Purlear Creek - Phase II
Stream Restoration
Annual Monitoring Report

Monitoring Year: 2006
Measurement Year: 1
As-built Date: 2005
NCEEP Project Number: 010559701

Delivered to: NCDENR-Ecosystem Enhancement Program
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Project Designed By: Kimley-Horn and Associated

Submitted: December, 2006

Ecosystem Enhancement PROGRAM

NCDENR

PURLEAR CREEK - PHASE 2 STREAM RESTORATION
2006 MONITORING REPORT

CONDUCTED FOR THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

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TABLES

I. Executive Summary/Project Abstract

The channel has remained stable since construction. Study reaches show no significant bed profile, channel pattern or cross sectional changes. The majority of channel banks are well-covered with vegetation. Planted trees and shrubs are doing well throughout the buffer.

Two areas concern exist on Reach 4. The first is erosion along the outside meander at station 5+75. This area should be monitored to see if further degradation occurs. The second is concentrated flow piping through the buffer at station 9+80. Excess nutrients are bypassing the buffer in this location. The area outside of the buffer should be fenced and the swale cutting through the buffer should be turned into a level spreader to repair this location. Reach 1 has no areas of instability although the upper 300 feet is silting in fairly heavily. The channel will likely adjust to this sediment load over the next few years as vegetation and the channel matures.

Vegetation is performing excellent on both reaches. The wetlands appear to be exceeding minimal conditions for hydrology but both groundwater wells have failed to function. New wells should be installed this winter.

II. Project Background

Project background information can be obtained from the as-built monitoring report prepared by Kimley-Horn and Associates dated 2006.

Table I lists project structure and objectives while Table II lists project activity and reporting history. The project contact table is listed in Table III and Table IV lists the background information for the project. Figure 1 shows a map with detailed directions to the project site. An aerial photo of the project is contained in Figure 2 in the form of an aerial photograph.

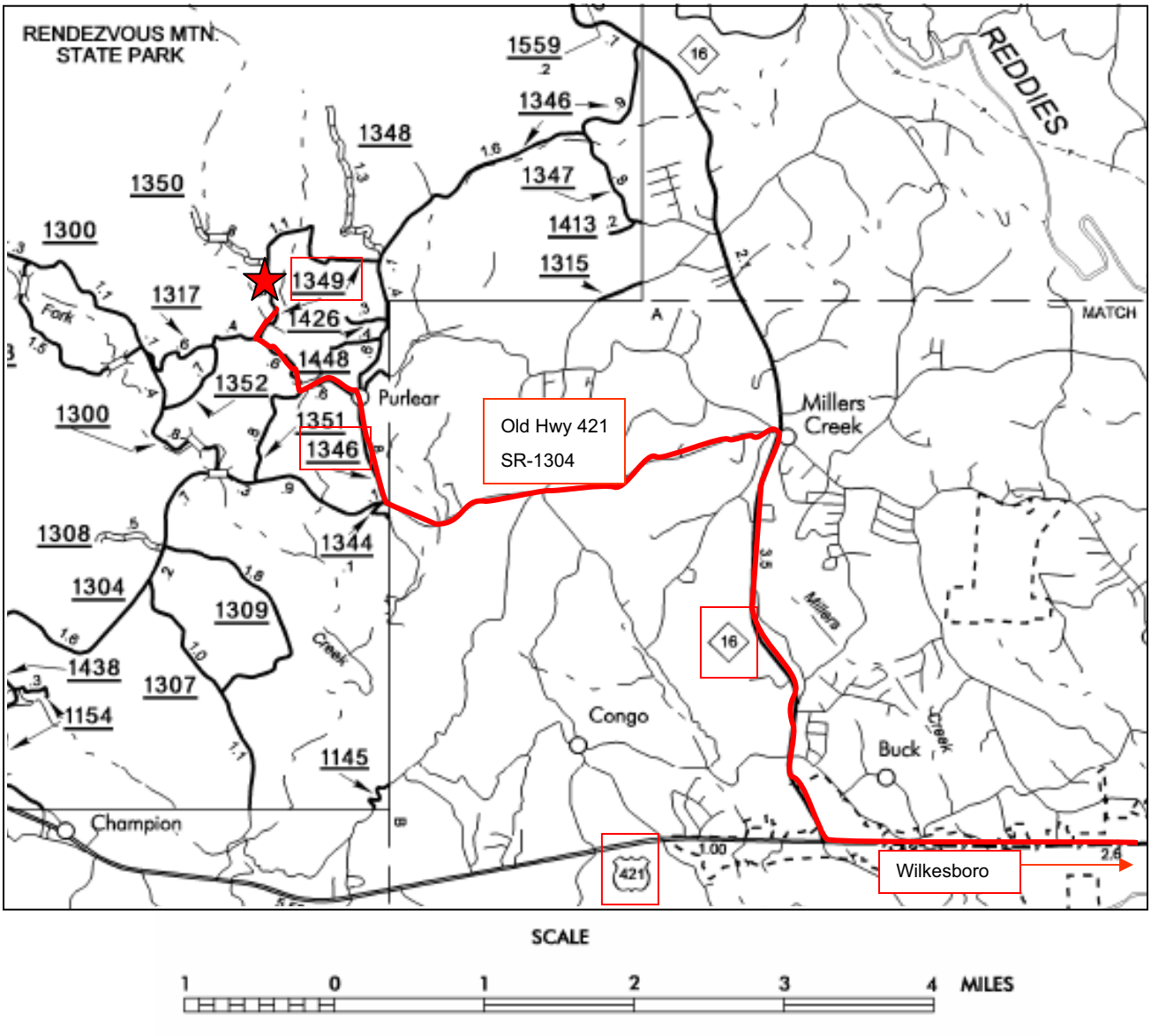
Table I. Project Mitigation Structure and Objectives Table Purlear Creek Phase II / Project ID 010559701					
Project Segment or Reach ID	**Mitigation Type**	**Approach**	**Linear Footage (lf) or Acreage (ac)**	**Stationing**	**Comment**
Reach 1	Restoration	Priority II	1,140 lf	00 + 00 - 11 + 40	--
Reach 4	Restoration	Priority I	1,480 lf	00 + 00 - 14 + 80	--
Tract W1	Restoration	Rehabilitation	0.21 ac.	307 + 50 - 310 + 50	Improvement of vegetation and hydrology of seep wetland
Tract W2	Restoration	Re-establishment	0.84 ac.	301 + 60 - 313 + 90	Restoration of riverine wetland located along left side of Reach 4

Table II. Project Activity and Reporting History Purlear Creek Phase II / Project ID 010559701				
Activity or Report	**Scheduled Completion**	**Data Collection Complete**	**Actual Completion or Delivery**	**Comments**
Restoration Plan			April 2004	
Final Design – 90%	March 2004	--	May 2004	
Construction	Spring 2005	--	Spring 2006	Construction delay due to delay in obtaining easement and multiple bids
Temporary S&E mix applied to entire project area	--	--	--	
Permanent seed mix applied	--	--	--	
Containerized and B&B plantings for reach/segments 1&2	--	--	January 2006	
Mitigation Plan / As-built (Year 0 Monitoring – baseline)	December 2005	--	May 2006	Delay in planting
Year 1 monitoring	December 2006	October 2006	December 2006	
Year 2 Monitoring	--	--	--	
Year 3 Monitoring	--	--	--	
Year 4 Monitoring	--	--	--	
Year 5 Monitoring	--	--	--	
Year 5+ Monitoring	--	--	--	

Table III. Project Contact Table Purlear Creek Phase II / Project ID 010559701		
Designer	P.O. Box 33068	
Kimley-Horn and Associates	Raleigh, NC 27636-3068	
Primary Designer POC	Will Wilhelm, P.E.	(704) 319-7684
Construction Contractor	220 Stoneridge Drive, Suite 405	
L-J, INC	Columbia, SC 29210	
Primary Contractor POC	Richard Goodwin	(803) 929-1181
Planting Contractor	P.O. Box 655	
HARP	Newell, NC 28126	
Planting contractor POC	Jim Matthews, Ph.D.	(704) 841-2841
Seeding Contractor		
UNKNOWN		
Planting contractor POC	UNKNOWN	
Seed Mix Sources	UNKNOWN	
Nursery Stock Suppliers	UNKNOWN	
Monitoring Performers		
North Carolina State University	Campus Box 7625 Raleigh, NC 27606	
Stream Monitoring POC	Jan Patterson	919-515-6771
Vegetation Monitoring POC	Lara Rozzell	919-515-8243
Wetland Monitoring POC	Jan Patterson	

Table IV. Project Background Table Purlear Creek Phase II / Project ID 010559701		
Project County	Wilkes	
Drainage Area	Reach 1	3.0 mi^2
	Reach 4	0.4 mi^2
Drainage impervious cover estimate (%)	Reach 1	< 5%
	Reach 4	< 5%
Stream Order	Reach 1	3
	Reach 4	1
Physiographic Region	Piedmont	
Ecoregion	Northern Inner Piedmont	
Rosgen Classification of As-built	Reach 1	C4/1
	Reach 4	C4
Cowardin Classification	PEM01E	
Dominant soil types	Chewacla loam (CkA); Pacolet Sandy clay loam (PcC2); Pacolet sandy loam (PaD); Wehadkee loam (WhA)	
Reference site ID	Upstream 1; Upper Big Warrior Creek; Basin Creek	
USGS HUC for Project and Reference	03040101 (All project and reference reaches)	
NCDWQ Sub-basin for Project and Reference	03-07-01 (All project and reference reaches)	
NCDWQ classification for Project and Reference	Project Reaches & Upstream 1 Reference	12-31-1-8-(2)
	Upper Warrior Creek	12-29-1 (2)
	Basin Creek	12-46-2-2
Any portion of any project segment 303d listed?	No	
Any portion of any project segment upstream of a 303d listed segment?	N/A	
Reasons for 303d listing or stressor	N/A	
% of project easement fenced	100%	

Figure 1. Project Location

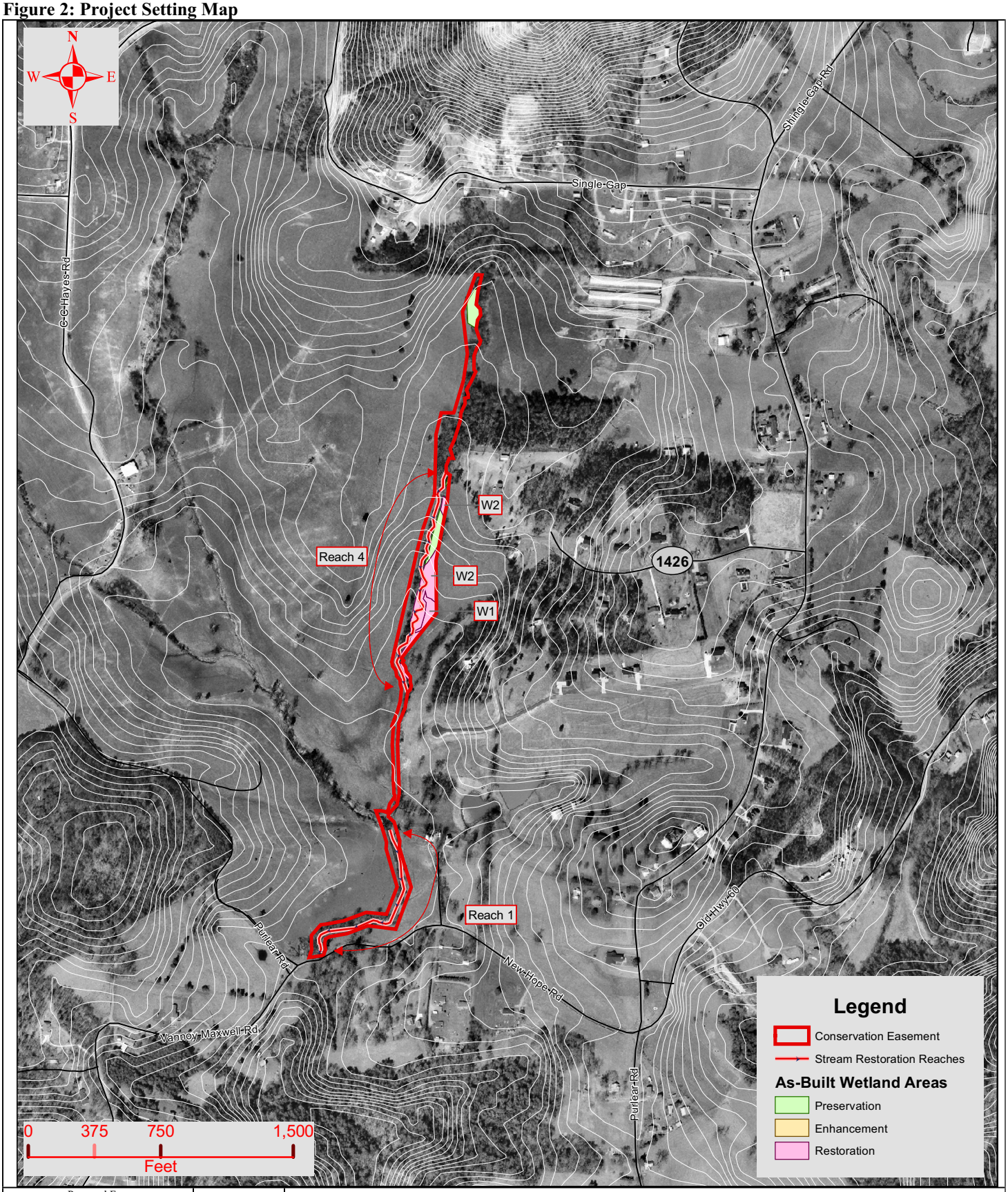


Directions from Hwy. 421 in Wilkesboro:

From Wilkesboro on Hwy. 421, turn right onto NC-16. Follow NC-16 for 3.5 miles to the Miller's Creek intersection. Turn left onto Old Hwy. 421 (SR-1304) and follow for 2.6 miles. Turn right onto Purlear Road (SR-1346) and follow for 0.8 miles. You will come to a stop sign at a church, turn left to stay on Purlear Road (also called New Hope Road). Follow Purlear Road for 0.6 miles until the intersection with Vannoy Maxwell Road. Project begins at this intersection and continues through the intersection with CC Hayes Road (SR- 1349).

Contact the EEP Project Manager for access and landowner notification instructions. Access is not permitted to this site without prior approval.

Figure 2: Project Setting Map



Prepared For:	Project	Purlear Creek Phase II Stream and Wetland Restoration – Year 0 Monitoring 2006 Wilkes County, North Carolina	
Ecosystem Enhancement Program		**Date** 6/5/06	**Project Number** 010559701

REACH 4
WETLAND REACH

NORTH

NOTE: PEBBLE COUNT ZONE

LEGEND
- 2006 THALWEG
- 2006 WATER EDGE
- 2006 BANKFULL
- AS-BUILT THALWEG
- FENCE LINE
- CROSS SECTION
- PHOTO POINT P#
- VEG PLOT

CROSS SECTION #1
REACH 4
RIFFLE

CROSS SECTION #2
REACH 4
POOL

CROSS SECTION #3
REACH 4
RIFFLE

CROSS SECTION #4
REACH 4
POOL

CROSS SECTION #5
REACH 4
RIFFLE

CROSS SECTION #6
REACH 4
POOL

P11 P12 P13 P14 P15 P16 P17 P18 P19 P20 P21 P22 P23 P24 P25 P26 P27 P28

RDS-W1

RDS-W2

BOX CULVERT

FLOW DIRECTION

FLOW MEASUREMENT & SAMPLING POINT - J-11

Veg Plot #1
Veg Plot #2
Veg Plot #3
Veg Plot #4
Veg Plot #5
Veg Plot #6

00+0 1+00 2+00 3+00 4+00 5+00 6+00 7+00 00+8 9+00 10+00 00+4 00+2 13+00 14+00 14+79.60

SCALE 1" = 50'

25 0 25 50

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NO	DESCRIPTION	DRC	JMP	DRN	CHK	DATE
1	AS-BUILT PLAN					12/01/06

REVISIONS

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BIOLOGICAL & AGRICULTURAL ENGINEERING
Weaver Labs Campus Box 7625
North Carolina State University
Raleigh, NC 27695

PURLEAR CREEK - PHASE 2
REACH 4 - WETLAND AREA
WILKES COUNTY, N.C.

MONITORING PLAN SHEET
FIGURE 3a

DATE 03/01/2006
PROJECT NO. 294
FILENAME PULEAR ASBUILT 05.DWG
SHEET NO. MONITORING 1 of 3

REACH 1

MAIN STEM REACH

NORTH

FLOW MEASUREMENT & SAMPLING POINT – J–12

CROSS SECTION #7 REACH 1 RIFFLE

P2

P4

P6

P1

P3

P5

0+00

1+00

2+00

3+00

4+00

5+00

6+00

7+00

8+00

9+00

Veg Plot #7

Veg Plot #8

FLOW DIRECTION

CROSS SECTION #8 REACH 1 RIFFLE

FLOW MEASUREMENT & SAMPLING POINT – J–13

NOTE: PEBBLE COUNT ZONE

CROSS SECTION #9 REACH 1 POOL

FLOW MEAS. & SAMP. PT. – J–14

CROSS SECTION #10 REACH 1 POOL

P8

P7

BRIDGE

P10

P9

10+00

11+00

11+40.52

FLOW DIRECTION

FLOW M
SAMP. P
CROS
REAC
POOL

LEGEND

- 2006 THALWEG
- 2006 WATER EDGE
- 2006 BANKFULL
- AS–BUILT THALWEG
- FENCE LINE
- CROSS SECTION
- PHOTO POINT (P#)
- VEG PLOT

SCALE 1" = 50'

25 0 25 50

NO	AS-BUILT PLAN	REVISIONS	DRN	CHK	DATE
1			DRC	JMP	12/01/06

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PURLEAR CREEK – PHASE 2
REACH 1 – MAIN STEM REACH
WILKES COUNTY, N.C.

MONITORING PLAN SHEET
FIGURE 3b

DATE	03/01/2006
PROJECT NO.	294
FILENAME	PULEAR ASBUILT 05.DWG
SHEET NO.	MONITORING 1 of 3

III. Project Condition and Monitoring Results

Results of the 2006 vegetation monitoring are shown below. Monitoring was conducted in September of 2006.

A. Vegetation Assessment

Eight vegetation monitoring plots in the riparian buffer of the Purlear Phase II project were surveyed. All the plots had been previously established and sampled after construction in early 2006. Plot numbering is consistent with numbering from the Vegetation Baseline Data post-construction monitoring report.

Initial establishment of herbaceous vegetation is progressing well on both reaches. The upstream reach in particular is well vegetated with dense wetland vegetation.

Planted woody stems within the vegetation plots suffered considerable mortality in the first few months of establishment, between collection of the Vegetation Baseline Data and our fall monitoring. Several dead stems were found within each of the vegetation plots, and overall mortality within the plots is roughly estimated at 39%. Tall and dense wetland vegetation in the upstream plots may also have hidden some stems, and they could reappear as they grow taller in later years.

The following tables summarize vegetation and soils results for 2006 monitoring. Soil data from the soil survey are summarized in Table VI. Raw vegetation data can be found in Appendix A. No vegetative problem areas were observed. Problem areas are listed in Table VII – there were only three small problem areas throughout this long project. Vegetation plot data are summarized in Table VIII below. Photos of each vegetation plot can be found in the vegetation photo log.

Table V. Preliminary Soil Data
Purlear Creek Phase II / Project ID 010559701

Series	Max Depth (in.)	% Clay on Surface	K	T	OM %
Chewacla loam (CkA)	60	10-35	0.28	5	1.0-4.0
Pacolet sandy clay loam (PcC2)	60	20-35	0.24	2	0.5-1.0
Pacolet sandy loam (PaD)	60	15-30	0.2	5	0.5-2.0
Wehadkee loam (WhA)	72	5-27	0.24	5	2.0-5.0

Table VI. Vegetative Problem Areas
Purlear Creek Phase II / Project ID 010559701

Feature/Issue	Station # / Range	Probable Cause	Photo #
None Detected	--	--	--
	--	--	--
	--	--	--
	--	--	--

Table VII: Stem counts for each species arranged by plot.
Purlear Creek Phase II / Project ID 010559701

Species	# plots	1	2	3	4	5	6	7	8	VBD Totals	2006 Totals	Survival %
Shrubs												
Asimina triloba	2		1		5					18	6	33%
Cephalanthus occidentalis	2	1					1			5	2	40%
Cornus	1					7				40	*7	*88%
Cornus amomum	3	1	10					17		*	*28	*
Diospyros virginiana	4	4	1		2		5			13	12	92%
Cercis canadensis	3		1	1				1		5	3	60%
Morus rubra	2		4	4						7	8	
Salix nigra	1						1				1	
Trees												
Fraxinus pennsylvanica	1			1							1	
Juglans nigra	1							1		3	1	33%
Platanus occidentalis	3		5	3	5					17	13	76%
Quercus	5	6				3	1	3	3	61	*16	*64%
Quercus michauxii	4	3	3	1		5				*	*12	*
Quercus phellos	5		1		1	2	5	2		*	*11	*
Unknown	6	2	2	1	5	20			1	48	31	65%
Totals	**8**	**16**	**27**	**11**	**13**	**30**	**12**	**24**	**4**	**154**	**70**	**61%**

* Where species were lumped within a genus in early 2006 and could be separated in later 2006, the survival numbers are calculated with the species lumped into genera for comparability

Note: Tree and shrub classifications taken from 2006 VBD report.

B. Stream Assessment

The stream channel is in a stable condition, with only localized problem areas identified in this survey.

Hydrologic Assessment

Continuous stage recorders were installed at various locations along the channel in the winter of 2005. Table VIII lists the number of events equal to or greater then bankfull. Over the past year, there were 2 events documented that were out of bank. A graph of 2006 monitoring period flow data is included in Appendix B.

Table VIII. Verification of Bankfull Events
Purlear Creek Phase II / Project ID 010559701

Date of Data Collection	Date of Occurrence	Method	Photo #
Monthly	6/28/2006	On-site transducer/data logger	NA
Monthly	7/31/2006	On-site transducer/data logger	NA

Bank Stability Assessment

Table IX lists the results of a BEHI (Bank Hazard Erosion Assessment) conducted during the 2006 monitoring period. In general, the banks scored very low to low. The primary factors leading to those scores were low bank height ratios, full surface protection, excellent root density, and moderate bank angles. Estimated sediment yield was not calculated.

Table IX. BEHI and Sediment Export Estimates
Purlear Creek Phase II / Project ID 010559701

Time Point	Date of Assessment	Segment / Reach	Linear Footage	Extreme		Very High		High		Moderate		Low		Very low	
				ft	%	ft	%	ft	%	ft	%	ft	%	ft	%
Pre-Construction	NA														
Total															
Post-Construction	Sep-06	R1	1140	0	0%	80	7%	20	2%	340	30%	400	35%	300	26%
		R4	1480	0	0%	0	0%	0	0%	320	22%	440	30%	720	49%
Total			2620	0	0%	80	3%	20	1%	660	25%	840	32%	1020	39%

Project Problem Area

Table X lists the project problem areas for 2006. Only 2 problems were identified in 2006 and both are localized.

Table X. Stream Problem Areas Purlear Creek Phase II / Project ID 010559701					
Feature Issue	**Reach**	**Station numbers**	**Description**	**Suspected Cause**	**Photo number**
Bank scour/erosion	1	5+60 to 6+20	Erosion around outside meander	Tight meander and lack of deep rooting vegetation	SP01
	--	--	--	--	--
Piping through Buffer	1	9+75	Nutrient laden water piping through buffer	Wet Seep and heavy cattle usage	SP02
	-			--	--

Stream Visual Assessment

Table XI lists the results of a visual assessment conducted over each study reach. The data used to calculate the percentages listed in this table are found in Table B1(a through f) in Appendix B.

Table XI. Categorical Stream Feature Visual Stability Assessment Purlear Creek Phase II / Project ID 010559701						
Reach 1						
Feature	**Initial**	**MY-01**	**MY-02**	**MY-03**	**MY-04**	**MY-05**
A. Riffles	100%	69%	--	--	--	--
B. Pools	100%	92%	--	--	--	--
C. Thalweg	80%	80%	--	--	--	--
D. Meanders	100%	92%	--	--	--	--
E. Bed General	100%	90%	--	--	--	--
F. Vanes / J Hooks etc.	100%	100%	--	--	--	--
G. Wads and Boulders	100%	100%	--	--	--	--
Reach 4						
Feature	**Initial**	**MY-01**	**MY-02**	**MY-03**	**MY-04**	**MY-05**
A. Riffles	100%	75%	--	--	--	--
B. Pools	100%	97%	--	--	--	--
C. Thalweg	100%	100%	--	--	--	--
D. Meanders	100%	100%	--	--	--	--
E. Bed General	100%	83%	--	--	--	--
F. Vanes / J Hooks etc.	98%	100%	--	--	--	--
G. Wads and Boulders	--	--	--	--	--	--

Channel Morphology

Tables XII a and b list baseline channel morphology and hydraulic conditions for the main stem of Purlear Creek and the Tributary within the project. Channel morphology results from the current years survey and prior years surveys are listed in Tables XIII a and b. Results from each study area are described below. Problem area photos, problem area plan views, and raw and analyzed data can be found in Appendix B.

Area 1 Main Stem Purlear Creek
The channel profile is similar to the as-built survey condition, with bedform features maintaining their locations and depths. Channel cross sections showed no significant changes in cross sectional area. One localized are of bank erosion exists around station 5+75. As vegetation established thei are should stabilize. The typical bed material particle size remained similar for both areas sampled.

A visual assessment of this reach showed a total decrease in number of riffles and pools but those that remain are mostly stable. Meanders are maintaining location and stability throughout the reach. The channel bed is mostly stable with some minor downcutting between stations between stations 2+00 and 4+00. No structures have failed their purpose in this reach.

Area 2 - Upper Middle Tributary
The channel profile is similar to the as-built survey condition, with the majority of bedform features maintaining their locations and depths. Channel cross sections show some adjustment as a result of heavy sediment loads entering the channel from upstream. As the restored channel and vegetation matures, the channel should adjust to this sediment load. Channel thalweg is being maintained in the proper location and banks show no signs of degrading.

The typical bed material particle size decreased as a result of the high fine sediment load entering the system. A coarse substrate exists below the silted material. Channel pattern is similar to as-built conditions. Dense vegetation is establishing along the channel banks. This vegetation is providing an excellent root mass to stabilize the banks. There are no areas of visible meander migrations throughout this reach. No erosion areas were observed along this reach.

