

Purlear Creek - Phase II Stream Restoration Annual Monitoring Report

Monitoring Year: 2010

Measurement Year: 5

As-built Date: 2005

NCEEP Project Number: 010559701



Submitted to: NCDENR-Ecosystem Enhancement Program
1619 Mail Service Center
Raleigh, NC 27699-1619

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PURLEAR CREEK - PHASE II STREAM RESTORATION 2010 MONITORING REPORT

CONDUCTED FOR THE NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES



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I. Executive Summary/Project Abstract

This report represents monitoring year 5 for the Purlear Creek Phase II stream restoration project in Wilkes County, North Carolina. The project is comprised of two reaches. The upper reach is Reach 4 and the lower reach is Reach 1. Phase II of the Purlear Creek stream and wetland restoration project strived to restore stream reaches and enhance adjacent riparian wetlands. Both streams lie within an area that is actively used for cattle grazing. The alignments of the channels indicated that the channels had been straightened and channelized in the past. The designer used a Priority I approach to restore Reach 4 and a Priority II approach for Reach 1. For both reaches, in-stream structures such as A-Vane, Cross-Vanes, and J-Hooks were installed to provide additional stability to the channel and root wads were installed to provide additional habitat. The objectives of the Phase II restoration were:

- Restore wetland hydrology by increasing the frequency and duration of overbank flows into the adjacent wetland and raise groundwater elevations influenced by the base flow elevation of the stream
- Improve in-stream habitat
- Stabilize streambanks and reduce sedimentation to downstream reaches
- Fence cattle out of the stream and riparian area
- Reestablish a viable riparian forest community

Four 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 during the previous monitoring years. Plot numbering is consistent with numbering from the Vegetation Baseline Data post-construction monitoring report. Estimated planted stem density was 613 stems per acre. Vegetation survival thresholds were met in all four plots. Little mortality was seen from the previous year. Vegetation was vigorous and healthy. No vegetative problem areas were observed. Vegetation data is presented in Appendix C of this report.

The channel has remained stable since construction. The majority of channel banks are well-covered with vegetation. Study reaches show no significant changes in channel pattern. The channel profile did not change significantly from the as built condition with the exception of some aggradation along the upstream portion of Reach 4. The aggradation observed in Reach 4 was likely caused by excess sediment from upstream sources. There is no evidence of lateral bars and the area appears to be stable. This aggradation is illustrated in the longitudinal profile and cross sections 1, 2, and 3 in Appendix D of this report. No significant erosion was observed along the study reaches with the exception of one problem area in Reach 1 (problem area 4). Problem area 4 (PA 4) consists of bank erosion observed on the left streambank at cross-section 9. This area of erosion was likely caused by the beaverdam that was removed this year. The beaverdam backed water up in this area for several years. Once the beaverdam was removed, the saturated streambank started to erode. This issue appears to be isolated and not a trend of systematic failure.

The restored wetland along Reach 4 exceeded minimal conditions for hydrology during the 2010 monitoring period. Wetland data is presented in Appendix E of this report. There are six gauges at the site in two clusters of three gauges. Two gauges (RDS-W1 and RDS-W2) were originally installed at the site to monitor water levels for the two restored wetland tracts. These gauges did not function properly and two additional gauges (W1A and W2A) were installed to replace them. There were

issues with the W2A gauge so two additional gauges (W1B and W1A) were installed in 2008. These gauges have functioned properly and are the ones that are currently monitored.

Summary information/data related to the occurrence of items such as beaver or encroachment and statistics related to performance of various project and monitoring elements can be found in the tables and figures in the report appendices. Narrative background and supporting information formerly found in these reports can be found in the Baseline Monitoring Report (formerly Mitigation Plan) and in the Mitigation Plan (formerly the Restoration Plan) documents available on EEPs website. All raw data supporting the table and figures in the appendices is available from EEP upon request.

II. Methodology Section

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

Geomorphic surveys were completed with survey grade GPS. A small 20-foot section of reach 1 was surveyed with a total station (no GPS coverage) and tied into the GPS survey with three common benchmarks.

Longitudinal stationing used for the profiles is consistent with the as-built alignment and previous four monitoring events.

Wetted perimeter surface pebble counts were completed in two zones per reach (illustrated on the CCPVs in Appendix B). The method used is consistent with the US Forest Service document referenced below (Bunte et al. 2001)

The taxonomic standard for vegetation used in this report was based on “Flora of the Carolinas, Virginia, Georgia, and Surrounding Areas”, by Alan S. Weakley. The vegetation monitoring protocol used for collecting vegetation data was the CVS-EEP Protocol for Recording Vegetation Version 4.0 (Lee et al. 2006).

