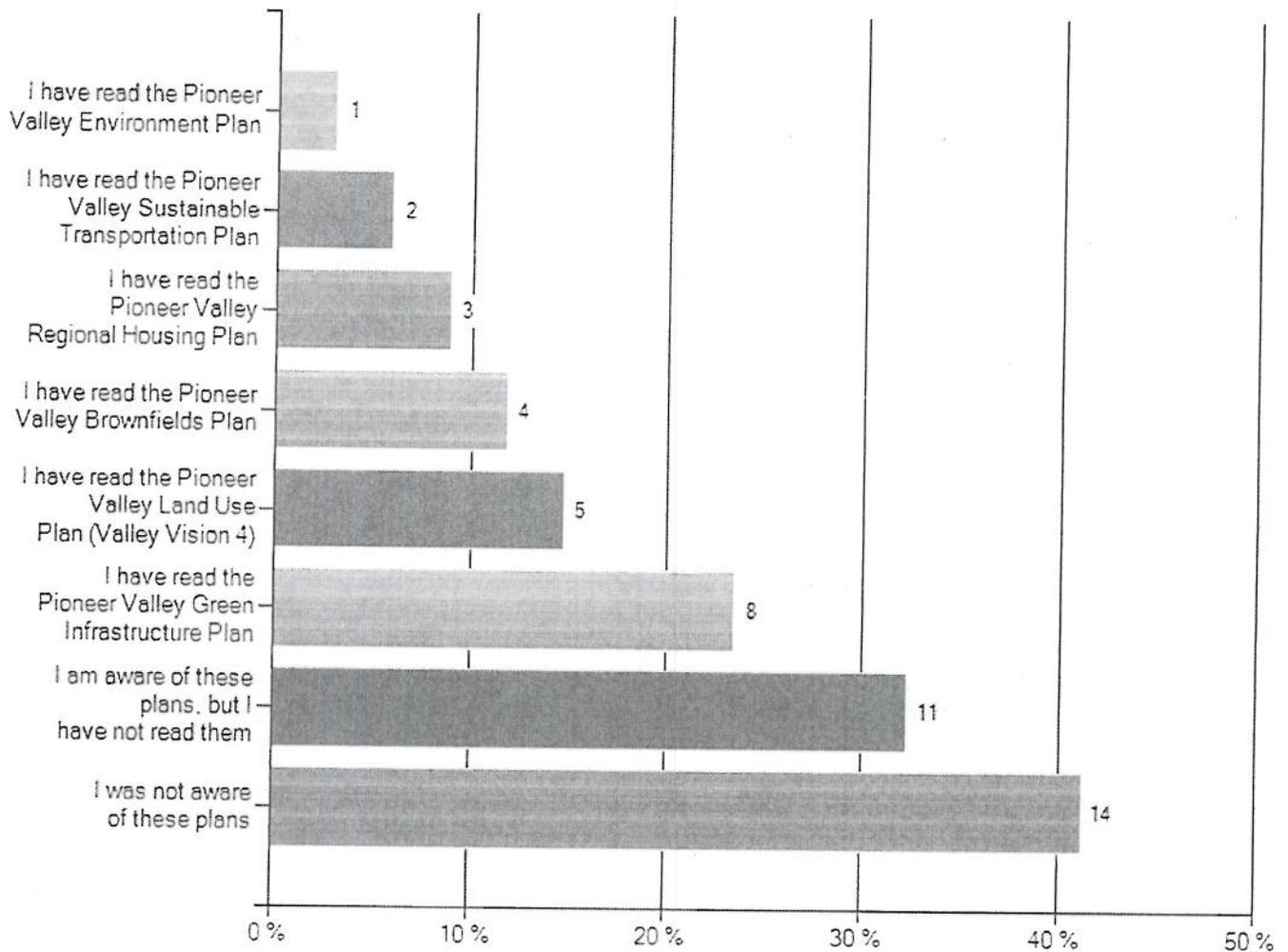
- No, this is not relevant to my work.
- No, this is not a high priority.
- Yes, I would consider this.

Priorities - Lowest 39/78



Awareness of PVPC Plans

Are you aware of, or have you read, any Pioneer Valley Regional Plans?



