Naked Creek Stream Restoration

Wilkes County, North Carolina

2008 Year 1 Monitoring Report
EEP Project Number: 261
USGS HUC 03040101010100
EcoEngineering Project Number: EEP-08000

Prepared for:

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Note: No wetlands are being monitored at this site.

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Executive Summary/Project Abstract

The Naked Creek Stream Restoration project was designed by Kimley-Horn and Associates (KHA), Inc. The Naked Creek Stream Final Mitigation Report and As-built Plan were completed by KHA in August 2007. The project results include approximately 2,562 linear feet of stream restoration within a 2.92 acre conservation easement that serves as a riparian buffer.

The single largest problem that could affect lateral stability is excessive vegetation in the channel. Excessive vegetation was observed between stations 11+00 and 18+00. Based on the prior year comparison using longitudinal profile data, it appears that minor systemic aggradation has occurred throughout the reach. Minor "piping" through a cross vane arm was observed at the structure located at station 34+67. It appeared as if a repair had been made using hand tools/labor and it is possible that this problem may fix itself over time. Structure failure was not imminent.

No wetlands are being monitored for mitigation credits at this project site.

Various exotic/invasive species were observed at the site. Exotic species observed at the site include Chinese privet (*Ligustrum sinense*) and silktree (*Alibizia julibrissin*). The extent of exotic/invasive species is depicted in the Integrated Project Problem Areas Plan View **Appendix D**.

No crest gages are installed at Naked Creek to document bankfull events. There was no evidence of wrack lines to indicate that a bankfull event had occurred.

Current stem counts were calculated using vegetation plot monitoring data. Interim density targets (stems/acre) are 320 at year 3 and 288 at year 4. Final stem count criteria is 260 trees per acre at the end of the five (5) year monitoring. As monitored for Year 1, Naked Creek had 5 plots encompassing 0.12 acres, containing 39 stems, which yielded a density of 325 trees per acre.

There are a few minor concerns at the site, but overall, the channel is stable and the planted vegetation is becoming established. The primary area of concern is the upper portion of the reach where the stream channel contains thick vegetation. The thick vegetation may be due to over seeding or may be the result of a prolonged drought or a dry period which enabled plants to grow within the bed of the channel. This vegetation is influencing vertical and lateral stability to a minor extent. The single structure near the end of the project reach that exhibited "piping" should be monitored closely although it does not appear to be an immediate risk for failure. The herbaceous species at the site seem to have an over abundance of swamp sunflower (*Helianthus angustifolius*) likely due to the distribution of a seed mix that contained only black eyed susan seeds or a seed mix that contained a significant amount of black eyed susan seeds when compared to other appropriate species.

Current and future maintenance concerns at this site should be addressed to protect the integrity of the project. Currently a crest gauge needs at be installed as soon as possible and

all exotic and invasive vegetation needs to be treated to prevent it from spreading throughout the buffer. Future annual maintenance should include periodic invasive/exotic vegetation control. The in-channel vegetation along the upper portion of the stream should only be removed if lateral and/or vertical instability persists at Monitoring Year 5.

1.0 Project Background

1.1 Project Objectives

The goal of the restoration project is to improve the water quality and biological habitat of the site's streams, wetlands, and riparian buffers through the following:

-Restore (pattern, dimension, and profile) unstable streams using natural channel design techniques

-Re-establish riparian buffers (Kimley-Horn, 2007)

1.2 Project Structure, Restoration Type, and Approach

A Priority II restoration approach was used for this project. The Priority II approach was used to re-establish an active floodplain and stabilize the stream banks (Rosgen, David L. 1997). This method should decrease stream bank erosion, establish an active floodplain, reduce channel stress during floods, improve aquatic habitat, and reduce fine sediments.

The riparian buffer was planted as three zones. Zone 1 was the stream bank zone consisting of tree and shrub species and native herbaceous seeding typically found along stream banks in the region. Zone 2 was a forested riparian area consisting of selected tree and shrub species, with a range of tolerances of inundation and saturation. Zone 3 was an upland zone that was planted with tree and shrub species less tolerant to inundation and saturation. Zone 1 was planted with live stakes and Zones 1 and 2 were planted with bare root seedlings and containerized plants. Planting spacing was determined according to planting type. The entire easement was planted.

Inspection of the vegetation plots during the baseline monitoring phase showed that the planting density did not match the density prescribed in the planting plan. EEP will request that the contractor provide supplemental plantings during the spring of 2008 to bring the planting density to design specifications. (Kimley-Horn, 2007)

1.3 Location and Setting

The Naked Creek Stream Restoration project falls within the Eller and Day Properties in Wilkes County, North Carolina approximately 10.6 miles west of Wilkesboro, North Carolina and 18.4 miles east of Boone, North Carolina. The stream lies within headwaters of the USGS hydrologic unit 03040101010100 in the Yadkin River Basin. The site as defined by the protective conservation easement surrounding the stream and riparian buffers covers approximately 2.92 acres.

Prior to construction, the site consisted of one reach (UtNkd), an approximately 2,800 linear foot portion of an unnamed tributary to Naked Creek (Drainage area 0.5 mi^2). UtNkd drained a watershed consisting of predominantly forest land and agricultural land.

Pasture land surrounded the project reach and the stream banks lacked strong rooted vegetation (e.g. woody or deep rooted herbaceous vegetation). For most of the riparian buffer, pasture grasses dominated with isolated specimens of hardwoods. Riparian zone woody vegetation included red maple (*Acer rubrum*), sycamore (*Plantus occidentalis*), river birch (*Betula nigra*), and yellow poplar (*Liriodendron tulipifera*). Due to the lack of bank protection, and denuded watershed, the stream channel incised (bank height ratios of 1.7) and became entrenched (entrenchment ratios of 1.5). Entrainment calculations predicted that the channel would continue to degrade. The BEHI scores for the reach ranged from High to Very High. In this condition and with regular impacts due to cattle traffic, bank erosion accelerated and the variety of bed features diminished. With active cattle grazing in the area, the channel would have continued to receive impacts. The reach stream type was an incised B4c and without restoration would have likely continued to downcut and widen, resulting in high sediment loads and impaired habitat. (Kimley-Horn, 2007)

1.4 Project History and Background

The Naked Creek Stream Restoration project was designed by Kimley-Horn and Associates, Inc. The Naked Creek Stream Final Mitigation Report and As-built Plan were completed in August 2007. The project results include approximately 2,562 linear feet of stream restoration within a 2.92 acre conservation easement that serves as a riparian buffer.

Exhibit Table I. Project Restoration Components

Naked Creek Stream Restoration Project/EEP Project Number: 261

Project Segment or Reach ID	Existing Feet/Acres	Type	Approach	Footage or Acreage	Stationing	Comment
UtNkd	2,800 lf	R	P2	2,562 lf	10+00 - 35+87.40	
Mitigation Unit Summations						
Stream (lf)	Riparian Wetland (Ac)	Nonriparian Wetland (Ac)	Total Wetland (Ac)		Buffer (Ac)	Comment
2,562	0	0	0		2.92	

R= Restoration EII= Enhancement II P1= Priority I P3= Priority III
EI= Enhancement S= Stabilization P2= Priority II SS=Stream Bank Stabilization

Exhibit Table II. Project Activity and Reporting History Naked Creek Stream Restoration Project/EEP Project Number: 261		
Activity or Report	**Data Collection Complete**	**Actual Completion or Delivery**
Restoration Plan	Summer 05	Nov-05
Final Design – 90%	Spring 06	Summer 06
Construction	Fall 06	Winter 06
Temporary S&E mix applied to entire project area	Winter 06	Winter 06
Permanent seed mix applied to reach/segments 1 & 2	Winter 06	Winter 06
Containerized and B&B plantings for reach/segments 1 & 2	Winter 06	Winter 06
Mitigation Plan / As-built (Year 0 Monitoring – baseline)	Spring 07	Aug-07
Year 1 Monitoring	Sep-08	Nov-08
Year 2 Monitoring	-----	-----

Note: Timeframe estimated from information provided by EEP.

Exhibit Table III. Project Contacts Table Naked Creek Stream Restoration Project/EEP Project Number: 261	
Designer Primary project design POC	Kimley-Horn and Associates, Inc. P.O Box 33068, Raleigh, North Carolina 27636 POC name and phone 919-677-2050
Construction Contractor Construction contractor POC	Fluvial Solutions, Inc. PO Box 28749, Raleigh, NC 27611-8749 Peter Jelenevsky, 919-605-6134
Planting Contractor Planting contractor POC	Carolina Silvics 908 Indian Trail Road, Edenton, NC 27932 Mary-Margaret McKinney 252-482-8491
Seeding Contractor Planting contractor POC	Contact: Fluvial Solutions, Inc. PO Box 28749, Raleigh, NC 27611-8749 Peter Jelenevsky, 919-605-6134
Seed Mix Sources	Contact: Fluvial Solutions, Inc. Peter Jelenevsky, 919-605-6134
Nursery Stock Suppliers	ArborGen 843-851-4129
Monitoring Performers	EcoEngineering - A Division of The John R. McAdams Co. 2905 Meridian Parkway, Durham, NC 27713
Stream Monitoring POC Jim Halley	919-287-4262
Vegetation Monitoring POC Jim Halley	919-287-4262
Wetland Monitoring POC NA	NA

Note: Information obtained from EEP documents and bid tabulation results. Use contacts in table for additional information or to verify data.

Exhibit Table IV. Project Background Table Naked Creek Stream Restoration Project/EEP Project Number: 261	
Project County	Wilkes County
Drainage Area: UTto Naked Creek	0.53 square miles
Drainage impervious cover estimate (%)	Estimated at 0.2%
Stream Order	1st for UT to Naked Creek
Physiographic Region	Blue Ridge
Ecoregion	Appalachian Highlands
Rosgen Classification of As-built	C
Cowardin Classification	R3UBH
Dominant soil types	Chewacla loam, Pacolet sandy loam
Reference site ID	UT Purlear, Upper Big Warrior
USGS HUC for Project	03040101010100
NCDWQ Sub-basin for Project	12-31-3-(0.5)
NCDWQ classification for Project and Reference	C
Any portion of any project segment 303d listed?	No
Any portion of any project segment upstream of a 303d listed segment?	No
Reasons for 303d listing or stressor	NA
% of project easement fenced	100%

1.5 Monitoring Plan View

See **Appendix D** for Stream Restoration Project – Year One Monitoring Plan View.

2.0 Project Condition and Monitoring Results

2.1 Vegetation Assessment

Vegetation monitoring plot stem counts and photos are located in **Appendix A**.

2.1.1 Vegetative Problem Areas

Vegetative problem areas can be grouped into three categories: bare floodplain, invasive species encroachment, and thick vegetation in channel. Of the three categories, the invasive species encroachment category is of high concern.

Two areas along the floodplain were noted to be bare and lacked vegetation therefore exposing the soil. It appears these areas are a result of runoff and poor site soils. A limited amount of vegetation is growing within the bare floodplain areas. It is possible that vegetation may thrive and subsequently fill in these bare floodplain areas as time progresses.

In upstream areas, the stream channel contains thick vegetation in the riffle sections which may be due to over seeding. Channel morphology has been influenced by the thick vegetation causing flow patterns within the channel to be altered. Over time, the vegetation may cause lateral migration of the thalweg which would cause minor lateral instability.

There are areas in which invasive populations have encroached into Naked Creek. Patches of Chinese privet (*Ligustrum sinense*) and silktree (*Alibizia julibrissin*) were noted.

2.1.2 Vegetative Problem Area Plan View

All vegetative problem areas discussed above are shown on Stream Restoration Project – Year One Monitoring Plan View located in **Appendix D**.

2.2 Stream Assessment

2.2.1 Procedural Items

2.2.1.1 Morphometric Criteria

Dimension and profile were sampled per the 2003 Stream Mitigation Guidelines (USACE, 2003) as follows:

2.2.1.1.1 Dimension

See **Appendix B** for cross-section information.

2.2.1.1.2 Profile

See **Appendix B** for longitudinal profile information.

2.2.1.2 Hydrologic Criteria

No crest gages are installed at Naked Creek to document bankfull events. There was no evidence of wrack lines to verify bankfull events. EcoEngineering recommends installation of crest gages to determine bankfull events.

Exhibit Table V. Verification of Bankfull Events
Naked Creek Stream Restoration Project/EEP Project Number: 261

Date of Data Collection	Date of Occurrence	Method	Photo # (if available)
Not provided	Not provided	Not provided	Not provided

Note: Crest gages have not been installed at the site.

Based on discharge data from USGS 0211500 Reddies River at North Wilkesboro, NC (http://waterdata.usgs.gov/nwis/dv?cb_00060=on&format=gif_default&begin_date=2007-08-01&end_date=2009-09-21&site_no=02111500&referred_module=sw) which has a drainage area of 89.2 square miles and is approximately 10 miles from Naked Creek, it is

likely that Naked Creek had two bank full occurrences which occurred in September 2008 and January 2009.

2.2.1.3 Bank Stability Assessments

This is the first year of monitoring; and therefore, BEHI and NBS assessments were not performed. As required by EEP, BEHI and NBS assessments will be performed during the year five monitoring period.

2.2.2 Problem Areas Plan View

See **Appendix D** for Stream Restoration Project – Year One Monitoring Plan View.

2.2.3 Problem Areas Summary

See Exhibit Table B.1 in **Appendix B** for the Stream Problem Areas table.

Please note that the materials data (pebble count) collected at this site was affected by the thick vegetation within the channel. The data was obtained from surface particles along the wetted perimeter of the normal flow area of the channel. Due to thick vegetation several samples were classified as silt/clay. Conditions along the first riffle sampled were typical of the remaining riffle sections; therefore, the materials data was applied to all three cross sections.

To further investigate the excessive vegetation within the channel, the root mat and plant material was removed by hand in approximately three locations revealing a gravel substrate below the herbaceous vegetation layer. The thickness of the root mat averaged approximately three inches.

2.2.4 Stream Problem Area Photographs

See representative stream problem area photographs located in **Appendix B**.

2.2.5 Fixed Station Photos

Stream Photo Station photographs are located in **Appendix B**.

2.2.6 Stability Assessment

The following is the Categorical Stream Feature Visual Stability Assessment Table (Exhibit Table VII).

Exhibit Table VII. Categorical Stream Feature Visual Stability Assessment
Naked Creek Stream Restoration Project/EEP Project Number: 261
Unnamed Tributary to Naked Creek: 2,562 Linear Feet

Feature	Initial	MY-01	MY-02	MY-03	MY-04	MY-05
A. Riffles		95%				
B. Pools		82%				
C. Thalweg		96%				
D. Meanders		96%				
E. Bed General		87%				
F. Bank Condition		100%				
G. Vanes/J-Hooks etc.		99%				
H. Wads and Boulders		100%				

2.2.7 Quantitative Measures Summary

The following are the Baseline Morphology and Hydraulic Summary (Exhibit Table VIII) and Morphology and Hydraulic Monitoring Summary (Exhibit Table IX) tables.