III. References

Bunte, Kristin; Abt, Steven R. 2001. *Sampling Surface and Subsurface Particle-size Distributions in Wadable Gravel-and Cobble-Bed Streams for Analyses in Sediment Transport, Hydraulics, and Streambed Monitoring*. Gen. Tech. Rep. RMRS-GTR-74. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 428 p

Harman, W.H. et al. 1999. *Bankfull Hydraulic Geometry Relationships for North Carolina Streams*. AWWRA Wildland Hydrology Symposium Proceedings. Edited By: D.S. Olsen and J.P. Potyondy. AWWRA Summer Symposium. Bozeman, MT.

Lee, Michael T., R. K. Peet, S. D. Roberts, and T. R. Wentworth. 2006. *CVS-EEP Protocol for Recording Vegetation*, Version 4.0 (<http://cvs.bio.unc.edu/methods.htm>)

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

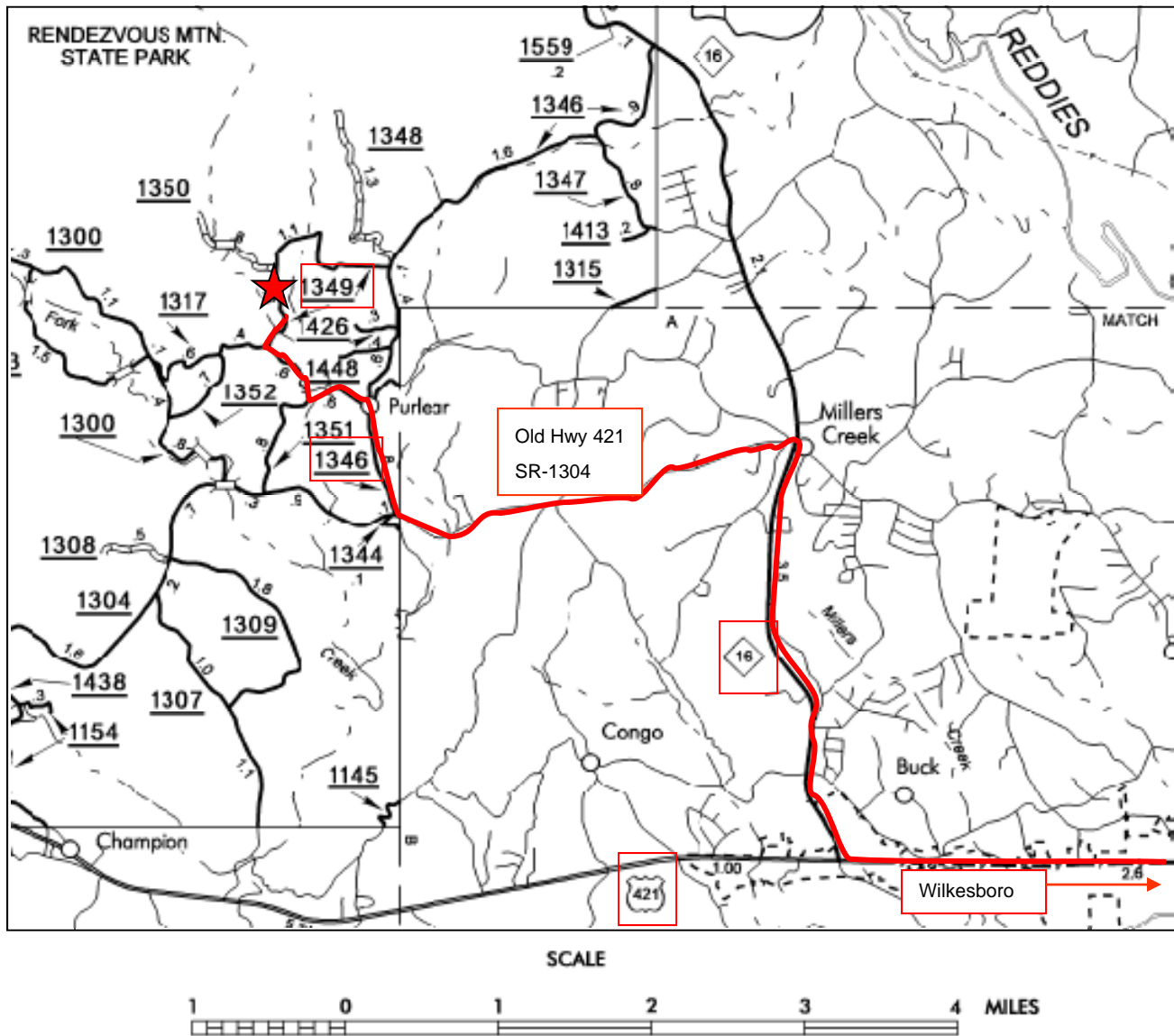
USACOE (2003) *Stream Mitigation Guidelines*. USACOE, USEPA, NCWRC, NCDENR-DWQ

