

Naked Creek Stream Restoration

Wilkes County, North Carolina

2010 Year 3 Monitoring Report - Final

EEP Project Number: 261

USGS HUC 03040101010100

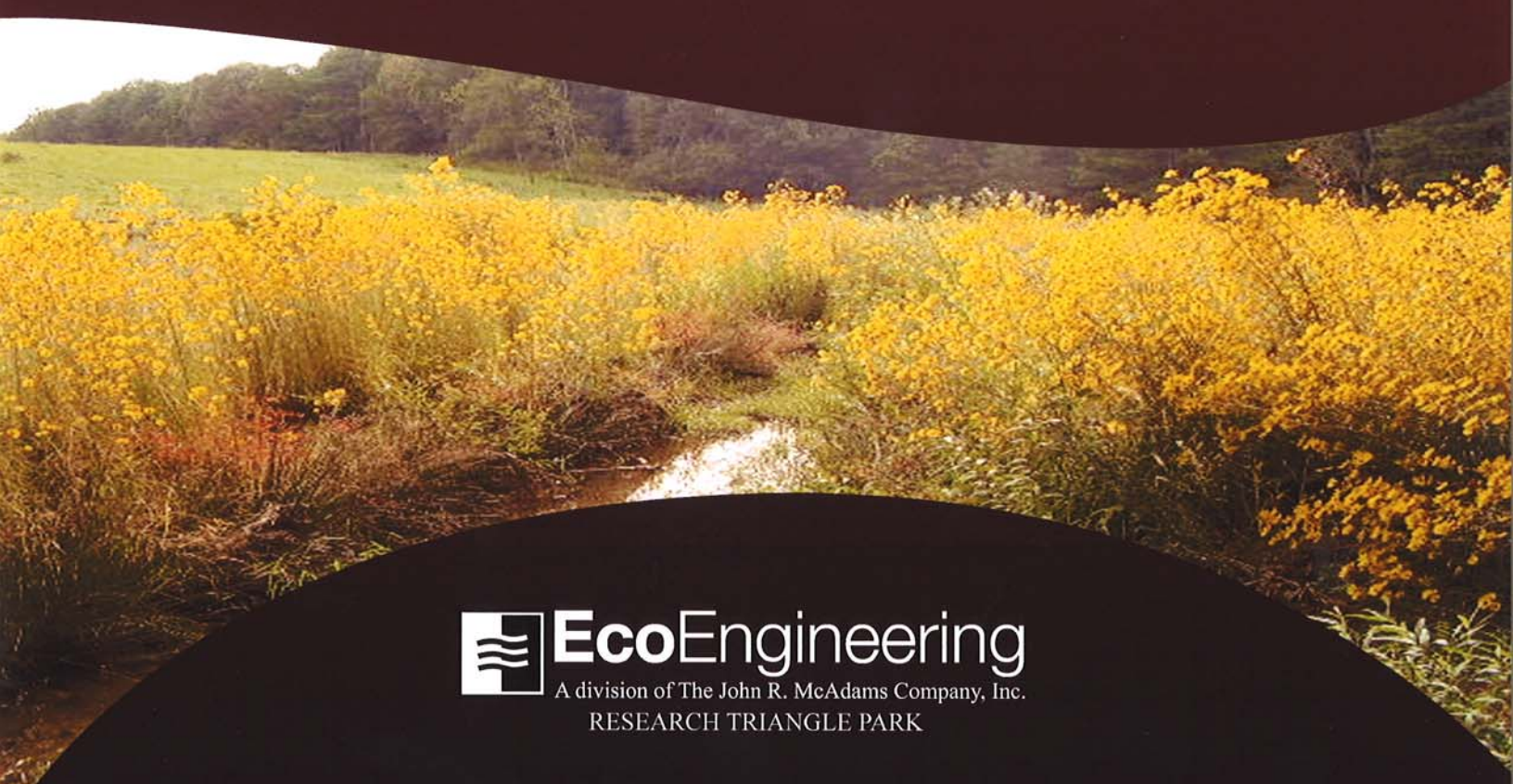
EcoEngineering Project Number: EEP-08000

Prepared for:

NCDENR Ecosystem Enhancement Program

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1.0 Executive Summary/Project Abstract

1.1 Project Goals and 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 Vegetation Condition and Comparison

Original baseline vegetation monitoring data was not provided prior to the 2008 Monitoring Year 1 and 2008 is considered a drought year. The 2009 Monitoring Year 2 is considered the baseline datum because after two years of monitoring it is assumed all planted stems within a vegetation monitoring plot have been surveyed and accounted for. Therefore, any additional species observed in proceeding monitoring years are considered volunteer species. The 2010 Monitoring Year 3 data was provided by Carolina Vegetation Survey and was not manipulated for presentation within Table 7 - Stem Count Total and Planted by Plot Species **Appendix C**.

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 are 260 trees per acre at the end of the five (5) year monitoring. As monitored for Year 3, Naked Creek had 5 plots encompassing 0.12 acres, containing 59 planted and volunteer stems, which yielded a density of 478 trees per acre including planted and volunteer species. Planted and volunteer vegetation survival threshold was met for each of the 5 plots.

Various exotic/invasive species were observed at the site. Exotic species observed at the site include Chinese privet (*Ligustrum sinense*), silk tree (*Albizia julibrissin*), and cattail (*Typha latifolia*). There were nine areas in which exotic/invasive species were observed which total approximately 0.04 acres in size and are approximately 1.02% of the easement acreage. The extent of exotic/invasive species is depicted in the Consolidated Current Condition Plan View **Appendix A**.

Bare areas which exhibit limited cover of both woody and herbaceous material were observed at the site. There were two areas which were considered bare areas which total approximately 0.22 acres in size and are approximately 8.66% of the planted area at the site. The extent of the bare areas is depicted in the Consolidated Current Condition Plan View **Appendix A**.

The restoration project site includes areas designated as "Allowable Use Area". Allowable Use Areas are areas in which mowing activities have occurred and are permissible. These Allowable Use Areas are noted within Table 6A – Vegetation Condition Assessment

Appendix C as Easement Encroach Areas. There were two areas which were considered Allowable Use Areas which total approximately 0.34 acres in size and are approximately 8.71% of the easement acreage. The extent of the Allowable Use Areas is depicted in the Consolidated Current Condition Plan View **Appendix A**.

1.3 Stream Stability/Condition and Comparison

Overall the stream system appears stable and is not migrating toward lateral or vertical instability. Vegetation was observed within the channel between stations 11+00 and 29+00. Based on the prior year comparison using longitudinal profile data, it appears that minor systemic aggradation has occurred throughout the reach, although this condition does not appear to pose an imminent threat to the overall stability of the system. To document bankfull events a crest gage is located approximately 450 feet upstream of cross section 4 and is depicted in the Consolidated Current Condition Plan View **Appendix A**. Evidence of a bankfull event was observed this monitoring year.

1.4 Wetland Conditions and Performance

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

1.5 Narrative Background

Summary information/data related to the occurrence of items such as beaver or encroachment and statistics related to performance of various project and monitoring elements can be found in the tables and figures in the report appendices. Narrative background and supporting information formerly found in these reports can be found in the mitigation and restoration plan documents available on the EEP website. All raw data supporting the tables and figures in the appendices is available from EEP upon request.

2.0 Methodology

All monitoring methodologies follow the most current templates and guidelines provided by EEP (EEP, 2006; EEP, 2009). 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).

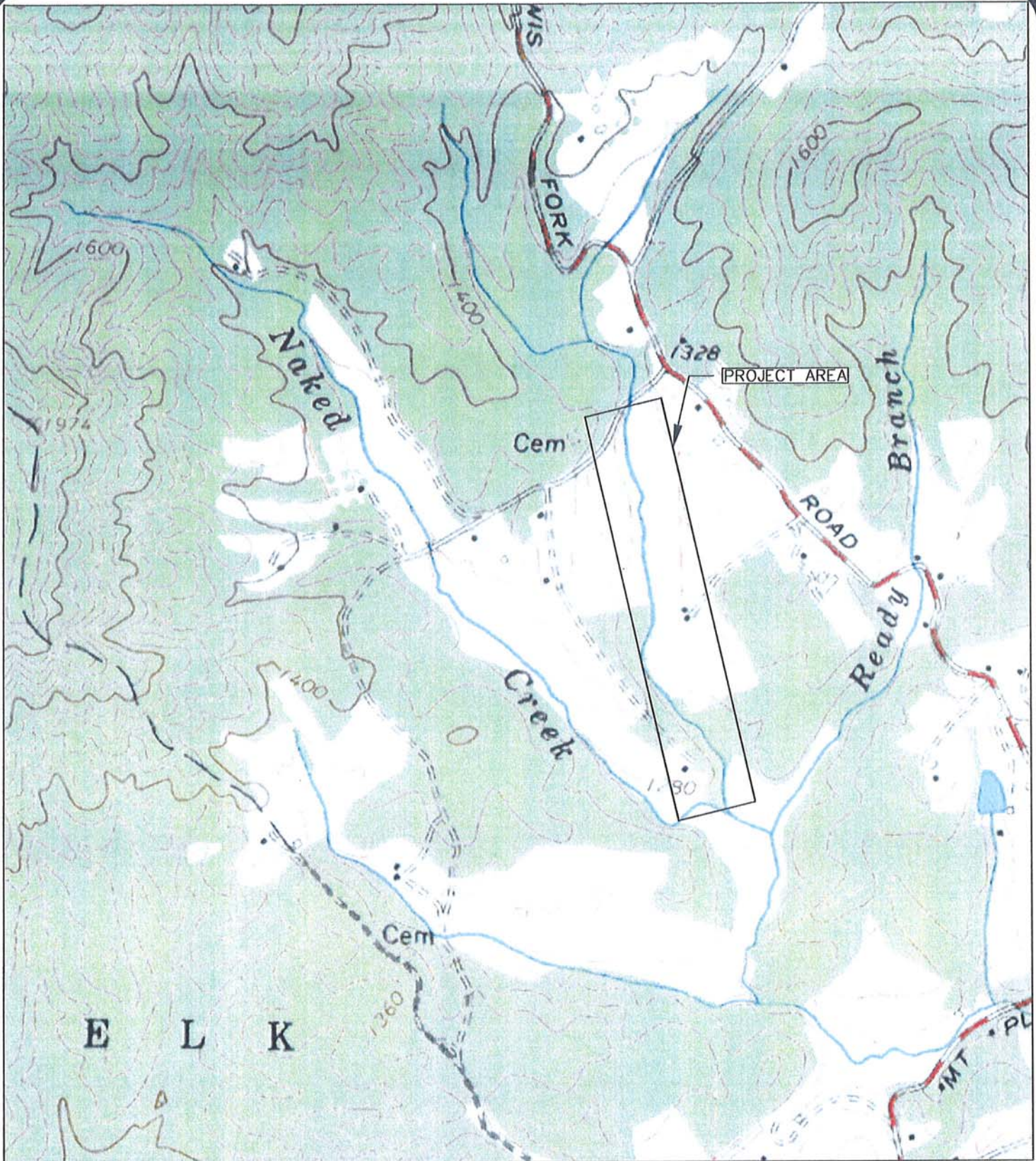
Vegetation monitoring methods followed the 2008, Version 4.2 CVS-EEP Protocol for Recording Vegetation (Lee et. al., 2008). Vegetation plot photographs were collected for each vegetation plot. Vegetation monitoring plots were re-marked in the field by replacing all old flagging with new orange flagging. 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.

3.0 References

- Ecosystem Enhancement Program (EEP), 2006. Monitoring Report Guidelines, November 16, 2006.
- Ecosystem Enhancement Program (EEP), 2009. Monitoring Report Guidelines, June 1, 2009.
- 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. 2008. CVS-EEP Protocol for Recording Vegetation, Version 4.2 (<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

General Figures and Plan View



USGS, 7.5 MINUTE, TOPOGRAPHIC QUADRANGLE;
 PURLEAR, N.C.; 1966; LAT: 36.1394315° N
 LON: 81.3634822° W



PROJECT NO.	EEP-08000
FILENAME:	EEP-08000
SCALE:	1" = 1,000
DATE:	08-12-10



NAKED CREEK

VICINITY MAP

WILKES COUNTY, NORTH CAROLINA



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NAKED CREEK

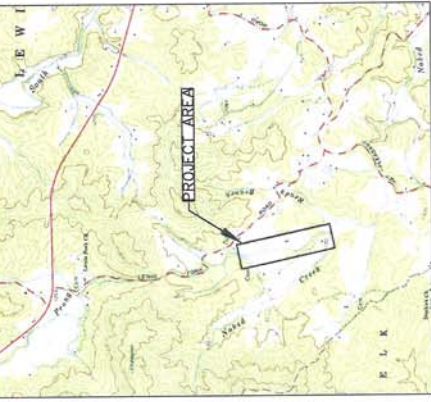
CONSOLIDATED CURRENT CONDITIONS PLAN VIEW - YEAR THREE MONITORING

POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1776034.41	2615857.00	1323.69	CP 1
2	1789414.95	2615866.09	1334.03	CP 2
5	1768883.08	2616008.80	1283.99	CP 5
6	1768887.01	2616040.08	1285.02	CP 6
7	1768230.33	2616200.26	1286.37	CP 7
8	1767905.05	2616418.19	1276.62	CP 8
21	1768976.73	2615841.40	1314.45	XSCC
22	1768875.01	2615907.57	1310.10	XSCC
23	1768811.05	2615554.15	1312.41	XSCC
24	1768833.83	2615921.91	1309.27	XSCC
25	1768957.97	2616035.30	1309.93	XSCC
26	1768928.18	2616000.38	1304.25	XSCC
27	1768943.89	2616007.39	1299.91	XSCC
28	1768941.05	2616071.64	1299.16	XSCC
29	1768961.50	2616006.32	1285.76	XSCC
30	1768135.40	2616090.71	1282.76	XSCC
31	1768008.00	2616130.42	1281.06	XSCC
32	1768024.62	2616162.14	1280.54	XSCC
200	1767923.77	2616265.32	1277.86	NS TRV
201	1768021.09	2616272.32	1277.86	NMAG
202	1767750.53	2616140.01	1317.13	NS TRV
203	1768246.83	2616798.45	1388.95	NS TRAV
204	1768680.70	2616461.82	1313.81	NS SPUR
206	1768656.44	2616054.29	1297.16	NS SPUR/7/0/68IC
207	1767685.75	2616033.96	1300.06	NS TRAV
210	1767586.20	2616203.21	1307.36	NS TRAV
211	1767500.07	2616480.29	1293.22	NS TRAV
300	1767935.38	2616171.69	1279.68	1/2" ER AT BASE
301	1767787.67	2616275.95	1284.75	1/2" ER BASE
302	1767688.16	2616287.50	1284.82	27" MARKED BEECH
303	1767724.60	2616181.08	1317.87	PP
304	1767910.76	2615858.16	1308.65	PP
305	1768030.82	2616840.25	1318.89	1/2" EP
306	1768672.92	2616491.75	1313.53	1/2" EP
307	1768655.98	2616073.00	1287.44	1/2" ER
308	1768794.01	2615411.25	1382.08	3/4" EP RAB
309	1768389.61	2615812.83	1340.59	3/4" EP
310	1768247.44	2615709.89	1335.95	PP
311	1768094.04	2615832.43	1327.39	AXLE
312	1768824.46	2616060.77	1289.50	1/2" ER
313	1767864.13	2616438.23	1289.30	3/4" EP
314	1767833.97	2616475.92	1278.67	1.5" EP
315	1767947.46	2616160.14	1278.67	1/2" ER
316	1768132.37	2616037.25	1280.22	1/2" ER
317	1768206.14	2615960.69	1282.38	1/2" ER
318	1768576.84	2615594.74	1301.89	AXLE
319	1768491.54	2615925.36	1307.83	NS TRV
320	1768484.42	2616163.77	1286.41	NS TRV
321	1767748.03	2616432.00	1273.34	NS TRAV

