

**Esopus Creek Stream Management Planning Process  
Watershed Assessment Working Group Meeting  
Shandaken Town Hall  
Monday, July 11, 2005  
Meeting Report**

Meeting participants and contact information

Name	Affiliation/background	Phone	e-mail
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Ted Wohnsiedler	Ulster County Community College Professor Emeritus; an aquatic biologist with 30 years experience working in Esopus watershed	315-536-9194	<a href="mailto:wohnsiet@sunvulster.edu">wohnsiet@sunvulster.edu</a>
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Gary Capella	Ulster County Soil and Water Conservation District – Executive Director; Produced Broadstreet Hollow stream management plan and managed construction of Esopus Creek restoration demonstration project	845-883-7162	<a href="mailto:Gary-capella@nacdnet.gov">Gary-capella@nacdnet.gov</a>
Quentin Gahan	USDA-NRCS – field engineer; Worked on surveying and CAD-based mapping of Esopus Creek restoration demonstration project; Esopus Creek watershed resident	845-883-7162	<a href="mailto:Quentin.gahan@ny.usda.gov">Quentin.gahan@ny.usda.gov</a>
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Jack Isaacs	NYSDEC – Region 3 Habitat Protection Manager Over 25 years of experience with stream disturbance permitting activities in Esopus Creek watershed	845-256-3087	<a href="mailto:jmisaacs@gw.dec.state.ny.us">jmisaacs@gw.dec.state.ny.us</a>
Mike Flaherty	NYSDEC – Region 3 Senior Aquatic Biologist	845-256-3069	<a href="mailto:mflaher@gw.dec.state.ny.us">mflaher@gw.dec.state.ny.us</a>
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Craig Fischenich	US Army Engineer Research Development Center - Environmental Laboratory – Research Civil Engineer; Design engineer for Esopus Creek restoration demonstration project and will lead geomorphic assessment for Esopus Creek	601-634-3449	<a href="mailto:fischec@wes.army.mil">fischec@wes.army.mil</a>
Mike Malloy	Town of Shandaken Zoning Enforcement Officer and Floodplain Administrator; Esopus Creek watershed resident	845-688-5008	<a href="mailto:zoning@shandaken.us">zoning@shandaken.us</a>

The following people were not able to make the meeting:

Dr. Sam Adams – Director of Olive Natural Heritage Society

Barry Baldigo – USGS Fisheries Biologist

Konrad Ryushin – Zen Environmental Studies Institute – Mt Tremper, NY

Carl Schwartz – US Fish and Wildlife Service

Alan White – The Nature Conservancy

The meeting scheduled to start at 1:00 PM got off to a delayed start due to unavoidable delays in some participants' arrivals. The proposed agenda (see attached) was modified to discuss habitat assessment first and then geomorphic assessment. This documentation of the meeting is a summary of the information and issues raised during discussion and the conclusions reached by the end of the meeting. The summary is also presented in order of the original agenda topics (not the somewhat less linear discussion that actually occurred).

### **Overview**

Dan Davis (DD) gave some background on purpose of meeting and stream management planning for Esopus Creek:

As part of the Filtration Avoidance Determination (FAD) deliverables EPA requires DEP to develop a stream management plan (SMP) for several priority watersheds in the NYC West-of-Hudson water supply watershed. The draft SMP for Esopus Creek is due to EPA on 12/30/06. DEP has three contracts in place to meet this deliverable:

1. DEP-Cornell Cooperative Extension-Ulster County (CCE) – CCE will be responsible for coordinating the process and products of the SMP for Esopus Creek. Jeremy Magliaro is the CCE Project Coordinator.
2. DEP-US Army Engineer Research Development Center – Environmental Laboratory (ERDC-EL) – Under the guidance of Dr. Craig Fischenich, ERDC-EL professional staff and DEP staff will develop a watershed and stream geomorphic assessment protocol to inform management recommendations for Esopus Creek.
3. DEP-Ulster County Soil and Water Conservation District (UCSWCD) – UCSWCD was responsible for permitting, construction management, monitoring and maintenance of the Esopus Creek Restoration Demonstration Project implemented on Esopus Creek at the Woodland valley confluence. The project was constructed in 2003.