Weakley, Alan S., *Flora of the Carolinas, Virginia, Georgia, and Surrounding Areas*

APPENDIX A-
Project Vicinity Map and Background Tables

1. Project Location Map
2. Project Setting Map
3. Project Restoration Components
4. Project Activity and Reporting History
5. Project Contact Table
6. Project Background Table

Figure 1. Project Location

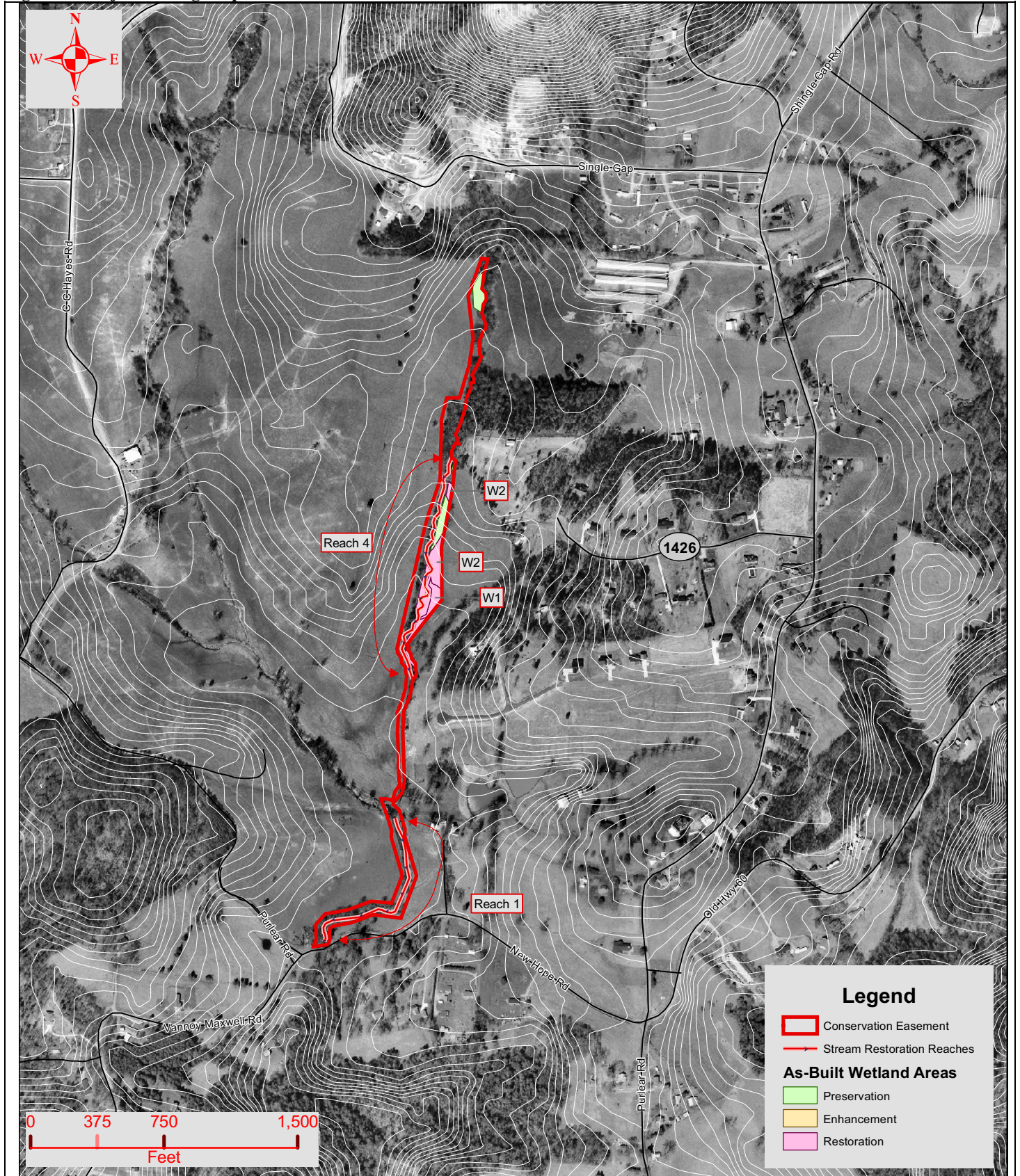



Directions from Hwy. 421 in Wilkesboro:

