

# Riparian Corridor Management Plan

Sammet Property – 68-69 Silver Hollow Road  
Chichester, NY 12416

2013

**A plan to address the management, restoration and preservation of riparian zones found on the Sammet property, Chichester, NY.**



**Catskill Streams  
Buffer Initiative**

*At the Root of Streamside Protection*

**Ashokan Watershed Stream Management Program**  
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## **Executive Summary**

### **Purpose**

This plan aims to enhance awareness and inform the landowner about riparian management issues specific to their particular property.

### **Riparian Buffer**

The land adjacent bodies of water are not only important plant and animal habitat, but also contribute to the health of the waters they surround. A healthy buffer is more resilient and can help protect and maintain the character and function of a stream. The wider the buffer, the more function it provides.

### **The Ashokan Watershed**

Located in the Catskill Region of New York State, the Ashokan Watershed comprises all areas draining to the Ashokan Reservoir. This area remains heavily forested but has seen significant amounts of development along its streams.

### **Sammet Property**

The property is located in the high peaks region of the Ashokan Watershed near Chichester, Ulster County, New York. Riparian areas are influenced by the highly dynamic nature of streams on the property. Excessive erosion has resulted in a loss of vegetation along the project site.

### **Best Management Practices**

The following BMP's are recommended:

- Use of native plant species.
- Control of invasive species.
- Toe/bank zone management.
- The three-zone riparian forest buffer.
- Management of bank zone leaning trees.
- Restoration/reconnection of floodplain forest.

### **Maintenance**

By keeping vegetation healthy, landowners can ensure that vegetation functions effectively. Restoration areas are especially vulnerable in the years directly following installation and may require special attention.

### **Monitoring**

Monitoring is an important component of successful projects. Through monitoring, management decisions can be directed more efficiently to address any potential issues that arise.

## **Purpose**

The purpose of this Riparian Corridor Management Plan (RCMP) is to enhance awareness and inform the landowner about riparian management issues specific to their individual property. Each RCMP is written to encourage individual landowners to actively manage their riparian buffer areas using sustainable Best Management Practices (BMP) and to provide a roadmap to the process of repairing their property, improving riparian function, enhancing habitat, and maintaining it for the future.

This plan will:

- Review the functions and importance of proper management of riparian buffers
- Describe the present character and conditions of the riparian corridor
- Define the nature of problems associated with the landowners specific buffer or streamside elements
- Identify the landowner's issues and concerns, and
- Recommend BMP's to improve riparian buffer conditions, or stabilization efforts to resolve problems along the stream

Streamside landowner stewardship is essential to proper stream corridor management. Efforts by individual streamside landowners to improve and maintain proper stream processes and

streamside buffers can be substantial, especially with the control of invasive species and the management of desirable native vegetation. Well informed streamside landowners can also be instrumental in maintaining floodplain function, in addition to stream channel and streambank functions. Many times, streambank erosion and stream channel degradation begin as small problems that could have been minimized or corrected – without public funding assistance – by well-informed streamside landowners.

Improved understanding of the function of floodplains, streamside vegetation, and riparian buffers will help guide stakeholders as they adopt practices to protect streams and improve overall stream stability.

The primary purpose for riparian planting projects conducted by the Catskill Streams Buffer Initiative is to:

- Restore natural streamside vegetation.
- Encourage landowner stewardship of riparian areas

In addition, CSBI stresses the importance of maintaining ecological integrity and facilitating the use of plant materials that are native to the Catskill region. This plan will address floodplain function, stream processes (including riparian buffer maintenance), invasive species control, and the importance of desirable native streamside vegetation and their function.

## Riparian Buffer Functions and Benefits

**What is a Riparian Buffer?** A riparian area is the land adjacent to a body of water, such as a lake, river or wetland. Riparian areas are transitional zones that connect aquatic and terrestrial environments. These areas are not only important plant and animal habitat, but also contribute to the health of the waters they surround.

**Healthy Riparian Systems:** A healthy riparian corridor is a highly diverse assemblage of species and environmental processes. The level of diversity can be attributed to variations in water levels, geomorphic processes<sup>1</sup>, elevational shifts, and influences from upland areas.

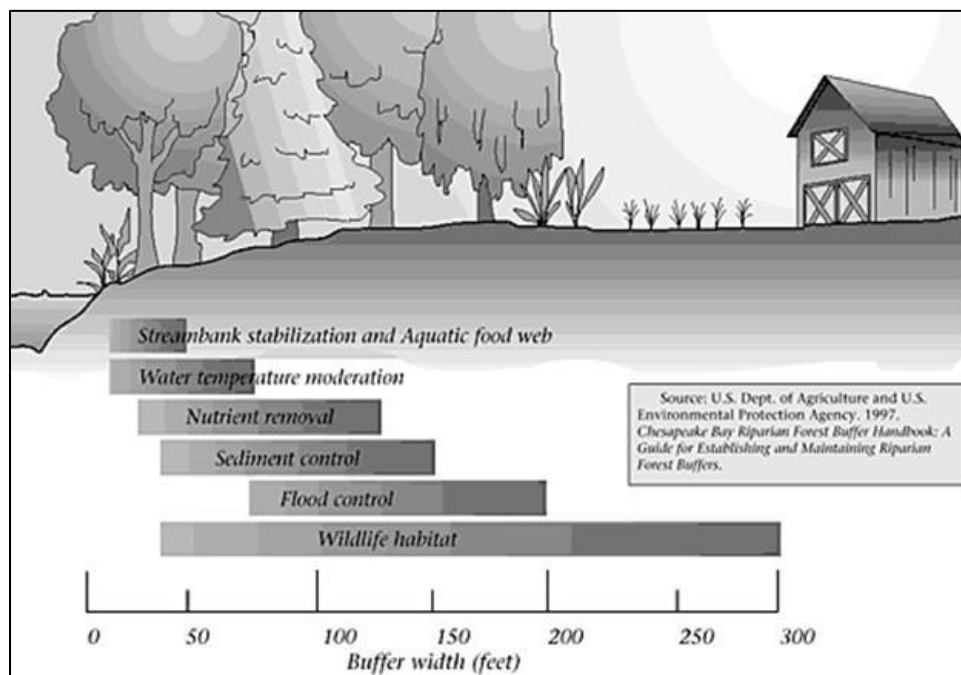
Streams with a healthy riparian buffer are more stable and resilient than those without and can help protect and maintain the character and

function of the stream. Healthy, vegetated riparian buffers provide a number of important ecological functions including:

- Water quality protection - filtering pollution as well as transformation and storage of nutrients
- Stream stabilization – decreased bank/floodplain erosion
- Habitat for aquatic and terrestrial wildlife
- Shade and temperature control for aquatic habitats
- Support for natural communities and adjacent streams and wetlands
- Property protection from flood and ice flow damage

The ecological functions provided by a riparian buffer are related directly to the width of the buffer (Figure 1).

