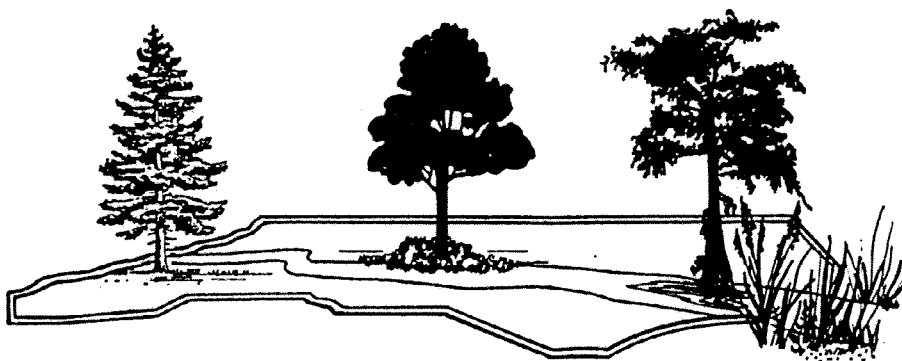


Monitoring Report
Year 1

Hominy Swamp Creek
Wilson, North Carolina



N.C. Wetlands Restoration Program
NCDENR

January 2003



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1.0 Introduction

The Hominy Swamp Creek Stream Restoration Project Site is located within the City Recreation Park in Wilson, North Carolina (Figure 1). The restoration of approximately 2,232 linear feet of stream and adjacent riparian buffers was completed in September 2001.

This Report presents the data and findings developed following assessments of stream physical stability and riparian buffer vegetation survivability. Monitoring activities included surveying a representative section of the project stream longitudinal profile, measuring stream cross-sectional dimensions and bed materials at four permanent locations, sampling vegetation survivability at ten locations on the stream banks and in the riparian buffer, and documenting general site conditions at ten designated photograph points. In addition, project site daily precipitation and water surface stage data collected for the initial six-month, post-construction period is provided. Field investigations were conducted on May 16–17, 2002. All supporting data and site photographs are included in the Report Appendices.

2.0 Methodologies

2.1 Hydraulic Geometry

A longitudinal profile was surveyed for a representative section beginning at the pedestrian bridge (Sta. 21+40) and extending 400 feet (20 bankfull widths) downstream. Four (4) permanent cross-sections were established within the project reach for annual monitoring purposes (Table 1). A modified-Wolman pebble count methodology was used at each cross-section to characterize the particle size distribution of streambed materials. The hydraulic geometry data developed were used to evaluate and classify the stream.

Table 1. Permanent Cross-sections.

Cross-section	Description	Station
1	Riffle	15+60
2	Riffle	23+30
3	Pool	24+40
4	Pool	30+10

2.2 Bank Vegetation (Live Stakes) Sampling

Sampling was conducted to monitor the survival rate of installed live stake material utilizing four (4) bank sections (Table 2). Each of the sampling areas was fifty (50) feet long and covered approximately 300 ft², extended from the top to the bottom of the bank.

Table 2. Bank Vegetation Monitoring Areas.


Area	Description	Stationing
1	Left bank	15+75 to 16+25
2	Left bank (upstream of Cross-section 2)	22+65 to 23+15
3	Left bank (at Cross-section 3)	24+30 to 24+80
4	Right bank (at Cross-section 4)	29+75 to 30+25

2.3 Riparian Buffer Vegetation Sampling

Riparian buffer vegetation was evaluated using six (6) sample plots (Table 3). Each plot consisted of a circular area of approximately 700 ft², totally contained within the riparian buffer.



*Hominy Swamp Creek
Stream Restoration Project
Wilson, North Carolina*

 Project Reach



*Figure 1.
Location
Map*

Table 3. Riparian Vegetation Monitoring Points.

Point No.	Northing	Easting
1	N 725323.70	E 2317936.25
2	N 725243.02	E 2317941.30
3	N 724943.76	E 2318007.02
4	N 724154.89	E 2318271.80
5	N 724001.44	E 2318397.79
6	N 723816.21	E 2318484.22

2.4 Site Photo Documentation

Site photographs were taken from ten (10) permanent photo documentation points established along the stream corridor (Appendix B). Photo documentation is intended to facilitate the qualitative evaluation of the conditions or changes in the restored stream and riparian areas. The photo locations were selected in order to document representative site conditions.

Table 4. Established Photo Documentation Points.

Point No.	Description	Northing	Easting
1	Upstream project limits on Ripley Road Bridge	N 725444.53	E 2317830.10
2	Right bank at Sta. 14+50	N 725075.71	E 2318028.03
3	Left bank at Sta. 15+35	N 724994.90	E 2318046.40
4	Right bank at Sta. 18+30	N 724735.54	E 2317934.91
5	Middle of concrete pedestrian bridge (Sta. 21+40)	N 724474.75	E 2318051.69
6	Right bank at Sta. 23+00	N 724338.99	E 2318109.28
7	Left bank at Sta. 24+85 (near wooden footbridge)	N 724225.24	E 2318259.75
8	Left bank at Sta. 26+65	N 724110.67	E 2318340.26
9	Right bank at Sta. 30+30	N 723763.49	E 2318473.83
10	Downstream project limits on train bridge	N 723624.20	E 2318580.33

2.5 Precipitation and Water Surface Stage Data

Precipitation and water surface stage data for the project site was collected for the initial six-month period following project implementation (Appendix C).

Two (2) pressure transducer/data logger devices (Levelloggers™) and a barometric pressure recorder were installed at the project site to collect and calibrate water surface stage data. Data was recorded at five-minute intervals. Detailed precipitation data was to be collected at the project site utilizing an installed rain gauge/data logger. However, due to the theft of the device, daily precipitation data for the six-month period was acquired from the Wilson 3 SW Meteorological Station (N 711346.20, E 2311738.74; State Plan, NAD83, ft.) located east of Wiggins Mill Reservoir, approximately 2.75 miles southwest of the project site.

Analysis of this data was not a component of this monitoring event; however, it is provided for informational purposes.

3.0 Data Analysis

3.1 Stream Stability

The as-built survey for the project was not completed until June 2002, in conjunction with this monitoring investigation. Therefore, a departure analysis comparing post-construction conditions and monitored conditions was not possible for this monitoring period.

Analysis of the hydraulic geometry data developed for the surveyed cross-sections indicates that the stream is maintaining a stable form with dimensions and characteristics consistent with those established in the original Project Morphological Design Criteria. Documentation of the collected stream data is provided in Appendix A.

Table 5. Hydraulic Geometry

Parameter	Design ¹	XS-1 (Riffle)	XS-2 (Riffle)	XS-3 (Pool)	XS-4 (Pool)
Drainage Area (mi ²)	5.4	5.4	5.4	5.4	5.4
Bankfull Cross Section Area(A _{bkf}) (ft ²)	55	62.27	53.35	77.25	88.25
Bankfull Width (W _{bkf}) (ft)	20.2	24.83	21.66	31.80	20.50
Bankfull Mean Depth (D _{bkf}) (ft)	2.73	2.51	2.46	2.43	4.30
Width to Depth Ratio (W/D)	7.4	9.9	8.79	-	-
Bankfull Max Depth (D _{mbkf}) (ft)	4.3	3.64	3.79	5.97	6.10
Width of Flood-Prone Area (W _{fpa}) (ft)	>100	>300	>300	-	-
Entrenchment Ratio (ER)	>5.0	12.08	13.85	-	-
Water Surface Slope (ft/ft)	0.0014	0.0015	0.0020	0.0008	0.0003
D ₅₀ (mm)	0.25	0.50	0.20	0.20	0.20
Discharge (cfs) ²	200	201	205	183	182
Ratio Riffle Slope:Water Surface Slope	1.07	1.07	1.33	-	-
Ratio Pool Slope:Water Surface Slope	0.47	-	-	0.57	0.21
Bank Height Ratio	1.0	1.0	1.0	1.0	1.0
Stream Type	E5	E5	E5	E5	E5

1. Project Design Criteria (Restoration Plan - February 2001)

2. Estimated discharge based on Manning's equation.

3.2 Bank Vegetation Survivability

The Project Restoration Design Plans specify that live stakes be placed on two (2) foot centers, which would result in a total of approximately 60 live stakes in each of the 300 ft² monitored areas. The total number of stakes identified in each monitoring area ranged between 25 and 99, with the total number of viable stakes in each ranging from 23 to 97. The variability in the number of stakes counted in the four monitoring areas may be attributable to the fact that the specified stake spacing appears to have been modified in places (i.e., tighter spacing in some places) in order to replicate more natural conditions. Calculations based upon the number of viable stakes as compared to the specified number of stakes indicate that the percentage of live stake survivability is acceptable in two of the four monitored areas.

Table 6. Bank Vegetation Data

Area	Anticipated # of Stakes per Specs	Total Stakes Counted	Viable Stakes	Mortalities	Live Stake Survivability (%) ¹
1	75	50	48	2	64
2	75	66	66	0	88
3	75	25	23	2	31
4	75	99	97	2	100
Sum	300	240	234	6	78

1. Number of viable stakes in the area divided by the number of stakes anticipated based upon the specified plant spacing.

An assessment to identify other potential areas of low live stake survivability, as well as corrective actions to reestablish targeted densities, is recommended.

3.3 Riparian Buffer Vegetation Survivability

Based upon the stem density/spacing requirements established in the project design plans, each 700 ft² sampling plot should contain a maximum of nine (9) plantings. However, sampling

produced only six surviving trees that had been installed as part of the initial restoration planting. At Monitoring Point 1, three viable plantings were identified along the perimeter closest to the streambank. Two viable plantings were counted at Point 5, and only one viable planting was found at Point 6. There were no surviving riparian buffer plantings identified at the other three sampling plots. It should be noted that viable riparian plantings were observed in other buffer areas not covered by the sampling plots; however, these observations are not quantifiable. It is clear that the overall survivability of the riparian buffer plantings is low. It is recommended that corrective actions be implemented to reestablish the targeted stem densities.

3.4 Qualitative Observations

Visual observations, as documented in the site photographs, indicate that at the time of the investigation the project site was generally in good condition. The stream appears to be maintaining a stable form and accessing its floodplain. All cross vane and log vane instream structures appeared to be stable and functioning. Herbaceous vegetation on the streambanks was generally well developed.

However, isolated areas of sparse herbaceous vegetation and bank erosion, including sections of undercut fiber roll toe protection, were noted. These observations were most commonly associated with the locations of high pedestrian traffic and the location of rootwad structures. In addition, areas of degraded herbaceous vegetation growth were noted in the upstream portion of the riparian buffer. Corrective actions to stabilize eroded bank areas and to augment herbaceous vegetation growth are recommended.

4.0 Conclusions

Findings from this monitoring event indicate that at the time of the investigation the project site was generally in good condition.

Hydraulic geometry data collected indicate that the stream dimensions and characteristics are consistent with those established in the original Project Morphological Design Criteria. The stream appears to be maintaining a stable form and accessing its floodplain. Instream structures appear to be stable and functioning. Sampling and observations of stream bank vegetation indicate that live stake survivability is acceptable in two of the four monitored areas and herbaceous vegetation is generally well developed on the stream banks.

Additional investigations and subsequent corrective efforts are warranted in order to address some deficiencies noted, including:

1. Areas of low live stake survivability, poor herbaceous growth, and bank erosion on streambanks,
2. Sections of undercut fiber roll toe protection and scour adjacent to rootwad structures, and
3. Overall survivability of riparian buffer plantings.

The next Project monitoring event is scheduled to be conducted between May and September 2003.