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 Wilkes County, North Carolina	Project Number 010559701
	Date 6/5/06	

**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	December 2007	October 2007	December 2007	Survey completed in August, photo points completed in October
Year 3 Monitoring	December 2008	October 2008	December 2008	Survey completed in July, photo points and additional survey completed in October
Year 4 Monitoring	December 2009	October 2009	January 2010	Survey completed in September, photo points completed in October
Year 5 Monitoring	December 2010	November 2010	December 2010	Survey completed in September, photo points completed in November
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	Zan Price	828-712-9194
Vegetation Monitoring POC	Karen Hall	919-515-8242
Wetland Monitoring POC	Zan Price	828-712-9194

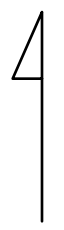
**Table IV. Project Background Table
Purlear Creek Phase II / Project ID 010559701**

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%	

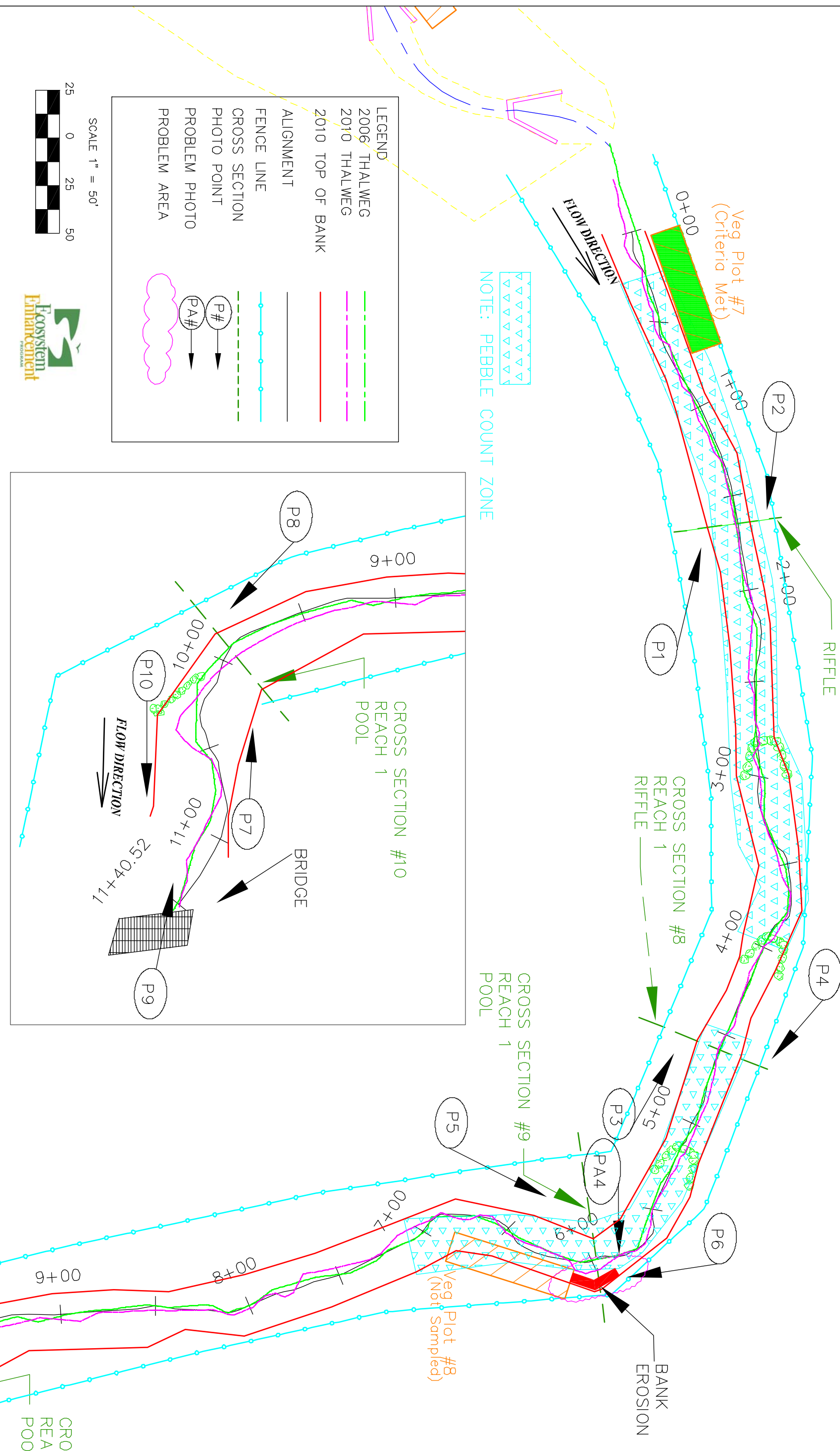
APPENDIX B-
Visual Assessment Data

1. Current Condition Plan View (CCPV)
2. Visual Stream Morphology Stability Assessment Table
3. Vegetation Condition Assessment Table (N/A)
4. Stream Station Photos
5. Vegetation Plot Photos

REACH 1



MAIN STEM REACH NORTH



NO	REVISIONS	DRN	CHK	DATE
1	A5-BUILT PLAN	JMP	JMP	12/01/06
2	2007 MONITORING	ZP	JMP	12/01/07
3	2008 MONITORING	ZP	JZ	11/19/08
4	2009 MONITORING	ZP	JZ	12/01/09
5	2010 MONITORING	ZP	JZ	12/01/10