PVPC Plans are a resource to the region. The Green Infrastructure plan, in particular, provides an assessment of and spatial analysis of communities within the region in order to determine cost-effective placement of BMPS. Practitioners can use the results of the analysis as well as the process used within the plan to inform their own decision making.

Tools & Resources Used by Participants

- ◇ Text books (Sarte, McMahon, etc.)
- ◇ Stormwater calculator
- ◇ design details from cities and towns
- ◇ <http://www.unh.edu/unhsc/>
- ◇ http://www.flowstobay.org/ms_sustainable_streets.php
- ◇ http://efc.muskie.usm.maine.edu/docs/roseen_right_practice_right_place.pdf
- ◇ ArcGIS, Town Stormwater Ordinance, MADEP website
- ◇ LEED Guidance, Sustainable Sites Initiative Guidance, Best Practices
- ◇ green street design guidelines storm water calculator
- ◇ Mass Stormwater Handbook MassDEP stormwater website.
- ◇ Massachusetts Stormwater Handbook Stormwater calculator
- ◇ MA Wetlands Protection Act Stormwater guidelines/handbook, stormwater calculator, EPA website, CT River Stormwater Committee
- ◇ stormwater calculator, MA DEP stormwater management website
- ◇ CT DEP Stormwater Quality Manual
- ◇ Case studies of places implementing GI practices
- ◇ I am not aware of any. The gardeners at Wistariahurst are not represented on the board and have no input. We can only make suggestions and try to back them with good research.
- ◇ <http://precip.eas.cornell.edu/>
- ◇ HydroCAD
- ◇ <http://websoilsurvey.nrcs.usda.gov/app/>
- ◇ MA Stormwater Handbook

