Summary of Activities in the Rocky River Watershed (0303000305) – Cape Fear River Basin

During the EMC NPDES Subcommittee Meeting in January 2010, concern was raised regarding protection of the Rocky River in Chatham County. The following provides a brief history and overview of ongoing activities within this watershed as of December 2010.

A. 401 Water Quality Certification for Expansion of Siler City's Lower Drinking Water Reservoir (Turner Reservoir) – Requirement to Develop the Rocky River Management Team

As part of the 401 water quality certification for the expansion of Siler City's lower drinking water reservoir, Siler City agreed to participate on a management team consisting of participants from DWQ, Division of Water Resources, NC Wildlife Resources Commission, US Fish and Wildlife Service, Friends of the Rocky River, Rocky River Heritage Foundation and Siler City. The reservoir management team was established to guide the Division in its efforts to ensure the optimum operation of the reservoir for the protection and improvement of the quality of the Rocky River. This team is also required to review the need for additional monitoring or studies of the river that will enable a better understanding of the cause of the excessive growth of aquatic plants that have been observed downstream of the reservoir.

Due to concerns of the local citizens about the amount of aquatic macrophytic algal/periphyton growth downstream of the reservoir, the 401 certification requires a 20 cfs pulse released from the dam every 30 days. This requirement was intended to mimic a natural storm event and dislodge filamentous algal mats that occur along the river. The dam was approved by the Division of Land Resources Dam Safety Program on October 22, 2009 and the Turner Reservoir was full on November 13, 2009.

B. Siler City WWTP Permit (NC0026441)

On April 25, 2006, Siler City submitted an application for renewal of its existing wastewater permit. The Division of Water Quality held a public hearing on the draft wastewater permit on April 17, 2008. Based on recommendations of the hearing officers, DWQ added to the permit:

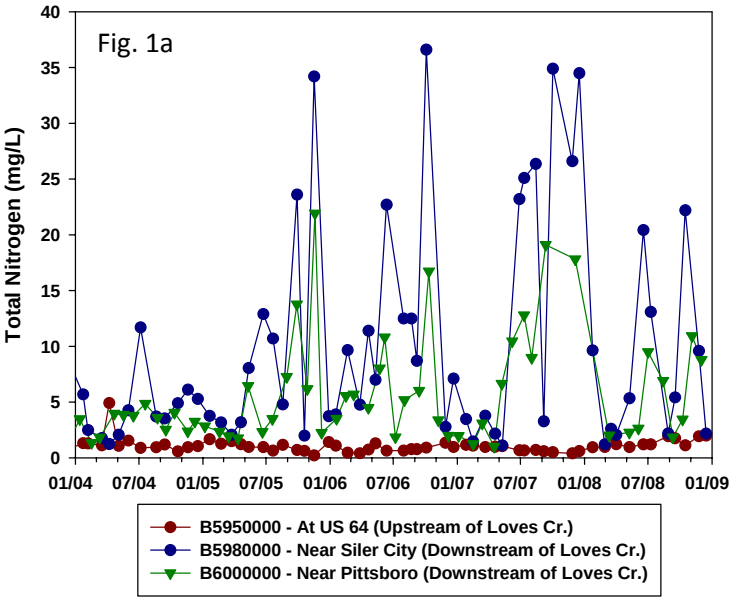
1) Winter total phosphorus (TP) limits of 2 mg/L;
2) Increased frequency of effluent total nitrogen (TN) monitoring from monthly to weekly;
3) Reporting of TN, NO_2+NO_3 and TKN effluent concentrations in addition to parameters already reported;
4) Additional instream monitoring on Loves Creek upstream and downstream of the discharge; and
5) Development of a Nutrient Removal Optimization Plan within one year from the effective date of the final permit.

