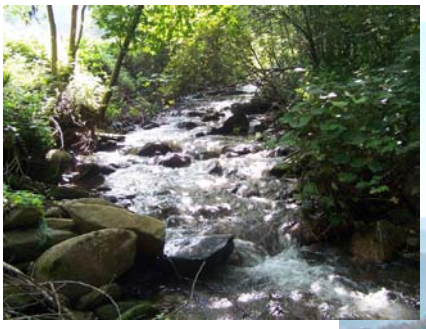
Peachtree-Martins Creek Local Watershed Plan Phase 3

Hiwassee River Basin
Cherokee and Clay Counties, N.C.

Watershed Management Plan Executive Summary

October 2007



A Project Of
The NC Ecosystem
Enhancement Program

With Assistance From
Equinox Environmental
Consultation and Design, Inc.
Asheville, NC

Executive Summary

1 Background

This report presents the Watershed Management Plan developed for the Peachtree-Martins Creek area by the NC Ecosystem Enhancement Program (NCEEP) in conjunction with the Hiwassee River Watershed Coalition (HRWC). The management plan represents Phase 3 of the Peachtree-Martins Creek Local Watershed Plan. Phase 1 produced a Preliminary Findings and Recommendations Report in early 2006. The second phase involved a detailed watershed assessment, completed in May 2007. The NC Division of Water Quality (NCDWQ), the NC Wildlife Resources Commission (NCWRC) and the Tennessee Valley Authority (TVA) also collaborated on the development of the Local Watershed Plan. Equinox Environmental Consultation and Design, Inc. (Equinox) served as the technical consultant for the project.

The area covered by this Watershed Management Plan is located primarily in Cherokee County and includes Peachtree Creek, Martins Creek, a portion of the Hiwassee River and a number of neighboring streams. The 39.3 square mile planning area includes the Hiwassee River and its tributaries from Mission Dam, outside of Brasstown, downstream to Murphy, with the exclusion of Brasstown Creek.

Important stressors that are widespread in the planning area include: lack of riparian vegetation; channel modification; sediment impacts; and nutrient and fecal coliform bacteria contamination. Additionally, a number of localized concerns exist: stormwater impacts in the Peachtree area; groundwater contamination in the vicinity of Tri-County Community College and the Clifton Precision Products/Moog Components facility; and impacts from Mission Quarry. Ongoing commercial and residential development is expected to continue in the area and is the biggest future threat to water quality and other elements of ecological function.

An assessment of ecological conditions offers both good and bad news for the Peachtree-Martins Creek area. On the positive side, about 17% of the area retains high or very high levels of ecological function. Severe degradation on the sub-watershed scale is currently limited, occurring only in the Mission Quarry area. While many individual sites in the planning area are severely impacted, at the sub-watershed level these impacts are mitigated to some degree by the areas that remain undisturbed or well-managed.

On the other hand, almost 18 square miles (about 45%) of the area has seen significant deterioration in ecological condition and is functioning at a low level or worse. Another 15 square miles (38% of the area) is functioning at a moderate level but is at risk of further degradation. Impacts of riparian vegetation removal, channel modification, and sedimentation are widespread.

The fact that much of the existing degradation is not severe makes the potential for successful rehabilitation more favorable than if the severest conditions were widespread. The fact that substantial areas remain in relatively good condition means that there is still much to lose if both ongoing activities and future growth are not handled well.

Because both the source activities and affected areas are widely dispersed, addressing these issues will require diverse strategies implemented over an extended period of time. A strong

organizational presence, as provided by the HRWC, is a major asset in pursuing both remedial and protection efforts.

