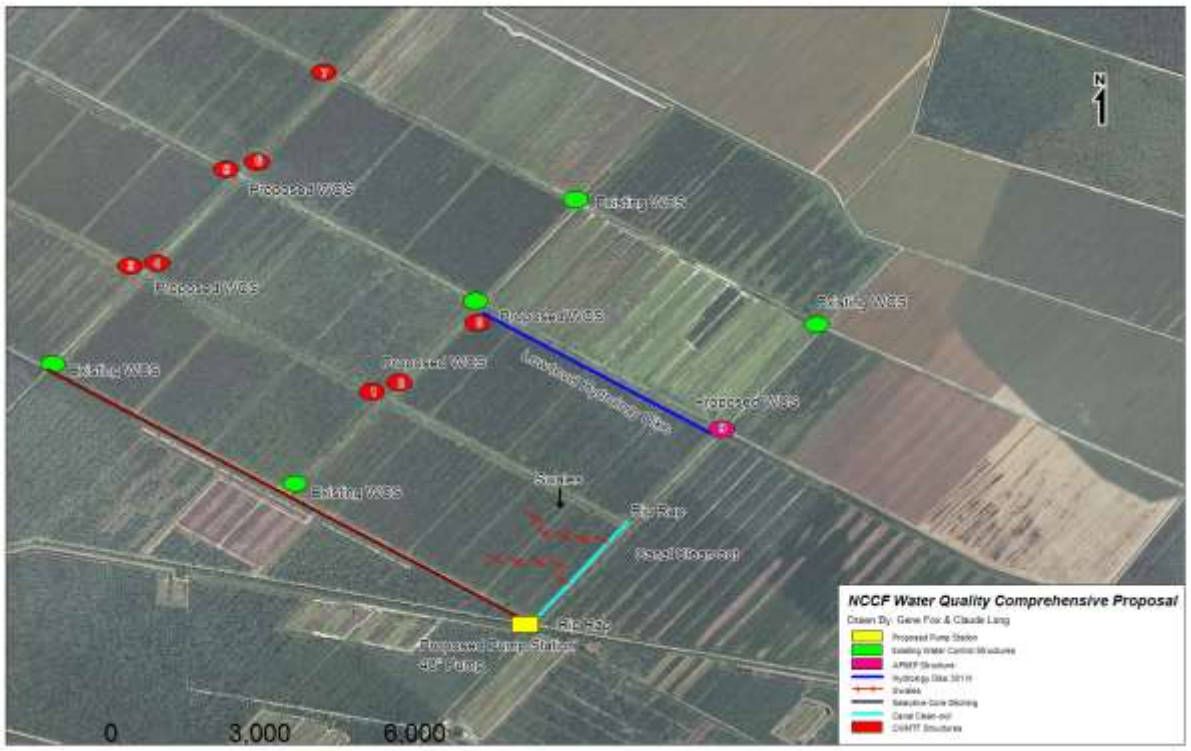
North Carolina Coastal Federation
Working Together for a Healthy Coast

Water Quality Restoration of Alligator River, Long Shoal River and Pamlico Sound
Contract No. 5143
March 13, 2013- November 15, 2013
$74,989



FINAL REPORT
To Albemarle-Pamlico National Estuary Partnership
Prepared by: Erin Fleckenstein, NC Coastal Federation
November 1, 2013

Albemarle - Pamlico National Estuary Partnership
cleanwater MANAGEMENT TRUST FUND
MATTAMUSKEET Management & Consulting
USDA NRCS United States Department of Agriculture Natural Resources Conservation Service
North Carolina Coastal Federation *Working Together for a Healthy Coast*

Project Summary
Decades of modifications to the natural hydrology and landscape have increased the amount of surface runoff entering historic shellfish waters in Hyde County, NC. Current land management operations rely on ditches and pumps that quickly release freshwater into coastal waters. The drainage system was constructed before there was much understanding of the water quality, fisheries and ecological consequences of converting wetlands to agricultural and forestry operation.

Over the last ten years the federation has worked with the Mattamuskeet Drainage Association, the largest drainage district in Hyde County, to develop landscape-scale, innovative, water management techniques that reduce the need to discharge runoff. The APNEP funded project is one of 10 high priority projects identified in a NCDWQ watershed restoration plan aimed at replicating historic flows, wetland conditions and reopening closed shellfishing waters. It is also prioritized in the state oyster plan.

This project enables approximately 100 million gallons of drainage generated by a 24-hour rain event over 3,700 acres of cropland to be contained within the project area. One water control structure, ten swales, and 8,750 feet of dike were cored as part of this project. Every gallon redirected to the project, is one less pumped into Albemarle and Pamlico Sounds.

Project Scope of Work
The Water Quality Restoration of Alligator River, Long Shoal River and Pamlico Sound project goals are to:

1) Restore hydrology to the extent practical on 1,350 acres of land enrolled in the NRCS WRP program;
2) Improve water quality in Pamlico Sound, Long Shoal River and Alligator River by diverting waters through restored wetlands so that oyster restoration in the sound can be more successful;
3) Enhance wetland function and habitat of lands enrolled in the NRCS WRP program;
4) Demonstrate non-traditional partnership opportunities that exist between environmental organizations, universities, federal government and private landowners.