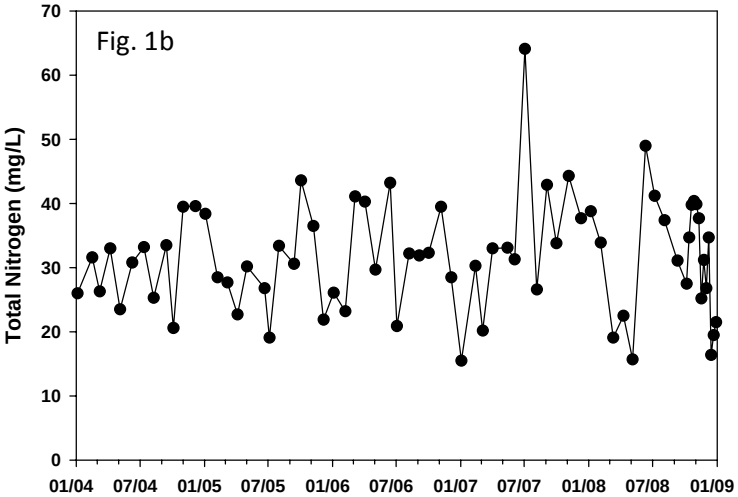
The Division Director approved the Siler City NPDES wastewater permit on August 29, 2008. The Friends of Rocky River challenged the renewal of the permit on whether it meets water quality standards for "best uses"; protects and preserves downstream "existing uses"; and addresses all cumulative and secondary impacts of all other pollution sources within the watershed. The Administrative Law Judge entered a decision recommending that the EMC affirm the reissuance of the permit. The NPDES committee of the EMC affirmed the renewal of the permit on January 13, 2010. However, the committee members expressed support for the Friends of Rocky River's efforts to protect and restore the river water quality. Siler City's NPDES permit will expire October 31, 2011.

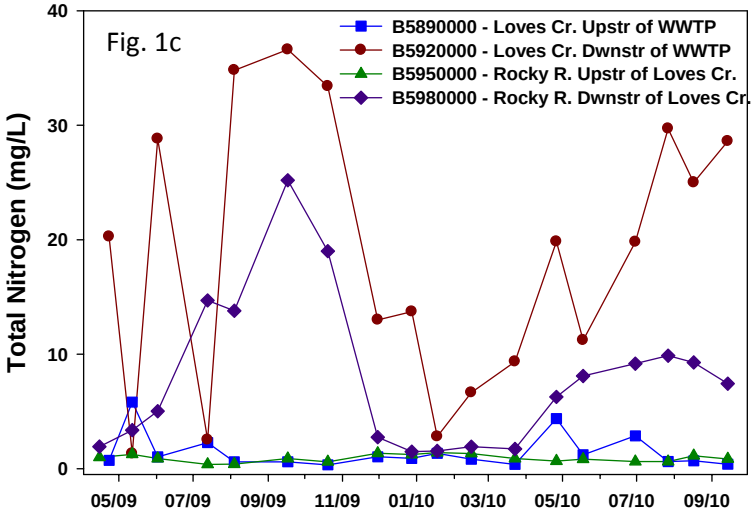
C. NC 2010 303(d)/Integrated Report Listings and Water Quality Data for the Rocky River Watershed (2004-2008)

Table 1. 2010 303(d) listed waters. Data window for 2010 is 1/1/2004 – 12/31/2008.

Name	Length/Area	Description	Assessment
Rocky River	214 acres	Upper Rocky River Reservoir	Impaired - Chlorophyll a (80% > 40µg/L Chl *a*)
Rocky River	6.7 mi	From dam at lower/Turner Reservoir to Varnal Cr.	Impaired - Low Dissolved Oxygen (13% < 4 mg/L DO at B5950000) Not Rated – Benthos (BB192)
Rocky River (not listed as impaired)	21.6 mi	From Varnal Cr. to Deep River	Not Rated – High Nitrogen Levels (> 10 mg/L NO_2+NO_3; 32% at B5980000 & 11% at B60000000) Not Rated – Benthos (BB376)
Loves Creek	6.2 mi	Source to Rocky River	Impaired – Benthos (2003 assessment)
Tick Creek	8.2 mi	Source to US 421	Impaired – Fish (BF72)
Bear Creek	2.0 mi	From SR 2189 to SR 2187	Impaired – Benthos (BB495)







Figures

1a. Rocky River ambient monitoring stations instream total nitrogen concentrations for 2010 IR period.

