

Executive Summary

The N.C. Wetlands Restoration Program (NCWRP), which is now operated and administered as the Ecosystem Enhancement Program (EEP) within the N.C. Department of Environment & Natural Resources (DENR), has conducted an intensive Local Watershed Planning (LWP) initiative covering two 14-digit hydrologic units located within the lower Yadkin River basin. The two local watershed units considered by this Plan include the Clarke-Ramah Creeks watershed and the upper Rocky River-Dye Branch watershed. These local watersheds are situated within a rapidly urbanizing region centered in northeastern Mecklenburg County, southern Iredell County and northwestern Cabarrus County (see [Figures 2-1](#) and [2-2](#)). This *Final Report* documents the results of the several phases of this initiative, conducted over a two-year period from December 2001 through December 2003, including:

- Watershed characterization and broad-scale water quality modeling;
- Detailed assessment and hydrologic modeling within representative, high-priority subwatersheds;
- The participation of a team of local government staff and resource professionals specifically recruited to help guide the LWP process and develop its final products and recommendations;
- Development and application of a subwatershed ranking (or prioritization) protocol;
- Development of a local watershed management plan, including both watershed-wide management strategies and subwatershed-specific protection and restoration tools;
- Identification of 30+ high-priority watershed protection/restoration and BMP project sites; and
- Presentation of a recommended long-term implementation strategy.

Section by Section summary of the Plan

Section 1 of the *Final Report* (or *Plan*) briefly describes the objectives of Local Watershed Planning within the context of EEP's overall program mission. It describes the basic criteria used to select the two watersheds that are the focus of the planning efforts, and it finishes by summarizing the major tasks conducted by the watershed assessment consultant hired by the EEP (Camp Dresser & McKee, or CDM).

Section 2 of the *Plan* presents details regarding the specific data collection and analyses performed by CDM towards the goal of developing a detailed understanding of historical and current conditions within the two study watersheds. Watershed characterization activities and results documented within this section include the compilation and analysis of basic watershed-related GIS coverages, determination of historical and current land use trends (and predictions regarding future development conditions in the watersheds), geomorphological characterizations using Rosgen-based techniques at various stream reach and cross section sites, a review of current municipal and county watershed-related rules/ordinances, and documentation of current or planned watershed restoration and preservation efforts.

Section 3 describes the results of water quality and habitat monitoring performed at various locations in the two local watersheds, and presents the results of integrating these and other watershed characterization data into water quality and hydrologic modeling efforts. All pertinent watershed data were then presented to the local stakeholder team (or Local Watershed Planning Group, *LWPG*) and used to develop a subwatershed ranking protocol, which scored out and prioritized each of the 41 delineated subwatersheds (see **Figure 3-3** in the *Final Plan* and **Figure ES-1** at end of this *Summary*) based on three basic categories of watershed management conditions:

- Current Watershed Health;
- Current Natural Resources & Habitat Value;
- and Future Risk to Watershed Functions.

The methodology and results of this subwatershed ranking protocol are detailed in **Section 4** of the *Plan*. **Figures 4-1 to 4-3** depict the two tiers of prioritized subwatersheds for each of the three management categories noted above.

In **Section 5**, the role of the *LWPG* is highlighted in developing a consensus mission statement and specific priority goals for the LWP initiative in these two watersheds. Seven major goals were identified by the *LWPG*,



ranging from “engaging and educating the general public and local governments” to “enhance recreation and open space preservation” to “identify potential funding sources”. **Table 5-1** presents these seven goals and the associated sub-goals or objectives needed to realize these goals within the two

local watersheds.

The broader **mission statement** adopted by the stakeholder group reads as follows:

“to identify the most critical existing and potential watershed impairments and to formulate a management plan that will accommodate planned growth in a manner that maintains (or re-establishes) the natural hydrologic characteristics of the watershed – specifically, stream baseflow, stable stream channel conditions, flood-carrying capacity of streams and storage capacity of their floodplains, and surface water quality and associated aquatic habitat functions – to the maximum extent practicable” (page 5-1).