2 Potential Impacts from Future Development

The primary threat for future degradation in the Peachtree-Martins Creek area is likely to come from activities associated with residential and commercial development. New development has been substantial in recent years, a trend that is expected to continue. Analyses conducted for this Watershed Management Plan indicate that:

- Substantial new development is likely to occur in the Peachtree-Martins Creek area between 2005 and 2015. The extent of land in residential use is anticipated to increase by over 40% over this period, while commercial areas are expected to increase by 77%.
- As a result, impervious cover in the planning area as a whole will increase from 3.9% to 5.5%.
- More substantial changes in impervious cover will occur in those sub-watersheds in which much of the new development is concentrated. By 2015 imperviousness in the McComb Branch and Lower Peachtree sub-watersheds will reach 17% and 13% respectively, while impervious cover in the Southern Hiwassee Tributary area will increase from 3% to 9% over the 10 year period.
- Still larger increases in imperviousness are likely for small streams experiencing development in a large portion of their drainage (e.g. Harshaw Branch, where impervious cover in the catchment may increase from 2% to 27%). Severe impacts are likely in these locations without a concerted effort to mitigate the effects of development by means of stormwater control and other measures.
- Estimates using TVA's Integrated Pollutant Source Identification (IPSI) model indicate that between 2005 and 2015, total suspended solids (TSS) loads from residential and commercial areas can be expected to increase by 44% and 77% respectively, while TSS loads from construction activity will increase by approximately 55%. Similar increases are estimated for nitrogen and phosphorus.
- A considerable portion of these pollution increases can be avoided by the implementation of a variety of local policies, most notably post-construction stormwater control, vegetative clearing limits and enhanced erosion and sediment control during construction.

3 Summary of Focus Areas and Recommended Strategies

This plan recommends several focus areas to concentrate management efforts. Recommended priority areas for addressing existing degradation are:

- The Middle Martins Creek, Lower Slow Creek and Messer Branch sub-watersheds, which should be considered primary focus areas for implementation of a broad range of remedial practices;
- The sub-watershed draining Mission Quarry, which is experiencing severe impacts from the quarry operation; and
- McComb Branch, which is subject to a variety of water quality and stormwater impacts.

Recommended priority areas for preservation include:

- The upper Peachtree drainage including the following sub-watersheds - Upper Peachtree, Moore Branch, Pipes Branch and the portion of Middle Peachtree upstream of Mission Road; and
- The Upper Martins Creek sub-watershed.

This plan recommends a number of strategies to mitigate the problems and threats noted above and thereby restore and protect watershed function. Strategies are summarized in the table below, immediately followed in the text by a listing of the full set of recommendations. The recommendations are listed in three groups: recommendations to address existing degradation, recommendations to promote ecological preservation and recommendations to mitigate the potential impacts of future development. The *Project Atlas,* a companion document to this management plan, describes the selection of potential NCEEP restoration and preservation projects and provides detailed information on these sites.