(ECO)

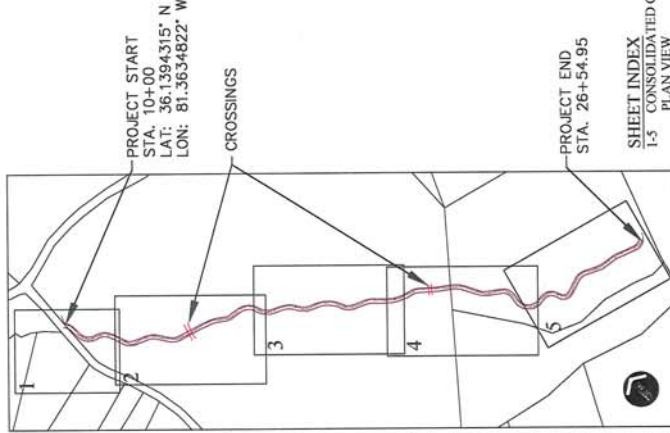
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1	VC1	878937.8305	1303895.7544
2	VC2	878969.6963	1303899.0500
3	VC3	878967.2706	1303829.8125
4	VC4	878935.1636	1303820.2089
5	VC5	878716.8337	1303856.7108
6	VC6	878781.7716	1303894.0887
7	VC7	878781.7462	1303811.8078
8	VC8	878715.3580	1303816.0404
9	VC9	878238.6632	1303704.1383
10	VC10	878304.3131	1303701.2231
11	VC11	878305.8613	1303712.2540
12	VC12	878240.8305	1303720.0466
13	VC13	877813.0154	1303761.1416
14	VC14	877876.1274	1303757.1416
15	VC15	877877.1897	1303772.6940
16	VC16	877812.3357	1303776.7246
17	VC17	878852.8169	1303875.3137
18	VC18	878668.9874	1303841.8805
19	VC19	878871.5988	1303855.2972
20	VC20	878861.4609	1303896.4754

(KHA)



VICINITY MAP
NTS

NOTE: SURVEY DATES OF THALWEG AND TOP-OF-BANK - 7/14/10 TO 7/16/10.



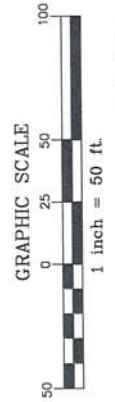
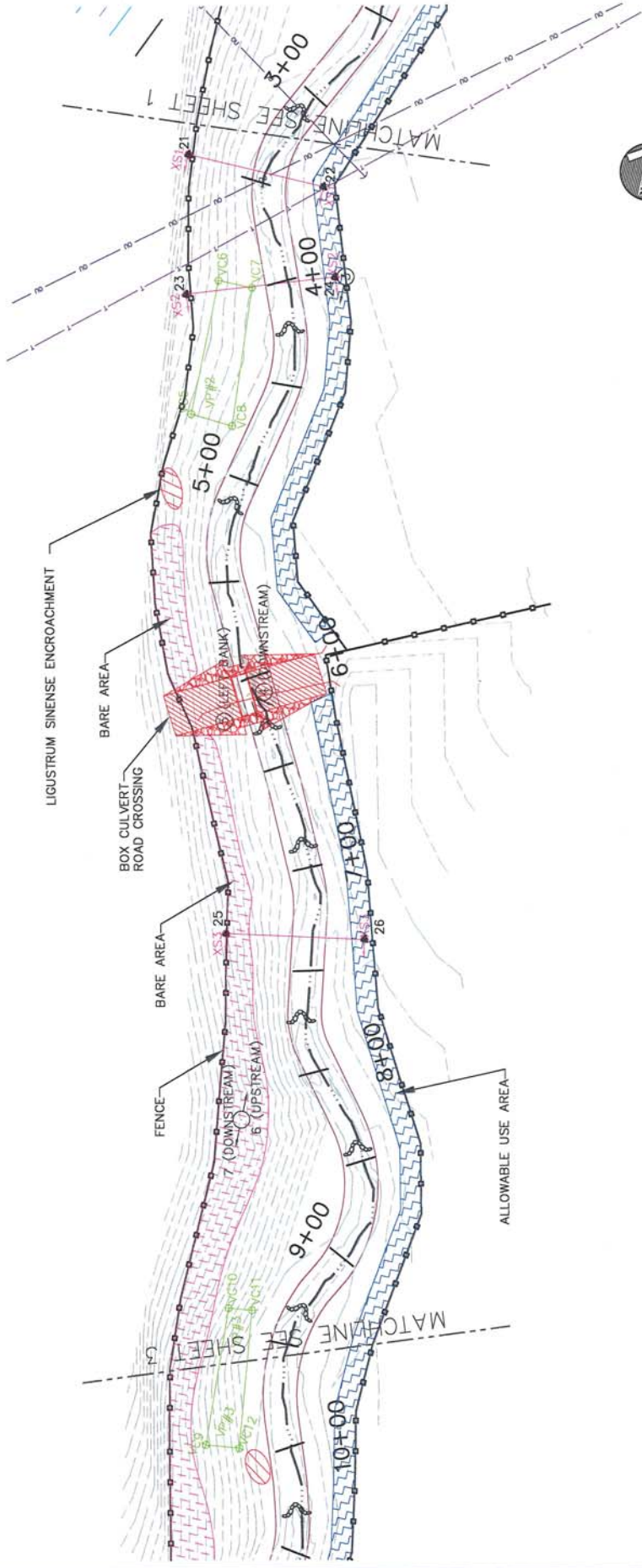
SHEET INDEX
1-3 CONSOLIDATED CURRENT CONDITIONS
PLAN VIEW

WILKES COUNTY, NORTH CAROLINA
EEP PROJECT NUMBER: 261
DATE: AUGUST 23, 2010

NORTH CAROLINA
ECOSYSTEM ENHANCEMENT PROGRAM
NC-EEP CONTACT: JULIE CAHILL (828)230-5172

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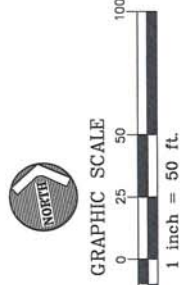
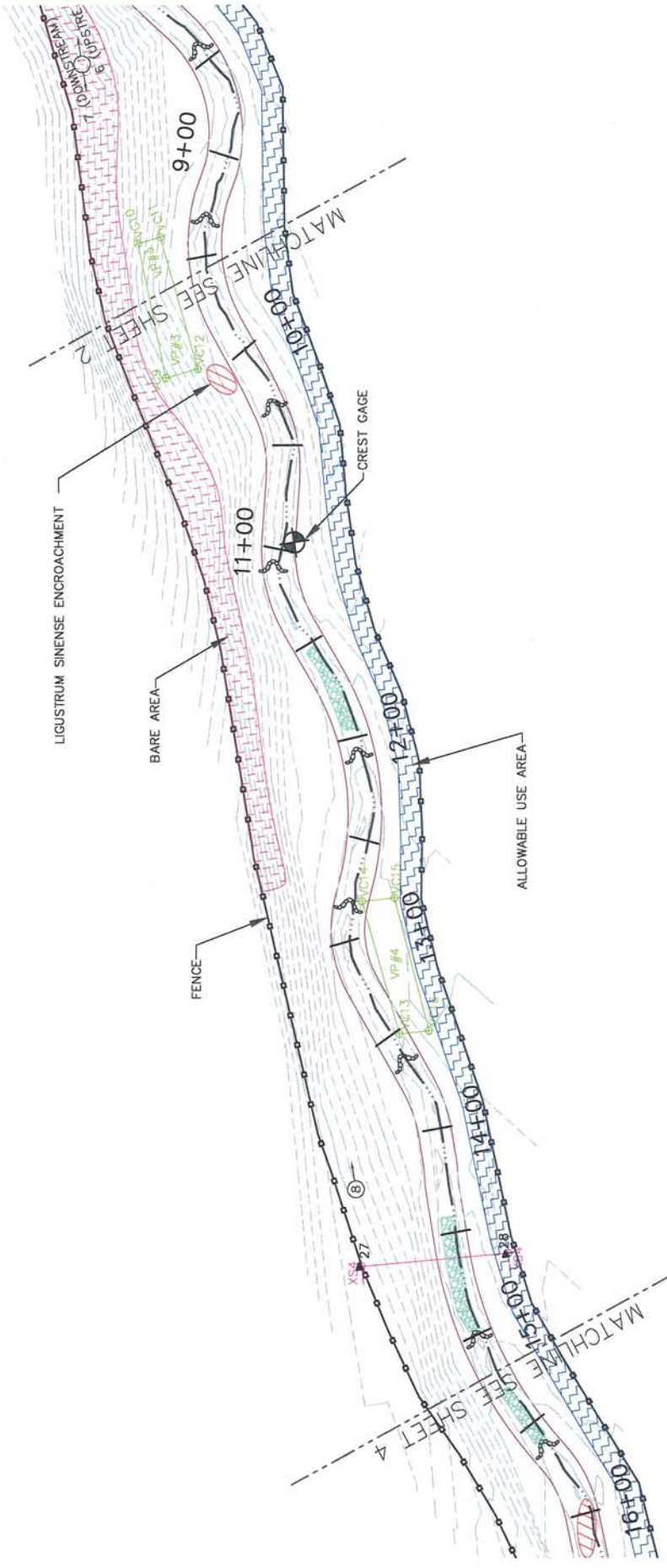
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 FILENAME: EEP-08000
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 DATE: 08-12-10

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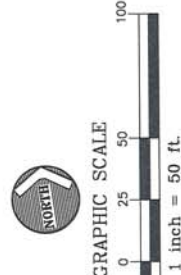
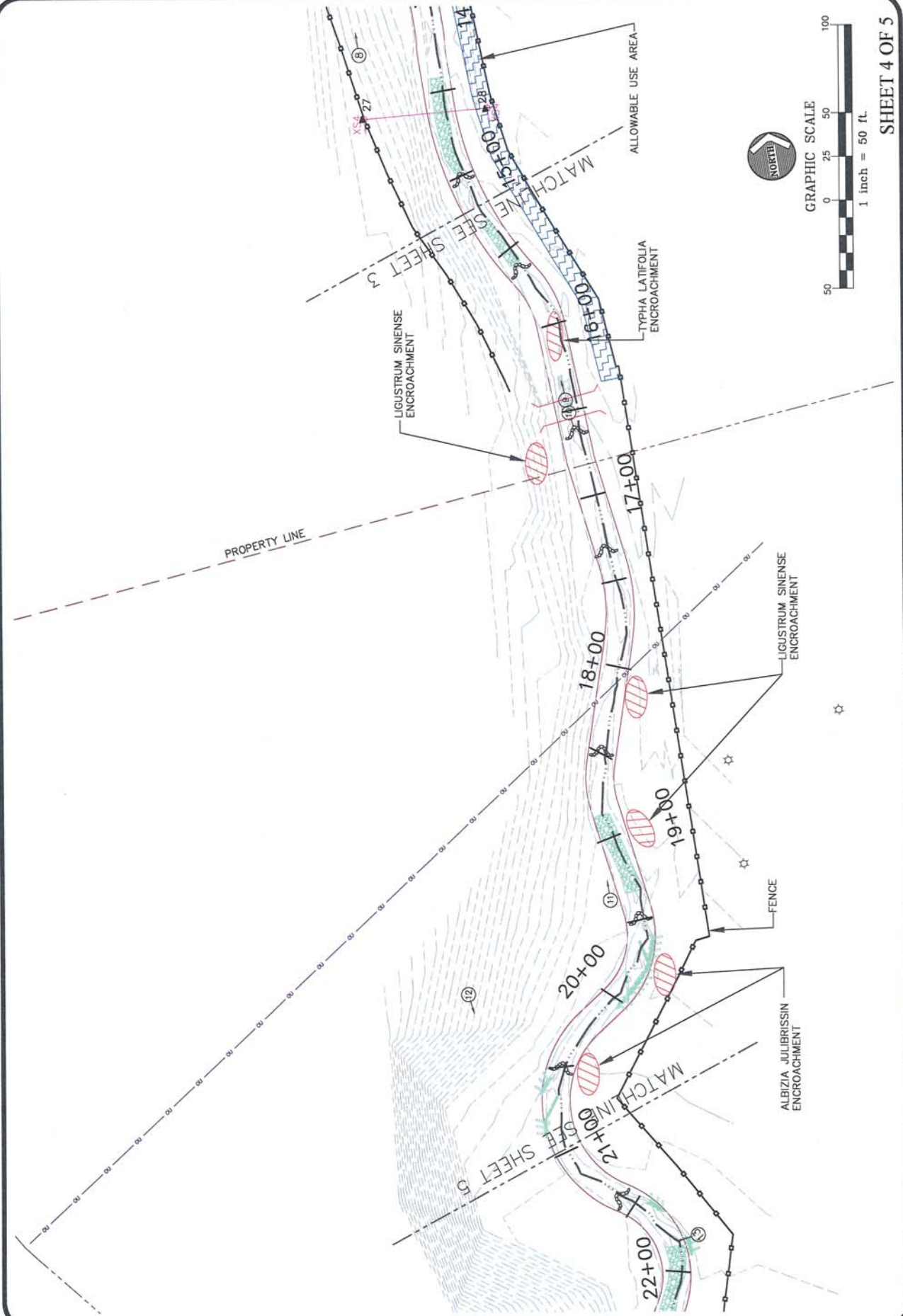
NAKED CREEK