Exhibit Table VIII. Baseline Morphology and Hydraulic Monitoring Summary
Naked Creek Stream Restoration Project/EEP Project Number: 261
Unnamed Tributary to Naked Creek: 2,562 Linear Feet

Parameter	USGS Gage Data			Regional Curve Interval			Pre-Existing Condition			Project Reference Stream			Design			As-built		
Dimension	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
BF Width (ft)						24.0	12.7	14.2	13.5	12.5	33.2	23.2			16.0	13.7	21.4	20.8
Floodprone Width (ft)							16	19	17	18	329	58	35	80	48	100	100	100
BF Cross Sectional Area (ft2)						33.0	12.1	13.8	13.0	7.4	68.4	39.7			13.0	6.8	11.7	10.2
BF Mean Depth (ft)						1.3	1.0	1.0	1.0	1.0	3.1	2.2			0.8	0.5	0.6	0.5
BF Max Depth							1.3	1.6	1.5	0.6	2.1	1.7			1.0	1.1	1.5	1.2
Width/Depth Ratio							13	15	14	11	21	16			20	28	45	37
Entrenchment Ratio							1.1	1.5	1.3	1.4	9.9	2.4	2.2	5.0	3.0	4.7	7.3	4.8
Bank Height Ratio							2.0	2.8	2.4	1.2	2.8	2.0			1.0	1.0	1.0	1.0
Wetted Perimeter (ft)							10.1	22.3	13.6							14.2	21.9	21.4
Hydraulic radius (ft)							0.9	1.1	1.0							0.5	0.5	0.5
Pattern																		
Channel Beltwidth (ft)							18	45	35	21	105	65	27	54	42	25	70	35
Radius of Curvature (ft)							7	36	19	0	3	2	32	64	48	43	363	80
Meander Wavelength (ft)							43	164	102	100	350	350	112	192	144	140	240	165
Meander Width ratio							1.4	3.5	2.8	0.0	3.4	1.8	1.7	3.4	2.6	1.8	3.3	1.7
Profile																		
Riffle length (ft)													5	115	40	3	30	18
Riffle slope (ft/ft)							0.023	0.057	0.040	0.021	0.051	0.029	0.020	0.025	0.021	0.007	0.222	0.021
Pool length (ft)													15	60	40	15	74	39
Pool spacing (ft)							41	56	48	100	305	224	80	144	112	57	356	100
Substrate																		
d50 (mm)							20	6	7	17	22	20	44	110	71**			42
d84 (mm)							46	35	27	31	121	50						
Additional Reach Parameters																		
Valley Length (ft)															2494			2494
Channel Length (ft)															2560			2587
Sinuosity							1.00	1.20	1.10	0.00	1.40	1.10	1.05	1.20	1.03			1.04
Water Surface Slope (ft/ft)							0.023	0.057	0.040	0.021	0.051	0.029	0.013	0.014	0.014	0.013	0.015	0.014
BF slope (ft/ft)									0.016	0.014	0.017	0.016	0.016	0.02	0.016	0.013	0.014	0.013
Rosgen Classification							B4C	F4		B4C	B	C4			C4			C4
*Habitat Index															N/A			
*Macrobenthos															N/A			

*Inclusion will be project specific and determined by As-built monitoring plan/success criteria
**Range provided by KHA was 44-110mm with a largest subpavement bar sample of 71mm.

Exhibit Table IX. Morphology and Hydraulic Monitoring Summary
Naked Creek Stream Restoration Project/EEP Project Number: 261
Unnamed Tributary to Naked Creek: 2,562 Linear Feet

Parameter	Cross Section 1 Pool						Cross Section 2 Riffle						Cross Section 3 Riffle						Cross Section 4 Riffle					
Dimension	MY1	MY2	MY3	MY4	MY5	MY+	MY1	MY2	MY3	MY4	MY5	MY+	MY1	MY2	MY3	MY4	MY5	MY+	MY1	MY2	MY3	MY4	MY5	MY+
BF Width (ft)	25.8						19.7						14.9						18.9					
Floodprone Width (ft)	N/A						50						30						35					
BF Cross Sectional Area (ft2)	36.4						14.7						7.3						10.3					
BF Mean Depth (ft)	1.4						0.7						0.5						0.5					
BF Max Depth (ft)	2.9						1.4						0.9						1.0					
Width/Depth Ratio	18						27						30						35					
Entrenchment Ratio	N/A						2.3						13.4						1.7					
Bank Height Ratio	1.0						1.0						1.0						1.0					
Wetted Perimeter (ft)	26.7						20.0						14.5						19.1					
Hydraulic radius (ft)	1.4						0.7						0.5						0.5					
Substrate																								
d50 (mm)	NA						SILT						SILT						SILT					
d84 (mm)	NA						20						20						20					

Parameter	Cross Section 5 Pool						Cross Section 6 Pool					
Dimension	MY1	MY2	MY3	MY4	MY5	MY+	MY1	MY2	MY3	MY4	MY5	MY+
BF Width (ft)	28.0						20.8					
Floodprone Width (ft)	N/A						N/A					
BF Cross Sectional Area (ft2)	40.9						14.5					
BF Mean Depth (ft)	1.5						0.7					
BF Max Depth (ft)	2.9						1.8					
Width/Depth Ratio	19.2						29.9					
Entrenchment Ratio	N/A						N/A					
Bank Height Ratio	1.0						1.0					
Wetted Perimeter (ft)	29.4						21.4					
Hydraulic radius (ft)	1.4						0.7					
Substrate												
d50 (mm)	NA						NA					
d84 (mm)	NA						NA					

Parameter	MY-01 (2008)			MY-02 (2009)			MY-03 (2010)			MY-04 (2011)			MY-05 (2012)			MY+ (2013)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	39	79	49															
Radius of Curvature (ft)	30	92	59															
Meander Wavelength (ft)	144	372	202															
Meander Width ratio	2.5	4.9	3.1															
Profile																		
Riffle length (ft)	4	69	29															
Riffle slope (ft/ft)	0.004	0.229	0.014															
Pool length (ft)	12	75	19															
Pool spacing (ft)	39	416	140															
Additional Reach Parameters																		
Valley Length (ft)	2494																	
Channel Length (ft)	2640																	
Sinuosity	1.06																	
Water Surface Slope (ft/ft)	0.015																	
BF slope (ft/ft)	0.013																	
Rosgen Classification	C4																	
Habitat Index*																		
Macrobenthos*																		

2.3 Wetland Assessment

2.3.1 Problem Areas Plan View

The Naked Creek Stream Restoration project does not have wetland areas; therefore, a wetland assessment was not performed.

2.3.2 Wetland Criteria Attainment

The Naked Creek Stream Restoration project does not have wetland areas; therefore, a wetland assessment was not performed.

3.0 Methodology Section

All monitoring methodologies follow the most current templates and guidelines provided by EEP (EEP, 2006). Photographs were taken at high resolution using an Olympus FE-115 5.0 megapixel digital camera. GPS location information was collected using a Trimble Geo XT handheld mapping grade GPS unit. Stream and vegetation problem areas were noted in the field on As-Built Plan Sheets.

The methods used to generate the data in this report are standard fluvial geomorphology techniques as described in *Applied River Morphology* (Rosgen, 1996) and related publications from US Forest Service and the interagency Stream Mitigation Guidelines (USACE, 2003).

Vegetation monitoring methods followed the 2007, Version 4.1 CVS-EEP Protocol for Recording Vegetation (Lee et. al., 2007). Vegetation plot photographs were collected for each vegetation plot. Vegetation monitoring plots were re-marked in the field by replacing all old flagging with new orange flagging. Monitoring taxonomy follows *Flora of the Carolinas, Virginia, Georgia, and Surrounding Areas* (Weakley 2007). Stem height was measured with a folding one-meter rule. Diameter at breast height and decimeter height were measured with calipers.

References:

Ecosystem Enhancement Program (EEP), 2006. Monitoring Report Guidelines.

Kimley-Horn and Associates, Inc., 2007. Naked Creek Stream Final Mitigation Report. Submitted to NCDENR-EEP, August 2007.

Lee, Michael T., R. K. Peet, S. D. Roberts, and T. R. Wentworth. 2007. CVS-EEP Protocol for Recording Vegetation, Version 4.1 (http://cvs.bio.unc.edu/methods.htm)

Rosgen, D.L. 1996. Applied Morphology. Wildland Hydrology, Pagosa Springs, CO.

US Army Corps of Engineers (USACE), 2003. April 2003 Stream Mitigation Guidelines.

US Army Corps of Engineers (USACE), 2005. Information Regarding Stream Restoration In The Outer Coastal Plain of North Carolina. US Army Corps of Engineers, Wilmington District, Regulatory Division and North Carolina Department of Environment and Natural Resources, Division of Water Quality, December 1, 2005.

Weakley, A. S., 2008. Flora of the Carolinas, Virginia, Georgia, northern Florida, and surrounding areas. University of North Carolina Herbarium (NCU), North Carolina Botanical Garden, University of North Carolina at Chapel Hill, working Draft as of April 7, 2008.

APPENDIX A

Table 1. Vegetation Metadata Naked Creek Stream Restoration Project/EEP Project ID: 261	
Report Prepared By	George Buchholz
Date Prepared	9/26/2008 10:57
database name	cvs-eep-entrytool-v2.2.5.mdb
database location	X:\Projects\EEP\EEP-08000 (Naked Creek)\Storm
computer name	BUCHHOLZ

DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT----------	
Metadata	Description of database file, the report worksheets, and a summary of project(s) and project data.
Proj, planted	Each project is listed with its PLANTED stems per acre, for each year. This excludes live stakes.
Proj, total stems	Each project is listed with its TOTAL stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Plots	List of plots surveyed with location and summary data (live stems, dead stems, missing, etc.).
Vigor	Frequency distribution of vigor classes for stems for all plots.
Vigor by Spp	Frequency distribution of vigor classes listed by species.
Damage	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage by Spp	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
Planted Stems by Plot and Spp	A matrix of the count of PLANTED living stems of each species for each plot; dead and missing stems are excluded.
PROJECT SUMMARY----------	
Project Code	40619201
project Name	Naked Creek
Description	10.6 miles west of Wilkesboro and 18.4 miles east of Boone in Wilkesboro, NC. One Reach (UtNkd) approximately 2,800 linear feet
River Basin	Yadkin-Pee Dee
length(ft)	2,562
stream-to-edge width (ft)	25
area (sq m)	0.01 square miles (2.92 acres)
Required Plots (calculated)	5
Sampled Plots	5

Table 2. Vegetation Vigor by Species

Naked Creek Stream Restoration Project/EEP Project ID: 261

	Species	4	3	2	1	0	Missing	Unknown
	Alnus serrulata		3					
	Betula nigra		3	1				
	Fraxinus pennsylvanica		13		2			
	Persea borbonia		1	1				
	Quercus falcata		2					
	Quercus phellos		9					
	Quercus rubra		1					
	Prunus serotina		3					
TOT:	**8**		**35**	**2**	**2**			

Table 3. Vegetation Damage by Species
Naked Creek Stream Restoration Project/EEP Project
ID: 261

	Species	All Damage Categories	(no damage)	Human Trampled	Insects
	Alnus serrulata	3	3		
	Betula nigra	4	3		1
	Fraxinus pennsylvanica	15	13	2	
	Persea borbonia	2	1		1
	Prunus serotina	3	3		
	Quercus falcata	2	2		
	Quercus phellos	9	9		
	Quercus rubra	1	1		
TOT:	**8**	**39**	**35**	**2**	**2**

Table 4. Vegetation Damage by Plot
Naked Creek Stream Restoration Project/EEP Project
ID: 261

	plot	All Damage Categories	(no damage)	Human Trampled	Insects
	070715101-01-VP1-year:1	6	5		1
	070715101-01-VP2-year:1	9	8	1	
	070715101-01-VP3-year:1	8	8		
	070715101-01-VP4-year:1	7	6		1
	070715101-01-VP5-year:1	9	8	1	
TOT:	**5**	**39**	**35**	**2**	**2**

Table 5. Stem Count by Plot and Species
Naked Creek Stream Restoration Project/EEP Project ID: 261

	Species	Total Planted Stems	# plots	avg# stems	plot 070715101-01-VP1-year:1	plot 070715101-01-VP2-year:1	plot 070715101-01-VP3-year:1	plot 070715101-01-VP4-year:1	plot 070715101-01-VP5-year:1
	Alnus serrulata	3	2	1.5	2		1		
	Betula nigra	4	2	2	1	3			
	Fraxinus pennsylvanica	15	4	3.75	2	6	3		4
	Persea borbonia	2	1	2				2	
	Prunus serotina	3	1	3			3		
	Quercus falcata	2	2	1			1		1
	Quercus phellos	9	2	4.5				5	4
	Quercus rubra	1	1	1	1				
TOT:	**8**	**39**	**8**		**6**	**9**	**8**	**7**	**9**

PHOTO 1: LOOKING UPSTREAM AT THE CULVERT AT TOP OF PROJECT.

PHOTO 2: LOOKING DOWNSTREAM AT CHANNEL AND WET AREA NEAR RIGHT BANK.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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PHOTO 3: LOOKING DOWNSTREAM AT CHANNEL.

PHOTO 4: LOOKING DOWNSTREAM FROM UPPER CROSSING AT CHANNEL.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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PHOTO 5: LOOKING AT LEFT BANK AT DRAINAGE SWALE ENTERING CHANNEL FROM LEFT SIDE.

PHOTO 6: LOOKING UPSTREAM FROM HILLSIDE ON RIGHT BANK.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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PHOTO 7: LOOKING DOWNSTREAM FROM HILLSIDE ON RIGHT BANK.

PHOTO 8: LOOKING UPSTREAM FROM HILLSIDE ON RIGHT BANK.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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PHOTO 9: LOOKING UPSTREAM AT CHANNEL FROM LOWER CROSSING.

PHOTO 10: LOOKING DOWNSTREAM AT CHANNEL FROM LOWER CROSSING.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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PHOTO 11: LOOKING UPSTREAM FROM RIGHT BANK.

PHOTO 12: LOOKING DOWNSTREAM FROM HILLSIDE.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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PHOTO 13: LOOKING FROM LEFT BANK TOWARD RIGHT BANK AT WET AREA DRAINING INTO RIGHT SIDE OF CHANNEL.

PHOTO 14: LOOKING DOWNSTREAM FROM RIGHT BANK AT CHANNEL AND RIPARIAN AREA.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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PHOTO 15: LOOKING DOWNSTREAM FROM RIGHT BANK AT RIP-RAP TOE PROTECTION

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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Exhibit Table 6. Vegetative Problem Areas			
Naked Creek Stream Restoration Project/EEP Project Number: 261			
Feature/Issue	**Station # / Range**	**Probable Cause**	**Photo #**
Bare Floodplain	17+50 – 18+00	Run-off/exposed subsoil material	VPA1
	32+75 – 34+25	Sandy soil not suitable for species	
Invasive/Exotic Populations	See Plan View	*Ligustrum sinese* encroachment	VPA2
	See Plan View	*Albizia julibrissin* encroachment	VPA3
Thick Vegetation in Channel	11+00 - 18+00	Thick vegetation in channel maybe due to over seeding	VPA4

VEGETATION PROBLEM AREA 1: STATION 17+50 – 18+00.

VEGETATION PROBLEM AREA 2: LIGUSTRUM SINENSE ENCROACHMENT.

PROJECT NO.	EEP–08000
FILENAME:	EEP–08000
SCALE:	NTS
DATE:	08–15–08

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VEGETATION PROBLEM AREA 3: ALBIZIA JULIBRISSIN ENCROACHMENT.

VEGETATION PROBLEM AREA 4: THICK HERBACEOUS GROWTH WITHIN STREAM CHANNEL.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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PHOTO VP1: LOOKING NORTH AT VEGETATION PLOT VP1.

PHOTO VP2: LOOKING NORTH AT VEGETATION PLOT VP2.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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PHOTO VP 3: LOOKING NORTHEAST OF VEGETATION PLOT VP3.

PHOTO VP 4: LOOKING NORTHWEST AT VEGETATION PLOT VP4.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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PHOTO VP 5: LOOKING SOUTHEAST AT VEGETATION PLOT VP5.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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APPENDIX B

Insert **Exhibit Table B.1. Stream Problem Areas** <HERE><TABLE LOCATED IN EXCEL DOCUMENT CALLED MONITORING_REPORT_TABLE.XLS><TABLE IS UNDER TABLE LABELED APPENDIX B EXHIBIT TABLE B.2.>

Exhibit Table B.1. Stream Problem Areas			
Naked Creek Stream Restoration Project/EEP Project Number: 261			
Feature Issue	**Station numbers**	**Suspected Cause**	**Photo number**
Aggradation/Bar Formation	33+20	Side channel bar (minor problem)	SP1
	11+00 - 18+00	Thick vegetation in channel influencing channel morphology	SP2
Engineered structures – back or arm scour Etc.	34+67	Piping at structure	SP3

STREAM PROBLEM AREA 1: SIDE CHANNEL BAR AT STATION 33+20.

STREAM PROBLEM AREA 2: THICK HERBACEOUS GROWTH WITHIN STREAM CHANNEL FROM STATION 11+00 TO 18+00.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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STREAM PROBLEM AREA 3: PIPING AT STRUCTURE LOCATED AT STATION 34+67.