Figure 1: Buffer function is dependent on width.



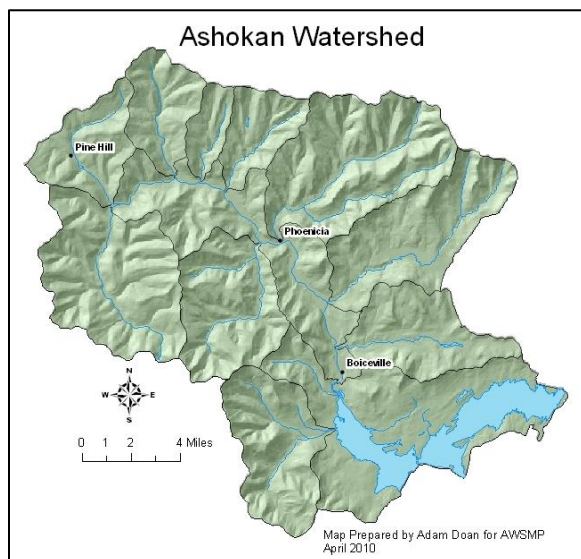


## The Ashokan Watershed

### The Landscape

The Upper Esopus Creek Watershed (Ashokan Watershed) covers 192 square miles in the South-central Catskill Mountain Region of New York State (Figure 2). This high peaks region of the Catskill Mountains includes 21 peaks higher than 3,000 feet above sea level (ft. asl.). The highest peak in the Catskills, Slide Mountain, can be found within the Ashokan Watershed and is 4,180 ft. asl. The result of this topographic variation is an extensive network of surface drainage systems comprising 330+ miles of stream.

Figure 2: The Ashokan Watershed



Forested lands exceed 95% of the total watershed land cover. However, in the 1800's significant portions of the watershed were cleared of forests by logging and bark peeling activity. Consequently, streams were altered from the increase in eroding sediment from the denuded landscape. Forest cover still tends to dominate the land cover in the valley bottom

along most of the stream courses, however, these corridors have been the preferential path for development into the watershed. This fact, coupled with the topographic variation in the watershed has resulted in the concentration of development associated with roads, residence, businesses and town centers along these stream corridors.

### Climate and Hydrology

The Catskill Mountains in general and High Peaks Region specifically is a landscape shaped by moving water. Erosional processes began with glacial activity and continue today with the draining of the land through a network of streams and reservoirs. The intensity and frequency with which these streams flood helps contribute to the high amount of diversity found in riparian zones. As such, it is important to consider climate when attempting to understand and manage these crucial areas.

Mean annual precipitation for the Upper Esopus watershed ranges from ~52 inches at the Ashokan Reservoir to ~63.5 inches at Slide Mountain. Typical winters leave a snowpack in the mountains, causing most of the peak floods to occur with the combination of snow melt and spring rains. The region is also in the path of tropical storm events with consequent flooding in late summer and fall.

While local impacts are more difficult to predict, current climate change models indicate that in the Catskills, storm events with rainfall greater than 1" are likely to increase in frequency and magnitude (Frumhoff, 2006). Paradoxically, drought periods are also likely to become more extreme. Snowpack amount and duration are also expected to decrease.

## Sammet Property Description

### Location and Size

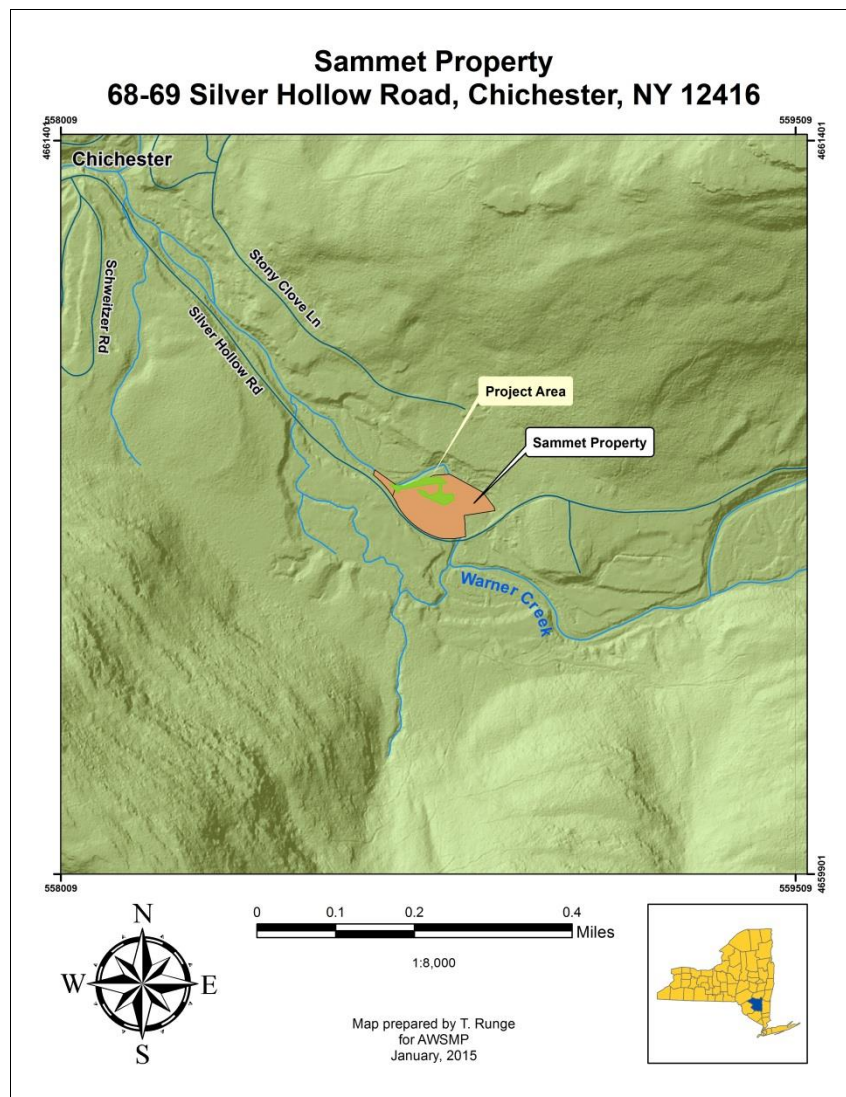
The Sammet property is located on Silver Hollow Road in the hamlet of Chichester, Ulster County, NY. The total property size is 4.40 acres and consists of two parcels. There are no buildings on the property. The parcel is currently for sale.

