

Upper Rocky River/Clarke Creek Local Watershed Planning Group

**Watershed Field
Trip: Thursday,
April 15
Meet at Cabarrus
County Cooperative
Extension Center at
12:45. Trip is from
1:00-4:00 p.m.**

We will visit sites in the watershed that are representative of a range of conditions- degraded to high quality. A good opportunity to get out and see first hand what we have been working on protecting and restoring!

Please RSVP to Christy by April 5 if you plan on joining us:
Christy_perrin@ncsu.edu
919-515-4542

Overview of Field Assessment Richard Darling, MACTEC

MACTEC has completed the Preliminary Findings and Recommendations Report for the watershed (called Task 1 of their watershed assessment). Dennis Testerman has a copy of this report if anyone would like to see it- it is also posted on the web at:

http://www.ces.ncsu.edu/depts/agecon/WECO/rocky_river/presentations.html

All presentations from meetings are located online as well.

This report characterizes water quality and habitat issues, based on physiography, geology, soils, land use, development patterns, types of agriculture, natural resources, and hydrography. Maps included delineated the subwatersheds with hydrography and major roads. The purpose of this report was to help determine existing site conditions, potential causes of degradation or lost functions, and potential constraints and opportunities for restoration.

The next major task MACTEC is working on, Task 2 of the assessment, includes a Detailed Assessment of Representative Subwatersheds and Preliminary Identification of Watershed Improvement Projects.

Richard reminded the group that 20 subwatersheds had been selected as a representative cross-section of the entire watershed area (approximately one for every 10 square miles), then divided into three groups. The groups include those subwatersheds with low, moderate, and high potential impacts to watershed health

This summary includes:

- Overview of field assessment
- Overview of proposed modeling methodology for assessment
- Results of watershed functions value exercise

WECO is: Christy Perrin
Patrick Beggs
Kim McClain

Visit our website at:
www.ces.ncsu.edu/WECO



(See Jay Lawson's Sept. 23 presentation for more information on how the subwatersheds were prioritized).

Task 2, Detailed Assessment of Representative Subwatersheds and Preliminary Identification of Watershed Improvement Projects includes:

2.1 Riparian Inventory and Reconnaissance

Up to five detailed stream study sites in each of the 20 high-priority sub-watersheds were assessed.

2.1.1 Office Inventory

Aerial photography was the primary data source used to help identify specific areas for visual assessment (2002 photographs). Additional information used in selecting sites included:

- NPDES dischargers
- NCDOT Transportation Improvement Projects
- Utility/infrastructure location
- Parcel disposition
- Hydric soils
- National Wetlands Inventory wetlands coverage
- Stakeholder input

In general, MACTEC selected sites based upon evidence of potential impacts to hydrology, water quality, and/or habitat functions or indications of potential preservation opportunities.

2.1.2 Stream visual assessment

A modified Stream Visual Assessment Protocol (SVAP) based on that used by USDA was used. The procedure includes an overall reach description as well as characterization/scoring of various assessment elements:

- Channel condition
- Hydrologic alteration
- Riparian zone
- Bank stability
- Nutrient enrichment
- Instream habitat
- Canopy cover
- Manure presence
- Riffle embeddedness
- Macroinvertebrates

As much as 750 linear feet of stream/riparian segment per study site was assessed. Stream rating was determined by adding values for each assessed element and dividing by the number of elements assessed. For example, if the assessment scores added up to 75, and 10 elements were assessed, the rating=7.5

The stream rating provides a general description of the environmental condition of the stream reach and is characterized as follows:

- =6.0=Poor;
- 6.1–7.4=Fair;
- 7.5–8.9=Good;
- =9.0=Excellent.

Poor/Fair indicative of potential restoration opps.
Good/Excellent indicative of preservation opps

Photos of representative stream locations were taken- some of these are included in the online presentation.

2.1.3 Assessments of General Causes and Effects of Degradation

MACTEC will develop statements about the perceived nature, causes, and effects of water quality degradation, aquatic habitat loss, and other areas of functional loss in the watershed. Focus will be on factors currently causing water quality degradation and also on stream instability and habitat degradation. This will include correlating available GIS data and general basin land use data with the observed conditions to ascertain the apparent relative impacts of both point and non-point sources of pollution.

2.2 Detailed Analyses of Prioritized Subwatersheds

MACTEC will coordinate with EEP and other stakeholders on the findings and conclusions from 2.1 to determine where more detailed analyses for each sub-watershed are needed to better understand changing basin conditions and their impacts. This may include:

- Water quantity modeling
- Stormwater system outfall review
- Collecting stream geomorphology data

HEC-HMS will be used as the hydrologic model.

2.3 Identify Restoration and Management Opportunities

MACTEC will rank priority opportunities identified within each of the four local watersheds as well as complete a review of restoration opportunities found in a broad area surrounding the study area (the Cataloguing Unit)

Proposed Modeling methodology, David Wallace, MACTEC

David provided some more information about the proposed modeling that will occur. His complete presentation is online.

Why model the waterflow in selected sub-watersheds?

