



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
3130 State Route 28
Shokan, New York 12481
(845) 688-3047**

Contents

Executive Summary.....	4
Purpose	5
Riparian Buffer Functions and Benefits	6
What is a Riparian Buffer?	6
Healthy Riparian Systems.....	6
The Ashokan Watershed.....	7
The Landscape.....	7
Climate and Hydrology.....	7
Sammet Property Description.....	8
Location and Size	8
Stream Type	9
Reference Stream Type.....	9
Management Implications	9
Soils	10
Soil Properties.....	10
Management Implications	10
Vegetation.....	12
Existing Vegetation	12
Vegetation Potential	12
Invasive Species	12
Past Intervention and Concerns.....	13
Site Visit History	13
Landowner Issues/Concerns	13
Past Property Maintenance	13
BMP Recommendations and Implementation	14
General BMP's.....	14
Restoration Planting	16
Project Site Overview.....	16
Project Soil Type.....	16
Planting Plan	16
Riparian Buffer Maintenance.....	17
Future Activities and Monitoring.....	18
Changes/Modifications to this RCMP	18

Bibliography	18
.....	18
End Notes	18
Appendix	19-27

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, elevational shifts, and influences from upland areas.

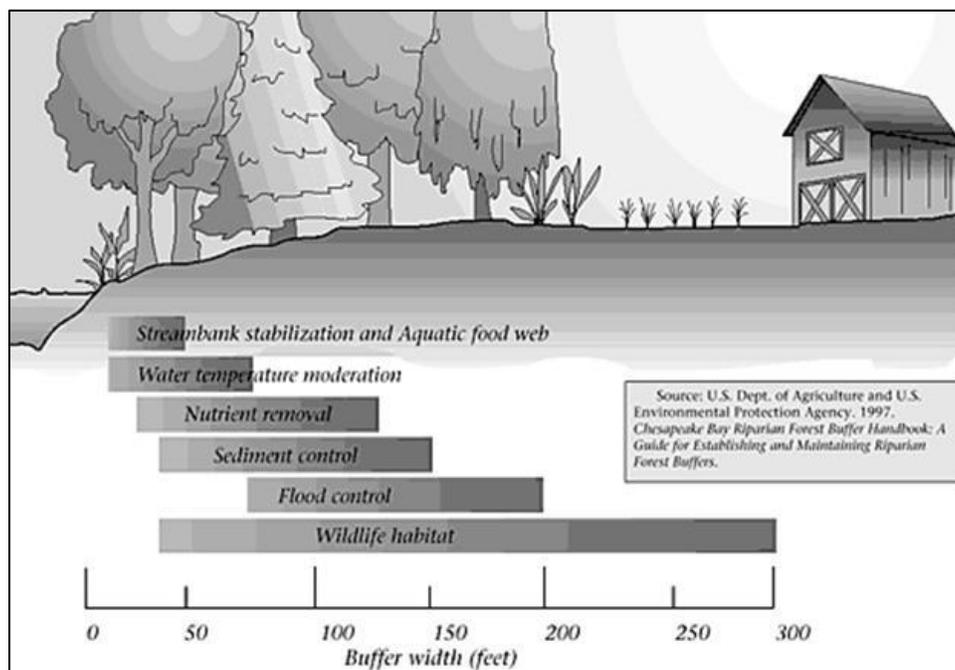
Streams with a healthy riparian buffer are more stable and resilient than those without and can help protect and maintain the character and

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.