Section 6 takes the seven major *LWPG*-identified goals for the LWP process and relates them to 10 recommended watershed-wide *Management Strategies (MSs)*. **Table 6-1** presents a matrix depicting the relationship between the *LWPG* goals/objectives and the recommended *MSs* presented by CDM. Each recommended *Management Strategy* (e.g., *MS 1, Incorporate the Public in Watershed Stewardship and Education*) is broken down into specific sub-strategies (e.g., *MS 1.2, Advocate Municipal Implementation*) which can be employed by local and state agencies, resource professionals, land trusts, local

watershed oversight groups and/or watershed residents in order to achieve the broader goals for the local watersheds. The discussion of recommended *MSs* and sub-strategies includes numerous references to useful websites and other publicly available resources to support implementation of these watershed protection strategies.

Specific stream, buffer and wetlands restoration, enhancement or preservation project types are described in [Section 7](#), along with recommended stormwater *Best Management Practices* (BMPs) that could be effectively applied in these two watersheds to address local water quality, habitat and flooding issues. [Table 7-1](#), [Figure 7-3](#) and detailed project data sheets and maps presented in [Appendix F](#) present CDM’s final “top 31” recommended project site locations, including a summary of the cost/benefit rationale for each project site and possible constraints/limitations on construction of the individual projects at the recommended sites. [Appendix F](#) to the Plan also includes specific parcel identification and ownership information based on available county tax records; however, no systematic effort has yet been made to contact landowners at most of the recommended “top 31” project sites. Landowner contacts and site visits will be arranged over the months to follow by EEP project implementation staff in order to assess site suitability and landowner willingness before moving forward with possible easement acquisition, project design and site construction activities.



The 31 CDM-recommended project sites (see [Figures 4-1 to 4-3](#), [Table 7-1](#), [Figure 7 3](#), and [Appendix F](#)) include a range of watershed protection project types and BMPs, located where they are likely to provide the most “bang for the buck” in terms of dollars spent and watershed functions eventually improved/restored or protected. In several cases, there is more than a single project site recommended for a given subwatershed, consistent with the EEP program philosophy that multiple restoration projects and/or BMPs constructed within a single subwatershed (approx. one to 5.0 sq. miles) or catchment (< 1.0 square mile) are likely to realize synergistic benefits to the watershed over the long term, greater than they would if they were otherwise “scattered” across the watershed units. The 31 recommended projects – which, if willing landowners are engaged, could amount to over 80,000 feet of stream or buffer restoration, 17 acres of wetlands restoration and over 300 acres of wetlands preservation – include:

- two buffer preservation projects
- two wetlands preservation projects
- four stream & buffer restoration projects
- 12 stream restoration projects
- four wet pond retrofits or water control structures
- five wet ponds/constructed wetlands, and
- two wetland restoration sites.

Note: beginning in fall of 2003, a new, geographically expanded local planning effort was initiated by EEP in the lower Yadkin region. The expanded LWP initiative includes four additional contiguous local watershed units adjacent to the original two. Together with the original two local watersheds (Clarke Creek and upper Rocky River-Dye Branch units), these four new 14-digit HUs comprise NC Division of Water Quality Subbasin 11 of the Yadkin-Pee Dee basin. This expanded area now covers the entirety of the upper Rocky River drainage system, including Coddle Creek, Mallard Creek, Reedy Creek and Back Creek, extending from southern Iredell and Rowan counties to southern Cabarrus and southeastern Mecklenburg counties. The current schedule for this expanded (“Phase 2”) effort in the lower Yadkin calls for watershed and subwatershed assessment activities to continue into spring of 2005, with stakeholders working with EEP and their LWP consultants to identify priority subwatersheds, optimal watershed project sites and final recommended watershed management strategies by the fall of 2005. Additional information on the expanded LWP initiative in the lower Yadkin can be obtained by going to the NCWRP web site at: <http://h2o.enr.state.nc.us/wrp/index.htm> or contact Hal Bryson at (919) 715-7452.