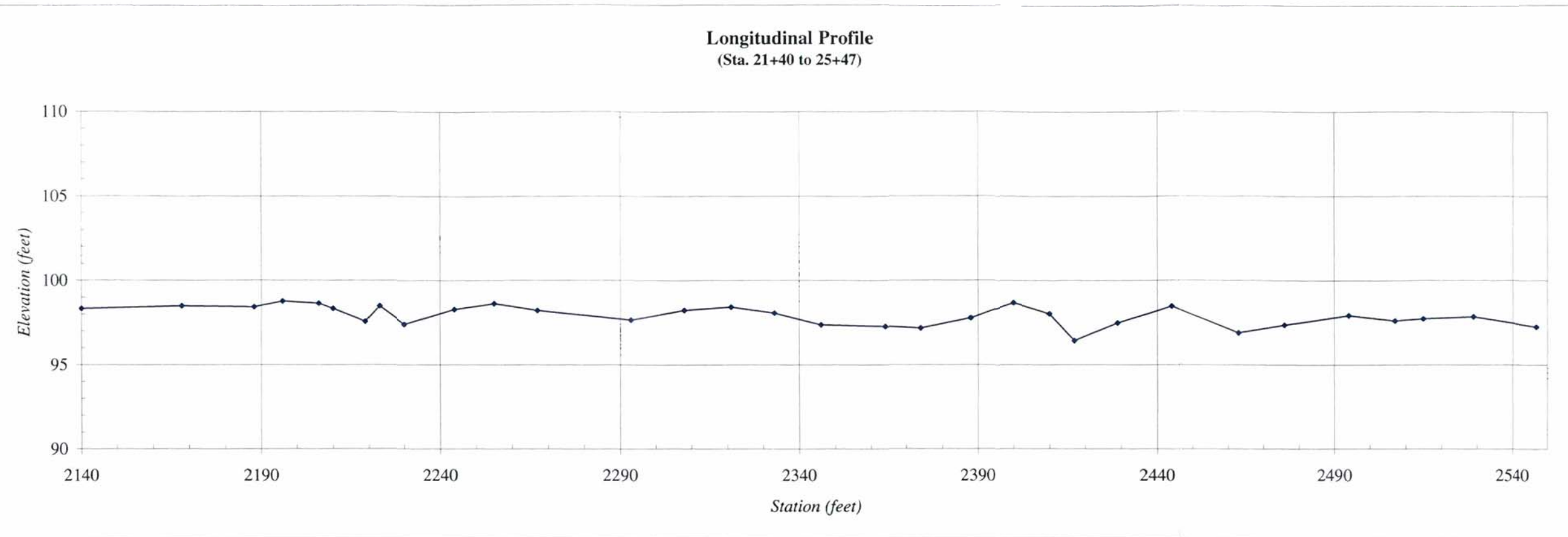
Appendix A

**Monitored Stream Data
Profile
Cross Sections
Pebble Counts**

Profile

Hominy Swamp Creek Stream Restoration Project
Physical Stability Monitoring

Station	Vertical	Elevation
2140.0	9.51	98.33
2168.0	9.36	98.48
2188.0	9.41	98.43
2196.0	9.08	98.76
2206.0	9.21	98.63
2210.0	9.51	98.33
2219.0	10.28	97.56
2223.0	9.36	98.48
2230.0	10.45	97.39
2244.0	9.56	98.28
2255.0	9.21	98.63
2267.0	9.62	98.22
2293.0	10.19	97.65
2308.0	9.61	98.23
2321.0	9.41	98.43
2333.0	9.78	98.06
2346.0	10.47	97.37
2364.0	10.57	97.27
2374.0	10.68	97.16
2388.0	10.07	97.77
2400.0	9.16	98.68
2410.0	9.81	98.03
2417.0	11.42	96.42
2429.0	10.36	97.48
2444.0	9.38	98.46
2463.0	10.96	96.88
2476.0	10.48	97.36
2494.0	9.91	97.93
2507.0	10.23	97.61
2515.0	10.12	97.72
2529.0	10.00	97.84
2547.0	10.60	97.24



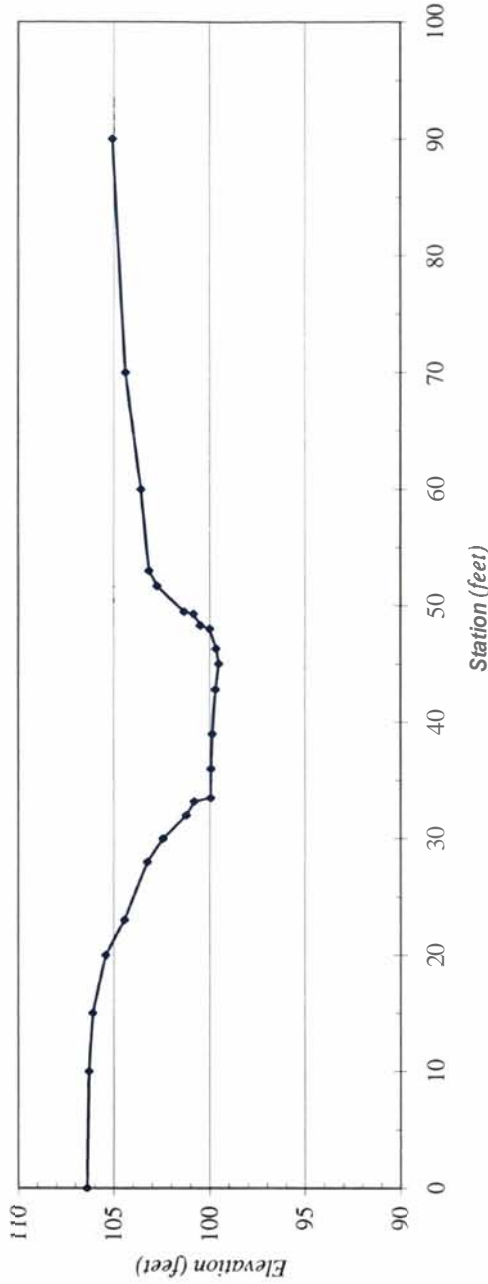
NOTE: Profile extends 407 l.f. downstream from the concrete pedestrian bridge (Station 21+40) past the wooden pedestrian bridge (Sta. 25+00). Photo to left was taken from the concrete pedestrian bridge looking downstream. The wooden pedestrain bridge is visible in the photo background

Cross Section 1

**Hominy Swamp Creek Stream Restoration Project
Physical Stability Monitoring**

Station	Vertical	Elevation
0.0	3.89	106.40
10.0	4.00	106.29
15.0	4.20	106.09
20.0	4.87	105.42
23.0	5.86	104.43
28.0	7.06	103.23
30.0	7.87	102.42
32.0	9.08	101.21
33.2	9.49	100.80
33.5	10.35	99.94
36.0	10.36	99.93
39.0	10.44	99.85
42.8	10.61	99.68
45.0	10.77	99.52
46.3	10.63	99.66
48.0	10.30	99.99
48.3	9.80	100.49
49.3	9.45	100.84
49.5	8.97	101.32
51.7	7.56	102.73
53.0	7.13	103.16
60.0	6.72	103.57
70.0	5.91	104.38
90.0	5.23	105.06

Cross Section 1 (Rime)



Morphological Measurements	
W/D Ratio	
Ent. Ratio	
LBH Ratio	

Left Permanent Monument:		Right Permanent Monument:	
Northing:	724960.36	Northing:	724966.72
Easting:	2318074.56	Easting:	2317984.73
Elevation:	106.40	Elevation:	105.07



View of right bank



View of left bank

Cross-section #1



Upstream view at Cross-section #1.

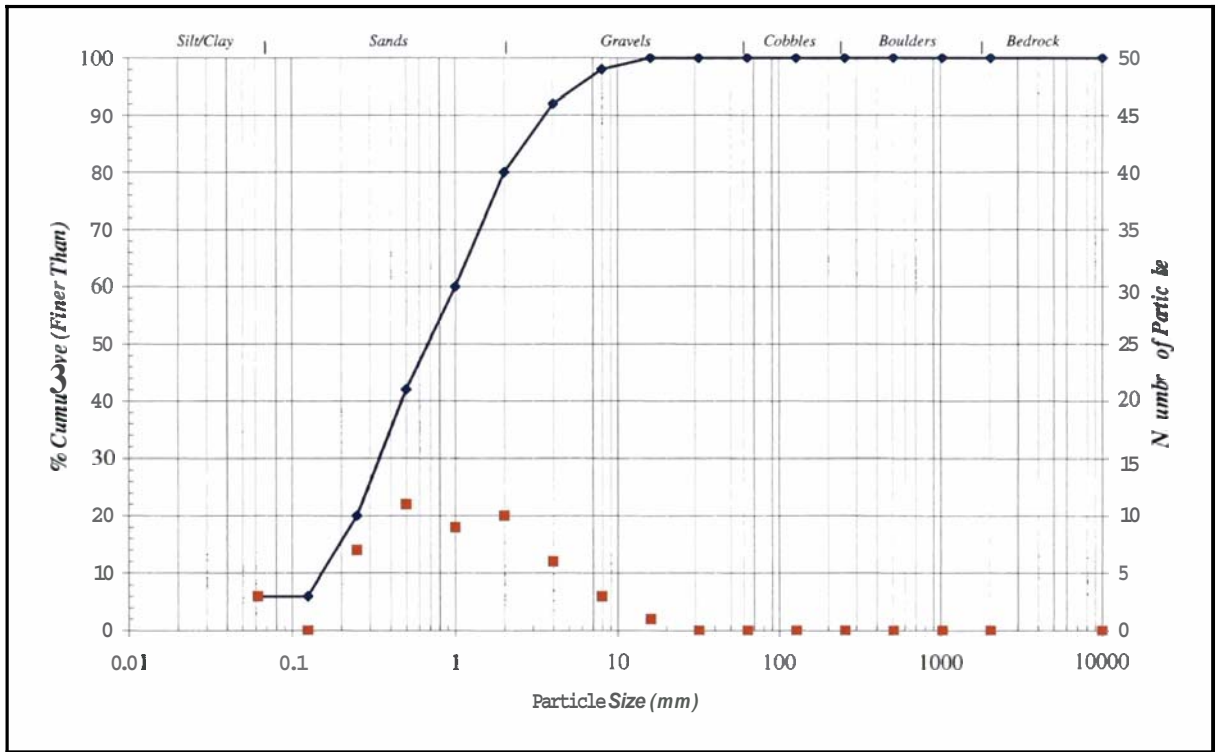


Downstream view at Cross-section #1.

**Hominy Swamp Creek Stream Restoration Project
Physical Stability Monitoring**

Stream:	Hominy Swamp Creek
Location:	Cross Section #1
Date:	5/17/2002

S/C	Particle	Size Range (mm)	Total #	Item %	% Cum.
	Silt/Clay	0 < 0.062	3	6	6
Sand	Very Fine Sand	0.062 < 0.125	0	0	6
	Fine Sand	0.125 < 0.25	7	14	20
	Medium Sand	0.25 < 0.50	11	22	42
	Coarse Sand	0.50 < 1.0	9	18	60
	Very Coarse Sand	1 < 2	10	20	80
Gravel	Very Fine Gravel	2 < 4	6	12	92
	Fine Gravel	4 < 8	3	6	98
	Medium Gravel	8 < 16	1	2	100
	Coarse Gravel	16 < 32	0	0	100
	Very Coarse Gravel	32 < 64	0	0	100
Cbl	Small Cobble	64 < 128	0	0	100
	Large Cobble	128 < 256	0	0	100
Bldr	Small Boulder	256 < 512	0	0	100
	Medium Boulder	512 < 1024	0	0	100
	Large Boulder	1024 < 2048	0	0	100
Bdrk	Bedrock	Bedrock	0	0	100
Totals:			50	100	100



Size percent less than (mm)				
D16	D35	D50	D84	D95
0.15	0.30	0.50	2.00	4.00

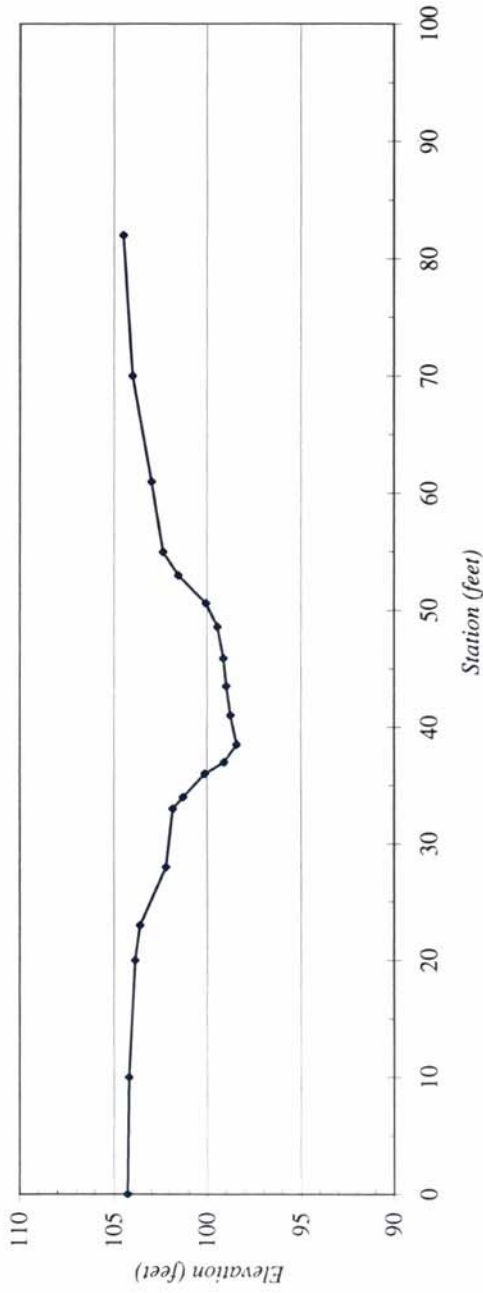
Percent by substrate type (%)					
Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock
6	74	20	0	0	0