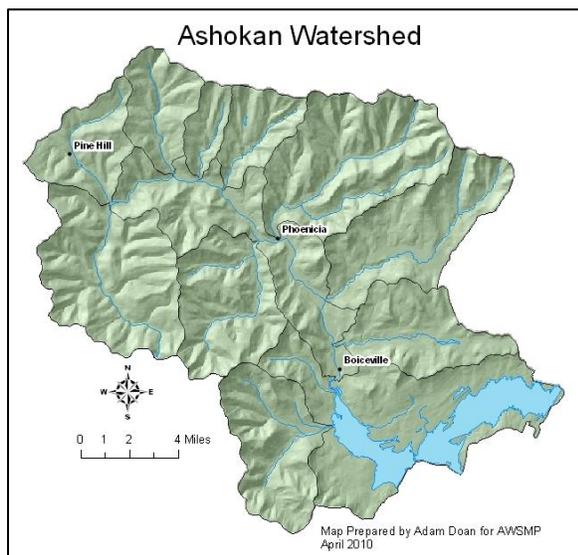


The Ashokan Watershed

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

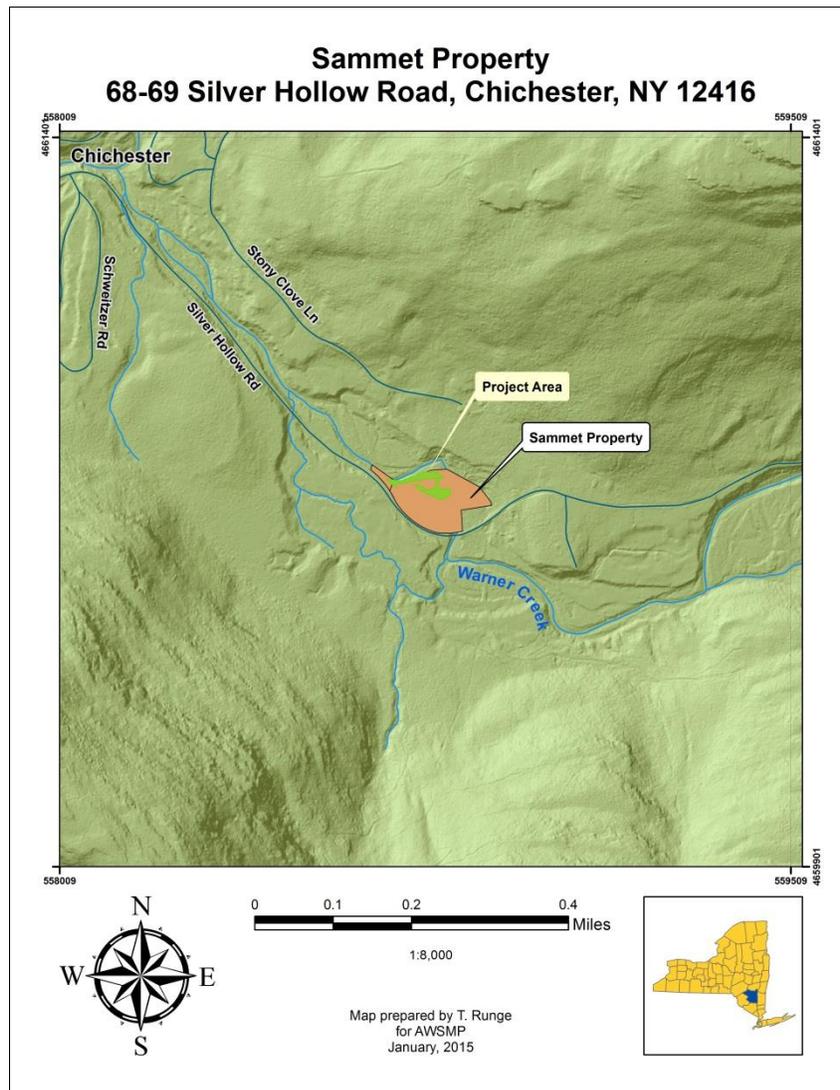
The Sammet property is located on Silver Hollow Road in the hamlet of Chichester, Ulster County, NY. The total property size is 4.40 acres and consists of two parcels. There are no buildings on the property. The parcel is currently for sale.

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 formⁱⁱ (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.

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.

