NONPOINT SOURCE SUCCESS STORY

District of Columbia

Neighborhood Residents Lead Water Quality Improvement Project to Restore Spring Valley Run

Waterbody Improved

The Spring Valley Run restoration project illustrates how environmental advocacy can lead to an effective collaboration with government agencies that achieves watershed restoration goals. Neighborhood residents identified a stream that was highly incised with exposed sanitary sewer lines, then partnered with several Washington, DC, agencies to restore it. Spring Valley Run is a tributary of Dalecarlia Tributary, which is listed as impaired for multiple pollutants, namely, *Escherichia coli* and total suspended solids (TSS), pursuant to Clean Water Act (CWA) section 303(d). To reduce loadings into the stream, the restoration project's environmental design goals included stabilizing stormwater outfalls, reducing the volume and velocity of stormwater flowing into the stream, improving infiltration, protecting exposed sanitary sewer lines, and repairing an adjacent walking trail.

Problem

Spring Valley Run, a small first-order intermittent stream in the northwest quadrant of DC, flows through Spring Valley Park, a DC Parks and Recreation Department property (Figure 1). The stream is a tributary to Dalecarlia tributary, which connects to the Potomac River and eventually to the Chesapeake Bay. The DC Department of Energy and Environment (DOEE) developed a total maximum daily load (TMDL) for the Dalecarlia Tributary in 2004 and revised it in 2014 for failing to meet multiple designated uses, including recreation and fish consumption.

The 32-acre watershed drainage area is composed of single-family homes and is part of the American University campus. Approximately one-third of the watershed is covered by impervious surfaces such as roads, homes and university buildings. The surrounding neighborhood was developed before the enactment of stormwater regulations and, consequently, uncontrolled storm flows eroded the stream banks and riparian habitat. Before restoration, the stream channel was unstable, with highly visible signs of degradation such as high rates of adjustment including lateral migration against valley walls, toe slope failures, deep downcutting and incision. Mean bank heights were approximately 7 feet (12 feet in some project areas), which prevented the storm flows from connecting to the floodplains (Figure 2).

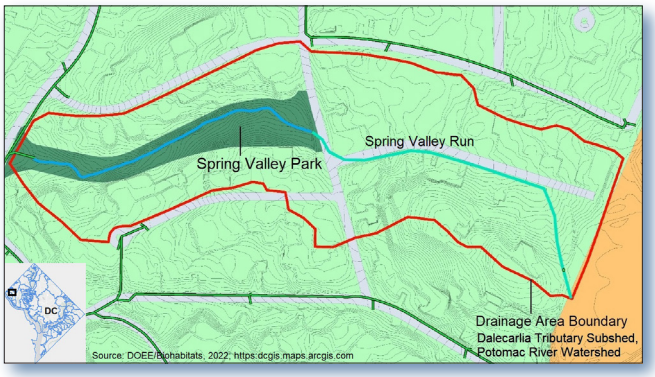

Figure 1. Spring Valley Run is in northwest Washington, DC.

Downcutting caused by storm flows caused severe erosion that exposed three sanitary sewer lines running through the park (Figure 3). The storm drain inlet was constantly clogged due to excessive sedimentation, which resulted in frequent park flooding.

Story Highlights

After years of community advocacy, DC Councilwoman Mary Cheh presented the project to DOEE. In 2017, DOEE contracted with Biohabitats, Inc. to undertake full design and construction for the restoration of 1,000 feet of Spring Valley Run. The design approach focused on regenerative stream channel techniques to raise the stream bed, promote infiltration, and connect it to the floodplain. Raising the stream bed

Figure 2. Measuring the eroded bank height.

Figure 3. Sewer pipe exposed by erosion.

Figure 4. Restored area along Spring Valley Run.

increased storage capacity of groundwater and restored subterranean reservoirs within the riparian area. Regenerative stream channel design included installing a series of riffles and pools, sand and wood chip fill, rock weirs, and large woody debris to reduce stream velocity, control stormflow and allow for infiltration (Figure 4). DOEE and Biohabitats coordinated with DC Water to protect and bury sanitary sewer lines to prevent further stream impairment. Implementing the project also created a sustained baseflow for aquatic biota survival and established native riparian vegetative communities. Project partners cleared an old inlet at the bottom of the stream to allow the full flow of the stream to exit the site. They also covered exposed roots along the trail and installed rolling dips, which created a trough in the trail that sloped toward the stream and directed runoff into a vegetated swale before draining into a nearby pool.

Results

Stabilizing the banks and raising the streambed of Spring Valley Run would yield load reductions of 72,648 pounds per year (lbs/yr) of total suspended solids, 457 lbs/yr of nitrogen and 210 lbs/yr of phosphorous, according to the Chesapeake Bay program's stream restoration protocols. In addition, DOEE contracted with the Metropolitan Washington Council of Governments to conduct pre- and post-stream restoration monitoring. Before the project, mean bank stability at the site was approximately 66.4% (fair), while post-restoration mean bank stability was measured at 94.5% (excellent). Reducing the mean bank height by almost 50% has substantially improved storm flows' connectivity to the floodplain. In addition, riparian cover was restored by removing invasive plants and planting over 1,000 native plants and trees. Repairing the walking trail that winds through Spring Valley Park also improved public access to green space and afforded residents the enjoyment of restored stream and wildlife habitat.

Partners and Funding

DOEE worked with the community and landowners, DC Department of Parks and Recreation, and Department of General Services. DOEE contracted with Biohabitats for project design, and construction was conducted by Aquatic Resource Restoration Company. Friends of Spring Valley Park helped with the project's planning and completion, and they supported ongoing maintenance of the project area. DOEE received $1,327,469 in funding from the DC government and DC Water.

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