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	NTS
DATE:	08-15-08

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Insert **Exhibit Table B.2. Visual Morphological Stability Assessment** <HERE><TABLE LOCATED IN EXCEL DOCUMENT CALLED MONITORING_REPORT_TABLE.XLS><TABLE IS UNDER TABLE LABELED APPENDIX B EXHIBIT TABLE B.2.>

Exhibit Table B.2. Visual Morphological Stability Assessment Naked Creek Stream Restoration Project/EEP Project Number: 261 Unnamed Tributary to Naked Creek: 2,562 Linear Feet						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state[1]	% Perform in Stable Condition[2]	Feature Perform. Mean or Total[3]
A. Riffles	1. Present ?[4]	28	28	NA	100	
	2. Armor stable (e.g. n o displacement)?	28	28	NA	100	
	3. Facet grade appears stable? (slope ≤ design range)	22	28	NA	79	
	4. Minimal evidence of embedding/fining?	28	28	NA	100	
	5. Length appropriate?	NA	NA	NA	NA	**95**
B. Pools	1. Present? (e.g. not subject to severe aggrad. or migrat.?)	17	17	NA	100	
	2. Sufficiently deep (Max Pool D:Mean Bkf>1.6?)	Design = 2.4 / 0.8 = 3 17	Max Pool / 0.8 > 1.6, 10 of 17	NA	59	
	3. Length appropriate? (pool-to-pool spcng)	15	17	NA	88	**82**
C. Thalweg	1. Upstream of meander bend (run/inflection) centering?[5]	26	28	NA	93	
	2. Downstream of meander (glide/inflection) centering?[5]	28	28	NA	100	**96**
D. Meander	1. Outer bend in state of limited/controlled erosion?	27	27	NA	100	
	2. Of those eroding, # w/concomitant point bar formation	27	27	NA	100	
	3. Apparent Rc within spec?	22	27	NA	82	
	4. Sufficient floodplain access and relief?	27	27	NA	100	**96**
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	1/700	73	
	2. Channel bed degradation – areas of increasing down-cutting or head cutting?	NA	NA	NA	100	**87**

F. Bank[6]	1. Actively eroding, wasting, or slumping bank	NA	NA	NA	100	**100**
G. Vanes	1. Free of bank or arm scour?	34	34	NA	100	
	2. Height appropriate?	34	34	NA	100	
	3. Angle and geometry appear appropriate?	34	34	NA	100	
	4. Free of piping or other structural failures?	33	34	NA	97	**99**
H. Wads/ Boulders	1. Free of scour?	36	36	NA	100	
	2. Footing stable?	36	36	NA	100	**100**

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

1 Metrics that are spatial estimates that are continuous variables should be entered as:
The number of locales over the reach for which the failing condition is observed / followed by the total linear distance (feet) or area for which the failing or unstable condition is observed.

2 In the case of categorical metrics for which a feature count is involved, this is simply calculated as the number of functional features that are in a state of stability as a percentage of the total. In the case of those metrics based on footage or aerial extent it is that amount in a state of failure or instability expressed as a proportion of the total amount of that feature. The resulting proportion is then subtracted from land then multiplied by 100 to give a percentage that represents the proportion of that feature category in a state of apparent stability.

3 The mean of the metrics for a given feature category.

4 Was the feature actually present as compared to the As-built or has the feature been completely obscured (aggraded) or removed (degraded).

5 Is the Thalweg centering up on the channel in between meander bends?

6 Amount of active bank failure/erosion. This should be the tally of all stressed and failing bank from the problem area plan view, which an then be calculated as indicated in footnote 1 above.

USDA-NRCS (1998) *Stream Visual Assessment Protocol* National Water and Climate Center (Technical Note 99–1)

Rosgen, D L. (1996) *Applied River Morphology* . Wildland Hydrology Books, Pagosa Springs, CO.

Phankuch, D.J. (1975) Stream reach inventory and channel stability evaluation. USDA Forest Service, R1-75-002. GPO #696-260/200

1-YEAR, 2008 SURVEY DATA

PROJECT NAME NAKED CREEK

TASK LONGITUDINAL PROFILE

FEATURE/FACET SLOPE LENGTH, AND SPACING AND LONGITUDINAL PROFILE DATA

REACH NAKED CREEK

DATE 9/16/2008 to 9/18/2008

CREW ALTIZER/BUCHHOLZ/HALLEY/FURRY

Overall water surface slope =	1.4%
WS sta. start =	97.33 ft
WS sta. end =	2654.95 ft
ELEV. Start =	1309.90 ft msl
ELEV. End =	1274.27 ft msl

Results

	DESIGN	MIN.	MAX.
Riffle	1.95%	2.50%	
Run	---	---	
p-p spacing	80	144	

	n =	MIN.	MEDIAN.	AVG.	MAX.
Riffle slopes measured =	28	0.4%	1.4%	1.9%	22.9%
Run slopes measured =	22	0.4%	3.2%	4.1%	10.5%
Pools measured =	17	39	140	155	416

All data reported in units of **feet** unless otherwise specified. Elevation data is presented in feet mean sea level.

Feature	Start sta.	End sta.	Length	WS El. Start	WS El. End	Change	Slope
Riffle	97	113	16	1309.90	1309.43	0.47	2.93%
Riffle	167	197	30	1309.45	1308.30	1.15	3.78%
Riffle	236	268	32	1307.86	1307.60	0.26	0.81%
Riffle	360	376	16	1306.36	1306.20	0.16	1.03%
Riffle	480	511	31	1304.67	1304.08	0.59	1.89%
Riffle	646	688	42	1302.89	1301.99	0.90	2.16%
Riffle	821	831	10	1300.45	1300.31	0.14	1.34%
Riffle	879	924	45	1299.91	1299.40	0.51	1.14%
Riffle	1002	1013	12	1298.00	1297.86	0.14	1.18%
Riffle	1060	1097	37	1296.77	1296.60	0.16	0.45%
Riffle	1147	1196	48	1295.92	1295.25	0.67	1.38%
Riffle	1250	1274	24	1294.35	1294.05	0.30	1.27%
Riffle	1327	1348	21	1293.70	1293.21	0.49	2.32%
Riffle	1422	1491	69	1292.45	1291.37	1.08	1.57%
Riffle	1527	1555	28	1290.91	1290.29	0.62	2.22%
Riffle	1684	1715	31	1288.86	1288.52	0.34	1.08%
Riffle	1785	1847	62	1287.46	1286.63	0.83	1.34%
Riffle	1865	1928	63	1286.11	1285.28	0.83	1.33%
Riffle	2003	2039	35	1284.28	1284.05	0.23	0.65%
Riffle	2110	2136	26	1283.34	1282.61	0.73	2.84%
Riffle	2232	2235	4	1281.60	1280.80	0.80	22.87%
Riffle	2311	2334	23	1280.35	1280.11	0.24	1.04%

Riffle	2398	2406	8	1278.74	1278.41	0.33	4.04%
Riffle	2437	2445	7	1278.36	1277.82	0.54	7.48%
Riffle	2466	2501	35	1277.65	1277.13	0.52	1.50%
Riffle	2530	2547	17	1275.97	1275.72	0.25	1.48%
Riffle	2582	2613	31	1275.47	1275.11	0.36	1.15%
Riffle	2635	2644	9	1274.41	1274.27	0.14	1.63%
n =	28						
MIN =	0.4%						
MEDIAN =	1.4%						
AVG. =	1.9%	Outlier of 22.9% not included.					
MAX =	22.9%						

Feature	Start sta.	End sta.	Length	WS El. Start	WS El. End	Change	Slope
Run	113	116	3	1309.43	1309.23	0.20	7.97%
Run	197	204	6	1308.30	1307.99	0.31	4.80%
Run	268	302	34	1307.60	1306.90	0.70	2.05%
Run	376	419	44	1306.20	1305.35	0.85	1.94%
Run	688	691	3	1301.99	1301.65	0.34	10.49%
Run	831	841	10	1300.31	1300.00	0.31	3.10%
Run	924	932	8	1299.40	1298.69	0.71	9.18%
Run	1013	1029	15	1297.86	1297.10	0.76	4.95%
Run	1086	1111	25	1296.61	1296.07	0.54	2.16%
Run	1175	1208	34	1295.69	1294.75	0.94	2.78%
Run	1274	1285	11	1294.05	1293.79	0.26	2.37%
Run	1348	1363	15	1293.21	1292.89	0.32	2.18%
Run	1491	1501	10	1291.37	1290.91	0.47	4.46%
Run	1715	1731	16	1288.52	1287.83	0.69	4.41%
Run	1847	1851	5	1286.63	1286.23	0.40	8.64%
Run	1928	1947	19	1285.28	1284.89	0.39	2.04%
Run	2039	2050	11	1284.05	1283.62	0.43	3.97%
Run	2235	2249	14	1280.80	1280.35	0.45	3.31%
Run	2501	2521	19	1277.13	1276.19	0.94	4.87%
Run	2547	2559	11	1275.72	1275.47	0.25	2.18%
Run	2604	2621	17	1275.23	1274.86	0.37	2.16%
Run	2644	2655	11	1274.27	1274.22	0.04	0.40%

n =	22
MIN =	0.4%
MEDIAN =	3.2%
AVG. =	4.1%
MAX =	10.5%

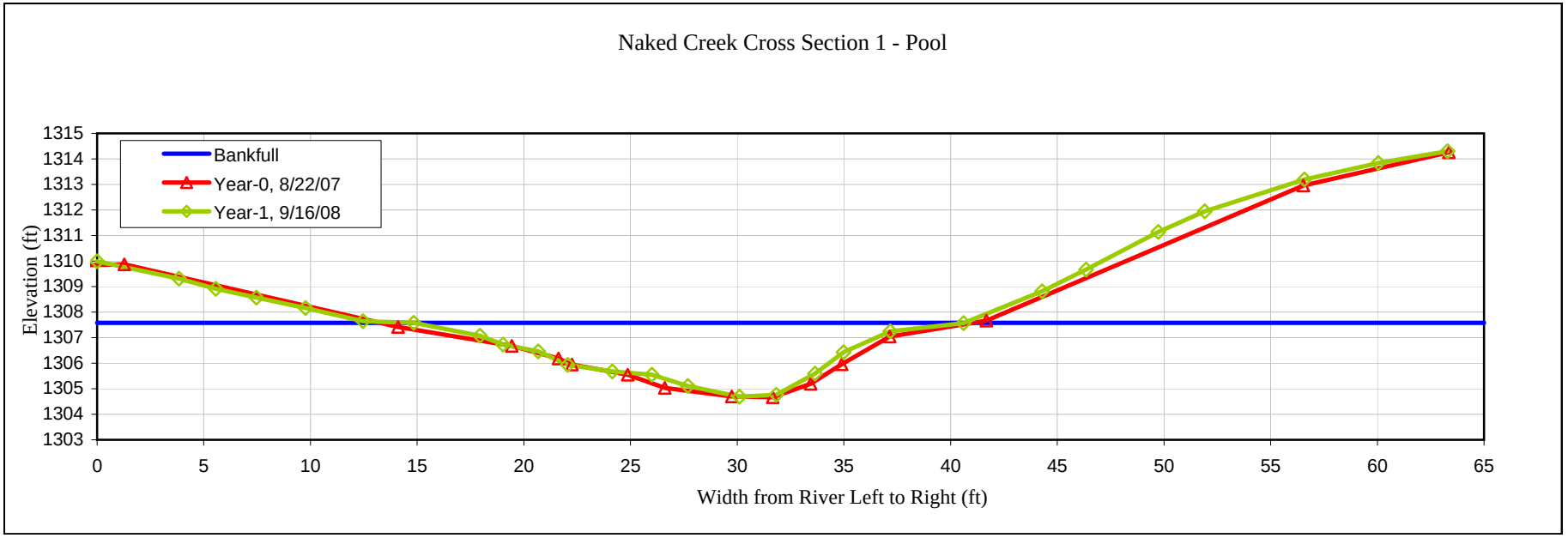
1-YEAR, 2008 SURVEY DATA **PROJECT NAME** NAKED CREEK

Feature	Start sta.	End sta.	Length	p-p spacing
Pool	146	159	13	
Pool	222	236	14	76
Pool	335	351	16	112
Pool	700	726	26	365
Pool	841	871	30	141
Pool	1029	1057	28	188
Pool	1218	1242	23	189
Pool	1363	1390	27	145
Pool	1501	1516	15	138
Pool	1563	1582	19	61
Pool	1736	1780	45	173
Pool	2151	2227	75	416
Pool	2259	2311	52	108
Pool	2367	2385	18	108
Pool	2406	2425	19	39
Pool	2447	2464	17	41
Pool	2623	2635	12	176

n =	17	
MIN =	39	(p-p spacing)
MEDIAN =	140	
AVG. =	155	
MAX =	416	

NAKED CREEK **EEP PROJECT # 261** CROSS SECTION 1

Year-0		Year-1		Year-2		Year-3		Year-4		Year-5		Year-6	
Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)
-2.50	1310.07	0.00	1309.99										
-2.27	1309.80	3.84	1309.31										
1.27	1309.87	5.55	1308.91										
14.11	1307.42	7.47	1308.57										
19.44	1306.68	9.77	1308.17										
21.63	1306.18	12.46	1307.64										
22.26	1305.94	14.84	1307.58										
24.87	1305.55	17.94	1307.07										
26.61	1305.03	19.02	1306.73										
29.75	1304.70	20.68	1306.47										
31.66	1304.67	22.07	1305.93										
33.44	1305.20	24.14	1305.68										
34.89	1305.96	26.01	1305.55										
37.15	1307.04	27.68	1305.11										
41.68	1307.67	30.11	1304.68										
56.53	1312.96	31.83	1304.77										
63.35	1314.26	33.64	1305.59										
		34.98	1306.43										
		37.17	1307.25										
		40.61	1307.57										
		44.29	1308.81										
		46.35	1309.66										
		49.73	1311.14										
		51.91	1311.94										
		56.58	1313.19										
		60.05	1313.83										
		63.29	1314.30										



CROSS SECTION PLOT - LOOKING DOWNSTREAM

YEAR-1, 2008 SURVEY DATA **CROSS-SECTION:** 1
PROJECT NAKED CREEK **FEATURE:** Pool
TASK CROSS SECTION
REACH NAKED CREEK
DATE 9/16/2008 to 9/18/2008
CREW ALTIZER/BUCHHOLZ/HALLEY/FURRY

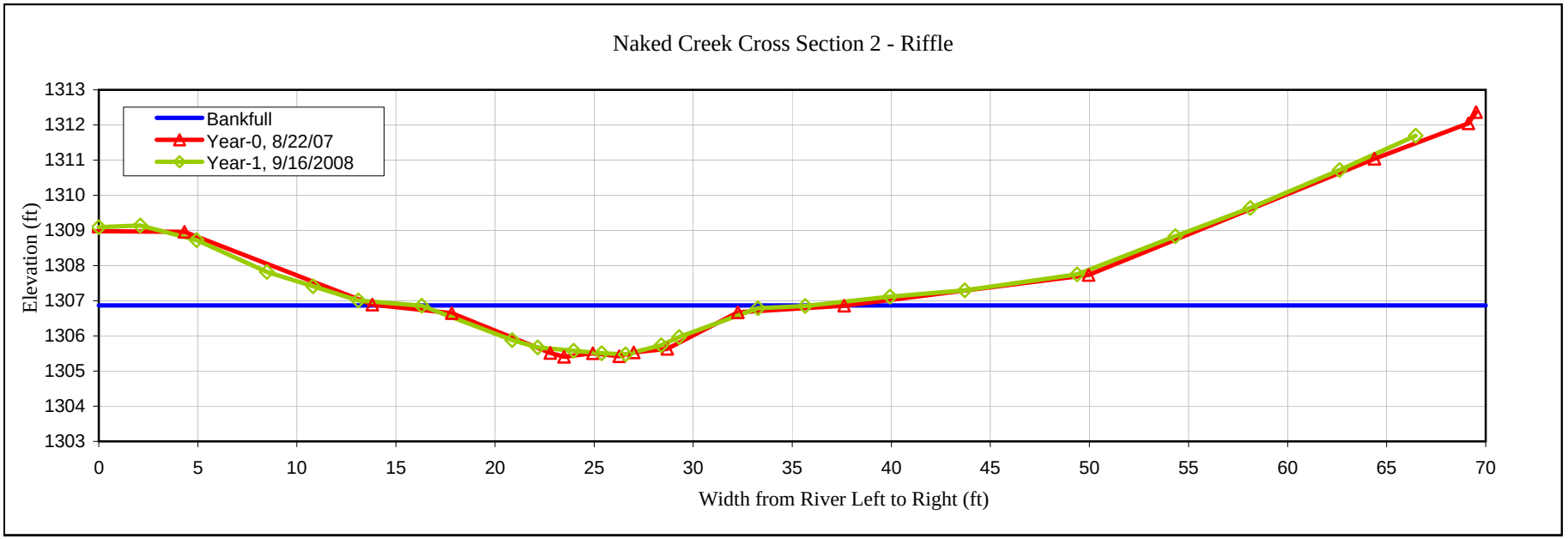
Summary Data
All dimensions in feet.

Bankfull X-sec area	36.4	sq. ft.
Bankfull Width	25.8	ft.
Bankfull Mean Depth	1.4	ft.
Bankfull Max Depth	2.9	ft.
Width/Depth Ratio	18.3	
Entrenchment Ratio	>2.2	
Classification	n/a	
Bank Height Ratio	1.0	
Bankfull Elevation:	1307.58	ft.