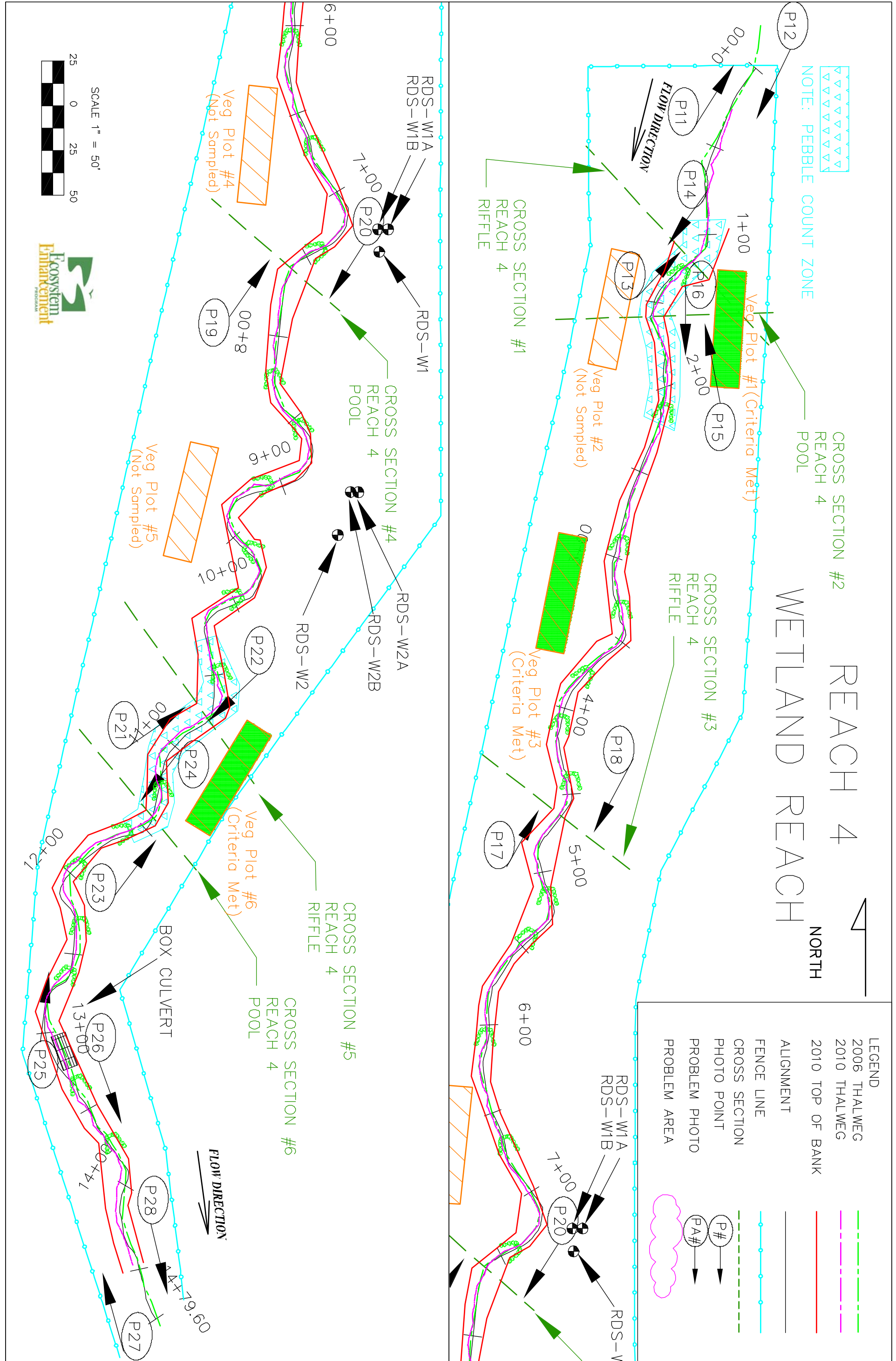
NC STATE UNIVERSITY

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.

**CURRENT CONDITION PLAN VIEW
 FIGURE B2**

DATE: 03/01/2006
 PROJECT NO: 284
 FILENAME: PURLEAR.DWG
 SHEET NO: MONITORING 1 of 2



NO	REVISIONS	DRN	CHK	DATE
1	AS-BUILT PLAN	DRC	JMP	12/01/06
2	2007 MONITORING	ZP	JMP	12/01/07
3	2008 MONITORING	ZP	ZP	11/19/08
4	2009 MONITORING	ZP	ZP	12/01/09
5	2010 MONITORING	ZP	ZP	12/01/10

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.

**CURRENT CONDITION PLAN VIEW
FIGURE B1**

DATE: 03/01/2006
PROJECT NO.: 294
FILENAME: PULEARIL_09.DWG
SHEET NO. 2 OF 2

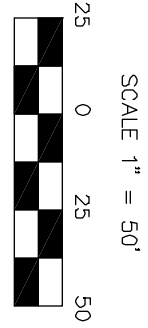


Table 5. Visual Stream Morphology Stability Assessment
Purlear Creek Phase II / Project ID 010559701
Reach 1 (1140 Feet)

Main Channel Category	Channel Sub-Category	Metric	(# Stable) Number Performing as Intended	Total number per As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run units)	1. <u>Aggradation</u> - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. <u>Degradation</u> - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. <u>Texture/Substrate</u> - Riffle maintains coarser substrate	9	13			69%			
	3. Meander Pool Condition	1. <u>Depth</u> Sufficient (Max Pool D:Mean Bkf D>1.6?)	12	12			100%			
		2. <u>Length</u> appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle)	12	12			100%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run)	5	5			100%			
		2. Thalweg centering at downstream of meander (Glide)	5	5	100%					
	Totals									
2. Bank	1. Scoured/Eroding	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does <u>not</u> include undercuts that are modest, appear sustainable, and are providing habitat			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			1	25	98%	0	0	98%
Totals										
3. Engineered Structures	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs	4	4			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill	4	4			100%			