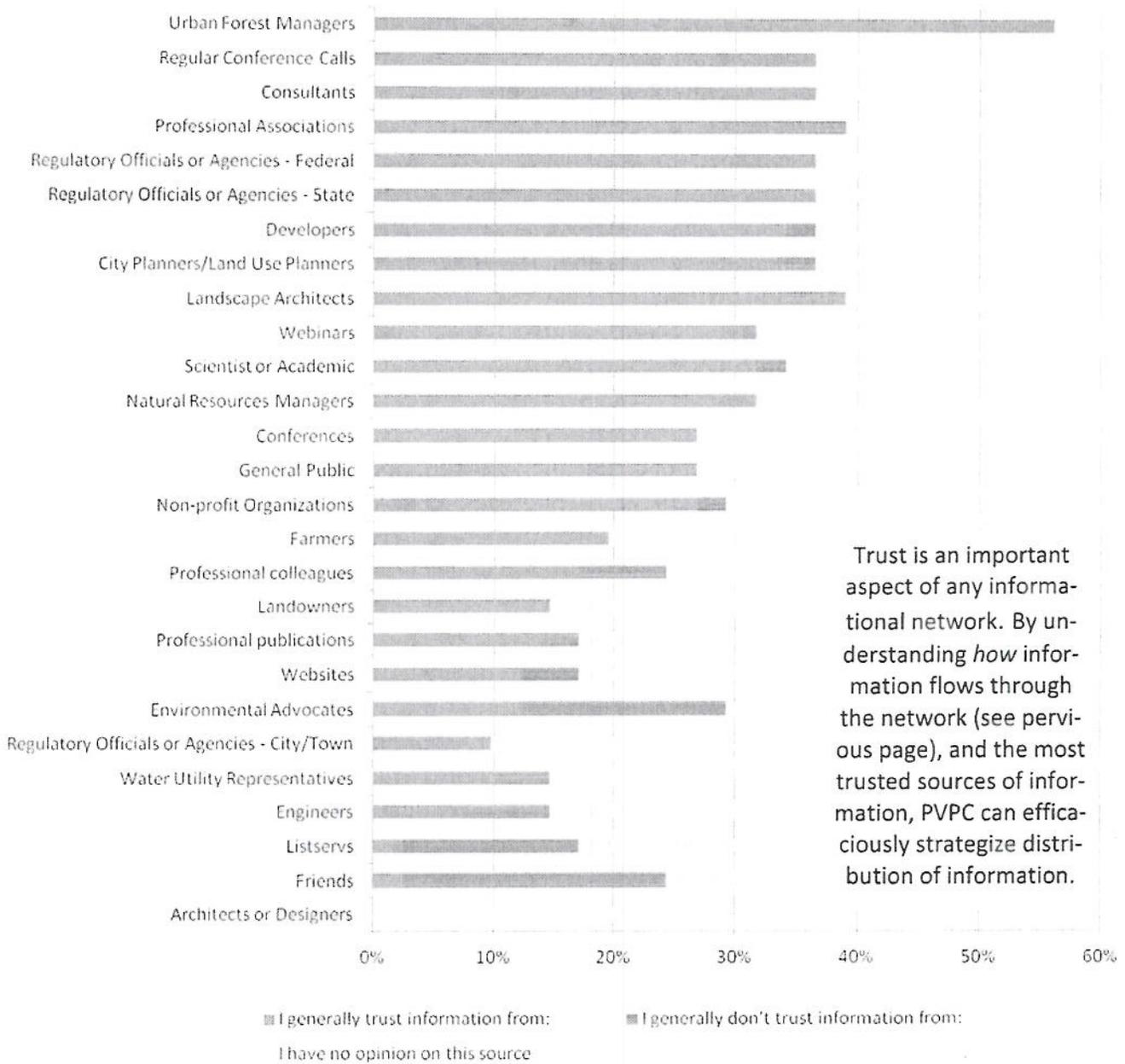
Missing Tools, Resources & Information

What has been difficult for participants to find?

- ◇ Open discussion of problems related to GI/LID projects esp in cold weather climates.
- ◇ Contributing drainage area for specific projects/BMPs - except for public 319 grant-funded projects, local groups/officials often do not have access to this information--need to contact project engineers/designers and they are often too busy to follow up.
- ◇ I'm interested in to what extent GI is practiced on a residential level. Many examples are of commercial sites and neighborhood-scale projects. Perhaps this is most effective scale at which to apply these principles. It would be interesting to know if which GI/LID practices are most appropriate to smaller-scale projects.
- ◇ porous pavement design and cost analysis
- ◇ What is the range of stormwater fee practices that would be legal and practicable in MA/CT? Are there monitoring and measuring technologies (ie to meter stormwater and grey water outflow) in recent years? What are the fed/state/regional resources available for support and training to assist DPW transition to GI/LID practices?
- ◇ It would be nice to have a resource area (library) of sample projects with specific implementation details which could be used on actual projects.

