Section 5.3 Proposed Rondout Creek Demonstration Project

As part of the 2007 Filtration Avoidance Determination for the NYC Water Supply, it was agreed to construct, by 12 February 2012, a demonstration restoration project for the Rondout Creek. After completing the watershed assessment and mainstem stream feature inventory, and following discussions with highway superintendents and engineers from the towns and counties in the watershed regarding their priority infrastructure issues related to stream management, a site was selected in the lower reaches of Management Unit 6 as a potential demonstration project site. In 2009 and early 2010, preliminary discussions between DEP and the Sullivan County Soil and Water District (DEP's contract partner on the Rondout Basin Stream Management Plan and Project), Sullivan County Department of Public Works, the owner of the property on which the restoration work will occur, and NYSDEC permitting biologists for Region 3, a general consensus was made to develop the project described below, contingent on receipt of permits.

Site description

At the downstream end of Management Unit 6, the Rondout Creek becomes braided, aggraded and collects large woody debris (Figs. 1-7). A major new channel thread has developed as a result of debris jams carrying a significant proportion of the total bankfull channel flow; eroding a hay field (Figure 8); threatening the road embankment along a stretch of Sundown Road (Sullivan County Route 153); undermining a piped outfall carrying road runoff (Figs. 9-10); and entraining fine sediment, increasing turbidity (Fig. 8-10).

During the watershed assessment, the Sullivan County Department of Public Works identified this site as priority for protection of public safety, as the road is a primary artery for emergency services for a significant population. The road embankment is not protected by ledge here; rather is composed of highly erodible glacial till deposits; which include a significant fraction of entrainable fine clay sediment and represent a source of turbidity and thus a water quality concern for the NYCDEP. Additional fine sediment is entrained from the eroding bank at the hayfield.

The multi-thread stream channel in this reach is overwide and undercompetent; bankfull channel width varies between 250' and 350' (compare to the mean stable channel width for this drainage area from Catskill regional hydraulic geometry curves of 75'). These overwidened conditions result in shallow mean depths, reduced local slopes and inadequate sediment transport capacity. Such reaches often remain chaotic for many decades due the vicious cycle of aggradation, braiding and frequent resetting of vegetational succession by disturbance from flows of bedload across the low floodplain.

Proposed project

The site is proposed to serve as a training case study for two technical workshops for key stream managers in the region. The first is a Post-flood Emergency Stream Work workshop which will provide instruction on rapid characterization techniques to dimension channels for effective sediment conveyance following channel-altering flood events. The second workshop would

focus on Bioengineering Streambank Stabilization techniques, and would be taught by Chris Hoag, formerly of NRCS' Aberdeen Plant Materials Center, and a national expert on bioengineering, and Jon Fripp, an NRCS engineer.

The restoration project would be conducted in two phases, and would entail:

Year 1:

▪ Temporarily diverting the flow from the road embankment into a secondary channel (Channel "B") and installing a channel block in the upstream end of Channel "A";

▪ Largely filling the channel along the road embankment (Channel "A"), bioengineering the bank and redirecting the road runoff and small springs along the embankment into the secondary channel;

Year 2:

▪ Diverting the flow from the primary design channel (Channel "C") into Channel "B";

▪ Redimensioning the primary channel (Channel "C") for sediment transport effectiveness (approximately 2700');

▪ Reopening Channel C and installing a channel block in the upstream end of Channel "B", refilling the connecting channel between Channels B and C ;

▪ Installing bioengineered bank stabilization treatments on Channel C;

▪ Side channels would remain connected to the primary at their downstream ends to become spring-fed binnekills to provide trout rearing habitat;

Project Objectives

- Improve Rondout stream system stability by establishing channel geometry for effective bedload conveyance;

- Reduce of introduction of fine sediment from road embankment and failing streambank along hayfield;

- Protect public health and safety through stabilization of failing embankment on a primarily emergency access corridor for dozens of local residents;

- Improve fish habitat: increase passage and temperature conditions at baseflow, increase pool holding capacity in primary channel, increasing rearing habitat in backwaters;

- Provide a site for emergency flood response streamwork training session (likely attendance by contractors from Sullivan County, who have been performing flood emergency response work in response to flooding in 2004, 2005, 2006 and 2007), and for a 2010 Interbasin Soil Bioengineering Training Session;

- Respond to strong public interest in flood mitigation/response efforts, indicated in 2009 public opinion survey;