A visual assessment of this reach showed a decrease in riffle condition due to sediment overloading this reach. Meanders are maintaining location and stability throughout the reach. No structures have failed their purpose in this reach.

Stream problem areas (described above) are listed in Table X. A categorical stream feature visual stability assessment can be found in Table XI. Baseline morphology and summary morphology data are located in tables XII and XIII, respectively.

Table XII. Baseline Morphology and Hydraulic Summary

Purlear Creek Phase II / Project ID 010559701

Reach 1

Parameter		USGS Gage Data			Regional Curve (3.0 mi^2)			Pre-Existing Condition			Project Reference Stream			Design			As-built		
Dimension	**Units**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**
BF Width	ft	--	--	--	--	--	28.6	--	--	23.9	--	--	--	--	--	24.2	25.7	26.8	26.3
Floodprone Width	ft	--	--	--	--	--	--	--	--	50	--	--	--	--	--	62	--	--	74.0
BF Cross Sectional Area	ft^2	--	--	--	--	--	45.6	--	--	40.3	--	--	--	--	--	43.5	25.8	48.9	37.3
BF Mean Depth	ft	--	--	--	--	--	1.6	--	--	1.7	--	--	--	--	--	1.8	1.0	1.9	1.4
BF Max Depth	ft	--	--	--	--	--	--	--	--	2.8	--	--	--	--	--	2.7	2.0	3.4	2.7
Width/Depth Ratio		--	--	--	--	--	--	--	--	14.2	11.2	20.8	16	--	--	13.5	--	--	15.9
Entrenchment Ratio		--	--	--	--	--	--	--	--	2.1	1.4	9.9	4	--	--	2.6	--	--	3.1
Wetted Perimeter	ft	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hydraulic radius	ft	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.9	1.8	1.4
Pattern																			
Channel Beltwidth	ft	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	28	61	43
Radius of Curvature	ft	--	--	--	--	--	--	--	--	75	--	--	--	48	83	66	33	57	43
Meander Wavelength	ft	--	--	--	--	--	--	--	--	200	--	--	--	--	--	200	126	220	179
Meander Width ratio		--	--	--	--	--	--	--	--	--	1.7	3.4	2.3	--	--	--	1.1	2.3	1.6
Profile																			
Riffle length	ft	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Riffle slope	ft/ft	--	--	--	--	--	--	--	--	0.015	--	--	--	--	--	0.009	0.001	0.01	0.005
Pool length	ft	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	28	76	53
Pool spacing	ft	--	--	--	--	--	--	61	181	121	--	--	--	121	194	194	127	200	145
Substrate																			
d50	mm	--	--	--	--	--	--	--	--	1	--	--	--	--	--	6	5.3	6.7	6.0
d84	mm	--	--	--	--	--	--	--	--	35	--	--	--	--	--	22	21.8	24.9	23.4
Additional Reach Parameters																			
Valley Length	ft		--			--			1000			--			1000			1035	
Channel Length	ft		--			--			1100			--			1100			1139	
Sinuosity			--			--			1.1		1.1	1.4	1.2		1.1			1.1	
Water Surface Slope	ft/ft		--			--			0.005		0.01	0.016	0.013		0.005			0.006	
BF slope	ft/ft		--			--			0.005		0.01	0.016	0.013		0.005			0.006	
Rosgen Classification			--			--			B4c/1			B4c - C4			C4/1			C4/1	
*Habitat Index			--			--			--			--			--			--	
*Macrobenthos			--			--			--			--			--			--	

Reach 4

Parameter		USGS Gage Data			Regional Curve (0.4 mi^2)			Pre-Existing Condition			Project Reference Stream			Design			As-built		
Dimension	**Units**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**
BF Width	ft	--	--	--	--	--	8	--	--	7.4	--	--	--	--	--	8	7.2	9.7	8.5
Floodprone Width	ft	--	--	--	--	--	--	--	--	9.5	--	--	--	--	--	55	--	--	60.1
BF Cross Sectional Area	ft^2	--	--	--	--	--	11.5	--	--	3.5	--	--	--	--	--	4.1	4.1	5.1	4.6
BF Mean Depth	ft	--	--	--	--	--	1.1	--	--	0.5	--	--	--	--	--	0.5	0.5	0.6	0.5
BF Max Depth	ft	--	--	--	--	--	--	--	--	1.4	--	--	--	--	--	1.4	0.9	1.4	1.1
Width/Depth Ratio		--	--	--	--	--	--	--	--	15.5	11.2	20.8	16	--	--	16	--	--	15.4
Entrenchment Ratio		--	--	--	--	--	--	--	--	1.3	1.4	9.9	4	--	--	6.8	--	--	7.1
Wetted Perimeter	ft	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hydraulic radius	ft	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.5	0.5	0.5
Pattern																			
Channel Beltwidth	ft	--	--	--	--	--	--	--	--	40	--	--	80	--	--	--	18.5	55.3	34.7
Radius of Curvature	ft	--	--	--	--	--	--	10	40	25	--	--	24	48	83	66	12.8	38.1	20.6
Meander Wavelength	ft	--	--	--	--	--	--	50	60	55	60	80	70	--	--	200	75.4	124.6	93
Meander Width ratio		--	--	--	--	--	--	--	--	5.4	--	--	10	--	--	--	2.2	6.5	4.1
Profile																			
Riffle length	ft	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Riffle slope	ft/ft	--	--	--	--	--	--	0.007	0.02	0.01	--	--	--	--	--	0.009	0.002	0.01	0.03
Pool length	ft	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.7	24.6	15.8
Pool spacing	ft	--	--	--	--	--	--	--	--	70	--	--	--	40	64	64	26.6	63.8	43.5
Substrate																			
d50	mm	--	--	--	--	--	--	--	--	0.5	--	--	--	--	--	6	0.5	2.0	1.3
d84	mm	--	--	--	--	--	--	--	--	5	--	--	--	--	--	22	9.3	26.2	17.8
Additional Reach Parameters																			
Valley Length	ft		--			--			1284			--			1284			1327	
Channel Length	ft		--			--			1412			--			1541			1460	
Sinuosity			--			--			1.1		1.1	1.4	1.2		1.2			1.1	
Water Surface Slope	ft/ft		--			--			0.0165		0.01	0.016	0.013		0.0183			0.013	
BF slope	ft/ft		--			--			0.0165		0.01	0.016	0.013		0.0183			0.013	
Rosgen Classification			--			--			F4			B4c - C4			C4			C5	
*Habitat Index			--			--			--			--			--			--	
*Macrobenthos			--			--			--			--			--			--	

Table XIIIa. Morphology and Hydraulic Monitoring Summary
Purlear Creek Phase II / Project ID 010559701
Reach 4 (1,480 feet)

Parameter		Cross Section 1					Cross Section 2					Cross Section 3				
		Riffle					Pool					Riffle				
Dimension	**Units**	MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5
BF Width	ft	11.1					9.4					7.8				
Floodprone Width	ft	72					-					72.0				
BF Cross Sectional Area	ft	6.7					4.2					4.8				
BF Mean Depth	ft	0.6					0.4					0.6				
BF Max Depth	ft	1.3					1.0					1.4				
Width/Depth Ratio		18.4					-					12.7				
Entrenchment Ratio		6.5					-					9.2				
Wetted Perimeter	ft	12.3										9.0				
Hydraulic radius	ft	0.5										0.5				
Substrate		Upper	Lower													
d50	mm	silt	silt													
d84	mm	silt	1.03													

Parameter		Cross Section 4					Cross Section 5					Cross Section 6				
		Riffle					Riffle					Pool				
Dimension	**Units**	MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5
BF Width	ft	17.2					9.9					8				
Floodprone Width	ft	-					46					-				
BF Cross Sectional Area	ft	14.4					7.0					7.9				
BF Mean Depth	ft	0.8					0.7					1.0				
BF Max Depth	ft	2.5					1.4					1.7				
Width/Depth Ratio							14.0									
Entrenchment Ratio							4.6									
Wetted Perimeter	ft						11.3									
Hydraulic radius	ft						0.6									
Substrate																
d50	mm															
d84	mm															

Parameter		MY-01 (2006)			MY-02 (2007)			MY-03 (2008)			MY-04 (2009)			MY-05 (2010)		
Pattern		**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**
Channel Beltwidth	ft	17	42	29												
Radius of Curvature	ft	13	112	26												
Meander Wavelength	ft	62	171	88												
Meander Width ratio																
Profile																
Riffle length	ft	5	93	17												
Riffle slope	ft/ft	0.20%	6.14%	2.12%												
Pool length	ft	10	38	21												
Pool spacing	ft	25	73	40												
Additional Parameters																
Valley Length	ft	1277														
Channel Length	ft	1480														
Sinuosity		1.2														
Water Surface Slope	ft/ft	1.60%														
BF slope	ft/ft															
Rosgen Classification		C														

Table XIIIb. Morphology and Hydraulic Monitoring Summary
Purlear Creek Phase II / Project ID 010559701
Reach 1 (1,140 feet)

Parameter		Cross Section 7					Cross Section 8					Cross Section 9					Cross Section 10				
		Riffle					Riffle					Pool					Pool				
Dimension	**Units**	MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5
BF Width	ft	20.4					31.3					28.8					34.5				
Floodprone Width	ft	50					98					-					-				
BF Cross Sectional Area	ft	23.1					54.8					31.5					42.4				
BF Mean Depth	ft	1.1					1.8					1.1					1.2				
BF Max Depth	ft	1.9					3.5					3.2					3.0				
Width/Depth Ratio		14.0					14.0					-					-				
Entrenchment Ratio		2.5					3.1					-					-				
Wetted Perimeter	ft	22.7					34.8					-					-				
Hydraulic radius	ft	1.0					1.6					-					-				
Substrate		Upper	Lower																		
d50	mm	9.65	11.4																		
d84	mm	37.01	32.8																		

Parameter		MY-01 (2006)			MY-02 (2007)			MY-03 (2008)			MY-04 (2009)			MY-05 (2010)		
Pattern		**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**
Channel Beltwidth	ft	36	44	40												
Radius of Curvature	ft	38	88	50												
Meander Wavelength	ft	201	255	228												
Meander Width ratio																
Profile																
Riffle length	ft	9	50	18												
Riffle slope	ft/ft	0.41%	4.56%	1.15%												
Pool length	ft	17	113	74												
Pool spacing	ft	59	134.5	100												
Additional Parameters																
Valley Length	ft	1021														
Channel Length	ft	1140														
Sinuosity		1.1														
Water Surface Slope	ft/ft	0.85%														
BF slope	ft/ft															
Rosgen Classification																

VI. Methodology Section

Monitoring methods used are based on US Army Corps of Engineering and NC Division of Water Quality Guides as referenced below.

References:

USACOE (2003) *Stream Mitigation Guidelines*. USACOE, USEPA, NCWRC, NCDENR-DWQ

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

APPENDIX A

Vegetation Raw Data

1. Vegetation Photo Log
2. Vegetation Plot Locations
3. Vegetation Field Data Sheets

Notes:

- No separate plan view was established for vegetation conditions. See monitoring plan view for this information.
- No vegetation problems occur on this project therefore those sections have been omitted from the appendix.

2006 Purlear II Vegetation Photo Log

Plot 1, 28-Sept-06

Plot 2, 28-Sept-06

Plot 3, 28-Sept-06

Plot 4, 28-Sept-06

Plot 5, 12-Sept-06

Plot 6, 12-Sept-06

Plot 7, 12-Sept-06

Plot 8, 12-Sept-06

Table A1: Plot Locations Purlear Creek Phase II / Project ID 010559701					
Plot	**Latitude/UTM-N**	**Longitude/UTM-E**	**UTM Zone**	**Datum**	**Date Sampled**
1	4006186	473791	17	NAD83/WSG84	9/28/2006
2	4006168	473771	17	NAD83/WSG84	9/28/2006
3	4006121	473765	17	NAD83/WSG84	9/28/2006
4	4006028	473744	17	NAD83/WSG84	9/28/2006
5	4005976	473730	17	NAD83/WSG84	9/12/2006
6	4005918	473740	17	NAD83/WSG84	9/12/2006
7	4005583	473710	17	NAD83/WSG84	9/12/2006
8	4005441	473665	17	NAD83/WSG84	9/12/2006

Purlear II Vegetation Plot Summary Table
January 18, 2007

plot	Latitude/UTM-N	Longitude/UTM-E	UTM Zone	Datum	Date Sampled	Living Stems	Dead Or Missing Stems	# species
Purl2-01-0001	4006186	0473791	17	NAD83/WSG84	9/28/2006	17	1	6
Purl2-01-0002	4006168	0473771	17	NAD83/WSG84	9/28/2006	28	1	9
Purl2-01-0003	4006121	0473765	17	NAD83/WSG84	9/28/2006	11	0	6
Purl2-01-0004	4006028	0473744	17	NAD83/WSG84	9/28/2006	18	0	5
Purl2-01-0005	4005976	0473730	17	NAD83/WSG84	9/21/2006	37	1	5
Purl2-01-0006	4005918	0473740	17	NAD83/WSG84	9/21/2006	13	3	5
Purl2-01-0007	4005583	0473710	17	NAD83/WSG84	9/12/2006	24	3	5
Purl2-01-0008	4005441	0473665	17	NAD83/WSG84	9/12/2006	4	1	2

Purlear II Vegetation Vigor Summary Table
January 18, 2007

Vigor	Count	Percent
	1	0.6
0	6	3.7
1	9	5.6
2	26	16
3	73	45.1
4	44	27.2
Missing	4	2.5

Purlear II Vegetation Vigor by Species Table
January 18, 2007

	Species	4	3	2	1	0	Missing
	Asimina triloba	1	3	2			
	Cephalanthus occidentalis	1			1	1	
	Cornus amomum	4	22	1	1		
	Diospyros virginiana	6	5	1			
	Fraxinus pennsylvanica		1				
	Juglans nigra			1			
	Morus alba	2	5	1			
	Quercus michauxii	4	5	3		1	
	Quercus phellos		6	5			
	Salix nigra		1				
	Cornus	6	1				
	Cercis canadensis		2	1		1	
	Quercus	2	6	6	2	1	2
	Platanus occidentalis	5	5	1	2		1
	Unknown	13	11	4	3	2	1
TOT:	**15**	**44**	**73**	**26**	**9**	**6**	**4**

Purlear II Vegetation Damage Summary Table
January 18, 2007

Damage	Count	Percent Of Stems
(no damage)	49	30.1
Unknown	40	24.5
Deer	32	19.6
Insects	31	19
Diseased	4	2.5
Site Too Wet	3	1.8
Site Too Dry	2	1.2
[Enter other damage]	2	1.2

Purlear II Vegetation Damage by Species Table
January 18, 2007

	Species	All Damage Categories	(no damage)	Other damage	Deer	Diseased	Insects	Site Too Dry	Site Too Wet	Unknown
	Asimina triloba	6	1				5			
	Cephalanthus occidentalis	3	1						1	1
	Cercis canadensis	4			2					2
	Cornus	7	6		1					
	Cornus amomum	28	4		17		5			2
	Diospyros virginiana	12	6			3	1			2
	Fraxinus pennsylvanica	1					1			
	Juglans nigra	1			1					
	Morus alba	8	2		2					4
	Platanus occidentalis	14	6				3	1		4
	Quercus	19	4	1	1		5			8
	Quercus michauxii	13	4		1		5			3
	Quercus phellos	11		1	1	1	1	1	1	5
	Salix nigra	2	1						1	
	Unknown	34	14		6		5			9
TOT:	**15**	**163**	**49**	**2**	**32**	**4**	**31**	**2**	**3**	**40**

Purlear II Vegetation Damage by Plot Table
January 18, 2007

	plot	All Damage Categories	(no damage)	Other damage	Deer	Diseased	Insects	Site Too Dry	Site Too Wet	Unknown
	Purl2-01-0001	18	8		1	2	1			6
	Purl2-01-0002	29	8		10		3	2		6
	Purl2-01-0003	12	4		1		2			5
	Purl2-01-0004	18	2				10			6
	Purl2-01-0005	38	17	2	6	1	5			7
	Purl2-01-0006	16	6			1	2		3	4
	Purl2-01-0007	27	3		12		6			6
	Purl2-01-0008	5	1		2		2			
TOT:	**8**	**163**	**49**	**2**	**32**	**4**	**31**	**2**	**3**	**40**

Purlear II Stem Count by Plot and Species
January 18, 2007

	Species	Total Stems	# plots	avg# stems	plot Purl2-01-0001	plot Purl2-01-0002	plot Purl2-01-0003	plot Purl2-01-0004	plot Purl2-01-0005	plot Purl2-01-0006	plot Purl2-01-0007	plot Purl2-01-0008
	Asimina triloba	6	2	3		1		5				
	Cephalanthus occidentalis	2	2	1	1					1		
	Cercis canadensis	3	3	1		1	1				1	
	Cornus	7	1	7					7			
	Cornus amomum	28	3	9.33	1	10					17	
	Diospyros virginiana	12	4	3	4	1		2		5		
	Fraxinus pennsylvanica	1	1	1			1					
	Juglans nigra	1	1	1							1	
	Morus alba	8	2	4		4	4					
	Platanus occidentalis	13	3	4.33		5	3	5				
	Quercus	16	5	3.2	6				3	1	3	3
	Quercus michauxii	12	4	3	3	3	1		5			
	Quercus phellos	11	5	2.2		1		1	2	5	2	
	Salix nigra	1	1	1						1		
	Unknown	31	6	5.17	2	2	1	5	20			1
TOT:	**15**	**152**	**15**		**17**	**28**	**11**	**18**	**37**	**13**	**24**	**4**

Plot Data: CVS Levels 1 & 2

General Information

Project Label:

Project Name: Purl 2

Team: 1

Plot: 1

☐ Level 1 (planted stems only)
☒ Level 2 (planted and natural stems)

Start Date: SE / 28 / 2006
e.g.: JAN / 15 / 2006

End Date (if different): / /

Party	Role**
Lara	Plot Leader
Mike	
Dave	

**Roles: Co-leader, Assistant, Guide, Land owner, Taxonomist, Other

Soil Drainage*

☐ Excessively drained
☐ Somewhat excessively drained
☒ Well drained
☐ Moderately well drained
☐ Somewhat poorly drained
☒ Poorly drained
☐ Very poorly drained

Water

Percent of Plot Submerged: _____ %

Mean Water Depth: _____ cm

Location

General:

State: County:

Quadrangle:

Place Names: 1)

2) 3)

Land Owner:

GPS Receiver Location (m): x= 0 y= 0

Datum: ☒ NAD83/WGS84 ☐ NAD27

UTM Zone: if UTMs used 17S

Lat: decimal deg. e.g. 35.16623 4006186

(or UTM-N) meters e.g. 3962248

Long: e.g. -125.12413 0473791

(or UTM-E) e.g. 710524

Coordinate Accuracy (m radius): e.g. 30

GPS File Name:

Site Characteristics

Elevation: ± ☐m ☐ft.

Slope (deg): 0

Aspect (deg): na

Compass Type: ☒ magnetic ☐ true

Plot Placement

☐ Representative
☐ Random
☐ Stratified random
☐ Transect component
☐ Systematic (grid)
☐ Capture specific feature

Further details of placement can be mentioned in Plot Rationale.

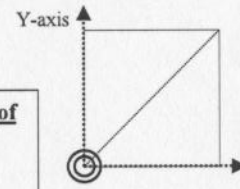
Taxonomic Standard Used for Plant Identification

Authority: _____, **Publ. Date:** _____

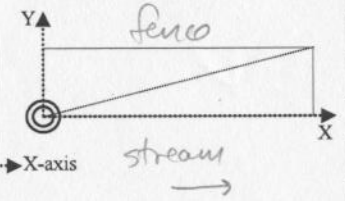
Plot Diagram

Fill in ***ONE*** of the templates below, using the key to draw GPS location, photos and posts. Edit shape if plot doesn't match one of the templates. Draw any landmarks, such as streams, banks, fences, etc.

Standard 10m x 10m (14.142m diagonal):



Non-standard 5m x 20m (20.616m diagonal):



Bearing of Plot X-Axis: 192 °

●Posts (x,y) (meters)
(,)
(,)
(,)
(,)
(,)

Key
- ◎ Plot origin (0,0) point
- ⊗ GPS location point
- ○→ photo taken, with direction
- ● posts

Plot Size (ares, default=1): 1
(An "are" is 100 m²)

○→ Photo Identifier(s): 1507

Notes

If more space is needed, check the box and use back of datasheets.

Layout: (anything unusual about plot layout and shape) ☐ more...

Plot Location: (directions to plot, landscape content) ☐ more...

Plot Rationale: (why location was chosen for the plot) ☐ more...

Other Notes: (invasive species, erosion, disturbances, etc.) ☐ more...

Required Fields in Bold and Underlined. *Definitions and/or values are in the Definitions section of the CVS Field Guide.

Planted Woody Stem Data: CVS Levels 1 & 2

Leader: Lara **Project:** Purl 2 **Team:** _____ **Plot:** 1 **Date:** 9/28/2006 Page 1 of _____

Species Name	Source	Coordinates X (m)	Coordinates Y (m)	ddh (mm)	Height (cm)	DBH (cm)	Vigor	Damage
QUER SPP	B	1	7	452	52		3	Unk
QUER MIC	C	2.4	3.8	9	86		4	
	B	2.7	1.8	5.1	71		1	Unk
QUER SPP	B	~~3.7~~ 4.6	2.6	2	35		2	Unk
CORNAMO	B	6.0	4.8	5	46		2	Deer
QUERMIC	C	8.0	4.6	11	89		4	
QUERMIC	C	8.8	2.8	9	91		4	
DIOSVIR	B	8.0	0.8	5	84		3	Dis
CEPH OCC	B	9.8	0.2	7	76		4	
QUERSPP	B	10.3	5.4	5	84		3	Ins
QUERSPP	B	11.3	1.9	8	75		4	
DIOSVIR	B	11.4	0.1	6	82		4	
QUERSPP	B	12.2	4.1	2	35		2	Unk
	B	13.7	0.1	7	60		1	Unk
	C	15.5	0.6	8			0	Unk
DIOSVIR	B	15.9	4.0	4	77		3	DIS
QUERSPP	C	19.5	5.0	8	78		4	
DIOSVIR	B	16.3	2.6	3	50		4	
Que spp are red								
Dead ::								

Source: **C**ultivated, **T**ransplant, **L**ive stake, **B**all and Burlap, **P**ot, Bare **R**oot

Vigor: **4**=excellent, **3**=good, **2**=weak, **1**=unlikely to survive year, **0**=Dead, **M**issing. ↓

Damage: **Rem**oval, **Cut**, **Mow**ing, **Beav**er, **Deer**, **Rod**ents, **Ins**ects, **Game**, **Livest**ock, Other/Unknown **Anim**al, Human **Tramp**led, Site Too **Wet**, Site Too **Dry**, **Flood**, **Drought**, **Storm**, **Hurr**icane, **Dis**eased, **Vine** Strangulation, **Unkn**own, specify other.

Form PWS12, ver 6.3

Plot Data: CVS Levels 1 & 2

General Information

Project Label:

Project Name: Pur12

Team:

Plot: 2

☐ Level 1 (planted stems only)
☒ Level 2 (planted and natural stems)

Start Date: / /
e.g.: JAN / 15 / 2006

End Date (if different): / /

Party	Role**
Lara	Plot Leader
Mike	
Dave	

**Roles: Co-leader, Assistant, Guide, Land owner, Taxonomist, Other

Soil Drainage*

☐ Excessively drained
☐ Somewhat excessively drained
☒ Well drained
☐ Moderately well drained
☐ Somewhat poorly drained
☐ Poorly drained
☐ Very poorly drained

Water

Percent of Plot Submerged: _____ %

Mean Water Depth: _____ cm

Location

General:

State: NC County:

Quadrangle:

Place Names: 1)

2) 3)

Land Owner:

⊗ **GPS Receiver Location** (m): x= 0 y= 0

Datum: ☒ NAD83/WGS84 ☐ NAD27

UTM Zone: if UTMs used 17

Lat: decimal deg. e.g. 35.16623 4606168 **(or UTM-N)** meters e.g. 3962248

Long: e.g. -125.12413 0473771 **(or UTM-E)** e.g. 710524

Coordinate Accuracy (m radius): e.g. 30 5

GPS File Name:

Site Characteristics

Elevation: 1340 ± ☐m ☐ft.

Slope (deg): 2

Aspect (deg): 120

Compass Type: ☒ magnetic ☐ true

Plot Placement

☐ Representative
☐ Random
☐ Stratified random
☐ Transect component
☐ Systematic (grid)
☐ Capture specific feature

Further details of placement can be mentioned in Plot Rationale.

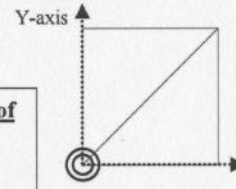
Taxonomic Standard Used for Plant Identification

Authority: _____, **Publ. Date:** _____

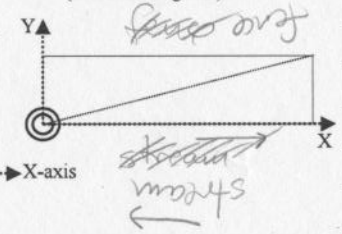
Plot Diagram

Fill in ***ONE*** of the templates below, using the key to draw GPS location, photos and posts. Edit shape if plot doesn't match one of the templates. Draw any landmarks, such as streams, banks, fences, etc.

Standard 10m x 10m (14.142m diagonal):



Non-standard 5m x 20m (20.616m diagonal):



Bearing of Plot X-Axis: 20 °

●Posts (x,y) (meters)
(,)
(,)
(,)
(,)
(,)

Key

- ◎ Plot origin (0,0) point
- ⊗ GPS location point
- ○→ photo taken, with direction
- ● posts

Plot Size (ares, default=1): (An "are" is 100 m²)

○→ Photo Identifier(s): 1506

Notes

If more space is needed, check the box and use back of datasheets.

Layout: (anything unusual about plot layout and shape)

5×20

☐ more...

Plot Location: (directions to plot, landscape content)

☐ more...

Plot Rationale: (why location was chosen for the plot)

☐ more...

Other Notes: (invasive species, erosion, disturbances, etc.)

☐ more...

Required Fields in Bold and Underlined. *Definitions and/or values are in the Definitions section of the CVS Field Guide.

