

Fall 2004

Cathey's Creek Newsletter

Watershed Education for Communities and Local Officials
Campus Box 5129
Raleigh, NC 27695

Next Cathey's Creek Meeting: February 17, 2005 9:30 a.m.- 12:30 p.m.

We will NOT meet in January as discussed at our last meeting. Based on feedback from the group, the project team has decided to move the next meeting date to Feb. 17 to allow us time to provide a report for the group's review before their next meeting.

The Cathey's Creek Watershed Advisory Committee met on Oct. 26 to hear results from the watershed assessment conducted by NC Division of Water Quality and Earth Tech. They were also provided an opportunity to provide feedback on specific project opportunity areas.

All presentations are posted on our project website, and can be viewed via Adobe Ac-

robat (available for free from Adobe.com). There is also an anonymous comment form available on the project website.

www.ces.ncsu.edu/WECO/catheys

This newsletter contains summaries of the draft watershed assessment results presented to the committee. After reviewing the newsletter, please start thinking about suggestions you may have for particular strategies or recommendations for addressing problems identified in the watershed assessment. We will begin discussing these in February.

Happy holidays to all!



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The next Watershed Advisory Committee Meeting will be held

Thursday, February 17
9:30 a.m.- 12:30 p.m.

At the Rutherford County
Coop. Ext. Center in Spindale

PLEASE NOTE THE CHANGE IN DATE!

Objectives:

- ⇒ Overview of final watershed assessment
- ⇒ Discussion about potential draft recommendations for the watershed plan
- ⇒ Begin discussion about next steps

Watershed Assessment Results

Jane Almon, Earth Tech, presented results from the detailed watershed assessment. This article summarizes Jane's presentation.

Jane first presented an overview of the 3 part watershed assessment process:

1. Initial Characterization: This GIS based check-up of the watershed is located on the project website
2. Detailed assessment: This includes the results of the field work and monitoring, and was the focus of the presentation
3. Specific Solutions: This section will include recommendations for pro-

tecting and restoring the watershed.

The Assessment Objectives included:

- ⇒ *Update GIS land cover and buffer data*
- ⇒ *Assess sedimentation*
- ⇒ *Assess Habitat degradation*
- ⇒ *Assess urban runoff*
- ⇒ Evaluate Wastewater treatment plan effects on water quality
- ⇒ Assess mercury in sediments
- ⇒ *Identify critical areas for stream stabilization and restoration*

Jane reported results for the italicized objectives, while Andrea Leslie reported on

Watershed Assessment, Continued...

the others.

The field based analysis involved looking at 4-5 points in each of the 14 sub-watersheds, investigating 54,000 ft. of perennial stream, and various land uses.

When investigating a particular site, Earth Tech measured indicators of various stream functions. Indicators were used to develop scores for degree of sedimentation, erosion, habitat degradation, and urban runoff. The scoring for *erosion* is illustrated here. The following indicators were measured and provided with numerical scores:

- Bank erosion potential
- Near-bank stress
- Channel modification
- Bank stability and vegetation
- Buffer type
- Riparian vegetation width
- Adjacent landscape
- Impervious cover class (such as roads, rooftops, driveways)

A number of other indicators were evaluated to calculate scores for *habitat degradation* and *urban runoff* as well.

Results

GIS Update Results (from 1992-1998)

⇒ A decrease in forest cover was found in subwatersheds: 01,02,09,11,13,14 (see diagram 1).



Sedimentation Results

⇒ High degree of embeddedness, pool filling, and deposition found

Erosion Results

- ⇒ Bank erosion rather than upland erosion causing problems
- ⇒ Channels are not in equilibrium

Habitat Results

⇒ Sedimentation, low diversity, inadequate shade and woody debris

Urban Runoff Results

- ⇒ Urban sub-watersheds (09 and 13) had worst sediment and erosion scores
- ⇒ Urban sub-watersheds have highest percentage of impervious cover

Overall Results- Field Scores Assigned for Sub-watersheds

The indicator scores for each subwatershed were totaled, to result in an overall field score for each. The scores were grouped into 4 categories:

- ⇒ **A**= least developed, most forested cover
- ⇒ **B**=agricultural, moderate erosion and sedimentation
- ⇒ **C**=semi-rural and urban, worst erosion scores, high impervious cover
- ⇒ **D**=mixed, worst sedimentation and habitat, high impervious cover

An initial scoring of the watersheds, not including Division of Water Quality data yet, of how they scored after the field assessment was shown to the group. These scores are not listed in this newsletter, since the project team is now incorporating the DWQ data, which may potentially change the scores.

The needs for restoring/protecting the watershed will include:

Group A:

- ⇒ minimize effect of changing land use on stream bank stability

Groups B&C:

- ⇒ Reduce erosion and sedimentation
- ⇒ Reduce fecal coliform contamination

Watershed Assessment Results, continued.

Group D:

- ⇒ Reduce urban runoff and associated pollutant loading and erosive processes

Specific strategies for the subwatersheds will be developed over the next few months based on the scoring results.

Questions for Jane:

Q: *Bryant's Creek flows into Cathey's Creek in Gilbertown- is there a rating for that creek? (Rock Rd.) It may have been impacted by tanning factory.*

Response: That was near one of the sites assessed. Habitat scores were low- sediment is detrimental to fish and other creatures who live in the streams. Habitat scores showed sedimentation, low biodiversity, inadequate shade and woody debris

Q: *Why did subwatershed 11 score low, when it is not urban?*

R: It included a large portion of Cathey's Creek. It could be a result of sampling methodology- the creek was poor where we sampled. It had problems relative to its condition- it is not urban but it has been manipulated.