DEP also intends to negotiate an additional contract with UCSWCD to implement recommendations for riparian corridor management activities.

The goals of this meeting were to (1) outline a strategy devised for a watershed and stream geomorphic assessment to inform development of a stream management plan; and (2) identify needs and possible approaches for an aquatic habitat and riparian corridor assessment.

### **Phased Watershed and Stream Geomorphic Assessment**

DEP and ERDC-EL have proposed a multi-phased approach to the watershed and stream geomorphic assessment to address the general management questions identified by the Project Advisory Council (PAC): What and where are the sources and potential controls on suspended sediment in Esopus Creek? Where does excessive stream bank erosion occur and what are appropriate measures to address it? How do we deal with the large woody debris after flood events?

In the past SMP efforts, data collection was extensive and involved detailed surveys and geomorphic classification of the entire mainstem of the stream. Significant labor and time was involved and given the size of the Esopus Creek the team decided to do a first cut watershed scale assessment (Phase 1) using an existing protocol from Vermont's River Management Program. Dan Davis provided participants with a copy of the Phase 1 watershed assessment report (without appendices). The Phase 1 assessment delineated the stream into 23 reaches from the headwaters at Winnisook to the Ashokan Reservoir. The report documents the creek corridor geology, geomorphology, and past management actions using available data from GIS coverages, aerial photography, existing studies and limited field observations. The basic findings are (prior to April, 2005 flooding) that Esopus Creek is in generally good shape, with a few chronic instability locations. Glacial geology (in particular lake deposits and glacial till) significantly influences channel stability and water quality. The April flooding amply demonstrated the sensitivity of the stream stability and water quality to these deposits.

Craig Fischenich explained that an additional component of a watershed scale assessment will be the development of a sediment budget, focusing on fine grained sediments. The Shandaken tunnel clearly delivers a tremendous amount of sediment; however, fine sediment is distributed throughout the watershed sourced from the glacial lake and glacial till deposits. How much of this stuff is out there and can we do anything about it? Craig noted that you can go out on any of the streams in the Esopus watershed and kick up lots of fine sediment that causes turbidity, so after flooding the stream bed is also a source of turbidity in the stream. It may be that there is very little that can be done to address this problem on a system wide basis. The study will be important to determine the system versus site specific conditions. All seemed to agree to the importance of this study.

Phase 2 will be directed by ERDC-EL and will essentially be a reach level rapid reconnaissance to identify existing conditions and features that would inform management decisions. And not just management concerns of DEP (principally water quality) but also stream bank erosion, flooding, and threats to infrastructure such as bridges and roads. This phase will involve a walkover of the mainstem collecting data on clay exposures, active stream bank erosion, areas where riparian corridors are limited or not of high quality, invasive plant species, point source discharges, berms, and functioning and failing revetment. The team will also note whether a particular bank stabilization project will fail. [Peter White commented that that they will all fail – it is the timeline of failure that is most interesting, since this could influence what gets installed for future EWP projects.] If potential management options (there will be a list of twelve or so) can be identified in the field they will be noted and recorded as part of the Phase 2 recon. The walkover will also identify areas to come back to for more detailed surveying (Phase 3) or to establish permanent monumented cross sections to monitor the stream over a long period of time.

Craig also posited the hypothesis that, in the Esopus Creek, the undisturbed glacial lake silts/clays may act as a form of grade control (limiting stream down-cutting) rather than the current assumption that once the stream erodes into the silt/clay deposits it rapidly incises and further induces bank erosion since the stream can no longer flood to reduce its

erosive energy. He will be collecting some of these deposits to take back to the lab to run shear stress tests to determine their erosion resistance.

Phase 3 will be site specific surveys to collect sufficient information for baseline condition determination and to provide design level input into addressing priority problems along the stream.

