

Corrective Action Plan (CAP)

Alden Resources, LLC

Area #6 Project

Campbell County, Tennessee

LRN-2018-00397; ARAP# NR19MS.001

NPDES Permit TN0070408

SMCRA Permit 3333

WPT# 2023-61

Table 1. Impacts Summary

Name	Length (Linear Feet)	Baseline FCU	Debit (FCUs)
Stream 1	40	10	10
Stream 1	136	34	34
Total	176	44	44

Table 2. Mitigation Summary

Name	Length (Linear Feet)	Proposed FCU
Stream 2	118	93
Stream 2A	150	119
Total	268	212

Table 3. Credit and Debit Summary

Name	Length (Linear Feet)	Baseline Impacts FCU Debit	Mitigation FCU Credit
Stream 1	176	44	
Stream 2/2A	268	0	212
Total	NA	-44	+212
Net Lift	NA	+168 FCUs	

FCI Calculator for the High-Gradient Headwater Streams in Appalachia

To ensure accurate calculations, the **UPPERMOST STRATUM** of the plant community is determined based on the calculated value for V_{CCANOPY} ($\geq 20\%$ cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-Gradient Headwater Streams and Low-Gradient Perennial Streams in Appalachia (Environmental Laboratory U.S. Army Corps of Engineers 2017).

Project Name: Area 6

Location: Stream 2 Lower

Sampling Date: 4-25-23

Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR:

Shrub/Herb Strata

SAR number: 1

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.42
Biogeochemical Cycling	0.21
Habitat	0.12

Variable Measure and Subindex Summary:

Variable	Name	Average Measure	Subindex
V_{CCANOPY}	Percent canopy over channel.	Not Used, <20%	Not Used
V_{EMBED}	Average embeddedness of channel.	1.17	0.16
$V_{\text{SUBSTRATE}}$	Median stream channel substrate particle size.	0.08	0.04
V_{BERO}	Total percent of eroded stream channel bank.	83.00	0.63
V_{LWD}	Number of down woody stems per 100 feet of stream.	60.00	0.50
V_{TDBH}	Average dbh of trees.	Not Used	Not Used
V_{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V_{SSD}	Number of saplings and shrubs per 100 feet of stream.	41.00	0.63
V_{SRICH}	Riparian vegetation species richness.	0.00	0.00
V_{DETRITUS}	Average percent cover of leaves, sticks, etc.	55.00	0.67
V_{HERB}	Average percent cover of herbaceous vegetation.	25.31	0.34
V_{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.55	0.58

High-Gradient Headwater Streams in Appalachia Field Data Sheet and Calculator

Team: Waypoint, LLC	Latitude/UTM Northing: N36.48910°
Project Name: Area 6	Longitude/UTM Easting: W84.02067°
Location: Stream 2 Lower	Sampling Date: 4-25-23
SAR Number: 1	Reach Length (ft): 100
Stream Type: Intermittent Stream	
Top Strata: Shrub/Herb Strata (determined from percent calculated in $V_{CCANOPY}$)	
Site and Timing: Project Site Before Project	

Sample Variables 1-4 in stream channel

1 $V_{CCANOPY}$ Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.) Not Used, <20%

List the percent cover measurements at each point below:

20	15	20	20	15	20	10	15	15	10

2 V_{EMBED} Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. 1.2

Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)

Rating	Rating Description
5	<5 percent of surface covered, surrounded, or buried by fine sediment (or bedrock)
4	5 to 25 percent of surface covered, surrounded, or buried by fine sediment
3	26 to 50 percent of surface covered, surrounded, or buried by fine sediment
2	51 to 75 percent of surface covered, surrounded, or buried by fine sediment
1	>75 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface)

List the ratings at each point below:

1	1	1	1	1	1				
1	1	1	1	1	2				
1	2	1	1	4	1				
1	1	1	1	1	1				
1	1	1	1	1	1				

3 $V_{SUBSTRATE}$ Median stream channel substrate particle size. Measure at no fewer than 30 roughly equidistant points along the stream; use the same points and particles as used in V_{EMBED} . 0.08 in

Enter particle size in inches to the nearest 0.1 inch at each point below (bedrock should be counted as 99 in, asphalt or concrete as 0.0 in, sand or finer particles as 0.08 in):

0.08	0.50	0.08	14.00	0.08	0.08				
0.08	0.08	0.08	0.08	0.20	4.00				
0.08	0.08	0.08	0.08	12.00	2.00				
0.08	0.10	0.08	0.08	0.10	0.20				
0.08	0.20	0.08	0.08	8.00	0.08				

4 V_{BERO} Total percent of eroded stream channel bank. Enter the total number of feet of eroded bank on each side and the total percentage will be calculated. If both banks are eroded, total erosion for the stream may be up to 200%. 83 %

Left Bank: **31 ft** Right Bank: **52 ft**

Sample Variables 5-9 within the entire riparian/buffer zone adjacent to the stream channel (25 feet from each bank).

