

**Riparian Corridor Management Plan  
East Kill  
Rivera Property – Jewett, NY**



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**Prepared by:**

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**Catskill Streams  
Buffer Initiative**

## Introduction

Maintaining healthy and intact riparian areas is a high priority of the Catskill Streams Buffer Initiative, as is improving the condition of degraded riparian buffers. Through the protection and enhancement of the riparian corridor we are protecting water quality, protecting and increasing habitat diversity and offering some level of stabilization for streambanks through natural biological means. Well vegetated riparian buffers filter upland pollutants, provide rooting mass for bank stability, and lower stream water temperatures. Numerous streams in the Catskills have been walked with detailed mapping of the vegetation conducted within the riparian corridors documenting various stream conditions, need for supplemental vegetation, presence of invasive species, and other conditions impacting the health of the riparian area. While 75% of the West of Hudson Watershed is forested, it is apparent that some riparian areas lack this protective cover.

The overall goal of the Catskill Streams Buffer Initiative is to inform and assist landowners in better stewardship of their riparian (streamside) area through protection, enhancement, management, or restoration. The New York City Department of Environmental Protection and its partners (County Soil & Water Conservation Districts and Cornell Cooperative Extension) will assist private, riparian landowners throughout the West of Hudson Watershed by providing:

- 1) Riparian Corridor Management Plans to create awareness about riparian management issues specific to individual properties
- 2) Best management practice design and/or prescriptive measures and installation to encourage positive riparian stewardship and
- 3) Educational materials and activities as needed by landowners to understand the critical role of their buffer and how to maintain it in optimal functioning condition.

Any watershed landowner with property within the mapped buffer area can receive technical assistance and a Riparian Corridor Management Plan.



*Aerial view of Rivera property on Whaley Road, Jewett, NY*



## Site Visit Description / Existing Conditions

The Rivera property is located in between County Route 17 and Koss Road with a house, sitting back from the stream about 115 feet. At this location, less than one mile upstream of the confluence with the Schoharie Creek, the East Kill is a C (TS) stream suitable for trout spawning.<sup>1</sup>

Several site visits were conducted by GCSWCD and NYCDEP staff to evaluate localized erosion occurring on the parcel at three separate locations. On the left bank (looking downstream) a picnic area near the house has 100 feet of undercut bank. There is a narrow buffer of healthy woody vegetation next to the stream with mowed lawn behind it. According to the current floodplain maps, this project area is located within the 100-year floodplain. The ground cover is primarily herbaceous as the site is presently used for recreation.



*2010 Undercut banks immediately downstream of picnic area*

The second location on the right bank, 300 feet downstream from the first location, is 100 feet of eroding bank. Although this bank was a significant erosion site, approximately 250 feet appears to be recovering, with herbaceous vegetation becoming established on the face of the bank. Beyond the stream bank, the mowed terrace is an ideal planting site.



*2010 Eroding right bank with willows on established gravel bar in foreground*

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<sup>1</sup> All waters of New York State are provided a class and standard designation based on existing or expected best usage of each water or waterway segment. Classification C is for waters supporting fisheries and is suitable for non - contact activities. Classification TS designates trout spawning waters.



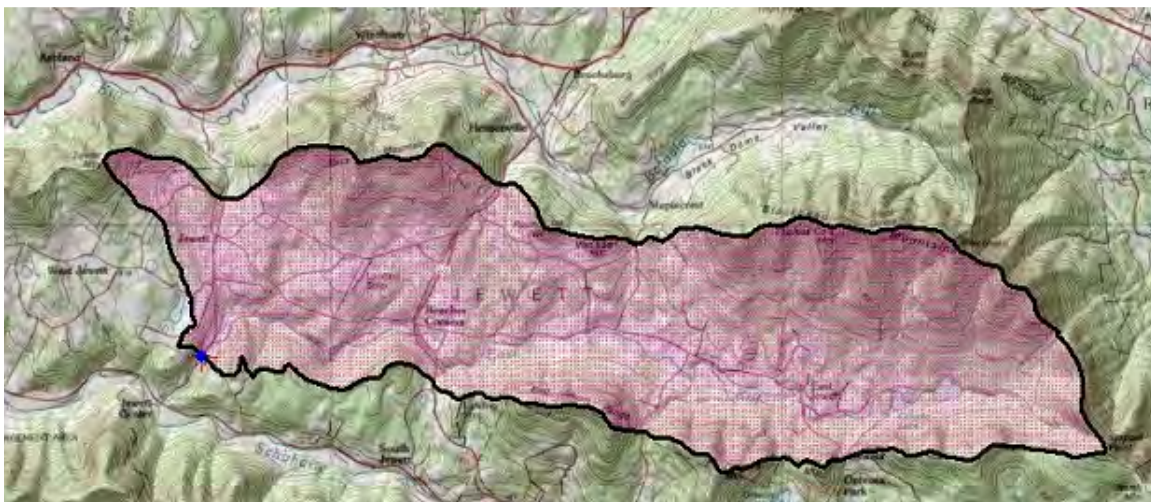
As the stream meanders downstream on the left bank, there is a hill slope undermined by toe erosion, resulting in the mass wasting of approximately 600 feet. This large mass failure appears to be starting towards self-recovery. Willow stakes installed at the toe and lower bank should assist the recovery process.