The Sammet property is bordered on the northern and eastern edges by Warner Creek

for approximately 300 feet. The property is adjacent to a large scale stream restoration project. The restoration project was constructed in 2013 and intended to improve stream channel and floodplain stability. A subsequent planting project was installed in the same year.

The project site is located at the northern fringe of the parcel and adjacent to the left bank (facing downstream). The total project area is 24,000 square feet or 0.56 acres and includes approximately 550 feet of streambank.

Figure 3: The Sammet property and project location.





## Stream Type

The shape of a river at any given point is a function of the water and sediment transported as well as the composition of bed and bank materials including vegetation. Much work has occurred over the years to classify rivers based on their dimension, pattern, profile and material. Classification creates a common, standardized language and method for describing and measuring streams. While a number of classification systems exist, the most effective are based on field measurement that is objective, quantifiable and consistent.

Two of the most commonly used systems are those of Rosgen (Rosgen, 1994) and Montgomery-Buffington (Montgomery & Buffington, 1997). AWSMP uses a combination of these systems during Phase I surveys to determine a reference stream type. This reference stream type describes the natural tendency of channel form and process that would exist in the absence of human-related changes to the channel, floodplain, and/or watershed. It should be noted that the point of a reference stream type is not to predict the actual stream type but to predict its potential.

Considering the history of human-related changes to the Upper Esopus Creek watershed, the reference stream type is based largely on valley, geology and stream climate characteristics.

Reference stream type helps inform management decisions by providing a basis to understanding a streams potential. This potential extends to riparian vegetation which has a significant influence on stability for certain stream types. For more information on the interaction between stream type and vegetation see **Vegetation Potential** on page 12.

**Reference Stream Type:** For the section of Warner Creek passing through the Sammet property, project monitoring classified the stream as a slightly entrenched channel with cobble size bed material and displaying a riffle-pool bed form<sup>ii</sup> (Rosgen C3b/riffle-pool).

**Management Implications:** The C3b stream type is moderately sensitivity to disturbance and has a good recovery potential. Recovery potential assumes natural recovery once the cause of instability is corrected. The 2013 stream restoration project was intended to correct channel instabilities. Human intervention can help accelerate recovery response.

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Figure 4: Rendering of the Rosgen “C” stream type.



## Soils

Understanding the soils found at a particular site is an important component to understanding the overall processes influencing riparian vegetation success as well as establishment. Soils, like streams, can be categorized based on distinguishing characteristics. These characteristics can vary greatly between soils and include: erodeability, water holding capacity, nutrient composition and particle size.

Two different soil types were identified on the Sammet property (Figure 5 & Figure 7) with Barbour loam (Ba) comprising 93% of the total area. The majority of riparian vegetation found on the property occupies this soil type.

**Dominant Soil Type:** Barbour loam is the most common soil found at the Sammet property and is associated with flood plains. As is expected for a flood plain, slope is nearly level at 0-2%. Ba soils often overlay alluvial land and are richer in gravel and sand. Tunkhannock gravelly loam (TkB) is associated with valley trains (glacial outwash) and terraces with a slope of 3-8%.

**Soil Properties:** Barbour loam and Tunkhannock gravelly loam are well-drained soils derived from reddish sandstone, siltstone, and shale. Ba has moderate water storage capacity and is frequently flooded. TkB has low water storage capacity.

**Management Implications:** The Ba and TkB soil types are typically not well suited for hand planting due to the presence of alluvial deposits including cobbles and gravel. As such, mechanical planting is recommended. Due to the soils well-drained properties, watering planted vegetation is recommended.

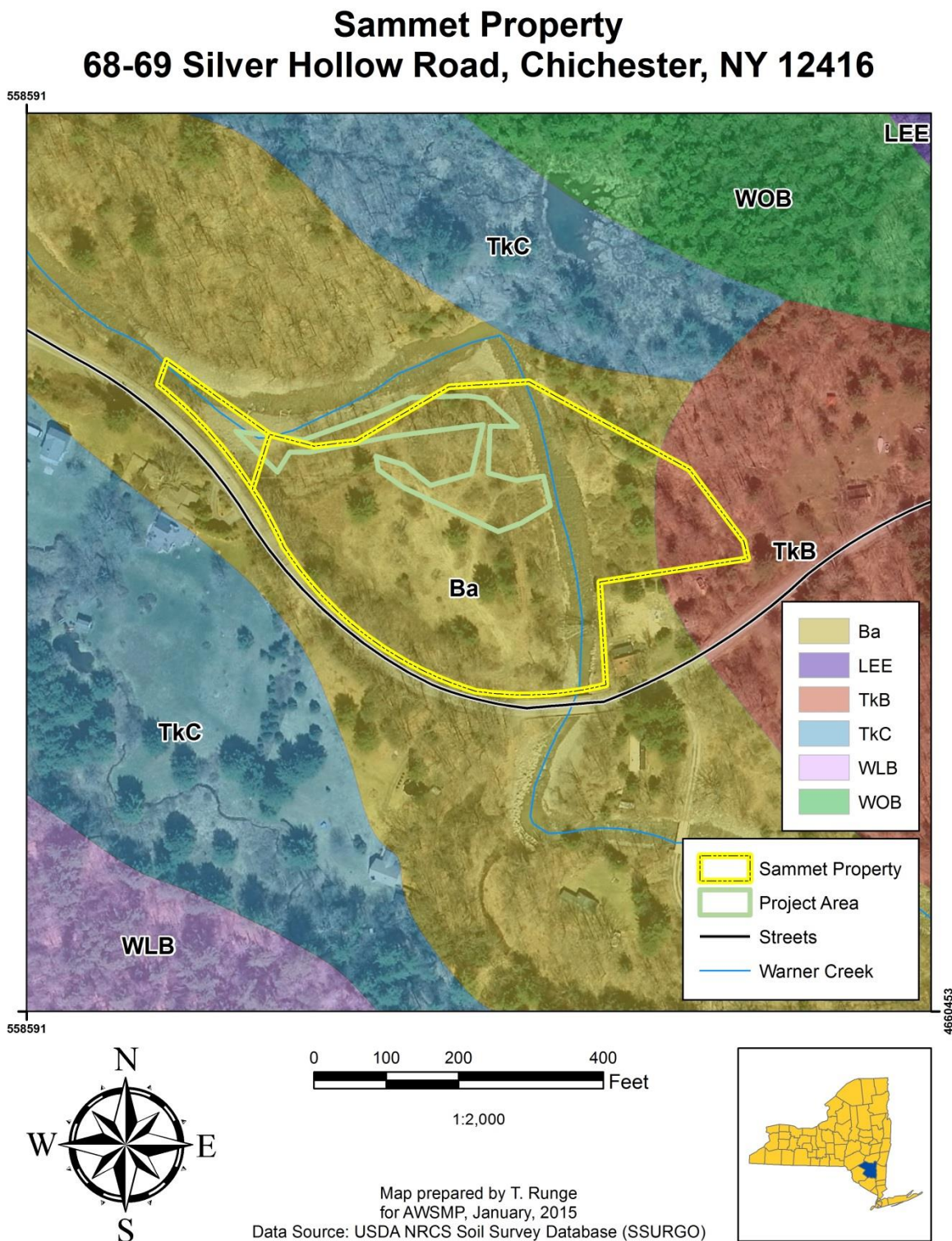
Figure 5: Soil types with percent cover for the Sammet property.

