

YEAR IN REVIEW 2016



Success Stories & Accomplishments

North Carolina Forest Service, Nonpoint Source & Water Quality programs

Forests & Watersheds

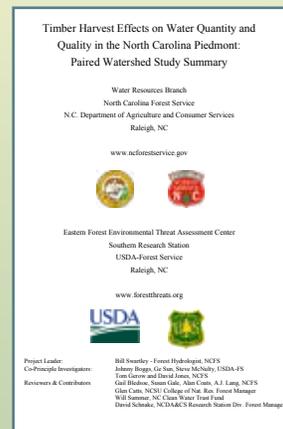
Timber Harvesting Study in the Upper Neuse River Basin Demonstrates Water Quality and Water Quantity Effects

In 2016, the N.C. Forest Service developed and published a detailed summary report and leaflet on a paired watershed timber harvesting research study in the upper Neuse River basin. There is a continued interest in how timber harvesting affects stream flow, nutrient and sediment levels, and residual streamside vegetation. The detailed summary report and leaflet illustrates data from technical peer-review journal articles in an easier to read fashion with “big-picture” forest management take-home points.

So What Did We Find?

Timber harvesting did increase streamflow and streamflow remained greater than pre-harvest levels three years following timber harvest. However, nutrients and sediment levels never exceeded the state’s water quality standards. Biodiversity of the streamside vegetation increased following timber harvests due to increase light reaching the ground. This study demonstrated that silviculture and forest management can be compatible with water quality standards when BMPs (Best Management Practices) are implemented.

Check out our web page for more details!
(http://www.ncforestservice.gov/water_quality/pairedWatershed.htm)



Best Management Practice (BMP) Implementation Assessments on Logging Sites

- After 3-4 years of data collection, 204 surveys were completed across 94 of North Carolina’s 100 counties.
- Final reports and products including, leaflets, presentations, and a self-guided story map are on schedule to be completed in early spring 2017.
- These surveys help direct program improvement efforts by evaluating the use of Forestry BMPs (Best Management Practices) for maintaining water quality and conserving soil.
- These surveys also document the success as an agency in educating forest practitioners, landowners, and the general public.
- Learn more about these BMP surveys on the agency’s website. http://www.ncforestservice.gov/water_quality/wq_bmp_studies.htm



Left: A set of properly installed bridgemats protecting the stream channel;



Below: A skid trail stabilized with brush barriers, grass seed, and straw mulch.



Above: Bridgemats and logging mats installed over a roadside ditch.



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Education, Outreach & Training

Notable Outreach Events with NCFS Participation:

(Estimated number of attendees shown in parentheses)

- Trained 113 loggers at North Carolina ProLogger workshops.
- Instructed 41 college students on harvest planning and forestry BMPs.
- Reached 162 foresters, timber buyers, and other natural resource professionals at three refresher workshops in Alamance, Granville, and Iredell counties. We plan for more workshops in 2017.
- Southern Farm Show (attended by thousands).
- Water Resources Research Institute, Erosion and Sediment Control Refresher Workshop (60).
- Mills River Day in Henderson county (1,000+).
- Resource Conservation Workshop for high school students (95).



Left: NCFS Water Quality Forester filming a video for ProLogger; **Right:** NCFS Water Quality Forester speaking at a refresher workshop

Bridgemats

N.C. Forest Service allows loggers to borrow agency-owned portable steel bridgemats to help protect water resources. This service is provided to loggers to demonstrate the advantages over other stream crossing methods. During 2016, NCFS bridgemats were implemented on 38 logging jobs and utilized on 45 stream and/or ditch crossings to access an estimated 1,932 acres of timber.

Bridgemats were also used for an emergency response purpose this past September. NCFS delivered a set of bridgemats to an Alamance County community cut off from a storm-induced culvert failure. This temporary fix provided access to dozens of homes and was highlighted by local television media.



Above: NCFS bridgemats in use on a logging job in Halifax County.