Biological and Chemical Monitoring Results

Andrea Leslie, an EEP planner formerly with the Division of Water Quality, provided an overview of the results found from chemical and fish monitoring in the watershed.

The monitoring plan objectives were to investigate the following:

- ⇒ Fish communities:
 - Have fish communities recovered since 2000 in lower Cathey's Creek?
- ⇒ Water chemistry monitoring
 - Evaluate Wastewater treatment plan effects on water quality.
 - Is there a difference above and below Holland's Creek?
 - Assess what pollutants are delivered by storms
 - Assess mercury in sediments

Fish monitoring Results

Cathey's Creek

- ⇒ Fish community in lower Catheys Creek did recover slightly from Poor in 2000 to Fair in 2004. Rated Fair due to low species diversity, absence of suckers, darters, sunfish, and bass, and an unstable community. These reflect habitat and water quality degradation
- ⇒ Upper Cathey's creek was rated Good/Fair

Hollands Creek

- ⇒ Fish community rated Good-Fair at a site with good habitat, characterized by rocky substrate, stable banks, and wooded riparian buffer. Rated only Fair

at a site with poor habitat, characterized by no wooded riparian buffer, high eroding banks, and no pools, bends or riffles of quality.

Water Chemistry Monitoring Results

Urban pollutants in stormflows:

- ⇒ Suspended sediments were higher in urban streams
- ⇒ Sediments carry many pollutants
- ⇒ Metals such as aluminum, iron, and manganese were found at high levels, but these metals are found naturally in local rock and are bound to sediments
- ⇒ Trace metals (copper, lead, zinc) were highest in Hdlands and Reynolds creeks. These are often found in urban stream and are associated with runoff from roofs, pipes, parking lots, etc.
- ⇒ High fecal coliform bacteria counts (greater than state standard of 200 geometric mean) found at all sites at base flows, with counts 10 times as high found during storms
- ⇒ Fecal coliform bacteria are associated with human and animal waste

Upstream and Downstream Comparisons:

- ⇒ Pollutants were higher downstream during stormflows
 - ⇒ Pollutants in baseflows generally low except for fecal coliform bacteria and nutrients
- *note-Baseflow refers to the streamflow that is derived from groundwater flow

Why is conductivity consistently higher in Case Branch?

- ⇒ Seepage from landfill and dumped materials enters baseflows in Case Branch

Sediment Metals

Metals in sediment were analyzed to investigate whether

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We're on the web!
www.ces.ncsu.edu/WECO/catheys



Participants of the September Meeting included:

Boyce Abernathy
Jane Almon, Earth Tech
Patrick Beggs, WECO
Walt Bumgarner, Rutherford Co. CES
Roger Edwards, NCDWQ
Lynne Faltraco, CCRC
Nancy Ellen Fergusson, County historian
Steve Foster, Earth Tech
Brandon Higgins, Rutherford-Stokesdale Central High
Andrea Leslie, NCEEP
Chuck Nance, IPDC
Kathy Nance
James Padgett, NC Natural Heritage Program
Christy Perrin, WECO
Keith Price, Rutherford Co. Extension Advisory Bd
Travis A. Ringo, Rutherford Co. SWCD/ NCCWMTF
Jerry Stensland, Rutherford Outdoor Coalition
Mary Stone, NCDWQ

residual mercury and arsenic contamination exists from past gold mining. Five sites on small tributaries that drained old mining practices were sampled.

⇒ Highest levels at downstream Cathey's Creek site– nearing higher national screening levels

Mercury levels found compared to national screening levels:

Cathey's Creek	Conservative screening levels	Non-conserv. Levels
0.41 mg/kg	0.13– 0.2	0.49-2.0

⇒ In gold mine areas, higher levels of various trace metals were found, including cadmium, chromium, copper, nickel, lead and zinc.
⇒ Fish Tissue analysis is needed to determine food web impacts.

Monitoring Summary Notes

⇒ Urban streams deliver high sediment and occasionally high metal levels during storms
⇒ Fecal coliform bacteria is high throughout the watershed
⇒ Mercury is present at notable levels in lower Catheys Creek sediments
⇒ Urban streams suffer from a multitude of impacts, from poor habitat to dumps
⇒ In urban areas, fish community responds to better habitat– less embedded riffles, larger rocks, woody debris (all good things)
⇒ Lower Catheys Creek suffers from both water and habitat quality problems
⇒ Impacts from Spindale's urban drainage (Holland's Creek) could not be separated from those of the wastewater treatment plant with this data

Discussion:

Question: In the Second Broad watershed there were more gold mine– would there likely be more of an impact there?

Response: Yes, that is likely.

Q: *Do you correlate your information with the groundwater sampling data that has been collected in the past?*

R: We looked at old files, but very little sampling of groundwater has been conducted by NCDENR.

Q: *How do you account for the fecal coliform?*

R: Sources can include cattle accessing the stream in rural areas, leaky septic tanks.

A participant suggested inviting landowners who may have potential projects opportunities to a meeting.

It was also mentioned that the group needed to think about how they were going to move beyond the planning stage to implementation when the planning stage ends in spring 2005.

Map Exercise

A map of the watershed with potential restoration projects was provided for participants to look at. They were asked if they had any feedback regarding the potential sites– did they know any of the landowners or did they know of any reasons why sites may not work?

Due to the short time period allowed for the exercise during the meeting, there was no feedback received.