



Issue 58, December 2014

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## **Unearthing Our Ugly Stormwater BMPs**

By David Hirschman

The past can be ugly: ill-fated love affairs, half-eaten sandwiches under the car seat, leisure suits, and, of course, stormwater BMPs built twenty years ago. The typical diagnosis for one of these “legacy” BMPs: down a steep hill, overgrown, full of sediment and trash, and probably a really ugly chain-link fence (Figure 1).



*Figure 1. A typical “legacy” BMP. In this case, there was no designated maintenance access.*

It takes an intrepid local stormwater manager to unearth these old BMPs. And for what purpose?

The Center has been working with various MS4s and other communities in Virginia to do just this. Several years ago, we completed a BMP condition assessment in the James River Watershed (CWP, 2009), and recently did a similar inventory for the City of Lynchburg, VA as part of an overall water quality master plan.

Increasingly, communities want to get a handle on their legacy BMPs. Often, there is a great deal of uncertainty about whether the BMPs actually exist, where they are, and precisely who is responsible for maintaining them. Local stormwater programs are acknowledging that stormwater infrastructure – the good, bad, and ugly – is an important asset and needs to be catalogued, assessed, and improved where necessary. There are several other reasons for conducting this type of condition assessment, as outlined below.

**TMDLs:** In the context of TMDLs, such as the Chesapeake Bay TMDL, communities can sometimes take credit for older BMPs that were never included in the initial modelling.

**Stormwater Retrofits:** Older BMPs are prime candidates for retrofits that can improve water quality function, provide habitat, and improve overall aesthetics in the landscape. For instance, in Lynchburg, the assessment identified 10 publicly-managed BMPs that were good candidates for retrofitting, and which could also garner TMDL pollutant reduction credits for the City. These retrofit projects make compelling cases for grant applications, and several in Lynchburg have already been funded. In addition to the public BMPs, 24% of all private BMPs also showed some potential for retrofitting. As a final note, retrofits of older ponds and basins tend to be much more cost-effective than “new” retrofits (such as installing a new bioretention practice in a parking lot). Planning-level data from several Center retrofit studies in Virginia’s Shenandoah Valley show that the cost per pound of Total Phosphorus removed averages \$24,000 for retrofits of old ponds versus \$56,000 for “new” retrofits (CWP, 2013).

**Looking Back, Looking Forward:** Perhaps the most valuable lesson in conducting a BMP condition assessment is that we learn about design, installation, and maintenance mistakes of the past that can be remedied with new BMP standards. One interesting lesson from Lynchburg was that, for both public and private BMPs, there was a correlation between the visibility of the BMP and its overall condition (see Figures 2 and 3). This suggests that in the future, we should focus on BMPs that are more visible and easier to access if we hope to improve our track record with maintenance and long-term performance (CWP, 2014).

As a result of the condition assessment, the City is considering developing public BMP design standards in the categories of materials, safety, maintenance access and visibility, vegetation, sediment removal, and content of O&M plans. The intent of these standards is that tomorrow’s BMP will be better cared for, and not the legacy BMP headaches we have inherited from the past.

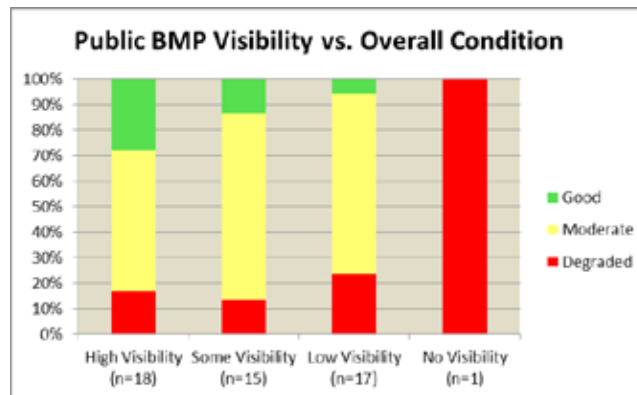


Figure 2. As a BMP’s visibility declines, fewer tend to be in “good” condition (green bar) and more in “degraded” condition (red).