Cross Section 2

**Hominy Swamp Creek Dam Restoration Project
Physical Stability Monitoring**

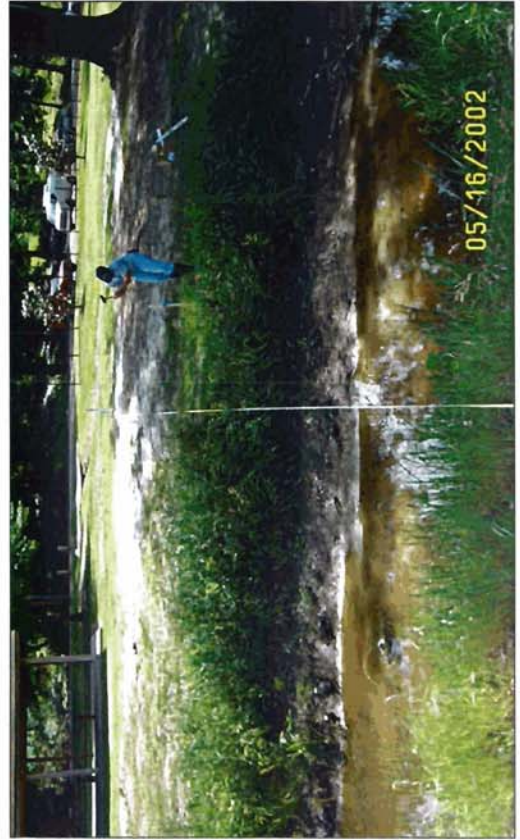
Station	Vertical	Elevation
0.0	3.85	104.27
10.0	3.93	104.19
20.0	4.26	103.86
23.0	4.51	103.61
28.0	5.90	102.22
33.0	6.26	101.86
34.0	6.81	101.31
36.0	7.98	100.14
37.0	9.03	99.09
38.5	9.69	98.43
41.0	9.38	98.74
43.5	9.15	98.97
45.9	9.00	99.12
48.6	8.67	99.45
50.6	8.05	100.07
53.0	6.58	101.54
55.0	5.76	102.36
61.0	5.13	102.99
70.0	4.12	104.00
82.0	3.63	104.49

Cross Section 2 (Riffle)



Morphological Measurements	
W/D Ratio	8.8
Ent. Ratio	13.9
LBH Ratio	1.0

Left Permanent Monument:		Right Permanent Monument:	
Northing:	2318177.20	Northing:	7318097.51
Easting:	104.27	Easting:	104.47
Elevation:		Elevation:	



View of right bank



View of left bank

Cross-section #2



Upstream view at Cross-section #2.

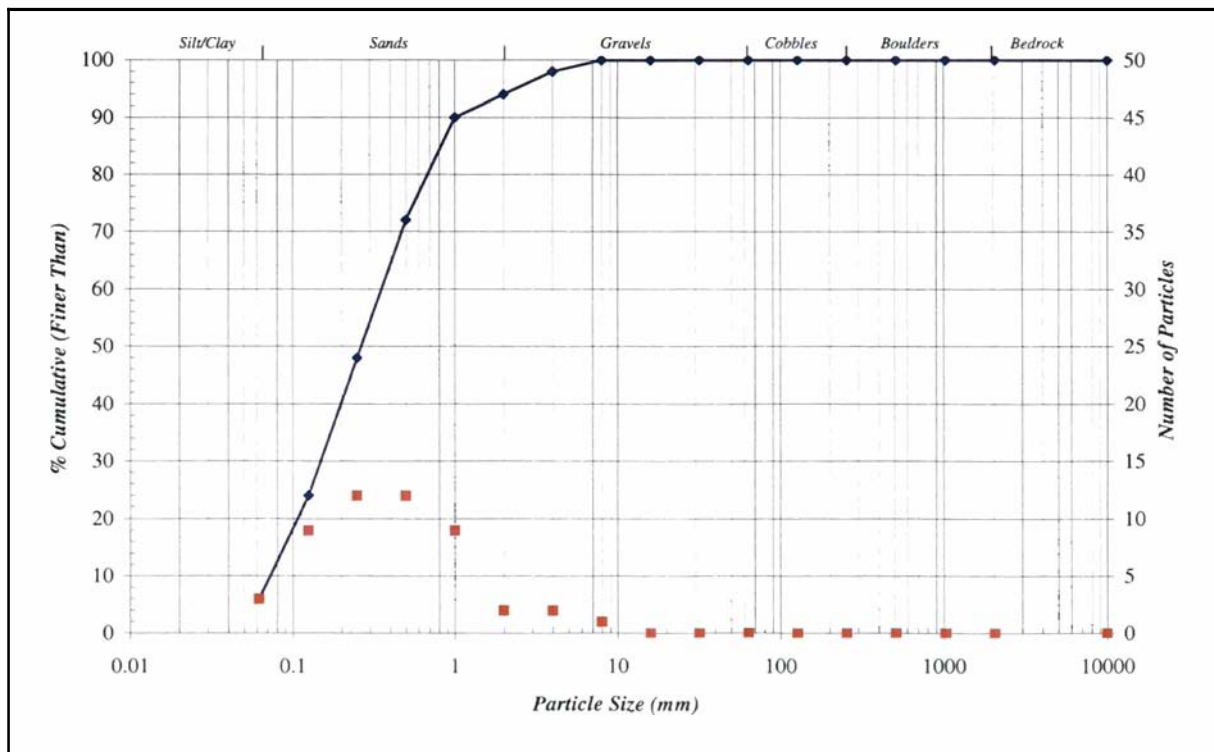


Downstream view at Cross-section #2.

Hominy Swamp Creek Stream Restoration Project Physical Stability Monitoring

Stream:	Hominy Swamp Creek
Location:	Cross Section #2
Date:	5/16/2002

Particle		Size Range (mm)	Total #	Item %	% Cum.
S/C	Silt/Clay	0 < 0.062	3	6	6
Sand	Very Fine Sand	0.062 < 0.125	9	18	24
	Fine Sand	0.125 < 0.25	12	24	48
	Medium Sand	0.25 < 0.50	12	24	72
	Coarse Sand	0.50 < 1.0	9	18	90
	Very Coarse Sand	1 < 2	2	4	94
Gravel	Very Fine Gravel	2 < 4	2	4	98
	Fine Gravel	4 < 8	1	2	100
	Medium Gravel	8 < 16	0	0	100
	Coarse Gravel	16 < 32	0	0	100
	Very Coarse Gravel	32 < 64	0	0	100
Cbl	Small Cobble	64 < 128	0	0	100
	Large Cobble	128 < 256	0	0	100
Bldr	Small Boulder	256 < 512	0	0	100
	Medium Boulder	512 < 1024	0	0	100
	Large Boulder	1024 < 2048	0	0	100
Bdrk	Bedrock	Bedrock	0	0	100
Totals:			50	100	100



Size percent less than (mm)				
D16	D35	D50	D84	D95
0.06	0.13	0.20	1.00	2.00

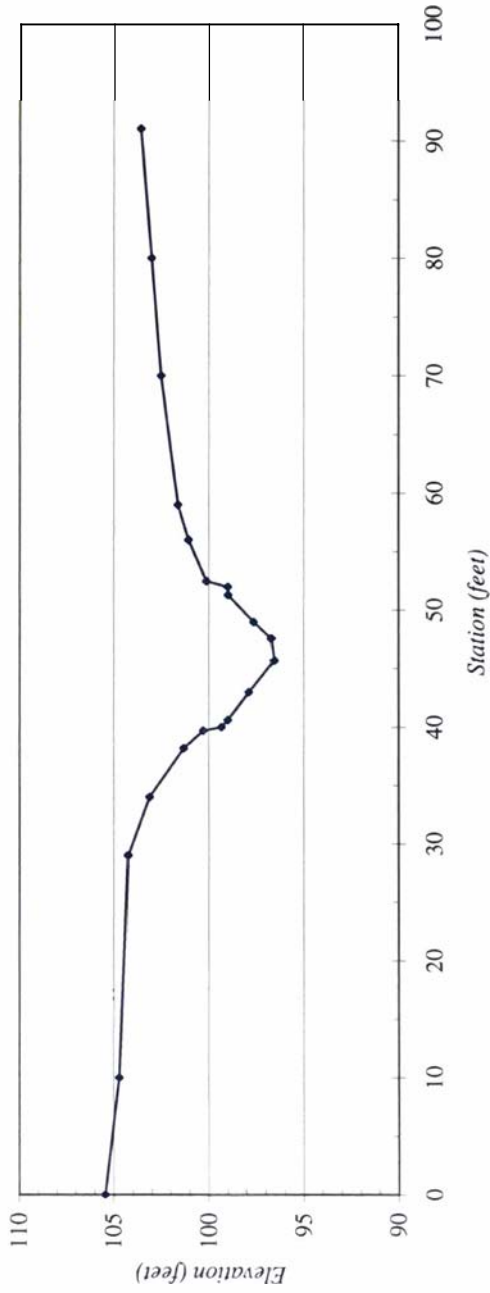
Percent by substrate type (%)					
Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock
6	88	6	0	0	0

Cross Section 3

Hominy Swamp Creek Wetland Restoration Project
Physical Stability Monitoring

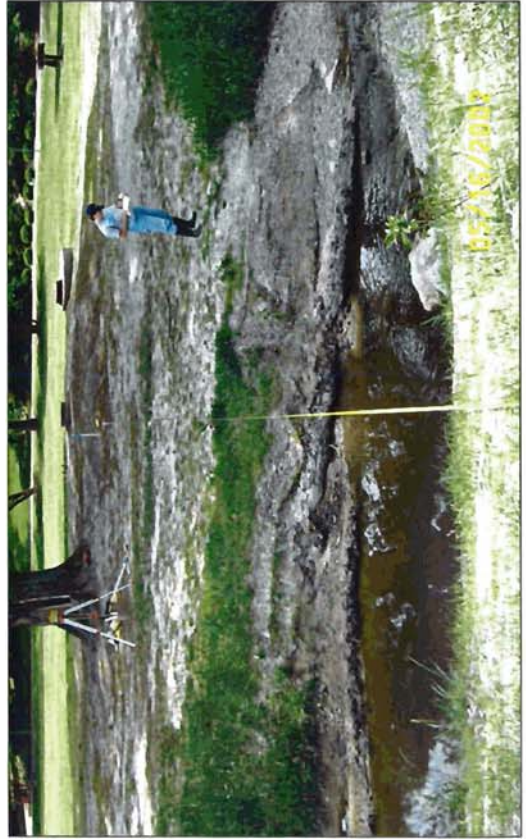
Station	Vertical	Elevation
0.0	2.66	105.46
10.0	3.42	104.70
29.0	3.86	104.26
34.0	4.98	103.14
38.2	6.80	101.32
39.7	7.82	100.30
40.0	8.78	99.34
40.6	9.13	98.99
43.0	10.25	97.87
45.7	11.56	96.56
47.6	11.41	96.71
49.0	10.50	97.62
51.3	9.14	98.98
52.0	9.12	99.00
52.5	7.99	100.13
56.0	7.05	101.07
59.0	6.49	101.63
70.0	5.59	102.53
80.0	5.09	103.03
91.0	4.52	103.60

