Evitts Run Park Green Infrastructure Project

Prepared for the National Fish and Wildlife Foundation

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Introduction

This study was developed for the National Fish and Wildlife Foundation (NFWF) to assess the results of a grant awarded to the City of Charles Town, West Virginia, to construct green infrastructure, low impact design stormwater management best practices on the 12-acre Evitts Run Park site. This case study aims to assist similar communities experiencing population growth and development pressures in implementing green infrastructure best practices for stormwater management.

Project Overview

The City of Charles Town, West Virginia received a Chesapeake Bay Local Government Assistance Program grant from NFWF to design a 12-acre public park featuring green infrastructure and low-impact design elements. The goal of the project was to help position the City to meet anticipated stormwater pollution targets set by the State of West Virginia municipal separate storm sewer system (MS4) permits and the Chesapeake Bay Total Maximum Daily Load (TMDL) requirements. Although Charles Town applied for the grant, partnership with the neighboring and directly adjacent town of Ranson was an essential component to this project. Charles Town has a history of collaboration with Ranson, and due to its upstream location, cooperation between the two localities would be vital for the success of the Evitts Run Park project.

Evitts Run Park is located between two brownfield redevelopment sites, one upstream in Ranson and the other downstream in Charles Town. Charles Town owns the park, but it is adjacent to Ranson, and the runoff from the site originates both in the western portion of Ranson and southern portion of Charles Town. Evitts Run flows into the Shenandoah River, then into the Potomac River, and ultimately into the Chesapeake Bay. Due to the imminent redevelopment of these two brownfields, a solution for improving runoff water quality was a crucial priority.

Through this grant, Charles Town also hoped to align the park’s design with the West Virginia Phase II Watershed Implementation Plan (WIPII). Due to expected population increases, it is likely that Charles Town will become an MS4 community, as designated by the West Virginia Department of Environmental Protection (WVDEP) and United States Environmental Protection Agency (EPA).

The Evitts Run project is meant to showcase how a small, rural city can foster sustainable development through green infrastructure planning and implementation, while advancing Chesapeake Bay TMDL objectives.
Community Description

Key Community Issues

The Evitts Run project was envisioned to manage stormwater in a “green commerce corridor” bisecting Charles Town and Ranson, identified as critical for area transportation and development. This area is experiencing particularly dramatic population growth – from 2000 to 2010, there was an 80.9 percent increase in the community’s population, while West Virginia as a state had only a 2.5 percent population increase over the same period.

Currently, waters in Charles Town and Ranson are listed as impaired by West Virginia and the EPA. The area will likely be designated as MS4 by the EPA in the near future due to increased development pressures, underscoring the importance of preemptive mitigation efforts.

Project Description

Technical, design, and project management assistance was provided by Downstream Strategies, LLC, an environmental consulting firm based in Morgantown, West Virginia. The firm conducted a review of existing environmental studies, surveyed the site’s wetlands and boundaries, assessed infiltration rates, and produced renderings of a planned excavation and final water feature. Designs for the park were based on a master plan completed by William H. Gordon Associates in 2009.

The project began in August 2013 and was near completion as this case study was being published, in June 2014.

Methodology

The project began with an initial meeting and tour of Evitts Run to discuss the desired outcomes and allow Downstream Strategies, project partner Harbor Engineering Inc., and City staff to gain familiarity with the site. Downstream Strategies then reviewed existing environmental studies of the site – on the soils, surface water, and groundwater – before conducting its own studies and surveys of wetlands, topography, infiltration, and the site’s boundaries. A comprehensive drainage study served as the basis for the site’s design.

To maximize stakeholder involvement, in-person meetings were held at approximately the 25 percent and 90 percent completion marks. The results of this involvement assisted Downstream Strategies in planning for its preliminary design work and guided the firm as it balanced trade-offs resulting from lower funding levels than originally requested.

The design that emerged from this planning process prioritized signs and other fixtures to educate the public on the benefits of green infrastructure and also to showcase the cooperative efforts between Charles Town and Ranson. As originally conceived, the project would have had Downstream Strategies applying for all necessary permits, however due to receiving $100,000 instead of $150,000 in grant funding, they were able instead to create a detailed blueprint for the City of permit timelines, requirements, and contacts so that the permitting process would be more easily implemented during future funding phases.

Technical Design

The Evitts Run plan incorporated the following specific design elements:

- Use of green infrastructure/low impact design best management practices to help manage stormwater from existing development, agricultural areas, and future development pressures.
- Stream channel modification to decrease flow velocity and increase freeboard capacity, the distance between the designed water’s edge and the elevation of the structure.
- Creation of a pond feature, wetland areas, and increased habitat in the aquatic shelf, a shallow water zone planted with wetland vegetation.
- Re-grading for recreation and parking areas.
- BMPs including rain gardens, porous pavement, cisterns and rain barrels, seepage pits, tree plantings, soil amended areas, and vegetated swales.
- Pond grading, including redirection or intake/outflow system to maintain water levels and provide aeration.
- Inclusion of signs, kiosks, and educational features to increase public awareness of the benefits of green infrastructure practices.
Challenges

It was reported that the main challenges faced during the project were of a technical nature. For example, Downstream Strategies had to define project parameters, determine what catchment size was needed to ensure flow as opposed to stagnation, and ascertain infiltration depths and rates. However, a few additional challenges did arise, listed to the right.