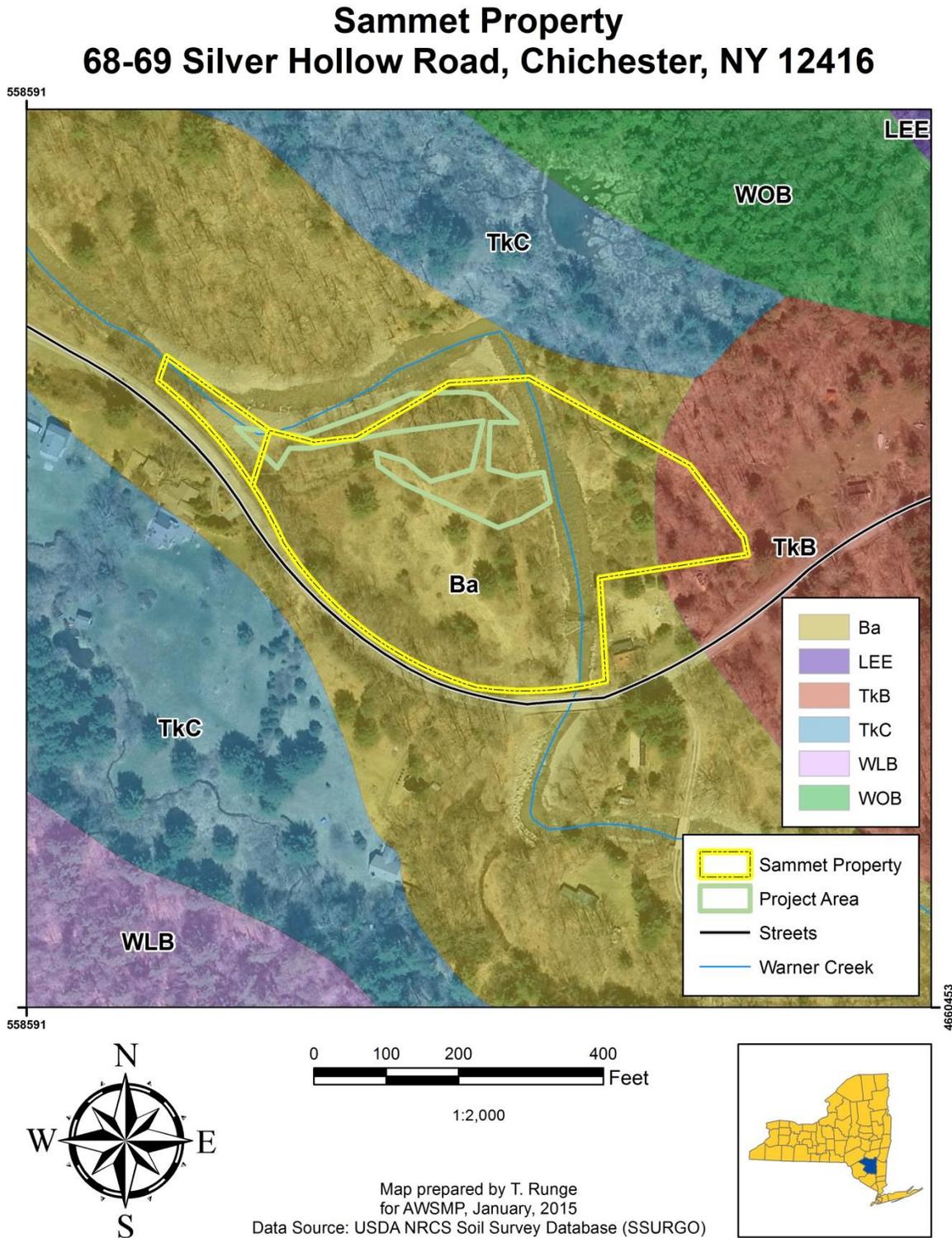
Figure 5: Soil types with percent cover for the Sammet property.

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 Speciesⁱⁱⁱ: 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.

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.

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.