*2010 Looking downstream*

The soil type within the project area is identified as Barbour loam (Ba) which consists of very deep, well drained soils formed in alluvial deposits derived from acid, reddish sandstone, siltstone and shale. Mean annual air temperature is 45 to 50 degrees F., and mean annual precipitation is 47.6 inches. Depth to high water table is 3 to 6 feet with occasional flooding. Native trees found in this flood plain soil type are maple, oak, and white pine.<sup>2</sup>

The drainage area for this location is 35.8 mi<sup>2</sup> including runoff from portions of Cave Mountain, the Blackhead Mountains, and Onteora Mountain. Approximately 94.2% of the drainage area is covered by forest.



*USGS StreamStats map showing Drainage Area for Rivera property*

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<sup>2</sup> National Cooperative Soil Survey  
Official Series Description – 1999

## Historic Conditions

Greene County Soil and Water Conservation District (GCSWCD) completed the East Kill Stream Management Plan in 2007. The Rivera parcel is located in Management Unit 11. Within this Management Unit, 62% of the predominant vegetation type within the 300 foot mapped riparian buffer zone is forested, 21.4% is shrubland, 24% is herbaceous and 6.4% is impervious.

As seen from the historical stream channel alignments (below), the stream channel has not changed significantly over the years along this management unit; the channel has remained fairly stable.



*Historic stream channel alignments with 2006 aerial photograph*

According to available NYS DEC records dating back to 1996, there have been no stream disturbance permits issued in this management unit.

The East Kill Stream Management Plan recommends that management efforts in this unit should focus on establishing a riparian buffer in appropriate locations by planting native trees and shrubs along the streambank and the upland area. Buffer width should be increased by the greatest amount agreeable to the landowners. Increasing the buffer width to at least 100 feet will increase the buffer's functionality and protect the stream from nearby land uses.

## Landowner Issues / Concerns

Mr. Rivera has expressed concern about erosion occurring on his property. Since 2001 he estimates 4-5 feet of land have been lost on the left bank near his home due to storm flooding. He states that the field beyond the eroding right bank was much larger. Also, he is concerned about the significant changes to the property and erosion on the large bank visible from County Route 17. A neighbor has mentioned that this large mass failure on the left bank was a sloping hill that one could walk some 20 years ago.

## Landowner Goals

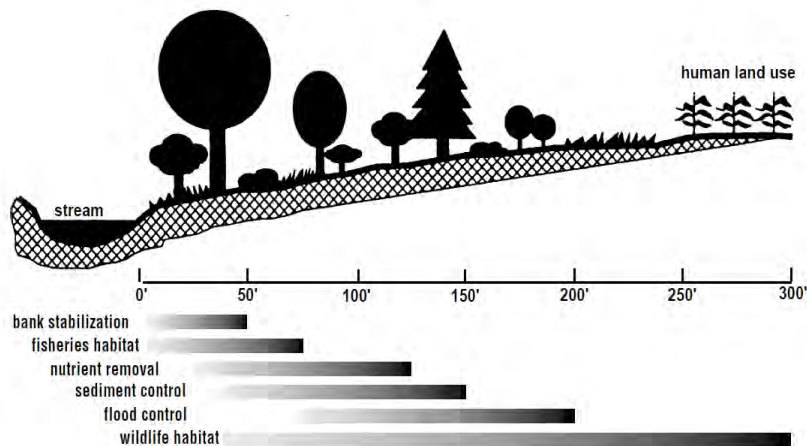
- 1) Reduce erosion and stabilize streambanks
- 2) Protect existing trees and plant additional vegetation to enhance buffer
- 3) Improve wildlife habitat
- 4) Maintain property for family recreation