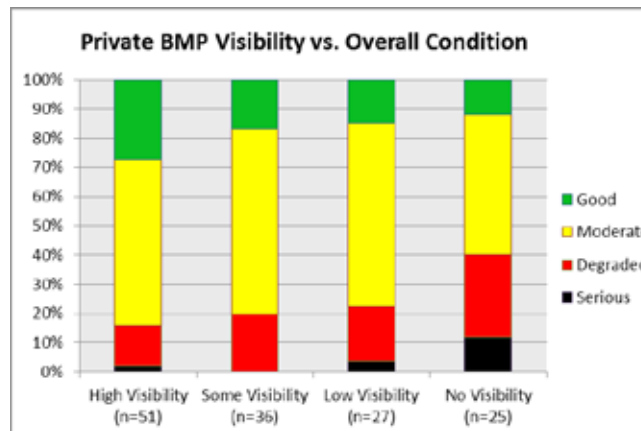


Figure 3. As shown in Figure 2, the same general pattern holds for private BMPs.

As it turns out, there are many good reasons to undertake an inventory and assessment of your legacy BMPs. And while you're at it, maybe get rid of that half-eaten sandwich from under the car seat.

The Center's 2009 report on BMPs in the James River Watershed – *Technical Report – Stormwater BMPs in Virginia's James River Basin: An Assessment of Field Conditions & Programs* – is a free download at the Center's Online Watershed Library: <http://cwp.org/online-watershed-library-owl>

## References

Center for Watershed Protection. 2014. *Stormwater BMP Condition Assessment – City of Lynchburg*. Prepared for: City of Lynchburg.

Center for Watershed Protection. 2013. Three Separate Reports: *Stormwater Retrofit Opportunities at James Madison University*. *Stormwater Retrofit Opportunities on Public Land in Harrisonburg*. *Stormwater Retrofit Opportunities on Public Land in Bridgewater*.

Center for Watershed Protection. 2009. *Technical Report – Stormwater BMPs in Virginia's James River Basin: An Assessment of Field Conditions & Programs (part of the Extreme BMP Makeover project)*.

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## Happy Holidays from the Center for Watershed Protection!

2014 was an exciting and busy year for the Center!

We hired three new employees – two Water Resources Engineers and a Communications and Marketing Manager. In the summer, we moved our Ellicott City, MD, office location and went from cubicle-land to a more open concept. With that change, we also moved our office to the "Cloud." Center employees now have more flexibility to work remotely – all thanks to our IT guru, Chris! The Center also updated its Strategic Plan this year, and now have a revised organizational vision and strategy to guide us through 2020.

Outside of the office, we gave talks about watershed Total Maximum Daily Load (TMDL) implementation practices in Utah, offered training in Stormwater Best Management Practices (BMP) and Better Site Design in South Carolina, and developed new Chesapeake Bay nutrient and sediment reduction crediting protocols for stream restoration urban filter strips and elimination of nutrient discharges from grey infrastructure. We expanded our support to municipalities with meeting Chesapeake Bay TMDL requirements, by developing the first regional Chesapeake Bay Pollution Reduction Plan in Pennsylvania, with 42 municipalities in York County. Our webcast series was actively attended by researchers, field professionals, and government agencies throughout the United States and Canada.

We completed a couple manuals this year, including the Coastal South Carolina manual and a contaminated groundwater manual for the District of Columbia. The Center also published a white paper on *The Value of Stormwater Fees in Maryland* to help support the State's Stormwater Fee Law, and worked with the Potomac Conservancy to produce a report on the results of a review of development codes for ten major jurisdictions in the Potomac River watershed. We also authored *Watershed Science Bulletin* articles on Pollutant Analysis of HVAC Discharges and Potential Application of Stormwater Banking in the Chesapeake Bay.