Lessons Learned

1. Options may not Always be Desirable

Downstream Strategies was asked by the City to offer two initial designs for the site:
- A smaller pond feature would have been aesthetically pleasing and introduced the public to the concepts of green infrastructure, but its stormwater management benefits would be reduced.
- A larger pond and water feature would have sufficient water volume to slow infiltration rates and provide significant pollution benefits, and it would also align better with the goals expressed by stakeholders. The advantage of this larger scope became apparent once the infiltration study was finalized.

Although the City was originally concerned about whether the larger project was “in the wheelhouse of reality,” given funding levels, the City was fortunately comfortable moving forward with the larger pond, which included a re-route of Evitts Run. In hindsight, Downstream Strategies reports that exploring the smaller water feature concept, with the idea of reducing final construction expenses, was certainly reasonable, but probably less efficient given that project goals were already clearly outlined by the earlier stakeholder process. An important lesson for other communities may be to avoid the temptation to revisit issues that have already been vetted through earlier stakeholder processes.

1. Award Amount: The City was awarded less than it had applied for, which presented challenges in adjusting the scope of work for Downstream Strategies. Instead of completing the permit application process in full, Downstream Strategies decided to create a detailed blueprint of permit timelines, requirements, and contacts for the city. Due to this lesser amount of funding, Downstream Strategies also had to cut site visits where possible and do much of the work remotely, relying on electronic communication.

2. Site Characteristics: While the karst geology and site infiltration capacity were advantages to achieving certain design goals, other site characteristics presented limitations. A moderate elevation difference across the site limited the amount of excess freeboard capacity that could be designed into the pond feature and Evitts Run stream channel to help manage stormwater.
2. Proactive Communities Become “MS4-ready”

Because Charles Town is not yet regulated by an MS4 permit, its proactive implementation of green infrastructure and stormwater management practices is somewhat unique. Downstream Strategies noted that this community will be at an advantage if it comes under the MS4 umbrella, as is expected, because it will already have projects in place to help meet its required pollutant load reductions (particularly for sediment).

3. Buy-in Among Partners is Critical

Downstream Strategies reported that apart from challenges presented by personnel turnover, City staff had high levels of buy-in to the project and made people and resources available when needed. Project implementation would have been impeded had this support been lacking.

4. Visible Projects Offer Added Value

This project partnership was ideal in that the City was a cooperative landowner with a highly visible yet undeveloped site where infrastructure changes could make a real difference in downstream impacts. This mix of factors is unusual, as many localities do not own or have access to undeveloped sites for these pollutant reduction projects. When localities do have this opportunity, Downstream Strategies calls it a “fantastic opportunity” that should not be missed.

5. Third Party Involvement Helps with the Big Picture

It was reported that the involvement of the U.Va. Institute for Environmental Negotiation, as a third party facilitator and reporter for the project, was initially surprising but turned out to be more helpful than expected. Downstream Strategies found that this involvement, specifically quarterly discussions about project progress, helped keep the overall goals of the project in focus.

6. Communication With Regulators is Key

Regular communication with state regulators (e.g., West Virginia Department of Environmental Protection staff) was seen as an important key to success for other communities. Downstream Strategies suggests that creating open channels of communication with the regulators around the goals of the community’s MS4 status or other regulatory programs can help ensure optimized outcomes. MS4 and other programs are often in a state of flux, so it may be only through communication with the regulators that an understanding can be reached about the specific needs and approaches appropriate for a community.
7. Design for the Long Term

One of the key features of the Charles Town design is that it incorporates “passive” green infrastructure (such as pervious pavement). Downstream Strategies calculates that these passive green infrastructure approaches can have lower operation and maintenance costs than traditional stormwater management systems and provide ancillary benefits for the local and downstream communities. Another co-benefit of the green infrastructure approach is that the project provides an aesthetically pleasing and engaging park amenity to the community, as well as an opportunity for highly visible public education about water quality.

8. Keep the Project Visible

Keeping City Council informed and involved at every stage is an important lesson that could have helped minimize the delays, according to project staff. Greater stakeholder interaction was envisioned in the original proposal but was ultimately truncated to fit within the smaller budget, which staff believe added to the coordination and communication challenges. This lesson suggests the importance of keeping the project visible with decision-makers by establishing a method and expectation for regular reports and updates.

Conclusion

This project’s highly visible implementation of green infrastructure and focus on educational elements stands in stark contrast to traditional modes of stormwater management (“drains and pipes”). Project partners believe this will influence the public to be more willing to incorporate green infrastructure projects in the future. Downstream Strategies reported that this approach “helps people connect with the design, so at some level you think it will inform their behavior. This isn’t something we’re separate from, it involves all of us, and it’s a real educational opportunity that helps connect people to their community.”

The City of Charles Town is coming under increasing pressure to manage its stormwater. Over the years, Charles Town residents have experienced significant personal property loss from periodic flooding events, requiring the City to invest public dollars into recovery. In addition, the community is likely to become MS4 regulated in the near future. This grant project is an example of how a community can face these challenges through innovative, visible, and publicly accessible green infrastructure, low impact design stormwater management best practices.