Soil Symbol	Soil Type	Percent Coverage
Ba	Barbour loam	93
TkB	Tunkhannock gravelly loam, 3-8% slopes	7

Figure 6: Barbour loam soil on Sammet property with alluvial deposits from Warner Creek.



Figure 7: Map of soil types found on the Sammet property.





## Vegetation

When dramatic changes occur to riparian vegetation, a resulting change in stream stability may be noticed. This can be attributed to the reciprocal nature of stream morphology influencing riparian vegetation and vegetation influencing morphology.

**Existing Vegetation:** During site visits the following vegetation were identified on the Sammet property: sycamore, red oak, sugar maple, red maple, gray birch, hornbeam, white pine, and black cherry. Additional species identified on the adjacent right bank property are: paper birch, striped maple, winterberry, elderberry, and poplar.

**Vegetation Potential:** Unfortunately, no vegetation map exists for Warner Creek at this time. As a result, it is recommended that

surrounding vegetation be used as a guide for vegetation establishment.

For the “C” stream type, vegetation has a very high influence on stability. Planting native tree and shrub species that thrive in the Ashokan basin will contribute to stream and bank stability through the development of dense root systems.

**Invasive Species<sup>iii</sup>:** A number of invasive, non-native species were observed during site visits to the Sammet property. Multiflora rose (*Rosa multiflora*) and Japanese barberry (*Berberis thunbergii*) dominate the understory of the floodplain forest. The invasive herb garlic mustard (*Alliaria petiolata*) was also observed growing in the field. These species, if left unchecked, have the potential to threaten vegetation restoration activities.

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Figure 8: Forested floodplain on right bank across from Sammet property. 2014.



## Past Intervention and Concerns

### Site Visit History

The property owner, John Sammet, was approached by staff from the Ashokan Stream Management Program in 2010 in regards to extreme erosion occurring on his property. Since that time, a number of site visits have occurred to document the changing conditions and to evaluate restoration potential.

Immediately following Tropical Storm Irene funding became available to construct a restoration project on Sammet's property. The funding that was available was unable to pay for vegetation restoration. The Catskill Streams Buffer Initiative stepped in and worked with the landowner and project engineer to ensure that a stream restoration project adequately addressed streamside vegetation.

### Landowner Issues/Concerns

The Landowner's primary concern was stabilization of their eroding bank through the use of vegetation native to the Catskill region of New York State. Secondary, the landowner wished to return the property to pre-construction levels of vegetation and appearance. The engineer's main concern was to install and use vegetation throughout the project that would work with the stream process that is occurring at the project site.

### Past Property Maintenance

**Mowing and Cutting:** No mowing had occurred adjacent to the creek prior to the restoration project in 2013. A two-track road was apparent on satellite imagery prior to construction but had little influence on vegetation.

**Plantings:** It is unclear if any intentional plantings occurred adjacent to the stream or along this piece of property in recent years.

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Figure 9: Aerial image of Silver Hollow Road and Sammet property post Irene, September 2011.





## BMP Recommendations and Implementation

The Best Management Practices (BMP's) identified in this plan are tools, techniques and practices to improve riparian buffer management and help mitigate the potentially damaging effects of periodic flooding and negative upland influences on the stream and its banks. Implementation and use of these BMP's will help achieve the goals identified by the landowner as well as contribute to the overall health of the natural environment found on the property. Proper riparian management can have a lasting effect. Streams with a healthy riparian buffer are more stable and resilient than those without.

The Best Management Practices identified in this plan can be implemented individually or in any combination depending on time and funding. The Ashokan Watershed Stream Management Program strongly encourages the implementation of **ALL** recommended BMP's.

### General BMP's

**Use of Native Plant Species:** A central theme of the CSBI program is the use of native plant species for restoration projects. Native plants are adapted to the regional climate and physical conditions and offer a more natural habitat for wildlife species. Once established, native plants typically require less maintenance.

**Control of Invasive Species:** Invasive plants can threaten the success of restoration efforts and as such care must be taken in their control. Control can be achieved through manual, mechanical and/or chemical means and should include the establishment of native species once the invasive plant is controlled.

**Toe/Bank Zone Management:** As a result of regular disturbance associated with flooding, the toe (or bottom of streambank) and bank zones (Figure 10) are especially susceptible to erosion from vegetation loss. It is important to protect these areas by limiting human disturbance to these zones. The toe and bank zone should be protected from vegetation removal, livestock access, improper access paths, etc.

**The Three-Zone Riparian Forest Buffer:** The diagram (Figure 11) on the following page provides good general guidelines for how to effectively manage for a healthy riparian buffer that provides a number of benefits to not only the landowner but also the stream itself.

**Management of Bank Zone Leaning Trees:** As trees become undercut through bank erosion they begin to cantilever out over the stream. At some point, the tree will dislodge from the bank and potentially take a large section of streambank with it. Trees that pose a threat to bank stability should be cut near ground level with their roots left intact to help provide structure and stability to the streambank.

Figure 10: Stylized drawing of vegetation zones relative to water levels.