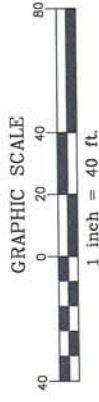
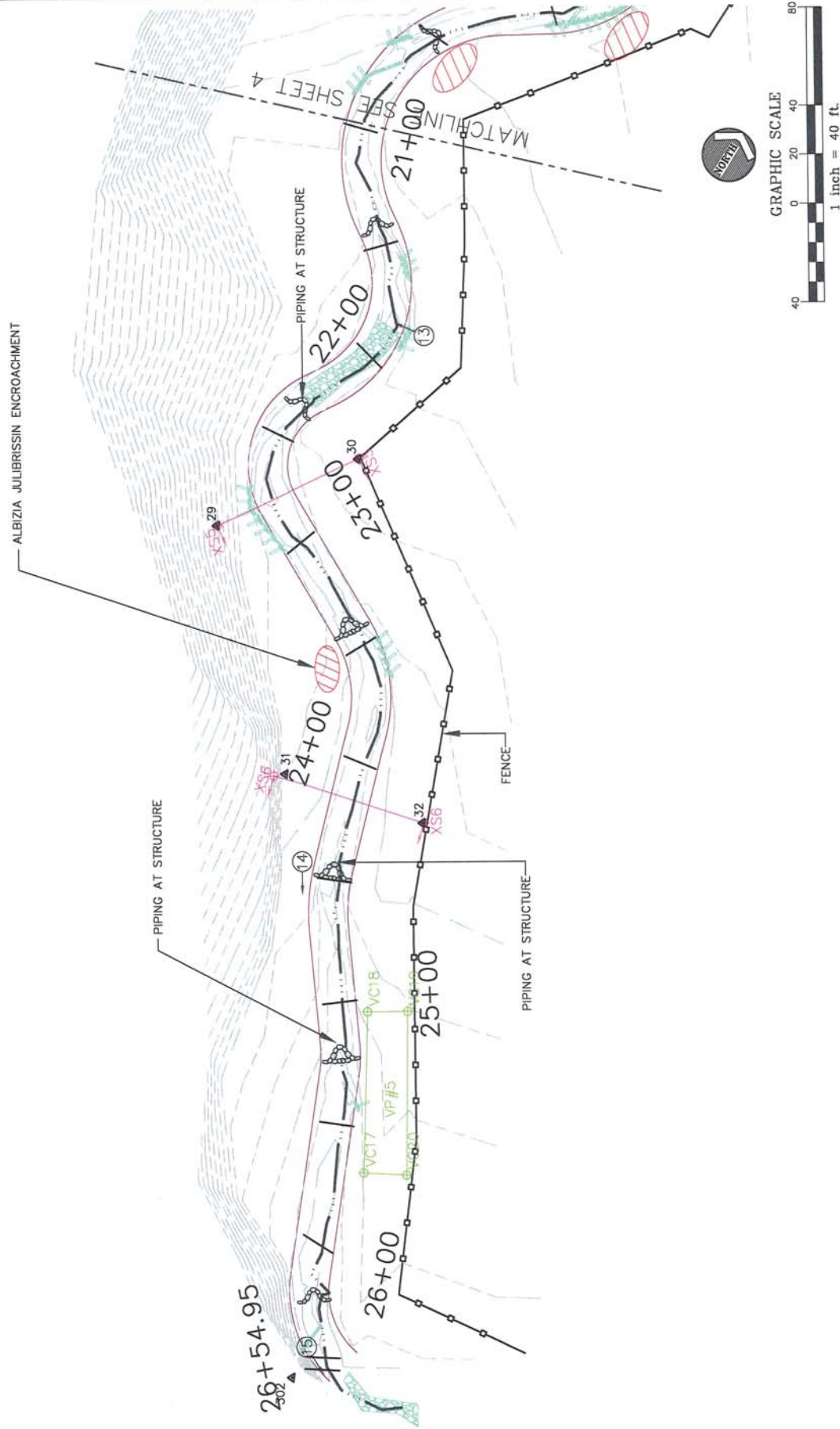
CONSOLIDATED CURRENT CONDITIONS PLAN VIEW - YEAR THREE MONITORING
 WILKES COUNTY, NORTH CAROLINA

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SHEET 3 OF 5





APPENDIX B

General Project Tables

**Table 1. 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	Mitigation Ratio	Mitigation Units	Stationing	Comment
UtNkd	2,652 lf	R	P2	2,652 lf	1	2,652	10+00 - 26+54.95	
Mitigation Unit Summations								
Stream (lf)	Riparian Wetland (Ac)	Nonriparian Wetland (Ac)	Total Wetland (Ac)	Buffer (Ac)	Comment			
2,652	0	0	0	0				

R= Restoration
EI= Enhancement

EII= Enhancement II
S= Stabilization

P1= Priority I
P2= Priority II

P3= Priority III
SS=Stream Bank Stabilization

**Table 2. Project Activity and Reporting
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	Sep-09	Nov-09
Year 3 Monitoring	Jul-10	Oct-10

Note: Timeframe estimated from information provided by EEP.

Table 3. Project Contacts Table
Naked Creek Stream Restoration Project/EEP Project Number: 261

Designer	Kimley-Horn and Associates, Inc. P.O Box 33068, Raleigh, North Carolina 27636
Primary project design POC	POC name and phone 919-677-2050
Construction Contractor	Fluvial Solutions, Inc. PO Box 28749, Raleigh, NC 27611-8749
Construction contractor POC	Peter Jelenevsky, 919-605-6134
Planting Contractor	Carolina Silvics 908 Indian Trail Road, Edenton, NC 27932
Planting contractor POC	Mary-Margaret McKinney 252-482-8491
Seeding Contractor	Contact: Fluvial Solutions, Inc PO Box 28749, Raleigh, NC 27611-8749
Planting contractor POC	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.

Table 4. Project Attribute 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%

APPENDIX C

Vegetation Assessment Data

Table 5. Vegetation Plot Mitigation Success Summary Table

Naked Creek Stream Restoration Project/EEP Project Number: 261

Tract	Vegetation Plot ID	Vegetation Survival Threshold Met?	Tract Mean
Naked Creek	VP1	Y	100%
	VP2	Y	
	VP3	Y	
	VP4	Y	
	VP5	Y	

Note: Threshold criteria based on planted and volunteer species.

Table 6. Vegetation Metadata

Naked Creek Stream Restoration Project/EEP Project Number:261

Report Prepared By	George Buchholz
Date Prepared	10/4/2010 16:09
database name	EcoEngineering-2010-A.mdb
database location	X:\Projects\EEP\EEP-08000 (Naked Creek)\Storm\CVS Vegetation Data\2010 Vegetaion Data
computer name	BUCHHOLZGEO
file size	49315840
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	261
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 sq miles (2.92 acres)
Required Plots (calculated)	5
Sampled Plots	5

**Table 6A. Vegetation Condition Assessment
Naked Creek Stream Restoration Project/EEP Project Number:261**

Planted Acreage 2.54

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Planted Acreage
1. Bare Areas	Very limited cover of both woody and herbaceous material.	0.1 acres	dash, pink	2	0.22	8.66%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1 acres	----	0	0	0.0%
Total						
3. Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 acres	----	0	0	0.0%
Cumaltive Total						

Easement Acreage 3.9*

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Easement Acreage
4. Invasive Areas of Concern	Areas or points (if too small to render as polygons at map scale).	1000 SF	diagonal, red	9	0.04	1.02%
5. Easement Encroachment Areas**	Areas or points (if too small to render as polygons at map scale).	none	zig zag, blue	2	0.34	8.71%

Notes:

* Easement Acreage is based on information received from EEP on January 24, 2011 and is based on DB 1019 Page 361, Plat 10 Page 486 Wilkes County, and DB 1019 Page 417, Plat 10 Page 486 Wilkes County, Dated November 20, 2007.

** Easement Encroachment Areas are Allowable Use Areas and are areas in which mowing activities have occurred.



PHOTO VP1: LOOKING NORTH AT VEGETATION PLOT VP1.



PHOTO VP2: LOOKING NORTH AT VEGETATION PLOT VP2.

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PROJECT NO. EEP-08000
 FILENAME: EEP-08000
 SCALE: NTS
 DATE: 07-16-10



NAKED CREEK RESTORATION
MONITORING PHOTOS
WILKES, NORTH CAROLINA

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PHOTO VP 3: LOOKING NORTHEAST OF VEGETATION PLOT VP3.



PHOTO VP 4: LOOKING NORTHWEST AT VEGETATION PLOT VP4.

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PROJECT NO. EEP-08000
 FILENAME: EEP-08000
 SCALE: NTS
 DATE: 07-16-10



NAKED CREEK RESTORATION
MONITORING PHOTOS
WILKES, NORTH CAROLINA



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PHOTO VP 5: LOOKING SOUTHEAST AT VEGETATION PLOT VP5.

McADAMS

PROJECT NO. EEP-08000

FILENAME: EEP-08000

SCALE: NTS

DATE: 07-16-10



NAKED CREEK RESTORATION

**MONITORING PHOTOS
WILKES, NORTH CAROLINA**



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RESEARCH TRIANGLE PARK, NC
P.O. BOX 14005 ZIP 27709-4005
(919) 361-5000

APPENDIX D

Stream Assessment Data

**Table 8. 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	% Perform in Stable Condition	Feature Perform. Mean or Total
A. Riffles	1. Present?	28	28	NA	100	
	2. Armor stable (e.g. no 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 Bkt > 1.6?)	Design = 2.4 / 0.8 = 3 17	Max Pool / 0.8 > 1.6, 10 of 17	NA	59	
C. Thalweg	3. Length appropriate? (pool-to-pool spong)	15	17	NA	88	82
	1. Upstream of meander bend (run/inflection) centering?	26	28	NA	93	
D. Meander	2. Downstream of meander (glide/inflection) centering?	28	28	NA	100	96
	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	
E. Bed General	4. Sufficient floodplain access and relief?	27	27	NA	100	96
	1. General channel bed aggradation areas (bar formation)	NA	NA	1/700	73	
F. Bank	2. Channel bed degradation -- areas of increasing down-cutting or head cutting?	NA	NA	NA	100	87
	1. Actively eroding, wasting, or slumping bank	NA	NA	NA	100	100
	1. Free of bank or arm scour?	34	34	NA	100	
	2. Height appropriate?	34	34	NA	100	
G. Vanes	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

**Table 9. Verification of Bankfull Events
Naked Creek Stream Restoration Project/EEP Project Number: 261**

Date of Data Collection	Date of Occurrence	Method	Photo # (if available)
07/15/10	Between 09/16/09 and 07/15/10	On-Site Crest Gage located at Station 10+97. Observed elevation on gage at elevation 1297.81	Not Available

Note: A crest gage was installed during the 2009 Monitoring Year 2 field investigations so that bankfull events can be documented during the 2010 Monitoring Year 3 field investigations. The crest gage is located at Station 10+97 and is depicted in the Consolidated Current Condition Plan View located in Appendix A.



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



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

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PROJECT NO. EEP-08000
 FILENAME: EEP-08000
 SCALE: NTS
 DATE: 07-16-10



NAKED CREEK RESTORATION
MONITORING PHOTOS
WILKES, NORTH CAROLINA

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PHOTO 3: LOOKING DOWNSTREAM AT CHANNEL.



PHOTO 4: LOOKING DOWNSTREAM FROM UPPER CROSSING AT CHANNEL.

McADAMS

PROJECT NO. EEP-08000
 FILENAME: EEP-08000
 SCALE: NTS
 DATE: 07-16-10



NAKED CREEK RESTORATION
MONITORING PHOTOS
WILKES, NORTH CAROLINA



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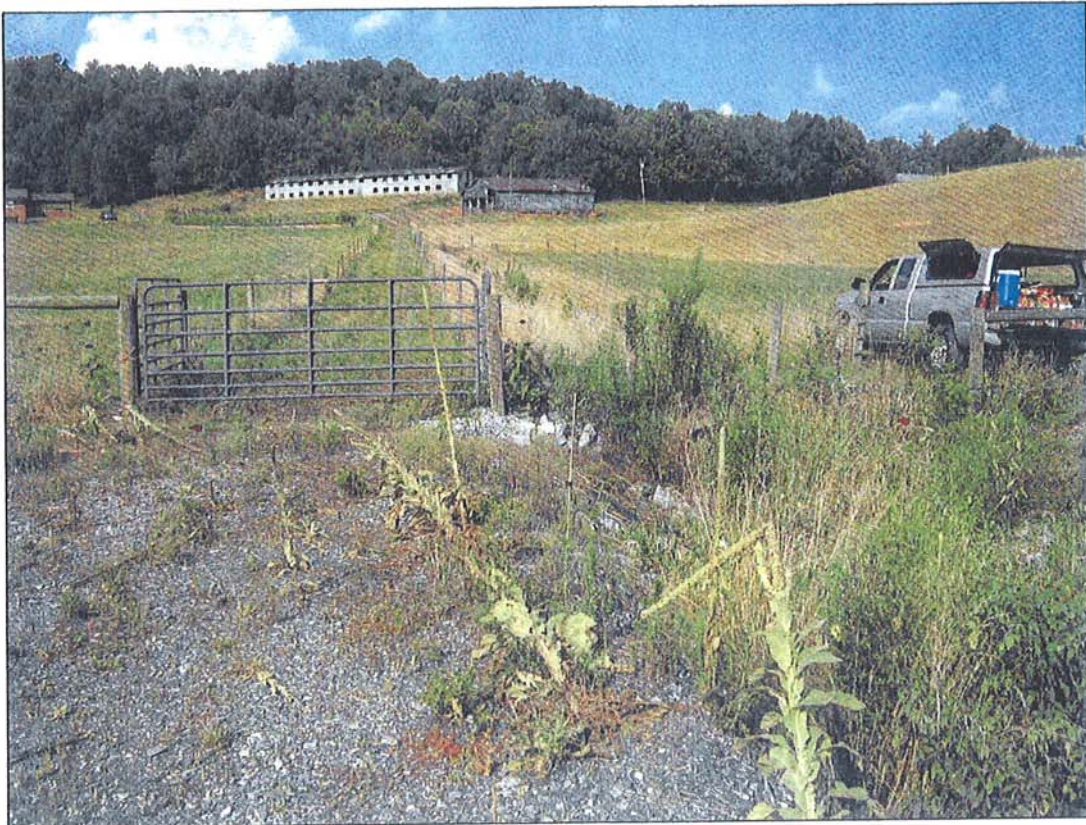


PHOTO 5: LOOKING AT LEFT BANK AT DRAINAGE SWALE ENTERING CHANNEL FROM LEFT SIDE.



PHOTO 6: LOOKING UPSTREAM FROM HILLSIDE ON RIGHT BANK.

PROJECT NO. EEP-08000
 FILENAME: EEP-08000
 SCALE: NTS
 DATE: 07-16-10



NAKED CREEK RESTORATION
MONITORING PHOTOS
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PHOTO 7: LOOKING DOWNSTREAM FROM HILLSIDE ON RIGHT BANK.



PHOTO 8: LOOKING UPSTREAM FROM HILLSIDE ON RIGHT BANK.

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PROJECT NO. EEP-08000
 FILENAME: EEP-08000
 SCALE: NTS
 DATE: 07-16-10



NAKED CREEK RESTORATION
MONITORING PHOTOS
WILKES, NORTH CAROLINA



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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: 07-16-10



NAKED CREEK RESTORATION
MONITORING PHOTOS
WILKES, NORTH CAROLINA

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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: 07-16-10



NAKED CREEK RESTORATION
MONITORING PHOTOS
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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.