CROSS SECTION PHOTO - LOOKING DOWNSTREAM

NAKED CREEK **EEP PROJECT # 261** CROSS SECTION 2

Year-0		Year-1		Year-2		Year-3		Year-4		Year-5		Year-6	
Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)
-2.00	1309.25	0.00	1309.10										
-1.48	1308.98	2.10	1309.14										
4.32	1308.96	4.94	1308.72										
13.81	1306.89	8.49	1307.82										
17.81	1306.65	10.81	1307.41										
22.79	1305.52	13.10	1307.01										
23.48	1305.41	16.30	1306.86										
24.93	1305.51	20.85	1305.88										
26.27	1305.42	22.15	1305.67										
27.00	1305.53	23.96	1305.57										
28.69	1305.63	25.38	1305.51										
32.26	1306.67	26.58	1305.47										
37.62	1306.86	28.38	1305.74										
49.96	1307.73	29.29	1305.97										
64.39	1311.04	33.26	1306.79										
69.12	1312.05	35.66	1306.85										
69.52	1312.36	39.93	1307.12										
		43.70	1307.30										
		49.37	1307.75										
		54.34	1308.84										
		58.12	1309.64										
		62.63	1310.72										
		66.47	1311.70										



CROSS SECTION PLOT - LOOKING DOWNSTREAM

YEAR-1, 2008 SURVEY DATA **CROSS-SECTION:** 2
PROJECT NAKED CREEK **FEATURE:** Riffle
TASK CROSS SECTION
REACH NAKED CREEK
DATE 9/16/2008 to 9/18/2008
CREW ALTIZER/BUCHHOLZ/HALLEY/FURRY

Summary Data
All dimensions in feet.

Bankfull X-sec area	14.7	sq. ft.
Bankfull Width	19.7	ft.
Bankfull Mean Depth	0.7	ft.
Bankfull Max Depth	1.4	ft.
Width/Depth Ratio	>12	
Entrenchment Ratio	2.3	
Classification	C	
Bank Height Ratio	1.0	
Bankfull Elevation:	1306.87	ft.

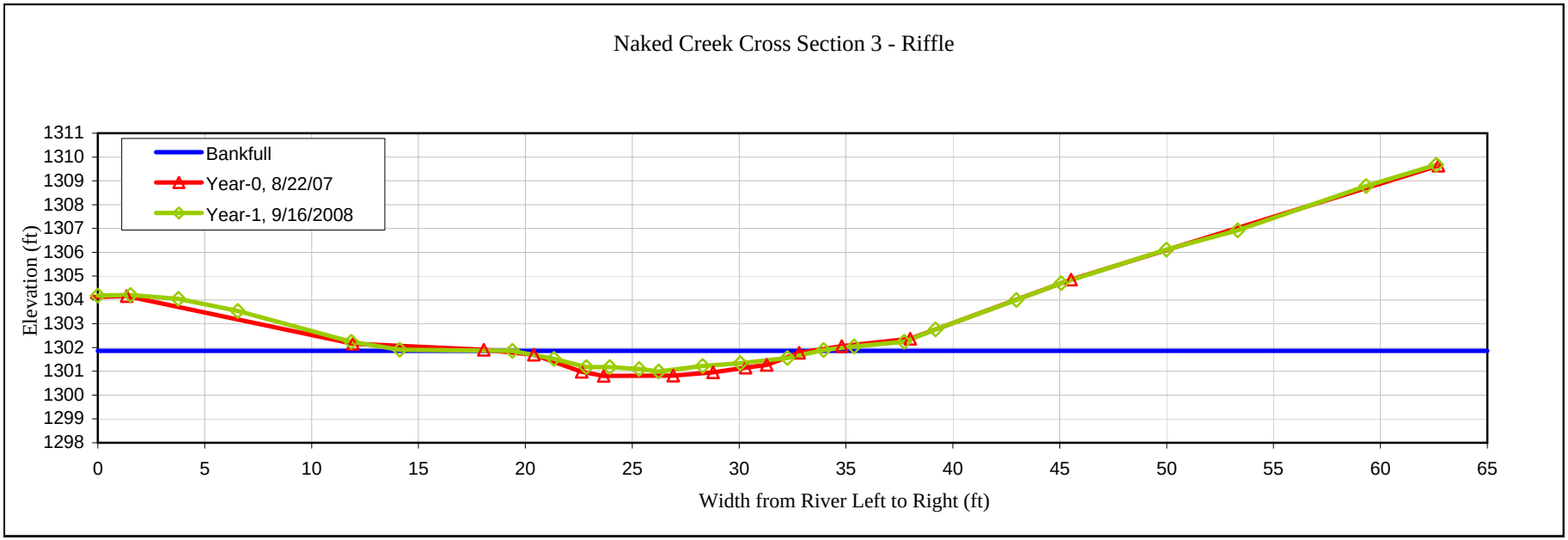
CROSS SECTION PHOTO - LOOKING DOWNSTREAM

Ecosystem Enhancement Program

EcoEngineering
A division of The John R. McAdams Company, Inc.

NAKED CREEK **EEP PROJECT # 261** CROSS SECTION 3

Year-0		Year-1		Year-2		Year-3		Year-4		Year-5		Year-6	
Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)
-3.20	1304.09	0.00	1304.18										
-3.00	1303.86	1.53	1304.20										
1.35	1303.96	3.77	1304.04										
11.93	1301.96	6.55	1303.54										
18.06	1301.71	11.86	1302.24										
20.40	1301.49	14.12	1301.91										
22.63	1300.78	19.40	1301.86										
23.67	1300.61	21.34	1301.53										
26.92	1300.63	22.85	1301.18										
28.78	1300.76	23.95	1301.18										
30.30	1300.96	25.32	1301.10										
31.29	1301.07	26.24	1300.99										
32.81	1301.58	28.29	1301.23										
34.80	1301.86	30.05	1301.34										
38.00	1302.16	32.25	1301.55										
45.53	1304.65	33.95	1301.89										
62.71	1309.43	35.38	1302.04										
63.02	1309.72	37.72	1302.24										
		39.19	1302.76										
		42.97	1304.00										
		45.07	1304.70										
		50.00	1306.11										
		53.33	1306.93										
		59.33	1308.78										
		62.61	1309.67										



CROSS SECTION PLOT - LOOKING DOWNSTREAM

YEAR-1, 2008 SURVEY DATA **CROSS-SECTION:** 3
PROJECT NAKED CREEK **FEATURE:** Riffle
TASK CROSS SECTION
REACH NAKED CREEK
DATE 9/16/2008 to 9/18/2008
CREW ALTIZER/BUCHHOLZ/HALLEY/FURRY

Summary Data
All dimensions in feet.

Bankfull X-sec area	7.3	sq. ft.
Bankfull Width	14.9	ft.
Bankfull Mean Depth	0.5	ft.
Bankfull Max Depth	0.9	ft.
Width/Depth Ratio	>12	
Entrenchment Ratio	>2.2	
Classification	C	
Bank Height Ratio	1.0	
Bankfull Elevation:	1301.86	ft.

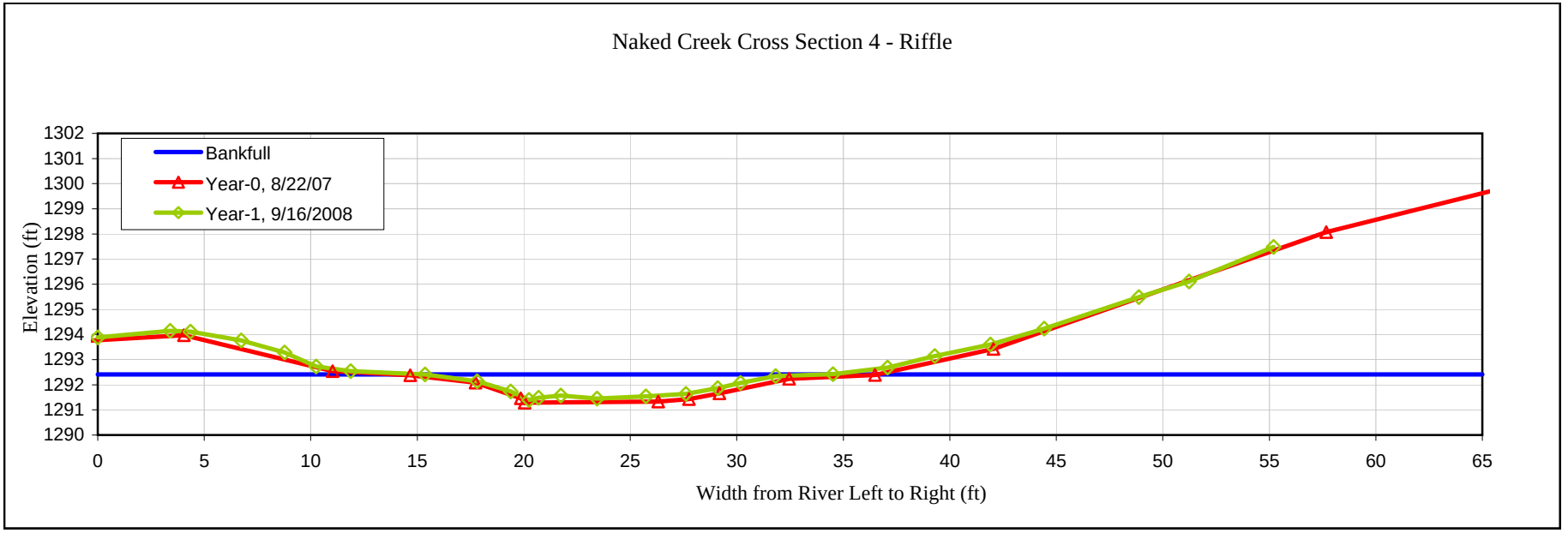
CROSS SECTION PHOTO - LOOKING DOWNSTREAM

Ecosystem Enhancement Program

EcoEngineering
A division of The John R. McAdams Company, Inc.

NAKED CREEK **EEP PROJECT # 261** CROSS SECTION 4

Year-0		Year-1		Year-2		Year-3		Year-4		Year-5		Year-6	
Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)
-3.45	1294.08	0.00	1293.89										
-2.86	1293.64	3.40	1294.15										
4.04	1293.97	4.36	1294.11										
11.02	1292.54	6.74	1293.76										
14.67	1292.38	8.77	1293.28										
17.74	1292.08	10.25	1292.73										
19.86	1291.46	11.87	1292.54										
20.04	1291.29	15.36	1292.41										
26.31	1291.33	17.81	1292.14										
27.76	1291.43	19.39	1291.73										
29.18	1291.66	20.24	1291.40										
32.45	1292.24	20.69	1291.48										
36.48	1292.38	21.74	1291.57										
42.05	1293.42	23.44	1291.46										
57.67	1298.07	25.73	1291.54										
66.66	1299.97	27.62	1291.63										
66.97	1300.23	29.10	1291.86										
		30.18	1292.07										
		31.82	1292.34										
		34.52	1292.42										
		37.08	1292.69										
		39.29	1293.14										
		41.90	1293.60										
		44.43	1294.23										
		48.88	1295.48										
		51.23	1296.11										
		55.20	1297.48										
		58.52	1298.34										
		61.31	1298.85										
		64.99	1299.68										



CROSS SECTION PLOT - LOOKING DOWNSTREAM

YEAR-1, 2008 SURVEY DATA **CROSS-SECTION:** 4
PROJECT NAKED CREEK **FEATURE:** Riffle
TASK CROSS SECTION
REACH NAKED CREEK
DATE 9/16/2008 to 9/18/2008
CREW ALTIZER/BUCHHOLZ/HALLEY/FURRY

Summary Data

All dimensions in feet.

Bank Height Ratio	1.0	
Bankfull X-sec area	10.3	sq. ft.
Bankfull Width	18.9	ft.
Bankfull Mean Depth	0.5	ft.
Bankfull Max Depth	1.0	ft.
Width/Depth Ratio	34.8	
Entrenchment Ratio	1.7	
Classification	B	

Bankfull Elevation: 1292.41 ft.

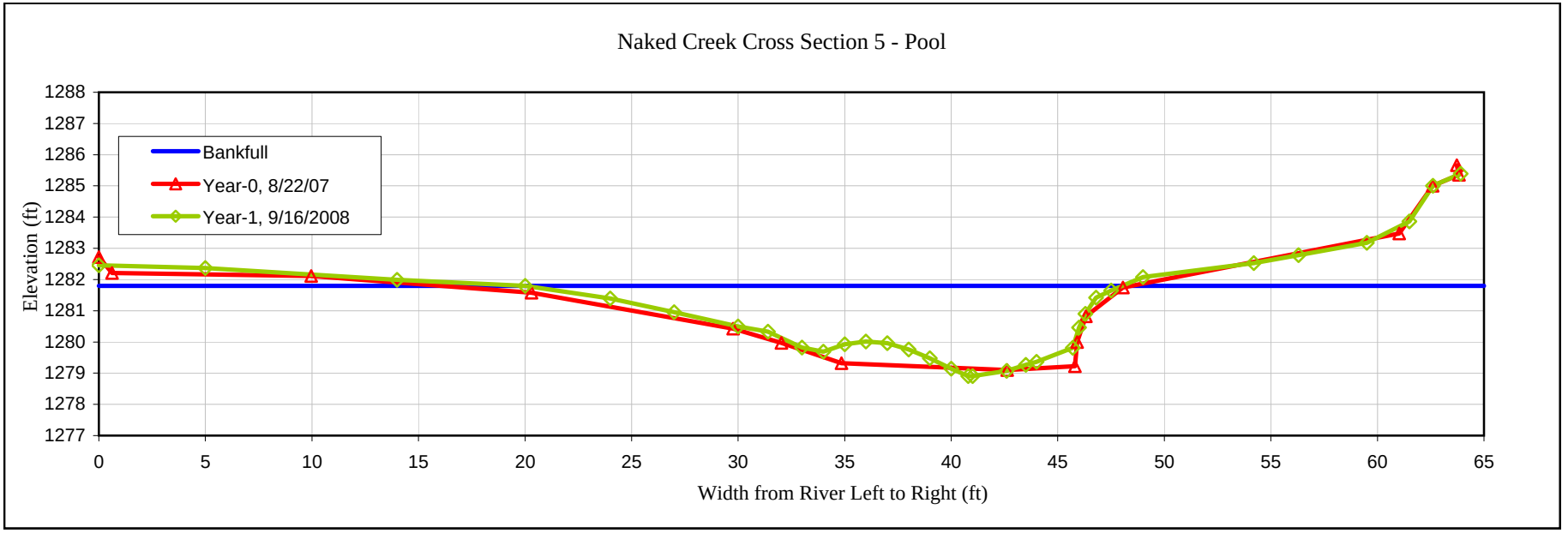
CROSS SECTION PHOTO - LOOKING DOWNSTREAM

Ecosystem Enhancement Program

EcoEngineering
A division of The John R. McAdams Company, Inc.