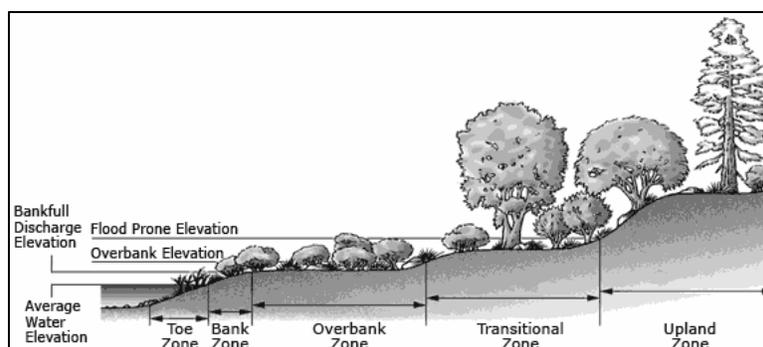
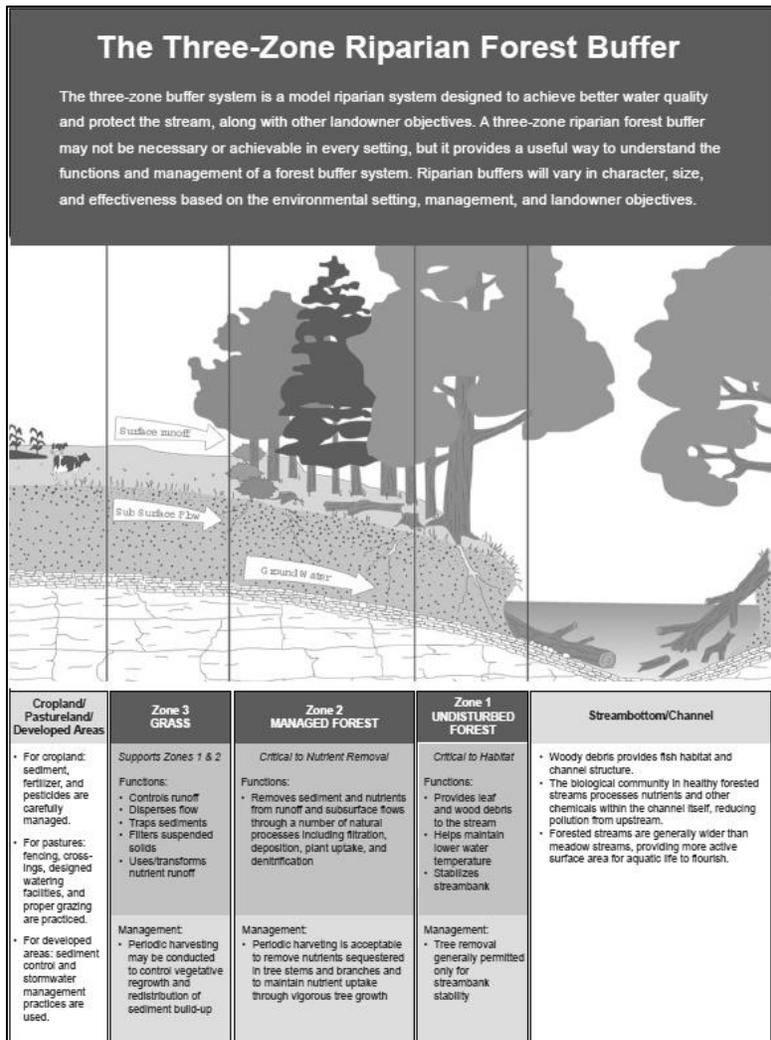


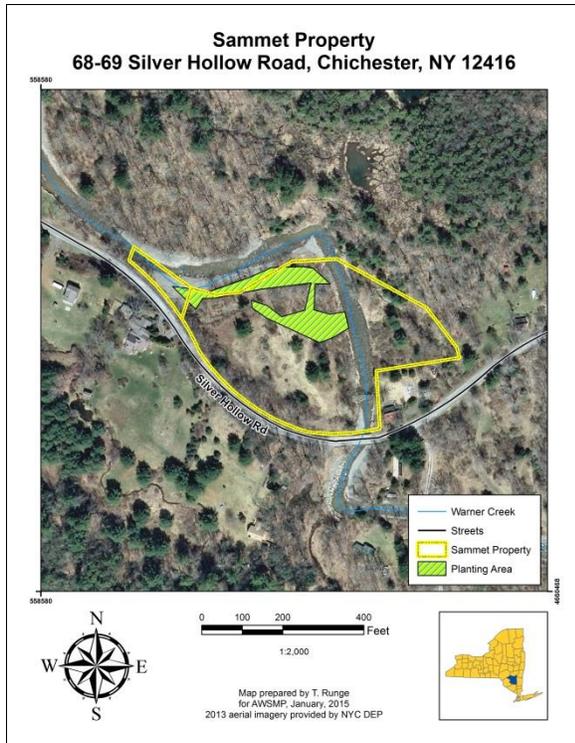
Figure 11: The three-zone riparian buffer.