McADAMS

PROJECT NO. EEP-08000

FILENAME: EEP-08000

SCALE: NTS

DATE: 07-16-10



NAKED CREEK RESTORATION
MONITORING PHOTOS
WILKES, NORTH CAROLINA

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

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PROJECT NO. EEP-08000

FILENAME: EEP-08000

SCALE: NTS

DATE: 07-16-10



NAKED CREEK RESTORATION
MONITORING PHOTOS
WILKES, NORTH CAROLINA

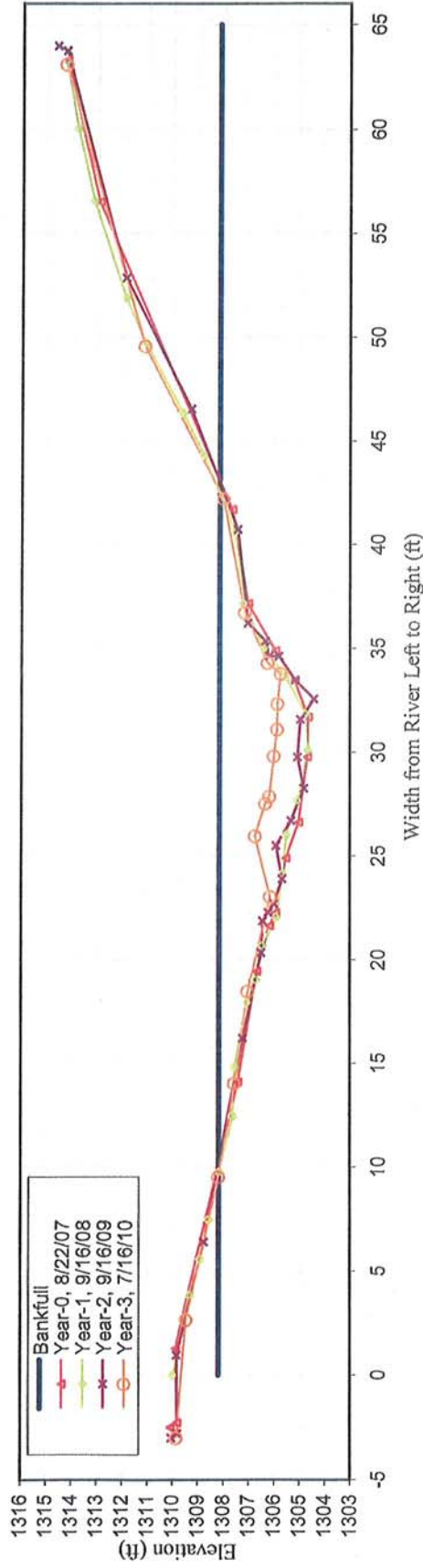
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NAKED CREEK		EEP PROJECT # 261				CROSS SECTION 1							
Year-0		Year-1		Year-2		Year-3		Year-4		Year-5		Year-6	
Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)	Station (ft)	Elev. (ft)
-2.50	1310.07	0.00	1309.99	-3.00	1310.02	-3.00	1309.84						
-2.27	1309.80	3.84	1309.31	-2.79	1309.79	2.65	1309.45						
1.27	1309.87	5.55	1308.91	0.96	1309.82	9.53	1308.18						
14.11	1307.42	7.47	1308.57	6.40	1308.75	14.04	1307.56						
19.44	1306.68	9.77	1308.17	16.22	1307.24	18.47	1307.04						
21.63	1306.18	12.46	1307.64	20.34	1306.50	23.03	1306.16						
22.26	1305.94	14.84	1307.58	21.87	1306.44	25.95	1306.76						
24.87	1305.55	17.94	1307.07	22.28	1306.22	27.52	1306.35						
26.61	1305.03	19.02	1306.73	22.70	1306.01	27.85	1306.19						
29.75	1304.70	20.68	1306.47	23.89	1305.68	29.81	1306.02						
31.66	1304.67	22.07	1305.93	25.50	1305.93	31.09	1305.89						
33.44	1305.20	24.14	1305.68	26.69	1305.34	32.32	1305.88						
34.89	1305.96	26.01	1305.55	28.26	1304.83	33.76	1305.75						
37.15	1307.04	27.68	1305.11	29.75	1305.08	34.29	1306.27						
41.68	1307.67	30.11	1304.68	31.57	1304.97	36.71	1307.17						
56.53	1312.96	31.83	1304.77	32.55	1304.43	42.20	1308.02						
63.35	1314.26	33.64	1305.59	33.47	1305.17	49.56	1311.16						
		34.98	1306.43	34.61	1305.82	63.11	1314.30						
		37.17	1307.25	34.61	1306.21								
		40.61	1307.57	35.35	1306.35								
		44.29	1308.81	36.20	1307.05								
		46.35	1309.66	40.72	1307.45								
		49.73	1311.14	46.54	1309.30								
		51.91	1311.94	52.87	1311.90								
		56.58	1313.19	63.76	1314.26								
		60.05	1313.83	63.99	1314.64								
		63.29	1314.30										



Naked Creek Cross Section 1 - Pool



CROSS SECTION PLOT - LOOKING DOWNSTREAM



CROSS SECTION PHOTO - LOOKING DOWNSTREAM

YEAR-3, 2010 SURVEY DATA
 PROJECT NAKED CREEK
 TASK CROSS SECTION
 REACH NAKED CREEK
 DATE 7/14/2010 to 7/16/2010
 CREW BUCHHOLZ/PARRISH/PICKENS

CROSS-SECTION: 1
 FEATURE: Pool

Summary Data

All dimensions in feet.

Bankfull X-sec area	41.8	sq. ft.
Bankfull Width	33.0	ft.
Bankfull Mean Depth	1.3	ft.
Bankfull Max Depth	2.4	ft.
Width/Depth Ratio	26.1	ft.
Entrenchment Ratio	n/a	ft.
Classification	n/a	

Bankfull Elevation: 1308.18 ft.



CROSS SECTION 2

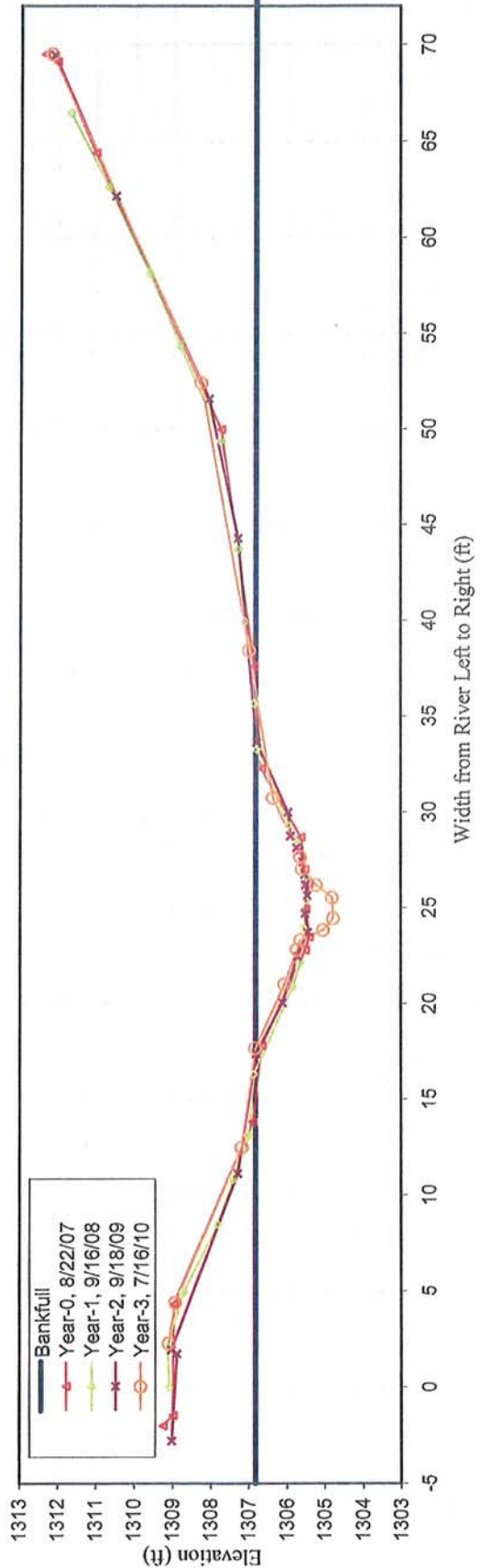
EEP PROJECT # 261

NAKED CREEK

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	-2.80	1309.01	2.00	1308.94						
-1.48	1308.98	2.10	1309.14	1.72	1308.88	2.28	1309.09						
4.32	1308.96	4.94	1308.72	1.94	1309.02	4.39	1308.93						
13.81	1306.89	8.49	1307.82	11.12	1307.28	12.48	1307.18						
17.81	1306.65	10.81	1307.41	17.38	1306.80	17.67	1306.82						
22.79	1305.52	13.10	1307.01	20.04	1306.12	21.02	1306.06						
23.48	1305.41	16.30	1306.86	22.47	1305.73	22.82	1305.74						
24.93	1305.51	20.85	1305.88	22.89	1305.63	23.33	1305.65						
26.27	1305.42	22.15	1305.67	23.72	1305.46	23.85	1305.04						
27.00	1305.53	23.96	1305.57	24.70	1305.53	24.46	1304.77						
28.69	1305.63	25.38	1305.51	25.65	1305.46	25.53	1304.80						
32.26	1306.67	26.58	1305.47	26.17	1305.52	26.20	1305.23						
37.62	1306.86	28.38	1305.74	26.75	1305.53	27.05	1305.61						
49.96	1307.73	29.29	1305.97	27.38	1305.59	27.68	1305.66						
64.39	1311.04	33.26	1306.79	27.98	1305.68	30.74	1306.37						
69.12	1312.05	35.66	1306.85	28.13	1305.75	38.44	1306.99						
69.52	1312.36	39.93	1307.12	28.74	1305.91	52.41	1308.27						
		43.70	1307.30	29.98	1305.98	69.52	1312.17						
		49.37	1307.75	33.65	1306.79	69.64	1312.38						
		54.34	1308.84	44.29	1307.29								
		58.12	1309.64	51.58	1308.06								
		62.63	1310.72	62.15	1310.51								
		66.47	1311.70	69.48	1312.12								



Naked Creek Cross Section 2 - Riffle



CROSS SECTION PLOT - LOOKING DOWNSTREAM



CROSS SECTION PHOTO - LOOKING DOWNSTREAM

YEAR-3, 2010 SURVEY DATA
 PROJECT NAKED CREEK
 TASK CROSS SECTION
 REACH NAKED CREEK
 DATE 7/14/2010 to 7/16/2010
 CREW BUCHHOLZ/PARRISH/PICKENS

CROSS-SECTION: 2
 FEATURE: Riffle

Summary Data
 All dimensions in feet.

Bankfull X-sec area	14.5	sq. ft.
Bankfull Width	18.7	ft.
Bankfull Mean Depth	0.8	ft.
Bankfull Max Depth	2.1	ft.
Width/Depth Ratio	24.0	ft.
Entrenchment Ratio	5.4	ft.
Classification	C	
Bankfull Elevation:	1306.82	ft.



CROSS SECTION 3

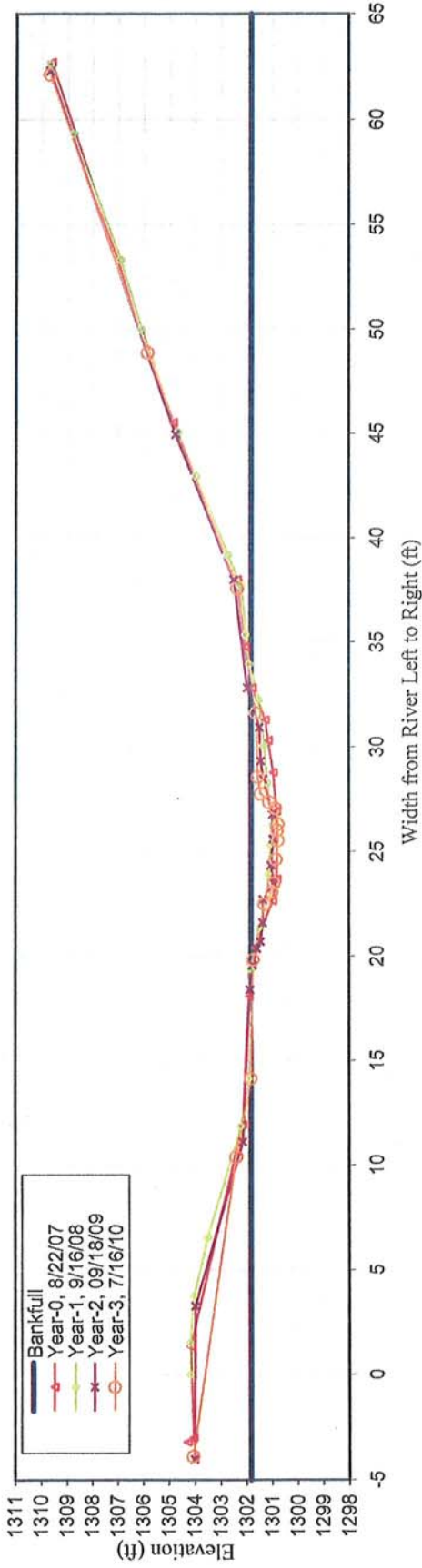
EEP PROJECT # 261

NAKED CREEK

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	-4.03	1304.01	-4.00	1304.19						
-3.00	1303.86	1.53	1304.20	3.27	1303.98	-3.87	1304.06						
1.35	1303.96	3.77	1304.04	11.12	1302.14	-3.87	1304.06						
11.93	1301.96	6.55	1303.54	18.40	1301.87	10.41	1302.39						
18.06	1301.71	11.86	1302.24	19.57	1301.75	14.15	1301.84						
20.40	1301.49	14.12	1301.91	20.37	1301.59	19.83	1301.74						
22.63	1300.78	19.40	1301.86	20.70	1301.46	22.50	1301.31						
23.67	1300.61	21.34	1301.53	21.59	1301.37	23.08	1301.00						
26.92	1300.63	22.85	1301.18	22.70	1301.36	23.49	1300.93						
28.78	1300.76	23.95	1301.18	23.46	1300.95	24.64	1300.85						
30.30	1300.96	25.32	1301.10	24.34	1301.05	25.54	1300.77						
31.29	1301.07	26.24	1300.99	25.60	1300.96	26.02	1300.80						
32.81	1301.58	28.29	1301.23	26.77	1300.98	26.31	1300.77						
34.80	1301.86	30.05	1301.34	28.46	1301.35	27.07	1300.87						
38.00	1302.16	32.25	1301.55	29.33	1301.45	27.37	1301.12						
45.53	1304.65	33.95	1301.89	30.93	1301.51	27.77	1301.45						
62.71	1309.43	35.38	1302.04	32.82	1301.98	28.57	1301.58						
63.02	1309.72	37.72	1302.24	38.00	1302.49	31.63	1301.64						
		39.19	1302.76	44.96	1304.76	37.59	1302.36						
		42.97	1304.00	62.29	1309.69	48.88	1305.85						
		45.07	1304.70			62.14	1309.69						
		50.00	1306.11			62.31	1309.91						
		53.33	1306.93										
		59.33	1308.78										
		62.61	1309.67										

