

Growing Greener Grant Program, Final Report / One-Page Summary

Grantee: Carversville Farm Foundation  
Project Title: Carversville Stream Restoration  
Document Number: 4100080714  
Date prepared: November 2021

The Carversville Farm Foundation (CFF), located along Mechanicsville Road in Solebury Township, Bucks County, Pennsylvania, is a fully diversified 150-acre farm located in the upper reaches of the Paunacussing Creek which is a High Quality- Cold Water Fishery per Pennsylvania Chapter 93.

The Foundation had enlisted the help of Princeton Hydro in 2015-2016 to conduct extensive watershed, pollutant, and hydrology studies for the portion of the Paunacussing Creek which runs through their farm. This study aimed to understand the form and function of the creek, its current limitations and threats to its health and what improvements could be made to enrich the aquatic habitat. The results of this study showed numerous issues with the stream that runs through the CFF property. Specifically, portions of the upper reaches lack or have impaired riparian buffers, are disconnected from the floodplain, and suffer from excessive in-stream flows that exacerbate stream bed and bank scour and erosion. Subsequently, there is excessive loading of phosphorus and nitrogen from the watershed, in-stream, and watershed-based sediment loading, reductions in epifaunal habitat from infilling, thermal degradation, and reductions in critical baseflow. Excessive siltation from agriculture and numerous 'unknown' causes of water quality impairments from urban runoff and storm sewers have resulted in the Paunacussing Creek being listed as Impaired on the 2016 Integrated Water Quality Monitoring and Assessment Report. As such, the Paunacussing has been tentatively scheduled for a Total Maximum Daily Load (TMDL) in 2029.

A major portion of this grant focused on the engineering design and calculations necessary to produce engineering project plans for the complete restoration of a headwater reach of the Paunacussing. These designs consisted of three interrelated restoration activities including:

- 1) Establishment of planting plan for productive riparian area along the length of Reach 01 through Reach 03 (total – approximately 2,400 linear feet),
- 2) Engineering plan set for reconnection of the stream to floodplain through excavation of bench floodplain at Reach 01,
- 3) Planting plan for restoration of seepage wetland at Reach 03 (approximately 100 ft<sup>2</sup>)

The completed plan sets were submitted as part of a Restoration Waiver permit package which was subsequently approved as a PASPGP-5 Permit. This waiver included the completion of a Wetland Delineation, an Environmental Assessment, General Information Form (GIF), Impact and Administration Fees, PA Natural Diversity Inventory (PNDI) and Pennsylvania Bulletin Notification. Furthermore, Princeton Hydro filed an Erosion and Sediment Control Plan with Bucks County Conservation District and a request for Grading, Zoning and Floodplain Development permits from Solebury Township.

In addition, a demonstration planting project was completed along a 100' section of the headwater stream and also a small seepage wetland. The riparian restoration approach closely followed the Riparian Forest Buffer Guidance (#394-5600-001) issued by the PADEP Bureau of Watershed Management. A 100' buffer width was decided upon by the CFF and incorporated several functional habitats, while providing optimal flood attenuation and concomitant benefits of sediment and phosphorus trapping. Zonal plant communities were consistent with the guidance provided by PADEP with large, woody vegetation along the stream corridor transitioning to smaller, shrubby vegetation and ultimately to a mixture of forbs and wildflowers at the perimeter near the agricultural edge.