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.

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.

End Notes

ⁱ **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.

ⁱⁱ **Bed Form:** Arrangement of sediment by flowing water into discernable features.

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

Appendix

Page 20-22 – Planting Species Plan

Page 21-25 – 2014 CSBI Monitoring Results

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

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

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

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: Camera: 9(N), 10(E), 11(S), 12(W)

Plot begins facing north + continuing clockwise
 + taller are in back
 in later are out of 12 inches

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 minor insect damage, 1st flower opening	buttonbush	CEOC2
#2/ALSA		26.0"	0.25"	5	1	Minor insect damage, 1st flower opening	silky dogwood	COAM2
#3/SPAL2		42.0"	1.0"	4	1	Some brown spotting, brown young stem, some growth for 2-3"	gray dogwood	CORAB
#4/PH094		23.0"	1.0"	5	1/N/A	1st flower opening, very minor insect damage, 1st flower opening	redosier dogw	COSE16
#5/SPAL2		38.0"	1.0"	3	1	Minor insect damage, 1st flower, red spotting	winterberry	ILVE
#6/CACA18		32.0"	0.5"	4	1	Some yellowing (leaves), brown spots	elderberry	SANIC4
#7/ALSA		19.0"	1.0"	5	1	Insect predation, lower stem red, brown spots, insect damage	meadowsweet	SPAL2
#8/CEOC2		15.0"	1.0"	3	2	Insect predation, lower stem red, brown spots, insect damage	red maple	ACRU
#9/PH094		26.0"	1.0"	4	1	Minor insect damage, some spotting	silver maple	ACSA2
#10/PH094		23.0"	2.0"	5	1	Minor insect damage, some spotting	sugar maple	ACSA3
#11/ALVE		16.0"	1.0"	5	1	Minor insect damage, some spotting	speckled alder	ALINR
#12/PH094		21.0"	1.0"	4	1	Minor insect damage, some spotting	hazel alder	ALSE2
#13/ALDI		8.0"	1.0"	5	1	Minor insect damage, some spotting	sweet birch	BELE
#14/CORAB		17.0"	2.0"	3	2	Minor insect damage, some spotting	paper birch	BEPA
#15/SANIC4		20.0"	2.0"	5	1	Minor insect damage, some spotting	gray birch	BEPO
#16/ALVE		16.0"	1.0"	4	1	Minor insect damage, some spotting	hornbeam	CACA18
#17/ALVE		18.0"	2.0"	6	1	Minor insect damage, some spotting	white pine	PIST
#18/ALVE		26.0"	1.0"	5	1	Minor insect damage, some spotting	sycamore	PIOC
#19/CEOC2		11.0"	1.0"	4	1	Minor insect damage, some spotting	cottonwood	PODE3
#20/CACA18		12.0"	1.0"	4	1	Minor insect damage, some spotting	white oak	QUAL
#21/CEOC2		12.0"	1.0"	4	1	Minor insect damage, some spotting	red oak	QURU
#22/SANIC4		13.0"	1.0"	4	1	Minor insect damage, some spotting	cedar arborvit	THOC2
#23/SPAL2		18.0"	1.0"	3	1	Minor insect damage, some spotting	hemlock	TSCA
#24/SPAL2		25.0"	2.0"	5	1	Minor insect damage, some spotting		
#25/SPAL2		34.0"	2.0"	5	1	Minor insect damage, some spotting		