It is important to keep in mind the intended **end uses** of the NCWRP and EEP Local Watershed Planning products, including this written document, with all its tables, figures, text and Appendices. The recommended planning goals and management strategies presented in this Final Plan, as detailed and lengthy as it is, are not intended as a rigidly prescriptive set of local watershed protection or restoration tools. In fact, as conditions in the watersheds change – for instance, as some of the subwatersheds and catchments are “built out” over time, while other areas perhaps remain primarily rural or less intensively developed – and as political and socioeconomic changes ensue, there will arise a need to periodically re-assess watershed conditions and refine or update the watershed management recommendations presented in this Plan. For this reason it is very important that local governments, local resource professionals and other stakeholders with expertise and interest in watershed planning commit to forming a local watershed “steering” group that could provide long term oversight of changing watershed conditions and that could spearhead local watershed protection efforts, including the acquisition of funding for project implementation and monitoring tasks [see MS-9 and MS-10 in Section 6 of the Plan].

To summarize, the primary end uses of this Final Plan for the Clarke-Ramah Creek and upper Rocky River-Dye Branch local watersheds are:

- (1) As a blueprint and resource guide for local governments in developing and enacting certain watershed protection ordinances or policies;**
- (2) As a springboard for local citizens groups and/or a watershed steering committee seeking to implement the management strategies and specific projects contained herein, including specific supporting language and resources for grant writing to obtain funding for such objectives;**

(3) As an atlas for recommended watershed protection/restoration projects in optimal locations within priority subwatersheds – with the intent that such opportunities are to be pursued by several groups, including EEP and NCDOT compensatory mitigation program staff, a Local Watershed Steering Committee (or “team”), local or regional Land Trusts, and local governments or resource agencies; and

(4) As a preliminary blueprint for monitoring the long-term performance and relative success of the recommended watershed management strategies and projects.

Acknowledgments

The NCEEP and its consultants in this local watershed planning effort (CDM and WECO) wish to gratefully acknowledge the support, guidance and input received from all members of the Local Watershed Planning Group (LWPG). Without the support and active participation of professional staff, representatives and interested citizens from the following groups, agencies and jurisdictions, this planning effort could not have been successfully accomplished: the Cabarrus County NRCS, Soil & Water Conservation District, and Watershed Improvement Commission (especially Mr. Dennis Testerman); Cabarrus County Planning Department; the Town of Davidson Planning Department (especially Mr. Lindsey Hobbs); the City of Charlotte Stormwater Services; the Mecklenburg County Stormwater Services and Water Quality programs; the Mecklenburg Soil & Water Conservation District; the Town of Mooresville (especially Mr. Carson Fisher); Davidson College (Professor David Grant); Town of Cornelius Planning Department; Town of Huntersville Planning Department; Catawba Lands Conservancy; Davidson Lands Conservancy; Iredell County Planning Department and Soil & Water Conservation District; NC DENR – Mooresville Regional Office; the Land Trust for Central NC; NC DENR – Division of Forest Resources and Wildlife Resources Commission; the Open Space Institute at UNC-Charlotte; the Yadkin-Pee Dee River Basin Association; the Water & Sewer Authority of Cabarrus County.

[Please see **Appendix A** of the *Final Plan* for a complete listing of LWPG members.]

Final Note: the participation of the above-named groups, agencies and individuals in this planning process, and the appearance of their names in sections of the Final Plan or related documents, does not constitute an official endorsement or approval of the Plan recommendations by these individuals or the agencies/entities for whom they work.

To the extent that concerted and cooperative local efforts are made to fund and implement the management strategies and watershed protection & restoration projects identified in this *Plan*, the important natural functions of these two local watersheds will be maintained, protected or restored for the future enjoyment and use of- and wise management by --watershed residents and local jurisdictions.