 Form PLT12, ver 6.2

Planted Woody Stem Data: CVS Levels 1 & 2

Leader: Lara Project: Pur12 Team: 1 Plot: 2 Date: 9/28/2006 Page 1 of

Species Name	Source	Coordinates X (m)	Coordinates Y (m)	ddh (mm)	Height (cm)	DBH (cm)	Vigor	Damage
QUERMIC	B	0.8	4.60	6	46		2	Ins
MORUALB	B	1.9	2.6	5	81		4	
CORNAMO	B	3.4	2.0	4	36		3	Deer
QUERMIC	B	3.6	3.8	3	33		3	Ins
DIOSVIR	B	4.4	8.0	7	32		2	Unk
CERCCAN	C	~~10.3~~ 5.1	2.7	10	70		3	Deer
QUERMIC	B	6.4	1.8	3	36		3	Ins
CORNAMO	B	7.0	4.6	6	48		3	Deer
PLATOCC	C	6.8	0.5	8	76		3	Dry
PLATOCC	C	8.2	2.9	7	70		4	
CORNAMO	B	7.8	1.3	6	45		4	
CORNAMO	B	9.3	3.8	3	31		3	Unk
MORUALB	B	9.7	0.7	2	25		2	Unk
CORNAMO	B	10.8	1.5	4	39		2	Deer
PLATOCC	B	11.4	3.0	10	84		4	
QUERPHE	B	9.6	2.6	2	5		2	Dry
PLATOCC	B	12.9	0.8	5	65		4	
CORNAMO	B	14.5	1.3	4	36		3	DEER
CORNAMO	B	15.4	.3		39		3	DEER
Dead								
Unk 2	C	13.6	4.9	7	71		3	Deer
MORUALB	B	13.9	2.5	4	44		3	Deer
MORUALB	B	16.2	0.8	4	73		3	Deer
CORNAMO	B	17.5	1.6	5	43		3	Deer
CORNAMO	B	17.0	4.0	4	52		3	Deer
CORNAMO	B	17.0	0	3	40		1	Unk
ASIMTRI	C	18.4	0.7	5	72		4	
QUERMIC	B	19.0	4.6	5			0	Unk
PLATOCC	B	19.7	1.8	4	68		3	Unk
Unk 2	B	19.9	4.6	3	46		4	

Source: Cultivated, Transplant, Live stake, Ball and Burlap, Pot, Bare Root

Vigor: 4=excellent, 3=good, 2=weak, 1=unlikely to survive year, 0=Dead, Missing.

Damage: Removal, Cut, Mowing, Beaver, Deer, Rodents, Insects, Game, Livestock, Other/Unknown Animal, Human Trampled, Site Too Wet, Site Too Dry, Flood, Drought, Storm, Hurricane, Diseased, Vine Strangulation, Unknown, specify other.

Form PWS12, ver 6.3

Plot Data: CVS Levels 1 & 2

General Information

Project Label:

Project Name: Pur| 2

Team: 1

Plot: 3

☐ Level 1 (planted stems only)
☒ Level 2 (planted and natural stems)

Start Date: SEP / 28 / 06
e.g.: JAN / 15 / 2006

End Date (if different): / /

Party	Role**
Lara	Plot Leader
Mike	
Dave	

**Roles: Co-leader, Assistant, Guide, Land owner, Taxonomist, Other

Soil Drainage*

☐ Excessively drained
☐ Somewhat excessively drained
☒ Well drained
☐ Moderately well drained
☐ Somewhat poorly drained
☐ Poorly drained
☐ Very poorly drained

Water

Percent of Plot Submerged: _____ %

Mean Water Depth: _____ cm

Location

General:

State: NC County:

Quadrangle:

Place Names: 1)

2) 3)

Land Owner:

GPS Receiver Location (m): x= 0 y= 0

Datum: ☒ NAD83/WGS84 ☐ NAD27

UTM Zone: if UTMs used 17

Lat: decimal deg. e.g. 35.16623 4006121 **(or UTM-N)** meters e.g. 3962248

Long: e.g. -125.12413 0473765 **(or UTM-E)** e.g. 710524

Coordinate Accuracy (m radius): e.g. 30 ~~0~~ 5

GPS File Name:

Site Characteristics

Elevation: ± ☐m ☐ft.

Slope (deg): 2

Aspect (deg): 171

Compass Type: ☒ magnetic ☐ true

Plot Placement

☐ Representative
☐ Random
☐ Stratified random
☐ Transect component
☐ Systematic (grid)
☐ Capture specific feature

Further details of placement can be mentioned in Plot Rationale.

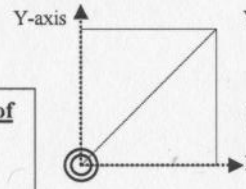
Taxonomic Standard Used for Plant Identification

Authority: _____, **Publ. Date:** _____

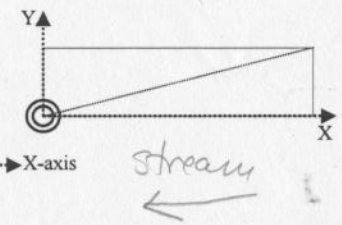
Plot Diagram

Fill in ***ONE*** of the templates below, using the key to draw GPS location, photos and posts. Edit shape if plot doesn't match one of the templates. Draw any landmarks, such as streams, banks, fences, etc.

Standard 10m x 10m (14.142m diagonal):



Non-standard 5m x 20m (20.616m diagonal):



Bearing of Plot X-Axis: 21 °

●Posts (x,y) (meters)
(,)
(,)
(,)
(,)
(,)

Key
- ◎ Plot origin (0,0) point
- ⊗ GPS location point
- ○→ photo taken, with direction
- ● posts

Plot Size (ares, default=1): 1
(An "are" is 100 m²)

○→ Photo Identifier(s): 1505

Notes

If more space is needed, check the box and use back of datasheets.

Layout: (anything unusual about plot layout and shape) ☐ more...

Plot Location: (directions to plot, landscape content) ☐ more...

Plot Rationale: (why location was chosen for the plot) ☐ more...

Other Notes: (invasive species, erosion, disturbances, etc.) ☐ more...

Required Fields in Bold and Underlined. *Definitions and/or values are in the Definitions section of the CVS Field Guide.

Planted Woody Stem Data: CVS Levels 1 & 2

Leader: Lara **Project:** Purl 2 **Team:** **Plot:** 3 **Date:** 9/28/06 Page 1 of

Species Name	Source	Coordinates X (m)	Coordinates Y (m)	ddh (mm)	Height (cm)	DBH (cm)	Vigor	Damage
Moru alb	C	0.6	4.3	7	68		3	Unk
Moru alb	B	1.2	2.5	3	63		3	Unk
Moru alb	B	3.5	3.9	4	77		3	Unk
PLATOCC	B	5.4	2.9	4	30		1	Unk
PLATOCC	B	7.4	1.5	2	32		2	Unk
Moru alb	B	8.9	2.3	5	74		4	
Unk 2	B	11.5	4.4	6	46		3	Ins
FRAX PEN	B	13	0.5	7	80		3	Ins
QUERMIC	B	16.9	1.2	5	73		4	
CERCCAN	C	18.5	1.0	10	62		3	Deer
PLATOCC	C	19.6	2.9	7	76		4	
Nat regen SANI		8.1	2.2	5	69		4	
Dead								

Source: Cultivated, Transplant, Live stake, Ball and Burlap, Pot, Bare Root

Vigor: 4=excellent, 3=good, 2=weak, 1=unlikely to survive year, 0=Dead, Missing. ↓

Damage: Removal, Cut, Mowing, Beaver, Deer, Rodents, Insects, Game, Livestock, Other/Unknown Animal, Human Trampled, Site Too Wet, Site Too Dry, Flood, Drought, Storm, Hurricane, Diseased, Vine Strangulation, Unknown, specify other.

Form PWS12, ver 6.3

Plot Data: CVS Levels 1 & 2

General Information

Project Label:

Project Name: Pur 2

Team: 1

Plot: 4

☐ Level 1 (planted stems only)
☒ Level 2 (planted and natural stems)

Start Date: SEP / 28 / 2006
e.g.: JAN / 15 / 2006

End Date (if different): / /

Party	Role**
Lora	Plot Leader
Mike	
Dave	

**Roles: Co-leader, Assistant, Guide, Land owner, Taxonomist, Other

Soil Drainage*

☐ Excessively drained
☐ Somewhat excessively drained
☐ Well drained
☒ Moderately well drained
☐ Somewhat poorly drained
☐ Poorly drained
☐ Very poorly drained

Water

Percent of Plot Submerged: _____ %

Mean Water Depth: _____ cm

Location

General:

State: NC County:

Quadrangle:

Place Names: 1)

2) 3)

Land Owner:

⊗ **GPS Receiver Location** (m): x= 0 y= 0

Datum: ☒ NAD83/WGS84 ☐ NAD27

UTM Zone: if UTMs used

Lat: decimal deg. e.g. 35.16623 4006028

(or UTM-N) meters e.g. 3962248

Long: e.g. -125.12413 0473744

(or UTM-E) e.g. 710524

Coordinate Accuracy (m radius): e.g. 30 5

GPS File Name:

Site Characteristics

Elevation: 1319 ± ☐m ☐ft

Slope (deg): 2 1

Aspect (deg):

Compass Type: ☒ magnetic ☐ true

Plot Placement

☐ Representative
☐ Random
☐ Stratified random
☐ Transect component
☐ Systematic (grid)
☐ Capture specific feature

Further details of placement can be mentioned in Plot Rationale.

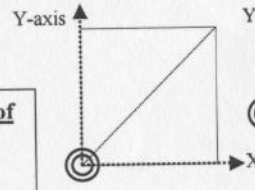
Taxonomic Standard Used for Plant Identification

Authority: _____, **Publ. Date:** _____

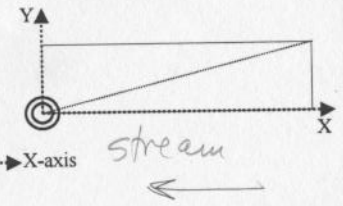
Plot Diagram

Fill in ***ONE*** of the templates below, using the key to draw GPS location, photos and posts. Edit shape if plot doesn't match one of the templates. Draw any landmarks, such as streams, banks, fences, etc.

Standard 10m x 10m (14.142m diagonal):



Non-standard 5m x 20m (20.616m diagonal):



Bearing of Plot X-Axis: 19 °

●Posts (x,y) (meters)
(,)
(,)
(,)
(,)
(,)

Key
- ◎ Plot origin (0,0) point
- ⊗ GPS location point
- ○→ photo taken, with direction
- ● posts

Plot Size (ares, default=1): 1
(An "are" is 100 m²)

○→ Photo Identifier(s): 1503-4

Notes

If more space is needed, check the box and use back of datasheets.

Layout: (anything unusual about plot layout and shape) ☐ more...

Plot Location: (directions to plot, landscape content) ☐ more...

Plot Rationale: (why location was chosen for the plot) ☐ more...

Other Notes: (invasive species, erosion, disturbances, etc.)
tall Juncus & wetland herbs crowd plot
several trees found as loose stems
☐ more...

Required Fields in Bold and Underlined. *Definitions and/or values are in the Definitions section of the CVS Field Guide.

 Form PLT12, ver 6.2

Planted Woody Stem Data: CVS Levels 1 & 2

Leader: Lara **Project:** Pur12 **Team:** 1 **Plot:** 4 **Date:** 09/28/06 Page 1 of

Species Name	Source	Coordinates X (m)	Coordinates Y (m)	ddh (mm)	Height (cm)	DBH (cm)	Vigor	Damage
ASIMTRI	B	1.7	1	6	90		3	Ins
PLATOCC	C	1.7	3	7	94		3	Ins
PLATOCC	B	4.7	2.4	2~~3~~	10~~9~~~~0~~4		1	~~Wet~~ Unk
~~DIVI~~ Unk 2	B	7.6	1	7	62		2	Ins
DIVI	B	5.9	1.8	6	65		3	Ins
ASIMTRI	B	8.2	2.3	5	63		3	Ins
ASIMTRI	B	9.5	2.2	6	63		2	Ins
ASIMTRI	B	10.3	1.2	6	51		3	Ins
PLATOCC	B	11.9	0.9	6	71		3	Ins
PLATOCC	B	12.8	4	7	83		3	Ins
PLATOCC	C	13.1	2.8	8	117		4	
ASIMTRI	B	17.2	1.5	4	60		2	Ins
QUERPHE	B	18.2	2.7	6	39		3	~~3~~ Unk
Unk 2	~~3~~ B	20	0.5	7	60		1	Unk
Unk 1	B	18.2	12.6	5	26		2	Unk
Unk 1	B	16.7	3.0	5	67		4	
DIOSVIR	B	11.3	5.2	4	62		3	Unk
Unk 2	B	9.7	3.6	4	37		2	Unk
Dead ⊠ ⊏								
rest missing								

Source: Cultivated, Transplant, Live stake, Ball and Burlap, Pot, Bare Root

Vigor: 4=excellent, 3=good, 2=weak, 1=unlikely to survive year, 0=Dead, Missing.

Damage: Removal, Cut, Mowing, Beaver, Deer, Rodents, Insects, Game, Livestock, Other/Unknown Animal, Human Trampled, Site Too Wet, Site Too Dry, Flood, Drought, Storm, Hurricane, Diseased, Vine Strangulation, Unknown, specify other.

Form PWS12, ver 6.3

Plot Data: CVS Levels 1 & 2

General Information

Project Label: Purlear 2

Project Name: Purlear 2

Team: 1

Plot: 5

☐ Level 1 (planted stems only)
☐ Level 2 (planted and natural stems)

Start Date: 09 / 24 / 2006
e.g.: JAN / 15 / 2006

End Date (if different): / /

Party	Role**
Lara	Plot Leader
Mike	
Dave	

**Roles: Co-leader, Assistant, Guide, Land owner, Taxonomist, Other

Soil Drainage*

☐ Excessively drained
☐ Somewhat excessively drained
☐ Well drained
☐ Moderately well drained
☒ Somewhat poorly drained
☐ Poorly drained
☐ Very poorly drained

Water

Percent of Plot Submerged: _____ %

Mean Water Depth: _____ cm

Location

General:

State: NC County:

Quadrangle:

Place Names: 1)

2) 3)

Land Owner:

GPS Receiver Location (m):
x= 0 y= 0

Datum: ☒ NAD83/WGS84 ☐ NAD27

UTM Zone: if UTMs used

Lat: (or **UTM-N**)
decimal deg. e.g. 35.16623 — meters e.g. 3962248: 0473730

Long: (or **UTM-E**)
e.g. -125.12413: 4005976 — e.g. 710524

Coordinate Accuracy (m radius):
e.g. 30: 4

GPS File Name:

Site Characteristics

Elevation: 1308 ± ☐m ☐ft.

Slope (deg): 2

Aspect (deg): 113

Compass Type: ☒ magnetic ☐ true

Plot Placement

☐ Representative
☐ Random
☐ Stratified random
☐ Transect component
☐ Systematic (grid)
☐ Capture specific feature

Further details of placement can be mentioned in Plot Rationale.

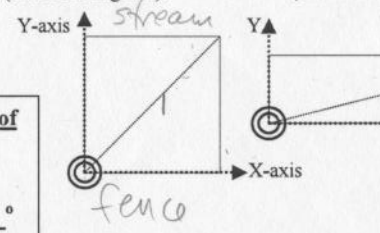
Taxonomic Standard Used for Plant Identification

Authority: _____, **Publ. Date:** _____

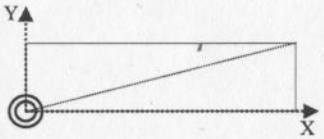
Plot Diagram

Fill in ***ONE*** of the templates below, using the key to draw GPS location, photos and posts. Edit shape if plot doesn't match one of the templates. Draw any landmarks, such as streams, banks, fences, etc.

Standard 10m x 10m (14.142m diagonal):



Non-standard 5m x 20m (20.616m diagonal):



Bearing of Plot X-Axis: 264 °

Posts (x,y) (meters)

(,)	
(,)	
(,)	
(,)	
(,)	

Key

- Plot origin (0,0) point
- GPS location point
- photo taken, with direction
- posts

Plot Size (ares, default=1): 1
(An "are" is 100 m²)

Photo Identifier(s):

Notes

If more space is needed, check the box and use back of datasheets.

Layout: (anything unusual about plot layout and shape) ☐ more...

Plot Location: (directions to plot, landscape content) ☐ more...

Plot Rationale: (why location was chosen for the plot) ☐ more...

Other Notes: (invasive species, erosion, disturbances, etc.) ☐ more...

Required Fields in Bold and Underlined. *Definitions and/or values are in the Definitions section of the CVS Field Guide.

Planted Woody Stem Data: CVS Levels 1 & 2

Leader: Lora Project: Prlr 2 Team: Plot: 5 Date: 09 / 12 / 06 Page 1 of 2

Species Name	Source	Coordinates X (m)	Coordinates Y (m)	ddh (mm)	Height (cm)	DBH (cm)	Vigor	Damage
Unkn	C	1.1	0.8	6	68		4	
Unkn	C	0.6	2.0	4	31		3	Unkn
Unkn	B	0.7	4.4	5	85		4	
CORN SPP	C	0.8	5.7	9	100		4	
CORN SPP	C	0.4	6.8	10	60 85		3	DEER
CORN SPP	C	0.7	8.1	8	65		4	
CORN SPP	C	3.7	7.9	11	90		4	
CORN SPP	B	3.5	6.5	7	73		4	
CORN SPP	B	3.5	5.1	6	97		4	
Unkn	B	2.2	4.1	6	79		3	PEER
QUER MIC	C	3.2	1.7	8	80		3	INS
Unkn	B	2.6	2.9	7	66		3	DEER
Unkn	C	3.9	3.8	6	72		3	DEER
QUER MIC	B	4.3	3.2	8	73		3	DEER
Unkn 2	B	4.2	1.8	6	59		3	INS
Unkn 2	B	4.1	0.5	6	55		3	DEER
QUER MIC	B	5.5	1.1	5	47		2	Unkn
Unkn 1	C	5.8	2.6	7	79		3	Ins
Unkn 2	B	3.9	5.3	7	84		4	
Unkn 1	B	5.9	5.2	7	100		4	
CORN SPP	C	5.3	6.5	10	102		4	
Unkn 1	C	5.8	7.8	8 7	77		4	
Unkn 1	C	5.6	9.4	6	81		4	
Unkn 1	C	6.6	9	7	76 37		4	
Unkn 2	C	6.7	6.5	8	95		4	
ceph occ		6.9	0.9				0	Unkn
QUER MIC	B	7.7	2.4	6	67		3	Ins
QUER MIC	B	9.0	0.4	4	40		2	Unkn
QUER SPP	B	9.5	6.6	7	94		3	Unkn
QUER SPP	B	8.3	5.2	6	85		2	Unkn
QUER SPP (Alba?)	B	7.6	6.3	5	75		1	Other (Juncus)
Unkn 2	C	9.6	8.1	8	97		4	
Unkn 1		8.8	9.2	6	65		3	Unkn

Source: Cultivated, Transplant, Live stake, Ball and Burlap, Pot, Bare Root

Vigor: 4=excellent, 3=good, 2=weak, 1=unlikely to survive year, 0=Dead, Missing.

Damage: Removal, Cut, Mowing, Beaver, Deer, Rodents, Insects, Game, Livestock, Other/Unknown Animal, Human Trampled, Site Too Wet, Site Too Dry, Flood, Drought, Storm, Hurricane, Diseased, Vine Strangulation, Unknown, specify other.

Form PWS12, ver 6.3

Planted Woody Stem Data: CVS Levels 1 & 2

Leader: Lara **Project:** Prkr 2 **Team:** _____ **Plot:** 5 **Date:** 9/12/06 Page 2 of 2

Species Name	Source	Coordinates X (m)	Coordinates Y (m)	ddh (mm)	Height (cm)	DBH (cm)	Vigor	Damage
Vnkn 2	C	10	9.1	7	96		4	
Vnkn 2	C	10	10	9	114		4	
QUERPHE	B	10	1	6	104		3	DIS
Vnkn 1	B	6.8	8	5	71		3	Ins
QUERPHE	B	6.7	4.4	3	96		2	Oth (Juncus)

Source: Cultivated, Transplant, Live stake, Ball and Burlap, Pot, Bare Root

Vigor: 4=excellent, 3=good, 2=weak, 1=unlikely to survive year, 0=Dead, Missing.

Damage: Removal, Cut, Mowing, Beaver, Deer, Rodents, Insects, Game, Livestock, Other/Unknown Animal, Human Trampled, Site Too Wet, Site Too Dry, Flood, Drought, Storm, Hurricane, Diseased, Vine Strangulation, Unknown, specify other.

Form PWS12, ver 6.3

Plot Data: CVS Levels 1 & 2

General Information

Project Label:

Project Name: Purlear

Team: 1

Plot: 6

☐ Level 1 (planted stems only)
☒ Level 2 (planted and natural stems)

Start Date: 09 / 12 / 2006
e.g.: JAN / 15 / 2006

End Date (if different): / /

Party	Role**
Lara	Plot Leader
Dave	
Mike	

**Roles: Co-leader, Assistant, Guide, Land owner, Taxonomist, Other

Soil Drainage*

☐ Excessively drained
☐ Somewhat excessively drained
☐ Well drained
☐ Moderately well drained
☐ Somewhat poorly drained
☒ Poorly drained
☐ Very poorly drained

Water

Percent of Plot Submerged: 5 %

Mean Water Depth: 14 cm

Location

General:

State: NC County:

Quadrangle:

Place Names: 1)

2) 3)

Land Owner:

⊗ **GPS Receiver Location** (m): x= 0 y= 0

Datum: ☒ NAD83/WGS84 ☐ NAD27

UTM Zone: if UTMs used 17S

Lat: decimal deg. e.g. 35.16623 0473740 **(or UTM-N)** meters e.g. 3962248

Long: e.g. -125.12413 400 5918 **(or UTM-E)** e.g. 710524

Coordinate Accuracy (m radius): e.g. 30 5

GPS File Name:

Site Characteristics

Elevation: 1305 ± ☐m ☐ft.

Slope (deg):

Aspect (deg): 14

Compass Type: ☒ magnetic ☐ true

Plot Placement

☐ Representative
☐ Random
☐ Stratified random
☐ Transect component
☐ Systematic (grid)
☐ Capture specific feature

Further details of placement can be mentioned in Plot Rationale.

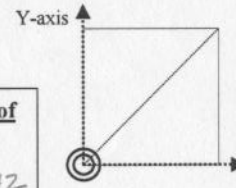
Taxonomic Standard Used for Plant Identification

Authority: _____, **Publ. Date:** _____

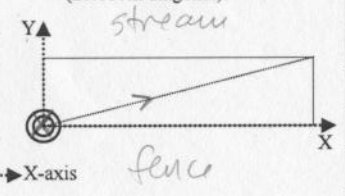
Plot Diagram

Fill in ***ONE*** of the templates below, using the key to draw GPS location, photos and posts. Edit shape if plot doesn't match one of the templates. Draw any landmarks, such as streams, banks, fences, etc.

Standard 10m x 10m (14.142m diagonal):



Non-standard 5m x 20m (20.616m diagonal):



Bearing of Plot X-Axis: 42°

●Posts (x,y) (meters)
(,)
(,)
(,)
(,)
(,)

Key
- ◎ Plot origin (0,0) point
- ⊗ GPS location point
- ○→ photo taken, with direction
- ● posts

Plot Size (ares, default=1): (An "are" is 100 m²) 1

○→ Photo Identifier(s): 102

Notes

If more space is needed, check the box and use back of datasheets.

Layout: (anything unusual about plot layout and shape) ☐ more...

Plot Location: (directions to plot, landscape content) ☐ more...

Plot Rationale: (why location was chosen for the plot) ☐ more...

Other Notes: (invasive species, erosion, disturbances, etc.) ☐ more...

Required Fields in Bold and Underlined. *Definitions and/or values are in the Definitions section of the CVS Field Guide.

Plot Data: CVS Levels 1 & 2

General Information

Project Label: Purlear

Project Name:

Team: 1

Plot: 7

□ Level 1 (planted stems only)
□ Level 2 (planted and natural stems)

Start Date: Sep / 12 / 2006
e.g.: JAN / 15 / 2006

End Date (if different): / /

Party	Role**
Lora	Plot Leader
Dave G.	

**Roles: Co-leader, Assistant, Guide, Land owner, Taxonomist, Other

Soil Drainage*

□ Excessively drained
□ Somewhat excessively drained
□ Well drained
☒ Moderately well drained
□ Somewhat poorly drained
□ Poorly drained
□ Very poorly drained

Water

Percent of Plot Submerged: _____ %

Mean Water Depth: _____ cm

Location

General:

State: NC County:

Quadrangle:

Place Names: 1)

2) 3)

Land Owner:

GPS Receiver Location (m):
x= 0 y= 0

Datum: ☒ NAD83/WGS84 □ NAD27

UTM Zone: if UTMs used 17S

Lat: decimal deg. e.g. 35.16623 0473710

(or UTM-N) meters e.g. 3962248

Long: e.g. -125.12413 4005583

(or UTM-E) e.g. 710524

Coordinate Accuracy (m radius): e.g. 30 4

GPS File Name:

Site Characteristics

Elevation: 1294 ± □m ~~ft.~~

Slope (deg): ~~0~~ 3

Aspect (deg): 119

Compass Type: ☒ magnetic □ true

Plot Placement

□ Representative
□ Random
□ Stratified random
□ Transect component
□ Systematic (grid)
□ Capture specific feature

Further details of placement can be mentioned in Plot Rationale.

Taxonomic Standard Used for Plant Identification

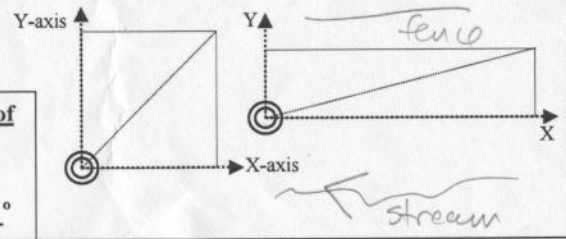
Authority: _____, **Publ. Date:** _____

Plot Diagram

Fill in ***ONE*** of the templates below, using the key to draw GPS location, photos and posts. Edit shape if plot doesn't match one of the templates. Draw any landmarks, such as streams, banks, fences, etc.

Standard 10m x 10m (14.142m diagonal):

Non-standard 5m x 20m (20.616m diagonal):



Bearing of Plot X-Axis: 341 °

Posts (x,y) (meters)
(0 , 0)
(0 , 20)
(2.5 , 0)
(2.5 , 20)
(,)

Key
- Plot origin (0,0) point
- GPS location point
- photo taken, with direction
- posts

Plot Size (ares, default=1): (An "are" is 100 m²)

Photo Identifier(s): 99

Notes

If more space is needed, check the box and use back of datasheets.

Layout: (anything unusual about plot layout and shape)

2.5 x 20 m

□ more...