1b. Siler City's WWTP effluent total nitrogen concentration for 2010 IR period (mean TN concentration is 31.5 mg/L).

1c. Loves Creek and Rocky River instream total nitrogen contractions for April 2009-September 2010. (Loves Creek stations initiated in April 2009 in response to permit renewal requirements.)

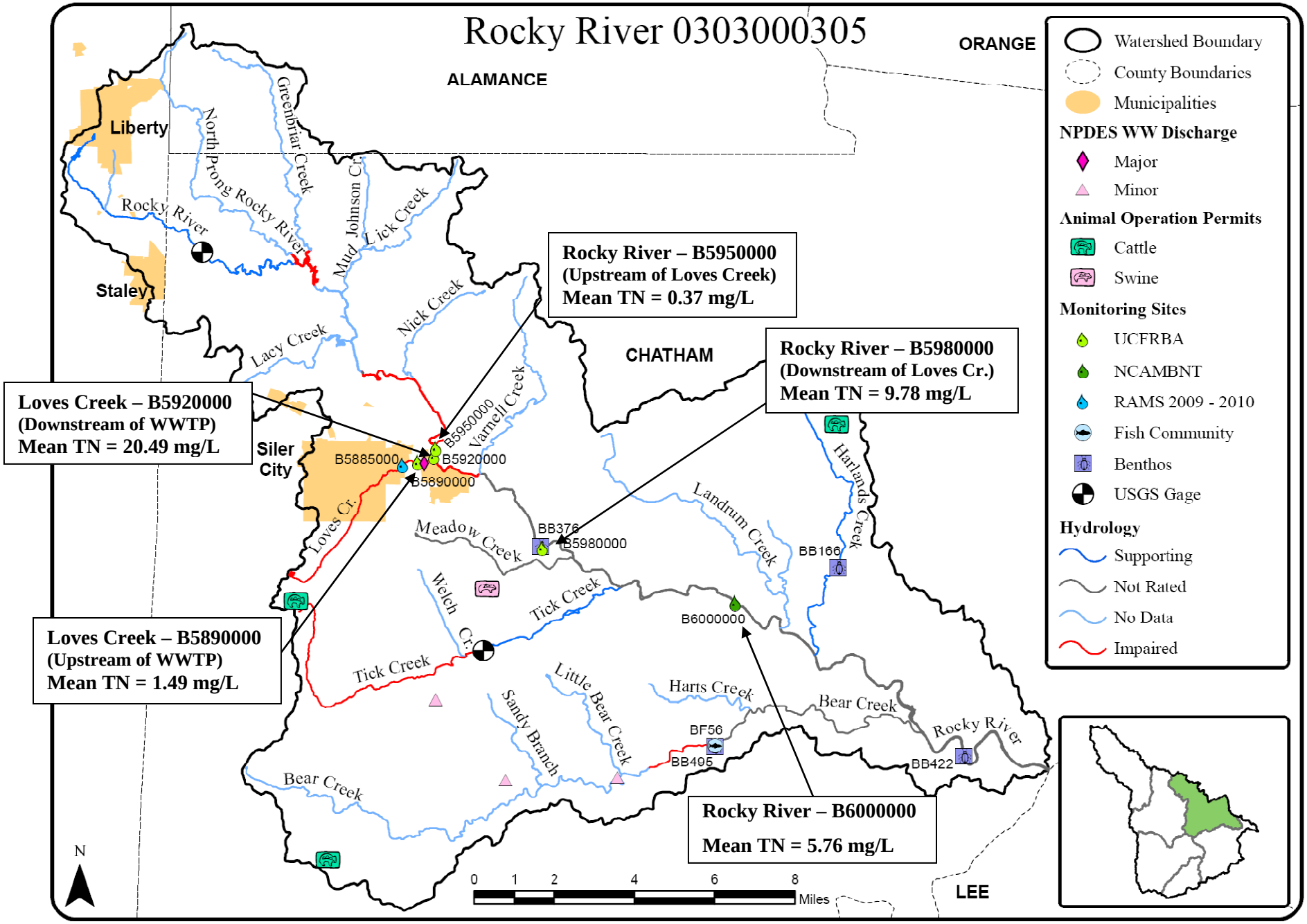


Figure 2. Map of Rocky River Watershed. Rocky R. mean TN concentrations for 2010 IR data set. Loves Cr. mean TN concentrations for 4/2009-12/2009 only.