Summary of Proposed Management Strategies

Watershed Problems		Proposed Solutions	
Stressors and Issues	**Major Impacts**	**Management Strategy**	**Location in Document**
Lack of Riparian Vegetation	Stream bank instability, poor shading, insufficient woody material in streams, limited pollution removal	● Revegetation of riparian areas	Section 6.1
Channel Modification	Habitat degradation, incision, bank erosion, sedimentation	● Stream channel restoration	Section 6.1
Excess Sediment Inputs	Habitat degradation-loss of riffle and pool habitat; reservoir filling	● Conservation tillage and other crop land measures ● Livestock exclusion and other BMPs for livestock operations ● Stabilization of eroding road banks and ditches; drainage and grading improvements to reduce erosion from unpaved road surfaces ● Education of landowners regarding property/road maintenance and design ● Stabilization and revegetation of eroding areas on existing developed land ● Education of landowners regarding land disturbance ● Enforcement of existing regulations at Mission Quarry ● Promotion of forestry BMPs ● Stabilization and replanting of eroding stream banks	Section 6.2 Section 6.2 Section 6.2 Section 6.2 Section 6.2 Sections 6.2, 8.2 Sections 6.2, 6.4 Section 6.2 Section 6.2
Excess Nutrient Inputs	Over-enrichment of steams and reservoirs, resulting in low dissolved oxygen levels and altered aquatic communities	● Education of property owners and contractors regarding appropriate fertilization and lawn care practices ● Removal of straight pipes; repair/replacement of faulty septic systems ● Education of landowners regarding proper septic system maintenance ● Livestock exclusion and other BMPs for livestock operations ● Conservation tillage and other crop land measures ● Replanting of riparian vegetation	Sections 6.2, 8.2 Section 6.2 Section 6.2 Section 6.2 Section 6.2 Section 6.1
Bacterial Contamination	Human health risk	● Additional monitoring of fecal coliform bacteria ● Removal of straight pipes; repair/replacement of faulty septic systems ● Education of landowners regarding proper septic system maintenance ● Livestock exclusion practices and other BMPs for livestock operations	Section 6.2 Section 6.2 Section 6.2 Section 6.2
Stormwater	Channel erosion due to increased storm discharge; aquatic life impacts from nutrients and toxic substances	● Additional monitoring of stormwater impacts ● Stormwater retrofits for developed areas, especially in McComb Br. area ● Education of citizens regarding stormwater and pollution prevention	Section 6.3 Section 6.3 Section 8
Groundwater Contamination	Human health risk (drinking water); impacts to aquatic biota	● Continued remediation of existing contamination in Peachtree area ● Continued monitoring of organic contaminants in Peachtree area	Section 6.5 Section 6.5
Mission Quarry	Sedimentation and water quality impacts	● Enforcement of applicable water quality, mining and health regulations	Section 6.4
New Development	Future increase in sediment, nutrient and stormwater impacts	● Adoption of a subdivision ordinance that encourages Low Impact Development (LID) and other approaches to reduce impacts ● Instituting post-construction stormwater management requirements ● Developing a local erosion and sediment control program ● Ongoing public education regarding watershed and stormwater issues ● Evaluation of stormwater control opportunities on government properties ● Adoption of hillside development standards ● Expansion and revision of existing water supply and floodplain ordinances ● Development of a long-term wastewater management plan ● Development of a comprehensive land use plan	Section 8.2 Section 8.2 Section 8.2 Section 8.2 Section 8.2 Section 8.2 Section 8.2 Section 8.2 Section 8.2
Multiple Stressors	Diverse future impacts	● Preservation of priority areas through conservation easements and proper forest management	Section 7

4 Recommended Strategies to Address Existing Degradation

Recommended actions to remediate existing degradation are summarized below, grouped by the major stressor or issue addressed.

4.1 Channel Modification and Lack of Riparian Vegetation

Recommendation 1: Where channel morphology and stability have been compromised, stream channels should be restored to a natural pattern, dimension and profile. Streams identified as channelized by TVA's IPSI analysis provide a good first approximation of the reaches where stream channel restoration projects are needed. NCEEP should undertake these projects to the extent feasible. The HRWC should take the lead to initiate projects for stream reaches where NCEEP cannot operate.

Recommendation 2: Where channel morphology does not need restoration but riparian vegetation is inadequate, woody vegetation should be replanted. Streams identified by the IPSI as having inadequate riparian revegetation provide a fairly accurate indication of reaches where riparian area enhancement projects are needed. NCEEP should undertake these projects to the extent feasible. The HRWC should take the lead to initiate projects for stream reaches where NCEEP cannot operate.

Recommendation 3: Where severely eroding stream banks exist outside of areas to be included in stream channel restoration and riparian revegetation projects, they should be stabilized and revegetated. The HRWC, Cooperative Extension Service or Cherokee Soil and Water Conservation District (SWCD) could take the lead in this work.