	2a. Piping	Structure lacking any substantial flow underneath sills or arms	4	4			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%	4	4			100%			
	4. Habitat	Pool forming structures maintaining - Max Pool Depth: Mean Bankfull Depth ratio > 1.6. Rootwads/logs providing some cover at base-flow	4	4			100%			

Table 6. Visual Stream Morphology Stability Assessment
Purlear Creek Phase II / Project ID 010559701
Reach 4 (1480 Feet)

Main Channel Category	Channel Sub-Category	Metric	(# Stable) Number Performing as Intended	Total number per As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run units)	1. <u>Aggradation</u> - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%			
		2. <u>Degradation</u> - Evidence of downcutting			0	0	100%			
	2. Riffle Condition	1. <u>Texture/Substrate</u> - Riffle maintains coarser substrate	10	35			29%			
	3. Meander Pool Condition	1. <u>Depth</u> Sufficient (Max Pool D:Mean Bkf D>1.6?)	32	34			94%			
		2. <u>Length</u> appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle)	33	34			97%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run)	27	27			100%			
		2. Thalweg centering at downstream of meander (Glide)	27	27			100%			
	Totals									
2. Bank	1. Scoured/Eroding	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does <u>not</u> include undercuts that are modest, appear sustainable, and are providing habitat			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
3. Engineered Structures	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs	29	29			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill	29	29			100%			
	2a. Piping	Structure lacking any substantial flow underneath sills or arms	29	29			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%	29	29			100%			
	4. Habitat	Pool forming structures maintaining - Max Pool Depth: Mean Bankfull Depth ratio > 1.6. Rootwads/logs providing some cover at base-flow	29	29			100%			

*Note: Aggradation observed in the upstream portion of Reach 4. However, this area is stable and no lateral bars have formed. Therefore, this area is not cataloged in the "Bed" section above.