Plot Location: (directions to plot, landscape content)

across stream from barn

□ more...

Plot Rationale: (why location was chosen for the plot)

□ more...

Other Notes: (invasive species, erosion, disturbances, etc.)

~~Baccharis~~ ?

□ more...

Required Fields in Bold and Underlined. *Definitions and/or values are in the Definitions section of the CVS Field Guide.

Planted Woody Stem Data: CVS Levels 1 & 2

Leader: Lara **Project:** Purl2 **Team:** 1 **Plot:** 7 **Date:** 9/12/06 Page 1 of 1

Species Name	Source	Coordinates X (m)	Coordinates Y (m)	ddh (mm)	Height (cm)	DBH (cm)	Vigor	Damage
Cercan	C	0.9	2.2	7	75		2	Unkn
Quer spp	C	2.2	1.1	8	139		3	Ins
Cornamo	B	2.2	2.5	6	70		3	Ins
Unk [Cerc]	C	3.3	1.9				0	Unkn
Cornamo	B	4.2	0.1	9	55		3	Ins
Quer spp	B	4.4	1.4	9	45		2	Unk
cornamo	B	5.7	2.0	7	51		3	Deer
Cornamo	B	6.7	0.8	4	55		3	Ins
Unkn [Quer]		7.1	1.9				0	Unk
Cornamo	B	8.8	2.5	5	65		4	
Cornamo	B	8.7	0.9	7	61		3	Deer
Quer spp	C	9.9	1.7	10	55		2	Unk
Cornamo	B	10.1	0.6	6	61		3	Deer
Cornamo	B	12.0	0.6	5	45		4	
Quer phe	C	12.9	1.6	10	30		2	Unk
Cornamo	B	14.2	0.4	8	60		3	Deer
Cornamo	B	14.1	1.9	11	60		3	Deer
Quer phe	C	15	1.2	8	42		2	Unk
Cornamo	B	15.8	0.6	8	53		3	Ins
Cornamo	B	17.1	0.6	5	54		3	Ins
Cornamo	B	16.8	2.0	9	66		3	Deer
Juglnig	C	18.7	0.9	8	96		2	Deer
Cornamo	B	20	2.5	5	59		3	Deer
Cornamo	B	20	1.3	9	64		3	Deer
Cornamo	B	18.1	2.0	5	51		3	Deer
Platocc							M	
Cornamo	B	0.5	0.8	5	51		3	Deer

Source: Cultivated, Transplant, Live stake, Ball and Burlap, Pot, Bare Root

Vigor: 4=excellent, 3=good, 2=weak, 1=unlikely to survive year, 0=Dead, Missing.

Damage: Removal, Cut, Mowing, Beaver, Deer, Rodents, Insects, Game, Livestock, Other/Unknown Animal, Human Trampled, Site Too Wet, Site Too Dry, Flood, Drought, Storm, Hurricane, Diseased, Vine Strangulation, Unknown, specify other.

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Plot Data: CVS Levels 1 & 2

General Information

Project Label: Purlear II

Project Name:

Team: 1

Plot: 8

☐ Level 1 (planted stems only)
☐ Level 2 (planted and natural stems)

Start Date: 09 / 12 / 2006
e.g.: JAN / 15 / 2006

End Date (if different): / /

Party	Role**
Lara	Plot Leader
Dave G.	

**Roles: Co-leader, Assistant, Guide, Land owner, Taxonomist, Other

Soil Drainage*

☐ Excessively drained
☐ Somewhat excessively drained
☐ Well drained
☒ Moderately well drained
☐ Somewhat poorly drained
☐ Poorly drained
☐ Very poorly drained

Water

Percent of Plot Submerged: _____ %

Mean Water Depth: _____ cm

Location

General:

State: NC County: Wilkes

Quadrangle:

Place Names: 1)

2) 3)

Land Owner:

⊗ **GPS Receiver Location** (m): x= 0 y= 0

Datum: ☒ NAD83/WGS84 ☐ NAD27

UTM Zone: if UTMs used 17S

Lat: decimal deg. e.g. 35.16623: 4005441

(or UTM-N) meters e.g. 3962248

Long: e.g. -125.12413: 0473665

(or UTM-E) e.g. 710524

Coordinate Accuracy (m radius): e.g. 30: 5

GPS File Name:

Site Characteristics

Elevation: 1296 ± . ☐m ☐ft.

Slope (deg): 3

Aspect (deg): 145

Compass Type: ☒ magnetic ☐ true

Plot Placement

☐ Representative
☐ Random
☐ Stratified random
☐ Transect component
☐ Systematic (grid)
☐ Capture specific feature

Further details of placement can be mentioned in Plot Rationale.

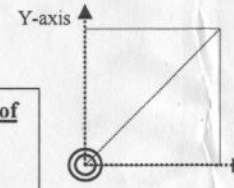
Taxonomic Standard Used for Plant Identification

Authority: _____, **Publ. Date:** _____

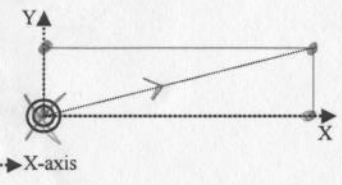
Plot Diagram

Fill in ***ONE*** of the templates below, using the key to draw GPS location, photos and posts. Edit shape if plot doesn't match one of the templates. Draw any landmarks, such as streams, banks, fences, etc.

Standard 10m x 10m (14.142m diagonal):



Non-standard 5m x 20m (20.616m diagonal):



Bearing of Plot X-Axis: 270 °

●Posts (x,y) (meters)
(,)
(,)
(,)
(,)
(,)

Key

◎ Plot origin (0,0) point
⊗ GPS location point
○→ photo taken, with direction
● posts

Plot Size (ares, default=1): 0.5
(An "are" is 100 m²)

○→ Photo Identifier(s): ~~BW~~ 97

Notes

If more space is needed, check the box and use back of datasheets.

Layout: (anything unusual about plot layout and shape)

2.5 x 20 m

☐ more...

Plot Location: (directions to plot, landscape content)

☐ more...

Plot Rationale: (why location was chosen for the plot)

☐ more...

Other Notes: (invasive species, erosion, disturbances, etc.)

many native vines started in plot
sourwood regen >6 just outside

☐ more...

Required Fields in Bold and Underlined. *Definitions and/or values are in the Definitions section of the CVS Field Guide.

Planted Woody Stem Data: CVS Levels 1 & 2

Leader: Lara **Project:** Rdar 2 **Team:** _____ **Plot:** 8 **Date:** 09 / 12 / 2006 Page 1 of 1

Species Name	Source	Coordinates X (m)	Coordinates Y (m)	ddh (mm)	Height (cm)	DBH (cm)	Vigor	Damage
Unk	B	2.4	1.3	7.2	23		2	Deer
Quercus spp.	C	6.3	1.2	10	80		3	Deer
Quercus spp.	C	9.3	1.1	8	100		3	Ins
~~Unk~~ Quercus	C	13.4	1.0	9	25		1	Ins
Unk							M	

Source: **C**ultivated, **T**ransplant, **L**ive stake, **B**all and Burlap, **P**ot, Bare **R**oot

Vigor: **4**=excellent, **3**=good, **2**=weak, **1**=unlikely to survive year, **0**=Dead, **M**issing.

Damage: **Rem**oval, **Cut**, **Mow**ing, **Beav**er, **Deer**, **Rod**ents, **Ins**ects, **Game**, **Livest**ock, Other/Unknown **Anim**al, Human **Tramp**led, Site Too **Wet**, Site Too **Dry**, **Flood**, **Drou**ght, **Storm**, **Hurr**icane, **Dis**eased, **Vine** Strangulation, **Unkn**own, specify other.

Form PWS12, ver 6.3

APPENDIX B

Morphology Raw Data

1. Problem Area Plan View
2. Project Photo Log
3. Problem Area Photo Log
4. Visual Assessment Table B-1
5. Cross section and Pebble Count Plots and Raw Data Tables
6. Longitudinal Plots and Raw Data Tables
7. Slope Measurement Tables
8. Pattern Measurement Tables

REACH 4
WETLAND REACH

NORTH

CROSS SECTION #2
REACH 4
POOL

CROSS SECTION #3
REACH 4
RIFFLE

CROSS SECTION #1
REACH 4
RIFFLE

CROSS SECTION #4
REACH 4
POOL

CROSS SECTION #5
REACH 4
RIFFLE

CROSS SECTION #6
REACH 4
POOL

Veg Plot #1
Veg Plot #2
Veg Plot #3
Veg Plot #4
Veg Plot #5
Veg Plot #6

00+0
1+00
2+00
3+00
4+00
5+00
6+00
7+00
00+8
9+00
10+00
11+00
12+00
13+00
14+00
14+79.60

FLOW DIRECTION
FLOW DIRECTION

LEGEND
2006 THALWEG
2006 WATER EDGE
2006 BANKFULL
AS-BUILT THALWEG
FENCE LINE
CROSS SECTION
PROBLEM PHOTO IP#
PROBLEM AREA

SCALE 1" = 50'
25 0 25 50

FLOW MEASUREMENT &
SAMPLING POINT - J-11

NO	AS-BUILT PLAN	REVISIONS	DRN	CHK	DATE
1			DRC	JMP	12/01/06

B-2

NC STATE UNIVERSITY
BIOLOGICAL & AGRICULTURAL ENGINEERING
Weaver Labs Campus Box 7625
North Carolina State University
Raleigh, NC 27695

PURLEAR CREEK - PHASE 2
REACH 4 - WETLAND AREA
WILKES COUNTY, N.C.

PROBLEM AREA PLAN SHEET
FIGURE B1

DATE 03/01/2006
PROJECT NO. 294
FILENAME PULEAR ASBUILT 05.DWG
SHEET NO. MONITORING 1 of 3

REACH 1
MAIN STEM REACH

NORTH

FLOW MEASUREMENT & SAMPLING POINT – J–12

CROSS SECTION #7
REACH 1
RIFFLE

Veg Plot #7

0+00
1+00
2+00
3+00
4+00
5+00
6+00

PA1

FLOW DIRECTION

FLOW MEASUREMENT & SAMPLING POINT – J–13

CROSS SECTION #8
REACH 1
RIFFLE

CROSS SECTION #9
REACH 1
POOL

Veg Plot #8

7+00
8+00
9+00

FLOW M
SAMP. P
CROS
REAC
POOL

FLOW MEAS. & SAMP. PT. – J–14

CROSS SECTION #10
REACH 1
POOL

9+00
10+00
11+00
11+40.52

PA2

FLOW DIRECTION

LEGEND
- 2006 THALWEG
- 2006 WATER EDGE
- 2006 BANKFULL
- AS–BUILT THALWEG
- FENCE LINE
- CROSS SECTION
- PROBLEM PHOTO (IP#)
- PROBLEM AREA

SCALE 1" = 50'

25 0 25 50

NO	AS-BUILT PLAN	DRN	CHK	DATE
1	REVISIONS	DRC	JMP	12/01/06

B-3

NC STATE UNIVERSITY
BIOLOGICAL & AGRICULTURAL ENGINEERING
Weaver Labs Campus Box 7625
North Carolina State University
Raleigh, NC 27695

PURLEAR CREEK – PHASE 2
REACH 1 – MAIN STEM REACH
WILKES COUNTY, N.C.

PROBLEM AREA PLAN SHEET
FIGURE B2

DATE	03/01/2006
PROJECT NO.	294
FILENAME	PULEAR ASBUILT 05.DWG
SHEET NO.	MONITORING 1 of 3

2006 Purlear Phase II Photo Log – Reach 1

2005 – As-built **Oct. 5 2006**

P1. Reach 1 – Start and X7 looking upstream

P2. Reach 1 – Start and X7 looking downstream

2005 – As-built **Oct. 5 2006**

P3. Reach 1 – X8 looking upstream

P4. Reach 1 – X8 looking downstream

P5. Reach 1 – X9 looking upstream

2005 – As-built **Oct. 5 2006**

P6. Reach 1 – X9 looking downstream

P7. Reach 1 – X10 looking upstream

P8. Reach 1 – X10 looking downstream

P9. Reach 1 – End Project looking upstream

(As-built photos not taken Monitoring Photos taken Oct. 5, 2006)

2005 – As-built

Oct. 5 2006

P10. Reach 1 – End Project looking downstream

2006 Purlear Phase II Photo Log – Reach 4

(As-built photos not taken Monitoring Photos taken Oct. 5, 2006)

P11. Reach 4 – Start looking upstream

P12. Reach 1 – Start and X7 looking downstream

P13. Reach 4 – X1 looking upstream

P14. Reach 4 – X1 looking downstream

P15. Reach 4 – X2 looking upstream

P16. Reach 4 – X2 looking downstream

P17. Reach 4 – X3 looking upstream

P18. Reach 4 – X3 looking downstream

P19. Reach 4 – X4 looking upstream

P20. Reach 4 – X4 looking downstream

P21. Reach 4 – X5 looking upstream

P22. Reach 4 – X5 looking downstream

P23. Reach 4 – X6 looking upstream

P24. Reach 4 – X6 looking downstream

P25. Reach 4 – Bridge looking upstream

P26. Reach 4 – Bridge looking downstream

P27. Reach 4 – End of reach looking upstream

P28. Reach 4 – End of reach looking downstream

2006 Purlear Phase II
Problem Area Photo Log – Reach 1

IP1. Reach 1 – Station 5+75 Eroding Bank (Oct. 5, 2007)

(top photo looking upstream, bottom photo looking downstream)

IP2. Reach 1 – Station 9+80 – Concentrated flow into and through the buffer. (Oct. 5, 2007) (top photo – gully through buffer. Bottom photo – seep from field)

Table B1. Visual Morphological Stability Assessment
Purlear Creek Phase II / Project ID 010559701

Reach 1

Feature Category		Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	% Perform in Stable Condition	Feature Perform. Mean or Total
A. Riffles	1	Present?	9	13	69%	69%
	2	Armor stable (e.g. no displacement)?	9	13	69%	
	3	Facet grade appears stable?	9	13	69%	
	4	Minimal evidence of embedding/fining?	9	13	69%	
	5	Length appropriate?	9	13	69%	
B. Pools	1	Present? (e.g not subject to severe aggrad. or migrat.?)	11	12	92%	92%
	2	Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	11	12	92%	
	3	Length appropriate?	11	12	92%	
C. Thalweg	1	Upstream of meander bend (run/inflection) centering?	5	5	100%	80%
	2	Downstream of meander (glide/inflection) centering?	3	5	60%	
D. Meanders	1	Outer bend in state of limited/controlled erosion?	3	4	75%	92%
	2	Of those eroding, # w/concomitant point bar formation?	1	--		
	3	Apparent Rc within spec?	4	4	100%	
	4	Sufficient floodplain access and relief?	4	4	100%	
E. Bed General	1	General channel bed aggradation areas (bar formation)	1140	1140	100%	90%
	2	Channel bed degradation – areas of increasing down-cutting or head cutting?	920	1140	81%	
F. Vanes	1	Free of back or arm scour?	3	3	100%	100%
	2	Height appropriate?	3	3	100%	
	3	Angle and geometry appear appropriate?	3	3	100%	
	4	Free of piping or other structural failures?	3	3	100%	
G. Wads/ Boulders	1	Free of scour?	1	1	100%	100%
	2	Footing stable?	1	1	100%	

Reach 4

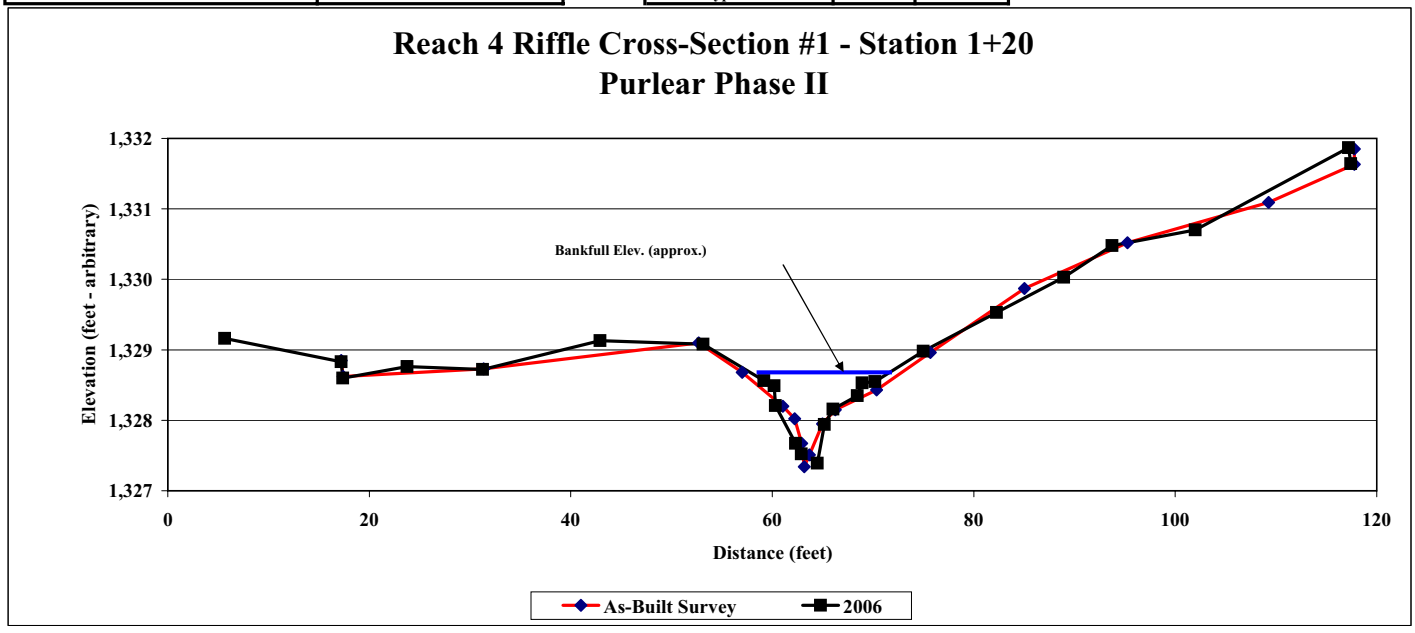
Feature Category		Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state	Feature Perform. Mean or Total
A. Riffles	1	Present?	31	35	89%	75%
	2	Armor stable (e.g. no displacement)?	31	35	89%	
	3	Facet grade appears stable?	31	35	89%	
	4	Minimal evidence of embedding/fining?	10	35	29%	
	5	Length appropriate?	28	35	80%	
B. Pools	1	Present? (e.g not subject to severe aggrad. or migrat.?)	33	34	97%	97%
	2	Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	33	34	97%	
	3	Length appropriate?	33	34	97%	
C. Thalweg	1	Upstream of meander bend (run/inflection) centering?	27	27	100%	100%
	2	Downstream of meander (glide/inflection) centering?	27	27	100%	
D. Meanders	1	Outer bend in state of limited/controlled erosion?	27	27	100%	100%
	2	Of those eroding, # w/concomitant point bar formation?	--	--		
	3	Apparent Rc within spec?	27	27	100%	
	4	Sufficient floodplain access and relief?	27	27	100%	
E. Bed General	1	General channel bed aggradation areas (bar formation)	986	1480	67%	83%
	2	Channel bed degradation – areas of increasing down-cutting or head cutting?	1480	1480	100%	
F. Vanes	1	Free of back or arm scour?	29	29	100%	100%
	2	Height appropriate?	29	29	100%	
	3	Angle and geometry appear appropriate?	29	29	100%	
	4	Free of piping or other structural failures?	29	29	100%	
G. Wads/ Boulders	1	Free of scour?	--	--		--
	2	Footing stable?	--	--		

Project Name	Purlear Phase II
Cross Section	X1 Reach 4
Feature	Pool
Date	8/15/2006
Crew	Shaffer, Patterson, Clinton

2005 As-Built Survey			2006 MY - 01		
Station	**Elevation**	**Notes**	**Station**	**Elevation**	**Notes**
117.77	1,331.85	PIN	5.64	1329.16	(FENCE)
117.77	1,331.63	FP	17.23	1328.83	(X1LP)
109.28	1,331.09	FP	17.36	1328.6	(X1)
95.26	1,330.52	FP	23.76	1328.76	(X1)
85.02	1,329.87	FP	31.25	1328.72	(X1)
75.69	1,328.96	RB	42.9	1329.13	(X1)
70.35	1,328.43	RB	53.14	1329.08	(X1)
66.26	1,328.15	RB	59.16	1328.56	(X1)
65	1,327.95	REW	60.2	1328.49	(X1W)
63.68	1,327.51	SB	60.32	1328.21	(X1)
63.18	1,327.34	SB	62.31	1327.67	(X1)
62.93	1,327.67	SB	62.88	1327.52	(X1)
62.21	1,328.02	LEW	64.47	1327.39	(X1)
61.05	1,328.20	LB	65.19	1327.94	(X1)
57.02	1,328.68	BKF	66.04	1328.16	(X1)
52.68	1,329.10	FP	68.46	1328.35	(X1)
31.35	1,328.73	FP	68.93	1328.53	(X1W)
17.4	1,328.62	FP	70.21	1328.55	(X1)
17.23	1,328.85	PIN1	74.98	1328.98	(X1)
			82.27	1329.53	(X1)
			88.95	1330.03	(X1)
			93.72	1330.48	(X1)
Adjusted			101.98	1330.7	(X1)
Right	17.23'		117.2	1331.87	(X1RP)
			117.43	1331.64	(X1)
			Adusted up	1235.77'	

Photo of Cross-Section #1 - Looking Downstream

	As-Built	**2006**
Area	7.31	6.7
Width	17.5	11.1
Mean Depth	0.4	0.6
Max Depth	1.3	1.3
w/d ratio	41.8	18.3
FPW	72	72
ER (greater than)	4.1	6.5
Stream Type	C	C

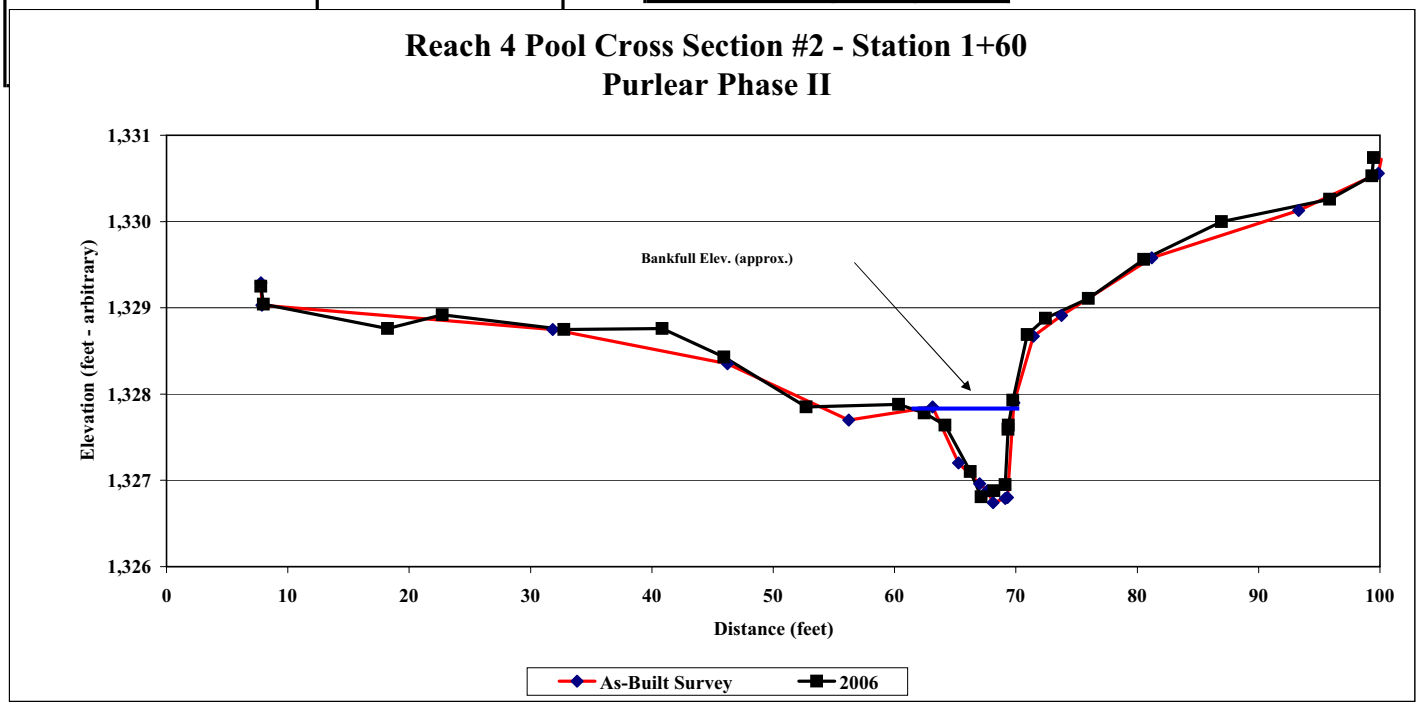


Project Name	Purlear Phase II
Cross Section	X2 Reach 4
Feature	Riffle
Date	8/15/2006
Crew	Shaffer, Patterson, Clinton

2005 As-Built Survey			2006 MY - 01		
Station	**Elevation**	**Notes**	**Station**	**Elevation**	**Notes**
100.11	1,330.72	PIN	7.78	1329.25	(X2LP)
99.88	1,330.56	FP	7.98	1329.04	(X2)
93.3	1,330.13	FP	18.22	1328.76	(X1)
81.2	1,329.58	FP	22.73	1328.92	(X2)
73.76	1,328.91	RB	32.76	1328.75	(X2)
71.44	1,328.67	RB	40.84	1328.76	(X2)
69.83	1,327.90	RB	45.94	1328.43	(X2)
69.31	1,326.80	SB	52.71	1327.85	(X2)
69.12	1,326.79	SB	60.34	1327.88	(X2)
68.12	1,326.74	SB	62.44	1327.78	(X2)
67.64	1,326.88	SB	64.16	1327.64	(X2W)
67.02	1,326.96	LEW	66.24	1327.1	(X2)
65.28	1,327.20	LB	67.14	1326.81	(X2)
63.12	1,327.85	BKF	68.2	1326.88	(X2)
56.23	1,327.70	LB	69.11	1326.95	(X2)
46.24	1,328.35	FP	69.35	1327.59	(W)
31.83	1,328.75	FP	69.38	1327.64	(X2W)
7.86	1,329.03	FP	69.74	1327.93	(X2)
7.78	1,329.29	PIN	70.93	1328.69	(X2)
			72.44	1328.88	(X2)
			75.98	1329.11	(X2)
			80.54	1329.56	(X2)
			86.94	1330	(X2)
			95.87	1330.26	(X2)
			99.34	1330.53	(X2)
			99.47	1330.74	(X2RP)