4.2 Sediment, Nutrients and Fecal Coliform Bacteria

Agricultural sources

Recommendation 4: Sediment and nutrients from crop land should be addressed using standard BMPs for controlling erosion, sediment and nutrients on cultivated land. These include conservation tillage, filter strips, field borders, the development of nutrient management plans and other practices. These practices are eligible for cost share from both the Natural Resources Conservation Service (NRCS) and the NC Agricultural Cost Share Program (NCACSP). These practices should be targeted at areas currently using low residue practices and other areas identified by agricultural agency staff as having a high potential for impacts. NRCS and the Cherokee SWCD should prioritize these areas for appropriate practices.

Recommendation 5: Sediment, nutrients and bacterial contamination from livestock operations should be addressed using standard BMPs for controlling these pollutants on pasture land. These include limiting livestock access to streams, the establishment of buffer areas between pastures and stream channels, heavy use area protection, rotational grazing and other practices. These practices are eligible for cost share from both the NRCS and the NCACSP. These practices should be targeted at areas with documented livestock stream access, pasture land that is in the poorest condition and other areas identified by agricultural agency staff as having a high potential for impacts. NRCS and the Cherokee SWCD should prioritize these areas for appropriate practices.

Existing developed areas
Recommendation 6: Education efforts should target property owners to inform them of the importance of a variety of activities aimed at reducing pollution sources. These include: maintaining vegetative cover; using proper erosion and sediment control methods when land disturbance is necessary; conservative use of fertilizer and other lawn and garden care products; septic system maintenance; and road design and maintenance. The HRWC, Cooperative Extension Service or a county-developed watershed education program could all be appropriate entities to carry out this work.

Recommendation 7: Sources of fecal coliform bacteria contamination should be identified and eliminated, including contamination from both domestic waste and livestock. NCDWQ, the Wastewater Discharge Elimination (WaDE) program of the NC Division of Environmental Health and local resource agencies should work together towards this goal. This work should focus on waters where violations of water quality standards were documented by NCDWQ during the summer of 2007, although additional priority areas may be identified by further investigation. The WaDE program should conduct a field survey to determine the extent of straight piping and malfunctioning septic systems in the planning area and identify sites in need of remediation.

Recommendation 8: An effort should be made to identify specific developed areas which are significant and ongoing sources of sediment. Features in these areas which are major sediment contributors should be stabilized and vegetated. The HRWC, Cooperative Extension Service or Cherokee County SWCD could take the lead in securing funding for these tasks.

New construction and disturbed areas
See Section 5, below, for this recommendation.

Roads
Recommendation 9: High priority areas of roadway and bank/ditch erosion should be identified and stabilized to the extent practicable. The HRWC, Cooperative Extension Service or Cherokee SWCD could take the lead in securing funding for these tasks.

Other recommendations
Recommendation 10: BMPs to protect water quality should be used during harvesting and other silvicultural operations, as outlined in the North Carolina Forestry Best Management Practices Manual to Protect Water Quality. Particular attention should be paid to recommended practices regarding streamside management zones, stream crossings and roads.

Recommendation 11: Landowners should be educated regarding the importance of proper maintenance and revegetation practices to limit erosion from recreational and other activities on forest land.

4.3 Stormwater in the Peachtree Area

Recommendation 12: Potential stormwater retrofit sites should be identified in the Tri-County Community College / Murphy Medical Center area, and an effort undertaken to secure funding to implement these projects. Retrofit projects would be useful even if they do not treat large areas and serve primarily educational purposes.

Recommendation 13: NCDWQ should continue its investigation into the nature of water quality degradation in McComb Branch and its tributaries, and the role of stormwater impacts in that

degradation. NCDWQ should make recommendations to improve water quality in these streams. Recommended actions should include the identification and elimination of any illicit discharges in the Tri-County Community College / Murphy Medical Center area.

4.4 Mission Quarry

Recommendation 14: In order to reduce sediment impacts to the stream below the quarry and to the Hiwassee River, the NCDWQ and the NC Division of Land Resources should continue their effort to bring the Mission Quarry operation into compliance with all operating permits. Steps should be taken to ensure that ongoing enforcement is sufficient to induce continued compliance and that additional impacts do not occur.