This will be accomplished by:

1) Securing needed permits from DWQ and Army Corps of Engineers for restoration work proposed- **Complete**
2) Installing 1 water control structure to improve water management with in the restored wetlands and retain as much water in the project area as possible.- **Complete**
3) Core approximately 3,750 feet of the project perimeter to maximize water retention within the project site.- **Complete, nearly 1 mile was actually cored**
4) Construct 10 swales (approximately 3,000 feet)- **Complete, slightly reconfigured to 5 swales, but overall length remains at 3,000 feet.**
5) Develop an interpretive sign, provide tours of project to interested parties and feature the project in a *Coastal Review Online* article.- **Complete, sign included as attachment.**

In partnership with:
the landowner- Mattamuskeet Ventures who provided the land, matching contribution for road coring, and will provide project management into the future;
the drainage district directors- who provided stakeholder involvement and project development suggestions during this process;

the contractor- Mattamuskeet Management and Consulting who provided project oversight and construction implementation
Hyde County- the extension director and county planning department have been active stakeholders in this project and watershed restoration plan development
U.S. Fish and Wildlife Service- refuge managers and private lands biologist have been active stakeholders in the project design and management
USDA Natural Resources Conservation Service- who provided overview of the design and permitting of the project. Also provided 100 acres of Atlantic white-cedar and hardwood tree planting.
NC State University- who provided modeling of project as part of the development of a watershed restoration plan.
NC Coastal Federation- who provided project oversight, coordination, and outreach.

Work is taking place on 1,350 acres of restored wetlands in the Mattamuskeet Drainage Association, in Hyde County. The approximate south-easternmost corner of the project is located at: 35.35.47N, 76.05.07.27W.

Results and Discussion

The following work was completed during this grant:

March 13- November 1, 2013

- Federation staff met with the landowner and manager of Mattamuskeet Management and Consulting to draft the construction contract and establish a project schedule. It was decided that the easiest way forward was to amend the existing contract between the federation and landowner which is for complimentary work being done with funding from CWTMF.
- Federation staff coordinated additional field survey and two GPR (ground penetrating radar) studies to assist and prioritize the selective dike coring that will take place. The work was performed by NRCS and NCSU in April 2013 and October 2013.
- Federation staff, landowner, and Corps of Engineers met at project site to review wetland delineation on May 9, 2013.
- Federation staff finalized and submitted the PCN and supporting documentation to permit the project on May 25, 2013. A copy of the permit is included in the supporting documentation for project reference.
- Permits for work were received from DWQ and Army Corps of Engineers on June 24th and 25th respectively. Please find attached permit documents, fulfills grant requirement.
- Ground was broken on July 26, 2013 and completed on September 16, 2013. Project construction to fulfill grant requirements included:
    - Over 3,750 feet of road were cored.
    - The water control structure (WCS) was ordered, and installed.
    - 5 sloughs at 600 feet each were constructed instead of 10 sloughs at 300 feet each. Same linear footage created, but slightly different configuration than originally proposed.
- Federation provided multiple tours to interested parties, at least 5, during grant period, fulfilling grant requirement.
- Federation developed a project sign (see attached proof) and featured the project in the Coastal Review Online on August 16, 2013 (http://www.nccoast.org/Article.aspx?k=7767ebfa-fed7-4e0a-9fc4-0672b33d458a)

This project is one step towards restoring coastal hydrology in Hyde County. Additional projects identified in the drainage association will help reach the goal of restoring historic waterflows and opening currently closed shellfishing waters in the Pamlico Sound. An extra 9,000 acres of restoration have been identified in the drainage district to help reach that goal.

In Kind Services, Volunteer Hours and Leverage

- Bottomland hardwood tree planting on 100 acres by NRCS as leverage.- No leverage was committed in the RFP.
- Mattamuskeet Management and Consulting has provided an in-kind service of $12.00/linear foot of road coring for 3,750 feet. This brings their matching contribution to: $45,000 for the project. It was anticipated that $43,125 would be provided as match.
- Z. Smith Reynolds Foundation provided $31,653.27 in cash to the federation to support general operations of project-related work.

Total amount of match provided by the project: $76,664.00
Total amount of leverage provided by the project: $128,500.00

A.  B. 

C.  D. 

A. Water is visibly seeping through un-cored road. B-D. Road Coring in progress, digging a core trench and then fill it will fine sand and clay material to limit water's ability to seep out of restored wetlands, thereby improving wetland restoration and water quality benefits.

First Slough being constructed. Providing diversity of wildlife habitat and water quality benefits through increased contact with the sediments and UV exposure.

Site of AWC plantings completed as leverage. Over 98% survival observed in May 2013

Water Control Structure (WCS) staged and ready for installation.

WCS installed

CCMP Goals Addressed
This project supports all three of the CCMP Goals.

Goal 1: A region where human communities are sustained by a functioning ecosystem –

- Outcome a: Waters are safe for personal contact
- Outcome c: Surface hydrologic regimes sustain regulated human uses
- Outcome d: Fish and game are safe for human consumption.

Goal 2: A region where aquatic, wetland, and upland habitats support viable populations of native species

- Outcome a: the biodiversity, function, and populations of species in aquatic, wetland, and upland communities are protected, restored or enhanced.
- Outcome b: The extent and quality of upland, freshwater, estuarine, and near-shore marine habitats fully support biodiversity and ecosystem function.

Goal 3: A region where water quantity and quality maintain ecological integrity

- Outcome a Appropriate hydrologic regimes support ecological integrity
- Outcome b: Nutrients and pathogens do not harm species that depend on the waters
- Outcome d: Sediments do not harm species that depend on the waters.