2010 Purlear Phase II Photo Log – Reach 1

2005 – As-built



Nov 11, 2010



P1. Reach 1 – Start and X7 looking upstream



P2. Reach 1 – Start and X7 looking downstream

2005 – As-built



Nov 11, 2010



P3. Reach 1 – X8 looking upstream



P4. Reach 1 – X8 looking downstream



P5. Reach 1 – X9 looking upstream

2005 – As-built



Nov 11, 2010



P6. Reach 1 – X9 looking downstream



P7. Reach 1 – X10 looking upstream



P8. Reach 1 – X10 looking downstream

Oct 5, 2006



Nov 11, 2010



P9. Reach 1 – End Project looking upstream

2005 – As-built



P10. Reach 1 – End Project looking downstream

2010 Purlear Phase II Photo Log – Reach 4

Oct. 5, 2006



Nov 11, 2010



P11. Reach 4 – Start looking upstream



P12. Reach 4 – Start and X1 looking downstream

Oct. 5, 2006



Nov 11, 2010



P13. Reach 4 – X1 looking upstream



P14. Reach 4 – X1 looking downstream



P15. Reach 4 – X2 looking upstream

Oct. 5, 2006



Nov 11, 2010



P16. Reach 4 – X2 looking downstream



P17. Reach 4 – X3 looking upstream



P18. Reach 4 – X3 looking downstream

Oct. 5, 2006



Nov 11, 2010



P19. Reach 4 – X4 looking upstream



P20. Reach 4 – X4 looking downstream



P21. Reach 4 – X5 looking upstream

Oct. 5, 2006



Nov 11, 2010



P22. Reach 4 – X5 looking downstream



P23. Reach 4 – X6 looking upstream



P24. Reach 4 – X6 looking downstream

Oct. 5, 2006



Nov 11, 2010



P25. Reach 4 – Bridge looking upstream



P26. Reach 4 – Bridge looking downstream



P27. Reach 4 – End of reach looking upstream

Oct. 5, 2006



Nov 11, 2010



P28. Reach 4 – End of reach looking downstream

2010 Purlear Phase II Vegetation Monitoring Plot Photos



Plot 01, Oct. 8, 2010



Plot 03, Oct. 8, 2010



Plot 06, Oct. 8, 2010



Plot 07, Oct. 2010

APPENDIX C-
Vegetation Plot Data

1. Vegetation Plot Mitigation Success Summary Table
2. CVS Vegetation Metadata Table
3. CVS Stem Count Total and Planted by Plot and Species

Table 7. Vegetation Plot Mitigation Success Summary Table

Vegetation Plot ID	Vegetation Survival Threshold Met?	Tract Mean
Purl2-01-0001	Yes	100%
Purl2-01-0003	Yes	100%
Purl2-01-0006	Yes	100%
Purl2-01-0007	Yes	100%

Table 8. Vegetation Metadata

Report Prepared By Nathan Buchanan
Date Prepared 12/1/2010 10:48 PM

database name NCSU_WQG-2009-A-PurlearONLY_v227p1123p_toFix.mdb
database location \\.\host\Shared Folders\My Desktop
computer name S10188

DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT-----

Metadata This worksheet, which is a summary of the project and the project data.
Each project is listed with its PLANTED stems, for each year. This excludes live stakes and lists stems per acre.
Proj, planted Each project is listed with its TOTAL stems, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems. Listed in stems per acre.
Proj, total stems List of plots surveyed.
Plots Frequency distribution of vigor classes.
Vigor Frequency distribution of vigor classes listed by species.
Vigor by Spp List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage Damage values tallied by type for each species.
Damage by Spp Damage values tallied by type for each plot.
Damage by Plot Count of total living stems of each species (planted and natural volunteers combined) for each plot; dead and missing stems are excluded.
ALL Stems by Plot and spp

PROJECT SUMMARY-----

Project Code Purl2
project Name Purlear 2
Description downstream 3000 feet
River Basin
length(ft)
stream-to-edge
width (ft)
area (sq m)
Required Plots
(calculated) 4
Sampled Plots 4

APPENDIX D-
Stream Survey Data

1. Cross-Sections with Annual Overlays
2. Longitudinal Profiles with Annual Overlays
3. Pebble Count Plots with Annual Overlays
4. Baseline Stream Data Summary Tables
5. Monitoring –Morphology Data Tables