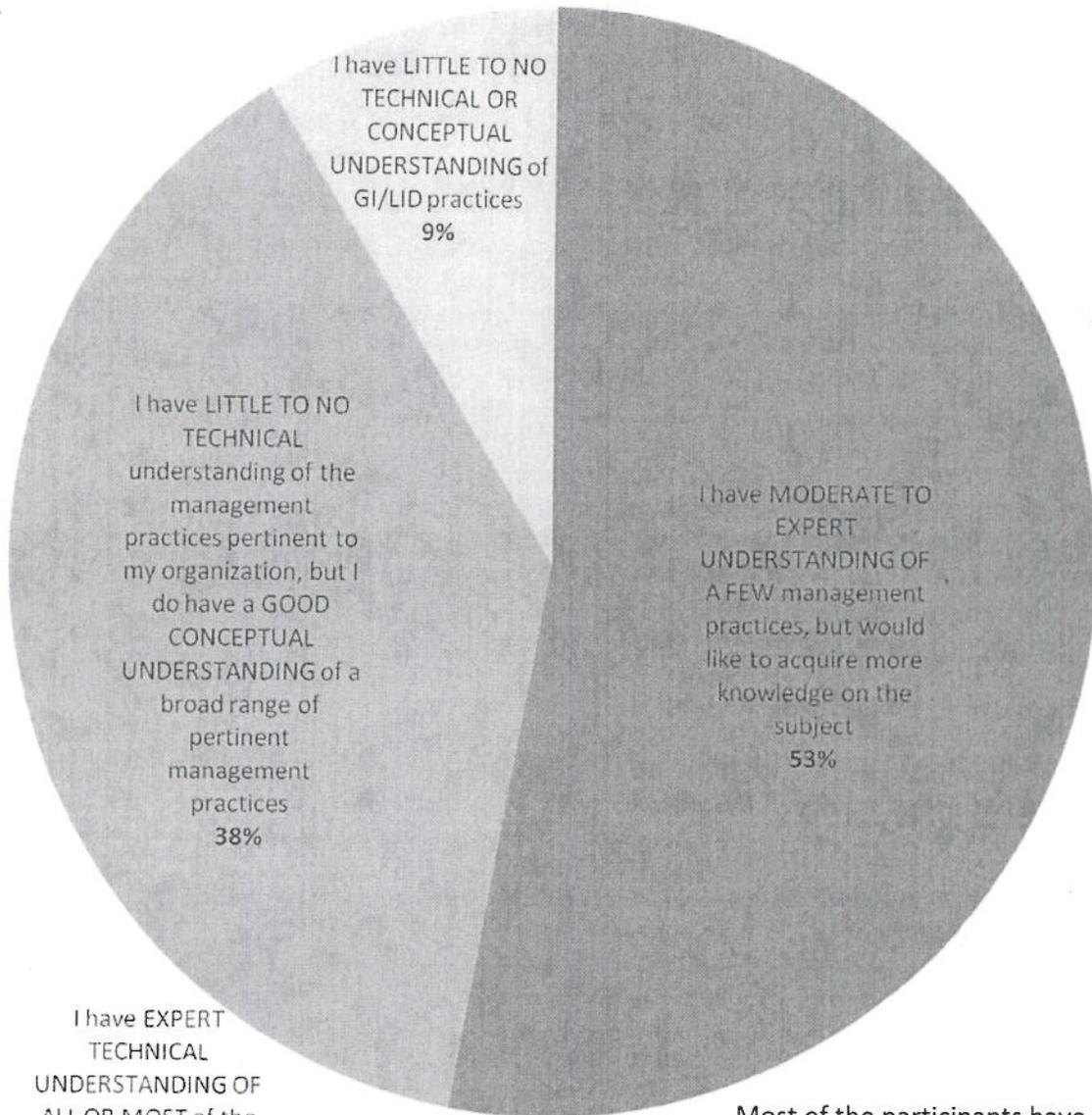
Trust

Participants' trust different sources of information differently



Familiarity

Technical & Conceptual Understanding of GI/LID



Most of the participants have a good conceptual understanding of GI, and are seeking more refined technical knowledge. PVPC can focus future efforts on expanding technical knowledge as much as possible through topical workshops and targeted information resources.

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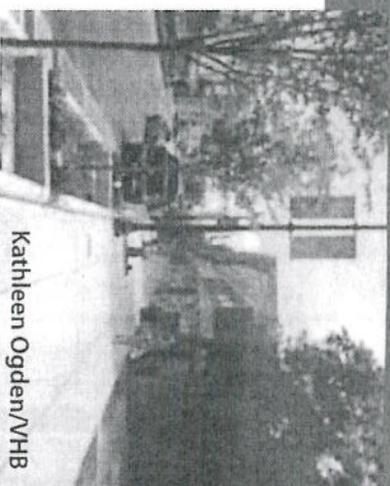
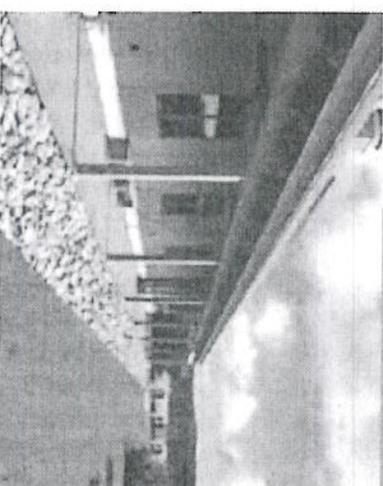
Thursday, June 13, 2013

Kittredge Center

Holyoke Community College

Green Infrastructure practices for stormwater management are being incorporated into site design criteria for new and re-development projects. Come learn how these systems can be incorporated into a range of site design scenarios based on completed projects in New England. This workshop will focus on design, construction, budget, and maintenance challenges from completed projects and how they were overcome.