Photo of Cross-Section #2 - Looking Downstream

	As-Built	**2006**
Area	4.9	4.2
Width	6.2	9.4
Mean Depth	0.8	0.4
Max Depth	1.1	1.0

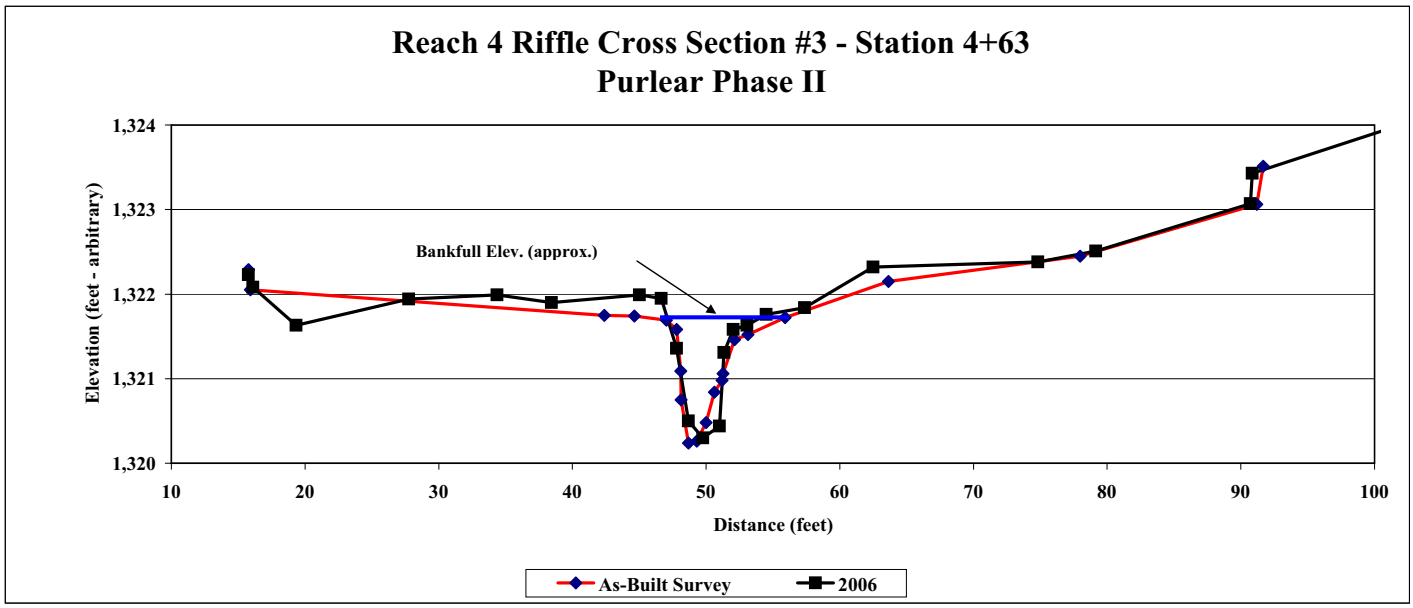


Project Name	Purlear Phase II
Cross Section	X3 Reach 4
Feature	Pool
Date	8/15/2006
Crew	Shaffer, Patterson, Clinton

2005 As-Built Survey			2006 MY - 01		
Station	**Elevation**	**Notes**	**Station**	**Elevation**	**Notes**
91.67	1,323.51	PIN	15.76	1322.23	(X3LP)
91.18	1,323.06	FP	16.1	1322.08	(X3)
77.99	1,322.45	FP	19.34	1321.63	(X3)
63.63	1,322.15	FP	27.75	1321.94	(X3)
55.9	1,321.72	RB	34.36	1321.99	(X3)
53.13	1,321.52	BKF	38.43	1321.9	(X3)
52.12	1,321.46	RB	45.03	1321.99	(X3)
51.27	1,321.06	REW	46.65	1321.95	(X3)
51.19	1,320.98	SB	47.79	1321.36	(X3)
50.61	1,320.84	SB	48.68	1320.5	(X3)
50	1,320.48	SB	49.75	1320.3	(X3)
49.3	1,320.26	SB	51.01	1320.44	(X3)
48.67	1,320.24	SB	51.33	1321.31	(X3W)
48.13	1,320.75	SB	52.02	1321.58	(X3)
48.1	1,321.09	LEW	53.06	1321.63	(X3)
47.8	1,321.58	LB	54.49	1321.76	(X3)
47.03	1,321.69	LB	57.36	1321.84	(X3)
44.63	1,321.74	BKF	62.5	1322.32	(X3)
42.38	1,321.75	FP	74.83	1322.38	(X3)
15.91	1,322.05	FP	79.14	1322.51	(X3)
15.76	1,322.29	PIN	90.72	1323.07	(X3)
			90.85	1323.43	(X3RP)
			101.55	1323.98	(FENCE)

Photo of Cross-Section #3 - Looking Downstream

	As-Built	**2006**
Area	4.93	4.8
Width	10.3	7.8
Mean Depth	0.5	0.6
Max Depth	1.5	1.4
w/d ratio	21.5	12.9
FPW	72	72
ER (greater than)	7.0	9.2
Stream Type	C	C



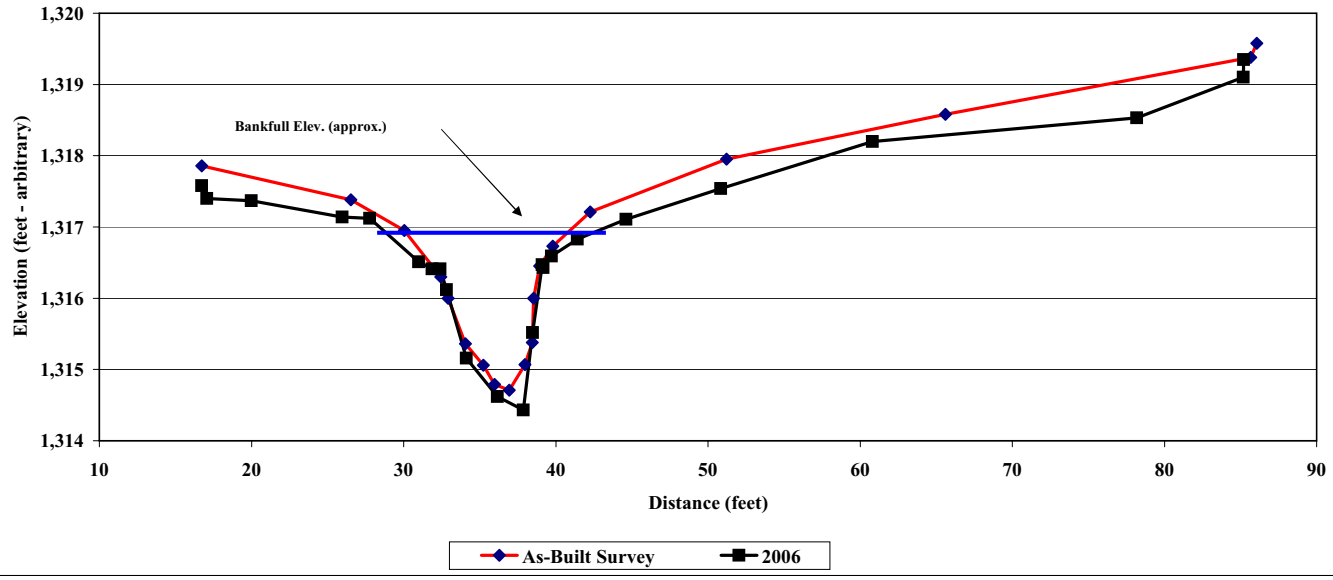
Project Name	Purlear Phase II
Cross Section	X4 Reach 4
Feature	Riffle
Date	8/15/2006
Crew	Shaffer, Patterson, Clinton

2005 As-Built Survey			2006 MY - 01		
Station	**Elevation**	**Notes**	**Station**	**Elevation**	**Notes**
86.06	1,319.58	PIN	16.74	1317.58	(XS4LP)
85.66	1,319.38	FP	17.07	1317.4	(XS4)
65.6	1,318.58	RB	19.98	1317.37	(XS4)
51.23	1,317.95	RB	25.97	1317.14	(XS4)
42.27	1,317.21	RB	27.77	1317.12	(XS4)
39.8	1,316.73	RB	30.99	1316.51	(XS4)
38.93	1,316.45	RB	31.88	1316.41	(XS4W)
38.54	1,316.00	REW	32.4	1316.41	(W)
38.45	1,315.38	SB	32.82	1316.12	(XS4)
37.98	1,315.07	SB	34.12	1315.16	(XS4)
36.93	1,314.71	SB	36.17	1314.62	(XS4)
35.98	1,314.79	SB	37.87	1314.43	(XS4)
35.23	1,315.06	SB	38.47	1315.52	(XS4)
34.06	1,315.36	SB	39.11	1316.47	(XS4W)
32.92	1,316.00	LEW	39.16	1316.43	(W)
32.45	1,316.30	LB	39.72	1316.59	(XS4)
30.05	1,316.95	BKF	41.42	1316.83	(XS4)
26.53	1,317.38	FP	44.62	1317.11	(XS4)
16.74	1,317.86	PIN	50.85	1317.54	(XS4)
			60.8	1318.2	(XS4)
			78.19	1318.53	(XS4)
			85.18	1319.1	(XS4)
			85.21	1319.35	(X4RP)

Photo of Cross-Section #4 - Looking Downstream

	As-Built	**2006**
Area	12.1	14.4
Width	11.3	17.2
Mean Depth	1.1	0.8
Max Depth	2.2	2.5

Reach 4 Pool Cross Section #4 - Station 7+60
Purlear Phase II

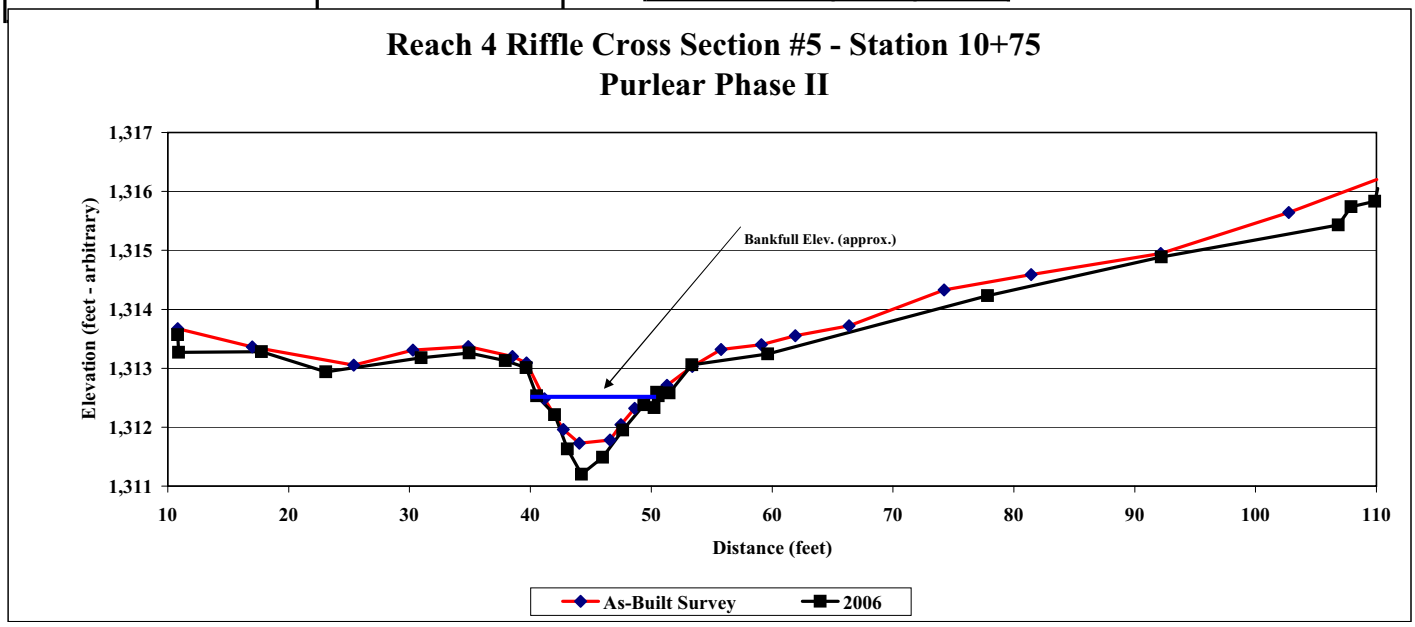


Project Name	Purlear Phase II
Cross Section	X5 Reach 4
Feature	Riffle
Date	8/15/2006
Crew	Shaffer, Patterson, Clinton

2005 As-Built Survey			2006 MY - 01		
Station	**Elevation**	**Notes**	**Station**	**Elevation**	**Notes**
110.02	1,316.20	pin	10.83	1313.57	(X5LP)
102.75	1,315.64	fp	10.91	1313.27	(X5)
92.16	1,314.95	fp	17.77	1313.28	(X5)
81.44	1,314.59	fp	23.07	1312.94	(X5)
74.22	1,314.33	fp	30.97	1313.18	(X5)
66.38	1,313.72	fp	34.95	1313.26	(X5)
61.91	1,313.55	fp	37.93	1313.13	(X5)
59.1	1,313.40	fp	39.65	1313.01	(X5)
55.78	1,313.32	fp	40.54	1312.53	(X5W)
53.39	1,313.03	bank	42.01	1312.21	(X5)
51.29	1,312.71	bkf	43.08	1311.63	(X5)
48.64	1,312.32	bank	44.24	1311.2	(X5)
47.5	1,312.04	rew	45.97	1311.49	(X5)
46.58	1,311.78	sb	47.65	1311.95	(X5)
44.05	1,311.73	sb	49.4	1312.38	(X5)
42.73	1,311.96	lew	50.24	1312.33	(X5)
41.16	1,312.48	bkf	50.45	1312.59	(W)
39.69	1,313.09	fp	50.6	1312.53	(X5W)
38.51	1,313.20	fp	51.5	1312.58	(X5)
34.85	1,313.37	fp	53.37	1313.06	(X5)
30.28	1,313.31	fp	59.63	1313.24	(X5)
25.38	1,313.05	fp	77.84	1314.23	(X5)
17	1,313.36	fp	92.2	1314.89	(X5)
10.83	1,313.67	pin	106.85	1315.43	(X5)
			107.92	1315.74	(X5)
			109.86	1315.83	(X5)
			110.1	1316.05	(X5RP)

Photo of Cross-Section #5 - Looking Downstream

	As-Built	**2006**
Area	5.1	7.0
Width	10.1	9.9
Mean Depth	0.5	0.7
Max Depth	0.9	1.4
w/d ratio	20.0	14.0
FPW	46	46
ER (greater than)	4.5	4.6
Stream Type	C	C



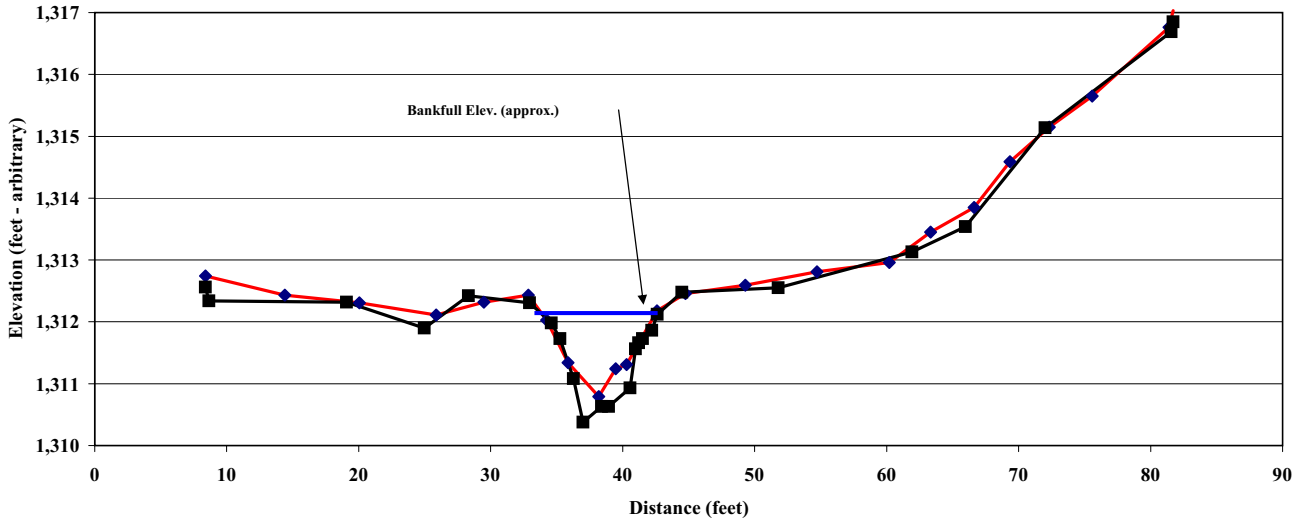
Project Name	Purlear Phase II
Cross Section	X6 Reach 4
Feature	Pool
Date	8/15/2006
Crew	Shaffer, Patterson, Clinton

2005 As-Built Survey			2006 MY - 01		
Station	**Elevation**	**Notes**	**Station**	**Elevation**	**Notes**
81.7	1,317.03	pin	8.38	1312.56	(X6LP)
81.4	1,316.76	ltr	8.66	1312.34	(X6)
75.58	1,315.65	ltr	19.08	1312.32	(X6)
72.33	1,315.15	ltr	24.98	1311.9	(X6)
69.35	1,314.59	ltr	28.31	1312.42	(VP)
66.62	1,313.85	ltr	32.95	1312.31	(X6)
63.33	1,313.45	fp	34.6	1311.98	(X6)
60.21	1,312.96	fp	35.25	1311.73	(X6W)
54.73	1,312.81	fp	36.27	1311.08	(X6)
49.3	1,312.59	fp	37	1310.38	(X6)
44.76	1,312.46	fp	38.41	1310.63	(X6)
42.6	1,312.18	bkf	38.95	1310.63	(X6)
40.3	1,311.31	rew	40.57	1310.93	(X6)
39.48	1,311.24	sb	40.98	1311.56	(X6)
38.18	1,310.79	sb	41.22	1311.66	(X6W)
35.85	1,311.34	lew	41.51	1311.73	(W)
34.24	1,312.03	bkf	42.22	1311.86	(X6)
32.85	1,312.43	fp	42.62	1312.12	(X6)
29.48	1,312.32	fp	44.48	1312.48	(X6)
25.86	1,312.11	fp	51.78	1312.55	(X6)
20.04	1,312.31	fp	61.93	1313.13	(X6)
14.4	1,312.43	fp	65.97	1313.54	(X6)
8.38	1,312.74	pin	72	1315.14	(X6)
			81.56	1316.69	(X6)
			81.72	1316.85	(X6RP)

Photo of Cross-Section #6 - Looking Downstream

	As-Built	2006
Area	6.1	7.9
Width	8.4	8.0
Mean Depth	0.7	1.0
Max Depth	1.3	1.7

Reach 4 Pool Cross Section #6 - Station 11+45
Purlear Phase II



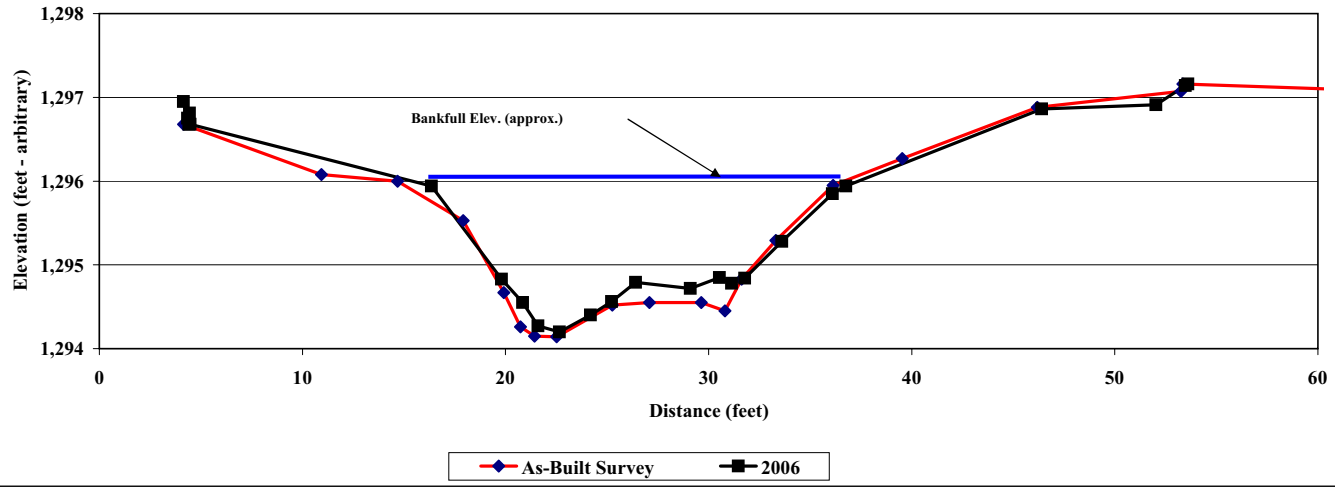
Project Name	Purlear Phase II
Cross Section	X7 Reach 1
Feature	Riffle
Date	8/15/2006
Crew	Shaffer, Patterson, Clinton

2005 As-Built Survey			2006 MY - 01		
Station	**Elevation**	**Notes**	**Station**	**Elevation**	**Notes**
4.14	1,296.68	PIN	4.14	1296.95	(xs7lp)
10.94	1,296.08	FP	4.35	1296.75	(XS7)
14.68	1,296.00	BKF	4.41	1296.68	(XS7)
17.92	1,295.53	LB	4.44	1296.81	(xs7lp)
19.92	1,294.67	LEW	4.47	1296.68	(xs7)
20.73	1,294.26	SB	16.35	1295.94	(xs7)
21.43	1,294.15	SB	19.81	1294.83	(xs7w)
22.51	1,294.14	SB	20.84	1294.55	(xs7)
25.25	1,294.52	SB	21.6	1294.27	(xs7)
27.08	1,294.55	REW	22.66	1294.2	(xs7)
29.64	1,294.55	BAR	24.19	1294.4	(xs7)
30.81	1,294.45	REW	25.22	1294.56	(xs7)
31.63	1,294.83	RB	26.4	1294.79	(xs7)
33.31	1,295.29	RB	29.1	1294.72	(xs7)
36.13	1,295.95	BKF	30.53	1294.85	(xs7)
39.53	1,296.27	TOB	31.14	1294.78	(xs7)
46.18	1,296.88	FP	31.78	1294.84	(xs7w)
53.26	1,297.07	FP	33.61	1295.28	(xs7)
53.35	1,297.16	FP	36.1	1295.85	(xs7)
102.6	1,296.75	PIN	36.76	1295.94	(xs7)
			46.41	1296.86	(xs7)
			52.03	1296.91	(xs7)
			53.48	1297.14	(xs7rp)
			53.61	1297.16	(XS7)

Photo of Cross-Section #7 - Looking Downstream

	As-Built	**2006**
Area	25.2	23.1
Width	25.2	20.4
Mean Depth	1.0	1.1
Max Depth	1.9	1.9
w/d ratio	25.1	18.0
FPW	50	50
ER (greater than)	2.0	2.4
Stream Type	C	C

Reach 1 Riffle Cross Section #7 - Station 1+65
Purlear Phase II



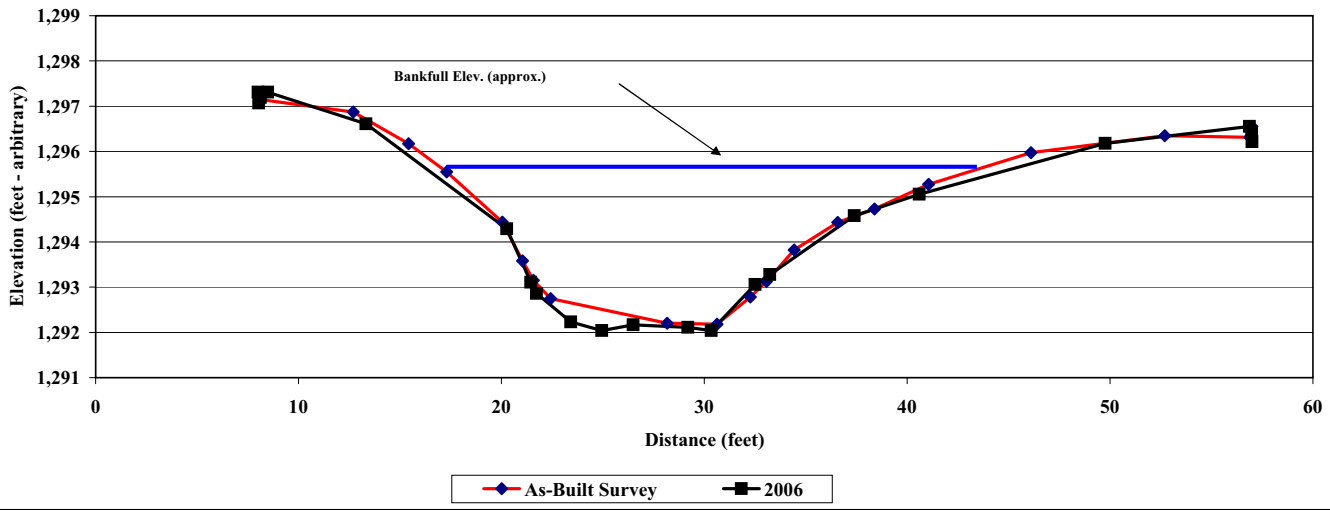
Project Name	Purlear Phase II
Cross Section	X8 Reach 1
Feature	Pool
Date	8/15/2006
Crew	Shaffer, Patterson, Clinton