Questions/Comments associated with this discussion:

Peter White emphasized the importance of the sediment budget study but also emphasized the importance of including the tributaries to the Esopus. Craig, agreed and sediment samples will be collected from the tribs. The ERDC-EL study will characterize known point sources and the systemic source available in the stream bed, and will attempt to address how these have changed over time. Essentially the sediment budget will be a simple mass balance model to estimate how the system may react and respond to certain magnitude events. What time frame being addressed is also important as far as what sediment transport might happen in x,y,z years. This will not be a predictive model that will say for a given event a specific point source on a given reach will yield x amount of fine sediment. However, the assessment should illuminate the general sources of sediments, their modes of transport and deposition, and the relevance of these processes to management decisions in the Esopus system. Through a contract with Upstate Freshwater Institute DEP, has information on sediment coming through the Shandaken Tunnel, as well as point samples at various locations in the watershed. There is also information on the amount of sediment deposited in the Ashokan reservoir since construction. These and other sources of information will be used to augment data collected by the ERDC team.

Jack Isaacs asked is it reasonable to expect a level of assessment that will assist DEC in how they review and/or approve stream disturbance permits? Most of the permitting is for bank stabilization and a large component of the permitting requirements is protecting water quality while stabilization is going on – will this research show that it is or is not a worthwhile endeavor? Craig, noted that we will be collecting information to evaluate the potential effectiveness (or lack thereof) of BMPs on reducing suspended sediment loading (which causes turbidity).

Beth Reichheld asked if local hydraulic geometry relationships (an important management tool for people doing stream restoration projects) will be developed. Dan responded that possibly that information could be collected through monitoring cross-sections. Craig stated that the existing regional relationships are probably adequate. Beth also asked whether the study would delineate flood erosion hazard areas. Dan and Craig stated that the information in the Phase 1 report, the Phase 2 mapping, and the channel migration study that a SUNY Binghamton graduate student is doing should provide the means to delineate the hazard areas. This will be important contribution to the Hazard Mitigation Plan that is being developed for Shandaken through this process.

Peter White informed us that NRCS has a small watershed program which basically stalled for regular people because no money available to do watershed studies for a

watershed plan, or any construction money to implement plans. But he understands that some people are getting that money for watershed plan and construction through congressional earmarks. If the Esopus plan meets NRCS criteria for watershed assessment, then if a local person “finds a friend”, that the possibility exists to have \$\$ to assist with planning and implementation.

### **Aquatic Habitat and Riparian Corridor Assessment**

This was the first topic discussed in length and turned out to be the most controversial with respect to what should be done within the context of the stream management planning process. Dan Davis started by explaining that we have done varying levels of aquatic habitat assessment with our past SMP efforts – ranging from a complicated MesoHabSim analysis with a professor from Cornell University to a simple recounting of known information. He emphasized that we are looking to do only what is necessary to help identify the condition of the aquatic habitat and to make sure that we don't miss the opportunity to collect information while we are in the field phase of this work.

Jack Isaacs questioned the need for a habitat assessment and its potential use. He asked if this was going to be a fisheries management plan and emphasized DEC's objections to such. DEC manages the fisheries and DEP manages water quality. Mike Flaherty also felt that this was not the appropriate action for the stream management planning. He noted that if DEC was going to be involved in this the emphasis would be on the Shandaken Tunnel and its significant impact given that it alters the hydrology of downstream reaches, delivers much of the fine sediment and alters the temperature regime of the water. The fishery has been and is driven by the portal release. The DEC would restate its long held position that DEP needs to modify its release operations. There is a big difference in fisheries resource above and below the portal. A fish management document may be a damning document on the operation of the tunnel. Dan Davis responded by saying we are not trying to develop a fisheries management plan nor trying to influence current DEC management. But instead trying to understand the ecosystem so that the stream management plan documentation could be a source of information for those who have questions. Concurrent with all of this is the ongoing SPDES permit process and how it will ultimately affect releases from the tunnel. The DEC representatives stated that if the document contained an educational component, description of the fishery, and explanation of the releases that may be sufficient.