Cross Section 3 (Pool)



Morphological Measurements	
W/D Ratio	-
Ent. Ratio	-
LBH Ratio	-

Left Permanent Monument:		Right Permanent Monument:	
Northing:	724288.76	Northing:	724228.21
Easting:	2318249.65	Easting:	2318181.70
Elevation:	105.46	Elevation:	103.57



View of right bank

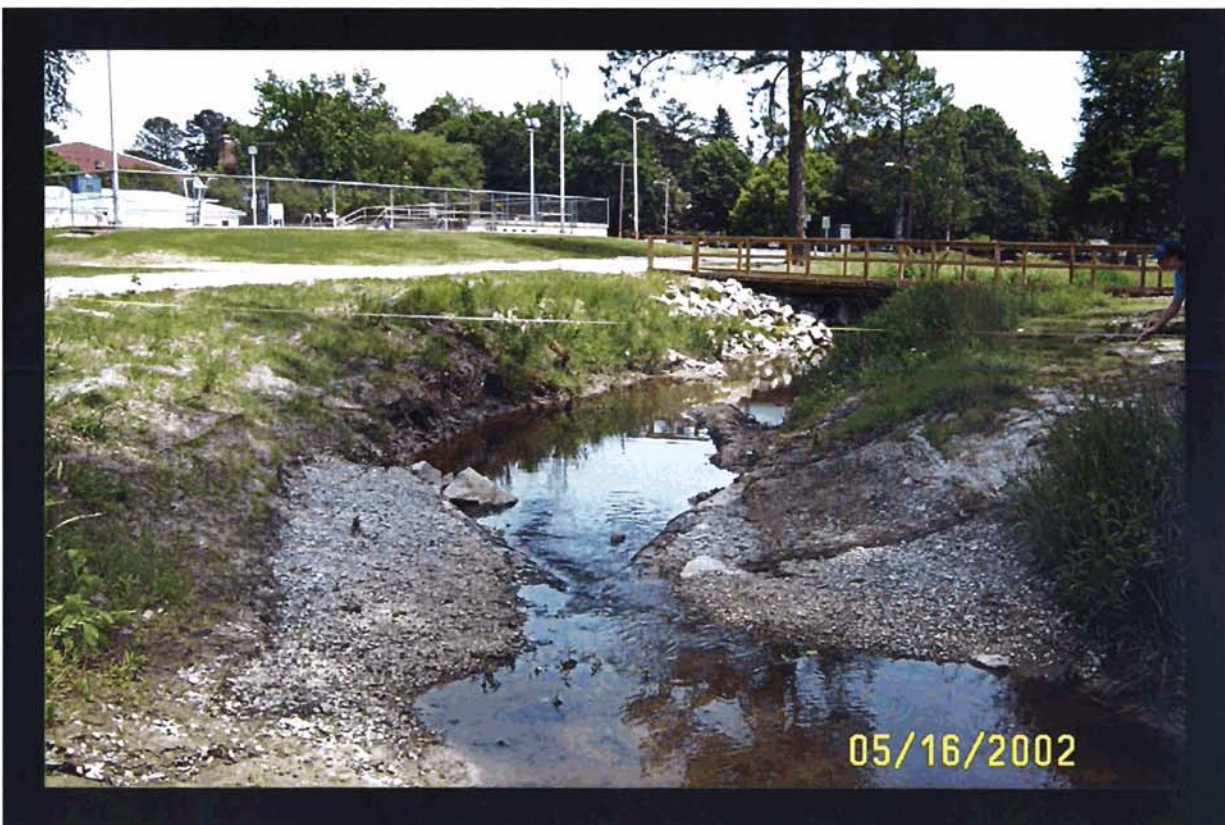


View of left bank

Cross-section #3



Upstream view at Cross-section #3.

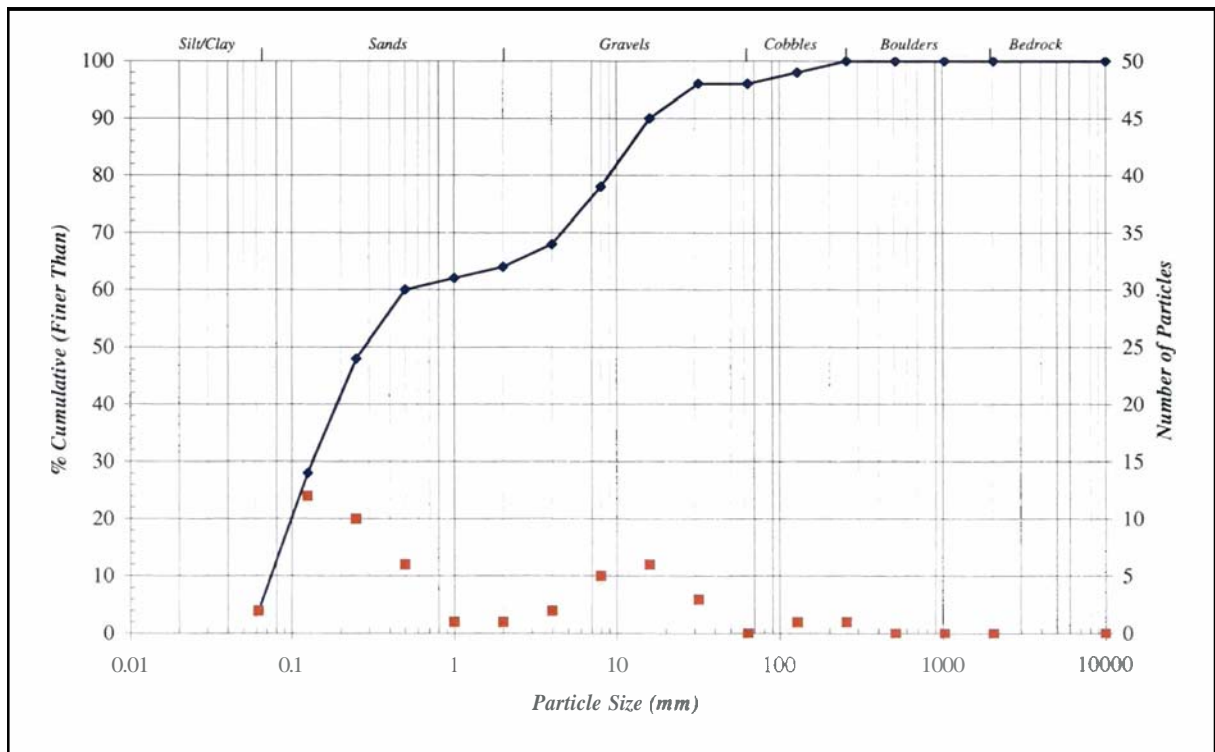


Downstream view at Cross-section #3.

**Hominy Swamp Creek Stream Restoration Project
Physical Stability Monitoring**

Stream:	Hominy Swamp Creek
Location:	Cross Section #3
Date:	5/16/2002

S/C	Particle	Size Range (mm)	Total #	Item %	% Cum.
	Silt/Clay	0 < 0.062	2	4	4
Sand	Very Fine Sand	0.062 < 0.125	12	24	28
	Fine Sand	0.125 < 0.25	10	20	48
	Medium Sand	0.25 < 0.50	6	12	60
	Coarse Sand	0.50 < 1.0	1	2	62
	Very Coarse Sand	1 < 2	1	2	64
Gravel	Very Fine Gravel	2 < 4	2	4	68
	Fine Gravel	4 < 8	5	10	78
	Medium Gravel	8 < 16	6	12	90
	Coarse Gravel	16 < 32	3	6	96
	Very Coarse Gravel	32 < 64	0	0	96
Cbl	Small Cobble	64 < 128	1	2	98
	Large Cobble	128 < 256	1	2	100
Bldr	Small Boulder	256 < 512	0	0	100
	Medium Boulder	512 < 1024	0	0	100
	Large Boulder	1024 < 2048	0	0	100
Bdrk	Bedrock	Bedrock	0	0	100
Totals:			50	100	100



Size percent less than (mm)				
D16	D35	D50	D84	D95
0.05	0.12	0.20	10.00	18.00

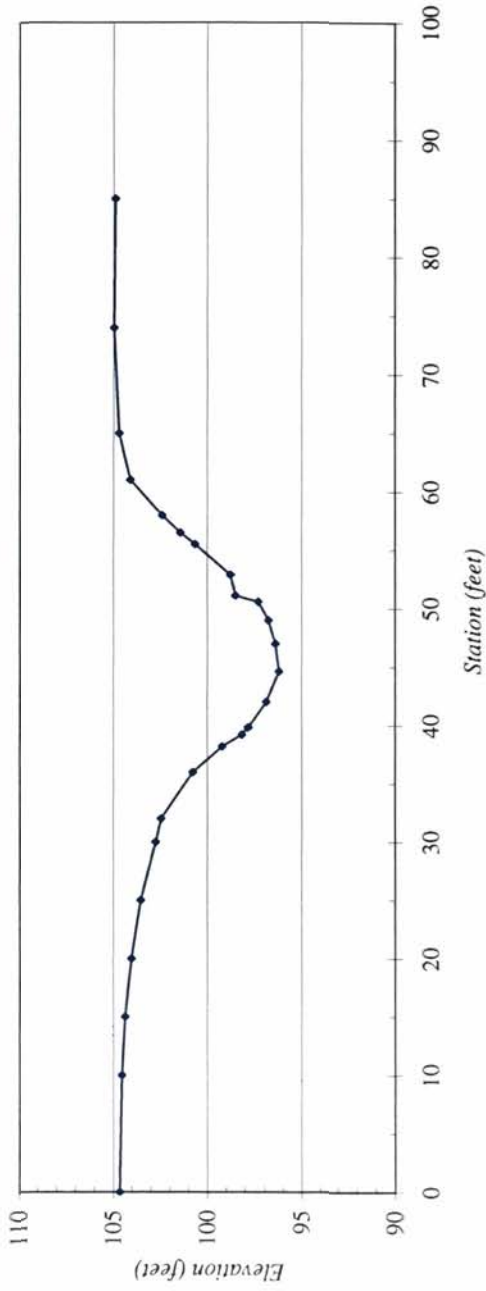
Percent by substrate type (%)					
Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock
4	60	32	4	0	0

Cross Section 4

**Hominy Swamp Creek Wetland Restoration Project
Physical Stability Monitoring**

Station	Vertical	Elevation
0.0	4.24	104.67
10.0	4.36	104.55
15.0	4.53	104.38
20.0	4.87	104.04
25.0	5.37	103.54
30.0	6.16	102.75
32.0	6.45	102.46
36.0	8.13	100.78
38.2	9.69	99.22
39.2	10.75	98.16
39.8	11.07	97.84
42.0	12.02	96.89
44.6	12.70	96.21
47.0	12.51	96.40
49.0	12.14	96.77
50.6	11.60	97.31
51.1	10.41	98.50
52.9	10.14	98.77
55.5	8.25	100.66
56.5	7.46	101.45
58.0	6.50	102.41
61.0	4.80	104.11
65.0	4.21	104.70
74.0	3.94	104.97
85.0	4.01	104.90

Cross Section 4 (Pool)

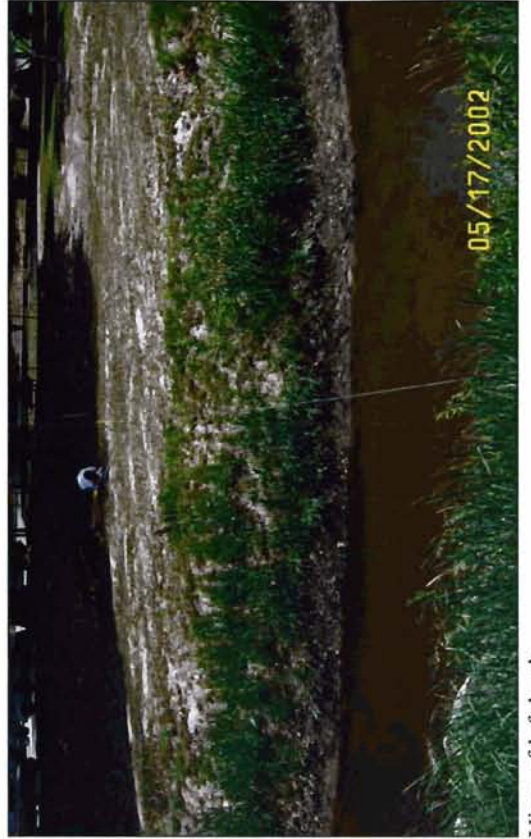


Morphological Measurements	
W/D Ratio	-
Ent. Ratio	-
LBH Ratio	-

Left Permanent Monument:		Right Permanent Monument:	
Northing:	723827.07	Northing:	723780.29
Easting:	2318499.20	Easting:	2318428.12
Elevation:	104.67	Elevation:	104.88



View of right bank



View of left bank

Cross-section #4



Upstream view at Cross-section #4.