Representatives from regional projects will be present to share their experiences, tools and resources used to get the job done. Workshop format will be interactive with lots of opportunity to get answers about how to make Green Infrastructure work in your next project.



Kathleen Ogyden/VHB

REGISTRATION IS REQUIRED BY JUNE 10th

Email Anne Capra at acapra@pvppc.org

Events to Come:

September 17, 2013 – Green Infrastructure Supplies, Tools, Resources, and Services Fair for Western Massachusetts

AGENDA

8:30 – 9:00

Registration

9:00 – 9:15

Greeting and Introductions

9:15 – 10:00

Green Infrastructure (GI) and Low Impact Development (LID) Introduction (Michelle West and Rich Claytor, Horsley Witten Group - HW)

Stormwater Impacts, GI/LID definition, regional and local examples, benefits overview, applicable MS4 requirements, and other drivers (LEED, Sustainable Sites Initiative).

10:00 – 11:00

Alternative Models for GI/LID Site Design and Project Benefits: Panel Discussion (60 minutes)

Facilitated discussion with a panel of four regional/local experts – examples of programs/policies where GI/LID have been applied.

- **Andrew Bohne**, New England Environmental, Inc.
Porous paving, Amherst headquarters building
- **John Furman**, VHB, Inc.
Roof water capture and reuse, Mass Mutual, Springfield
- **Richard Klein**, The Berkshire Design Group
Bioretention facilities, Northampton Senior Center
- **Stuart White**, Architect, and **William Fuqua**, Holyoke DPW
Green roof, Jones Ferry River Access Center, Holyoke

11:00 – 11:15

BREAK

11:15 – 12:00

Costs and Benefits of GI/LID (Rob Roseen and Tom Benjamin)

Review of actual design/installation/maintenance costs for GI/LID practices, documented benefits and reference to resources/data with additional information.

12:00 – 1:00

LUNCH

Web tools for GI/LID information, poster session, networking.

1:00 – 1:45

Incorporation of GI/LID in Retrofits and Redevelopment Projects (Michelle West - HW)

Introduction and local/regional examples, unique aspects for redevelopment, cost implications.

1:45 – 2:30

Importance of Construction Administration (20 minutes presentation- Rich Claytor - HW and 25 minute audience participation)

Construction admin (specs, preconstruction meetings, inspections, communication), sources for materials, contractor expertise. Question and answers.

2:30 – 2:45

BREAK

2:45 – 3:30

Importance of GI/LID Maintenance (20 minutes presentation- Rich Claytor - HW Representative and 25 minute audience participation)

Perceptions/realities about GI maintenance requirements, special equipment and training. Routine and non-routine maintenance. Aesthetics and economics of well maintained practices. Questions and answers.

3:30 – 4:15

Resources/Tools to Get the Job Done (EPA)

What we heard from you in the pre-workshop exercise, where to find tools & resources, the Pioneer Valley Green Infrastructure Plan, next steps to get the job done, and future workshops.



Pioneer Valley
Planning Commission
60 Congress Street – Floor 1
Springfield, MA 01104
www.pvpc.org



**GREEN INFRASTRUCTURE for Developers,
Designers, Contractors & Municipal Officials**
June 13, 2013 8:30-4:15
Kittredge Center
Holyoke Community College

REGISTRATION IS REQUIRED BY JUNE 10th
Email Anne Capra at acapra@pvpc.org

Events to Come:
September 17, 2013 – Green Infrastructure
Supplies, Tools, Resources, and Services Fair for
Western Massachusetts



Soak up the Rain:

Benefits for Your Home and Business

Save Money Beautify your landscape Prevent Pollution Reduce Flooding

Demonstration Workshop for Homeowners and Businesses

Saturday, October 26th 11 am – 3 pm
Lilly Library, 19 Meadow Street, Florence, MA

Come learn how you can soak up the rain. This is a hands-on demonstration workshop on how citizens and businesses can capture and treat rain water and snow melt. You'll learn about:

- Rain barrels and cisterns
- Porous pavers
- Rain gutter downspout diversion
- Rain gardens
- Green roofs