5 V_{LWD} Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. 60.0

Number of downed woody stems: **60**

6 V_{TDBH} Average dbh of trees (measure only if $V_{CCANOPY}$ tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. Not Used

List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below:

Left Side					Right Side				
8.3	4	4.1	11.8	5	4.5	4	5.9	6.1	4.4
6.2	4	5	7	5	6.2	5.8	5.2	5.7	6.1
5.5	5.1	7.5			6.5	6.7	6.6	4.3	5.9
					5.5	4			

7 V_{SNAG} Number of snags (at least 4" dbh and 36" tall) per 100 feet of stream. Enter number of snags on each side of the stream, and the amount per 100 feet will be calculated. 0.0

Left Side: Right Side: **0**

8 V_{SSD} Number of saplings and shrubs (woody stems up to 4 inches dbh) per 100 feet of stream (measure only if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 ft of stream will be calculated. 41.0

Left Side: **22** Right Side: **19**

9	V _{SRICH}	Riparian vegetation species richness per 100 feet of stream reach. Check all species present from Group 1 in the tallest stratum. Check all exotic and invasive species present in all strata. Species richness per 100 feet and the subindex will be calculated from these data.	0.00
Group 1 = 1.0		Group 2 (-1.0)	
<input checked="" type="checkbox"/>	<i>Acer rubrum</i>	<input type="checkbox"/>	<i>Magnolia tripetala</i>
<input type="checkbox"/>	<i>Acer saccharum</i>	<input type="checkbox"/>	<i>Nyssa sylvatica</i>
<input type="checkbox"/>	<i>Aesculus flava</i>	<input type="checkbox"/>	<i>Oxydendrum arboreum</i>
<input type="checkbox"/>	<i>Asimina triloba</i>	<input type="checkbox"/>	<i>Prunus serotina</i>
<input type="checkbox"/>	<i>Betula alleghaniensis</i>	<input type="checkbox"/>	<i>Quercus alba</i>
<input type="checkbox"/>	<i>Betula lenta</i>	<input type="checkbox"/>	<i>Quercus coccinea</i>
<input type="checkbox"/>	<i>Carya alba</i>	<input type="checkbox"/>	<i>Quercus imbricaria</i>
<input checked="" type="checkbox"/>	<i>Carya glabra</i>	<input type="checkbox"/>	<i>Quercus prinus</i>
<input type="checkbox"/>	<i>Carya ovalis</i>	<input type="checkbox"/>	<i>Quercus rubra</i>
<input type="checkbox"/>	<i>Carya ovata</i>	<input type="checkbox"/>	<i>Quercus velutina</i>
<input type="checkbox"/>	<i>Cornus florida</i>	<input type="checkbox"/>	<i>Sassafras albidum</i>
<input checked="" type="checkbox"/>	<i>Fagus grandifolia</i>	<input type="checkbox"/>	<i>Tilia americana</i>
<input type="checkbox"/>	<i>Fraxinus americana</i>	<input type="checkbox"/>	<i>Tsuga canadensis</i>
<input type="checkbox"/>	<i>Liriodendron tulipifera</i>	<input type="checkbox"/>	<i>Ulmus americana</i>
<input type="checkbox"/>	<i>Magnolia acuminata</i>		
3 Species in Group 1		3 Species in Group 2	

Sample Variables 10-11 within at least 8 subplots (40" x 40", or 1m x 1m) in the riparian/buffer zone within 25 feet from each bank. The four subplots should be placed roughly equidistantly along each side of the stream.