Ted Wohnsiedler stated that it is important to provide a biotic profile of Esopus Creek, assessing the impacts of siltation from the tunnel and within the watershed on the biota. He referred to his work and that of Bode and Novak (2001) and how that should be used to tell the story. Craig would be interested in knowing any information on periphyton and macroinvertebrate communities particularly in respect to responses to fine sediments. He has observed differences in community structure at various locations in the system, and feels that this issue provides important insight into the potential benefits of some management actions. Dr. Ted Wohnsiedler has 30 years of experience and many years of data collection with UCCC students and can potentially assist with this effort. [Later,

during the geomorphic assessment discussion he talked about a presentation that he could possibly give that summarizes the known information.]

Rocci Agguire stated that we should try to find balance between education and obtaining information that could inform a future fisheries management plan. He felt that there should be educational outreach and documentation that can be useful beyond the Esopus Creek effort.

Craig responded to the point made earlier about the portal as the primary control on the aquatic ecosystem that there are controls upstream of the portal as well, such as watershed-sourced fine sediment, past stream management activities and it would be worth understanding those. If there are certain limiting factors affecting the aquatic ecosystem it is important to know this and that might affect decision making in the future. However, he agreed and emphasized that fundamentally it comes down to what is the information going to be used for and that any data collection or analysis of existing data should be directed by the answer to that question.

There was consensus on at least pulling together available information on the aquatic ecosystem and telling that story as part of the process. Some felt that in doing so, we may identify gaps in information that could be gathered at a later date. In the DEP-CCE contract there is funding available to hire someone to perform this task. [Following the meeting DEP and CCE discussed the potential to follow-up on this.] The ERDC team will also note any ecological issues they feel to be significant while conducting their Phase 2 recon, and will vet these issues with this working group to determine their relevance to the corridor plan.

Unfortunately, the topic of riparian corridor assessment did not get to share the limelight with aquatic habitat. DEP will propose that an effort similar to what we have done in other basins be employed here with the use of an Americorp intern. This involves using remote-sensed data (digital orthophotos and other GIS data) to identify the community structure and riparian integrity. The Phase 1 assessment and the ERDC team have identified areas where the width of the riparian corridor is limited, and will assess these sites for restoration potential during their Phase 2 effort. The Phase 2 recon will also help characterize the distribution of exotic invasive plants such as Japanese knotweed that appear to have a negative impact on stream channel stability and riparian habitat. A proposed scope for this assessment will be developed and shared with this group via e-mail. The goal is to identify whether there is a need or a viable means to address riparian corridor issues.

### **Conclusions and Recommendations**

Dan Davis stated that what he will report to the PAC is that the proposal for the geomorphic assessment has the support of this working group and that with respect to aquatic ecosystem assessment we will focus on identifying and documenting the available existing information and gaps that could warrant further study. The emphasis

will be on education not on management. Craig suggested that we get back together after the Phase 2 recon and talk about the findings.

Post meeting editorial note from Dan Davis:

It was clear through the course of the meeting discussions that the term stream management plan has significant implications – that there will be management of all aspects of the stream (physical and biologic). This led to the confusion that we were going to develop a fisheries management plan. It also leads to the expectation that this “plan” will “fix” the stream. There is not enough money and it is most likely not wise to try to “fix” the stream. It is important to emphasize that there will be several products through this planning process. All the products do not have to be management oriented. The Hazard Mitigation Plan will be both a proactive and reactive management plan. There will also be a document that details the stream’s current geomorphic condition and identifies and prioritizes areas of concern that need to be addressed to protect water quality, property and infrastructure. There will potentially be several education and outreach documents/tools that will engage and inform the public on living streamside, the condition and functioning of the aquatic and riparian ecosystem, the importance of the stream to the community in the watershed and the larger community that drinks the water that flows through this valley.