2005 As-Built Survey			2006 MY - 01		
Station	**Elevation**	**Notes**	**Station**	**Elevation**	**Notes**
8.13	1,297.15	FP	8.02	1297.31	(XS8)
12.7	1,296.87	TOB	8.04	1297.07	(xs8)
15.42	1,296.17	LB	8.13	1297.19	(xs8lp)
17.31	1,295.55	BKF	8.48	1297.31	(xs8lp)
20.04	1,294.44	LB	13.33	1296.61	(xs8)
21.04	1,293.58	LB	20.27	1294.29	(xs8)
21.57	1,293.15	LEW	21.45	1293.11	(xs8w)
22.43	1,292.75	SB	21.73	1292.86	(xs8)
28.17	1,292.20	SB	23.43	1292.23	(xs8)
30.63	1,292.18	SB	24.95	1292.04	(xs8)
32.27	1,292.78	SB	26.5	1292.17	(xs8)
33.06	1,293.12	REW	29.2	1292.11	(xs8)
34.43	1,293.82	RB	30.34	1292.04	(xs8)
36.58	1,294.43	RB	32.5	1293.06	(xs8w)
38.39	1,294.73	RB	33.24	1293.28	(xs8)
41.05	1,295.27	RB	37.4	1294.58	(xs8)
46.1	1,295.97	RB	40.6	1295.05	(xs8)
52.69	1,296.35	FP	49.77	1296.18	(xs8)
56.9	1,296.31	FP	56.87	1296.55	(XS8)
56.99	1,296.55	PIN	56.98	1296.42	(xs8rp)
			57.01	1296.21	(xs8)

Photo of Cross-Section #8 - Looking Downstream

	As-Built	**2006**
Area	44.21	54.8
Width	35.4	31.3
Mean Depth	1.2	1.8
Max Depth	3.4	3.5
w/d ratio	28.3	17.9
FPW	98	98
ER (greater than)	2.8	3.1
Stream Type	C	C

Reach 1 Riffle Cross Section # 8 - Station 4+60
Purlear Phase II

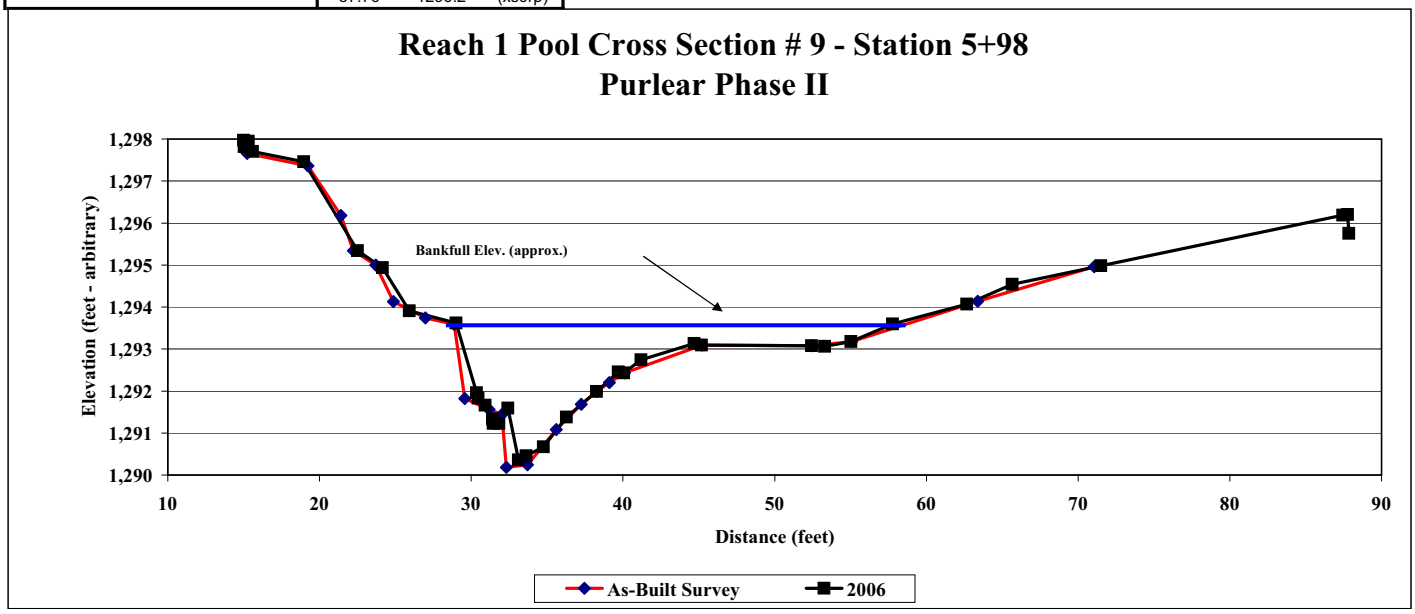


Project Name	Purlear Phase II
Cross Section	X9 Reach 1
Feature	Pool
Date	8/15/2006
Crew	Shaffer, Patterson, Clinton

2005 As-Built Survey			2006 MY - 01		
Station	**Elevation**	**Notes**	**Station**	**Elevation**	**Notes**
15.04	1,297.97	PIN	14.99	1297.97	(XS9)
15.23	1,297.66	FP	15.04	1297.82	(xs9lp)
19.23	1,297.36	TOB	15.32	1297.95	(xs9lp)
21.42	1,296.18	LB	15.59	1297.7	(xs9)
22.24	1,295.34	LB	18.96	1297.46	(xs9)
23.72	1,295.00	LB	22.51	1295.34	(xs9)
24.86	1,294.13	LB	24.16	1294.94	(xs9)
26.98	1,293.74	LB	25.93	1293.91	(xs9)
28.87	1,293.59	BKF	29	1293.62	(xs9)
29.57	1,291.82	SB	30.36	1291.96	(xs9)
31.18	1,291.56	SB	30.45	1291.83	(xs9)
32.01	1,291.44	SB	30.93	1291.66	(xs9)
32.31	1,290.18	SB	31.41	1291.33	(xs9)
33.71	1,290.24	SB	31.45	1291.23	(xs9)
35.6	1,291.08	SB	31.84	1291.23	(xs9)
37.26	1,291.68	SB	32.42	1291.59	(xs9)
38.26	1,291.99	SB	33.11	1290.36	(xs9)
39.11	1,292.20	REW	33.62	1290.46	(xs9)
40.1	1,292.43	PB	34.77	1290.67	(xs9)
45.22	1,293.09	PB	36.27	1291.38	(xs9)
52.49	1,293.08	PB	38.26	1291.99	(xs9w)
55.08	1,293.18	PB	39.7	1292.45	(xs9)
63.39	1,294.14	RB	40.05	1292.43	(XS9)
71.06	1,294.96	TOB	41.19	1292.74	(xs9)
			44.7	1293.13	(xs9)
			45.18	1293.09	(XS9)
			52.44	1293.08	(XS9)
			53.3	1293.06	(xs9)
			55.04	1293.18	(XS9)
			57.77	1293.6	(xs9)
			62.67	1294.07	(xs9)
			65.65	1294.54	(xs9)
			71.5	1294.98	(xs9)
			87.44	1296.19	(XS9)
			87.76	1296.2	(xs9rp)

Photo of Cross-Section #9 - Looking Downstream

	As-Built	**2006**
Area	33.8	31.5
Width	29.2	28.8
Mean Depth	1.2	1.1
Max Depth	3.4	3.2

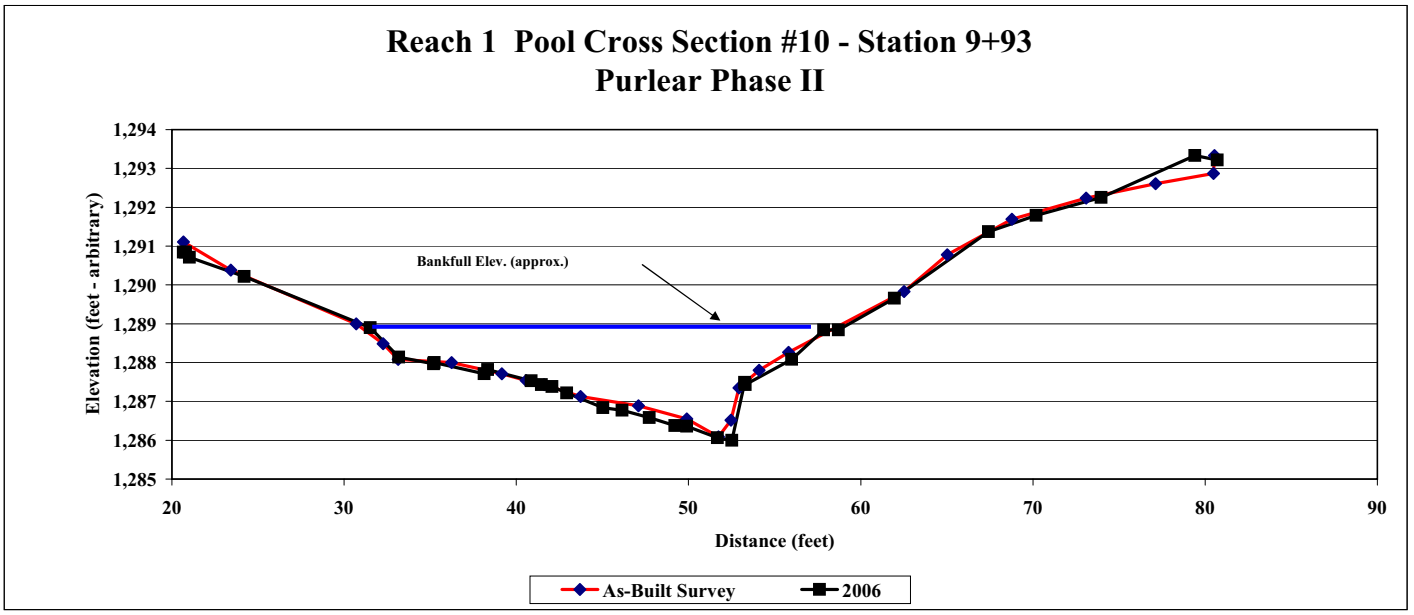


Project Name	Purlear Phase II
Cross Section	X10 Reach 1
Feature	Riffle
Date	8/15/2006
Crew	Shaffer, Patterson, Clinton

2005 As-Built Survey			2006 MY - 01		
Station	**Elevation**	**Notes**	**Station**	**Elevation**	**Notes**
20.66	1,291.11	FP	20.66	1290.84	(xs10lp)
23.41	1,290.38		20.79	1290.84	(xs10lp)
30.71	1,289.00	BKF	21.02	1290.71	(xs10)
32.26	1,288.49	LB	24.2	1290.22	(xs10)
33.14	1,288.08	LB	31.52	1288.9	(xs10)
36.25	1,288.00	PB	33.17	1288.14	(xs10)
39.16	1,287.71	PB	35.2	1287.97	(xs10)
40.58	1,287.54	LEW	35.24	1288	(XS10)
41.62	1,287.43		38.14	1287.71	(XS10)
43.73	1,287.13	SB	38.35	1287.82	(xs10)
47.1	1,286.89	SB	40.87	1287.53	(xs10)
49.89	1,286.55	SB	41.46	1287.43	(xs10)
51.74	1,286.09	SB	42.08	1287.38	(xs10)
52.47	1,286.52	SB	42.93	1287.22	(xs10)
52.93	1,287.35	REW	45.03	1286.84	(xs10)
54.1	1,287.80	RB	46.14	1286.77	(xs10)
55.81	1,288.26	RB	47.73	1286.58	(xs10)
62.51	1,289.83	RB	49.21	1286.38	(xs10)
65.03	1,290.78	RB	49.9	1286.36	(xs10)
68.78	1,291.69	TOB	51.68	1286.06	(xs10)
73.09	1,292.24	FP	52.52	1286	(xs10)
77.12	1,292.61	FP	53.26	1287.49	(xs10)
80.49	1,292.87	FP	53.3	1287.43	(xs10w)
80.55	1,293.33	PIN	56	1288.08	(xs10)
			57.86	1288.84	(xs10)
			58.71	1288.84	(xs10)
			61.96	1289.66	(xs10)
			67.43	1291.37	(xs10)
			70.2	1291.79	(xs10)
			73.97	1292.25	(xs10)

Photo of Cross-Section #10 - Looking Downstream

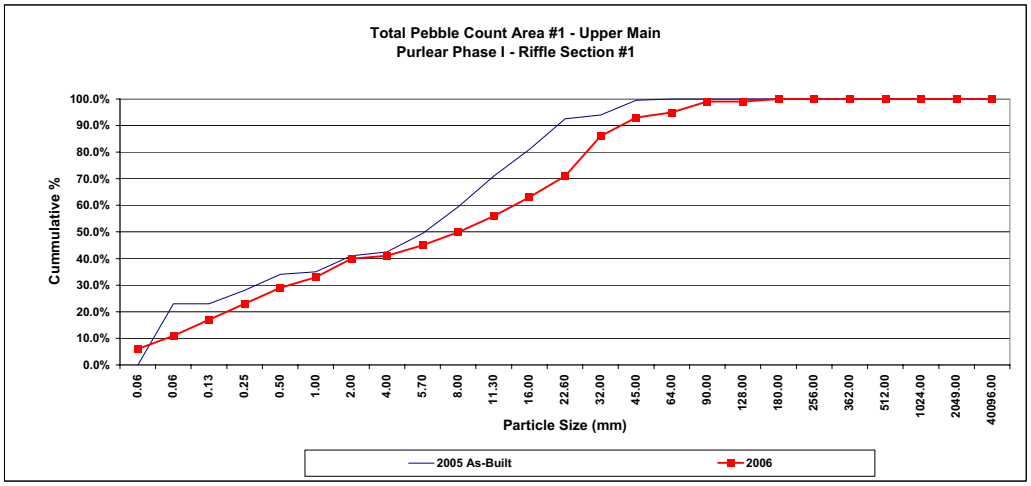
	As-Built	**2006**
Area	40.0	42.4
Width	28.3	34.5
Mean Depth	1.4	1.2
Max Depth	2.9	3.0



Project Name	Purlear Phase II
Cross Section	Reach 1 - Upper Area
Feature	
Date	10/1/2006
Crew	Shaffer, Rozzell, Clinton

		2005 As-Built					2006			
Description	**Material**	**Size (mm)**	**Pool**	**Riffle**	**%**	**Cum %**	**Pool**	**Riffle**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	0	0	0.0%	0.0%	3	3	6.0%	6.0%
Sand	very fine sand	0.062	37	9	23.0%	23.0%	5	0	5.0%	11.0%
	fine sand	0.125	0	0	0.0%	23.0%	4	2	6.0%	17.0%
	medium sand	0.25	7	3	5.0%	28.0%	5	1	6.0%	23.0%
	course sand	0.50	9	3	6.0%	34.0%	5	1	6.0%	29.0%
	very course sand	1.0	0	2	1.0%	35.0%	3	1	4.0%	33.0%
G r a v e l	very fine gravel	2.0	5	7	6.0%	41.0%	5	2	7.0%	40.0%
	fine gravel	4.0	3	0	1.5%	42.5%	0	1	1.0%	41.0%
	fine gravel	5.7	4	10	7.0%	49.5%	4	0	4.0%	45.0%
	medium gravel	8.0	1	19	10.0%	59.5%	2	3	5.0%	50.0%
	medium gravel	11.3	4	19	11.5%	71.0%	3	3	6.0%	56.0%
	course gravel	16.0	12	8	10.0%	81.0%	1	6	7.0%	63.0%
	course gravel	22.6	8	15	11.5%	92.5%	2	6	8.0%	71.0%
	very course gravel	32	3	0	1.5%	94.0%	2	13	15.0%	86.0%
	very course gravel	45	6	5	5.5%	99.5%	3	4	7.0%	93.0%
Cobble	small cobble	64	1	0	0.5%	100.0%	1	1	2.0%	95.0%
	medium cobble	90	0	0	0.0%	100.0%	2	2	4.0%	99.0%
	large cobble	128	0	0	0.0%	100.0%	0	0	0.0%	99.0%
	very large cobble	180	0	0	0.0%	100.0%	0	1	1.0%	100.0%
Boulder	small boulder	256	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			100	100	100.0%		50	50	100%	

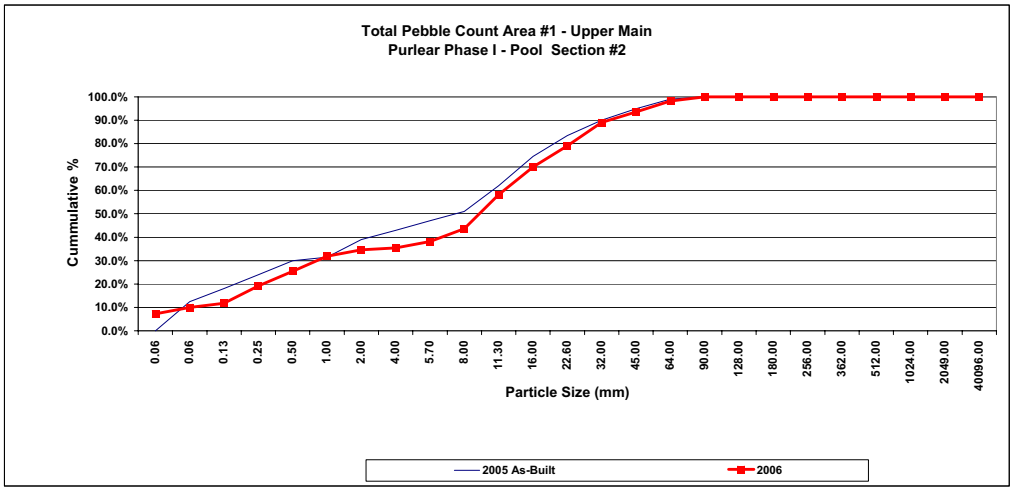
	d16	**d35**	**d50**	**d84**	**d95**
2005 As-Built	0.08	1.50	6.99	21.39	41.41
2006	0.17	1.93	9.65	37.01	77.00
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00
2010	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase II
Cross Section	Reach 1 - Lower Area
Feature	
Date	10/1/2006
Crew	Shaffer, Rozzell, Clinton

			2005 As-Built				2006			
Description	**Material**	**Size (mm)**	**Pool**	**Riffle**	**%**	**Cum %**	**Pool**	**Riffle**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	0	0	0.0%	0.0%	8	0	7.3%	7.3%
Sand	very fine sand	0.062	15	10	12.5%	12.5%	2	1	2.7%	10.0%
	fine sand	0.125	6	5	5.5%	18.0%	1	1	1.8%	11.8%
	medium sand	0.25	10	2	6.0%	24.0%	6	2	7.3%	19.1%
	course sand	0.50	9	3	6.0%	30.0%	6	1	6.4%	25.5%
	very course sand	1.0	3	0	1.5%	31.5%	5	2	6.4%	31.8%
G r a v e l	very fine gravel	2.0	10	5	7.5%	39.0%	2	1	2.7%	34.5%
	fine gravel	4.0	8	0	4.0%	43.0%	1	0	0.9%	35.5%
	fine gravel	5.7	6	2	4.0%	47.0%	1	2	2.7%	38.2%
	medium gravel	8.0	3	5	4.0%	51.0%	6	0	5.5%	43.6%
	medium gravel	11.3	9	13	11.0%	62.0%	6	10	14.5%	58.2%
	course gravel	16.0	8	17	12.5%	74.5%	8	5	11.8%	70.0%
	course gravel	22.6	5	13	9.0%	83.5%	2	8	9.1%	79.1%
	very course gravel	32	3	10	6.5%	90.0%	2	9	10.0%	89.1%
	very course gravel	45	3	7	5.0%	95.0%	1	4	4.5%	93.6%
Cobble	small cobble	64	2	6	4.0%	99.0%	0	5	4.5%	98.2%
	medium cobble	90	0	2	1.0%	100.0%	0	2	1.8%	100.0%
	large cobble	128	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			100	100	100.0%		57	53	100%	

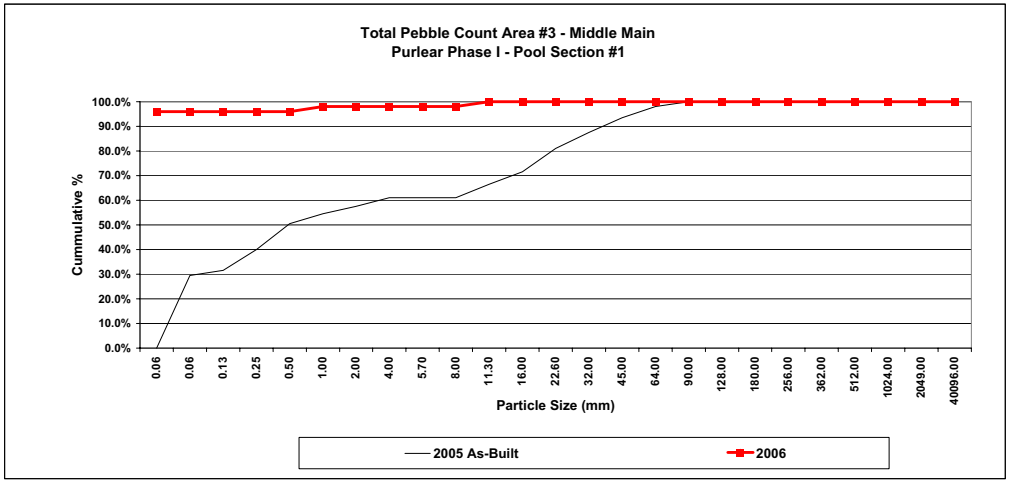
	d16	**d35**	**d50**	**d84**	**d95**
2005 As-Built	0.15	2.20	8.95	28.16	54.50
2006	0.30	3.93	11.40	32.80	61.25
2007	0.30	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00
2010	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase II
Cross Section	Reach 4 - Upper Area
Feature	
Date	10/1/2006
Crew	Shaffer, Rozzell, Clinton

		2005 As-Built					2006			
Description	**Material**	**Size (mm)**	**Pool**	**Riffle**	**%**	**Cum %**	**Pool**	**Riffle**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	0	0	0.0%	0.0%	25	23	96.0%	96.0%
Sand	very fine sand	0.062	32	27	29.5%	29.5%	0	0	0.0%	96.0%
	fine sand	0.125	0	4	2.0%	31.5%	0	0	0.0%	96.0%
	medium sand	0.25	8	9	8.5%	40.0%	0	0	0.0%	96.0%
	course sand	0.50	11	10	10.5%	50.5%	0	0	0.0%	96.0%
	very course sand	1.0	6	2	4.0%	54.5%	0	1	2.0%	98.0%
G r a v e l	very fine gravel	2.0	0	6	3.0%	57.5%	0	0	0.0%	98.0%
	fine gravel	4.0	2	5	3.5%	61.0%	0	0	0.0%	98.0%
	fine gravel	5.7	0	0	0.0%	61.0%	0	0	0.0%	98.0%
	medium gravel	8.0	0	0	0.0%	61.0%	0	0	0.0%	98.0%
	medium gravel	11.3	4	7	5.5%	66.5%	0	1	2.0%	100.0%
	course gravel	16.0	3	7	5.0%	71.5%	0	0	0.0%	100.0%
	course gravel	22.6	16	3	9.5%	81.0%	0	0	0.0%	100.0%
	very course gravel	32	3	10	6.5%	87.5%	0	0	0.0%	100.0%
	very course gravel	45	5	7	6.0%	93.5%	0	0	0.0%	100.0%
Cobble	small cobble	64	8	1	4.5%	98.0%	0	0	0.0%	100.0%
	medium cobble	90	2	2	2.0%	100.0%	0	0	0.0%	100.0%
	large cobble	128	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			100	100	100.0%		25	25	100.0%	

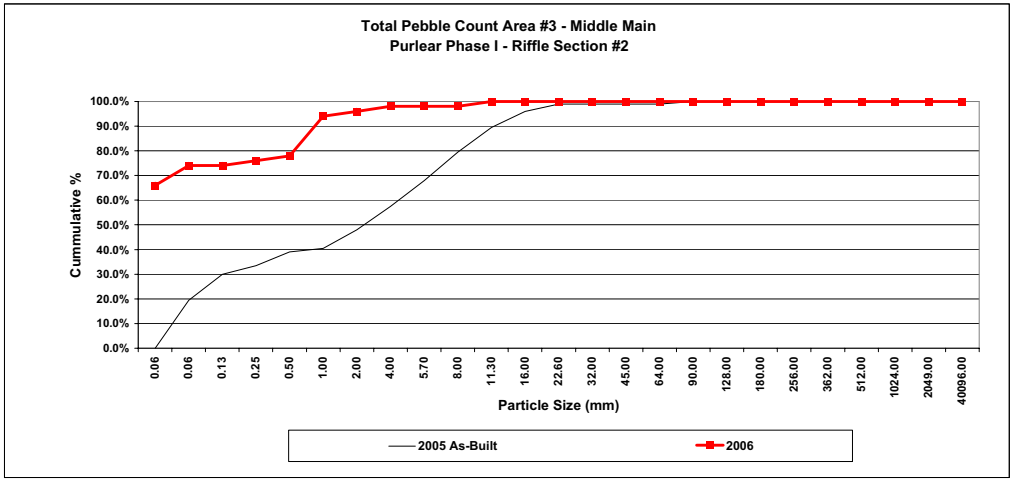
	d16	**d35**	**d50**	**d84**	**d95**
2005 As-Built	0.08	0.26	0.73	32.47	62.00
2006	0.00	0.00	0.00	0.00	0.00
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00
2010	0.00	0.00	0.00	0.00	0.00