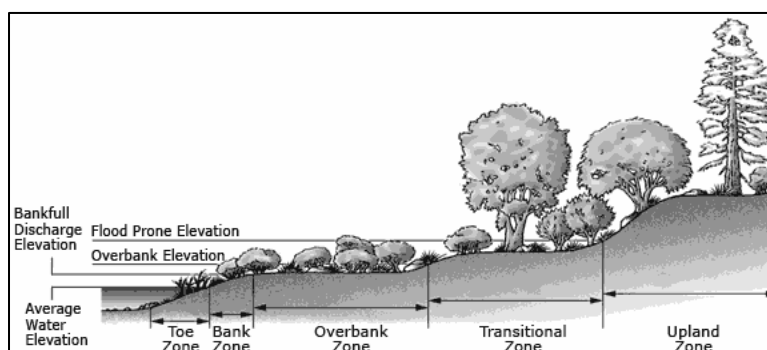
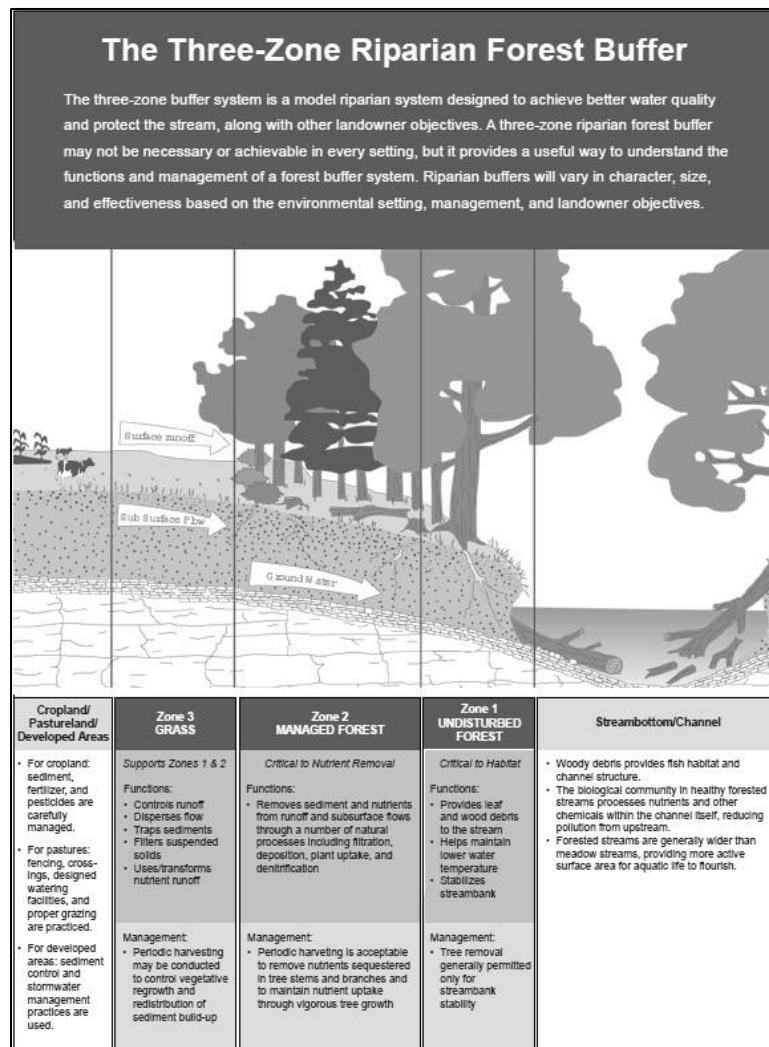


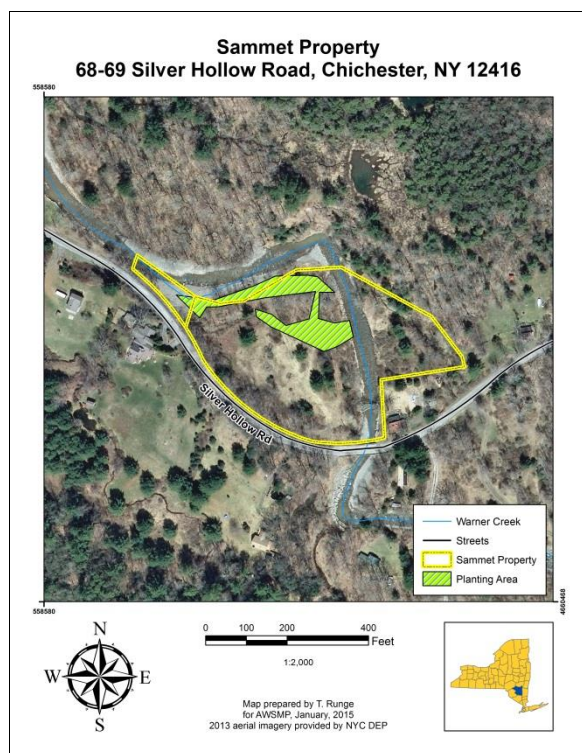
Figure 11: The three-zone riparian buffer.



## Restoration Planting

**Project Site Overview:** The project site is located on the northern edge of the property. The site involved 550 feet of streambank and ranged from 18 to 50 feet wide. Total area is approximately 0.56 acres or 24,000 square feet.

**Figure 12: Sammet project site.**



**Project Soil Type:** The project site soil type is identified as Barbour loam (Ba) and is described and discussed on page 10 under the Soils heading.

**Planting Plan:** The main goal of the planting plan, presented in the appendix, is to re-establish vegetation along the post-restoration work area. The vegetation, once established should help to stabilize the area and provide additional riparian functions to Warner Creek.

The closed floodplain forest adjacent the project site can and should be used as a reference when determining what species to plant. This will help to insure the visual integrity of the site as the planted material matures. Also, it provides a good indicator of what species are successful given the sites climatic and physical characteristics.

Vegetative community succession is also an important consideration, with the overall goal of establishing a closed floodplain forest that has a healthy over- and under-story.

**Figure 13: Two photos show plants at Sammet's after one year of establishment. Left photo from June 27, 2014 and right photo from July 9, 2014.**



## Riparian Buffer Maintenance

This section is intended to help the landowner maintain the vigor of riparian areas as well as the restoration planting. By keeping vegetation healthy, the landowner is ensuring that the vegetation functions effectively to keep streambanks stable and enhance the quality of habitat.

As a participant in the Catskill Streams Buffer Initiative, the Ashokan Watershed Stream Management Program requests that landowners take responsibility in monitoring the general condition of the vegetation and to report any problems to the AWSMP office at (845) 688-3047. This will allow us to quickly identify and repair any unforeseen problems and address any other potential issues.

**Mowing:** No mowing should be conducted within the project site.

A key of a healthy riparian buffer is the establishment of healthy and robust root systems. Mowing can cause stunted root development or potentially kill vegetation.

**Mulching:** Mulching is encouraged and can increase the success of planted vegetation.

Mulching around seedlings helps to maintain soil moisture as well as decrease competition from surrounding weedy species. Bark mulch should be spread around all trees and shrubs and replaced as necessary.