D. Ongoing Actions in the Rocky River Watershed

1) DWQ –
   - Continued administration of the Rocky River Management Team.
   - Raleigh Regional Office (RRO) working with Siler City to assure compliance with the 401 Water Quality Certification requirements for the newly functioning Turner Reservoir.
   - The RRO has reviewed the Nutrient Optimization Plan, as required in the NPDES Permit, conducted two (2) Compliance Evaluation Inspections in 2010, and met with the Town Manager and wastewater staff to discuss possible changes to process in order to reduce nutrient loads to Loves Creek. Nutrient (nitrogen) removal is not currently in place or planned for the Siler City wastewater treatment plant. The RRO has determined through the inspections the plant is being operated properly and compliant with all permit limits.
   - Staff from Raleigh Regional Office conducted surface water monitoring and assessments to better understand nutrient fates, pathways and loading occurring in the Rocky River. This data was collected throughout the watershed during the growing season (e.g. low base flow conditions) from July 14, 2010 through October 6, 2010.
   - This information will be used by the RRO to investigate the extensiveness of adjacent land use impacts to waters. [For example: golf course, single family-sand filter discharges, industries land uses, streamside gravity sewer lines, cattle access to streams, dry litter poultry operations, waste residuals (sludge) land applications, etc.] The RRO is in process of systematic efforts to identify sources with specific issues within the upper reaches of the Rocky River watershed and the Loves Creek catchment.
   - Work with the Rocky River Management Team to study the required 20 cfs pulsing from the newly constructed dam. Provide recommendations back to the Division on possible next steps.
   - Assessing best options to aid in watershed wide water quality improvements (e.g. 303(d) listing; nutrient reductions; modeling; nutrient TMDL due to chlorophyll *a* exceedances behind Woody's Dam (lower Rocky River) or Buckhorn Dam (upper Cape Fear River); endangered species).
   - Participating (active stakeholder) in watershed restoration, conservation and planning groups.
   - Continuing to work with stakeholder on the development and implementation of needed watershed studies.

2) Friends of Rocky River and Rocky River Heritage Foundation –
   - Environmental education efforts with the local citizens and high school students.
   - Initiated a chlorophyll *a* study on the lower Rocky River in 2009 (behind Woody's Dam). Data collected in 2009 found elevated chlorophyll *a* levels. Seventy percent of the samples exceeded the 40 µg/L chlorophyll *a* standard. The mean chlorophyll *a* level for the 10 samples collected was 53.6 µg/L.
   - Initiated a periphyton visual watershed assessment in 2009.
   - Completed a biological survey of fish, mussels, clams and crayfish in 2010 (Alderman Environmental Services; http://h2o.enr.state.nc.us/basinwide/documents/Rocky_River_Subbasin_Aquatic_Taxa_Surveys_Alderman_Jul2010.pdf).
   - In conjunction with the Triangle Land Conservancy, assess and prioritize lands on the Rocky River for volunteer conservation efforts.
   - Requesting additional guidance in further watershed studies.

3) 319 Grant – NCSU-WECO initiated in 2009
   - Tick Creek watershed restoration plan development.
   - Implementing agricultural BMPs as part of this grant.

4) Chatham County
   - Chatham Conservation Partnership developing a comprehensive conservation plan for the County.
   - Developing a strategic plan for Environmental Resources Division of Chatham County, including watershed assessments.

- Chatham County Soil and Water Conservation District implementing agricultural BMPs throughout the Rocky River watershed using NC Ag Cost Share and the Drought Response Recovery Program (2004-2009 spent $197,605).