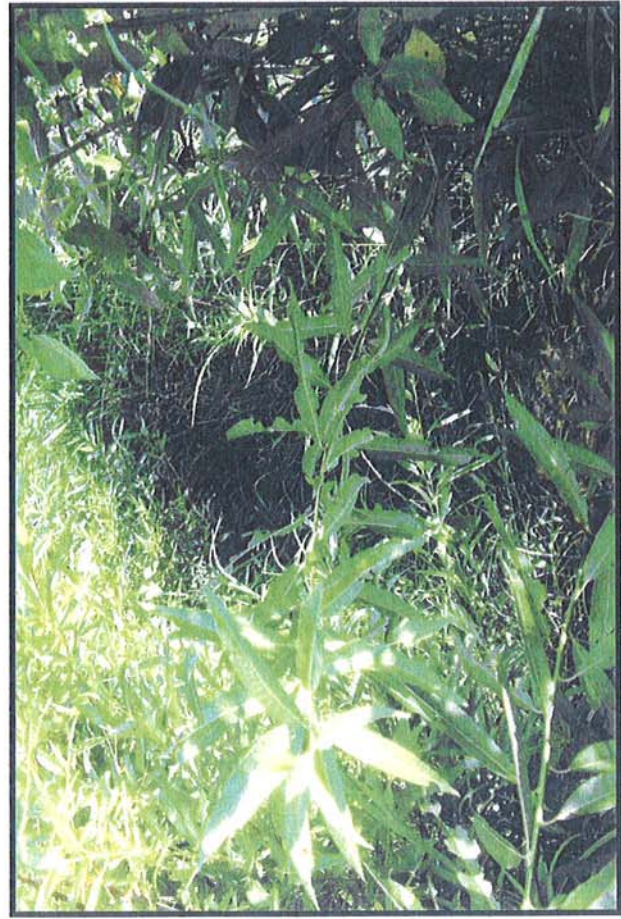


Naked Creek Cross Section 3 - Riffle



CROSS SECTION PLOT - LOOKING DOWNSTREAM

YEAR-3, 2010 SURVEY DATA
 PROJECT NAKED CREEK
 TASK CROSS SECTION
 REACH NAKED CREEK
 DATE 7/14/2010 to 7/16/2010
 CREW BUCHHOLZ/PARRISH/PICKENS



CROSS SECTION PHOTO - LOOKING DOWNSTREAM

Summary Data

All dimensions in feet.

Bankfull X-sec area	7.1	sq. ft.
Bankfull Width	19.1	ft.
Bankfull Mean Depth	0.4	ft.
Bankfull Max Depth	1.1	ft.
Width/Depth Ratio	51.6	ft.
Entrenchment Ratio	1.6	ft.
Classification	C	

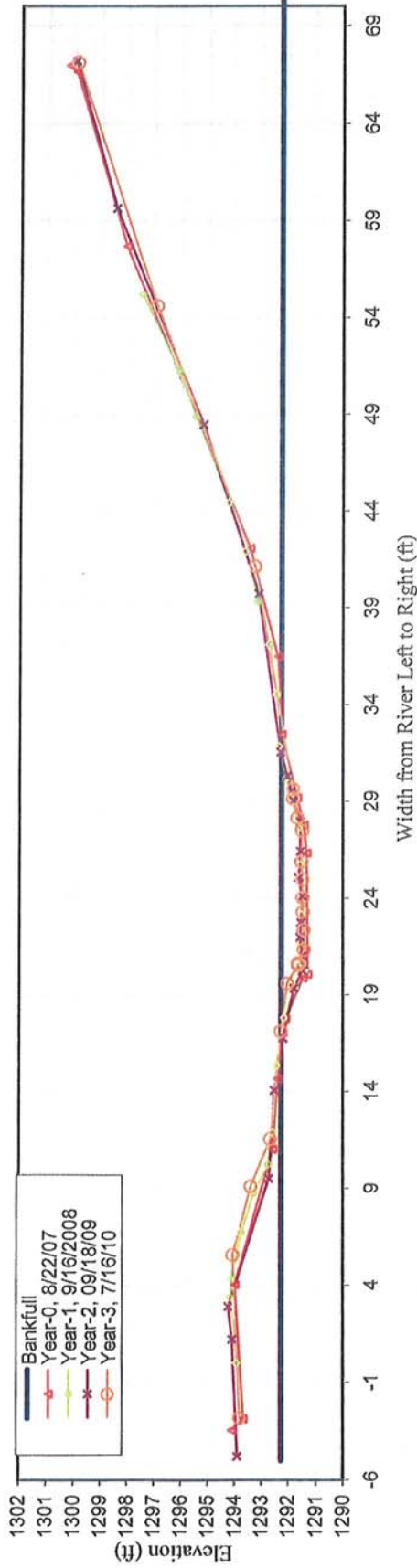
Bankfull Elevation: 1301.84 ft.



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	-4.80	1293.87	-3.00	1293.94								
-2.86	1293.64	3.40	1294.15	1.22	1294.06	-2.82	1293.79								
4.04	1293.97	4.36	1294.11	2.91	1294.21	5.58	1294.04								
11.02	1292.54	6.74	1293.76	9.52	1292.69	9.11	1293.37								
14.67	1292.38	8.77	1293.28	14.07	1292.49	11.57	1292.64								
17.74	1292.08	10.25	1292.73	16.77	1292.17	17.13	1292.25								
19.86	1291.46	11.87	1292.54	19.32	1291.78	19.60	1292.02								
20.04	1291.29	15.36	1292.41	20.24	1291.47	20.55	1291.62								
26.31	1291.33	17.81	1292.14	21.01	1291.48	20.65	1291.63								
27.76	1291.43	19.39	1291.73	21.97	1291.56	21.32	1291.42								
29.18	1291.66	20.24	1291.40	22.72	1291.53	22.36	1291.43								
32.45	1292.24	20.69	1291.48	24.08	1291.48	23.28	1291.46								
36.48	1292.38	21.74	1291.57	25.07	1291.62	24.02	1291.47								
42.05	1293.42	23.44	1291.46	26.42	1291.55	24.97	1291.48								
57.67	1298.07	25.73	1291.54	27.94	1291.55	25.88	1291.51								
66.66	1299.97	27.62	1291.63	29.03	1291.81	27.47	1291.48								
66.97	1300.23	29.10	1291.86	29.51	1291.87	28.15	1291.66								
		30.18	1292.07	30.31	1292.02	29.13	1291.82								
		31.82	1292.34	31.54	1292.28	29.64	1291.83								
		34.52	1292.42	39.72	1293.09	41.14	1293.23								
		37.08	1292.69	48.44	1295.18	54.60	1296.93								
		39.29	1293.14	59.63	1298.45	67.14	1299.92								
		41.90	1293.60	67.20	1299.97	67.32	1299.92								
		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												



Naked Creek Cross Section 4 - Riffle



CROSS SECTION PLOT - LOOKING DOWNSTREAM



CROSS SECTION PHOTO - LOOKING DOWNSTREAM

YEAR-3, 2010 SURVEY DATA
 PROJECT NAKED CREEK CROSS-SECTION: 4
 TASK CROSS SECTION FEATURE: Riffle
 REACH NAKED CREEK
 DATE 7/14/2010 to 7/16/2010
 CREW BUCHHOLZ/PARRISH/PICKENS

Summary Data

All dimensions in feet.

Bankfull X-sec area	7.9	sq. ft.
Bankfull Width	16.0	ft.
Bankfull Mean Depth	0.5	ft.
Bankfull Max Depth	0.8	ft.
Width/Depth Ratio	32.1	ft.
Entrenchment Ratio	2.1	ft.
Classification	B	
Bankfull Elevation:	1292.25	ft.



CROSS SECTION 5

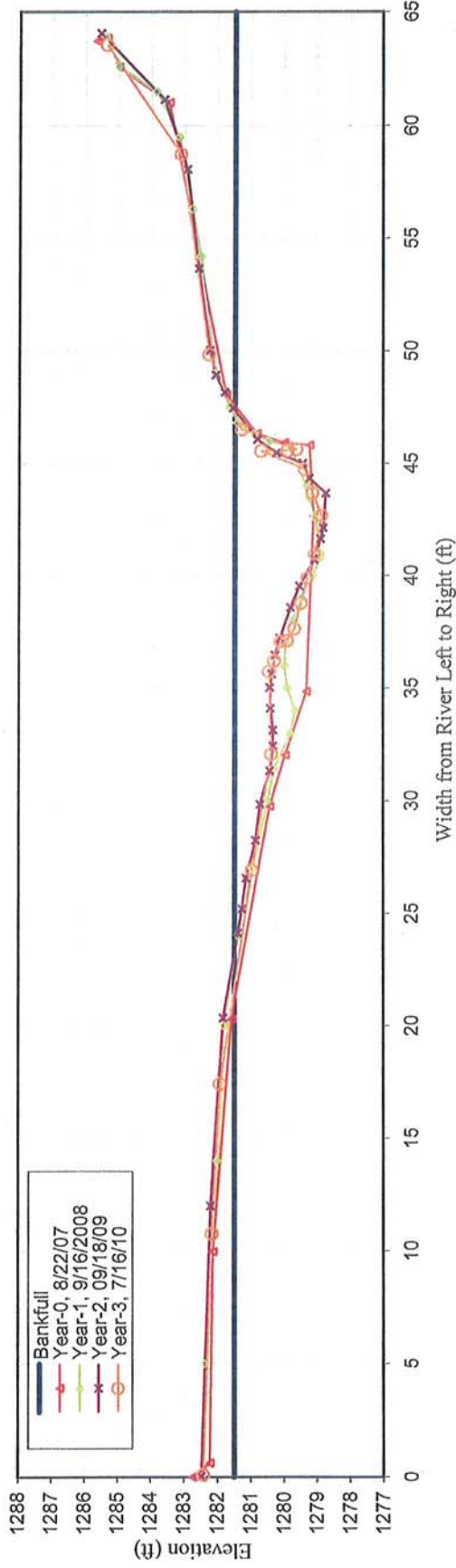
EEP PROJECT # 261

NAKED CREEK

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	0.04	1282.46	0.00	1282.74						
-1.88	1282.41	5.00	1282.37	12.00	1282.19	0.10	1282.41						
7.47	1282.32	14.00	1281.99	20.35	1281.82	10.77	1282.15						
17.80	1281.78	20.00	1281.80	24.12	1281.38	17.42	1281.92						
27.26	1280.63	24.00	1281.39	25.20	1281.26	26.92	1280.96						
29.53	1280.17	27.00	1280.95	26.56	1281.13	32.08	1280.38						
32.35	1279.52	30.00	1280.50	28.23	1280.85	35.75	1280.45						
40.12	1279.30	31.40	1280.33	29.85	1280.72	36.22	1280.30						
43.31	1279.43	33.00	1279.82	31.33	1280.43	37.08	1280.11						
43.41	1280.20	34.00	1279.69	32.44	1280.33	37.12	1279.91						
43.82	1281.02	35.00	1279.93	33.14	1280.33	37.64	1279.69						
45.56	1281.95	36.00	1280.01	34.10	1280.41	38.79	1279.49						
58.52	1283.68	37.00	1279.96	35.03	1280.43	39.90	1279.30						
60.09	1285.21	38.00	1279.76	35.63	1280.37	41.00	1279.07						
61.33	1285.56	39.00	1279.48	36.46	1280.27	42.68	1278.86						
61.22	1285.86	40.00	1279.14	37.23	1280.12	43.68	1279.14						
		40.80	1278.91	38.58	1279.81	44.73	1279.38						
		41.00	1278.91	39.53	1279.53	45.55	1280.69						
		42.60	1279.07	40.71	1279.08	45.58	1279.90						
		43.50	1279.27	41.63	1278.89	45.62	1279.63						
		44.00	1279.36	42.12	1278.81	46.51	1281.29						
		45.70	1279.81	43.66	1278.73	49.85	1282.26						
		46.00	1280.46	44.33	1279.23	58.74	1283.12						
		46.30	1280.90	45.00	1279.44	63.56	1285.36						
		46.80	1281.42	45.46	1280.24	63.74	1285.74						
		47.50	1281.65	46.07	1280.80								
		49.00	1282.08	47.47	1281.54								
		54.20	1282.53	48.17	1281.79								
		56.30	1282.78	48.93	1282.05								
		59.50	1283.18	50.03	1282.24								
		61.50	1283.86	53.67	1282.57								
		62.60	1285	58.07	1282.93								
		63.90	1285.39	61.15	1283.61								
				64.06	1285.55								



Naked Creek Cross Section 5 - Pool



CROSS SECTION PLOT - LOOKING DOWNSTREAM



CROSS SECTION PHOTO - LOOKING DOWNSTREAM

YEAR-3, 2010 SURVEY DATA
 PROJECT NAKED CREEK
 TASK CROSS SECTION
 REACH NAKED CREEK
 DATE 7/14/2010 to 7/16/2010
 CREW BUCHHOLZ/PARRISH/PICKENS

CROSS-SECTION: 5
 FEATURE: Pool

Summary Data
 All dimensions in feet.

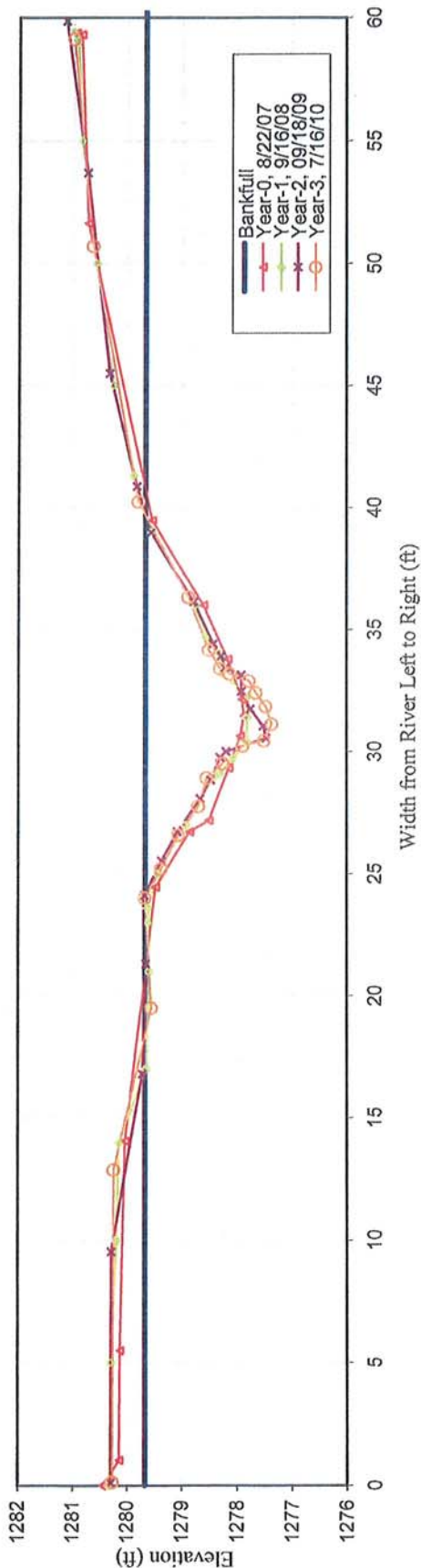
Bankfull X-sec area	25.7	sq. ft.
Bankfull Width	22.9	ft.
Bankfull Mean Depth	1.1	ft.
Bankfull Max Depth	2.4	ft.
Width/Depth Ratio	20.3	ft.
Entrenchment Ratio	n/a	ft.
Classification	n/a	ft.
Bankfull Elevation:	1281.49	ft.