**Fertilizer:** Fertilization is not required.

It is not necessary to fertilize planted materials. The potted planting materials that were used as part of the planting plan were fertilized at the nursery. Landowner applications of fertilizers could complicate monitoring efforts and potentially damage vegetation. There is also the potential for fertilizers to leach into waterways which can have a negative impact on water quality.

**Yard Waste:** Debris should not be dumped in the project site.

Yard waste and other debris dumped along streambanks could kill vegetation and lead to bank instability. Care should be taken to properly dispose of yard waste, including grass clippings outside the riparian area.

## Future Activities and Monitoring

The Ashokan Watershed Stream Management Program (AWSMP) is committed to ensuring the success of this project. To that end, AWSMP will continue to monitor the success of the restoration planting in the project area for 5 years after installation. These monitoring efforts are an important component of an adaptive management plan and will be used to guide future management decisions.

AWSMP employees will continue to survey both vegetation condition and physical site characteristics. They will also replace vegetation as needed. The project site will also be reviewed on an ongoing basis to identify if additional planting needs and/or other stabilization techniques are necessary or beneficial.

In August 2014 staff from the AWSMP visited the project site to evaluate vegetation growth

and vigor along the site. Results are presented in the appendix. Overall most trees and shrubs that were installed were growing.

Staff will visit the site every two years to measure the plants and ensure that the project is performing as intended and meeting the original goals and objectives.

## Changes/Modifications to this RCMP

This guide contains recommendations to be followed by current and future owners of the parcels identified in the landowner agreement. The recommendations are made in an effort to protect property from the hazards that accompany unstable stream conditions. Should you, as the landowner, or AWSMP find that conditions warrant an alteration to the vegetation plan or the management strategy of this document, AWSMP will work with the landowner to correct the conditions.

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## Bibliography

Frumhoff, P. e. (2006). *Climate Change in the U.S. Northeast: A Report of the Northeast Climate Impacts Assessment*. Cambridge, MA: Union of Concerned Scientists.

Montgomery, D. R., & Buffington, J. M. (1997). *Channel-reach morphology in mountain drainage basins*. Geological Society of America Bulletin.

Rosgen, D. L. (1994). *A classification of natural rivers*. Elsevier Science B. V.

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## End Notes

<sup>i</sup> **Geomorphic processes:** The physical and chemical interactions between the Earth's surface and the natural forces acting upon it to produce landforms. The processes are determined by natural environmental variables such as geology, climate and vegetation.

<sup>ii</sup> **Bed Form:** Arrangement of sediment by flowing water into discernable features.

<sup>iii</sup> **Invasive species:** A plant that has populations that are increasing in density or spatial extent beyond their natural range.



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# Appendix

Page 20-22 – Planting Species Plan

Page 21-25 – 2014 CSBI Monitoring Results

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***Final Planting Plan – Sammet, John (Installed November 7-15, 2013)***

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**Left Bank Planting – Total Installed**

Shrubs	
Button Bush	50
Gray Dogwood	55
Silky Dogwood	60
Meadowsweet	75
Witch-hazel	40
Elderberry	60
Pussy Willow	40
Winterberry	55
Speckled Alder	10
Sandbar Willow	20
Serviceberry	25

Trees	
Gray Birch	25
Red Maple	25
Sugar Maple	15
Hornbeam	65
Yellow Birch	20
Sycamore	25
Poplar	10
Red Oak	25
Chokeberry	30

**Left Bank Planting**

***Existing Species:*** Sycamore, Red Oak, Sugar Maple, Red Maple, Gray Birch, Hornbeam, White Pine, Black Cherry

***Planting Plan:*** 7 foot spacing

730 plants (67% shrubs & 33% trees)

490 shrubs

240 trees

***Proposed Species***

***Shrubs:*** Button Bush, Gray Dogwood, Silky Dogwood, Meadowsweet, Witch-hazel, Elderberry, Pussy Willow, Winterberry, Speckled Alder, Sandbar Willow, Serviceberry

***Trees:*** Gray Birch, Red Maple, Sugar Maple, Hornbeam, Yellow Birch, Sycamore, Poplar, Red Oak, Chokeberry, White Pine, Eastern Cottonwood

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## **Drought Tolerance**

Of nursery plants, medium tolerance:

- Button Bush (medium to high)
- Gray Dogwood
- American Elderberry
- Red Maple
- Sweet Birch
- Gray Birch
- Eastern Cottonwood
- White Oak

Of nursery plants, low tolerance:

- Silky Dogwood
- Common Winterberry
- White Meadowsweet
- Silver Maple
- Speckled Alder
- Hazel Alder
- Paper Birch
- American Hornbeam
- Red Oak
- Cedar
- Hemlock

Of nursery plants, no drought tolerance:

- White Pine

## **Shade Tolerance**

Of nursery plants, most tolerant of shade:

- Button Bush
- Gray Dogwood
- Hornbeam
- Hemlock

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Of nursery plants, intermediate tolerance of shade:

- Silky Dogwood
- Winterberry
- Meadowsweet
- Red Maple
- Silver Maple
- Speckled Alder
- Gray Birch
- White Pine
- Sycamore
- White Oak
- Red Oak
- Cedar

Of nursery plants, not tolerant of shade:

- Elderberry
- Hazel Alder
- Sweet Birch
- Paper Birch
- Cottonwood

## CSBI

## Monitoring

Date: 08/14/2014

Site: Warner Creek, Site 5, Plot #1

Photos: Cam 1: 9(N), 10(E), 11(S), 12(W)

Condition: 1 = very poor, 2 = poor, 3 = fair, 4 = good,

5 = very good, 6 = excellent

Predation: 1 = mild, 2 = moderate, 3 = severe

Natural Regeneration: Dark (red)