60% of plot is planted
 40% in wood area
 Ground Cover: 95% - Close

CSBI

Monitoring

Date: 8/11/14

Site: Masonry Creek Site S-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)

Page: 2 of 3

Plant #/Species	Dead	Height	Diameter	Condition	Predation	Notes	buttonbush	CEOC2
#25/HAVID		19.0"	9.0"	3	2	Insect Browsing/minor browning of leaves	silky dogwood	COAM2
#26/CORAB		13.0"	4.0"	2	2	Insect Browse/Browsing leaves/Minor stem borer	gray dogwood	CORAB
#27/SADI		5.84"	30.0"	5	1	Minor Insect Browse	redosier dogw	COSE16
#28/CORAB		23.0"	7.0"	3	2	Insect Browse/Browsing of leaves	winterberry	ILVE
#29/CACAI8		13.0"	0.2 in.	2	1	Insect Browse/1 stem is dying + bare (no leaves)	elderberry	SANIC4
#30/CEOC2		21.0"	10.0"	5	1	Minor insect Browse/very little reddening of leaves	meadowsweet	SPAL2
#31/SAL2		28.0"	11.0"	5	1	Minor insect Browse/Red browning leaves	red maple	ACRU
#32/SPAL2		29.0"	19.0"	5	1	Minor insect Browse/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		30.0"	13.0"	5	1	minor insect Browsing/Browning of leaves lower portion	sweet birch	BELB
#37/COAM2		31.0"	4.0"	3	1	Minor insect Browse/1 stem bare (no leaves)	paper birch	BEPA
#38/SANIC4		16.0"	8.5"	3	2	Insect Browsing/3 dead stem/deer browsing	gray birch	BEPO
#39/BEPO		27.0"	13.0"	3	1	Insect Browsing/1 dead stem/Browning of leaves	hornbeam	CACAI8
#40/PIPY4		24.0"	8.0"	4	1	Insect Browsing/1 dead stem/Minor yellowed spotting	white pine	PIST
#41/CACAI8		18.0"	0.2-0.25 in.	3	1	Browsing leaves/Insect Browse	sycamore	PIOC
#42/CACAI8		21.0"	0.1 in.	3	2	Insect Browse/Browning leaves	cottonwood	PODE3
#43/PIAP		19.0"	11.0"	4	1	Minor deer browse	white oak	QUAL
#44/COCAK		22.0"	0.2 in.	2	1	Insect predation/disdication of leaves	red oak	QRU
#45/SPAL2		30.5"	12.0"	5	N/A	Fire Specimen	cedar arborvitae	THOC2
#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 Browse		
#48/SPAL2		25.0"	19.0"	5	1/N/A	Fire Specimen		

* 60% plot is planted
40% is 5m wooded area

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

CSBI

Monitoring

Date: 8/14/14

Site: Whisman Creek Sikes - Plot #16

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)**

Page: 3 of 3

Plant #/Species	Dead	Height	Diameter	Condition	Predation	Notes		
#49 / ALLE		13.0"	4.0"	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	CORAB
#52 / ILVE		24.0"	7.0"	4	1	Browning of leaves / Insect predation?	redosier dogw	COSE16
#53 / CORAB		24.0"	6.0"	3	2	Insect browse (heavy)	winterberry	ILVE
#54 / HANNY		18.0"	16.0"	3	1	minor insect predation	elderberry	SANIC4
#55 / PAPPY		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"	0.3in.	4	1	minor insect browse	silver maple	ACSA2
#58 / HANNY		11.0"	13.0"	3	1	minor insect browse / yellowing of leaves	sugar maple	ACSA3
#59 / CACA18		26.0"	0.3in.	3	1	minor insect browse / discoloration on some leaves	speckled alder	ALINR
#60 / SPAL2		26.0"	11.0"	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	2	Yellowing of leaves / Insect browse	paper birch	BEPA
#63 / COSE16		15.0"	5.0"	3	2	Insect / Deer browse	gray birch	BEPO
#64 / SADI		82.0"	10.0"	4	1	1 dead branch / 1 cut branch	hornbeam	CACA18
#65 / SPAL2		30.0"	24.0"	3	1	Yellowing of leaves / insect browse	white pine	PIST
#66 / CACA18		20.0"	0.2in.	4	1	Insect predation / 1 branch bare (twigs)	sycamore	PIOC
#67 / HANNY		11.0"	12.0"	3	1	Some yellowing of leaves / minor insect predation	cottonwood	PODE3
#68 / COSE16		11.0"	6.0"	3	1	Browning of leaves / Insect browse	white oak	QUAL
							red oak	QRU
							cedar arborvit	THOC2
							hemlock	TSCA