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	0.00	1280.34	0.14	1280.27								
1.02	1280.14	5.00	1280.30	5.00	1280.30	12.89	1280.24								
5.49	1280.12	10.00	1280.20	10.00	1280.20	19.52	1279.55								
14.07	1280.04	14.00	1280.16	14.00	1280.16	24.03	1279.67								
24.46	1279.47	17.00	1279.65	17.00	1279.65	25.22	1279.37								
26.73	1278.85	21.00	1279.60	21.00	1279.60	26.60	1279.06								
27.19	1278.51	23.00	1279.61	23.00	1279.61	27.77	1278.70								
29.33	1278.15	23.60	1279.63	23.60	1279.63	28.93	1278.55								
30.64	1277.95	25.00	1279.44	25.00	1279.44	29.52	1278.26								
31.47	1277.87	27.00	1278.94	27.00	1278.94	30.24	1277.90								
32.13	1277.92	29.00	1278.42	29.00	1278.42	30.45	1277.51								
33.79	1278.17	29.10	1278.33	29.10	1278.33	31.13	1277.37								
36.00	1278.61	29.70	1278.10	29.70	1278.10	31.84	1277.48								
39.47	1279.54	30.40	1277.84	30.40	1277.84	32.42	1277.66								
51.65	1280.73	31.40	1277.83	31.40	1277.83	32.90	1277.79								
59.31	1280.85	32.30	1277.80	32.30	1277.80	33.19	1278.13								
59.38	1280.96	33.20	1278.30	33.20	1278.30	33.42	1278.31								
		34.05	1278.33	34.05	1278.33	34.16	1278.51								
		34.70	1278.58	34.70	1278.58	36.33	1278.88								
		36.00	1278.77	36.00	1278.77	40.25	1279.80								
		39.00	1279.57	39.00	1279.57	50.72	1280.64								
		41.30	1279.90	41.30	1279.90	59.13	1280.99								
		45.00	1280.27	45.00	1280.27										
		50.00	1280.58	50.00	1280.58										
		55.00	1280.84	55.00	1280.84										
		59.00	1280.93	59.00	1280.93										
		59.40	1281.02	59.40	1281.02										



Naked Creek Cross Section 6 - Pool



CROSS SECTION PLOT - LOOKING DOWNSTREAM

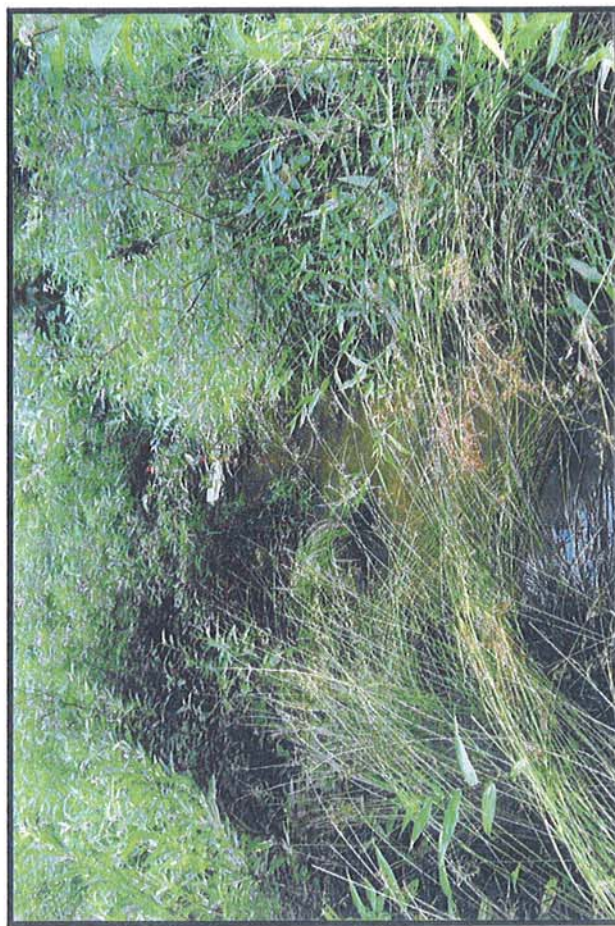
YEAR-3, 2010 SURVEY DATA
 PROJECT NAKED CREEK CROSS-SECTION: 6
 TASK CROSS SECTION FEATURE: Pool
 REACH NAKED CREEK
 DATE 7/14/2010 to 7/16/2010
 CREW BUCHHOLZ/PARRISH/PICKENS

Summary Data

All dimensions in feet.

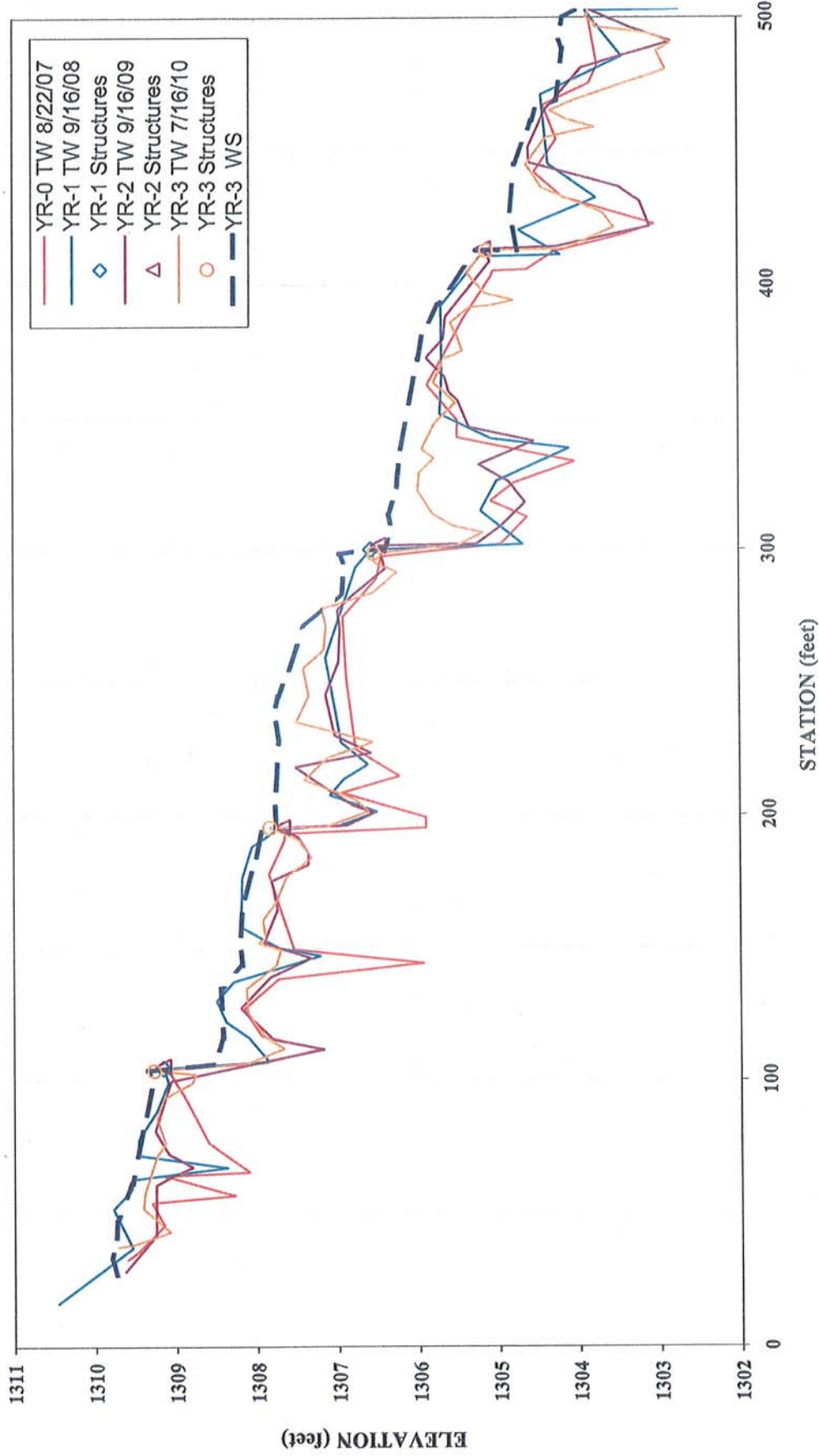
Bankfull X-sec area	16.1	sq. ft.
Bankfull Width	21.3	ft.
Bankfull Mean Depth	0.8	ft.
Bankfull Max Depth	2.3	ft.
Width/Depth Ratio	28.3	ft.
Entrenchment Ratio	n/a	ft.
Classification	n/a	

Bankfull Elevation: 1279.67 ft.



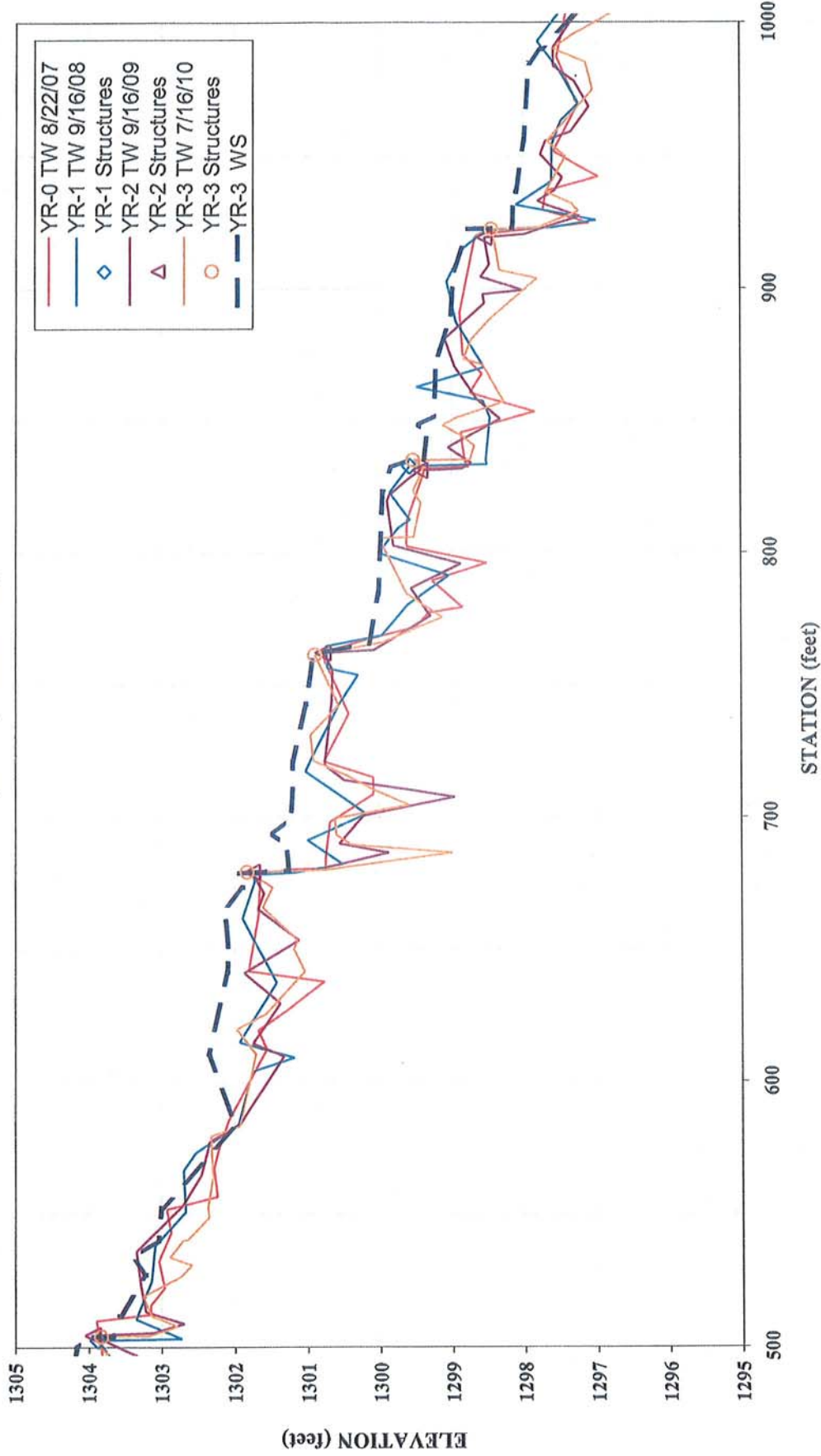
CROSS SECTION PHOTO - LOOKING DOWNSTREAM