Page: 1 of 3

Plant #/Species	Dead	Height	Diameter	Condition	Predation	Notes		
#1/SPAL2		24.0"	2.0"	6	1	Red yellowing (leaves), flower developing	buttonbush	CEOC2
#2/ALSC2		26.0"	0.25"	5	1	Minor insect damage, flower spotting	silky dogwood	COAM2
#3/SPAL2		42.0"	1.0"	4	1	Some brown spotting, brown	gray dogwood	CORA6
#4/PH24		23.0"	1.0"	5	1/N/A	Red yellowing (leaves), flower developing	redosier dogw	COSE16
#5/SPAL2		38.0"	1.0"	3	1	Minor insect damage, brown	winterberry	ILVE
#6/COCA18		32.0"	0.5"	4	1	Minor insect damage, brown	elderberry	SANICA
#7/SPAL2		19.0"	1.0"	5	1	Minor insect damage, brown	meadowsweet	SPAL2
#8/CEOC2		15.0"	1.0"	3	2	Minor insect damage, brown	red maple	ACRU
#9/PH24		26.0"	1.0"	4	1	Minor insect damage, brown	silver maple	ACSA2
#10/PH24		23.0"	2.0"	5	1	Minor insect damage, brown	sugar maple	ACSA3
#11/ALVE		23.0"	1.0"	5	1	Minor insect damage, brown	speckled alder	ALNR
#12/PH24		21.0"	1.0"	4	1	Minor insect damage, brown	hazel alder	ALSE2
#13/SADE		21.0"	1.0"	5	1	Minor insect damage, brown	sweet birch	BELE
#14/COA6		17.0"	2.0"	3	2	Minor insect damage, brown	paper birch	BEPA
#15/SADE		20.0"	2.0"	5	1	Minor insect damage, brown	gray birch	BEPO
#16/SADE		16.0"	1.0"	4	1	Minor insect damage, brown	hornbeam	CACA18
#17/SADE		18.0"	2.0"	6	1	Minor insect damage, brown	white pine	PIST
#18/ALVE		26.0"	1.0"	5	1	Minor insect damage, brown	sycamore	PIOC
#19/CEOC2		11.0"	1.0"	4	1	Minor insect damage, brown	cottonwood	PODE3
#20/SADE		12.0"	1.0"	2	1	Minor insect damage, brown	white oak	QUAL
#21/SADE		13.0"	1.0"	4	1	Minor insect damage, brown	red oak	QURU
#22/SADE		13.0"	1.0"	3	1	Minor insect damage, brown	cedar arborvit	THOC2
#23/SPAL2		25.0"	2.0"	5	1	Minor insect damage, brown	hemlock	TSCA
#24/SPAL2		34.0"	2.0"	5	1	Minor insect damage, brown		

Controlled mix  
40% of plot is planted  
40% in wood area

Ground Cover: 95% - Close



# CSBI

## Monitoring

Date: 8/10/14

Site: Macony Creek Site 5- Plot #1

Photos:

Condition: 1 = very poor, 2 = poor, 3 = fair, 4 = good,

5 = very good, 6 = excellent

Predation: 1 = mild, 2 = moderate, 3 = severe

Natural Regeneration: Oak (Red)

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Plant #/Species	Dead	Height	Diameter	Condition	Predation	Notes	buttonbush	CEOC2
#25/HAVID		19.0"	9.0"	3	2	Insect Browsing/minor browning of leaves	buttonbush	CEOC2
#26/CORAB		13.0"	4.0"	2	2	Insect Browsing/Browning leaves/Minor stem browning	gray dogwood	COAM2
#27/SADI		5.84"	30.6"	5	1	Minor Insect Browsing	redosier dogw	COSE16
#28/CORAB		23.0"	7.0"	2	2	Insect Browsing/Browning of leaves	winterberry	ILVE
#29/CACAI8		13.0"	0.2 in.	2	1	Insect Browsing/1 stem is dying + bare (no leaves)	elderberry	SANIC4
#30/CEOC2		21.0"	10.0"	5	1	Minor insect Browsing/Very little reddening of leaves	meadowsweet	SPAL2
#31/SPAL2		28.0"	11.0"	5	1	Minor insect Browsing/Red browning leaves	red maple	ACRU
#32/SPAL2		29.0"	19.0"	5	1	Minor insect Browsing/very few browning leaves	silver maple	ACSA2
#33/SPAL2		29.0"	26.0"	6	N/A	Fire Specimen	sugar maple	ACSA3
#34/SPAL2		40.0"	16.0"	5	1	Insect Browsing/browning of leaves lower portion.	speckled alder	ALINR
#35/SPAL2		33.0"	12.0"	4	1	Insect Browsing/browning of leaves/1 dying stem	hazel alder	ALSE2
#36/SPAL2		36.0"	13.0"	5	1	Minor insect Browsing/browning of leaves lower portion	sweet birch	BEL
#37/COAM2		31.0"	4.0"	3	1	Minor insect Browsing/1 stem bare (no leaves)	paper birch	BEPA
#38/SANIC4		16.5"	8.5"	3	2	Insect Browsing/3 dead stem/deer browning	gray birch	BEPO
#39/BAERY4		21.0"	13.0"	3	1	Insect Browsing/1 dead stem/browning of leaves	hornbeam	CACAI8
#40/BAERY4		24.0"	8.0"	4	1	Insect Browsing/1 dead stem/minor yellowed spotting	white pine	PIST
#41/CACAI8		18.0"	9.02-0.2 in.	3	1	Browning leaves/Minor insect Browsing	cottonwood	PODE3
#42/CACAI8		21.0"	0.1 in.	3	2	Insect Browsing/browning leaves	white oak	QUAL
#43/PAOR		19.0"	11.0"	4	1	Minor deer browse	red oak	QURU
#44/COCAK		22.0"	0.2 in.	2	1	Insect predation/discrimination of leaves	cedar arborvitae	THOC2
#45/SPAL2		30.6"	12.0"	5	1/N/A	Fire Specimen	gray dogwood	COAM2
#46/SANIC4		16.0"	8.0"	3	1	1 dead stem/minor insect predation/outside of plot	hemplock	TSCA
#47/COAM2		25.0"	4.0"	3	1	Insect Browsing		
#48/SPAL2		25.0"	19.0"	5	1/N/A	Fire Specimen/outside of Plot - long removed		

\* 60% plot is planted  
40% is in wooded area

\* Ground cover = 95%  
46, 48 outside of plot



# CSBI

## Monitoring

Date: 8/14/14

Site: Whiskey Creek Sikes - Plot 4

Photos:

Condition: 1 = very poor, 2 = poor, 3 = fair, 4 = good,

5 = very good, 6 = excellent

Predation: 1 = mild, 2 = moderate, 3 = severe

Natural Regeneration: OK (Red)