Recommendation 15: NCDWQ should continue its efforts to identify the source of high conductivity in the stream below the quarry, as well as high nutrient levels. The agency should make recommendations for water quality improvement upon completion of the investigation.

4.5 Groundwater Contamination

Recommendation 16: The NC Division of Waste Management (NCDWM) should conduct follow up sampling of private drinking wells in the Peachtree area to determine if a health risk exists from groundwater contamination at the Tri-County Community College or Moog sites. Sampling should be conducted in consultation with the Cherokee County Health Department.

Recommendation 17: NCDWM should continue to monitor compliance with remediation activities at the two sites to insure that reductions in contaminant concentrations continue and that required monitoring occurs.

5 Recommended Preservation Strategies

The following actions are recommended to protect existing high quality resources and to help prevent further loss of function in already impacted areas.

Recommendation 1: Governmental agencies and private organizations should work with local landowners to protect exiting forested tracts in the planning area using conservation easements or other means. NCEEP can undertake these projects in situations where this is feasible. The HRWC, the Land Trust for the Little Tennessee and other local groups should work with property owners to initiate projects where NCEEP cannot operate.

Recommendation 2: Owners of private woodlands in the planning area are encouraged to practice sustainable forest management, protecting habitat and water quality while making productive use of their land.

6 Recommended Strategies to Mitigate Future Development Impacts

The actions summarized below are recommended to address potential impacts from the additional residential and commercial development expected in the Peachtree Martins Creek planning area. Without a focused effort to mitigate the impacts of this activity, further degradation of water quality, hydrologic condition and stream habitat is likely to occur in many area streams. Additionally, efforts to ameliorate current degradation may have little noticeable impact, or those impacts may be short-lived, if future development issues are not dealt with effectively and expeditiously.

The task of developing and adopting these measures will be a major undertaking for the County and will take some time to carry out. It is important that the process begin as soon as possible, so that as much future development as possible takes place under a set of standards that will more effectively mitigate environmental impacts.

Recommendation 1: Cherokee County should consider developing and adopting a subdivision ordinance to ensure that adequate planning occurs prior to land development and that design standards and development practices are adequate to address environmental and resource protection needs. The ordinance should encourage Low Impact Development and other measures to minimize water quality impacts from development and should provide developers with incentives to undertake a variety of voluntary conservation efforts.

Recommendation 2: Cherokee County should consider developing and adopting a comprehensive stormwater management program to reduce the environmental impacts of post-construction stormwater.

Recommendation 3: Cherokee County should consider development of a local erosion and sediment control program, with specific provisions to address smaller sites and road and site development on steep slopes. Staffing levels sufficient to support effective enforcement are essential. Efforts to reduce construction-related sediment will be most effective if they include not only a regulatory component, but also non-regulatory efforts to educate contractors and property owners regarding the importance of limiting disturbance and utilizing appropriate control practices. These educational functions could also be performed as part of a broader public education program.

Recommendation 4: Cherokee County should develop a robust public education program to increase public knowledge of water quality and watershed issues, including stormwater and other issues of concern.

Recommendation 5: Publicly owned facilities - including facilities owned by Cherokee County, NC Department of Transportation, Tri-County Community College and other government agencies - should be evaluated for their potential to treat/retain stormwater. Stormwater BMPs should be implemented on other public properties as they are developed.

Recommendation 6: Cherokee County should consider the development of hillside development or mountain protection standards to address potential problems associated with development activity on steep terrain.

Recommendation 7: Cherokee County should consider expansion of its floodplain ordinance to include relevant portions of the Peachtree-Martins Creek area and should evaluate both the floodplain and water supply protection ordinances to determine ways in which they may be improved.

Recommendation 8: Cherokee County should develop a long term plan for meeting future wastewater treatment needs.

Recommendation 9: Cherokee County should consider the development of a county-wide comprehensive land-use plan.