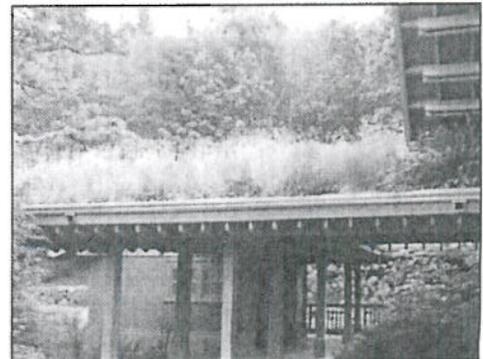
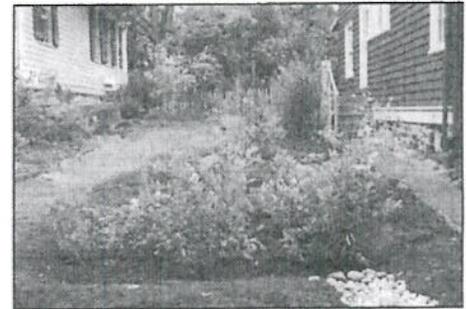
Registration is required – deadline October 18th

To register contact Pioneer Valley Planning Commission at acapra@pvpc.org or Anne Capra at (413) 781-6045.

Workshop is FREE. Refreshments provided.

Instructors are from the Pioneer Valley Planning Commission, UCONN Center for Land Use Education and Research, and the U.S. Environmental Protection Agency

Sponsored by Pioneer Valley Planning Commission, Connecticut River Stormwater Committee, and U.S. Environmental Protection Agency



HOME & REAL ESTATE GARDEN



Soak it up!

Control storm water, snow melt
to help curb pollution ■ Page F4

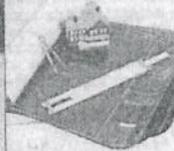
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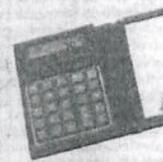
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**MORTGAGE
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Soak it up!

Control rain, snow melt to help curb pollution

By CORI URBAN

Concerns are rising over more frequent large storm events that push municipal sewer systems past their limits, causing not only flooding but increased water pollution.

That's why the Pioneer Valley Planning Commission is sponsoring a demonstration workshop for homeowners and businesses on ways to control storm water and snow melt.

"Soak up the Rain: Benefits for Your Home and Business" will take place on Oct. 26 from 11 a.m. to 3 p.m. at Lilly Library, 19 Meadow St., in the Florence section of Northampton.

"The Connecticut River is probably the most important natural resource in the region, and it is getting polluted at times during wet weather from combined sewer overflows," said Anne M. Capra, principal planner for the Pioneer Valley Planning Commission.

Some cities - like Chicopee, Springfield and Holyoke - have storm sewers that are combined with sanitary sewers, and thus during storms raw sewage can be discharged into the river, causing elevated bacterial levels in the water and making swimming, boating and fishing unsafe.

In addition, heavy runoff can cause erosion.

But if property owners were to use methods to use or to soak storm water into their grounds, it would not have to pass through the sewer system, Capra explained. Overflows and resulting problems would be less likely.

"Our goal is to reduce peak overflows," she said.

The hands-on demonstration workshop will help property owners and businesses learn how they can

IF YOU GO

Event: Soak up the Rain: Benefits for Your Home and Business

When: Saturday, Oct. 26, from 11 a.m. to 3 p.m.

Where: Lilly Library, 19 Meadow St., in the Florence section of Northampton

Cost: Free

To register by Oct. 21 and for more information: Email acapro@pvpc.org or call (413) 781-6045