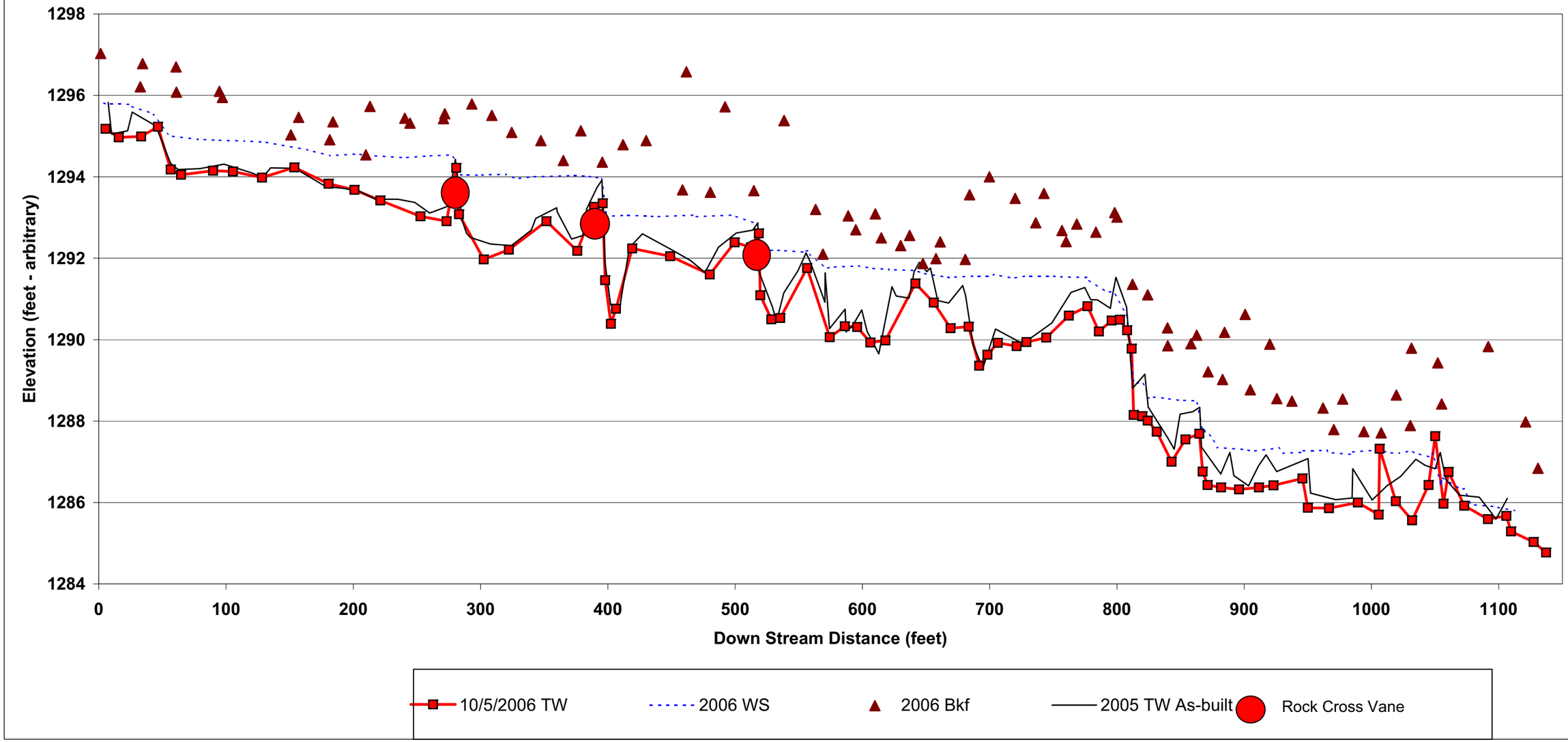
Project Name	Purlear Phase II
Cross Section	Reach 4 - LowerArea
Feature	
Date	10/1/2006
Crew	Shaffer, Rozzell, Clinton

		2005 As-Built					2006			
Description	**Material**	**Size (mm)**	**Pool**	**Riffle**	**%**	**Cum %**	**Pool**	**Riffle**	**%**	**Cum %**
Silt/Clay	silt/clay	0.061	0	0	0.0%	0.0%	11	22	66.0%	66.0%
Sand	very fine sand	0.062	23	16	19.5%	19.5%	3	1	8.0%	74.0%
	fine sand	0.125	17	4	10.5%	30.0%	0	0	0.0%	74.0%
	medium sand	0.25	7	0	3.5%	33.5%	1	0	2.0%	76.0%
	course sand	0.50	8	3	5.5%	39.0%	1	0	2.0%	78.0%
	very course sand	1.0	3	0	1.5%	40.5%	7	1	16.0%	94.0%
G r a v e l	very fine gravel	2.0	5	10	7.5%	48.0%	1	0	2.0%	96.0%
	fine gravel	4.0	10	9	9.5%	57.5%	1	0	2.0%	98.0%
	fine gravel	5.7	6	15	10.5%	68.0%	0	0	0.0%	98.0%
	medium gravel	8.0	11	12	11.5%	79.5%	0	0	0.0%	98.0%
	medium gravel	11.3	3	17	10.0%	89.5%	0	1	2.0%	100.0%
	course gravel	16.0	3	10	6.5%	96.0%	0	0	0.0%	100.0%
	course gravel	22.6	4	2	3.0%	99.0%	0	0	0.0%	100.0%
	very course gravel	32	0	0	0.0%	99.0%	0	0	0.0%	100.0%
	very course gravel	45	0	0	0.0%	99.0%	0	0	0.0%	100.0%
Cobble	small cobble	64	0	0	0.0%	99.0%	0	0	0.0%	100.0%
	medium cobble	90	0	2	1.0%	100.0%	0	0	0.0%	100.0%
	large cobble	128	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	362	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	very large boulder	2049	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			100	100	100.0%		25	25	100%	

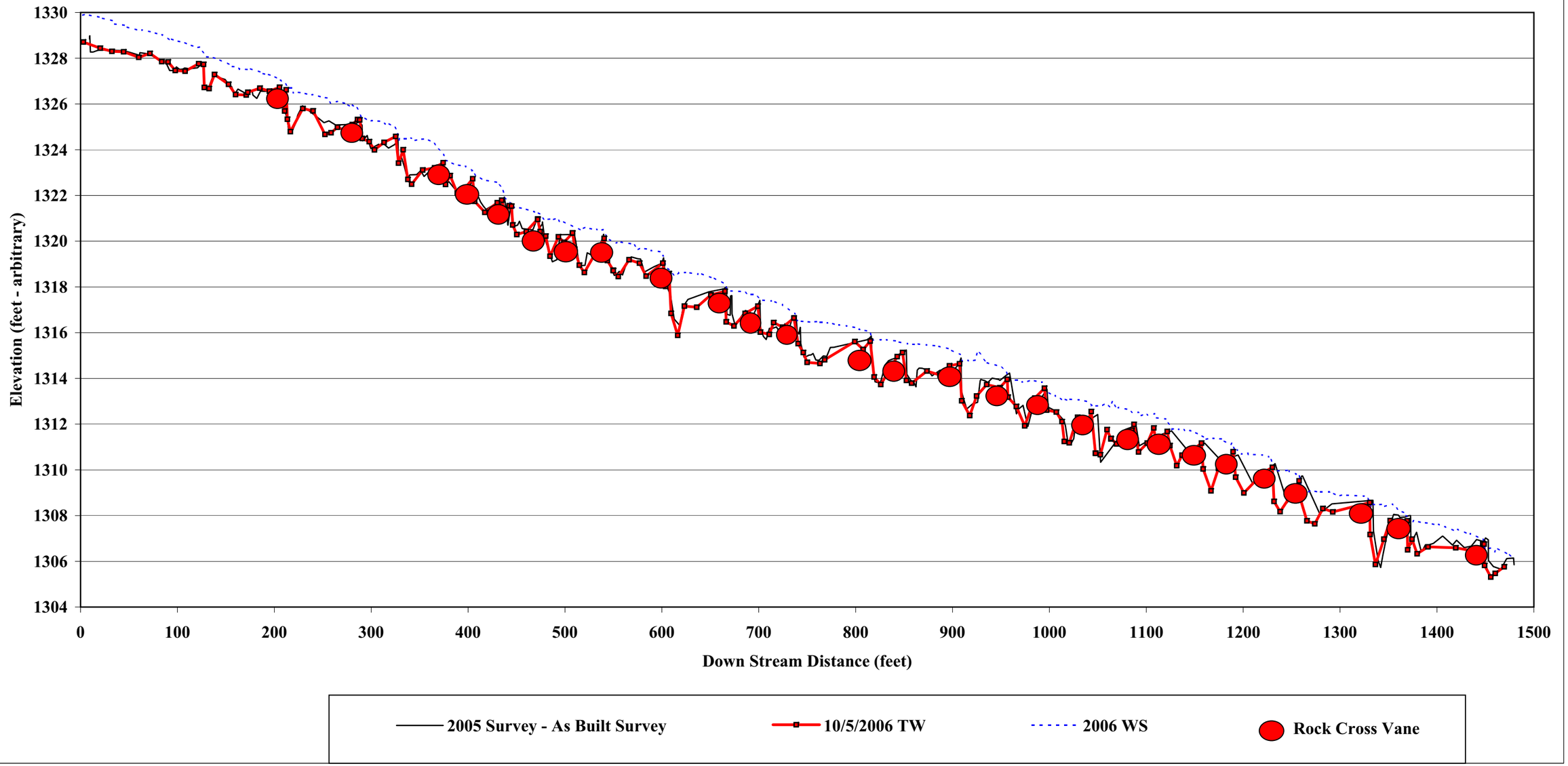
	d16	**d35**	**d50**	**d84**	**d95**
2005 As-Built	0.09	0.48	3.39	11.45	18.43
2006	0.00	0.00	0.00	1.03	2.25
2007	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00
2010	0.00	0.00	0.00	0.00	0.00



Purlear Phase 2
Longitudinal Profile
2006 - Reach 4
Main Channel



Purlear Phase 2
Longitudinal Profile
2006 -Reach 1
Wetland Area



Project Name Purlear Phase II
Task Longitudinal Profile
Section Reach 4 - Main Channel
Date 8/15/06
Crew Shaffer, Patterson, Clinton

Downstream

Symbol Key	
T	Thalweg
R	Head of Riffle
P	Head of Pool
U	Head of Run
M	Max Pool

2005 Survey - As Built Survey

TW Station	TW Elev	WS Station	WS Elev	BKF Station	BKF Elev	Feature
7.36	1295.83	4.16	1295.88	4.16	1297.21	TW
10.12	1295.05	9.63	1295.75	9.63	1297.47	TW
22.7	1295.13	60.81	1294.91	60.81	1296.63	TW
26.3	1295.59	61.75	1294.8	61.75	1296.48	TW
44.89	1295.25	278.09	1294.42	278.09	1295.85	TW
56.47	1294.33	279.29	1294.44	279.29	1295.69	TW
62.3	1294.18	641.75	1292.12	641.75	1293.7	TW
79.43	1294.2	650.02	1292.19	650.02	1293.36	TW
98.36	1294.31	747.93	1291.8	747.93	1293.23	TW
120.75	1294.09	750.85	1291.83	750.85	1293.91	TW
128.83	1293.98	837.5	1288.91	837.5	1291.03	CL
134.98	1294.22	837.88	1288.86	837.88	1290.94	TW
154.16	1294.21	969.86	1287.58	969.86	1289.8	TW
178.37	1293.76	973.66	1287.51	973.66	1289.53	TW
191.47	1293.72	1049.94	1287.53	1049.94	1290.28	TW
204.4	1293.65	1056.73	1287.45	1056.73	1288.93	CL
204.42	1293.65					TW
217.37	1293.45					TW
235.08	1293.45					TW
248.33	1293.37					TW
260.06	1293.11					TW
273.67	1293.27					TW
280.21	1294.43					TW
282.51	1293.8					TW
285.62	1292.92					TW
288.88	1292.62					CL
291.83	1292.51					TW
307.75	1292.35					TW
324.21	1292.31					TW
339.84	1292.69					TW
343.34	1292.98					TW
359.84	1293.24					CL
360.25	1293.14					TW
371.53	1292.47					TW
380.38	1292.56					TW
383.32	1293.21					TW
391.52	1293.74					CL
391.52	1293.74					TW
395.38	1293.92					TW
397.65	1291.91					TW
402.23	1290.85					TW
409.47	1290.81					TW
416.86	1292.26					TW
427.18	1292.6					TW
450.57	1292.2					TW
465.25	1291.94					TW
476.25	1291.65					TW
486.91	1292.27					TW
500.91	1292.62					TW
513.88	1292.69					TW
517.84	1292.87					TW
518.54	1291.68					TW
529.5	1290.79					TW
532.45	1290.44					TW
538.25	1291.15					TW
549.28	1291.69					TW
555.72	1292.13					TW
559.09	1291.91					TW
570.54	1290.92					TW
570.71	1291.64					CL
574.16	1290.27					TW
586.4	1290.75					CL
587.23	1290.19					TW
592.27	1290.34					TW
599.48	1290.73					CL
603.67	1290.21					TW
612.85	1289.65					TW
623.24	1291.3					CL
626.62	1291.07					TW
636.73	1291.02					TW
640.63	1291.67					TW
644.75	1291.9					CL
644.75	1291.9					TW
650.63	1291.67					TW
653.37	1291.76					CL
653.48	1291.76					TW
659.15	1290.96					TW
667.69	1290.9					TW
678.79	1291.33					CL
681.09	1291.08					TW
687.04	1289.87					TW
694.65	1289.3					TW
704.64	1290.26					TW
726.09	1289.9					TW
748.88	1290.41					TW
763.93	1291.16					TW
774.7	1291.28					TW
779.49	1290.98					TW
784.49	1290.98					TW
794.87	1290.77					TW
795.85	1290.99					CL
799.19	1291.53					TW
807.55	1290.8					TW
812.41	1288.81					TW
821.92	1289.15					TW
824.57	1288.34					TW
824.63	1288.34					CL
839.46	1287.61					TW
844.99	1287.31					TW
849.63	1288.17					TW
859.5	1288.23					TW
865.05	1288.34					TW
866.39	1287.36					TW
881.55	1286.7					TW
888.77	1287.23					TW
891.85	1286.66					TW
903.42	1286.41					TW
911.23	1286.9					TW
917.18	1287.17					TW
925.49	1286.76					TW
950.16	1287.08					CL
952.1	1286.23					TW
971.95	1286.07					TW
984.72	1286.11					TW
985.3	1286.83					CL
1000.54	1286.06					TW
1012.15	1286.41					TW
1022.96	1286.64					TW
1034.84	1287.06					TW
1042.36	1286.91					TW
1050.14	1286.83					TW
1054.01	1287.23					TW
1058.52	1286.56					TW
1069.21	1286.18					TW
1084.69	1286.13					TW
1093.42	1285.78					TW
1097.82	1285.59					TW
1106.71	1286.1					TW

2006 Survey*

TW Station	TW Elev	WS Station	WS Elev	BKF Station	BKF Elev	Feature
5.31	1295.18	4.03	1295.81	1.46	1297.03	T
15.7	1294.97	6.15	1295.79	32.62	1296.21	T
33.28	1294.99	24.3	1295.78	34.48	1296.78	T
46.44	1295.23	25.69	1295.73	60.73	1296.7	T
56.52	1294.18	42.83	1295.55	60.97	1296.08	T
64.63	1294.05	43.07	1295.52	94.75	1296.1	T
89.83	1294.15	54.52	1295.06	97.13	1295.95	T
105.41	1294.13	57.15	1295	150.97	1295.03	T
128.29	1293.98	78.08	1294.92	157.06	1295.46	T
153.65	1294.23	91.25	1294.9	181.51	1294.91	T
180.56	1293.83	114.4	1294.88	184.02	1295.35	T
200.9	1293.68	131.26	1294.85	209.87	1294.54	T
221.22	1293.42	164.12	1294.66	213.1	1295.73	T
252.81	1293.03	181.57	1294.52	240.48	1295.44	T
273.27	1292.91	203.75	1294.56	244.56	1295.32	T
280.86	1294.22	209.72	1294.53	270.88	1295.43	TRV
283.08	1293.08	240	1294.47	271.9	1295.55	T
302.45	1291.97	258.24	1294.51	293.16	1295.79	T
322.26	1292.21	276.92	1294.54	308.83	1295.51	T
351.75	1292.91	279.68	1294.45	324.51	1295.09	T
376.03	1292.18	282.02	1294.04	347.37	1294.89	T
389.22	1293.26	285.31	1294.05	365.05	1294.4	T
395.98	1293.35	298.04	1294.04	378.79	1295.13	TRV
397.86	1291.46	301.28	1294.05	395.6	1294.36	T
402.43	1290.39	320	1294.06	411.98	1294.79	T
406.37	1290.76	327.74	1293.95	430.08	1294.89	T
419.12	1292.24	340.96	1294	458.67	1293.68	T
448.99	1292.05	371.26	1294.03	480.53	1293.62	T
480.09	1291.6	383	1294.02	514.72	1293.66	T
499.65	1292.39	390.76	1293.98	563.23	1293.2	T
512.49	1292.27	395.04	1293.99	568.98	1292.1	T
518.63	1292.61	399.15	1292.99	588.84	1293.04	TRV
519.82	1291.09	399.27	1293.03	594.82	1292.7	T
528.47	1290.5	412.13	1293.05	610.18	1293.09	T
535.43	1290.53	431.99	1293.04	614.81	1292.5	T
556.58	1291.76	436.8	1293.02	630.04	1292.31	T
574.33	1290.06	467.48	1293.06	637.13	1292.56	T
586.23	1290.33	468.65	1293.02	647.57	1291.87	T
595.9	1290.31	497.7	1293.06	657.84	1291.99	T
606.25	1289.93	516.52	1292.85	661.13	1292.4	T
618.08	1289.98	517.52	1292.83	680.84	1291.97	T
641.64	1291.38	519.49	1292.17	684.21	1293.56	T
656.04	1290.91	520.55	1292.18	699.83	1294	T
669.24	1290.28	530.14	1292.2	720.03	1293.47	T
683.52	1290.32	536.99	1292.19	736.23	1292.87	T
691.73	1289.36	554.18	1292.15	742.68	1293.59	T
698.24	1289.63	554.28	1292.17	756.79	1292.68	T
706.34	1289.92	557.71	1292.19	760.03	1292.41	T
721.22	1289.84	558.83	1292.1	768.44	1292.84	T
728.94	1289.94	571.34	1291.75	783.47	1292.64	T
744.46	1290.05	575.28	1291.78	798.25	1293.12	T
762.22	1290.59	597.07	1291.81	800.05	1293.01	T
776.86	1290.82	607.6	1291.75	812.26	1291.36	T
785.88	1290.2	620.85	1291.73	824.17	1291.1	T
795.86	1290.47	621.02	1291.72	839.75	1290.29	T
802.34	1290.49	641.33	1291.7	839.93	1289.85	T
808	1290.23	647.62	1291.63	858.15	1289.9	T
811.6	1289.78	666.66	1291.53	862.71	1290.11	T
813.15	1288.15	668.15	1291.53	871.64	1289.21	T
819.97	1288.12	686.65	1291.56	882.99	1289.02	T
824.17	1288.01	699.48	1291.56	884.54	1290.18	T
831.26	1287.74	703.37	1291.6	900.7	1290.62	T
842.95	1287	718.44	1291.51	904.8	1288.77	T
853.81	1287.55	727.24	1291.56	920.07	1289.89	T
864.7	1287.69	750.18	1291.56	925.66	1288.55	T
867.35	1286.76	756.35	1291.54	937.48	1288.49	T
871.23	1286.43	776.18	1291.53	961.9	1288.32	T
881.86	1286.37	776.4	1291.49	970.41	1287.79	T
895.93	1286.32	791.33	1291.18	977.4	1288.54	T
911.57	1286.37	797.35	1291.17	994.02	1287.74	T
922.99	1286.42	807.5	1290.62	1007.64	1287.71	T
945.75	1286.59	812.92	1289	1019.56	1288.64	TD
950.04	1285.87	814.26	1288.92	1030.51	1287.89	T
966.59	1285.86	819.76	1288.96	1031.43	1289.79	T
989.31	1286	821.77	1288.87	1052.12	1289.43	T
1005.65	1285.7	824.99	1288.57	1055.18	1288.42	TT
1006.41	1287.32	825.74	1288.6	1091.78	1289.83	ROCK
1019.12	1286.03	837.76	1288.56	1121.1	1287.98	T
1031.94	1285.56	848.81	1288.51	1130.86	1286.84	T
1044.88	1286.43	861.52	1288.5	461.68	1296.58	T
1050.1	1287.63	862.9	1288.45	492.12	1295.72	BED
1056.58	1285.97	868.36	1287.61	538.43	1295.38	T
1060.57	1286.75	869.3	1287.76	538.57	1295.38	BED
1072.88	1285.92	874.34	1287.61			T
1091.54	1285.59	878.9	1287.35			T
1106	1285.67	901.03	1287.3			BED
1109.67	1285.29	906.76	1287.26			T
1127.39	1285.03	927.16	1287.34			T
1137.19	1284.77	930.61	1287.21			T
		944.55	1287.23			
		944.6	1287.27			
		964.94	1287.28			
		965.86	1287.23			
		984.39	1287.18			
		985.03	1287.24			
		1005.14	1287.29			
		1014.28	1287.22			
		1021.94	1287.21			
		1030.78	1287.27			
		1033.79	1287.22			
		1046.56	1287.11			
		1048.31	1287.21			
		1054.65	1286.41			
		1054.79	1286.63			
		1070.28	1286.32			
		1072.88	1286.34			
		1078.19	1285.95			
		1096.01	1285.9			
		1112.49	1285.8			

Project Name Purlear Phase II
Task Longitudinal Profile
Section Reach 1 Wetland
Date 8/15/06
Crew Shaffer, Patterson, Clinton

Upstream

Symbol Key

T	Thalweg
R	Head of Riffle
P	Head of Pool
U	Head of Run
M	Max Pool

2005 Survey - As Built Survey

TW Station	TW Elev	WS Station	WS Elev	BKF Station	BKF Elev	Feature	TW Station	TW Elev	Feature	TW Station	TW Elev	Feature
9.33	1328.84	8.73	1329.08	8.62	1329.58	CL	455.86	1320.55	TW	860.47	1313.79	TW
9.56	1328.98	9.09	1328.98	8.85	1329.49	TW	466.81	1320.49	TW	862.28	1313.63	TW
10.13	1328.27	226.92	1326.1	226.25	1326.8	TW	469.72	1320.81	TW	863.54	1314.36	TW
12.89	1328.27	229.12	1326.03	228.96	1326.66	TW	470.95	1321.03	TW	865.43	1314.45	CL
18.71	1328.36	539.99	1320.22	539.49	1320.84	TW	473.41	1320.56	TW	868.65	1314.44	TW
44.95	1328.33	540.19	1320.29	540.08	1320.72	TW	476.68	1320.76	CL	874.7	1314.35	TW
60.82	1328.13	665.66	1318.09	665.54	1318.57	TW	476.72	1320.84	TW	874.83	1314.35	CL
61.24	1328.24	666.27	1318.1	665.89	1318.58	CL	478.94	1320.14	TW	878.82	1314.11	TW
71.69	1328.18	812.54	1315.97	812.85	1316.69	TW	483.02	1319.62	TW	886.9	1314.35	TW
88.68	1327.76	815.57	1315.88	815.39	1316.49	TW	486.93	1319.1	TW	890.48	1314.37	CL
91.92	1327.46	956.25	1314.39	956.36	1315.04	TW	491.63	1319.19	TW	893.84	1314.4	TW
96.42	1327.46	956.77	1314.2	957.39	1314.72	TW	494.97	1320.28	TW	901.41	1314.38	TW
96.44	1327.47	977.22	1313.64	1342.04	1309.3	CL	495.13	1320.28	CL	906.65	1314.62	TW
98.9	1327.62	978.23	1313.63	1346.8	1309.56	TW	506.95	1320.29	TW	908.76	1314.89	TW
102.28	1327.51	985.55	1313.62	1371.83	1308.69	TW	509.18	1320.39	TW	909.25	1313.41	TW
105.34	1327.52	985.58	1313.63	1372.57	1308.81	CL	511.2	1319.97	TW	914.56	1312.66	TW
107.42	1327.57	1021.52	1312.76	1477.89	1307.22	TW	514.67	1318.93	TW	920.95	1312.89	CL
112.31	1327.54	1022.64	1312.74	1478.94	1306.97	TW	520.6	1318.94	TW	922.69	1312.91	TW
120.75	1327.58	1031.85	1312.76			TW	522.94	1319.49	CL	925.77	1312.95	TW
124.37	1327.73	1032.51	1312.73			TW	526.67	1319.41	TW	928.59	1313.89	CL
127.37	1327.71	1109.16	1311.76			TW	529.82	1319.54	CL	929.19	1313.95	TW
127.75	1326.83	1110.85	1311.8			TW	534.29	1319.65	TW	933.31	1313.9	TW
130.77	1326.64	1156.66	1306.1			TW	539.07	1320.17	TW	936.53	1313.82	CL
133.33	1326.84	1176.78	1310.91			TW	539.92	1320.3	TW	940.81	1314.01	TW
136.19	1327.16	1178.27	1310.9			TW	542.04	1319.35	TW	947.69	1313.95	CL
138.12	1327.25	1209.2	1310.37			TW	550.92	1318.5	TW	948.88	1313.91	TW
143.16	1327.15	1210.29	1310.38			CL	553.74	1318.57	TW	955.29	1314.13	TW
149.24	1327.07	1245.58	1309.81			TW	555.99	1318.68	CL	958.89	1314.23	TW
152.53	1326.87	1246.51	1309.85			CL	559.34	1318.52	TW	958.91	1314.23	CL
156.05	1326.75	1278.23	1308.8			TW	563.02	1318.98	TW	965.94	1312.45	TW
157.6	1326.56	1279.09	1308.82			CL	568.48	1319.31	TW	968.03	1312.65	TW
158.97	1326.43	1290.97	1308.68			TW	575.26	1319.23	TW	972.78	1312.82	TW
162.43	1326.65	1291.88	1308.79			TW	577.95	1319.22	CL	977.7	1311.9	TW
171.27	1326.44	1342.09	1308.31			TW	581.89	1318.65	TW	981.4	1312.49	TW
177.01	1326.59	1346.61	1308.37			CL	591.89	1318.88	CL	985.72	1313.03	TW
177.85	1326.39	1371.82	1308			TW	591.9	1318.88	TW	991.58	1313.15	TW
181.93	1326.24	1372.59	1308.09			TW	599.94	1319.03	TW	997.48	1313.52	TW
185.72	1326.56	1478.54	1306.21			TW	601.78	1319.27	TW	998.62	1312.74	TW
194.37	1326.55					TW	604.23	1318.14	TW	1006.47	1312.57	TW
203.98	1326.33					TW	608.96	1317.62	TW	1010.27	1312.38	TW
204.02	1326.33					CL	612.72	1316.59	TW	1014.75	1312.17	TW
206.42	1326.7					TW	618.68	1316.3	TW	1016.54	1311.93	TW
208.54	1326.04					TW	622.17	1317.15	TW	1019.12	1311.18	TW
213.51	1325.31					TW	622.21	1317.15	CL	1022.35	1311.15	TW
215.04	1324.74					TW	626.86	1317.45	TW	1025.11	1311.36	TW
217.3	1324.71					TW	648.29	1317.78	TW	1027.95	1312.33	TW
222.12	1325.18					TW	663.81	1317.91	TW	1032.43	1312.36	TW
224.2	1325.51					TW	666.63	1318	TW	1040.63	1312.17	TW
229.04	1325.92					TW	667.19	1316.8	TW	1049.85	1312.42	TW
241.38	1325.52					TW	670.5	1316.76	TW	1052.79	1310.33	TW
251.28	1325.18					TW	670.79	1317.6	TW	1078.15	1311.76	TW
256.37	1325.26					TW	671.91	1317.62	CL	1089.39	1311.94	TW
263.19	1325.08					TW	672.18	1317.62	TW	1092.7	1311.05	TW
282.03	1325.11					CL	672.38	1316.82	TW	1110.16	1311.47	TW
282.03	1325.11					TW	675.17	1316.39	TW	1126.08	1311.7	TW
288.04	1325.22					TW	678.06	1316.46	TW	1145.92	1310.68	TW
290.58	1325.07					TW	686.16	1316.97	TW	1160.19	1311.17	TW
291.01	1324.39					TW	694.86	1316.81	TW	1177.36	1310.39	TW
295.87	1324.62					TW	699.4	1317.24	TW	1194.72	1310.65	TW
297.56	1324.32					TW	701.13	1317.41	TW	1209.87	1309.4	TW
299.66	1324.05					TW	701.85	1316.22	TW	1232.84	1310.27	TW
307.74	1324.24					CL	704.84	1315.83	TW	1245.53	1308.57	TW
308	1324.15					TW	707.69	1315.7	TW	1260.42	1309.73	Vane
311.99	1324.29					TW	711.03	1316.19	CL	1261.25	1309.73	TW
317.83	1324.07					TW	713.05	1316.17	TW	1278.84	1308.09	TW
324.42	1324.23					TW	718.31	1316.25	TW	1291.57	1308.51	TW
327.6	1324.44					TW	720.13	1316.12	CL	1333.87	1308.67	TW
328.24	1323.37					TW	722.35	1315.86	TW	1333.89	1308.67	CL
330.92	1323.7					TW	727.02	1316.39	TW	1334.43	1307.33	TW
334.19	1323.26					TW	731.31	1316.3	TW	1335.29	1307.09	TW
337.37	1322.74					CL	732	1316.26	CL	1339.34	1306.03	TW
339.89	1322.9					TW	735.31	1316.74	TW	1341.88	1305.73	TW
346.88	1322.91					TW	738.54	1316.74	TW	1343.96	1306.23	TW
351.07	1323.08					CL	739.64	1316.05	TW	1347.44	1306.97	TW
354.55	1322.83					TW	741.41	1315.94	TW	1350.74	1307.52	TW
361.23	1323.1					TW	742.88	1316.23	TW	1355.28	1308.05	TW
366.93	1323.32					TW	743.4	1315.52	TW	1360.16	1308.02	TW
372.9	1323.37					TW	746.61	1314.93	TW	1361.77	1307.92	CL
374.71	1323.42					TW	750.33	1314.98	TW	1367.14	1307.94	TW
375.51	1322.59					TW	751.29	1315.01	CL	1371.21	1308	TW
378.17	1322.7					TW	754.19	1315.03	TW	1372.76	1308	TW
380.39	1322.59					TW	756	1315.09	TW	1373.2	1306.73	TW
388.53	1322.17					TW	758.91	1314.8	TW	1375.72	1307	TW
392.23	1322.05					CL	762.2	1314.79	TW	1378.89	1307.27	TW
392.23	1322.04					TW	766.66	1314.98	CL	1383.24	1306.51	TW
402.8	1322.51					TW	770.13	1314.96	TW	1385.09	1306.47	TW
404.68	1322.7					TW	773.89	1315.35	TW	1387.88	1306.71	TW
406.57	1321.79					TW	777.46	1315.36	TW	1390.72	1306.71	TW
410.1	1321.98					TW	813	1315.7	TW	1396.24	1306.78	TW
412.91	1321.71					TW	816.14	1315.85	TW	1405.68	1307.1	CL
415.64	1321.54					TW	816.77	1314.83	TW	1406.29	1307.09	TW
418.5	1321.39					TW	820.03	1313.85	TW	1416.03	1306.71	TW
418.55	1321.39					CL	825.4	1313.79	TW	1420.31	1306.92	CL
426.26	1321.58					TW	829.35	1314.4	CL	1428.24	1306.6	TW
434.66	1321.64					TW	829.95	1314.57	TW	1435.35	1306.66	TW
437.45	1321.93					TW	833.95	1314.77	TW	1440.9	1306.95	TW
439.53	1321.27					TW	837.12	1314.83	CL	1448.09	1306.86	TW
441.03	1320.7					TW	842.68	1314.91	TW	1450.14	1307.02	TW
444.11	1321.54					TW	849.8	1315.15	TW	1452.94	1306.94	TW
447.22	1320.65					TW	852.23	1315.24	TW	1453.08	1306.04	TW
451.06	1320.7					TW	852.84	1314.18	TW	1458.23	1305.77	TW
453.03	1320.87					CL	856.57	1313.93	TW	1461.6	1305.72	TW
455.86	1320.55					TW				1465.99	1305.66	TW
466.81	1320.49					TW				1471.97	1306.12	TW
469.72	1320.81					TW				1479.02	1306.14	CL
470.95	1321.03					TW				1479.6	1305.85	TW