Figure 1 Proposed Rondout Creek Demonstration Restoration Project, looking downstream

Figure 2 Woody debris accumulation

Figure 3 Woody debris accumulation

Figure 4 Woody debris accumulation

Figure 5 Woody debris accumulation

Figure 6 Woody debris accumulation

Figure 7 Woody debris accumulation

Figure 8 Eroding bank at hayfield

Figure 9 Eroding embankment along SC Rte 153

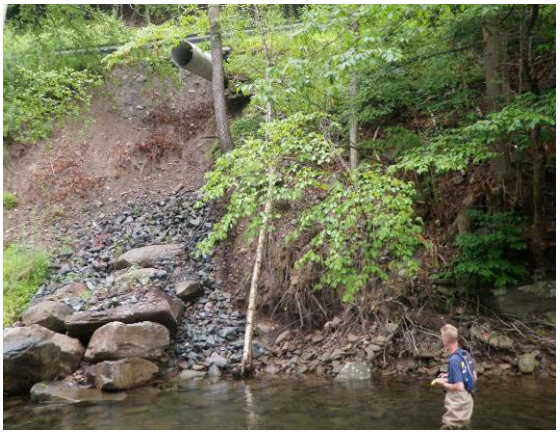

Figure 10 Undermined piped outfall

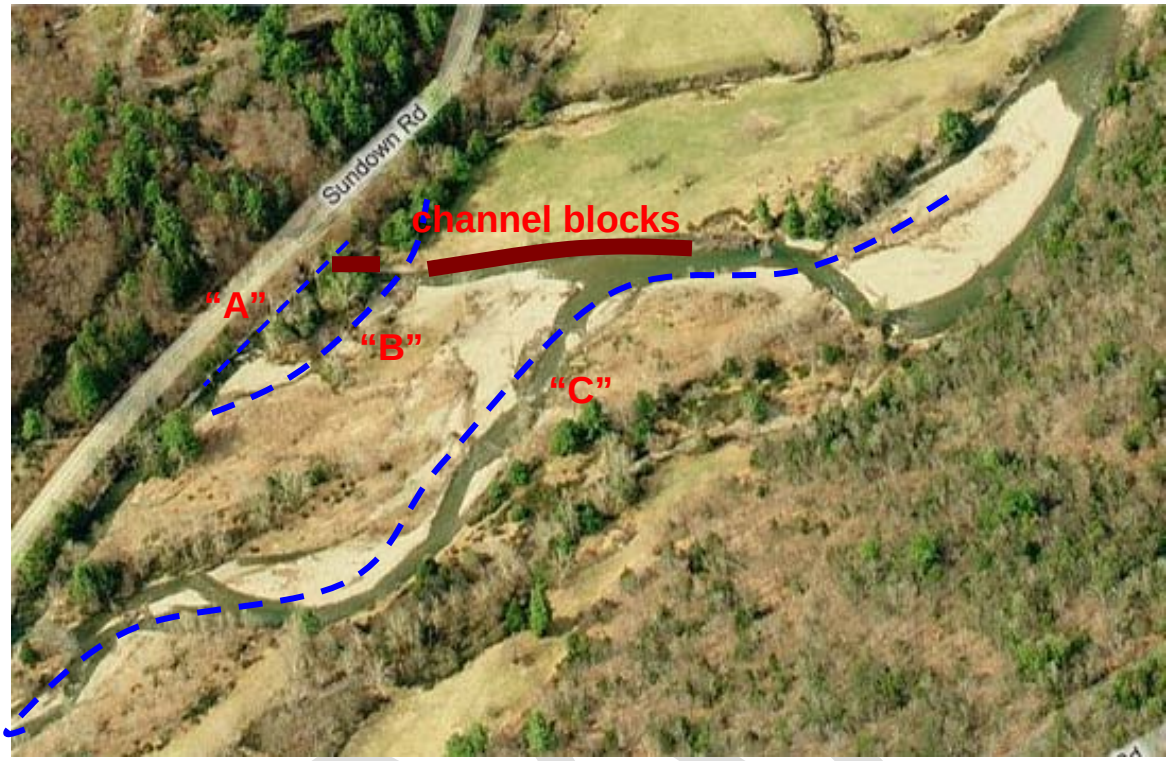

Figure 11 Proposed demonstration project site, showing location of A, B and C channels