

Rocky Branch Stream Restoration and Greenway Project

North Carolina Sea Grant and NC State University are implementing a three-phase stream restoration and greenway plan to renovate Rocky Branch, an urban creek that runs more than a mile through the heart of the university's campus.

The goal of the project is to create a safe and accessible outdoor teaching laboratory. The restoration effort strives to stabilize the creek; improve water quality, aquatic and wildlife habitat; and integrate the creek into the campus environment.

In addition to fixing the creek, 6,000 feet of greenway path will be built and connected to Pullen Park and the City of Raleigh Greenway System. Phase I, from Gorman St. to Dan Allen Dr., was completed in the spring of 2002. Phase II, from Morrill Dr. to Pullen Rd., was completed in February 2006. Phase III, the connecting segment from Dan Allen Dr. to Morrill Dr., is currently in design.



Streambank erosion prior to restoration

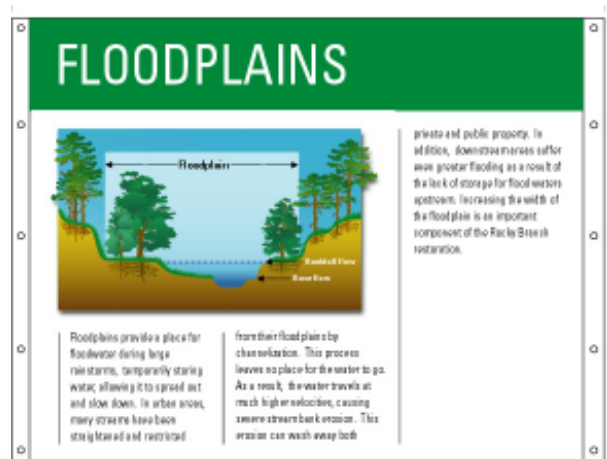
Rocky Branch drains into Walnut Creek, which is a tributary of the Neuse River. In 1978, the Division of Water Quality (DWQ) classified Rocky Branch as the state's most polluted urban stream. The stream had been



Rocky Branch greenway path

channelized, its floodplains filled and heavy development filled its drainage area. As a result, the stream was narrow, deep, severely eroded and was an unsafe eyesore on the campus.

Through natural channel design techniques, the restored stream now meanders through a newly created floodplain. Native vegetation provides habitat, cover and food for wildlife. Plantings have increased the width of the forested buffer zone, creating a wildlife corridor and shading the creek. A new greenway path provides a



Floodplain Interpretive Educational Sign

transportation alternative and brings people close to the creek. New interpretative signs installed along the greenway explain the concepts behind the restoration design.

A new bottomless arch culvert and pedestrian underpass at Pullen Road now connects the university to Pullen Park and will soon be linked to the Raleigh Greenway System. This expands the network of public green space. The underpass allows safe passage for pedestrians and wildlife beneath a major thoroughfare. The new culvert also increases floodplain area, thus improving stream stability. The underpass not only protects pedestrians, but also provides an opportunity to bring people close to the stream and improves wildlife connectivity.

In addition to restoring the creek, enhancing the



Pullen Rd. Arch Culvert



DH Hill Library rain garden

riparian buffer and installing the greenway path, stormwater controls were installed to filter and treat stormwater runoff before it enters the creek. A stormwater pond, three bioretention areas and three wetland ponds now occupy part of the watershed and floodplain.

Phase III proposes to “day-light” 235-feet of stream. Instead of flowing through culvert pipes, the stream will be recreated with a streambed and a small floodplain. Unearthing the channel will further increase habitat, visibility and human interaction with the creek.

Education is an important component of the Rocky Branch project. Because the creek bed was severely down-cut from erosion and confined to a narrow corridor through campus, many students, faculty and staff did not know of its existence. A campaign to raise awareness of the creek began in 1993 when volunteers stenciled “Don’t Dump” and “Keep Clean” messages on more than 80 storm drains throughout the campus.

The restoration of the stream and the establishment of access to the creek via the greenway path represent a sustainable outdoor teaching and research



Phase II after restoration, February 2006

facility for the university. Recognizing the rapid loss of natural systems within Raleigh’s increasingly urban landscape, faculty now urge the preservation and

restoration of significant natural resources on campus that have high educational value. Rocky Branch is a valuable tool for teaching students and professionals how to preserve and design natural systems in urban areas. In addition, the Rocky Branch Stream Restoration and Greenway Project reduces the need for field trips to off-site teaching areas.

Through the leadership of the Zoology Department and the student environmental club, students have monitored the aquatic inhabitants and collected water chemistry data from the stream since 1998. The Biological and Agricultural Engineering Department uses the creek for geomorphology class exercises, such as teaching about stability and sediment transport. Students in the Landscape Architecture Department have focused on Rocky Branch’s restoration and greenway path in several design studio classes.

The Rocky Branch project has been part of numerous educational workshops, field tours and presentations, including tours for graduate and undergraduate natural resource students as well as professional agencies and organizations. Presentations about the project have been given to high school and college classes and at professional workshops in North Carolina



River Course field tour of Phase II

and out of state reaching several hundred people each year.

North Carolina Sea Grant and the NC State University’s Facilities Division have worked together to obtain more than \$5.8 million dollars for the project from both federal and state agencies, including the NC Department of Transportation (TEA 21 and stream mitigation funds), NC Clean Water Management Trust Fund (CWMTF), Environmental Protection Agency 319 (through NC Department of Environment and Natural Resources), Federal Emergency Management Agency (FEMA) and NC State University capital improvement funds.