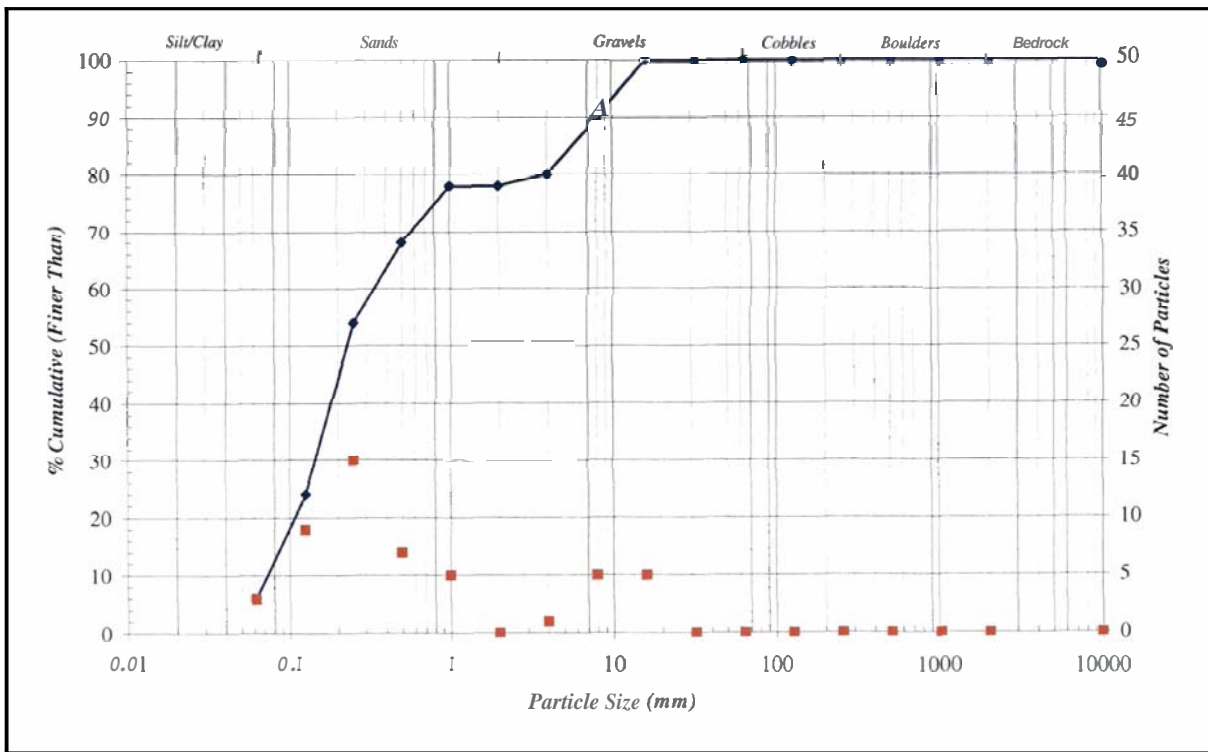


Downstream view at Cross-section #4.

**Hominy Swamp Creek Stream Restoration Project
Physical Stability Monitoring**

Stream:	Hominy Swamp Creek
Location:	Cross Section #4
Date:	5/17/2002

Particle		Size Range (mm)	Total #	Item %	% Cum.
S/C	Silt/Clay	0 < 0.062	3	6	6
Sand	Very Fine Sand	0.062 < 0.125	9	18	24
	Fine Sand	0.125 < 0.25	15	30	54
	Medium Sand	0.25 < 0.50	7	14	68
	Coarse Sand	0.50 < 1.0	5	10	78
	Very Coarse Sand	1 < 2	0	0	78
Gravel	Very Fine Gravel	2 < 4	1	2	80
	Fine Gravel	4 < 8	5	10	90
	Medium Gravel	8 < 16	5	10	100
	Coarse Gravel	16 < 32	0	0	100
	Very Coarse Gravel	32 < 64	0	0	100
Cbl	Small Cobble	64 < 128	0	0	100
	Large Cobble	128 < 256	0	0	100
Bldr	Small Boulder	256 < 512	0	0	100
	Medium Boulder	512 < 1024	0	0	100
	Large Boulder	1024 < 2048	0	0	100
Bdrk	Bedrock	Bedrock	0	0	100
Totals:			50	100	100



Size percent less than (mm)				
D16	D35	D50	D84	D95
0.06	0.12	0.20	5.00	8.00

Percent by substrate type (%)					
Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock
6	72	22	0	0	0

Appendix B
Site Photographs

Photo Location #1



Downstream view from Photo Location #1 (Ripley Road bridge).

Photo Location #2



Upstream view from Photo Location #2.



Downstream view from Photo Location #2.

Photo Location #3



Upstream view from Photo Location #3.



Downstream view from Photo Location #3.

Photo Location #4



Upstream view from Photo Location #4.

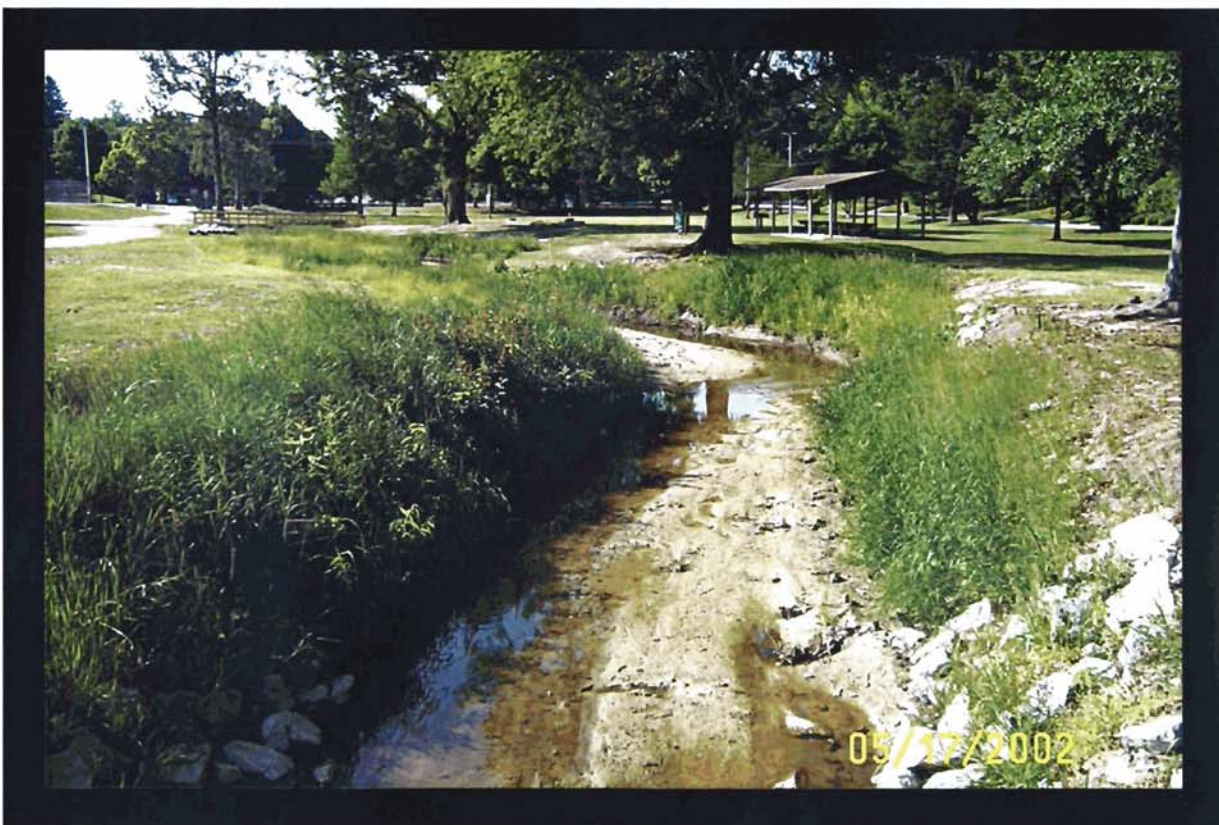


Downstream view from Photo Location #4.

Photo Location #5



Upstream view from Photo Location #5 (center of concrete pedestrian bridge).



Downstream view from Photo Location #5 (center of concrete pedestrian bridge).

Photo Location #6



Upstream view from Photo Location #6.



Downstream view from Photo Location #6.

Photo Location #7



Upstream view from Photo Location #7.



Downstream view from Photo Location #7.

Photo Location #8



Upstream view from Photo Location #8.



Downstream view from Photo Location #8.

Photo Location #9



Upstream view from Photo Location #9.



Downstream view from Photo Location #9.

Photo Location #10



Upstream view from Photo Location #10 (on downstream railroad bridge).