Sub-Watershed Delineation for the Upper Rocky River / Clarke Creek Local Watershed Plan

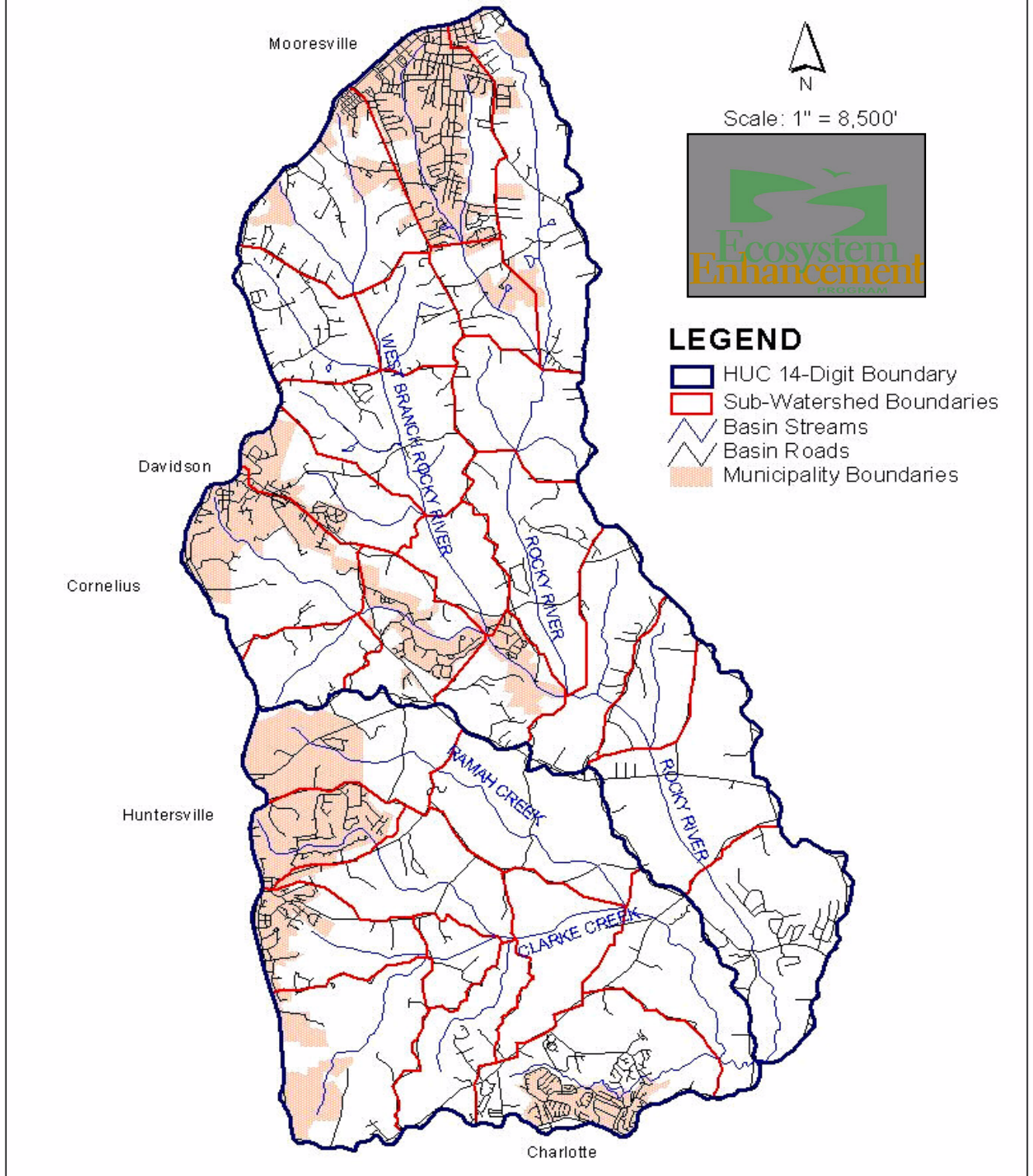


Figure ES-1. Delineated Subwatersheds in the LWP Study Area