10	V _{DETRITUS}	Average percent cover of leaves, sticks, or other organic material. Woody debris <4" diameter and <36" long are include. Enter the percent cover of the detrital layer at each subplot.	55.00 %																								
<table border="1"> <thead> <tr> <th colspan="4">Left Side</th> <th colspan="4">Right Side</th> </tr> </thead> <tbody> <tr> <td>80</td><td>40</td><td>10</td><td>60</td> <td>50</td><td>60</td><td>60</td><td>40</td> </tr> <tr> <td>50</td><td>70</td><td>60</td><td>70</td> <td>50</td><td>60</td><td>80</td><td>40</td> </tr> </tbody> </table>				Left Side				Right Side				80	40	10	60	50	60	60	40	50	70	60	70	50	60	80	40
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80	40	10	60	50	60	60	40																				
50	70	60	70	50	60	80	40																				
11	V _{HERB}	Average percentage cover of herbaceous vegetation (measure only if tree cover is <20%). Do not include woody stems at least 4" dbh and 36" tall. Because there may be several layers of ground cover vegetation percentages up through 200% are accepted. Enter the percent cover of ground vegetation at each subplot.	25 %																								
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50	40	10	50	15	20	30	15																				
20	15	15	40	10	10	50	15																				

Sample Variable 12 within the entire catchment of the stream.

12	V _{WLUSE}	Weighted Average of Runoff Score for watershed:	0.55																																				
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Land Use (Choose From Drop List)	Runoff Score	% in Catchment	Running Percent (not >100)																																				
Forest and native range (>75% ground cover)	1	52	52																																				
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Newly graded areas (bare soil, no vegetation or pavement)	0	16	100																																				

Summary: SAA Number 1			Notes:
Variable	Value	VSI	Stream 2 has been dammed in several locations by beavers. Stream valley dominated by open water. Substrate mostly silt and embedded. Canopy open. LWD abundant due to previous disturbances. Historic and current mine bench countour above assessment site reflected in land use.
V _{CCANOPY}	Not Used, <20%	Not Used	
V _{EMBED}	1.2	0.16	
V _{SUBSTRATE}	0.08 in	0.04	
V _{BERO}	83 %	0.63	
V _{LWD}	60.0	0.50	
V _{TDBH}	Not Used	Not Used	
V _{SNAG}	0.0	0.10	
V _{SSD}	41.0	0.63	
V _{SRICH}	0.00	0.00	
V _{DETRITUS}	55.0 %	0.67	
V _{HERB}	25 %	0.34	
V _{WLUSE}	0.55	0.58	

High-Gradient Headwater Streams in Appalachia Field Data Sheet and Calculator

Team: Waypoint, LLC Latitude/UTM Northing: 36.4861
 Project Name: Area 6 Longitude/UTM Easting: -84.01719
 Location: Stream 2 Upper Sampling Date: 2028
 SAR Number: 1 Reach Length (ft): 100 Stream Type: Intermittent Stream
 Top Strata: Shrub/Herb Strata (determined from percent calculated in $V_{CCANOPY}$)
 Site and Timing: Mitigation Site After Project

Sample Variables 1-4 in stream channel

1 $V_{CCANOPY}$ Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.) Not Used, <20%

List the percent cover measurements at each point below:

0									
---	--	--	--	--	--	--	--	--	--

2 V_{EMBED} Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. 3.3

Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)

Rating	Rating Description
5	<5 percent of surface covered, surrounded, or buried by fine sediment (or bedrock)
4	5 to 25 percent of surface covered, surrounded, or buried by fine sediment
3	26 to 50 percent of surface covered, surrounded, or buried by fine sediment
2	51 to 75 percent of surface covered, surrounded, or buried by fine sediment
1	>75 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface)

List the ratings at each point below:

5	1	2	2	2	2				
4	5	4	3	3	5				
2	5	5	5	5	2				
3	5	2	4	4	5				
4	2	1	2	2	2				

3 $V_{SUBSTRATE}$ Median stream channel substrate particle size. Measure at no fewer than 30 roughly equidistant points along the stream; use the same points and particles as used in V_{EMBED} . 3.00 in

Enter particle size in inches to the nearest 0.1 inch at each point below (bedrock should be counted as 99 in, asphalt or concrete as 0.0 in, sand or finer particles as 0.08 in):

3.00	0.08	0.30	3.00	3.00	0.08				
1.00	3.00	0.08	7.00	3.00	3.00				
2.10	0.50	0.70	4.00	3.00	3.00				
0.70	3.00	5.60	1.00	3.00	4.50				
2.50	0.50	0.08	3.00	3.00	3.00				

4 V_{BERO} Total percent of eroded stream channel bank. Enter the total number of feet of eroded bank on each side and the total percentage will be calculated. If both banks are eroded, total erosion for the stream may be up to 200%. 0 %

Left Bank: 0 ft Right Bank: 0 ft

Sample Variables 5-9 within the entire riparian/buffer zone adjacent to the stream channel (25 feet from each bank).