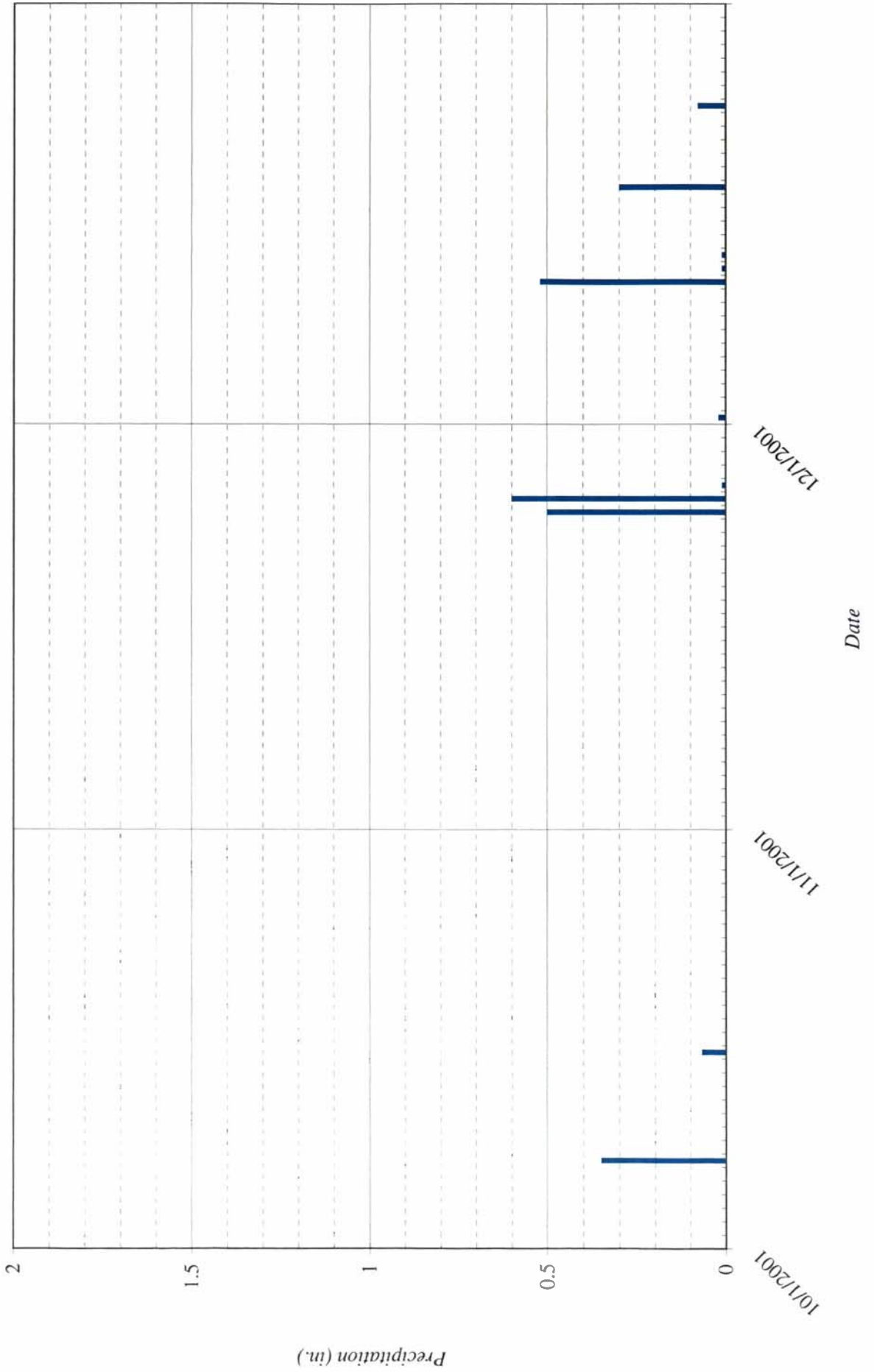
Appendix C

**Precipitation and
Water Surface Stage Data**

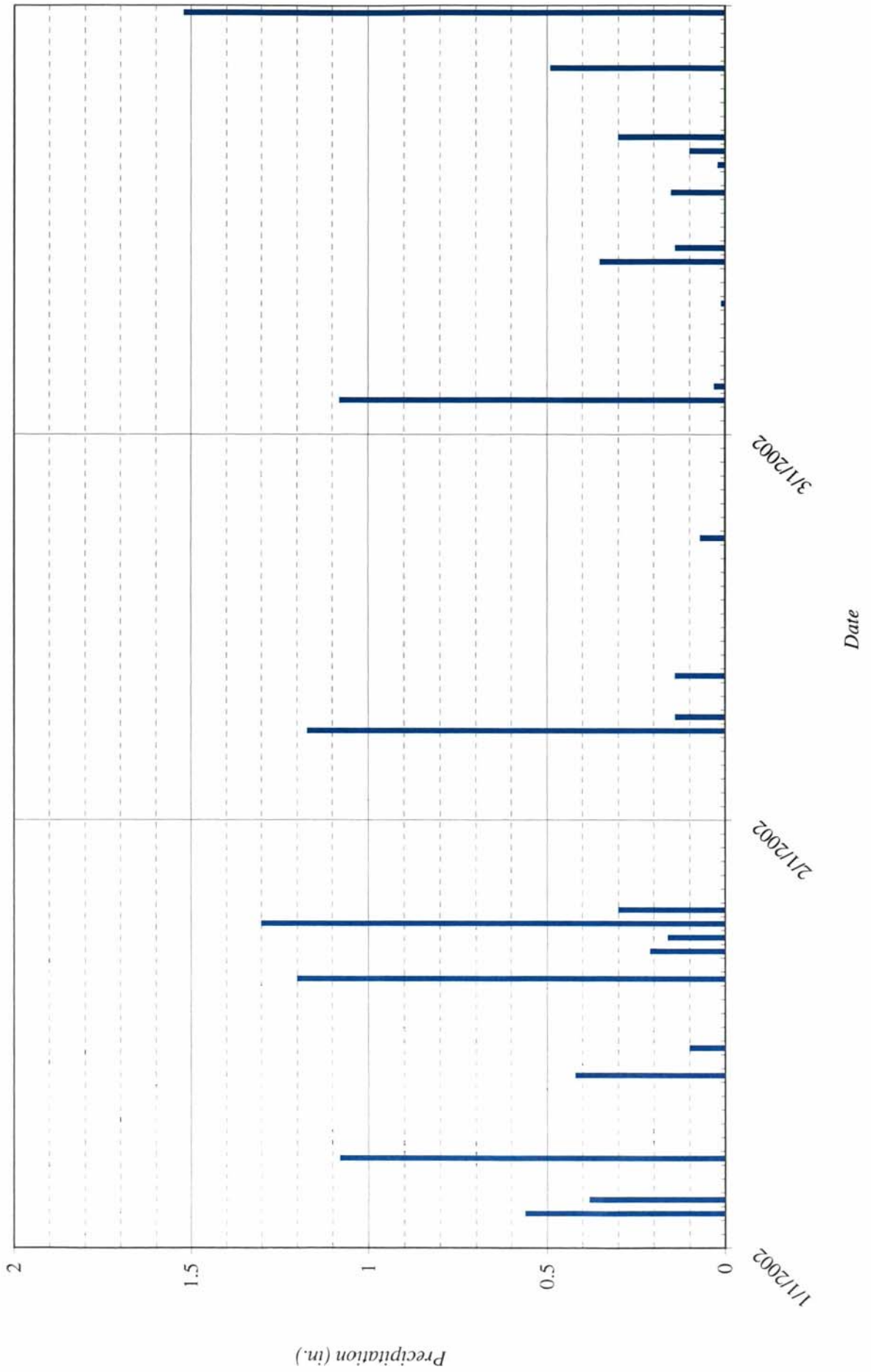
Daily Precipitation Data

Hominy Swamp Creek Stream Restoration Project

Daily Precipitation
(10/1/2001 - 12/31/2001)

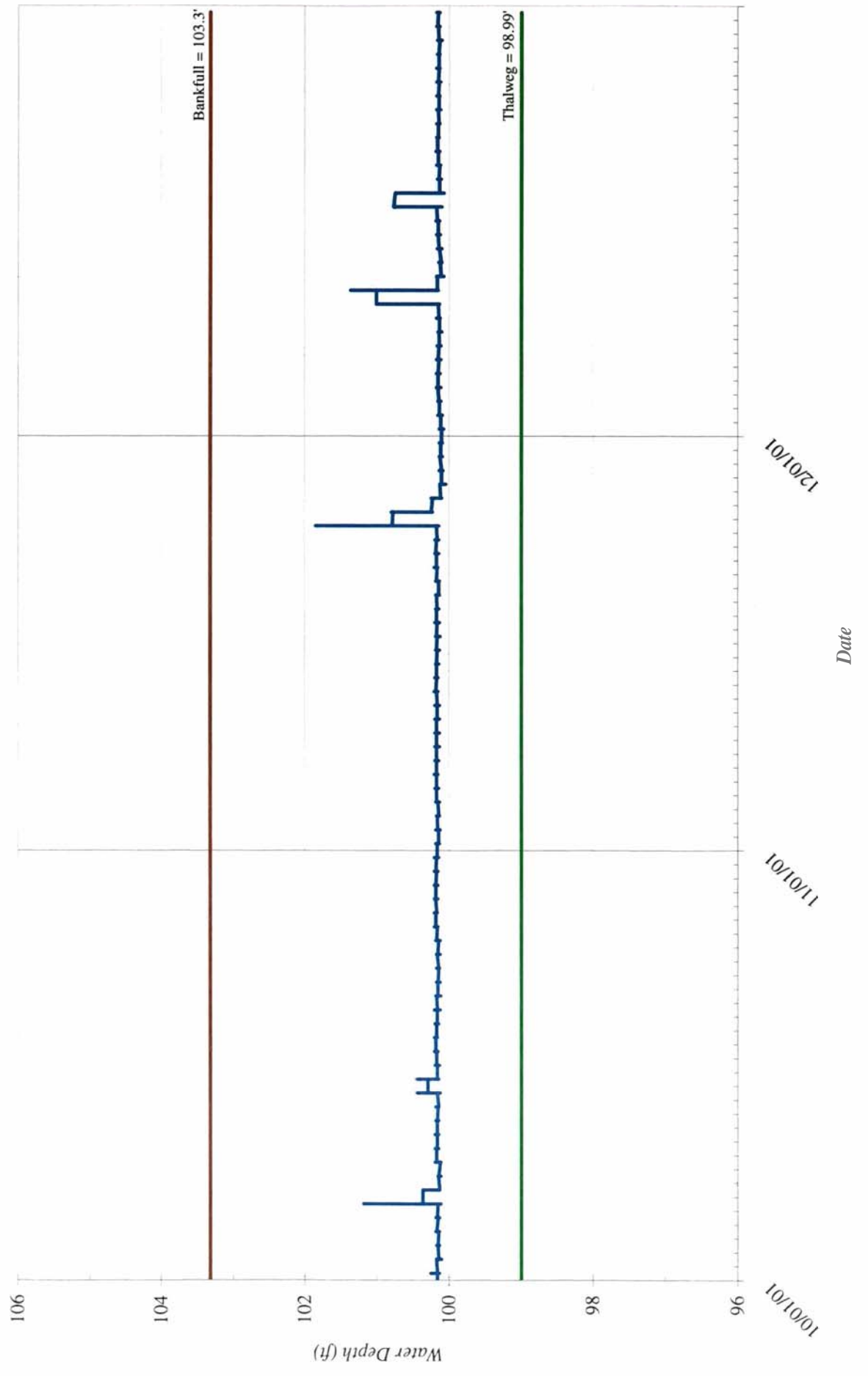


Hominy Swamp Creek Stream Restoration Project
Daily Precipitation
(1/1/2002 - 3/31/2002)

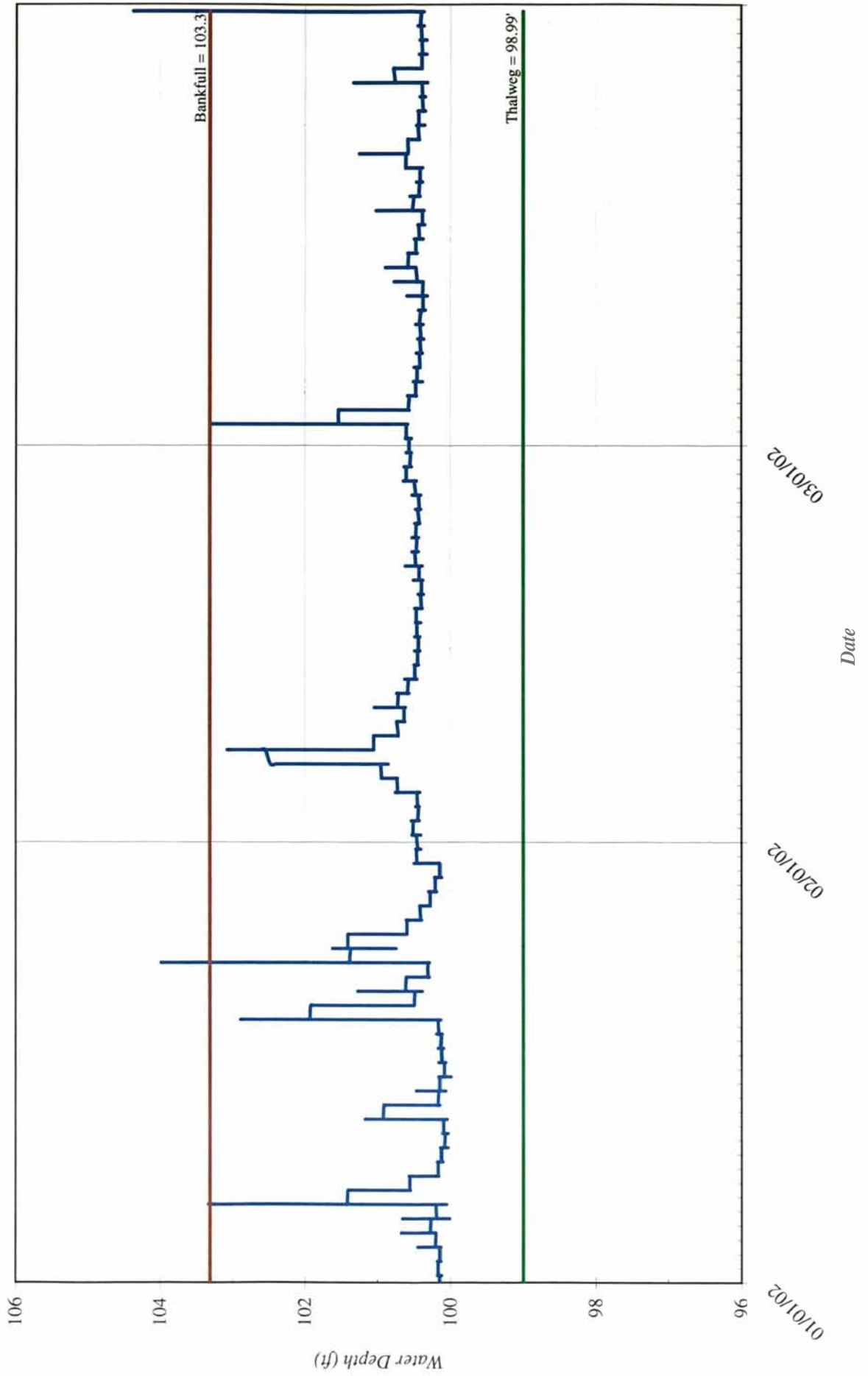


Water Surface Stage Data

Hominy Swamp Creek Stream Restoration Project
Upstream Water Surface Gauge (#06513)
(10/1/2001 - 12/31/2001)

