

# Neversink River Main Branch

## MANAGEMENT UNIT 10

### Summary of Post-Flood Recommendations

<b>Intervention Level</b>	Full Restoration.
<b>Stream Morphology</b>	No change.
<b>Riparian Vegetation</b>	No change.
<b>Infrastructure</b>	No change.
<b>Aquatic Habitat</b>	No change.
<b>Flood Related Threats</b>	Inundation threat on Tannery flats due to channel aggradation.
<b>Water Quality</b>	None.
<b>Further Assessment</b>	Include MU10 in comprehensive Local Flood Hazard Mitigation Analysis of Claryville MUs.

### Stream Channel and Floodplain Current Conditions

The following description of stream morphology is the result of a survey conducted in December, 2011. “Left” and “right” references are oriented looking downstream, photos are also oriented looking downstream unless otherwise noted. Stationing references, however, proceed upstream, in feet, from an origin (Station 0) at the confluence with the Neversink Reservoir. Italicized terms are defined in the glossary.

The first 250 feet of this management unit is characterized by an alluvial fan, formed by the confluence of the East and West Branch. Where two large tributaries come together, during high flow events, one or the other branch will predominate, depending on which valley receives more rainfall, causing the lower branch to backwater and deposit its bedload. Consistent with this typical confluence response to flood events over time, this section of this management unit exhibited bar formation, channel shifting, and a resetting of vegetation growth during the flooding that has occurred since 2010.

Within this reach the right bank is a low vegetated terrace. Several woody debris piles observed scattered throughout this terrace in 2010 indicate that it is regularly flooded. Woody debris has accumulated along the edge of this terrace, improving sediment transport through the reach by

concentrating flow in the channel. Woody debris blockage of an overflow channel diversion through the right floodplain was removed to provide high flow relief and reduce flooding risk to the residences on the left floodplain.

The left bank is at a slightly higher elevation, and is developed with residential structures, many close to the edge of the bank, including four structures at least partially within the FEMA-mapped 100-year floodplain (new FEMA flood maps are currently in development and are expected to be available for community review in 2013). During the survey conducted in December, 2011, the bank along these structures was documented as revetted with large rip-rap at the upstream end from Station 28900 to Station 28020, and was eroding at the unprotected downstream end. In addition, a millrace originating upstream on the East Branch, a private pond and Bungalow Brook running adjacent to Denning Road offer a flowpath for overbank flows, and contribute to locational flooding in this section of the Neversink River during high flow events.

Proceeding downstream, the main channel bends to the right along a long point bar, with 254 ft. of erosion along the left bank, from Station 28280 to Station 28030.

At Station 27700 the right channel thread converges with the main channel, with significant deposition of sand, gravel and cobble. Downstream of the convergence the main channel begins a wide meander to the left. Upstream of this meander, a forested floodplain is formed on the left bank that features several flood chutes including two well-defined side channels that diverge from the main channel near Station 27700. These channels have become more severe during flood events



*Large woody debris accumulation on left bank. (IMGP2303)*



*Erosion on the left bank near Station 28080. (IMGP2304)*

since 2010. In addition, a new flood chute that formed approximately 100 feet upstream of these diversions was the source of locational flooding and destruction of several structures during the flooding associated with Hurricane Irene.

Across from the left bank floodplain, on the outside of the meander bend, 449 feet of the right bank is eroding, exposing alluvial materials from Station 27220 to Station 26680. This bank was identified as a fine sediment source. Sedge that was documented at the toe of the eroding bank in 2010 was no longer present during the survey conducted in December, 2011. MBMU10 ends at Station 26800, where an unnamed tributary enters from the right.



*Severely scoured flood chute in floodplain downstream of Station 27700. (IMGP2311)*



*Flood chute that caused severe damage to structures in the left flood plain near Station 27800. (IMGP2327)*



*Eroding bank segment on the right bank near Station 27100. (IMG2329)*

Recommendations for MBMU10 include full restoration of channel dimensions throughout the unit, capable of transporting the sediment supplied from the two branches, and improvement of the riparian buffer on the left bank to improve bank stability. However, as evidenced by the impacts of flooding since 2010, deposition in this reach is the result of sediment dynamics associated with the confluence at the upstream end and the divergence at the downstream end. Therefore as part of the restoration design, it is recommended that this entire MU be included in a comprehensive Local Flood Hazard Mitigation Analysis to investigate hydraulics and sediment transport in the stream corridor, from Station 10500 through the Halls Mills covered bridge downstream. The purpose of the analysis would be to develop a comprehensive solution for reducing flooding threats to this relatively dense population center of the Neversink Valley.