5 V_{LWD} Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. 20.0

Number of downed woody stems: 20

6 V_{TDBH} Average dbh of trees (measure only if $V_{CCANOPY}$ tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. Not Used

List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below:

Left Side					Right Side				
2	3	2	3	2	3	2	2	2	3

7 V_{SNAG} Number of snags (at least 4" dbh and 36" tall) per 100 feet of stream. Enter number of snags on each side of the stream, and the amount per 100 feet will be calculated. 1.0

Left Side: Right Side: 1

8 V_{SSD} Number of saplings and shrubs (woody stems up to 4 inches dbh) per 100 feet of stream (measure only if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 ft of stream will be calculated. 150.0

Left Side: 75 Right Side: 75

9	V _{SRICH}	Riparian vegetation species richness per 100 feet of stream reach. Check all species present from Group 1 in the tallest stratum. Check all exotic and invasive species present in all strata. Species richness per 100 feet and the subindex will be calculated from these data.	3.00
Group 1 = 1.0		Group 2 (-1.0)	
<input checked="" type="checkbox"/>	<i>Acer rubrum</i>	<input type="checkbox"/>	<i>Magnolia tripetala</i>
<input type="checkbox"/>	<i>Acer saccharum</i>	<input type="checkbox"/>	<i>Nyssa sylvatica</i>
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<input type="checkbox"/>	<i>Magnolia acuminata</i>		
3 Species in Group 1		0 Species in Group 2	

Sample Variables 10-11 within at least 8 subplots (40" x 40", or 1m x 1m) in the riparian/buffer zone within 25 feet from each bank. The four subplots should be placed roughly equidistantly along each side of the stream.

10	V _{DETRITUS}	Average percent cover of leaves, sticks, or other organic material. Woody debris <4" diameter and <36" long are include. Enter the percent cover of the detrital layer at each subplot.	52.50 %																								
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Left Side				Right Side																							
50	50	50	50	50	50	50	50																				
70	60	50	50	40	50	70	50																				
11	V _{HERB}	Average percentage cover of herbaceous vegetation (measure only if tree cover is <20%). Do not include woody stems at least 4" dbh and 36" tall. Because there may be several layers of ground cover vegetation percentages up through 200% are accepted. Enter the percent cover of ground vegetation at each subplot.	71 %																								
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Left Side				Right Side																							
80	70	60	50	80	60	70	50																				
70	70	90	75	75	70	80	80																				

Sample Variable 12 within the entire catchment of the stream.

12	V _{WLUSE}	Weighted Average of Runoff Score for watershed:	0.93																																
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Forest and native range (>75% ground cover)	1	90	90																																
Open space (pasture, lawns, parks, etc.), grass cover >75%	0.3	10	100																																

Summary: SAA Number 1			Notes:
Variable	Value	VSI	Stream has been constructed with proper substrate, LWD, snags and stable banks. Riparian plantings have been installed. Saplings provide no canopy coverage. Land use in valley above is forested.
V _{CCANOPY}	Not Used, <20%	Not Used	
V _{EMBED}	3.3	0.92	
V _{SUBSTRATE}	3.00 in	1.00	
V _{BERO}	0 %	1.00	
V _{LWD}	20.0	1.00	
V _{TDBH}	Not Used	Not Used	
V _{SNAG}	1.0	1.00	
V _{SSD}	150.0	1.00	
V _{SRICH}	3.00	1.00	
V _{DETRITUS}	52.5 %	0.64	
V _{HERB}	71 %	0.94	
V _{WLUSE}	0.93	0.98	

High-Gradient Headwater Streams in Appalachia Field Data Sheet and Calculator

Team: Waypoint, LLC Latitude/UTM Northing: 36.48511
 Project Name: Area 6 Longitude/UTM Easting: -84.01817
 Location: Stream 2A Sampling Date: 2028
 SAR Number: 1 Reach Length (ft): 100 Stream Type: Intermittent Stream
 Top Strata: Shrub/Herb Strata (determined from percent calculated in $V_{CCANOPY}$)
 Site and Timing: Mitigation Site After Project