NAKED CREEK **EEP PROJECT # 261** CROSS SECTION 5

Year-0		Year-1		Year-2		Year-3		Year-4		Year-5		Year-6	
Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)
-2.50	1282.92	0.00	1282.46										
-1.88	1282.41	5.00	1282.37										
7.47	1282.32	14.00	1281.99										
17.80	1281.78	20.00	1281.80										
27.26	1280.63	24.00	1281.39										
29.53	1280.17	27.00	1280.95										
32.35	1279.52	30.00	1280.50										
40.12	1279.30	31.40	1280.33										
43.31	1279.43	33.00	1279.82										
43.41	1280.20	34.00	1279.69										
43.82	1281.02	35.00	1279.93										
45.56	1281.95	36.00	1280.01										
58.52	1283.68	37.00	1279.96										
60.09	1285.21	38.00	1279.76										
61.33	1285.56	39.00	1279.48										
61.22	1285.86	40.00	1279.14										
		40.80	1278.91										
		41.00	1278.91										
		42.60	1279.07										
		43.50	1279.27										
		44.00	1279.36										
		45.70	1279.81										
		46.00	1280.46										
		46.30	1280.90										
		46.80	1281.42										
		47.50	1281.65										
		49.00	1282.08										
		54.20	1282.53										
		56.30	1282.78										
		59.50	1283.18										
		61.50	1283.86										
		62.60	1285										
		63.90	1285.39										



CROSS SECTION PLOT - LOOKING DOWNSTREAM

YEAR-1, 2008 SURVEY DATA **CROSS-SECTION:** 5
PROJECT NAKED CREEK **FEATURE:** Pool
TASK CROSS SECTION
REACH NAKED CREEK
DATE 9/16/2008 to 9/18/2008
CREW ALTIZER/BUCHHOLZ/HALLEY/FURRY

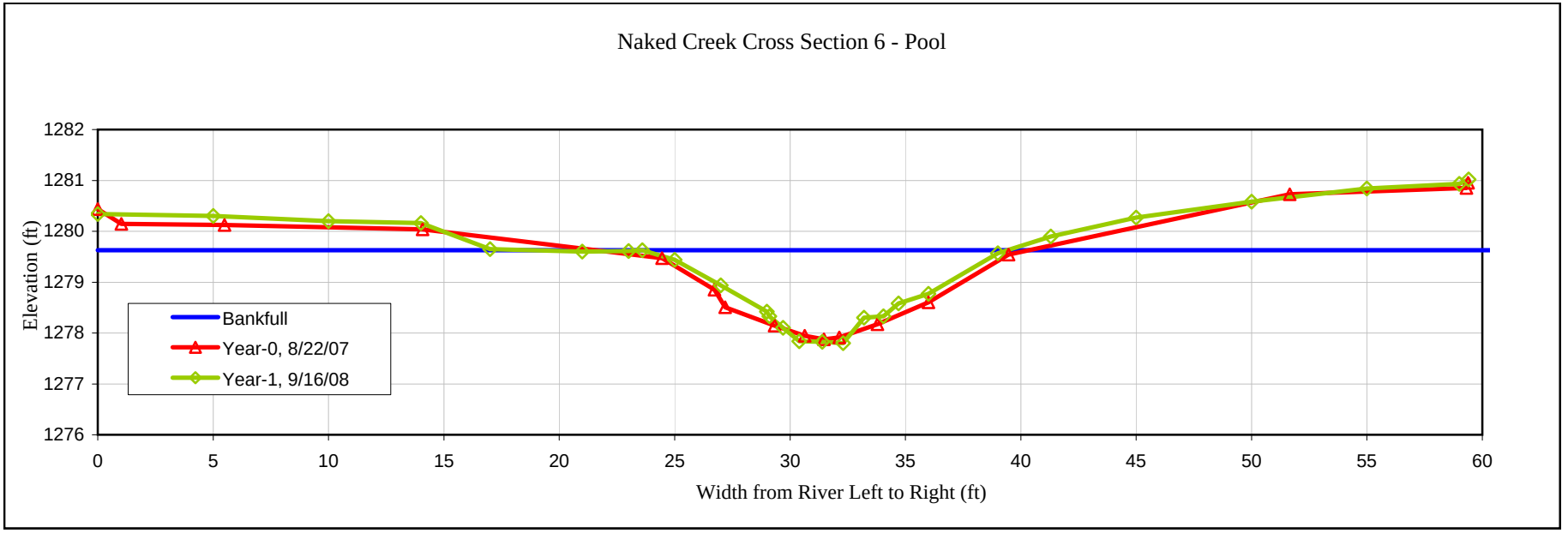
Summary Data
All dimensions in feet.

Bankfull X-sec area	40.9	sq. ft.
Bankfull Width	28.0	ft.
Bankfull Mean Depth	1.5	ft.
Bankfull Max Depth	2.9	ft.
Width/Depth Ratio	19.2	
Entrenchment Ratio	3.5	
Classification	n/a	
Bank Height Ratio	1.0	
Bankfull Elevation:	1281.80	ft.

CROSS SECTION PHOTO - LOOKING DOWNSTREAM

NAKED CREEK **EEP PROJECT # 261** CROSS SECTION 6

Year-0		Year-1		Year-2		Year-3		Year-4		Year-5		Year-6	
Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)
0.00	1280.44	0.00	1280.34										
1.02	1280.14	5.00	1280.30										
5.49	1280.12	10.00	1280.20										
14.07	1280.04	14.00	1280.16										
24.46	1279.47	17.00	1279.65										
26.73	1278.85	21.00	1279.60										
27.19	1278.51	23.00	1279.61										
29.33	1278.15	23.60	1279.63										
30.64	1277.95	25.00	1279.44										
31.47	1277.87	27.00	1278.94										
32.13	1277.92	29.00	1278.42										
33.79	1278.17	29.10	1278.33										
36.00	1278.61	29.70	1278.10										
39.47	1279.54	30.40	1277.84										
51.65	1280.73	31.40	1277.83										
59.31	1280.85	32.30	1277.80										
59.38	1280.96	33.20	1278.30										
		34.05	1278.33										
		34.70	1278.58										
		36.00	1278.77										
		39.00	1279.57										
		41.30	1279.90										
		45.00	1280.27										
		50.00	1280.58										
		55.00	1280.84										
		59.00	1280.93										
		59.40	1281.02										



CROSS SECTION PLOT - LOOKING DOWNSTREAM

YEAR-1, 2008 SURVEY DATA **CROSS-SECTION:** 6
PROJECT NAKED CREEK **FEATURE:** Pool
TASK CROSS SECTION
REACH NAKED CREEK
DATE 9/16/2008 to 9/18/2008
CREW ALTIZER/BUCHHOLZ/HALLEY/FURRY

Summary Data
All dimensions in feet.

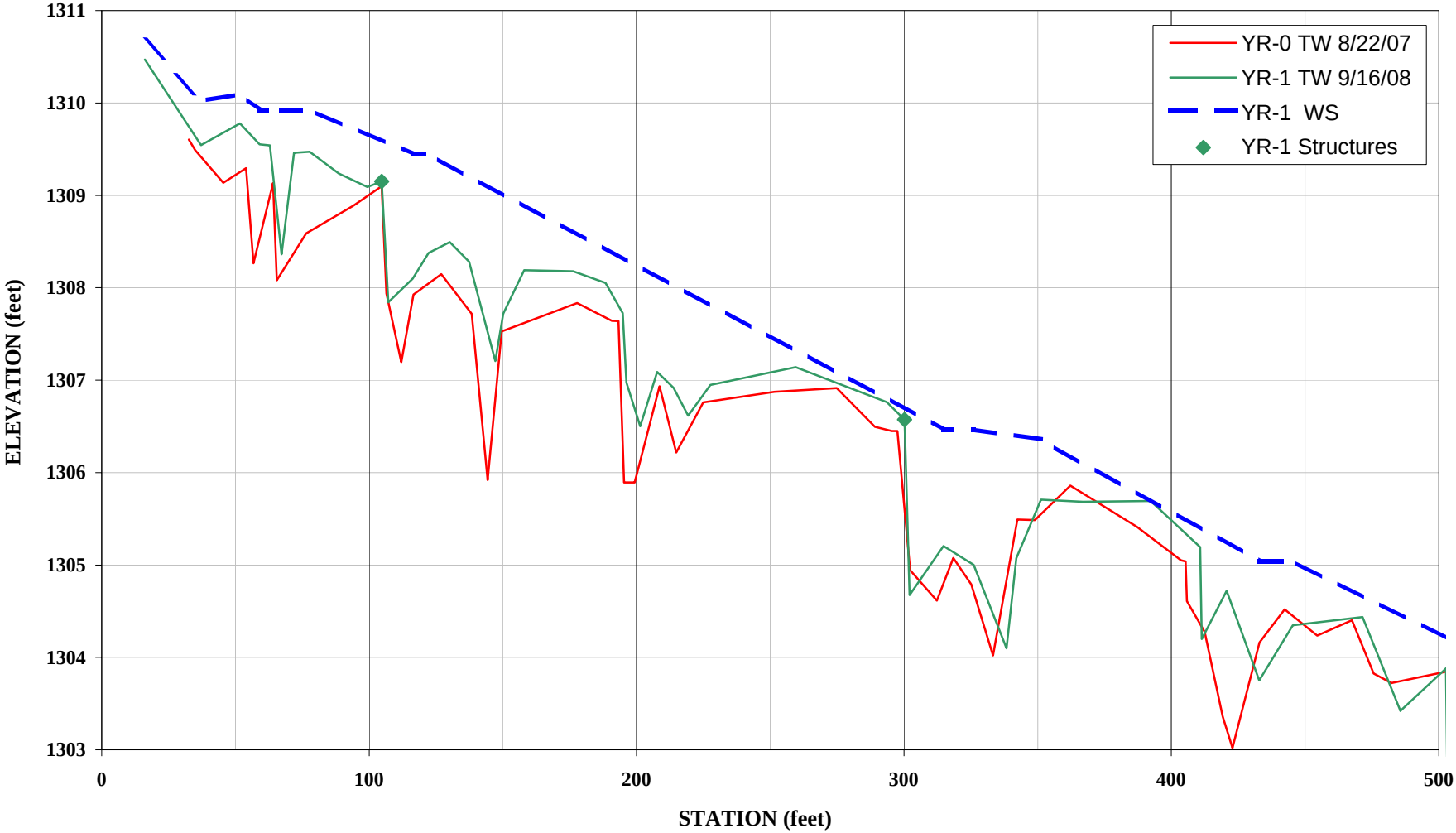
Bankfull X-sec area	14.5	sq. ft.
Bankfull Width	20.8	ft.
Bankfull Mean Depth	0.7	ft.
Bankfull Max Depth	1.8	ft.
Width/Depth Ratio	29.9	
Entrenchment Ratio	4.8	
Classification	n/a	
Bank Height Ratio	1.0	
Bankfull Elevation:	1279.63	ft.

CROSS SECTION PHOTO - LOOKING DOWNSTREAM

Ecosystem Enhancement Program

EcoEngineering
A division of The John R. McAdams Company, Inc.

Naked Creek
Longitudinal Profile
2008 (Year-1) Monitoring



Note: Due to slight differences in thalweg length, longitudinal profile was adjusted horizontally in 4 locations, distances ranging from 3 to 17 feet. Elevation data was not changed.

EcoEngineering
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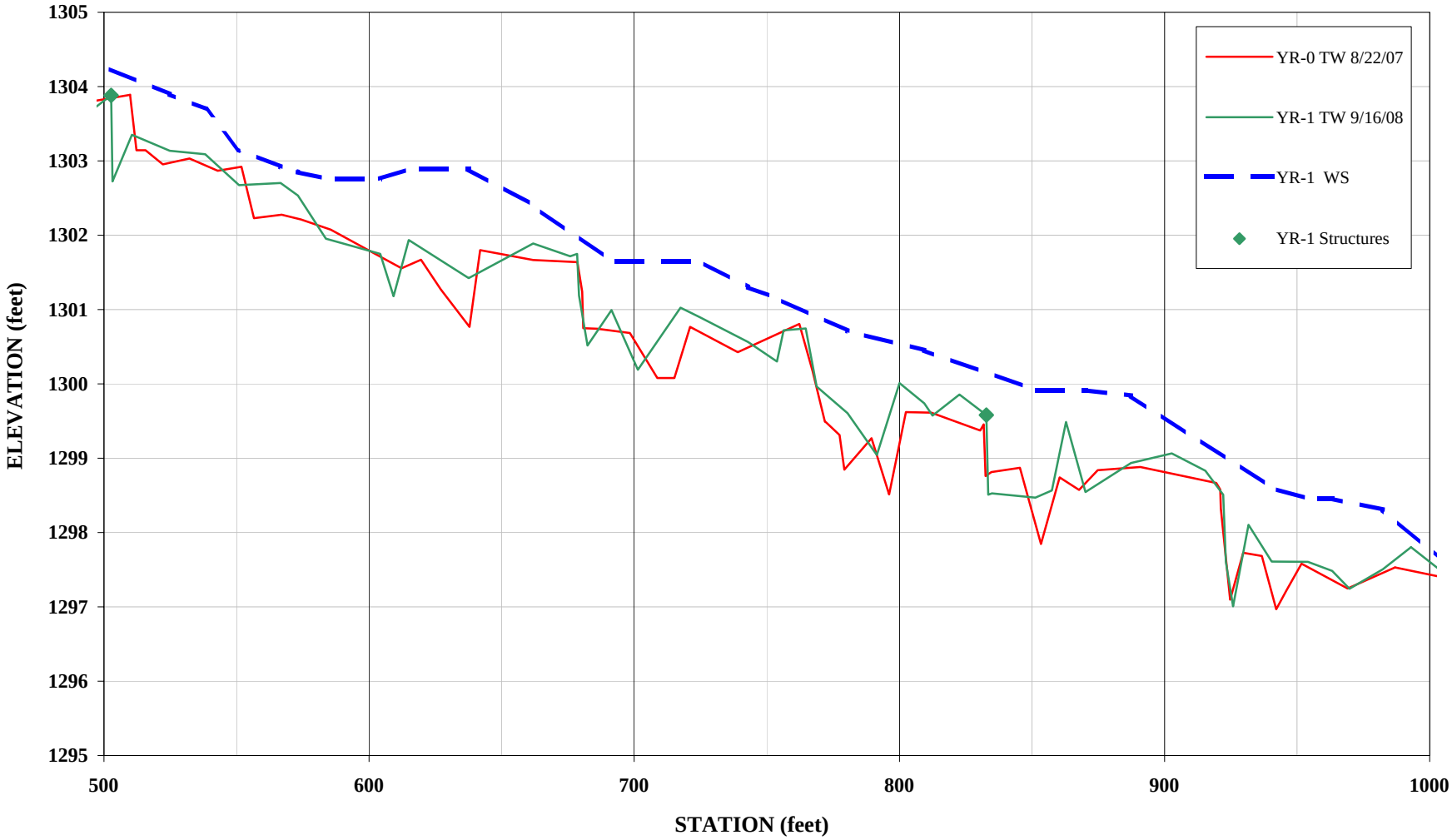
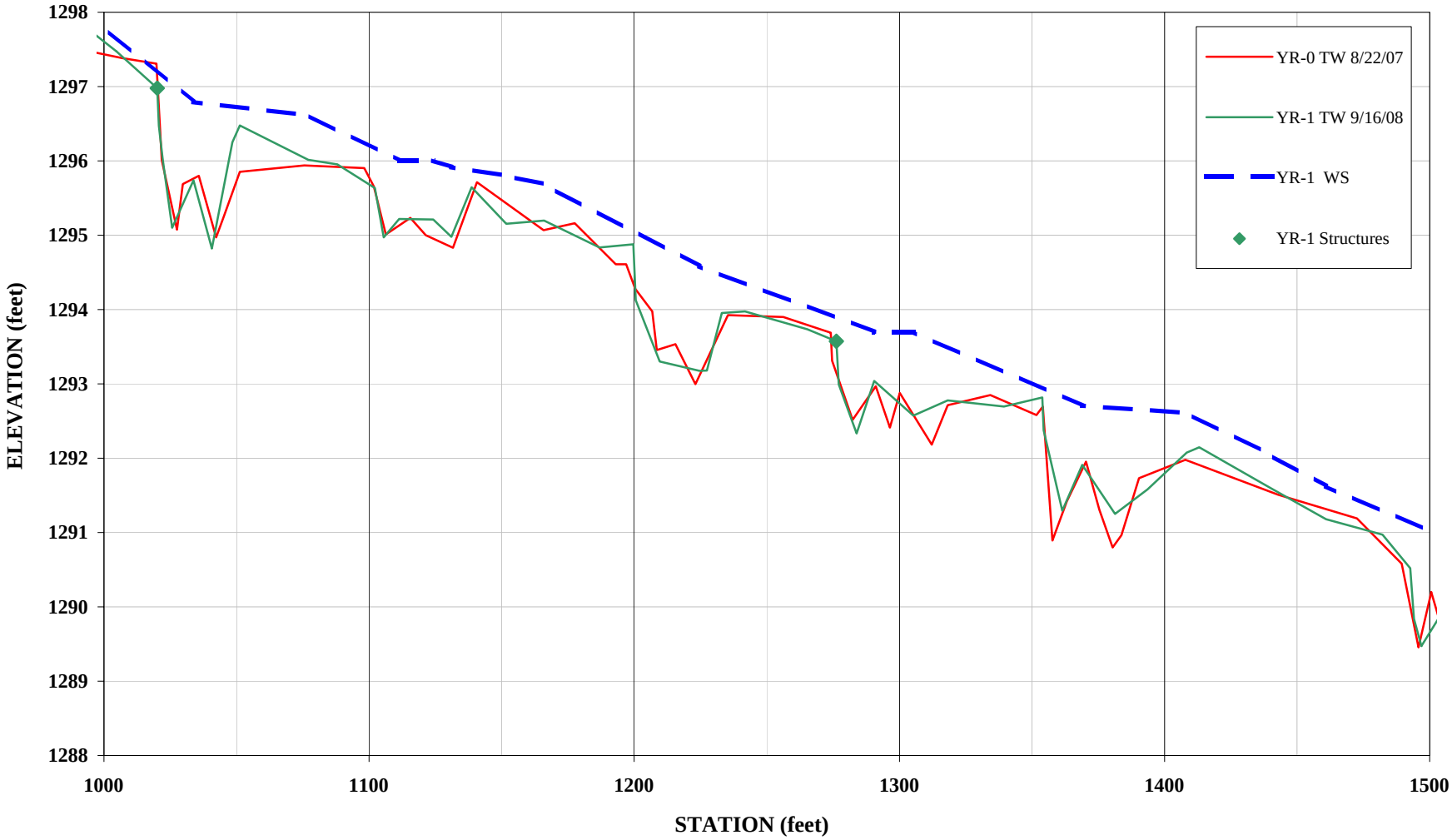
Naked Creek
Longitudinal Profile
2008 (Year-1) Monitoring



Note: Due to slight differences in thalweg length, longitudinal profile was adjusted horizontally in 4 locations, distances ranging from 3 to 17 feet. Elevation data was not changed.