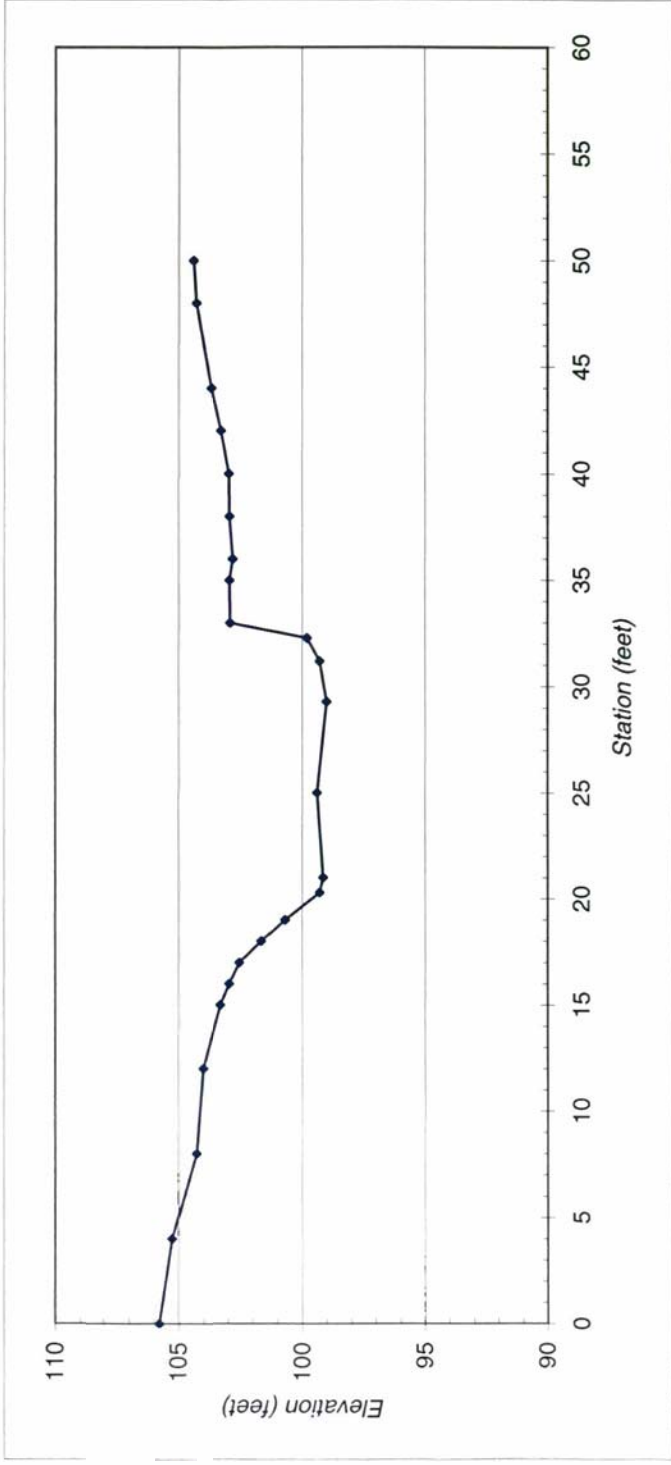


Hominy Swamp Creek Stream Restoration Project
Upstream Water Surface Gauge (#06513)
(1/1/2002 - 3/31/2002)



**Hominy Swamp Creek Stream Restoration Project
Upstream Water Surface Gauge - Cross Section**

Station	Vertical	Elevation
0.0	5.61	105.78
4.0	6.13	105.26
8.0	7.12	104.27
12.0	7.39	104.00
15.0	8.08	103.31
16.0	8.44	102.95
17.0	8.86	102.53
18.0	9.75	101.64
19.0	10.70	100.69
20.3	12.11	99.28
21.0	12.25	99.14
25.0	12.00	99.39
29.3	12.40	98.99
31.2	12.11	99.28
32.3	11.59	99.80
33.0	8.48	102.91
35.0	8.46	102.93
36.0	8.59	102.80
38.0	8.45	102.94
40.0	8.43	102.96
42.0	8.11	103.28
44.0	7.72	103.67
48.0	7.10	104.29
50.0	6.99	104.40



Thalweg:	98.99
Bankfull:	103.31

Control Elevation (Conservation Easement Marker on Left Bank):	106.77
Control Measurement (Foresight to Con. Ease. Marker on Left Bank):	4.62
Instrument Height (true elevation):	111.39

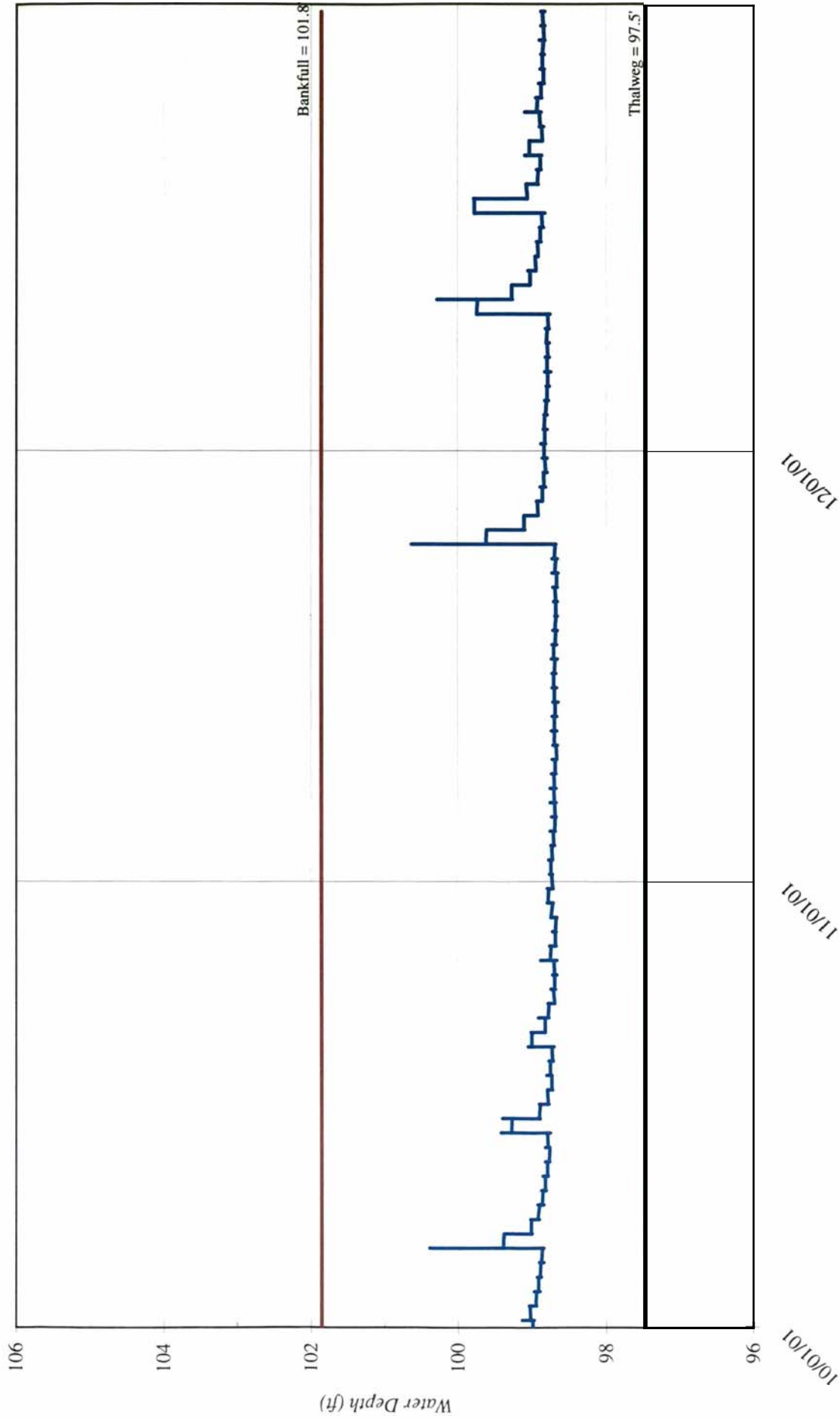


View of right bank

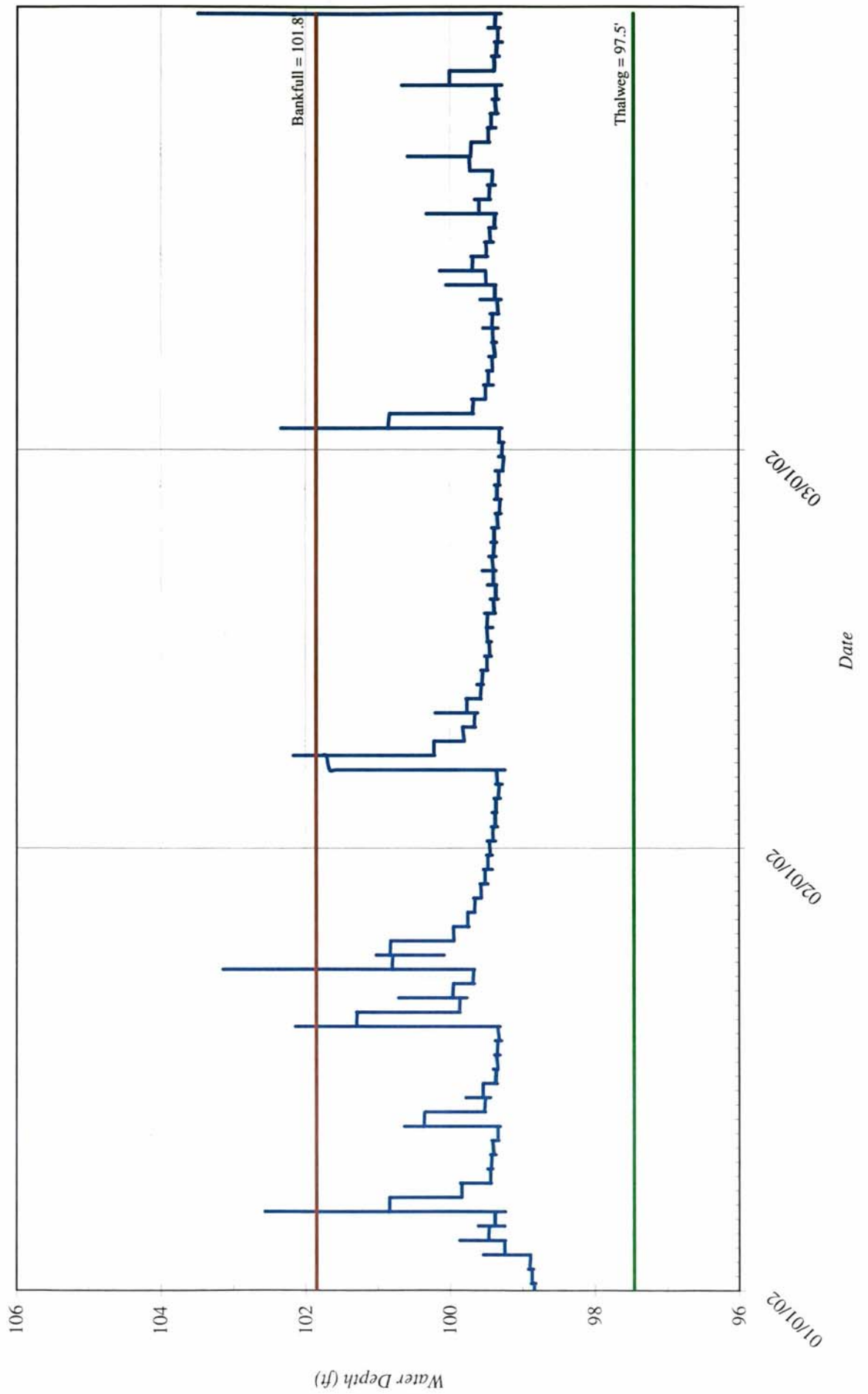


View of left bank

Hominy Swamp Creek Stream Restoration Project
Downstream Water Surface Gauge (#06514)
(10/1/2001 - 12/31/2001)