Sample Variables 1-4 in stream channel

1 $V_{CCANOPY}$ Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.) Not Used, <20%

List the percent cover measurements at each point below:

0									
---	--	--	--	--	--	--	--	--	--

2 V_{EMBED} Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. 3.3

Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)

Rating	Rating Description
5	<5 percent of surface covered, surrounded, or buried by fine sediment (or bedrock)
4	5 to 25 percent of surface covered, surrounded, or buried by fine sediment
3	26 to 50 percent of surface covered, surrounded, or buried by fine sediment
2	51 to 75 percent of surface covered, surrounded, or buried by fine sediment
1	>75 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface)

List the ratings at each point below:

5	1	2	2	2	2				
4	5	4	3	3	5				
2	5	5	5	5	2				
3	5	2	4	4	5				
4	2	1	2	2	2				

3 $V_{SUBSTRATE}$ Median stream channel substrate particle size. Measure at no fewer than 30 roughly equidistant points along the stream; use the same points and particles as used in V_{EMBED} . 3.00 in

Enter particle size in inches to the nearest 0.1 inch at each point below (bedrock should be counted as 99 in, asphalt or concrete as 0.0 in, sand or finer particles as 0.08 in):

3.00	0.08	0.30	3.00	3.00	0.08				
1.00	3.00	0.08	7.00	3.00	3.00				
2.10	0.50	0.70	4.00	3.00	3.00				
0.70	3.00	5.60	1.00	3.00	4.50				
2.50	0.50	0.08	3.00	3.00	3.00				

4 V_{BERO} Total percent of eroded stream channel bank. Enter the total number of feet of eroded bank on each side and the total percentage will be calculated. If both banks are eroded, total erosion for the stream may be up to 200%. 0 %

Left Bank: 0 ft Right Bank: 0 ft

Sample Variables 5-9 within the entire riparian/buffer zone adjacent to the stream channel (25 feet from each bank).

5 V_{LWD} Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. 20.0

Number of downed woody stems: 20

6 V_{TDBH} Average dbh of trees (measure only if $V_{CCANOPY}$ tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. Not Used

List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below:

Left Side					Right Side				
2	3	2	3	2	3	2	2	2	3

7 V_{SNAG} Number of snags (at least 4" dbh and 36" tall) per 100 feet of stream. Enter number of snags on each side of the stream, and the amount per 100 feet will be calculated. 1.0

Left Side: Right Side: 1

8 V_{SSD} Number of saplings and shrubs (woody stems up to 4 inches dbh) per 100 feet of stream (measure only if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 ft of stream will be calculated. 150.0

Left Side: 75 Right Side: 75

9	V _{SRICH}	Riparian vegetation species richness per 100 feet of stream reach. Check all species present from Group 1 in the tallest stratum. Check all exotic and invasive species present in all strata. Species richness per 100 feet and the subindex will be calculated from these data.	3.00
Group 1 = 1.0		Group 2 (-1.0)	
<input checked="" type="checkbox"/>	<i>Acer rubrum</i>	<input type="checkbox"/>	<i>Magnolia tripetala</i>
<input type="checkbox"/>	<i>Acer saccharum</i>	<input type="checkbox"/>	<i>Nyssa sylvatica</i>
<input type="checkbox"/>	<i>Aesculus flava</i>	<input type="checkbox"/>	<i>Oxydendrum arboreum</i>
<input type="checkbox"/>	<i>Asimina triloba</i>	<input type="checkbox"/>	<i>Prunus serotina</i>
<input type="checkbox"/>	<i>Betula alleghaniensis</i>	<input type="checkbox"/>	<i>Quercus alba</i>
<input type="checkbox"/>	<i>Betula lenta</i>	<input type="checkbox"/>	<i>Quercus coccinea</i>
<input type="checkbox"/>	<i>Carya alba</i>	<input type="checkbox"/>	<i>Quercus imbricaria</i>
<input type="checkbox"/>	<i>Carya glabra</i>	<input type="checkbox"/>	<i>Quercus prinus</i>
<input type="checkbox"/>	<i>Carya ovalis</i>	<input type="checkbox"/>	<i>Quercus rubra</i>
<input type="checkbox"/>	<i>Carya ovata</i>	<input type="checkbox"/>	<i>Quercus velutina</i>
<input type="checkbox"/>	<i>Cornus florida</i>	<input type="checkbox"/>	<i>Sassafras albidum</i>
<input checked="" type="checkbox"/>	<i>Fagus grandifolia</i>	<input type="checkbox"/>	<i>Tilia americana</i>
<input type="checkbox"/>	<i>Fraxinus americana</i>	<input type="checkbox"/>	<i>Tsuga canadensis</i>
<input checked="" type="checkbox"/>	<i>Liriodendron tulipifera</i>	<input type="checkbox"/>	<i>Ulmus americana</i>
<input type="checkbox"/>	<i>Magnolia acuminata</i>		
3 Species in Group 1		0 Species in Group 2	