Mr. Rivera does not participate in any other watershed programs at this time. He has indicated that his preferred buffer width is 100ft. and estimated the buffer length to be 500 ft. He has indicated a willingness to sign a 5 year license agreement, assist with project installation, recruitment of volunteers for project installation, and assistance with monitoring or maintenance.

### Recommendations – Best Management Practices (BMPs)

- 1) **Apply** to CSBI for funding support to install one or more of the practices below.
- 2) **Establish a riparian buffer** as deep rooted woody vegetation is critical to maintaining bank stability. This site could benefit from enhanced buffer width and establishment of more woody vegetation. Planting and maintaining a healthy buffer of native trees and shrubs along streambanks and floodplains is one of the most cost effective and self-sustaining methods for landowners to protect streamside property. Planting additional native species already present on the property such as willow can help restore the riparian buffer to stabilize the streambanks. Native species are recommended due to their adaptation to our regional climate and soil conditions and because they typically require less maintenance than exotic species following planting and establishment.



- 3) **Use vegetative treatments such as dormant posts and stakes to address minor localized erosion.** Bioengineering, the use of live vegetation to stabilize soils associated with streambanks, can be used at this location. Dormant cuttings from appropriate species, such as willows and dogwoods, quickly establish vegetation on the banks. Live posts and stakes are cut from living willow shrubs when the shrub is dormant (usually during the fall or early spring). The stakes, ranging from one to several feet long, are hammered or pushed into the stream bank where they will grow quickly and provide necessary bank stabilization where it is needed most. A dormant post detail drawing is attached. Onsite willows can be used for this treatment.
- 4) **Maintain root systems that hold soil in place by not mowing right to the stream edge.** Degrading buffer zones can be improved by not mowing in the buffer zone. Keeping a buffer zone of trees and shrubs, especially in the first 50 to 100 feet, along streambanks helps to minimize erosion and protect property, filter pollutants, and increase habitat value.

**5) Remove invasive species such as Japanese knotweed.** Invasive, non-native species can threaten the ecology of a native plant community. This impact may extend to an alteration of landscape or bank stabilization. Japanese knotweed out-competes native plants by growing much faster than its native counterparts. Knotweed can tower over native plants, cut off their light supply and eventually, take over the entire length of a stream. This is especially dangerous, because knotweed does not hold streambanks together as well as native species. Furthermore, it is a very resilient plant. Simply cutting it down without proper disposal can potentially make the problem worse. See the link below (in the Appendix) for tips on controlling Japanese knotweed.

**6) Continue to monitor reach stability through normal observations.** Take photographs from the same location each year to photo document erosion.

### **Project Proposal**

The scope of the proposed project includes riparian buffer plantings of trees and shrubs in two locations – the picnic area and the terrace on the right bank. Willow stakes will be installed as a toe treatment for the high bank. This riparian buffer planting of native vegetation is intended to enhance the overall ecological function of the riparian corridor.

The Greene County Soil and Water Conservation District will provide:

1. A Riparian Corridor Management Plan
2. Project Design for the Riparian Buffer Plantings
3. Native Trees and Shrubs
4. Installation of Plant Materials
5. A Landowner's Guide to Vegetation Management



## **Resources and References**

### **East Kill Stream Management Plan**

[http://www.catskillstreams.org/East\\_Kill\\_Stream\\_Management\\_Plan.html](http://www.catskillstreams.org/East_Kill_Stream_Management_Plan.html)

### **East Kill Management Unit 11**

[http://catskillstreams.org/pdfs/EKSMP/31\\_MU11.pdf](http://catskillstreams.org/pdfs/EKSMP/31_MU11.pdf)

### **Catskill Streams Buffer Initiative**

<http://catskillstreams.org/CSBI/>

### **Riparian Buffers**

[http://www.catskillstreams.org/stewardship\\_streamsideside\\_rb.html](http://www.catskillstreams.org/stewardship_streamsideside_rb.html)