2006 Survey

TW Station	TW Elev	WS Station	WS Elev	Feature	TW Station	TW Elev	WS Station	WS Elev	Feature	WS Station	WS Elev
2.8	1328.71	2.39	1329.88	T	768.07	1314.81	528.4	1320.52	T	1071.47	1312.72
20.26	1328.44	4.36	1329.92	T	799.15	1315.61	532.74	1320.51	T	1082.84	1312.63
32.34	1328.3	20.01	1329.79	T	807.76	1315.26	533.48	1320.48	T	1085.37	1312.52
44.48	1328.28	20.27	1329.77	T	815.1	1315.63	539.17	1320.5	RV	1091.51	1312.51
60.15	1328.04	32.81	1329.64	T	819.01	1314.06	543.82	1320.17	T	1094.77	1312.37
71.58	1328.21	35.32	1329.5	T	825.94	1313.73	546.07	1320.07	T	1094.83	1312.37
83.81	1327.85	47.5	1329.43	T	842.88	1314.95	552.92	1319.92	T	1100.25	1312.46
90.33	1327.84	48.22	1329.36	T	848.35	1315.13	553.98	1319.95	RV	1101.41	1312.4
97.72	1327.46	60.39	1329.21	T	852.45	1313.91	557.86	1319.96	T	1108.45	1312.45
107.93	1327.43	63.58	1329.24	T	857.78	1313.79	568.89	1319.88	T	1109.49	1312.28
121.9	1327.76	72.49	1329.15	T	873.56	1314.32	571.66	1319.83	T	1119.96	1312.22
126.9	1327.73	80.98	1329.05	T	886.98	1314.14	574.59	1319.61	T	1121.14	1312.13
127.7	1326.72	84.55	1329.02	T	896.82	1314.55	577.22	1319.69	T	1126.57	1311.79
132.66	1326.67	93.14	1328.77	T	907.27	1314.64	584.27	1319.66	RV	1132.83	1311.78
138.27	1327.29	93.58	1328.84	T	909.44	1313.02	588.95	1319.59	T	1133.32	1311.77
152.74	1326.86	97.03	1328.78	T	917.78	1312.37	598.04	1319.54	T	1138.55	1311.78
160.01	1326.41	107.79	1328.68	T	924.8	1313.23	601.13	1319.37	T	1139.66	1311.73
171.03	1326.39	112.96	1328.58	T	935.25	1313.73	604.45	1318.86	T	1144.89	1311.72
172.62	1326.51	121.18	1328.47	T	948.89	1313.59	608.68	1318.71	T	1147.1	1311.69
185.11	1326.69	122.72	1328.49	T	956.52	1313.96	613.36	1318.47	RV	1152.47	1311.58
194.9	1326.56	129.79	1328.06	T	957.18	1313.18	617.42	1318.62	T	1159.51	1311.42
205.34	1326.73	134.86	1328.05	T	965.84	1312.77	624.27	1318.63	T	1161.06	1311.33
210.6	1325.69	141.21	1327.97	T	974.5	1311.92	624.93	1318.64	T	1166.58	1311.39
212.2	1326.62	153.28	1327.73	RV	984.92	1313.14	637	1318.55	T	1169.73	1311.37
213.46	1325.33	155.49	1327.64	T	994.81	1313.57	637.26	1318.63	RV	1178.77	1311.35
216.58	1324.79	161.09	1327.62	T	997.15	1312.61	651.24	1318.4	T	1180.21	1311.26
229.37	1325.8	164.09	1327.53	T	1007.14	1312.53	651.97	1318.43	T	1187.37	1311.12
240.01	1325.7	174.63	1327.5	T	1012.93	1312.11	664.54	1318.14	T	1188.38	1311.18
252.28	1324.67	175.25	1327.54	T	1015.36	1311.24	667.03	1317.96	T	1191.84	1310.81
258.55	1324.74	185.03	1327.4	T	1020.48	1311.18	671.32	1317.82	T	1193.94	1310.87
265.2	1324.98	185.56	1327.35	T	1029.06	1312.3	685.61	1317.79	T	1193.97	1310.86
273.33	1324.84	191.69	1327.29	T	1037.57	1311.85	688.3	1317.67	T	1198.33	1310.69
280.44	1325.1	194.15	1327.29	T	1043.23	1312.55	696.85	1317.67	RV	1204.6	1310.72
285.9	1325.32	198.17	1327.23	T	1047.5	1310.73	701.8	1317.43	T	1205.21	1310.68
288.15	1325.3	202.76	1327.13	RV	1047.65	1310.72	713	1317.38	T	1219.82	1310.65
290.72	1324.49	206.37	1327.05	T	1052.6	1310.66	714.52	1317.42	T	1226.13	1310.57
297.95	1324.35	211.36	1326.9	T	1059.47	1311.76	716.79	1317.35	T	1226.29	1310.54
303.38	1323.99	213.98	1326.69	T	1063.55	1311.35	724.57	1317.22	T	1228.29	1310.51
313.3	1324.32	218.97	1326.69	T	1063.56	1311.37	737.1	1316.83	T	1232.06	1309.95
325.32	1324.58	219.69	1326.49	T	1069.25	1311.13	739.96	1316.53	T	1245.96	1309.98
328.24	1323.41	222.81	1326.52	T	1085.11	1311.73	740.38	1316.54	T	1247.35	1309.89
332.96	1324	229.33	1326.48	T	1087.33	1311.99	742.83	1316.5	RV	1247.45	1309.94
337.81	1322.7	237.43	1326.4	T	1091.95	1310.78	749.26	1316.48	T	1254.73	1309.81
341.74	1322.49	239.67	1326.41	T	1100.99	1311.17	752.95	1316.46	T	1257.29	1309.73
353.12	1323.11	249.73	1326.29	T	1107.73	1311.83	759.76	1316.48	T	1257.94	1309.73
365.41	1323.21	255.12	1326.26	T	1110.18	1311.12	760.97	1316.46	T	1260.16	1309.18
374.24	1323.43	258.06	1326.05	RV	1121.64	1311.68	766.83	1316.46	RV	1264.93	1308.98
376.69	1322.48	265.06	1326.11	T	1124.38	1311.06	770.95	1316.42	T	1269.44	1309.1
381.43	1322.87	274.27	1326.01	T	1131.43	1310.18	773.78	1316.43	T	1275.92	1309.04
388.87	1322.1	274.52	1325.99	T	1136.85	1310.64	780.06	1316.34	T	1280.23	1309.03
396.57	1322.31	279.62	1325.87	T	1148.37	1310.88	782.67	1316.34	T	1289.15	1309.03
404.77	1322.73	280.6	1325.95	RV	1156.93	1311.17	790.87	1316.29	RV	1289.33	1309.04
406.8	1321.74	284.94	1325.84	T	1158.63	1310.04	799.95	1316.22	RV	1298.35	1308.85
417.32	1321.26	285.2	1325.83	T	1166.75	1309.08	803.59	1316.15	T	1301.66	1308.9
430.1	1321.68	289.74	1325.46	T	1174.45	1310.06	807.82	1316.11	T	1324.75	1308.85
434.69	1321.79	290.97	1325.44	RV	1184.11	1310.18	814.79	1316.05	T	1328.29	1308.79
438.94	1321.17	298.12	1325.25	T	1189.58	1310.79	816.9	1315.67	RV	1330.36	1308.62
442.42	1321.55	301.04	1325.27	T	1192.2	1309.68	826.3	1315.69	T	1332.01	1308.43
444.85	1321.53	309.98	1325.24	T	1200.71	1308.99	831.89	1315.69	T	1333.73	1308.52
446.06	1320.71	314.26	1325.13	T	1220.33	1309.86	842.02	1315.63	T	1333.75	1308.5
450.26	1320.29	315.49	1325.19	T	1220.37	1309.87	842.97	1315.6	T	1336.74	1308.47
460.11	1320.42	324.34	1325	T	1230.16	1310.11	853.45	1315.52	RV	1343.29	1308.49
471.83	1320.97	326.99	1324.79	T	1231.81	1308.62	854.06	1315.5	T	1345.65	1308.4
471.9	1320.95	328.73	1324.41	RV	1238.13	1308.17	864.44	1315.48	T	1354.05	1308.5
474.38	1320.42	329.11	1324.49	T	1248.8	1308.85	864.77	1315.5	T	1357.2	1308.42
480.16	1320.22	340.81	1324.48	T	1257.76	1309.52	873.33	1315.46	RV	1360.06	1308.23
484.54	1319.34	341.08	1324.5	T	1259.06	1308.72	885.03	1315.42	T	1366.34	1308.12
493.21	1320.19	342.66	1324.39	T	1265.75	1307.77	885.92	1315.4	T	1367.67	1308.01
499.01	1319.95	351.83	1324.46	T	1273.9	1307.64	896.56	1315.29	T	1368.87	1307.97
507.7	1320.35	356.54	1324.47	T	1282.16	1308.31	898.41	1315.24	T	1369.93	1307.73
507.83	1320.36	364.6	1324.32	RV	1292.45	1308.16	907.85	1315.04	T	1371.76	1307.72
510.31	1319.65	367.37	1324.13	T	1330.68	1308.57	910.26	1314.75	RV	1375.1	1307.74
514.78	1318.95	374.72	1323.9	T	1330.99	1307.17	916.04	1314.79	T	1376.08	1307.79
519.99	1318.63	376.33	1323.54	T	1336.44	1305.86	917.62	1314.75	T	1383.22	1307.7
530.26	1319.39	378.58	1323.51	T	1345.22	1306.97	923.4	1314.8	T	1391.14	1307.67
540.43	1320.12	386.56	1323.34	RV	1351.64	1307.78	926.09	1315.21	T	1399.4	1307.59
543.78	1319.15	394.33	1323.3	T	1361.48	1307.71	934.29	1314.74	T	1401.67	1307.62
549.72	1318.73	397.67	1323.27	T	1367.47	1307.65	934.29	1314.74	T	1408.14	1307.52
549.88	1318.71	404.41	1323.08	T	1369.31	1307.77	935.85	1314.68	RV	1418.39	1307.33
554.97	1318.45	404.64	1323.09	T	1369.73	1306.5	949.68	1314.52	T	1421.43	1307.4
566.13	1319.19	407.73	1322.89	T	1374.24	1306.97	955.64	1314.27	T	1434.42	1307.16
576.89	1319.04	414.96	1322.69	T	1379.48	1306.33	958.23	1313.92	T	1434.54	1307.21
583.76	1318.47	430.01	1322.57	T	1390.76	1306.63	969.21	1313.92	T	1447.58	1306.96
601	1319.04	430.69	1322.53	RV	1419.41	1306.59	971.87	1313.84	T	1449.52	1306.53
603.92	1318.02	435.33	1322.32	T	1435.16	1306.47	977.61	1313.86	T	1455.07	1306.58
607.46	1318.58	438.04	1321.91	T	1443.72	1306.47	980.81	1313.92	T	1459.58	1306.42
609.44	1316.84	441.96	1321.75	T	1447.26	1306.78	992.33	1313.83	T	1460.81	1306.59
616.31	1315.88	446.11	1321.54	T	1448.73	1306.75	992.34	1313.83	RV	1473.82	1306.3
623.25	1317.16	446.86	1321.46	T	1449.21	1305.82	997.52	1313.42	T	1474.13	1306.33
636.01	1317.11	449	1321.49	T	1455.58	1305.31	1001.98	1313.29	T	1478.62	1306.14
650.58	1317.65	457.66	1321.42	T	1460.16	1305.47	1006.05	1313.24	T	1478.62	1306.14
665.12	1317.81	467.76	1321.3	RV	1469.44	1305.76	1010.4	1313.15	T		
666.42	1316.47	470.79	1321.24	T			1012.34	1313.08			
674.44	1316.29	472.17	1321.24	T			1013.36	1313.12			
685.96	1316.84	474.73	1321.18	T			1018.26	1313.04			
699.09	1317.16	478.17	1320.97	RV			1019.1	1313.09			
701.66	1316.02	481.53	1320.95	T			1030.52	1313.06			
710.82	1315.92	484.78	1320.97	T			1039.68	1312.98			
715.38	1316.44	487.66	1320.94	T			1043.84	1312.81			
724.71	1316.24	492.79	1321.01	T			1047.01	1312.79			
736.31	1316.64	494.22	1320.87	RV			1054.8	1312.81			
740.66	1315.52	498.58	1320.85	T			1058.07	1312.91			
745.96	1315.13	515.77	1320.49	T			1062.69	1312.73			
749.91	1314.7	515.99	1320.51	T			1065.29	1313.01			
763.2	1314.65	520.48	1320.6	T			1069.66	1312.64			
768.07	1314.81	528.4	1320.52	T							

Project Name	Purlear Creek - Phase 2
Task	Feature Slope and Length Calculations
Date	8/15/06
Crew	Shaffer, Clinton

Reach 4 - 2006

Riffle Station	Change	Water Elev	change	slope
0		1329.88		
93	93	1328.77	1.11	1.19%
122		1328.49		
129	7	1328.06	0.43	6.14%
141		1327.97		
164	23	1327.53	0.44	1.91%
194		1327.29		
219	25	1326.49	0.8	3.20%
229		1326.48		
258	29	1326.05	0.43	1.48%
285		1325.83		
298	13	1325.25	0.58	4.46%
315		1325.19		
324	9	1325	0.19	2.11%
364		1324.32		
378	14	1323.51	0.81	5.79%
397		1323.27		
414	17	1322.69	0.58	3.41%
467		1321.3		
474	7	1321.18	0.12	1.71%
498		1320.85		
515	17	1320.49	0.36	2.12%
568		1319.88		
588	20	1319.59	0.29	1.45%
651		1318.43		
671	20	1317.82	0.61	3.05%
696		1317.67		
701	5	1317.43	0.24	4.80%
716		1317.35		
737	21	1316.83	0.52	2.48%
773		1316.43		
814	41	1316.05	0.38	0.93%
842		1315.6		
854	12	1315.5	0.1	0.83%
885		1315.42		
907	22	1315.04	0.38	1.73%
934		1314.74		
955	21	1314.27	0.47	2.24%
997		1313.42		
1018	21	1313.04	0.38	1.81%
1039		1312.98		
1047	8	1312.79	0.19	2.38%
1082		1312.63		
1094	12	1312.37	0.26	2.17%
1109		1312.28		
1121	12	1312.13	0.15	1.25%
1147		1311.69		
1161	14	1311.33	0.36	2.57%
1178		1311.35		
1187	9	1311.12	0.23	2.56%
1219		1310.65		
1228	9	1310.51	0.14	1.56%
1247		1309.89		
1257	10	1309.73	0.16	1.60%
1298		1308.85		
1328	30	1308.79	0.06	0.20%
1354		1308.5		
1376	22	1307.79	0.71	3.23%
1401		1307.62		
1447	46	1306.96	0.66	1.43%
1460		1306.59		
1478	18	1306.14	0.45	2.50%

Reach 4	min	max	median
Riffle Length	5.0	93.0	17.0
Riffle Slope	0.20%	6.14%	2.12%
Pool Length	10.0	38.0	21.0
Pool Spacing	25	73	40

Reach 1 - 2006

Riffle Station	Change	Water Elev	change	slope
24		1295.78		
42	18	1295.55	0.23	1.28%
131		1294.85		
181	50	1294.52	0.33	0.66%
497		1293.06		
517	20	1292.83	0.23	1.15%
557		1292.19		
575	18	1291.78	0.41	2.28%
640		1291.7		
668	28	1291.53	0.17	0.61%
776		1291.49		
797	21	1291.17	0.32	1.52%
869		1287.76		
878	9	1287.35	0.41	4.56%
927		1287.34		
944	17	1287.27	0.07	0.41%
1030		1287.27		
1046	16	1287.11	0.16	1.00%

Pool Station	length	p-p spacing			
Reach 1 - 2006					
7			668		
24	17		776	108	114.5
57			825		
131	74	78.5	862	37	121.5
181			878		
276	95	134.5	927	49	59
282			944		
395	113	110	1030	86	84.5
399					
497	98	109.5			
520					
557	37	90.5			
575					
640	65	69			
Reach 4 - 2006					
93			740		
122	29		773	33	48
129			816		
141	12	27.5	842	26	72.5
164			854		
194	30	44	885	31	40.5
219			910		
229	10	45	934	24	52.5
258			958		
285	27	47.5	992	34	53
298			1018		
315	17	35	1039	21	53.5
329			1047		
364	35	40	1082	35	36
378			1094		
397	19	41	1109	15	37
414			1126		
430	16	34.5	1147	21	35
446			1161		
467	21	34.5	1178	17	33
478			1198		
498	20	31.5	1219	21	39
515			1232		
539	24	39	1247	15	31
535			1264		
568	33	24.5	1298	34	41.5
588			1333		
598	10	41.5	1354	21	62.5
613			1376		
651	38	39	1401	25	45
671			1449		
696	25	51.5	1460	11	66
701					
716	15	25			

Reach 1	min	max	median
Riffle Length	9.0	50.0	18.0
Riffle Slope	0.41%	4.56%	1.15%
Pool Length	17.0	113.0	74.0
Pool Spacing	59	135	100

Project Name	Purlear Phase 2
Task	Channel Pattern Measurements
Date	
Crew	Shaffer, Clinton

Reach 1 2006			
Radius of Curvature	**Meander Wavelength**	**Channel Beltwidth**	
41	111	24	
38	97	20	
68	76	26	
26	62	17	
45	117	18	
16	171	21	
29	133	41	
13	132	41	
112	88	36	
17	74	42	
25	64	38	
33	69	31	
18	71	28	
21	97	30	
15	66	22	
13	77	29	
25	98	34	
22		20	
30			
21			
37			
21			
49			
49			
37			
13	62	17	***min***
112	171	42	***max***
26	88	29	***median***

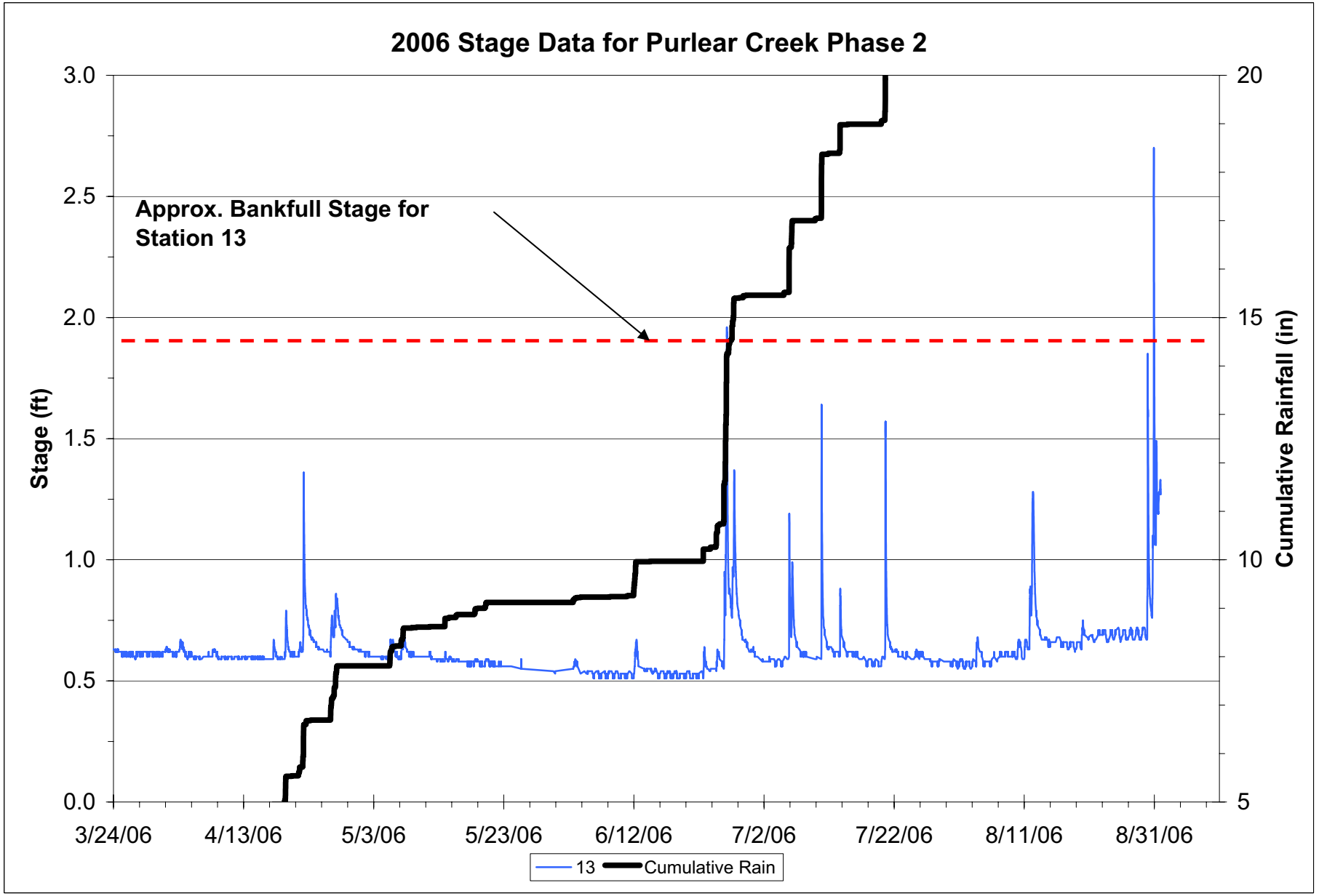
Reach 4 2006			
Radius of Curvature	**Meander Wavelength**	**Channel Beltwidth**	
38	201	36	
50	255	44	
88			
38	201	36	***min***
88	255	44	***max***
50	228	40	***median***

APPENDIX C

Surface Water Graphs

1. Surface Water Graphs

Surface Water Graphs


2006 Stage Data for Purlear Creek Phase 2
Approx. Bankfull Stage for Station 13
Stage (ft)
Cumulative Rainfall (in)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
20
15
10
5
3/24/06
4/13/06
5/3/06
5/23/06
6/12/06
7/2/06
7/22/06
8/11/06
8/31/06
13
Cumulative Rain