Sample Variables 10-11 within at least 8 subplots (40" x 40", or 1m x 1m) in the riparian/buffer zone within 25 feet from each bank. The four subplots should be placed roughly equidistantly along each side of the stream.

10	V _{DETRITUS}	Average percent cover of leaves, sticks, or other organic material. Woody debris <4" diameter and <36" long are include. Enter the percent cover of the detrital layer at each subplot.	52.50 %																								
		<table border="1"> <tr> <th colspan="4">Left Side</th> <th colspan="4">Right Side</th> </tr> <tr> <td>50</td><td>50</td><td>50</td><td>50</td> <td>50</td><td>50</td><td>50</td><td>50</td> </tr> <tr> <td>70</td><td>60</td><td>50</td><td>50</td> <td>40</td><td>50</td><td>70</td><td>50</td> </tr> </table>	Left Side				Right Side				50	50	50	50	50	50	50	50	70	60	50	50	40	50	70	50	
Left Side				Right Side																							
50	50	50	50	50	50	50	50																				
70	60	50	50	40	50	70	50																				
11	V _{HERB}	Average percentage cover of herbaceous vegetation (measure only if tree cover is <20%). Do not include woody stems at least 4" dbh and 36" tall. Because there may be several layers of ground cover vegetation percentages up through 200% are accepted. Enter the percent cover of ground vegetation at each subplot.	71 %																								
		<table border="1"> <tr> <th colspan="4">Left Side</th> <th colspan="4">Right Side</th> </tr> <tr> <td>80</td><td>70</td><td>60</td><td>50</td> <td>80</td><td>60</td><td>70</td><td>50</td> </tr> <tr> <td>70</td><td>70</td><td>90</td><td>75</td> <td>75</td><td>70</td><td>80</td><td>80</td> </tr> </table>	Left Side				Right Side				80	70	60	50	80	60	70	50	70	70	90	75	75	70	80	80	
Left Side				Right Side																							
80	70	60	50	80	60	70	50																				
70	70	90	75	75	70	80	80																				

Sample Variable 12 within the entire catchment of the stream.

12	V _{WLUSE}	Weighted Average of Runoff Score for watershed:	0.93																																
		<table border="1"> <thead> <tr> <th>Land Use (Choose From Drop List)</th> <th>Runoff Score</th> <th>% in Catchment</th> <th>Running Percent (not >100)</th> </tr> </thead> <tbody> <tr> <td>Forest and native range (>75% ground cover)</td> <td>1</td> <td>90</td> <td>90</td> </tr> <tr> <td>Open space (pasture, lawns, parks, etc.), grass cover >75%</td> <td>0.3</td> <td>10</td> <td>100</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Land Use (Choose From Drop List)	Runoff Score	% in Catchment	Running Percent (not >100)	Forest and native range (>75% ground cover)	1	90	90	Open space (pasture, lawns, parks, etc.), grass cover >75%	0.3	10	100																					
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Summary: SAA Number 1		Notes:																																	
Variable	Value	VSI	Stream has been constructed with proper substrate, LWD, snags and stable banks. Riparian plantings have been installed. Saplings provide no canopy coverage. Land use in valley above is forested.																																
V _{CCANOPY}	Not Used, <20%	Not Used																																	
V _{EMBED}	3.3	0.92																																	
V _{SUBSTRATE}	3.00 in	1.00																																	
V _{BERO}	0 %	1.00																																	
V _{LWD}	20.0	1.00																																	
V _{TDBH}	Not Used	Not Used																																	
V _{SNAG}	1.0	1.00																																	
V _{SSD}	150.0	1.00																																	
V _{SRICH}	3.00	1.00																																	
V _{DETRITUS}	52.5 %	0.64																																	
V _{HERB}	71 %	0.94																																	
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