44 Our goal is to

reduce peak

overflows. 77

Anne M. Capra

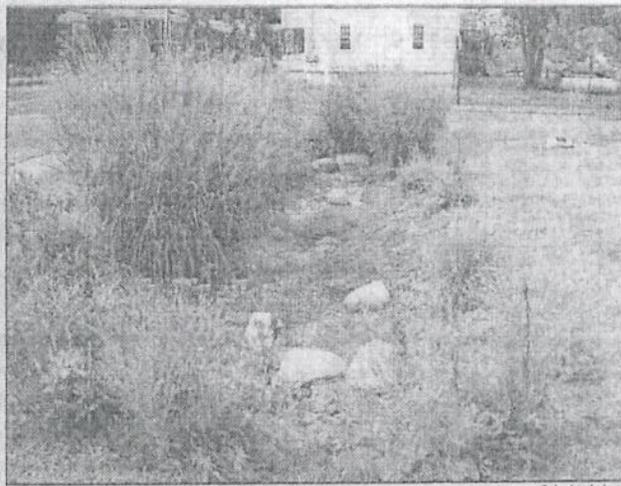
capture and treat rainwater and snow melt. Participants will learn about rain barrels and cisterns, porous pavers, rain gutter downspout diversion, rain gardens and green roofs.

Instructors will be from the Pioneer Valley Planning Commission and the University of Connecticut Center for Land Use Education and Research and sponsors include the U.S. Environmental Protection Agency.

"The Connecticut River is probably the most important natural resource in the region, and it is getting polluted at times during wet weather.

"Storm water nationwide is the leading cause of water pollution, according to the EPA," Capra said.

In addition to pollutants entering the river through the sewer system, she said, pollutants get into rivers, streams, lakes and other water systems when rain hits the ground and picks up and distributes pollutants including pesticides, fertilizer, oil, manure, trash and road salt.



A rain garden, designed by Berkshire Design Group, at the Northampton Senior Center. On the cover: An infiltration swale designed and maintained by Tree Frog Landscapes runs down the center of the parking area at River Valley Market Co-operative on King Street in Northampton.

Again, if rainwater is captured on properties to reduce the amount of water washing into bodies of water, the less water will be polluted, Capra emphasized, noting that rain gardens and rain barrels help with this process.

She said there is a greater interest in this process because of the increased frequency of large storm events in New England and because communities are being regulated by the EPA to better manage storm water on all scales, including municipal, business, industrial and resi-

dential.

Some communities - like Chicopee - have storm water utilities; Northampton is considering one, and residents would pay a fee to manage the storm water infrastructure in the community.

Capra said communities are realizing that because of the increase in large storm events and the federal regulations, they cannot "get by" with the storm water work done through the regular municipal budget funds. Thus a storm water utility "needs to be funded as its own infra-

structure," she said.

Sponsored by Pioneer Valley Planning Commission, Connecticut River Stormwater Committee and the U.S. Environmental Protection Agency, the demonstration workshop for homeowners and businesses is free. Refreshments will be provided.

Registration is required; the deadline is Oct. 21.

To register, contact Pioneer Valley Planning Commission at acapro@pvpc.org or Anne Capra at (413) 781-6045.

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10-26-13 Soak up the Rain Workshop Evaluation Results

of attendees: 29 # of completed evaluations: 20

For each category below, please **CIRCLE** the number that best reflects your evaluation.

	Poor		Good		Excellent
	1	2	3	4	5
<u>A. Round Robin w/ Attendees</u>					
1. Relevance and usefulness	0	0	5	11	1
<i>one person noted: Nice to see the geographic spread of attendees. Perhaps give a reminder in beginning to be concise.</i>					
<u>B. Rain Garden Design, Construction and Maintenance – Residential Primer</u>					
1. Relevance and usefulness	0	0	0	6	14
2. Quality of presentation	0	0	0	5	15
<u>C. Rain Garden App Demonstration Exercise</u>					
1. Relevance and usefulness	0	0	1	6	13
2. Quality of presentation	0	0	1	6	12
<u>D. Other Systems</u>					
1. Relevance and usefulness	0	0	2	6	12
2. Quality of presentation	0	0	2	8	10
<i>one person noted: Not super relevant for me, also I was tired of sitting and listening at this point.</i>					
<u>E. Resources</u>					
1. Relevance and usefulness	0	0	1	9	10
2. Quality of presentation	0	0	1	9	10
<i>one person noted: Would love resources/phone numbers on rebates, incentives, etc.</i>					

F. Strengths and Weaknesses

1. Which topics of the training did you consider most beneficial?

- Rain gardens
- When/where/why/how of rain gardens. Also thank you for the printouts.
- Calculating runoff
- Rain garden (I was surprised at all the info on paving!)
- Pavers (other systems). Would have liked more.
- Rain barrels, rain gardens, that paving systems were immensely helpful.
- Rain gardens, rain barrel catchment.
- Rain barrels
- Rain barrel info, rain garden info
- Internet access would have improved demos
- Rain garden designs; porous pavers, and water catchments.
- All
- Local resources, UConn's department was helpful
- Building rain gardens
- Apps, web site resources, actual products to view
- Rain gardens, initial background by Anne.
- Could have had some other hands-on experiential component.