We also put together a monitoring plan and literature review for Carroll County, MD, in support of their idea to add iron filings to their sand filters in order to increase phosphorus removal. In addition to the literature review, we put together a sample database that has the ability to automatically run statistics on measured data. [Watershed Science Bulletin subscribers can read about this work in full here.](#)

## CWP Staff Profile - Julie Schmeoder

*Meet our staff! Each month Runoff Rundown is profiling a different staff member and her or his work.*

Julie Schneider is a Watershed Planner with the Center for Watershed Protection. Julie joined the Center in 2005, and recently opened a Philadelphia, Pennsylvania satellite program office. In this role, Julie is working with communities in Pennsylvania to help meet local TMDL, watershed and stormwater permit needs. Julie's technical skills include watershed planning and analysis, conducting field assessments, training workshops, research and GIS mapping and analysis.

Julie graduated with a Master's degree in Environmental Science from SUNY's College of Environmental Science and Forestry. After graduating, she worked with in environmental consulting, doing wetland work and permitting. Working at a nonprofit, the Merrimack River Watershed Council in Massachusetts, exposed Julie to watershed management. There she worked with local municipalities on addressing watershed management at the subwatershed scale through stormwater sampling, GIS analysis, and stormwater retrofit projects.

When Julie joined the Center, she was hired to do GIS work and support various projects. Many of those projects focused on wetland research and working with local municipalities on watershed planning. These days Julie's work has changed a bit from working in the office full time to a part-time, remote worker. As the only staff member in Pennsylvania, a portion of her work has shifted to marketing and seeking out new projects in the state. Since Pennsylvania has a different local government structure of 2,562 local municipalities, it presents some challenges in terms of reaching out to and working with the local municipalities.

Two of the projects Julie is currently working on are the Tookany/Tacony-Frankford Trash Task Force (read more about this project here) and the William Penn Foundation Cluster Teams Project Catalog. For the latter project, the William Penn Foundation, a Philadelphia based foundation, is funding a collaboration to protect and restore the Delaware River Watershed. The Center's role is to develop a catalog of all the projects identified in the eight cluster plans with the goal of attracting new funding for these initiatives. The project catalog will include an update on the status of the identified projects in each cluster plan.

In the future, Julie would love to work more directly with local Pennsylvania watershed groups and local governments to help develop and build their programs. "We're really passionate about our work," Julie says. "We go above and beyond to provide a product that helps move the municipality forward." Some projects are a response to an RFP, but we don't act like consultants – we're not about the bottom line." Julie sees the Center as offering a unique perspective to watershed problems: staff has diverse knowledge and experience, and they always try to incorporate the best science, information, and trends. By keeping up with current trends and knowledge, she states, the Center sets itself apart.

You can keep up with Julie and the Center for Watershed Protection's work through Runoff Rundown, the Center website, or follow us on Twitter and Facebook.

In 2014, we really ramped up our on-the-ground work, taking on several large stormwater BMP design projects that will result in implementation of retrofit practices in more than 20 locations around the State. We designed and coordinated the construction of what is believed to be the first permeable pavement parking lot on the Eastern Shore of Virginia.

The Center developed the [Clean Water Optimization Tool](#) to help Maryland Eastern Shore counties develop more realistic and cost-effective pollution reduction strategies. The Tool is a planning level model that allows communities to optimize their stormwater pollution reduction strategies to achieve nutrient and sediment reduction goals at the lowest cost. The goal is to provide an easy-to-use, quick, and free tool to develop more realistic implementation plans based on local knowledge.

Kicking off 2015, we have a new project, Making Urban Trees Count, which will develop a national tree runoff and pollutant reduction crediting plan. We also plan to expand our Green Jobs Certificate program – which provides professional and technical training in clean water practices and connects job seekers with employers. Our newest webcast series will feature sessions on topics such as multi-sector and industrial stormwater permits, managing trash as part of local TMDLs, and how to use the Runoff Reduction Method.

2014 was exciting, but we have a feeling 2015 will be even better!