PROJECT SUMMARY

Cobb County Soil & Water Conservation District Demonstration Project
Shaw Park Stream Restoration/Stabilization

Background

Cobb County has experienced exponential growth within the last 20 years, and that growth has placed a strain on the natural waterways flowing throughout the county. Streams and rivers must continually adjust to transport stormwater from an ever-increasing area of hardened landscape. This urbanization of the County's watersheds has transformed even small, benign creeks into raging storm flows within deeply incised channels. The end result is a degraded ecosystem, which is adversely affecting the adjacent environment through which it flows. These conditions have created a need within the County for information and direction on how to address these problems in terms of stabilization and restoration of streambank areas.

There is a multitude of information available in print and through Internet resources detailing various aspects of addressing degraded or imperiled waterways. Although this information is useful, it fails to convey the breadth and scope of the issues involved in a "hands-on" manner. Furthermore, this information often fails to address the considerations and/or constraints unique to the urban environment. In an effort to help with "real time" solutions, the Cobb County Soil and Water Conservation District (CCSWCD) constructed an urban stream stabilization/restoration demonstration site.

Project Overview

The project site is located on Shaw Park Road off of Canton Highway within the northeastern portion of Cobb County. This particular reach of stream is located on Cobb County Parks & Recreation Department property associated with the site of Shaw Park. This stream typifies an urbanized stream within the Georgia Piedmont region, which has been impacted by the changes associated with urbanization of the watershed. The channel exhibited incised characteristics including near vertical stream banks, bank undercutting, and channel down cutting. In addition, the riparian stream corridor had been degraded and dominated by various exotic invasive species.

The total length of the stream reach utilized within the demonstration site is 385 linear feet. As noted, the stream has been impacted over the years from stormwater runoff with highly eroded banks exhibiting little or no native riparian buffer vegetation. Included in the stream reach was a culverted stream crossing consisting of two 36" corrugated metal pipe. These culverts were found in poor condition and in danger of failure with an associated large scour-hole at the point of the culverts outfall. The predominant riparian buffer vegetation was is a mixture of mature pine trees and exotic invasive plant species, mainly consisting of Chinese Privet (*Ligustrum sinensis*).

Restoration Activities

Due to unseasonally heavy rainfall and other unforeseen delays, restoration activities began on the site the last week of March 2010. Initial tasks included establishing all appropriate erosion and sediment control Best Management Practices; site access; and rough clearing and grubbing of critical project areas. The demonstration site utilized an array of stream restoration techniques to address a number of actively eroding areas within both the active stream channel and

Shaw Park entrance at the head of the restoration stream reach.

Typical streambank erosion and undercutting prior to restoration.

View of culvert outfall and associated scour hole prior to restoration.

Riparian buffer dominated by pine trees and exotic invasives.

Project begins with site clearing and erosion and sediment control BMPs.

the flood-prone areas. These techniques included in-stream morphological adjustments and channel structural stabilization elements, as well as different vegetative or Soil-Bioengineering components.

Critical to the overall success of the plan included the "daylighting" of the stream by the removal of the existing culvert crossing and creation of a stable channel slope and profile through the installation of four (4) rock vane grade control structures. Further channel instability was addressed throughout the reach utilizing natural materials through the installation of log "K" dams and log vane grade controls.

In an effort to demonstrate techniques that could be performed by the individual homeowner utilizing minimal mechanized assistance, a series of Soil-Bioengineering methods were implemented to address ongoing erosion within the streambanks. These techniques included the installation of a brush mattress system to protect an opposing streambank from stormwater flows eminating from an upstream culvert outfall, as well as the installation of a Vegetation Reenforced Soil System. This system utilized coconut fiber BioD Block geo-textiles to "re-build" a portion of the streambank that had been eroded and undercut due to increases in stormwater influences.

In addition to the mechanical or engineered stream restoration techniques showcased, the project involved vegetative restoration practices. Through the installation of native plant species including a mixture of trees, shrubs, forbs and native grasses, the natural vegetative stream buffer was comprehensively restored. This portion of the project also included efforts to control the presence of exotic invasive species.

Post Restoration Monitoring

In an effort to provide long-term educational data documenting the success of this project, the site will be monitored annually for a minimum of three years. The monitoring program will consist of both structural and biological data collection and analysis.

Structural monitoring will involve establishing a series of "as-built" cross-sectional surveys, as well as a longitudinal survey of the channel bottom. These surveys will be repeated annually to monitor channel stability under the direction of the CCSWCD. The biological component of the monitoring would include vegetation monitoring, water quality and to a limited degree the aquatic macro-invertebrate population of the stream. The CCSWCD would coordinate the monitoring program with Adopt-A-Stream and county park staff in order to accomplish the monitoring goals of the project.

Project Partners

The following organizations partnered with CCSWD on this project by providing funding and/or in-kind support:

Cobb County
Rolling Hills RC & D Council
GA Soil & Water Conservation Commission
Chestatee-Chatthoochee RC & D Council
U.S. Fish & Wildlife Service
USDA-Natural Resource Conservation Service
Gaskins Engineering & Surveying
Aquascape Environmental
Robert Schoonover, B.S.A. (Eagle Scout Project)
Rolanka International
Vulcan Materials
The Erosion Company


Installation of rock vane grade control.


View of culvert crossing after removal with rock vanes in place.


Installation of Log K dam.


View of completed brush mattress and VRSS soil bio-engineering.


Riparian buffer vegetation installation completed.