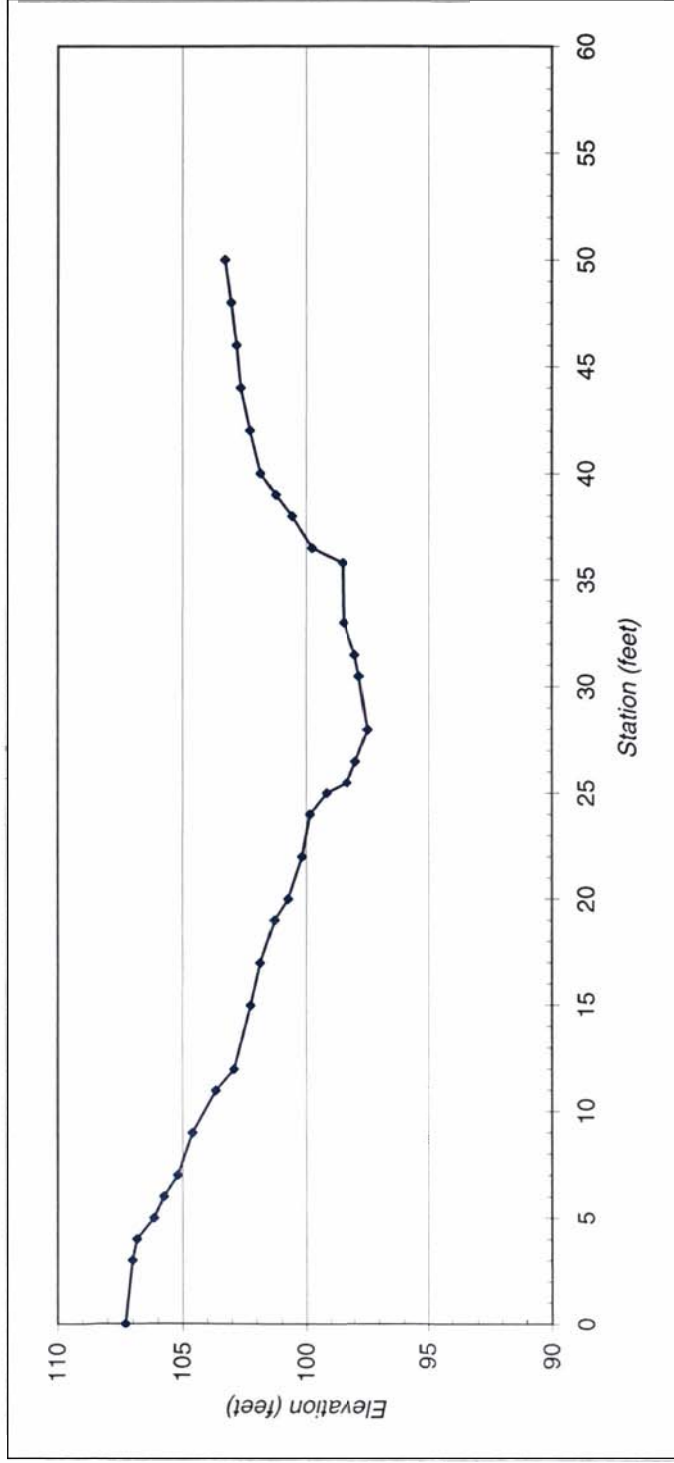


Hominy Swamp Creek Stream Restoration Project
Downstream Water Surface Gauge (#06514)
(1/1/2002 - 3/31/2002)



Hominy Swamp Creek Swamp Restoration Project
Downstream Water Surface Gauge - Cross Section

Station	Vertical	Elevation
0.0	5.46	107.30
3.0	5.74	107.02
4.0	5.92	106.84
5.0	6.61	106.15
6.0	7.01	105.75
7.0	7.57	105.19
9.0	8.17	104.59
11.0	9.11	103.65
12.0	9.85	102.91
15.0	10.53	102.23
17.0	10.91	101.85
19.0	11.48	101.28
20.0	12.03	100.73
22.0	12.60	100.16
24.0	12.92	99.84
25.0	13.61	99.15
25.5	14.45	98.31
26.5	14.80	97.96
28.0	15.30	97.46
30.5	14.95	97.81
31.5	14.78	97.98
33.0	14.32	98.44
35.8	14.27	98.49
36.5	13.01	99.75
38	12.19	100.57
39	11.54	101.22
40	10.92	101.84
42	10.5	102.26
44	10.12	102.64
46	9.96	102.80
48	9.73	103.03
50	9.49	103.27



Control Elevation (Conservation Easement Marker on Left Bank):	107.81
Control Measurement (Foresight to Con. Ease. Marker on Left Bank):	4.95
Instrument Height (true elevation):	112.76

Thalweg:	97.46
Bankfull:	101.85



View of right bank



View of left bank

FIELD REPORT

Project: Hominy Swamp Stream Restoration Project - Maintenance
Date: December 2002/February 2003
By: KCI Associates of North Carolina PA
Subs: KCI Environmental Technologies and Construction Inc.
H & H Hauling
Coastal Plain Nursery

The following work was conducted at the identified locations on the project:

Site 1: Station 11+80 - Isolated erosion of the bank

The bank was regraded using backhoe and then smoothed by hand. The site was then seeded with an erosion control seed mix (see label) and covered with wheat straw. Woven coir matting was then secured using 12 inch U-staples. The two side edges and the top edge were keyed-in to the slope. The bottom edge was secured using 3-foot, 2" x 2" wooden stakes. The slope was then live staked with collected live stakes including willow, dogwood and alder. Spacing of the live stakes was closer than 3 foot O.C.

Site 2: Station 13+20 - Isolated erosion of the bank

The bank was regraded using backhoe and then smoothed by hand. The site was then seeded with an erosion control seed mix and covered with wheat straw. Woven coir matting was then secured using 12 inch U-staples. The two side edges and the top edge were keyed-in to the slope. The bottom edge was secured using 3-foot, 2" x 2" wooden stakes. The slope was then live staked with collected live stakes including willow, dogwood and alder. Spacing of the live stakes was closer than 3 foot O.C.

Site 3: Station 14+40 - Erosion in proximity to the rootwad

Using a track hoe boulders were individually placed on both the upstream and downstream side of the existing root wad. This filled in much of the existing voids. Following boulder placement, a mixture of large rock, small rock, gravel and smaller granular material was placed on top of the boulders and worked into the voids to completely fill any remaining space. Finally a 6" layer (minimum) of topsoil was placed on top of the rock fill.

Site 3a (field addition): Station 14+80 - Erosion in proximity to the rootwad

Using a track hoe boulders were individually placed on both the upstream and downstream side of the existing root wad. This filled in much of the existing voids. Following boulder placement, a mixture of large rock, small rock, gravel and smaller granular material was placed on top of the boulders and worked into the voids to completely fill any remaining space. Finally a 6" layer (minimum) of topsoil was placed on top of the rock fill. The area was tilled and smoothed by hand. The site was then seeded with an erosion control seed mix and covered with wheat straw. Woven coir matting was then secured using 12 inch U-staples. The two side edges and the top edge were keyed-in to the slope. The bottom edge was secured using 3-foot, 2" x 2" wooden stakes. The slope was then live staked with collected live stakes including willow, dogwood and alder. Spacing of the live stakes was closer than 3 foot O.C.

Site 4: Station 16+00 - Erosion in proximity to the rootwad

Using a track hoe boulders were individually placed on both the upstream and downstream side of the existing root wad. This filled in much of the existing voids. Following boulder placement, a mixture of large rock, small rock, gravel and smaller granular material was placed on top of the boulders and worked into the voids to completely fill any remaining space. Finally a 6" layer (minimum) of topsoil was placed on top of the rock fill. The area was tilled and smoothed by hand. The site was then seeded with an erosion control seed mix and covered with wheat straw. Woven coir matting was then secured using 12 inch U-staples. The two side edges and the top edge were keyed-in to the slope. The bottom edge was secured using 3-foot, 2" x 2" wooden stakes. The slope was then live staked with collected live stakes including willow, dogwood and alder. Spacing of the live stakes was closer than 3 foot O.C.

Site 4a (field addition) - Station 17 + 15 - Erosion in proximity to the rootwad

Using a track hoe boulders were individually placed on both the upstream and downstream side of the existing root wad. This filled in much of the existing voids. Following boulder placement, a mixture of large rock, small rock, gravel and smaller granular material was placed on top of the boulders and worked into the voids to completely fill any remaining space. Finally a 6" layer (minimum) of topsoil was placed on top of the rock fill. The area was tilled and smoothed by hand. The site was then seeded with an erosion control seed mix and covered with wheat straw. Woven coir matting was then secured using 12 inch U-staples. The two side edges and the top edge were keyed-in to the slope. The bottom edge was secured using 3-foot, 2" x 2" wooden stakes. The slope was then live staked with collected live stakes including willow, dogwood and alder. Spacing of the live stakes was closer than 3 foot O.C

Site 5: Station 24 + 60 Isolated erosion of the bank, downstream of log cross-vane

The bank was regraded using a track hoe. Boulders were placed along the toe of the slope to function as "footer boulders". Four root wads were installed using the point drive method. Each trunk is a minimum of 12 feet in length. Boulders were individually placed on both the upstream and downstream side of the new root wads. This filled in much of the voids. Following boulder placement, a mixture of large rock, small rock, gravel and smaller granular material was placed on top of the boulders and worked into the voids to completely fill any remaining space. Finally a 6" layer (minimum) of topsoil was placed on top of the rock fill. The area was tilled and smoothed by hand. The site was then seeded with an erosion control seed mix and covered with wheat straw. Woven coir matting was then secured using 12 inch U-staples. The two side edges and the top edge were keyed-in to the slope. The bottom edge was secured using 3-foot, 2" x 2" wooden stakes. The slope was then live staked with collected live stakes including willow, dogwood and alder. Spacing of the live stakes was closer than 3 foot O.C

Site 6: Station 27 + 00 Erosion caused by discharge from parking lot

The bank was regraded using a trackhoe. Geosynthetic fabric was placed on the subsoil and secured using 12" U-staples. Class 2 rock was then placed on the slope using a backhoe. Following Class 2 placement, a mixture of medium rock, small rock, gravel and smaller granular material was placed on top of the riprap and worked into the voids to completely fill any remaining space.

Replanting of Forested Buffer:

The following vegetation was installed on the project within the limits of the conservation easement:

Species	Common Name	Form	Quantity
<i>Quercus falcate</i>	Southern Red Oak	2.5"x2.5"x4" pot	30
<i>Quercus lyrata</i>	Overcup Oak	1 gallon container	22
<i>Quercus laurifolia</i>	Laurel Oak	1 gallon container	185
<i>Quercus nigra</i>	Water Oak	1 gallon container	61
<i>Quercus pagoda</i>	Cherrybark Oak	1 gallon container	94
<i>Quercus michauxii</i>	Swamp Chestnut Oak	3 gallon container	9
<i>Viburnum nudum</i>	Possumhaw	2.5"x2.5"x4" pot	100
<i>Carya aquatica</i>	Water Hickory	1 gallon container	140
<i>Fraxinus pennsylvanica</i>	Green Ash	1 gallon container	61
<i>Fraxinus pennsylvanica</i>	Green Ash	3 gallon container	5
<i>Fraxinus caroliniana</i>	Carolina Ash	1 gallon container	19
<i>Diospyros virginiana</i>	Persimmon	1 gallon container	24
<i>Crateafus marshallii</i>	Parsely Hawthorne	1 gallon container	50
<i>Sambucus Canadensis</i>	Elderberry	Live Stake	200
<i>Caphalanthus occidentalis</i>	Buttonbush	Live Stake	100
<i>Salix Nigra</i>	Black Willow	Live Stake	100
Total Quantity			1200