EcoEngineering
A division of The John R. McAdams Company, Inc.

Naked Creek
Longitudinal Profile
2008 (Year-1) Monitoring



Note: Due to slight differences in thalweg length, longitudinal profile was adjusted horizontally in 4 locations, distances ranging from 3 to 17 feet. Elevation data was not changed.

EcoEngineering
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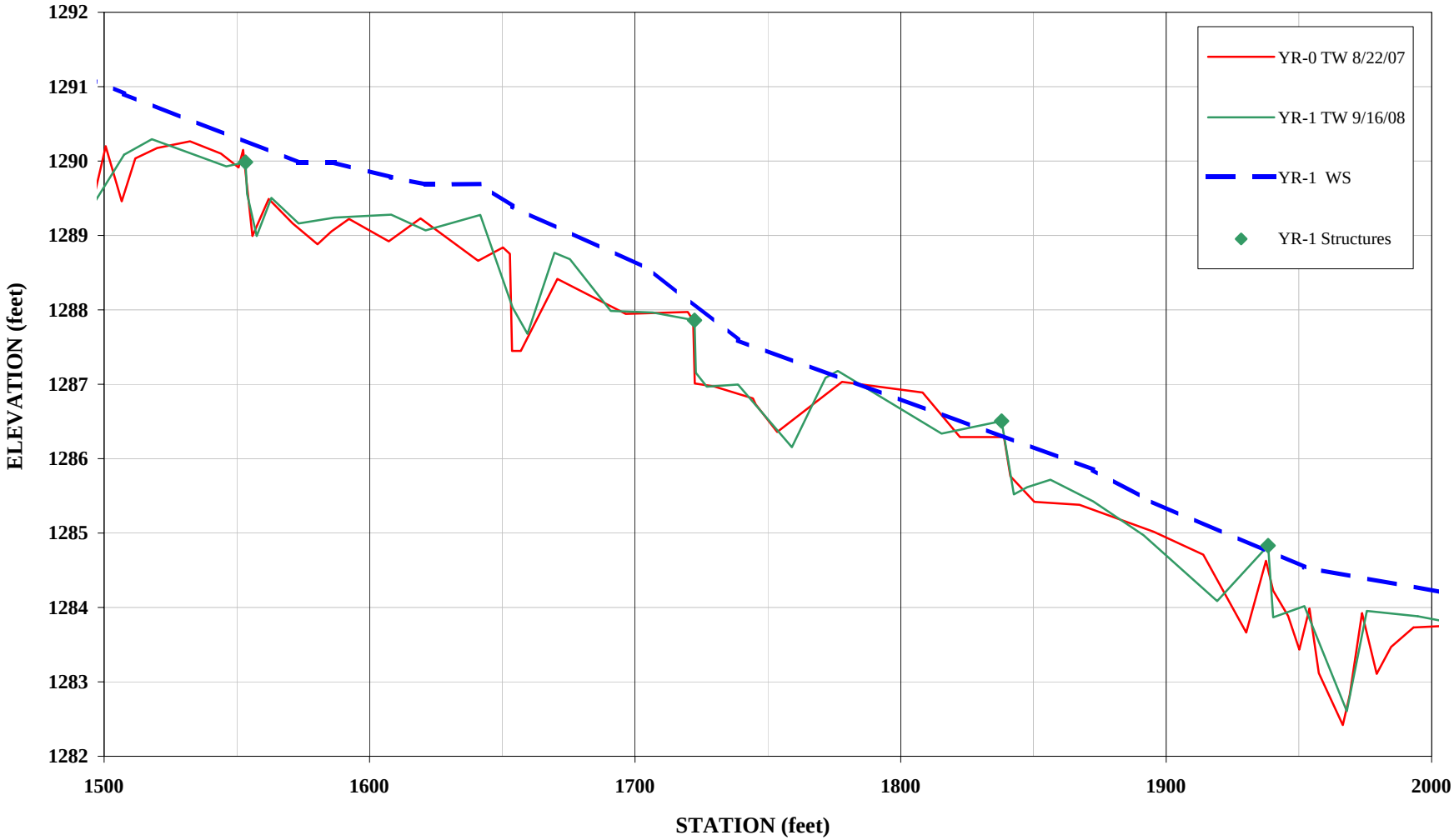
Naked Creek
Longitudinal Profile
2008 (Year-1) Monitoring



Note: Due to slight differences in thalweg length, longitudinal profile was adjusted horizontally in 4 locations, distances ranging from 3 to 17 feet. Elevation data was not changed.

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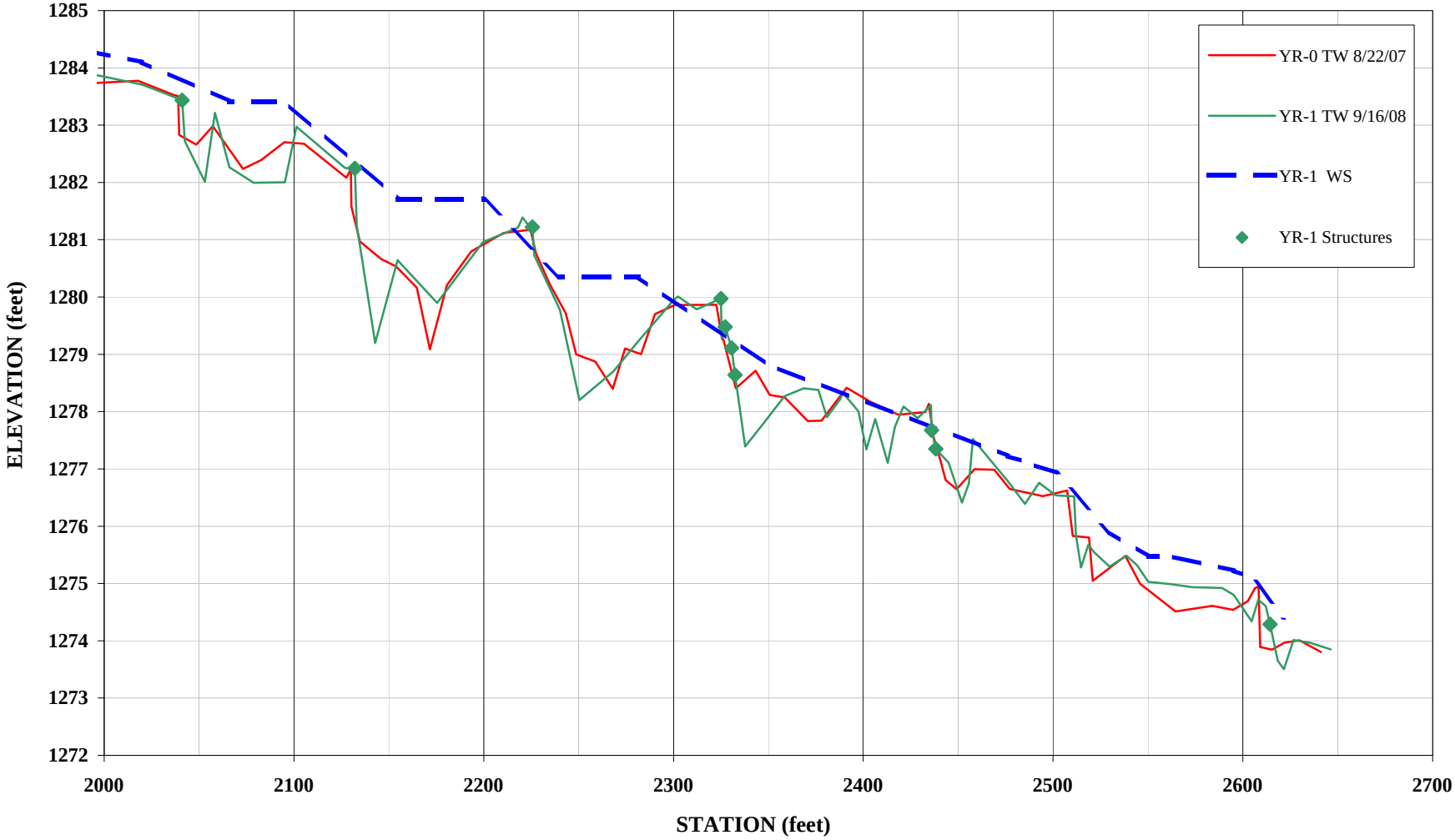
Naked Creek
Longitudinal Profile
2008 (Year-1) Monitoring



Note: Due to slight differences in thalweg length, longitudinal profile was adjusted horizontally in 4 locations, distances ranging from 3 to 17 feet. Elevation data was not changed.

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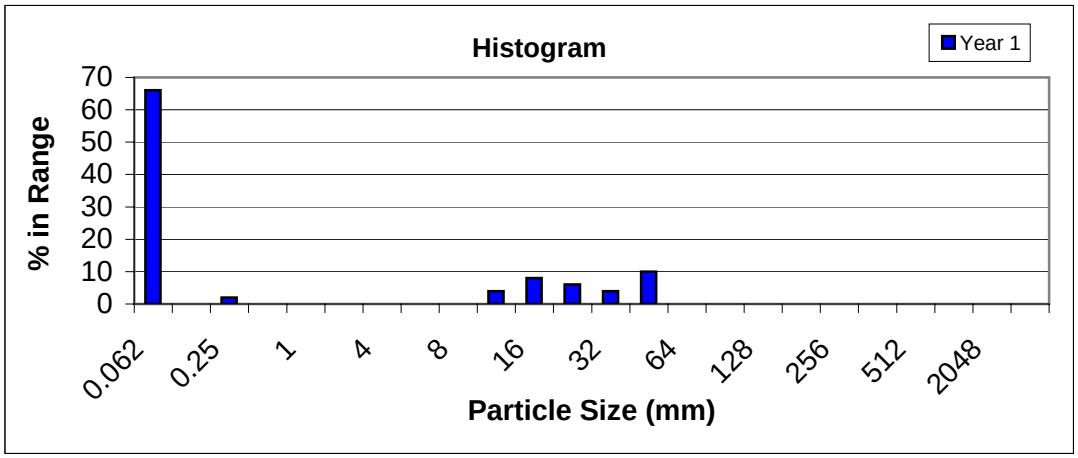


PROJECT ID: 040619201
CROSS-SECTION: 2 **FEATURE: RIFFLE**

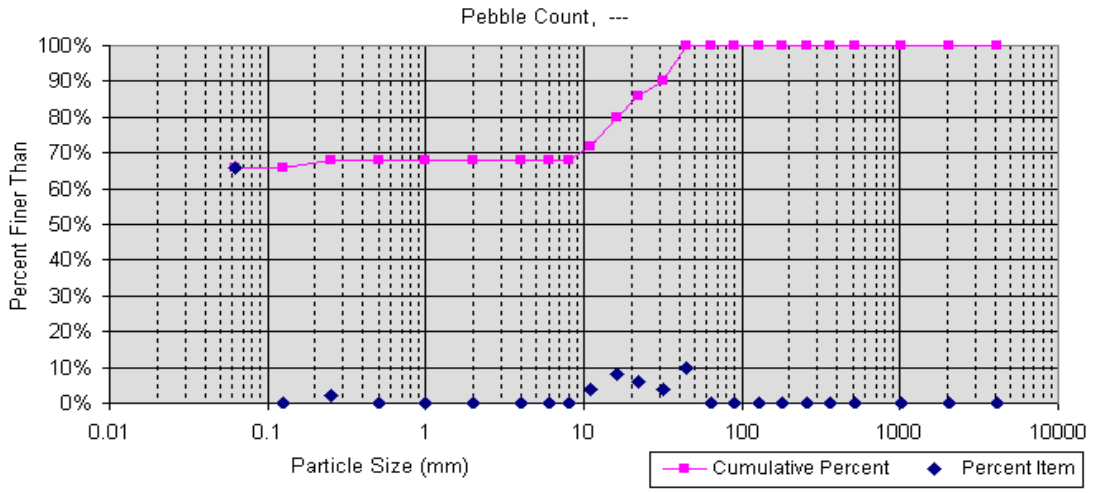
Ecosystem Enhancement PROGRAM

PROJECT NAKED CREEK
TASK PEBBLE COUNT
REACH NAKED CREEK
DATE 9/16/2008 to 9/18/2008
CREW ALTIZER/BUCHHOLZ/HALLEY/FURRY

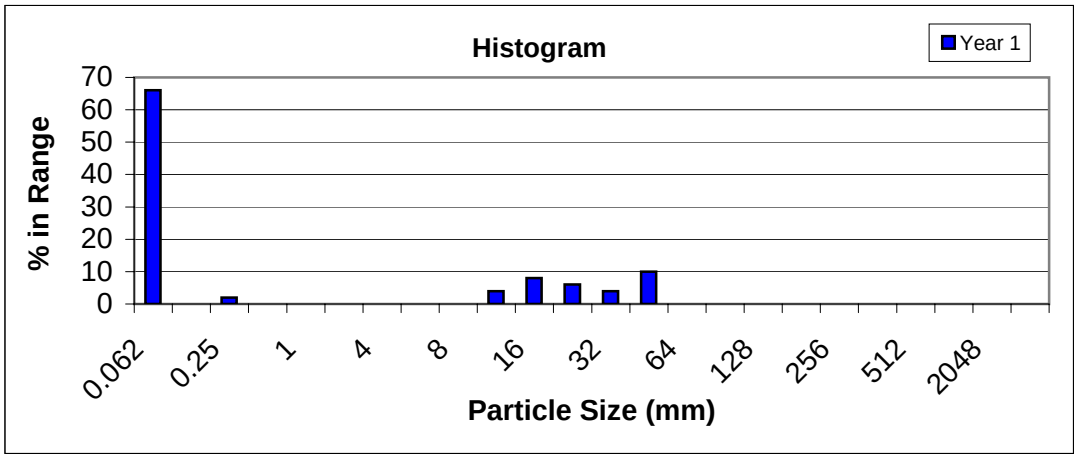
Pebble Count

Material	Size Range (mm)		Count
silt/clay	0	0.062	**66**
very fine sand	0.062	0.13	**0**
fine sand	0.13	0.25	**2**
medium sand	0.25	0.5	**0**
coarse sand	0.5	1	**0**
very coarse sand	1	2	**0**
very fine gravel	2	4	**0**
fine gravel	4	6	**0**
fine gravel	6	8	**0**
medium gravel	8	11	**4**
medium gravel	11	16	**8**
coarse gravel	16	22	**6**
coarse gravel	22	32	**4**
very coarse gravel	32	45	**10**
very coarse gravel	45	64	
small cobble	64	90	
medium cobble	90	128	
large cobble	128	180	
very large cobble	180	256	
small boulder	256	362	
small boulder	362	512	
medium boulder	512	1024	
large boulder	1024	2048	
very large boulder	2048	4096	
bedrock			
	Total Particle Count:		100

Note:	



Size percent less than (mm)					Percent by substrate type					
D16	D35	D50	D84	D95	silt/clay	sand	gravel	cobble	boulder	bedrock
#N/A	#N/A	#N/A	20	38	66%	2%	32%	0%	0%	0%