### **Introduction to Riparian Buffers Fact Sheet**

<http://northjerseyrcd.org/upload/uploads/Intro.pdf>

### **DEC Environmental Resource Mapper**

<http://www.dec.ny.gov/animals/38801.html>

### **Japanese Knotweed Information**

<http://www.catskillstreams.org/pdfs/Knotweed%20webpage%20text%20&%20links.pdf>

### **Soils**

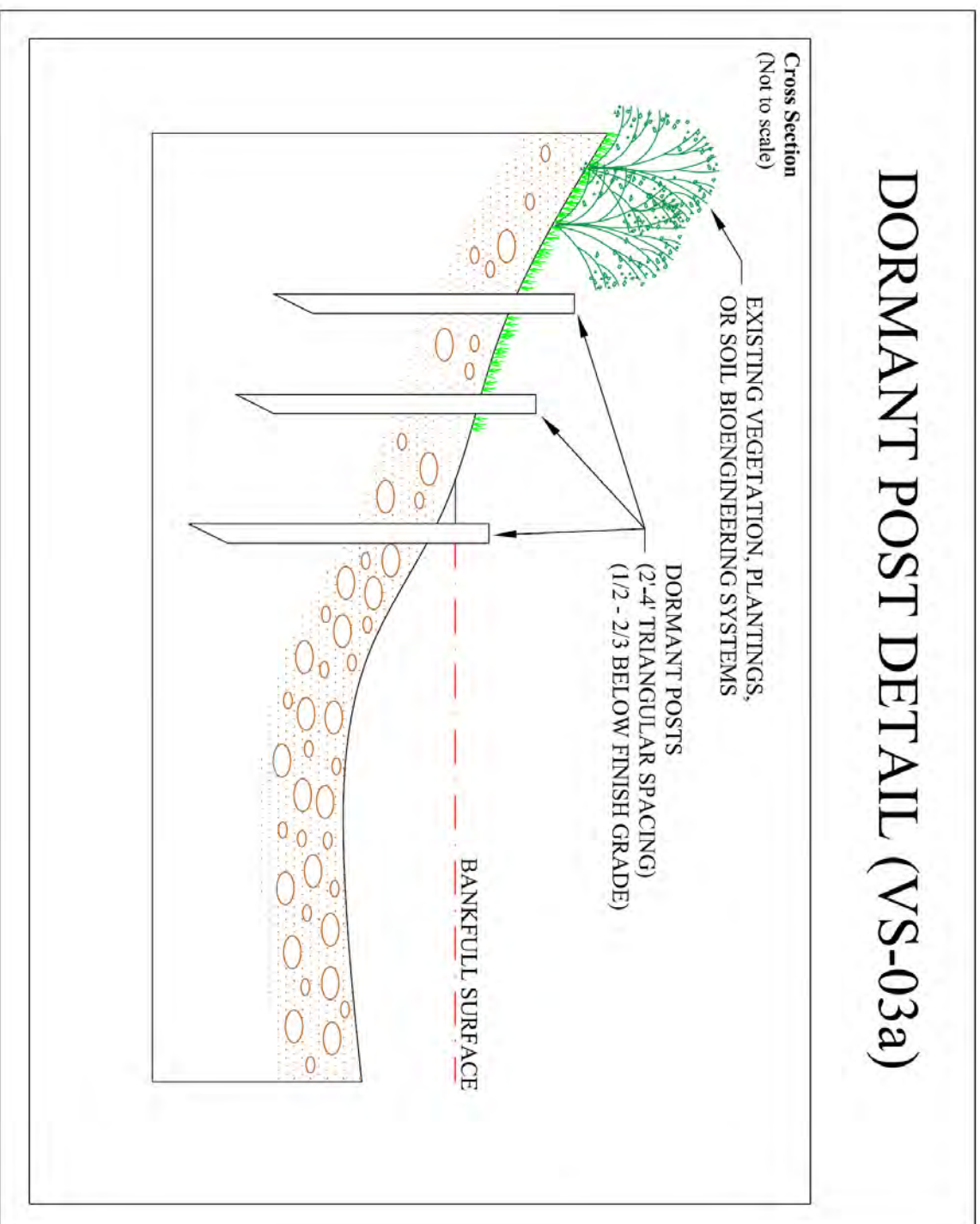
National Cooperative Soil Survey

Official Series Description Series, 1999

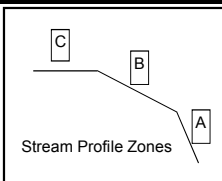
<http://soils.usda.gov/technical/classification/osd/index.html>