Below: NCFS bridgemats installed over road washout as temporary access in Alamance County

Right: View of a road washout where NCFS bridgemats were used as a temporary crossing in Alamance County



Stream Restorations

Lake Julia Outfall Restoration Project

Post-restoration monitoring was completed on the Lake Julia Outfall Restoration Project, located in DuPont State Recreational Forest. Trout appear to seasonally access the restored stream when water temperatures drop to a trout tolerant range (fall, winter, and spring). Streamside vegetation has begun shading parts of the stream. A kiosk was installed as an educational tool and depicts the nature and purpose of this stream restoration.



Left: view of the outfall restoration project in June 2016; **Right:** rainbow trout caught in the restored stream

The Canal Restoration Project

This restoration project located at the Claridge State Forest Tree Nursery in Wayne County aimed to reconstruct about 1 mile of stream. The floodplain had been widened (increasing the floodwater storage capacity) and the stream redirected to meander within the floodplain (slowing down water flow). Prior to Hurricane Matthew, this project was about 80% complete. The extent of damage from flooding is being evaluated by NCDOT, who is overseeing this restoration.

Right: A section of restored stream after Hurricane Matthew. Note the mudline on the vegetation in the background showing the water level at peak flood stage.



Linville River Restoration Project

The Water Resources Branch was awarded grant money to restore a section of the Linville River located on Gill State Forest in Avery County. During 2016, demolition of a low-water bridge and soil stabilization following bridge removal was completed. The restoration project planning and permitting will take place in 2017, and the river restoration construction in 2018.



Left: Low-water bridge before removal; **Right:** Low-water bridge removed

Inspections, Customer Service, & Technical Assistance

Forest Practice Guidelines Related to Water Quality (FPG) Compliance Inspections

For state fiscal year July 1, 2015 – June 30, 2016:

| Category Description | In-Compliance | Out-of-Compliance | Totals |
|----------------------------|---------------|-------------------|--------------|
| Timber Harvest - Active | 2,558 | 33 | 2,591 |
| Timber Harvest - Completed | 917 | 30 | 947 |
| Reforestation & Site Prep | 144 | 1 | 145 |
| Other | 239 | 1 | 240 |
| Totals | 3,858 | 65 | 3,923 |

FPG Referrals for Enforcement: 6

Citizen Complaints: 66 In-Compliance and 22 Out-of-Compliance upon initial inspection

Other BMP & Technical Assistance

- Provided NCFS agency comments to USEPA on the potential for forest road permitting.
- Provided NCFS agency comments to USF&WS on the effects of forest management to four aquatic-life species for the potential of listing them as federally Threatened or Endangered.
- Compiled and contributed forestry site inspection information for NC-DWR staff to include in their update of the Watauga River Basin Water Quality Plan.
- Assisted a landowner in Washington County with assessing the need for maintenance clean-out of drainage ditches in a manner that adheres to state and federal rules.
- Worked with staff at the N.C. Division of Coastal Management to learn more about coastal wetland marshes, and how silvicultural operations can occur in a way that minimizes impacts.
- Obtained guidance from the State Dam Safety Engineer on the removal of trees from earthen dams, in keeping with the state's dam safety law; and shared this guidance with forest industry stakeholders and NCFS employees.
- Provided information about forests, nutrients, and a summary of relevant forestry research in response to an inquiry from the NC Sea Grant Program, related to concerns about algae blooms in the Chowan River.
- Conducted an aerial reconnaissance flight over portions of the Chowan, Meherrin, and Perquimans rivers to visually observe if timber harvesting appeared to be a direct contributor to algal blooms.
- Provided feedback to Weyerhaeuser environmental scientists on their company owned sites that were inspected during the BMP implementation survey.
- Issued wet-weather logging advisories for T.S. Hermine and Hurricane Matthew.
- Offered guidance on handling "clean-up" on logging sites following Hurricane Matthew.
- Water Resources Branch staff members assisted with public information in support of Yellowstone National Park and western North Carolina fires and Hurricane Matthew relief (photo on right).
- The Water Resources Branch became fully staffed in June 2016!



Above: Water Resources Branch staff member presenting an update on the Party Rock fire.

Partners and Cooperators



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