PROJECT ID: 040619201
CROSS-SECTION: 3 **FEATURE: RIFFLE**

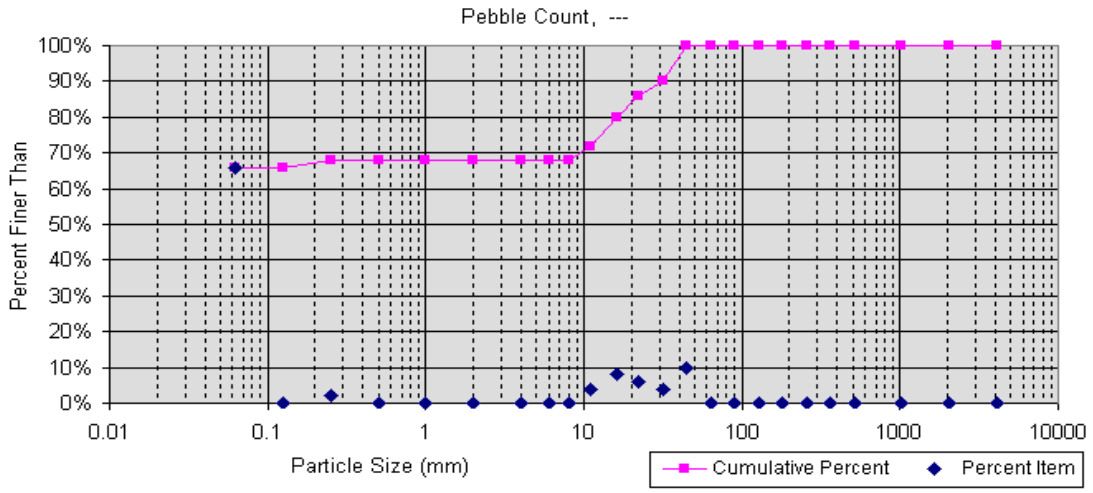
Ecosystem Enhancement PROGRAM

PROJECT NAKED CREEK
TASK PEBBLE COUNT
REACH NAKED CREEK
DATE 9/16/2008 to 9/18/2008
CREW ALTIZER/BUCHHOLZ/HALLEY/FURRY

Pebble Count

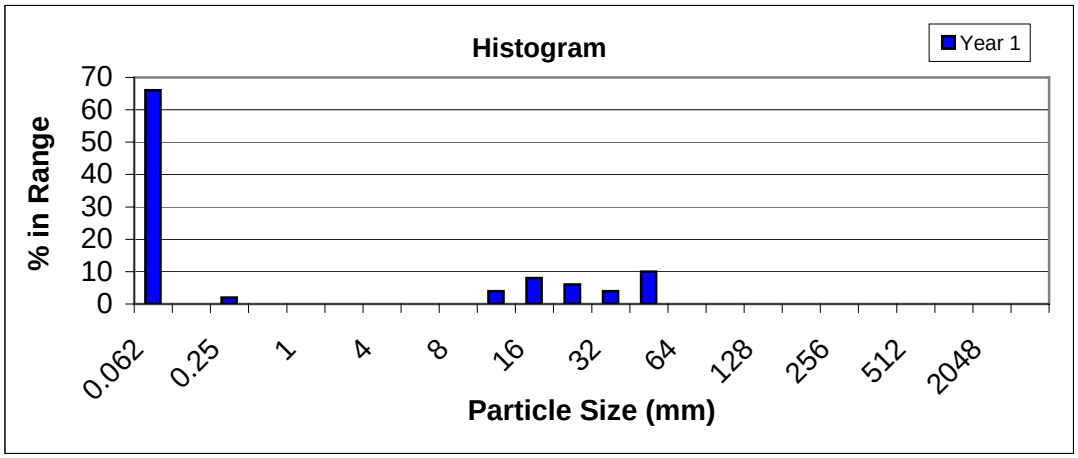
Material	Size Range (mm)		Count
silt/clay	0	0.062	**66**
very fine sand	0.062	0.13	**0**
fine sand	0.13	0.25	**2**
medium sand	0.25	0.5	**0**
coarse sand	0.5	1	**0**
very coarse sand	1	2	**0**
very fine gravel	2	4	**0**
fine gravel	4	6	**0**
fine gravel	6	8	**0**
medium gravel	8	11	**4**
medium gravel	11	16	**8**
coarse gravel	16	22	**6**
coarse gravel	22	32	**4**
very coarse gravel	32	45	**10**
very coarse gravel	45	64	
small cobble	64	90	
medium cobble	90	128	
large cobble	128	180	
very large cobble	180	256	
small boulder	256	362	
small boulder	362	512	
medium boulder	512	1024	
large boulder	1024	2048	
very large boulder	2048	4096	
bedrock			
	Total Particle Count:		100

Note:	



Size percent less than (mm)				
D16	D35	D50	D84	D95
#N/A	#N/A	#N/A	20	38

Percent by substrate type					
silt/clay	sand	gravel	cobble	boulder	bedrock
66%	2%	32%	0%	0%	0%



PROJECT ID: 040619201
CROSS-SECTION: 4 **FEATURE: RIFFLE**

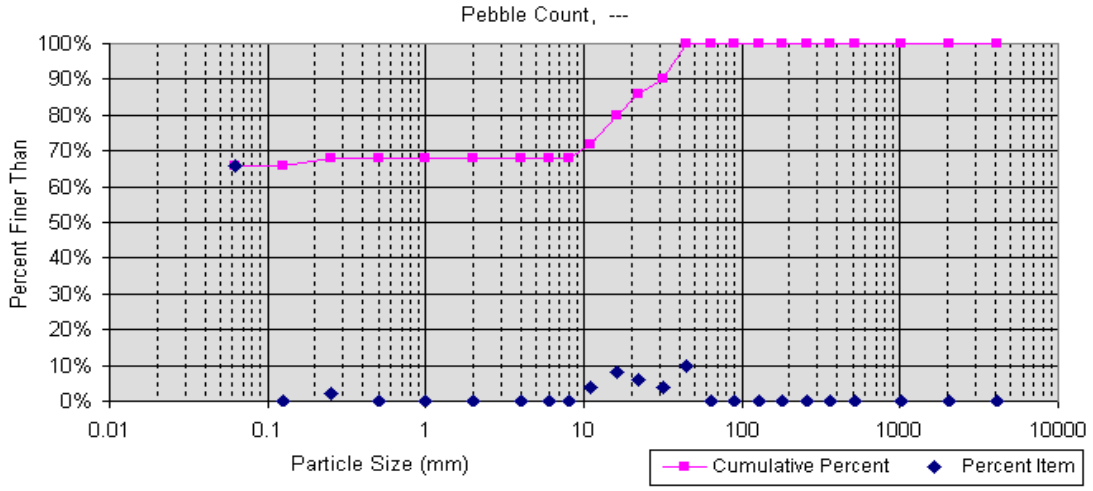
Ecosystem Enhancement PROGRAM

PROJECT NAKED CREEK
TASK PEBBLE COUNT
REACH NAKED CREEK
DATE 9/16/2008 to 9/18/2008
CREW ALTIZER/BUCHHOLZ/HALLEY/FURRY

Pebble Count

Material	Size Range (mm)		Count
silt/clay	0	0.062	**66**
very fine sand	0.062	0.13	**0**
fine sand	0.13	0.25	**2**
medium sand	0.25	0.5	**0**
coarse sand	0.5	1	**0**
very coarse sand	1	2	**0**
very fine gravel	2	4	**0**
fine gravel	4	6	**0**
fine gravel	6	8	**0**
medium gravel	8	11	**4**
medium gravel	11	16	**8**
coarse gravel	16	22	**6**
coarse gravel	22	32	**4**
very coarse gravel	32	45	**10**
very coarse gravel	45	64	
small cobble	64	90	
medium cobble	90	128	
large cobble	128	180	
very large cobble	180	256	
small boulder	256	362	
small boulder	362	512	
medium boulder	512	1024	
large boulder	1024	2048	
very large boulder	2048	4096	
bedrock			
	Total Particle Count:		100

Note:	



Size percent less than (mm)				
D16	D35	D50	D84	D95
#N/A	#N/A	#N/A	20	38

Percent by substrate type					
silt/clay	sand	gravel	cobble	boulder	bedrock
66%	2%	32%	0%	0%	0%

APPENDIX C

No wetlands monitored at this site

APPENDIX D

NAKED CREEK

INTEGRATED CURRENT CONDITIONS PLAN VIEW - YEAR ONE MONITORING

CONTROL TABLE				
POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1770034.41	2615810.00	1323.68	CP 1
2	1769414.45	2615886.09	1334.03	CP 2
5	1768883.08	2616058.80	1293.99	CP 5
6	1768567.01	2616040.08	1295.62	CP 6
7	1768230.13	2616220.26	1286.57	CP 7
8	1767905.05	2616419.19	1276.62	CP 8
21	1769876.73	2615841.40	1314.65	XSEC
22	1769875.01	2615907.57	1310.10	XSEC
23	1769811.05	2615854.15	1312.41	XSEC
24	1769833.93	2615921.91	1309.27	XSEC
25	1769517.07	2615935.30	1309.93	XSEC
26	1769528.18	2616000.38	1304.25	XSEC
27	1768845.89	2616001.39	1299.91	XSEC
28	1768841.05	2616071.64	1294.02	XSEC
29	1768081.50	2616056.52	1285.76	XSEC
30	1768135.40	2616090.71	1282.76	XSEC
31	1768008.00	2616130.42	1281.06	XSEC
32	1768024.62	2616192.14	1280.54	XSEC
200	1767923.77	2616295.32	1277.98	NS TRV
201	1768021.09	2616272.32	1277.98	NMAG
202	1767750.03	2616140.01	1317.13	NS TRV
203	1768246.83	2616709.45	1326.95	NS TRAV
204	1768660.70	2616461.82	1313.51	NS SPUR
206	1768656.44	2616054.29	1297.16	NS SPUR/10/05RC
207	1767885.75	2616033.96	1320.66	NS TRAV
210	1767586.20	2616220.21	1307.38	NS TRAV
211	1767350.07	2616460.29	1293.22	NS TRAV
300	1767935.38	2616171.69	1279.68	1/2" EIR AT BASE
301	1767797.67	2616275.95	1284.75	1/2" EIR BASE
302	1767806.16	2616267.50	1284.82	27" MARKED BEECH
303	1767724.60	2616119.08	1317.87	3/4" EIP
304	1767910.76	2615956.19	1326.65	PP
305	1768030.62	2616849.25	1318.89	1/2" EIP
306	1768672.92	2616491.75	1313.53	1/2" EIP
307	1768555.88	2616073.60	1287.44	1/2" EIR
308	1768794.01	2615411.25	1362.06	3/4" EIP RAB
309	1768399.81	2615612.93	1340.59	3/4" EIP
310	1768247.44	2615709.89	1335.95	PP
311	1768094.04	2615832.43	1327.39	AXLE
312	1768624.46	2616090.77	1289.05	1/2" EIR
313	1767394.13	2616438.23	1299.30	3/4" EIP
314	1767353.37	2616475.02	1297.61	1.5" EIP
315	1767947.48	2616180.14	1278.67	1/2" EIR
316	1768132.37	2616037.55	1280.22	1/2" EIR
317	1768209.14	2615980.69	1282.38	1/2" EIR
318	1768578.84	2615504.74	1350.98	AXLE
319	1768471.54	2615925.36	1307.83	NS SPUR
320	1768546.42	2616163.77	1289.41	NS TRV
321	1767748.03	2616432.00	1273.34	NS TRAV

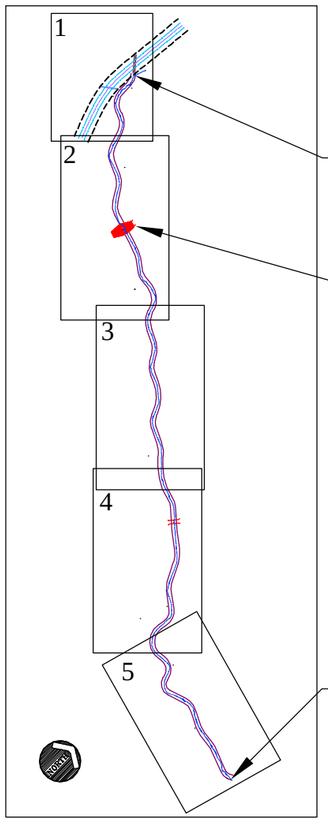
(ECO)

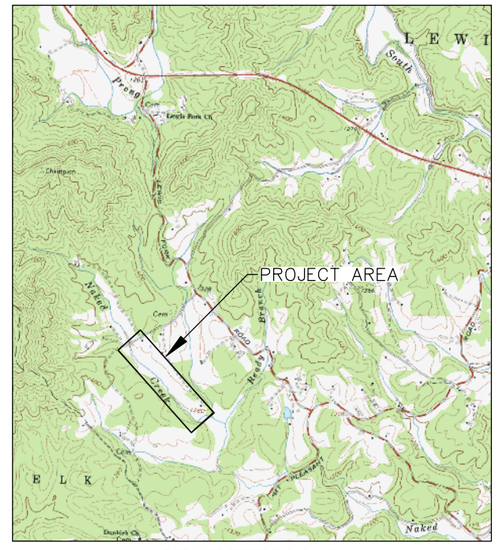
VEGETATION PLOT MONITORING CONTROL POINTS			
POINT NUMBRER	POINT TAG	NORTHING	EASTING
1	VC1	878937.6305	1303595.7584
2	VC2	878969.6963	1303599.5650
3	VC3	878967.2706	1303629.8125
4	VC4	878935.1638	1303628.2089
5	VC5	878716.8337	1303595.7108
6	VC6	878781.7716	1303595.5887
7	VC7	878781.7462	1303611.9076
8	VC8	878715.3560	1303616.0404
9	VC9	878238.8832	1303704.1393
10	VC10	878304.3131	1303701.2231
11	VC11	878305.6913	1303712.2540
12	VC12	878240.6355	1303720.0466
13	VC13	877913.0134	1303764.5696
14	VC14	877978.1274	1303757.1446
15	VC15	877977.1997	1303772.6940
16	VC16	877912.3357	1303778.7246
17	VC17	876852.8169	1303975.3137
18	VC18	876908.5974	1303941.6805
19	VC19	876917.5288	1303955.2972
20	VC20	876861.4609	1303990.4754

(KHA)

WILKES COUNTY, NORTH CAROLINA
EEP PROJECT NUMBER: 261
DATE: NOVEMBER 1, 2008

NORTH CAROLINA
ECOSYSTEM ENHANCEMENT PROGRAM
NC-EEP CONTACT: JULIE VANN (919) 715-1950





VICINITY MAP
NTS

NOTE: SURVEY DATES OF THALWEG AND TOP-OF-BANK – 9/16/08 TO 9/18/08.