50% Planted
40% in Wooded Area

Ground Cover = 100% to 95%

CSBI

Monitoring

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

Site: Warner Creek, Site S, Plot # 2

Photos:

* Not recorded when A are in tents
Those with asterisks are not in tents.

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

5 = very good, 6 = excellent

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

Natural Regeneration: cottonwood, red maple, milkweed, sycamore

Page: 2 of 2

Plant #/Species	Dead	Height	Diameter	Condition	Predation	Notes		
#25 / SADI		26.6"	17.0"	5	1/N/A	cutting/dying with "pregnant" very few green leaves	buttonbush	CEOC2
#26 / AEPD		6.4 ft	0.5"	5	1	few yellow leaves, minor insect damage	silky dogwood	COAM2
#27 / SANIC4		18.0"	11.0"	3	1	Some stems dead, browse, some yellowing,	gray dogwood	CORA6
#28 / CORA6		25.0"	20.0"	3	2	leaves with brown spotting, browse, minor insect damage, some yellowing	redosier dogw	COSE16
#29 / CARA18		16.0"	0.2 in	4	1	minor insect damage, few leaves redening, 1 stem with browse	winterberry	ILVE
#30 / CORA6		26.0"	25.0"	3	2	reddening leaves and spotting, browse, minor insect damage	elderberry	SANIC4
#31 / SANIC4		11.0"	10.0"	4	1/N/A	minor stem dead, minor growth, minor spotting	meadowsweet	SPAL2
#32 / AEPD		7.1 ft	0.5"	5	1/N/A	few leaves yellowing, minor insect damage	red maple	ACRU
#33 / AEPD		7.6 ft	0.8"	5	1	few brown leaves, few yellow leaves, brown spotting, 1 stem by branch	silver maple	ACSA2
#34 / CORA6		25.0"	16.5"	4	1	minor insect damage, minor insect damage	sugar maple	ACSA3
#35 / ILVE		12.0"	12.0"	6	1	minor insect damage, minor insect damage	speckled alder	ALINR
#36 / CORA6		18.0"	18.0"	3	2	green berries, no insect damage with insect damage, red spotting	hazel alder	ALSE2
#37 / ACRU		16.0"	0.5"	4	1	minor stem dead, some leaves red, browse	sweet birch	BELE
#38 / BEPD		6.3 ft	0.4"	4	1	very minor spotting, some yellow leaves, red as well as other as site for beetle	paper birch	BEPA
#39 / BEAL2		5.9 ft	0.5"	3	1	browse, minor insect damage, not dense in leaves	gray birch	BEPO
#40 / CEOC2		11.0"	9.0"	3	1	leaf with insect damage, minor stem browse,	hornbeam	CACA18
#41 / PLOC		29.0"	0.5 in	4	1/N/A	very minor spotting, minor insect damage, minor insect damage, minor insect damage	white pine	PIST
#42 / PLOC		23.0"	0.1"	3	1	Spotting, some leaves red	cottonwood	PLOC
#43 / PODE3		5.6 ft	0.5"	4	1	minor insect damage, very few leaves brown	white oak	QUAL
#44 / ILVE		27.0"	1.5"	5	1	100% spotting, very minor browse,	red oak	QRU
							cedar arborvitae	THOC2
							hemlock	TSCA