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## II. Introduction and Objectives

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The Batavia Kill has been a focus of concern for successive generations of water resource managers. In response to devastating floods in both the 50's and 60's, the towns of Windham and Ashland worked with the U.S.D.A. Soil Conservation Service (now the Natural Resources Conservation Service, NRCS) and Greene County Soil & Water Conservation District (GCSWCD) to construct a series of flood control structures. Efforts also included reforestation, seeding, and crop rotations, with the overall goal of reducing flooding, excess sedimentation of fish habitat and stream bank erosion.



In the mid-1990's, the Batavia Kill became the focus of a coordinated effort to evaluate stream system instability and its contribution to suspended sediment in the waters of the Batavia Kill. The Batavia Kill is a tributary to the Schoharie Creek and Reservoir, and as such, it contributes to the New York City drinking water supply. In 1996, a pilot project between the NYCDEP's Stream Management Program and the GCSWCD was initiated to develop a comprehensive plan for managing and improving the overall health of the Batavia Kill, to evaluate the stream's erosion rates and flooding behavior, and to demonstrate the use of *Natural Channel Design* methods as a tool for stabilizing streams in the Catskills in a manner that achieves improved fisheries and water quality at the same time as protecting property and infrastructure.

### **Batavia Kill Stream Management Plan**

*This Management Plan represents a coordinated effort between the numerous "stakeholders" in the Batavia Kill watershed – those who have a direct interest in the how the stream functions – to define a comprehensive, integrated management strategy that addresses those diverse interests and functions.*

For example, landowners who live along the stream have concerns about the protection of their property from both erosion and flooding; local, county and state highway department officials are responsible for protecting roads from stream erosion. Both the anglers who fish the stream regularly and the NYS Department of Environmental Conservation (NYSDEC) – the state agency responsible for improving public access for fishing and for overseeing in-stream work that can impact fisheries – have a stake in

coordinated management as well, and their interests are critical to the local recreation industry and economic health of the three Batavia Kill watershed towns: Windham, Ashland and Prattsville. Stakeholders also include those who rely on the Batavia Kill for water supply for snow-making, irrigation, or drinking water supply – both locally or those in NYC. State and Federal agencies have responsibilities to oversee and protect the varied natural resources of the watershed, and they too must be embraced as active and effective partners with an interest in the management of the stream.

The GCSWCD has chosen an approach to stream management that enables all of these interests to be addressed together. While the primary interests of the various stakeholders may appear at first to be in conflict, this is not necessarily the case if we take an approach that recognizes that rates of erosion, flood behavior, fisheries vitality and water quality all depend on the physical characteristics of the Batavia Kill. The Batavia Kill has a natural set of physical characteristics (such as width, depth, slope and vegetated banks) that, if maintained, will enable all of our different goals to be achieved.

The assessments conducted by GCSWCD have shown where the Batavia Kill is in a degraded condition, and where its stability is currently threatened and as a result where problems exist or will soon exist for some of the many stakeholders. It is the purpose of this Plan to identify the stakeholders linked to the Batavia Kill stream system, identify their concerns and interests, and with this information, tailor a practical management strategy that addresses their interests and the stream's health.

Many of the recommendations set forth in this plan are based on detailed assessments of the stream system conducted by the GCSWCD between 1997 and 2001. The GCSWCD has been able to identify the most important contributing factors to accelerated rates of erosion in the stream corridor and has developed a set of recommendations to address those factors.

This Plan offers practical guidance for the future management of the stream by:

- 1). Identifying reaches of the Batavia Kill that currently have unstable channel morphology (physical shape) or riparian (streamside) vegetation in need of restoration;
- 2). Identifying locations along the stream corridor where diffuse sources of pollutant-laden runoff are collected and are discharged to the Batavia Kill, e.g., culvert and road drainage outfalls;
- 3). Presenting and prioritizing recommendations for improving the stability, ecological health and trout fishery, and water quality of the Batavia Kill;
- 4). Recommending potential stream management practices at road/stream crossings that will reduce infrastructure maintenance time and expense, including infrastructure upgrades;

- 5). Recommending actions for landowners who wish to reduce their own erosion or flood hazard problems while also improving the Batavia Kill's fishery and water quality;
- 6). Recommending new strategies and instruments for local officials to reduce flood hazard risk and improve the physical and biological function of the stream and water quality;
- 7). Recommending changes in current maintenance and management practices by both the public and private sector;
- 8). Identifying a set of educational activities needed to achieve the overall goals of the Management Plan;
- 9). Targeting where new programs and/or funding are needed to better coordinate management of the activities affecting the Batavia Kill and to assist stewardship efforts undertaken by private landowners.

### **Natural Stream Channel Restoration Projects on the Batavia Kill**

This Project also sought to design and construct stream stability restoration projects, to provide concrete examples of management interventions to test their applicability in the Catskill Mountains, to provide hands on experience in their use, and to provide examples of natural channel design. To date, nearly two miles of the Batavia Kill have been treated using natural channel restoration techniques, reducing bed and bank erosion rates, and the associated flood hazards, and improving the fisheries habitat quality of the river. These projects have, and will continue to, test the ability of natural channel design to:

- 1). Reduce the total load of suspended solids (silt and clay) that cause turbidity in the Batavia Kill;
- 2). Reduce the need for costly routine stream maintenance;
- 3). Improve the fishery;
- 4). Provide for the long term physical stability of the Batavia Kill.

Information that is the basis for this Plan has come from numerous sources. While the GCSWCD has been active in the Batavia Kill watershed for some 40 years, and while the Batavia Kill Stream Corridor Management Pilot Project initiated this Plan, the institutional knowledge of the many local, state and federal agency people, as well as the local landowners who contributed to this body of knowledge has been critical to development of the Plan. The GCSWCD also wishes to thank the Project Advisory Committee (PAC) which has helped guide the GCSWCD along the way, and provided for review of this

document before its presentation to the public.

### **Using This Plan**

In this Plan, recommendations are presented within stream “management units.” Users of this Plan should refer to the management unit in which they live, or for which they are responsible for conducting activities that impact the stream, and work with the GCSWCD and our partners to adopt or implement those recommendations.