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Plant #/Species	Dead	Height	Diameter	Condition	Predation	Notes	buttonbush	CEOC2
#49 / ALLE		13.0"	9.0"	5	1	Insect browse	buttonbush	CEOC2
#50 / COAM2		35.0"	8.0"	3	2	Insect browse / minor browse	silky dogwood	COAM2
#51 / COAM2		38.0"	8.0"	4	1	Insect browse / Browning leaves	gray dogwood	CORA6
#52 / ILVE		24.0"	7.0"	4	1	Browning of leaves / Insect predation	redosier dogw	COSE16
#53 / CORA6		24.0"	6.0"	3	2	Insect browse (heavy)	winterberry	ILVE
#54 / HAV14		18.0"	16.0"	3	1	minor insect predation	elderberry	SANIC4
#55 / PAPNY		35.0"	7.0"	3	1	minor insect browse	meadowsweet	SPAL2
#56 / SANIC4		24.0"	10.0"	4	1	minor insect browse	red maple	ACRU
#57 / CACA18		21.0"	0.3 in.	4	1	minor insect browse	silver maple	ACSA2
#58 / HAV14		14.0"	13.0"	3	1	minor insect browse / yellowing of leaves	sugar maple	ACSA3
#59 / CACA18		26.0"	0.3 in.	3	1	minor insect browse / discoloration on some leaves	spectled alder	ALINR
#60 / SPAL2		26.0"	14.0"	4	N/A	minor discoloration / minor insect predation	hazel alder	ALSE2
#61 / COAM2		34.0"	6.0"	3	2	Insect / Deer browse / Browning of leaves	sweet birch	BELE
#62 / SPAL2		26.0"	20.0"	3	1	Yellowing of leaves / Insect browse	paper birch	BEPA
#63 / COSE16		15.0"	5.0"	3	2	Insect / Deer browse	gray birch	BEPO
#64 / SADI		82.4"	10.0"	4	1	1 dead branch / 1 cut branch	hornbeam	CACA18
#65 / SPAL2		30.0"	24.0"	5	1	Yellowing of leaves / Insect browse	white pine	PIST
#66 / CACA18		20.0"	0.2 in.	4	1	Insect predation / 1 branch bare (leaves)	sycamore	PIOC
#67 / HAV14		17.0"	17.0"	3	1	Some yellowing of leaves / minor insect predation	cottonwood	PODE3
#68 / COSE16		17.0"	6.0"	3	1	Browning of leaves / Insect browse	white oak	QUAL
							red oak	QRUR
							cedar arborvitae	THOC2
							hemlock	TSCA

60% Planted  
40% in Whiskey Creek

Ground Cover = 100% to 95%



\* Site 1 was ACSA 2 for Silver maple  
 (check code for Silver US maple Sugar maple  
 This farm has ACSA 2 for Silver and ACSA 3 for Sugar  
 TR located on road record ACSA 2 for Sugar

✓ ACSA 3 = Sugar

# CSBI

radius = 26.3 ft boundary N, continue cir

Condition: 1 = very poor, 2 = poor, 3 = fair, 4 = good,

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## Monitoring Site 5-Plot 2 (Warner Creek)

Date: 8/12/14 + 8/13/2014 + 8/14/2014

Site: Site 5 - Plot 2 \* PL OF NOT FINISHED

Photos: 8/14 - CAM 1, 2, 3 (N), 3 (E), 3 (S), 4 (W)

5 = very good, 6 = excellent  
 Predation: 1 = mild, 2 = moderate, 3 = severe  
 Natural Regeneration: cottonwood, red maple, milkweed, Spicewood

Plant #/Species	Dead	Height	Diameter	Condition	Predation	Notes	buttonbush	CEOC2
#1/CEOC2		26.0 in	8.0 in	4	1	browse, minor browsing in leaves	silky dogwood	COAM2
#2/BEPO		4.0 ft	0.75 in	6	1	browse, minor browsing in leaves	gray dogwood	CORAG
#3/CEOC2		16.0 in	12.0 in	4	1	browse, dead twigs, red spotting on leaves	redosier dogw	COSE16
#4/ILVE		13.0 in	7.0 in	4	1	minor dead at top, slight minor damage, quilling	winterberry	ILVE
#5/ACR4		10.0 in	1.1 in	1	1/4	dead main stem, browse, some leaves red, red spotting	elderberry	SANICA
#6/CACA18		26.0 in	0.3 in	3	1	some browsing of leaves, minor browse, some insect damage	meadowsweet	SPAL2
#7/BEPO		8.5 ft	0.8 in	5	1	some yellow leaves, few lower dead branches, insect damage minor	red maple	ACRU
#8/CEOC2		11.0 in	8 in	3	1	minor insect damage, minor browse, some spotting	silver maple	ACSA2
#9/ACR4		10.0 in	6.2 in	3	2	some missing/damaged leaves, browse, minor browsing	sugar maple	ACSA3
#10/BEAL2		6.4 ft	0.5 in	3	2	minor insect damage, moderate older browse, upper branch has lots of new growth	speckled alder	ALINR
#11/ACSA3		30.5 in	0.4 in	4	1	some spotting + browsing of leaves, insect damage	hazel alder	ALISE2
#12/ILVE		13.0 in	17.0 in	4	1	some browsing of leaves, minor browse	sweet birch	BELE
#13/PLOC		33.0 in	0.4 in	4	1	leaves browsing/yellowing on a few leaves, red only	paper birch	BEPA
#14/ILVE		30.0 in	9.0 in	3	1	some leaves browsing, minor browse	gray birch	BEPO
#15/ACSA3		23.0 ft	0.3 in	3	1	minor browsing, leaves browsing + spotting	hornbeam	CACA18
#16/CACA18		17.5 in	0.4 in	4	2	spotting on leaves, browse, insect damage	white pine	PIST
#17/COSE16		23.0 in	3.5 in	2	2	browsing/spotting, leaves browsing only, stem, all leaves eaten top	sycamore	PIOC
#18/BEPO		16.0 in	0.5 in	5	1	few yellow leaves, minor insect damage, minor browse	cottonwood	PODE3
#19/PLOC		25.0 in	0.5 in	4	1	some leaves with brown spotting, 1 dead main stem	white oak	QUAL
#20/ACSA/mud	DEAD						red oak	QRUR
#21/CACA18		24.0 in	0.3 in	4	1	few red leaves, some flower buds, stems with no leaves	cedar arborvit	THOC2
#22/BEPO		6.7 ft	0.6 in	5	1	few yellow leaves, brown spotting, very minor insect damage	hemlock	TSCA
#23/SADI		16.0 in	32.0 in	5	1/4	dead at top, dead twigs, some leaves eaten, minor insect damage		
#24/BEAL2		5.2 ft	0.5 in	4	1	leaves, some insect damage		

Contractor and 1 type of deer tongue  
 90 - 95% ground cover

~~X~~ It recorded with A are in feathers  
Those with patches are not in feathers.

Date: 08/14/2014 (Previous days 8/12, 8/13)

**Site:** Warner Creek, Site 5, Plot #2

**Photos:**

Condition: 1 = very poor, 2 = poor, 3 = fair, 4 = good,  
5 = very good, 6 = excellent

Predation: 1 = mild, 2 = moderate, 3 = severe

Natural Regeneration: (colonized, red maple, white wood, Sycamore)

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