**Naked Creek
Longitudinal Profile
2010 (Year-3) Monitoring**



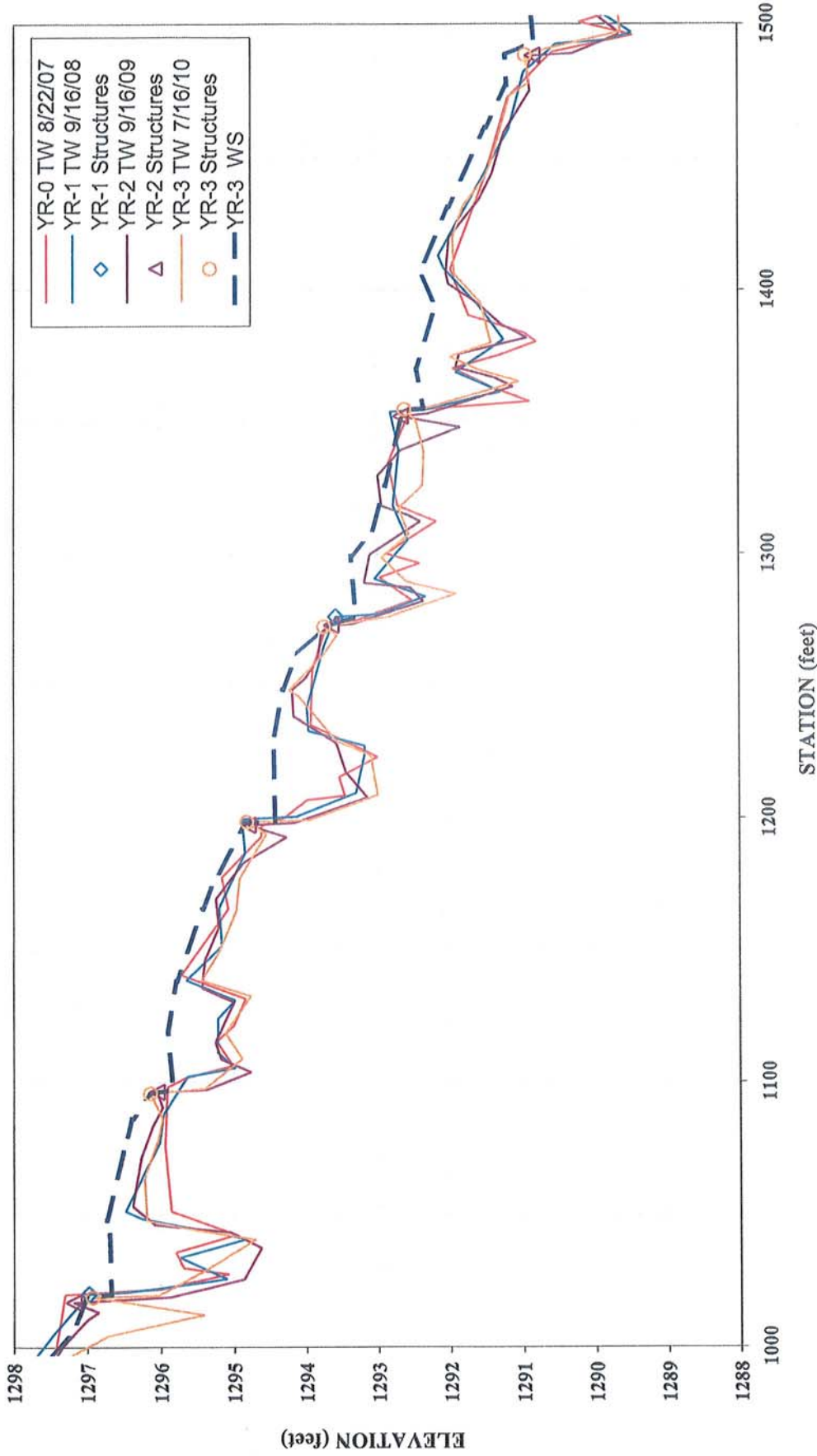
Note: Due to slight differences in thalweg length, longitudinal profile was adjusted horizontally. Elevation data was not changed.

Naked Creek
 Longitudinal Profile
 2010 (Year-3) Monitoring



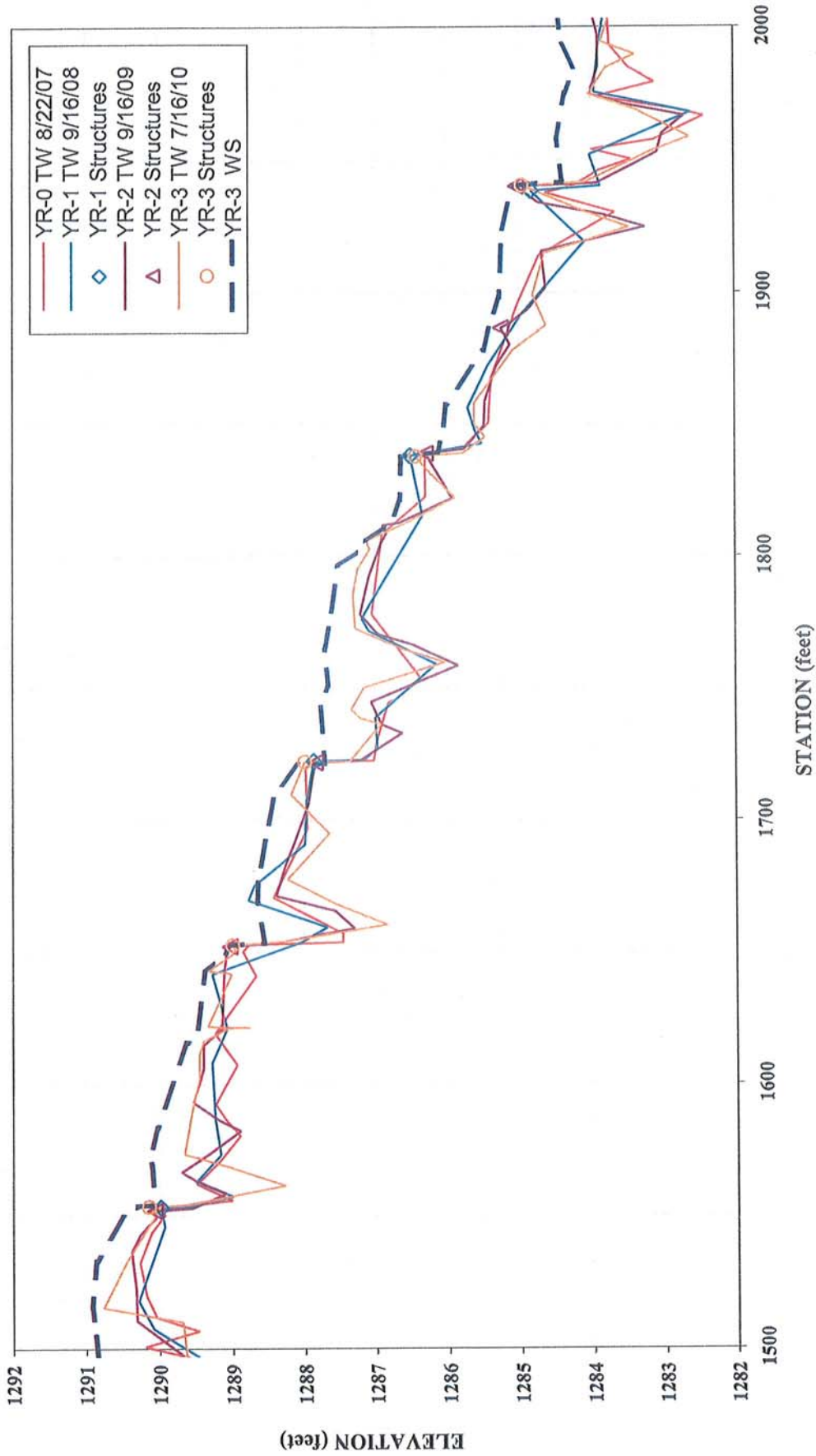
Note: Due to slight differences in thalweg length, longitudinal profile was adjusted horizontally. Elevation data was not changed.

**Naked Creek
Longitudinal Profile
2010 (Year-3) Monitoring**



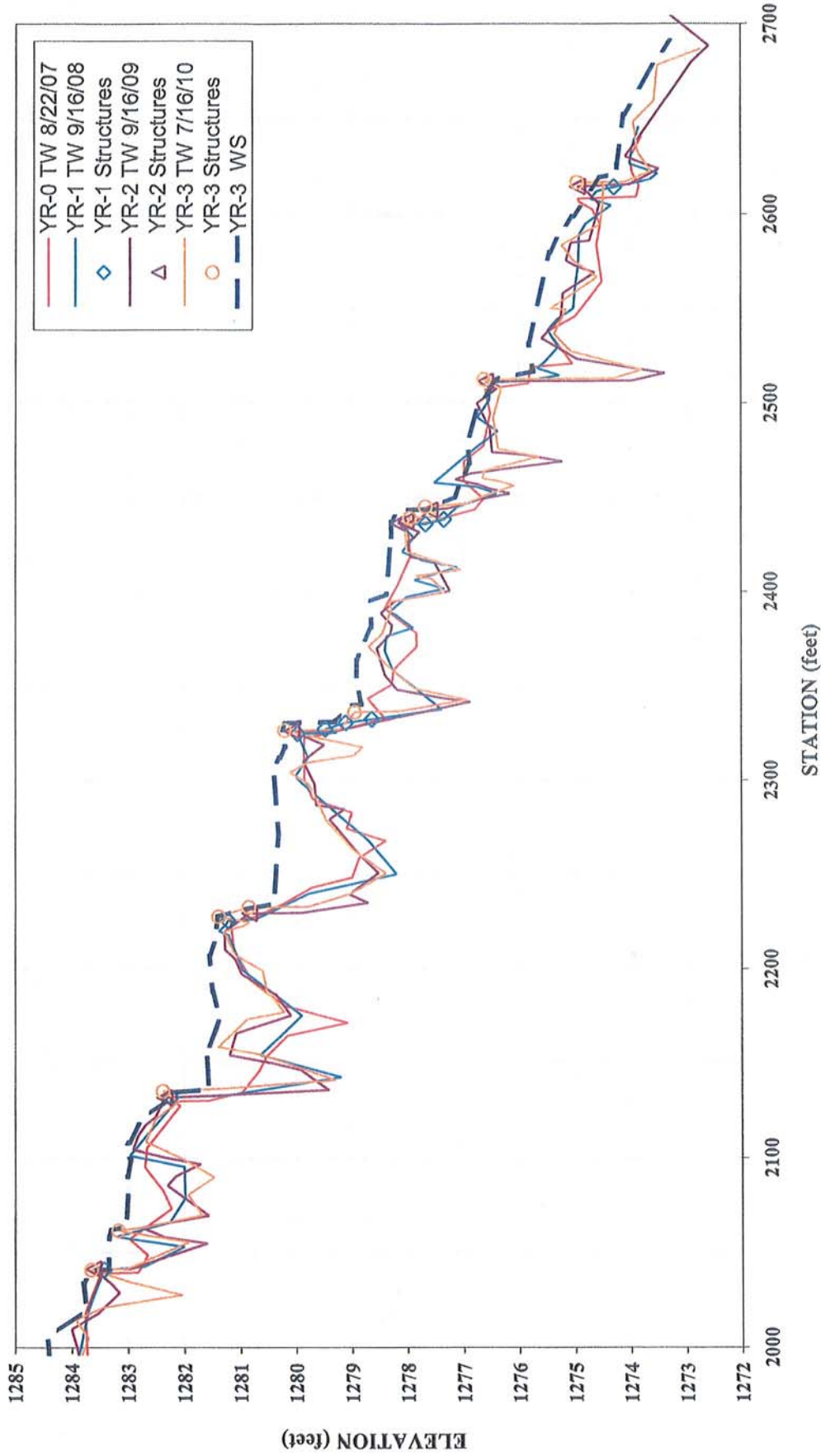
Note: Due to slight differences in thatweg length, longitudinal profile was adjusted horizontally. Elevation data was not changed.

**Naked Creek
Longitudinal Profile
2010 (Year-3) Monitoring**



Note: Due to slight differences in thalweg length, longitudinal profile was adjusted horizontally. Elevation data was not changed.

**Naked Creek
Longitudinal Profile
2010 (Year-3) Monitoring**



Note: Due to slight differences in thalweg length, longitudinal profile was adjusted horizontally. Elevation data was not changed.

3-YEAR, 2010 SURVEY DATA

PROJECT NAME NAKED CREEK

TASK LONGITUDINAL PROFILE

FEATURE/FACET SLOPE

REACH NAKED CREEK

LENGTH, AND SPACING AND

DATE 7/14/2010 to 9/16/2010

LONGITUDINAL PROFILE DATA

CREW BUCHHOLZ/PARRISH/PICKENS

Overall water surface slope =	1.4%	DESIGN	MIN.	MAX.
		Riffle	1.95%	2.50%
WS sta. start =	37.22 ft	Run	---	---
WS sta. end =	2709.04 ft	p-p spacing	80	144
ELEV. Start =	1309.73 ft msl			
ELEV. End =	1273.27 ft msl			

Results

	n =	MIN.	MEDIAN.	AVG.	MAX.
Riffle slopes measured =	42	0.1%	1.7%	3.9%	31.8%
Run slopes measured =	25	1.0%	9.2%	10.0%	27.6%
Pools measured =	45	14	42	54	161

All data reported in units of feet unless otherwise specified.

Feature	Station	Length	Slope		
RIFFLE	58	14	1.07%	n =	42
RIFFLE	96	18	0.17%	MIN =	0.10%
RIFFLE	145	9	4.24%	MEDIAN =	1.73%
RIFFLE	164	13	0.97%	AVG. =	3.86%
RIFFLE	255	39	2.06%	MAX =	31.82%
RIFFLE	324	16	1.08%		
RIFFLE	383	19	31.82%		
RIFFLE	455	12	4.69%		
RIFFLE	475	4	8.21%		
RIFFLE	502	12	0.56%		
RIFFLE	522	15	2.70%		
RIFFLE	550	12	2.34%		
RIFFLE	681	8	1.83%		
RIFFLE	708	6	0.32%		
RIFFLE	736	21	1.61%		
RIFFLE	838	12	29.89%		
RIFFLE	863	3	7.07%		
RIFFLE	888	15	2.46%		
RIFFLE	951	19	0.10%		
RIFFLE	1005	14	17.70%		
RIFFLE	1066	38	0.57%		
RIFFLE	1157	60	1.05%		

3-YEAR, 2010 SURVEY DATA

PROJECT NAME NAKED CREEK

RIFFLE	1267	24	2.01%
RIFFLE	1317	9	4.31%
RIFFLE	1344	24	0.37%
RIFFLE	1424	72	1.45%
RIFFLE	1533	38	1.62%
RIFFLE	1591	10	0.62%
RIFFLE	1661	10	3.54%
RIFFLE	1696	32	0.16%
RIFFLE	1760	8	2.19%
RIFFLE	1791	33	0.48%
RIFFLE	1876	41	2.00%
RIFFLE	1993	10	2.56%
RIFFLE	2127	27	1.11%
RIFFLE	2177	15	3.52%
RIFFLE	2225	21	1.49%
RIFFLE	2322	5	6.25%
RIFFLE	2393	7	3.64%
RIFFLE	2443	18	0.28%
RIFFLE	2482	4	0.71%
RIFFLE	2671	29	1.50%

Feature	Station	Length	Slope		
RUN	153	6	1.00%	n =	25
RUN	177	17	2.58%	MIN =	1.0%
RUN	294	8	3.88%	MEDIAN =	9.2%
RUN	339	5	3.57%	AVG. =	10.0%
RUN	467	2	15.59%	MAX =	27.6%

RUN	479	6	27.56%
RUN	537	4	3.55%
RUN	689	13	16.26%
RUN	715	5	20.48%
RUN	757	33	4.35%
RUN	866	6	10.85%
RUN	904	15	4.26%
RUN	970	19	3.27%
RUN	1019	8	16.58%
RUN	1104	23	4.77%
RUN	1368	15	9.44%
RUN	1496	19	6.59%
RUN	1728	27	4.72%
RUN	1768	10	11.62%
RUN	1917	26	5.17%
RUN	2039	7	21.19%
RUN	2191	4	17.51%
RUN	2328	8	12.28%
RUN	2486	7	13.52%
RUN	2700	9	9.15%