2. Which topics of the training did you consider least beneficial?

- Underground cisterns
- none
- They were all relevant!
- Green roofs, not so practical for homeowners - good that not much time devoted to topic.
- Connecticut specific stuff.
- Some terms were completely new - just beginning with this. Perhaps a terminology sheet would be helpful.
- Math, cannot remember how to do
- None, it was all beneficial, interconnected
- Cisterns, dry wells, commercial scale.

G. Did this training meet your expectations?

<u>Yes</u>	<u>No</u>
18	0

H. How would you rate the facilities?

<u>Poor</u>		<u>Good</u>		<u>Excellent</u>	
1	2	3	4	5	
0	0	1	8	10	

I. Overall rating of the entire workshop

<u>Poor</u>		<u>Good</u>		<u>Excellent</u>	
1	2	3	4	5	
0	0	0	7	11	

J. What will your next steps be for addressing stormwater issues at your home or business?

- Rain garden
- Talking and convincing my husband to do pervious overflow parking
- Redirect roof water, figure out whether rain garden can help
- Expand my collection system
- Rain barrels and rain gardens. Also researching options for replacing my driveway.
- Rain gutters to be installed. Need to calculate collection amounts to decide rain barrels v. cistern. Rain water garden very possible too.
- Adding more rain barrels
- Landscaping around a newly constructed barn, which is causing flooding issues.
- Rain barrels connections and putting them away for winter. I didn't know they should go in. My
- Empty rain barrel, get gutters clean and reevaluate stones around part of foundation
- Removing asphalt and concrete; installing rain barrels; building rain gardens; altering gutters
- Detailed look at alternatives from resources mentioned; check costs of materials, schedule work
- Begin a rain garden design, look into porous pavement options
- Implementing strategies suggested by presenters for slope situation.
- Measuring and assessing space, starting to physically do the work.
- Running water from gutter away from house
- Testing areas in my yard for absorption levels. Making my own water barrel.
- When go to buy land for a home, will have a more educated and creative eye.
- At work there is some kind of a rain garden in the parking lot. I'm interested in transitioning the vegetation from cattail and bittersweet to something more functional.

K. What would be most helpful to you for implementing your next steps? What additional resources, information, incentives do you need?

- Money and list of products and where to buy
- Step by step instructions. Will need the time and \$\$, but that will come.
- Local area contacts for future questions.
- Vendors. Where to get rain barrels and paver/asphalt info.
- Establish Soak up the Rain program in Berkshire County too
- Materials, supplies in area and to go look at sites referred to in this workshop.

- A person to come out one time to do a consult on our property to help see what would work best and possible pitfalls to avoid.
- Plan to check out websites
- Wegsites, books, I am curious to look at the phone app.
- Will check resources given
- Referral for materials list - local
- I would like to see this workshop offered in my town of Belchertown. Development is increasing and there seems to be a lack of planning with regard to stormwater planning.
- Availability of a site consultation (West Springfield) even if a fee.
- Wish the Uconn smart phone app was on the web. I don't have a smart phone.
- Resource links look like they have valuable information
- Besides having someone else do the digging for me, the web sites will help me implement my
- Sources, phone numbers to help me creat a pitch to my organization that targets economic benefits
- Incentive/programs for new homeowners and young farmers

L. Do you know any groups or organizations that would be interested in this workshop? Please provide contact information.

- Try contacting Stanley Park or Grandmother's Garden both in Westfield
- Pascommuck Trust in Easthampton
- Berkshire Regional Planning Commission
- Sustainable Berkshires
- Center for Eco Technology
- Master Gardners
- Greening Greenfield
- High schools, colleges with horticultural/landscaping classes such as STCC.