# DORMANT POST DETAIL (VS-03a)



## Rivera Riparian Planting Plan East Kill

<b>Site Details</b>		 <p style="text-align: center;">Stream Profile Zones</p>
Planting Area 1 - 200 ft x 50 ft Planting Area 2 - 250 ft x 90 ft Planting Area 3 - 600 ft x 100 ft 32,000 sq ft - trees & shrubs 10,000 sq ft - seeding 5,000 sq ft - willow stakes 1.08 acre 514 trees and shrubs with 8 x 8 spacing		

Latin Name	Wetland Indicator	Native	Location	Spacing (ft)	Planting Area 1	Planting Area 2	Planting Area 3	Total #	Notes		
<b>Evergreen transplants</b>											
White pine	Pinus strobus	FACU	Y	C	8	25	53		78		
Eastern hemlock	Tsuga canadensis	FACU	Y	C	8	10	35		45		
White spruce	Picea glauca	FACU	Y	C	8	7	30		37	along driveway / in sun	
									160		
<b>Hardwoods</b>											
Paper birch	Betula papyrifera	FACU	Y	C	8		10		10		
Sweet birch	Betula lenta	FACU	Y	C	8	10	10		20		
Gray birch	Betula populifolia	FAC	Y	C	8		10		10		
American hornbeam	Carpinus caroliniana	FAC	Y	B-C	8	10	10		25		
Sugar maple	Acer saccharum	FACU	Y	C	8		20		20		
Red maple	Acer rubrum	FAC	Y	C	8	20			20	20 RPM	
White oak	Quercus alba	FACU	Y	C	8	5	20		25		
Red oak	Quercus rubra	FACU	Y	C	8		15		15		
Black ash	Fraxinus nigra	FACW	Y	B	8	10			10		
Pin cherry	Prunus pensylvanica	FACU	Y	C	8		15		15		
Black cherry	Prunus serotina	FACU	Y	C	8		5		5	plant in sun	
									175		
<b>Shrubs</b>											
Buttonbush	Cephalanthus occidentalis	FACW	Y	B	8	5			5	tolerates shade	
Black willow	Salix nigra	FACW	Y	B	8		3		3	plant by stream edge	
Chokecherry	Prunus virginiana	FACU	Y	C	8		15		15		
Witch-hazel	Hamamelis Virginiana	FAC	Y	C	8	7	13		20		
Nannyberry	Viburnum lentago	FAC	Y	C	8		14		14		
Elderberry	Sambucus canadensis	FACW	Y	B	8	7			7	tolerates shade	
Shadblow serviceberry	Amelanchier canadensis	FAC	Y	C	8	5	20		25		
Redosier dogwood	Cornus sericea	FACW+	Y	A-B-C	8		5		5	plant by stream edge	
Silky dogwood	Cornus amomum	FACW	Y	A-B	8	10	5		15	plant by stream edge	
Gray dogwood	Cornus racemosa	FAC	Y	C	8	10	22		35		
Arrowwood	Viburnum dentatum	FAC	Y	C	8	7	20		27	tolerates shade	
									171		
									148	335	506
<b>TOTAL PLANTS</b>											
<b>Stakes</b>											
Willow sp.	Salix	FACW	Y	A-B	3			1000	1000	dormant native	
									1000		
<b>TOTAL Stakes</b>											
<b>Seed</b>											
Riparian seed mix		FACW	Y	A-B	15lbs/acre			15 lbs	15 lbs	Ernst riparian buffer mix	
Steep slope mix		FACU	Y	B	50lbs/acre			50	50 lbs.	1 - 50 lb. bag	
									65		
<b>TOTAL Seed mix</b>											

Wetland Indicator = Wetland Indicator Status

OBL: Obligate Wetland: Occurs almost always (estimated probability 99%) under natural conditions in wetlands.

FACW: Facultative Wetland: Usually occurs in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.

FAC: Facultative: Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

FACU: Facultative Upland: Usually occurs in non-wetlands (estimated probability 67%-99%), but occasionally found on wetlands (estimated probability 1%-33%).