SHEET INDEX
1-5 INTEGRATED CURRENT CONDITIONS PLAN VIEW

Ecosystem Enhancement Program

EcoEngineering
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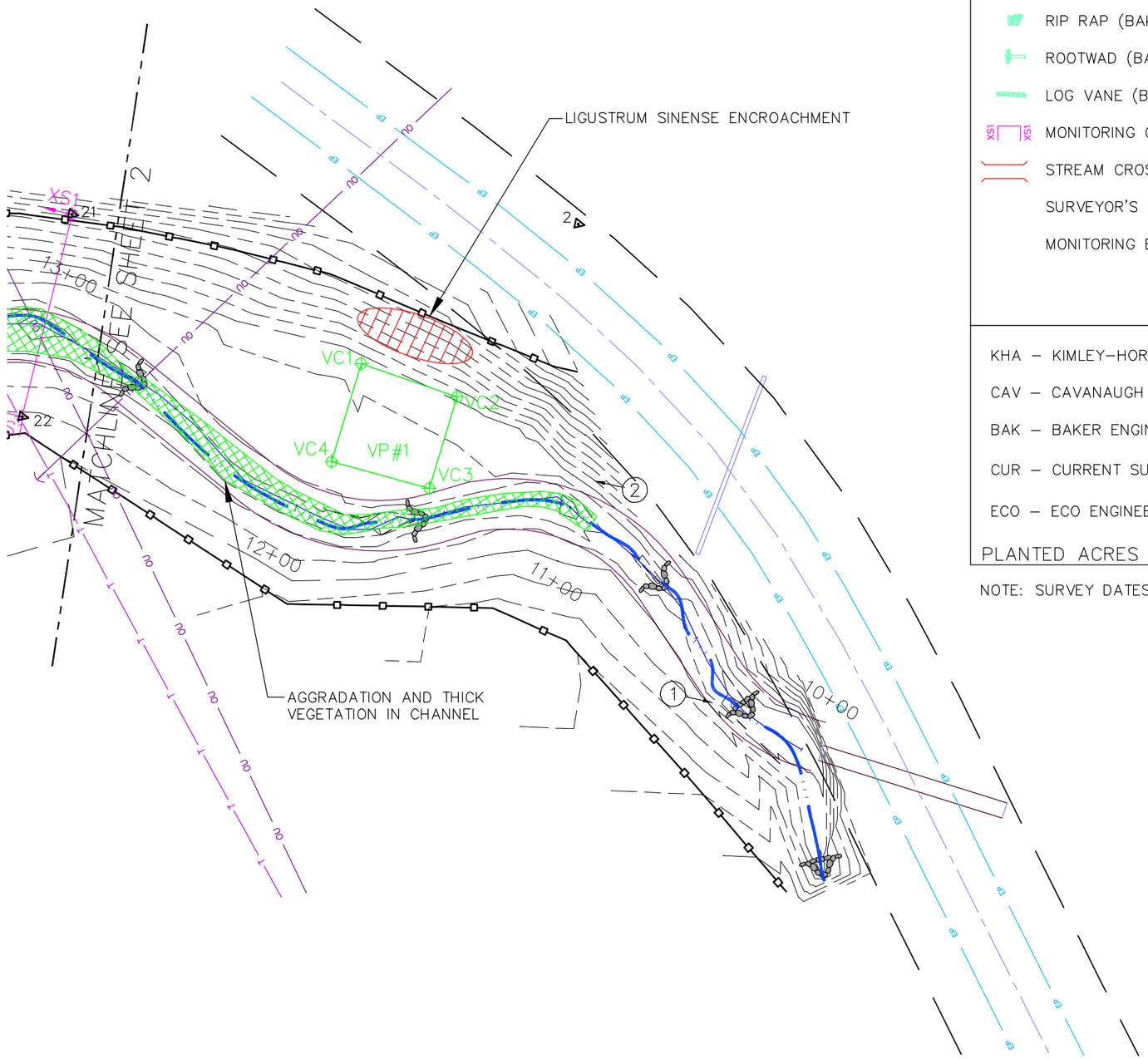

LEGEND

- PHOTO POINT (ECO)
- VP# VEGETATION MONITORING PLOT (KHA)
- ROCK CROSS VANE (BAK)
- ROCK A–VANE (BAK)
- RIP RAP (BAK)
- ROOTWAD (BAK)
- LOG VANE (BAK)
- XS1 MONITORING CROSS SECTIONS (ECO)
- STREAM CROSSING/FORD (BAK)
- SURVEYOR'S BENCHMARKS (CAV, BAK)
- MONITORING BENCHMARKS (KHA)
- EASEMENT (CUR)
- FENCE (BAK)
- EP EDGE OF PAVEMENT (CAV)
- T TELEPHONE LINE (CAV)
- OU OVERHEAD POWER LINE (CAV)
- YEAR ONE STREAM CENTERLINE (ECO)
- AS–BUILT TOP OF BANK (BAK)
- VEGETATION MONITORING PLOT (KHA)
- NOXIOUS INSECT POPULATIONS
- INVASIVE / EXOTIC VEGETATION
- THICK VEGETATION IN CHANNEL
- 1 PHOTO POINT LOCATION AND DIRECTION
- SIDE CHANNEL BAR
- PIPING AT STREAM STRUCTURE

KHA – KIMLEY–HORN AND ASSOCIATES, INC. (DESIGN BASED ON CAV MAPPING)

CAV – CAVANAUGH ASSOCIATES, P.A. (BASE/PRE–CONSTRUCTION MAPPING)

BAK – BAKER ENGINEERING NY, INC. (AS–BUILT MAPPING)

CUR – CURRENT SURVEYING AND MAPPING, P.A. (STATE PROPERTY EASEMENT SURVEYOR)

ECO – ECO ENGINEERING (YEAR ONE MONITORING)

PLANTED ACRES = 2.92

NOTE: SURVEY DATES OF THALWEG AND TOP–OF–BANK – 9/16/08 TO 9/18/08.

NORTH

GRAPHIC SCALE

40 0 20 40 80

1 inch = 40 ft.

SHEET 1 OF 5

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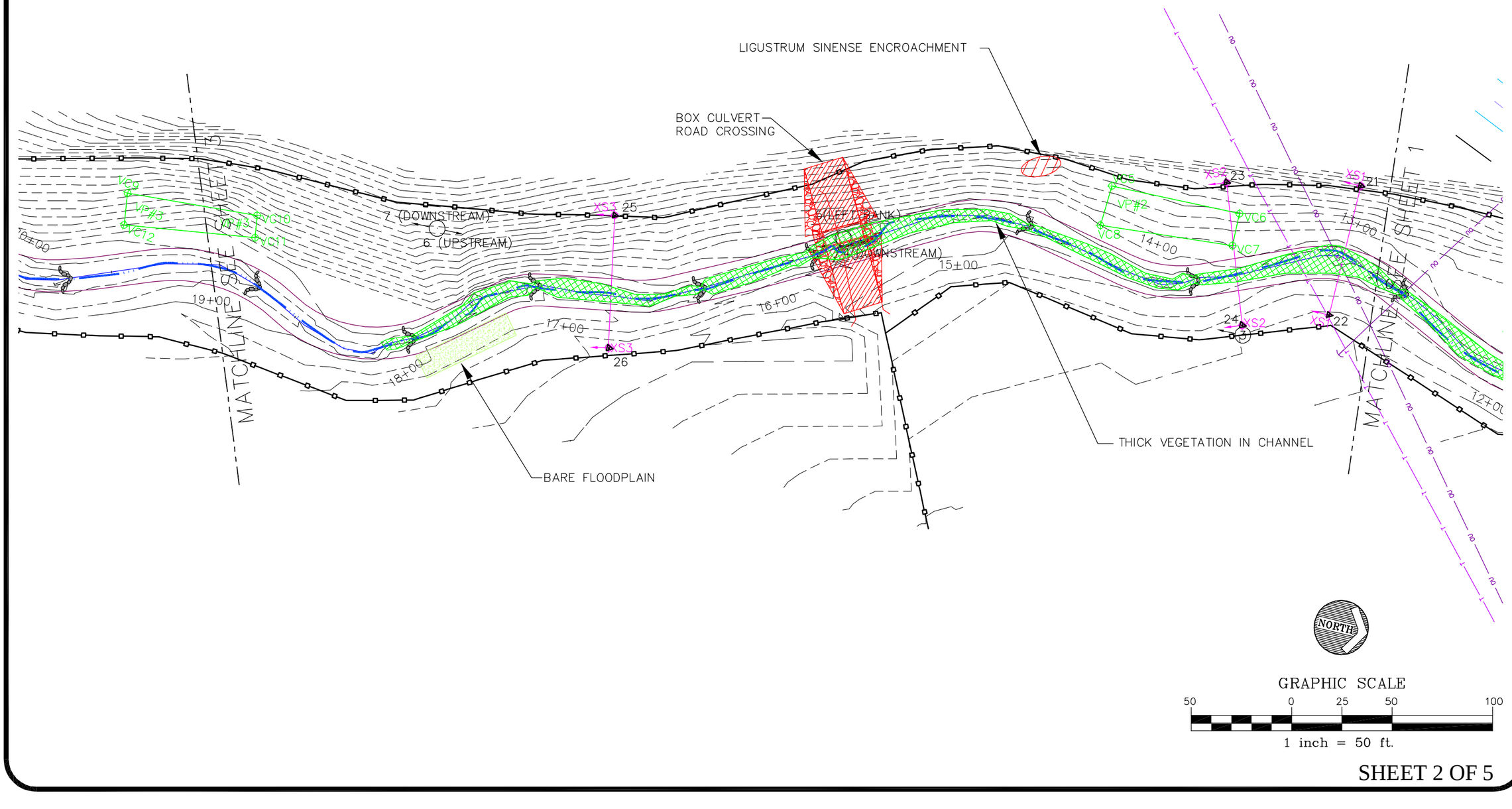
NAKED CREEK

INTEGRATED CURRENT CONDITIONS PLAN VIEW - YEAR ONE MONITORING

WILKES COUNTY, NORTH CAROLINA

PROJECT NO.	FILENAME:	SCALE:	DATE:
EEP–08000	EEP–08000	1" = 40'	11–03–08

McADAMS



SHEET 2 OF 5

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Ecosystem Enhancement Program

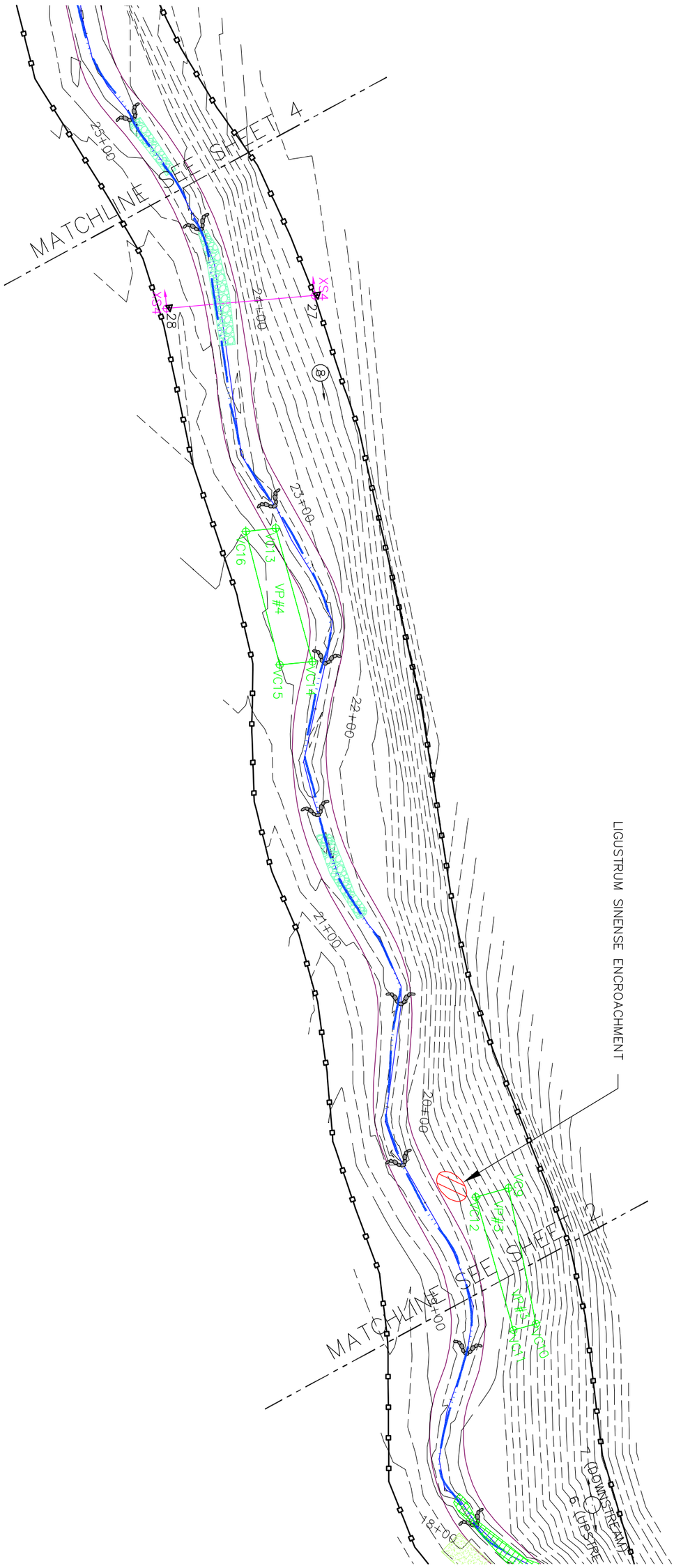
NAKED CREEK

INTEGRATED CURRENT CONDITIONS PLAN VIEW - YEAR ONE MONITORING

WILKES COUNTY, NORTH CAROLINA

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	1" = 50'
DATE:	11-03-08

McADAMS



GRAPHIC SCALE

1 inch = 50 ft.

50 0 25 50 100

NORTH

SHEET 3 OF 5

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	1" - 50'
DATE:	11-03-08

NAKED CREEK

INTEGRATED CURRENT CONDITIONS PLAN VIEW - YEAR ONE MONITORING

WILKES COUNTY, NORTH CAROLINA

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PROPERTY LINE

LIGUSTRUM SINENSE
ENCROACHMENT

ALBIZIA JULIBRISSIN
ENCROACHMENT

LIGUSTRUM SINENSE
ENCROACHMENT

SHEET LINE

MATCHLINE

MATCHLINE

XS4

24+00

25+00

26+00

27+00

28+00

29+00

30+00

31+00

GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

NORTH

SHEET 4 OF 5

NAKED CREEK

INTEGRATED CURRENT CONDITIONS PLAN VIEW - YEAR ONE MONITORING

WILKES COUNTY, NORTH CAROLINA

PROJECT NO. EEP -08000

FILENAME: EEP-08000

SCALE: 1" = 50'

DATE: 11-03-08

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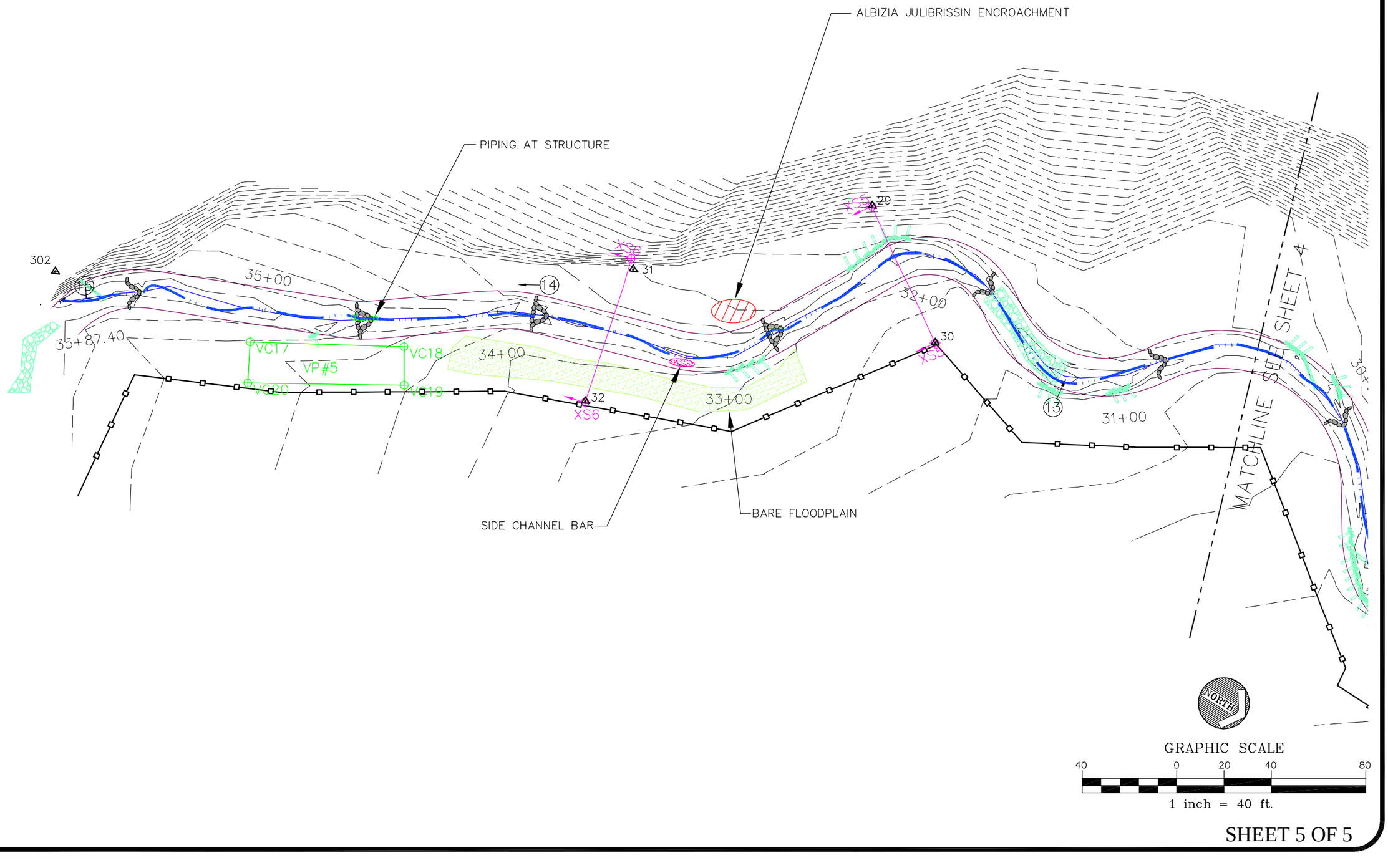

SHEET 5 OF 5

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Ecosystem Enhancement Program

NAKED CREEK

INTEGRATED CURRENT CONDITIONS PLAN VIEW - YEAR ONE MONITORING

WILKES COUNTY, NORTH CAROLINA

PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	1" = 40'
DATE:	10-31-08

McADAMS