- Assess/Quantify Flood Storage
- Basin Retention Capabilities

- Quantifies Benefits of Basin Management
- Wetlands Drainage
- Determine Attributes of Instituted BMPs
- Assess Impact of Impervious Areas
- Evaluate Impact of Land Use Changes

Some issues related to modeling subwatersheds include:

- Balance of Cost vs. Benefits
- Availability of Data
- Quality of Data
- Uncertainty due to Data Gaps
- Relevance of Physical Relationships
- Calibration of Model Results (Low and High Flows)
- Validity and Appropriateness

The link for the website for the HEC-HMS model is: www.hec.usace.army.mil/default.html

Questions from the group:

Q: Will you walk entire stream corridors?

A: No, we won't walk the entire corridors, but we are using GIS to narrow the areas down and we will be walking those areas.

Q: Have you looked at historical maps?

A: Yes, we looked at readily available maps. Aerials from 1938-the 1950's were compared with more current photos, and used to help rank subwatersheds.

Q: What are the major priorities used for screening streams for restoration?

Must be 1,000-1,500 ft. minimum reaches, with both sides. MACTEC is screening smaller reaches that may be representative of larger reaches. They are also seeking preservation opportunities.

Discussion about Watershed Plan implementation

Q: How can we follow up on actions based on our recommendations from the Phase 1 watershed plan?

A: We will also be bringing back a summary of Phase 1 recommendations for the group's final review.

Q: Who manages the implementation process for our watershed plan?

A: If the recommended project/action is eligible for EEP money (i.e. it will provide mitigation credit) then the EEP lead planner (Hal) recommends it to the operations staff, Jim Stanfill, for him to investigate.

They assign a designer, then design contract, then the construction management. For info. on specific projects, email Hal at hal.bryson@ncmail.net. Dennis Testerman is also helping implement some projects.

Q: How much input from local jurisdictions goes into project design?

A: It could be a lot. We would like continued involvement from stakeholders.

Q: Who maintains the projects?

A: EEP must maintain their projects for 5 years.

February Meeting Participants

William Allison, Iredell Planning
 Don Boekelheide, Meck. SWCD
 Jim, Borawa, NCWRC
 Hal Bryson, NC EEP
 Joni Cardin, Concord Engineering Dept.
 Richard Darling, MACTEC
 Bob Dowless, Concord Parks & Rec.
 Kassie Goodson, Cabarrus County Planning
 Dave Grant, DLC, Davidson College
 Scott Herman, Cabarrus SWCD Board
 Lindsey Hobbs, Town of Davidson
 Matthew Kinane, NRCS (Cabarrus-Meck)
 Mark Kincaid, Concord Parks & Rec.
 Roger Lentz, Cabarrus County
 Steve Little, Cabarrus Parks & Rec.
 Judy Melville, NRCS Earth Team
 Darrin Peine, Charlotte Stormwater Svcs.
 Randy Plummer
 Dennis Testerman, Cabarrus SWCD
 J. David Wallace, MACTEC
 Michael Wolfe, WaterOak, Inc.

Valuing the Watershed's Functions

The group discussed the watershed functions that were listed by the group at the Sept. 2003 meeting. In September the group was asked which functions (or services) were important for the watershed to provide. The functions were grouped in the following categories (see Sept. meeting summary for complete list):

- Water quality (supporting current uses and improving impaired waters)
- Wildlife habitat
- Wastewater treatment
- Recreation
- Education
- Supply Drinking Water
- Support for human needs
- Stormwater conveyance and containment
- Preservation of historical uses (cultural/agricultural)

The project team asked the group to rate the functions as to how much you value them. The purpose of this exercise is two-fold:

1. To get a better idea of the group's "vision" for the watershed by learning what is most important to them
2. To provide MACTEC with a tool to help them make choices about where to focus resources for their more in-depth assessment work. If limited resources dictate that only certain subwatersheds can be studied, then knowing which functions are valued most will help them to focus their efforts accordingly. They may be able to incorporate prioritized functions into their modeling effort. Also, it may help them to prioritize sites for restoration.

The group discussed the categories of functions, eliminated some headings that may not necessarily be measured as functions. *Wastewater Treatment* was changed to include fecal coliform control under water quality. *Support for Human Needs* included management objectives that could be addressed later in the planning process as land use recommendations. This heading also included aesthetics. "Spiritual appreciation of waters" (baptisms, meditation, etc.) was mentioned after the meeting as a function to be added under the "Recreation" heading.

The final list to be prioritized included:

- Water Quality(supporting current uses and improving impaired water)
- Wildlife Habitat
- Recreation
- Education
- Supply Drinking Water
- Stormwater Conveyance and containment/flood control
- Preservation of historical uses (cultural/agricultural)

Participants discussed the difficulty of rating one function over another, since most are inter-related, and some functions are actual functions carried out by the ecosystem, while others are services that humans want to use. Wildlife habitat is also not bounded by watershed boundaries, while the other functions are related to drainage areas. Drinking water was thought by some to be covered by the water quality grouping.

The project team realizes that this was a difficult exercise, and will inform and seek feedback from the group regarding how the results will be used in the watershed planning process. The results are shown in the graph below.