Feature	Station	Length	p-p spacing	n =	
POOL	122	9		45	
POOL	159	8	37	MIN =	14 (p-p spacing)
POOL	194	24	35	MEDIAN =	42
POOL	212	11	17	AVG. =	54
POOL	302	11	90	MAX =	161
POOL	316	7	15		

3-YEAR, 2010 SURVEY DATA

PROJECT NAME NAKED CREEK

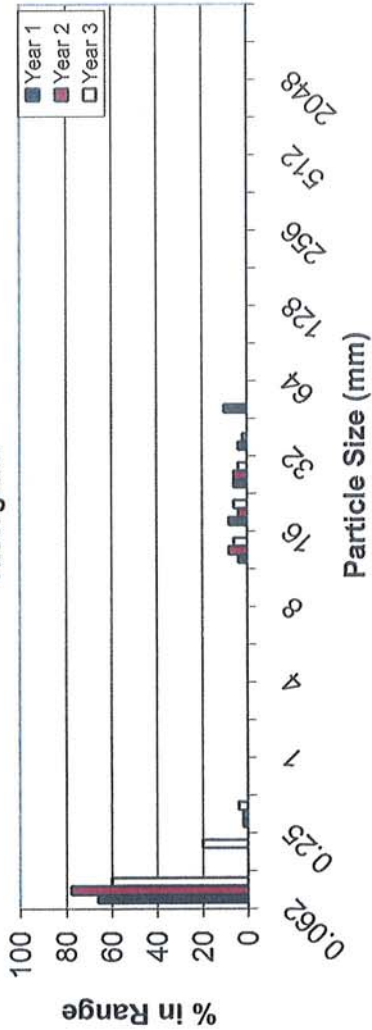
POOL	345	9	28
POOL	404	5	60
POOL	432	14	27
POOL	469	5	38
POOL	486	20	16
POOL	518	6	22
POOL	541	7	23
POOL	702	10	161
POOL	720	11	18
POOL	791	40	71
POOL	856	9	65
POOL	872	20	17
POOL	919	18	47
POOL	944	9	25
POOL	990	30	46
POOL	1027	18	37
POOL	1047	25	31
POOL	1127	21	80
POOL	1227	30	100
POOL	1303	13	76
POOL	1383	15	81
POOL	1515	19	132
POOL	1579	15	64
POOL	1678	14	99
POOL	1754	16	76
POOL	1778	15	23
POOL	1863	11	86
POOL	1943	31	79
POOL	1971	27	29
POOL	2046	14	74
POOL	2074	17	28
POOL	2088	41	14
POOL	2159	18	72
POOL	2195	15	36
POOL	2258	65	63
POOL	2336	15	78
POOL	2365	12	29
POOL	2478	12	113
POOL	2494	11	15

EEP PROJECT ID: 261
 CROSS-SECTION: 2
 FEATURE: RIFFLE

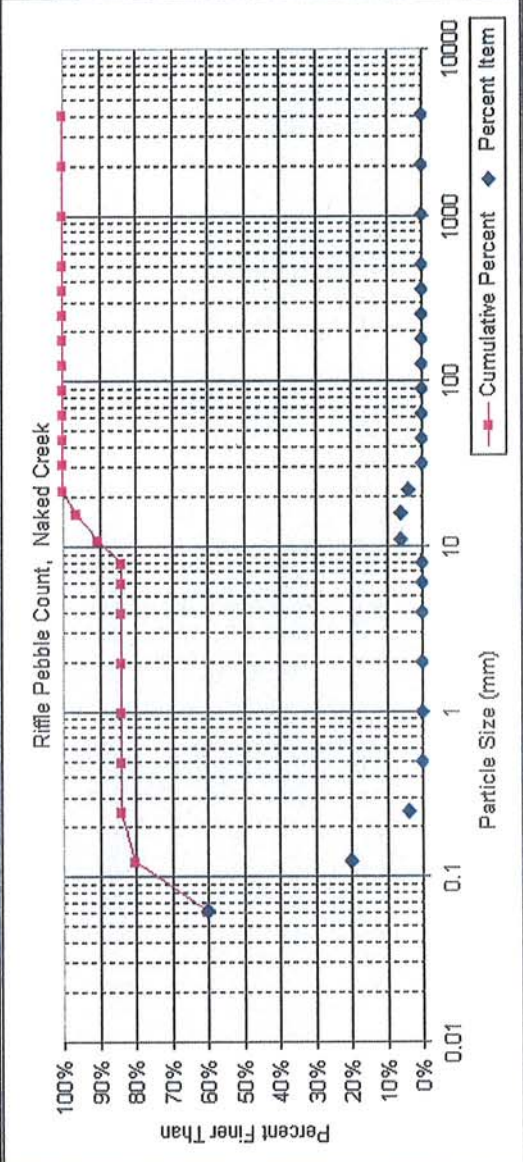


PROJECT NAKED CREEK
 TASK PEBBLE COUNT
 REACH NAKED CREEK
 DATE 7/14/2010 to 7/16/2010
 CREW BUCHHOLZ/PARRISH/PICKENS

Histogram



Material	Size Range (mm)	Count
silt/clay	0	60
very fine sand	0.062	20
fine sand	0.13	4
medium sand	0.25	0
coarse sand	0.5	0
very coarse sand	1	2
very fine gravel	2	4
fine gravel	4	6
medium gravel	8	11
coarse gravel	16	6
very coarse gravel	32	4
small cobble	64	0
medium cobble	128	0
large cobble	180	0
very large cobble	256	0
small boulder	362	0
medium boulder	512	0
large boulder	1024	0
very large boulder	2048	0
bedrock	4096	0
Total Particle Count:		100



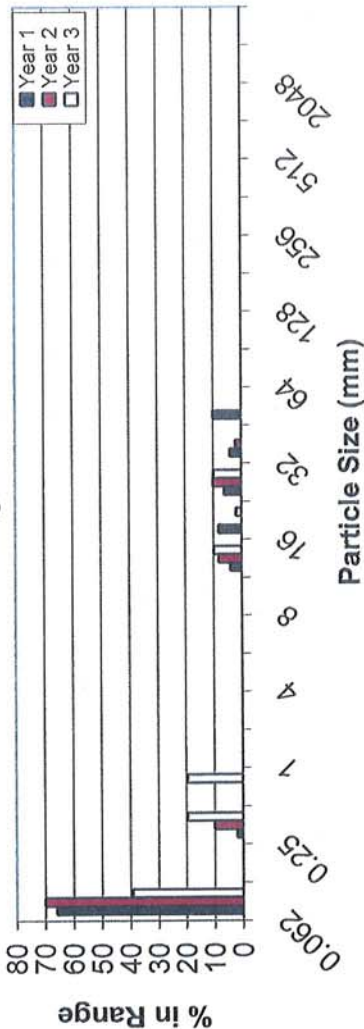
Size	Percent	Substrate Type	Percent
D16	#N/A	silt/clay	60%
D35	#N/A	sand	24%
D64	0	gravel	16%
D95	15	cobble	0%
D16	#N/A	boulder	0%
D35	#N/A	bedrock	0%

EEP PROJECT ID: 261
 CROSS-SECTION: 3
 FEATURE: RIFFLE



PROJECT NAKED CREEK
 TASK PEBBLE COUNT
 REACH NAKED CREEK
 DATE 7/14/2010 to 7/16/2010
 CREW BUCHHOLZ/PARRISH/PICKENS

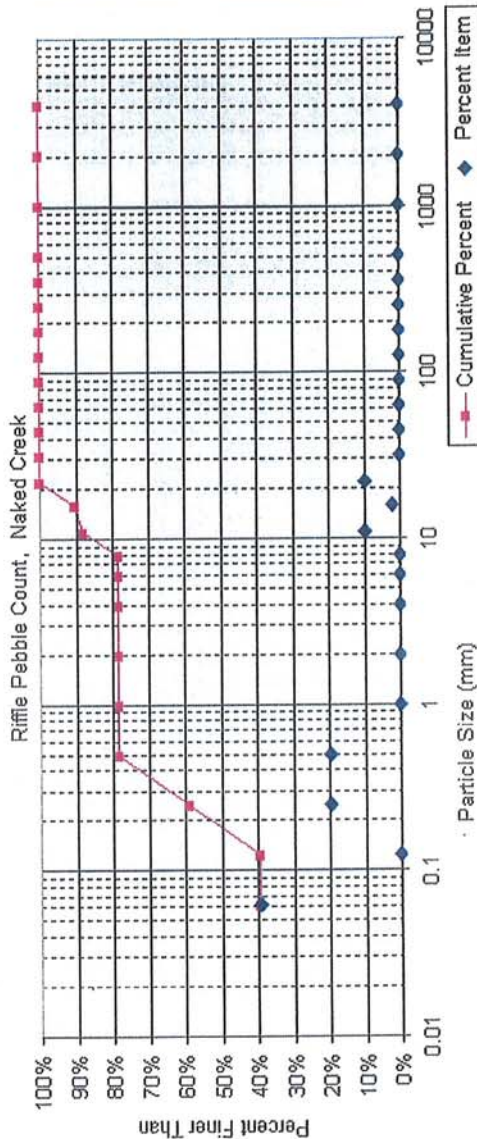
Histogram



Naked Creek

Material	Size Range (mm)	Count
silt/clay	0	39
very fine sand	0.062	0
fine sand	0.13	0
medium sand	0.25	20
coarse sand	0.5	20
very coarse sand	1	0
very fine gravel	2	0
fine gravel	4	0
fine gravel	6	0
fine gravel	8	0
medium gravel	11	10
medium gravel	16	2
coarse gravel	22	10
coarse gravel	32	0
very coarse gravel	45	0
very coarse gravel	64	0
small cobble	90	0
medium cobble	128	0
large cobble	180	0
very large cobble	256	0
small boulder	362	0
small boulder	512	0
medium boulder	1024	0
large boulder	2048	0
very large boulder	4096	0
bedrock		
Total Particle Count:		100

Note:



Size percent less than (mm)

Size	Percent
D16	#N/A
D35	#N/A
D50	0.2
D64	10
D95	19

Percent by substrate type

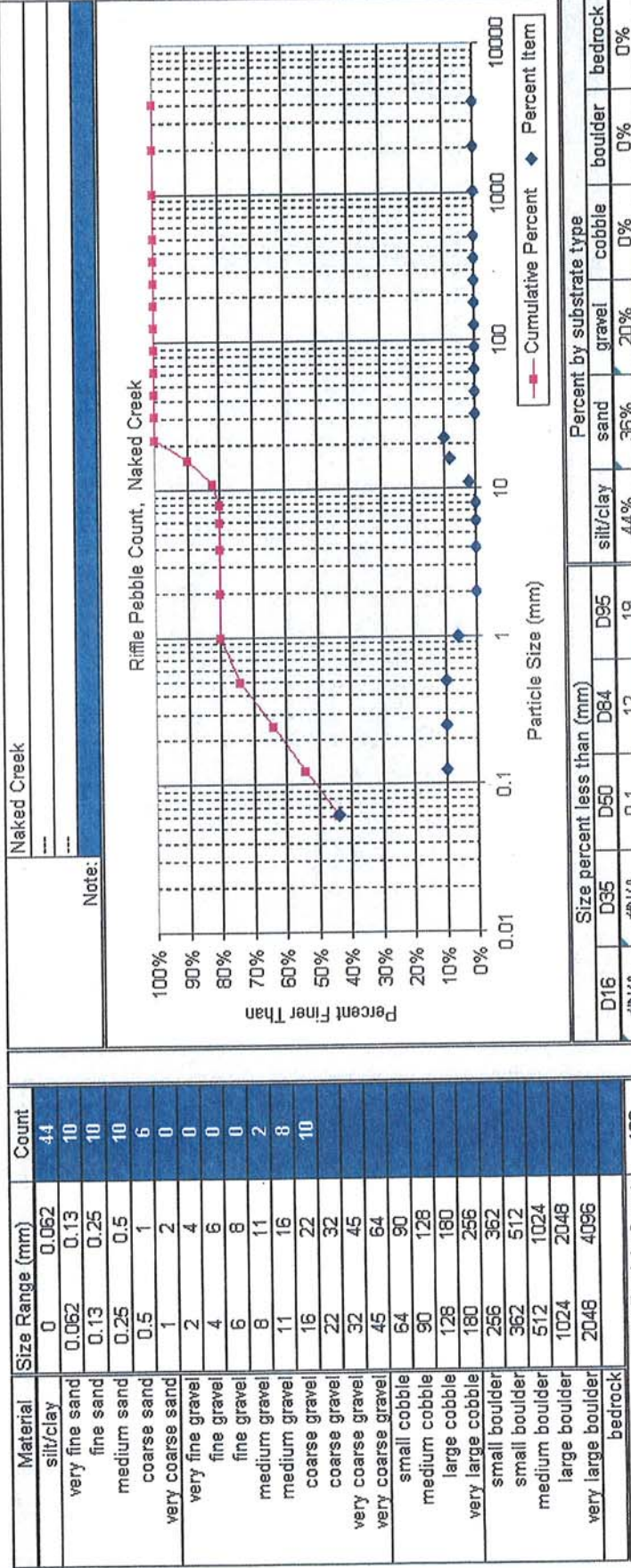
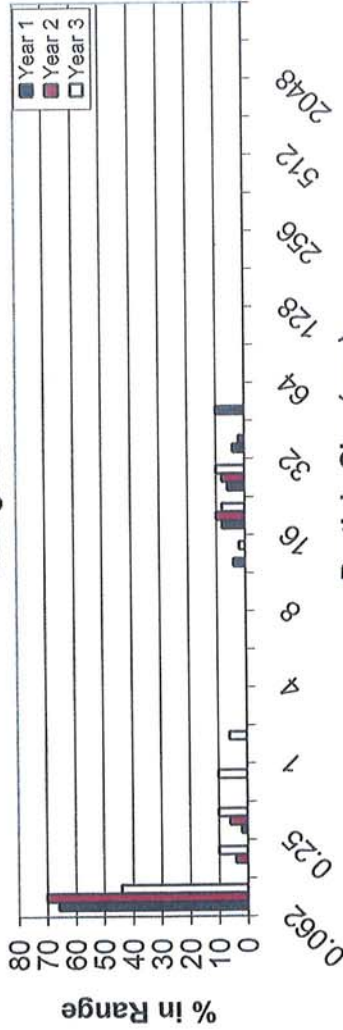
Substrate Type	Percent
silt/clay	39%
sand	39%
gravel	22%
cobble	0%
boulder	0%
bedrock	0%

EEP PROJECT ID: 261
 CROSS-SECTION: 4
 FEATURE: RIFFLE



PROJECT NAKED CREEK
 TASK PEBBLE COUNT
 REACH NAKED CREEK
 DATE 7/14/2010 to 7/16/2010
 CREW BUCHHOLZ/PARRISH/PICKENS

Histogram



APPENDIX E

Wetland Assessment
(omitted, not applicable)