Project Name	Purlear Phase II
Cross Section	X1 Reach 4
Feature	Riffle
Date	8/5/2010
Crew	Price, Emory

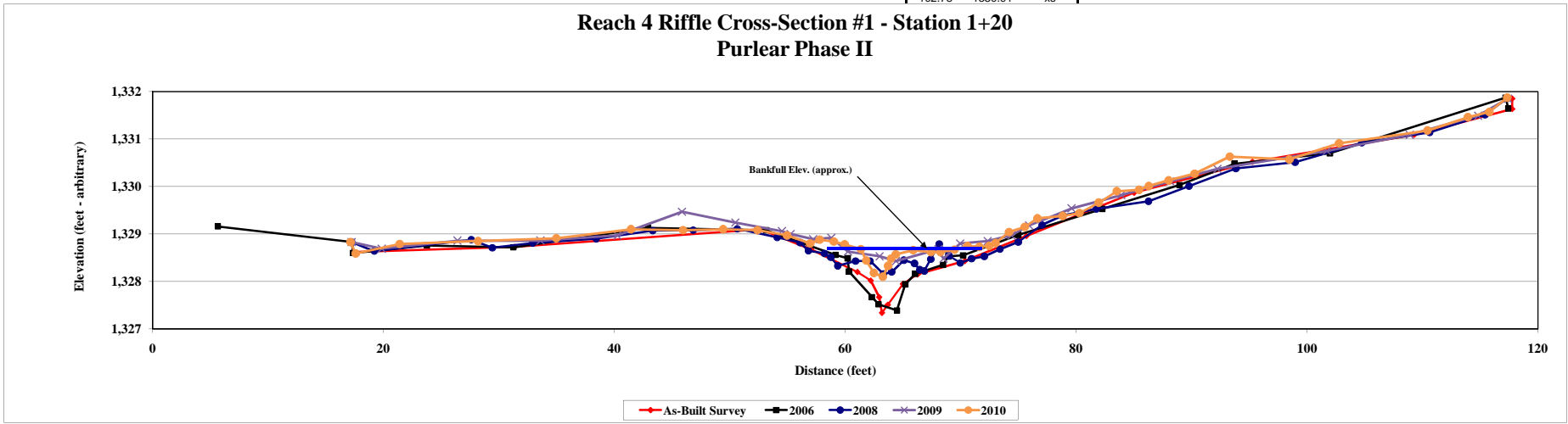
2005 As-Built Survey				2006 MY - 01				2007 MY - 02				2008 MY - 03				2009 MY - 04				2010 MY - 05				
Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes		
117.77	1,331.85	PIN		5.64	1329.16	(FENCE)		17.23	1328.83	x1p08		17.23	1328.83	XS1-LP-09		17.13	1328.83	xs1p10						
117.77	1,331.63	FP		17.23	1328.83	(X1LP)		19.19	1328.64	x108		19.84	1328.69	XS1-09		17.58	1328.59	xs						
109.28	1,331.09	FP		17.36	1328.6	(X1)		27.59	1328.88	x108		26.4	1328.86	XS1-09		21.39	1328.79	xs						
95.26	1,330.52	FP		23.76	1328.76	(X1)	Wrong cross section surveyed in the field. No data for 2007	29.42	1328.71	x108		33.58	1328.86	XS1-09		28.18	1328.85	xs						
85.02	1,329.87	FP		31.25	1328.72	(X1)		32.92	1328.81	x108		40.26	1328.97	XS1-09		34.96	1328.91	xs						
75.69	1,328.96	RB		42.9	1329.13	(X1)		38.42	1328.9	x108		45.85	1329.47	XS1-09		41.43	1329.1	xs						
70.35	1,328.43	RB		53.14	1329.08	(X1)		43.32	1329.07	x108		50.47	1329.24	XS1-09		45.94	1329.08	xs						
66.26	1,328.15	RB		59.16	1328.56	(X1)		46.82	1329.08	x108		54.51	1329.06	XS1-09		49.41	1329.1	xs						
65	1,327.95	REW		60.2	1328.49	(X1W)		50.64	1329.11	x108		55.26	1329	XS1-09		52.39	1329.08	xs						
63.68	1,327.51	SB		60.32	1328.21	(X1)		54.1	1328.93	x108		57.21	1328.89	XS1-09		54.96	1328.97	xs						
63.18	1,327.34	SB		62.31	1327.67	(X1)		56.08	1328.82	x108		58.79	1328.92	XS1-09		56.96	1328.8	xs						
62.93	1,327.67	SB		62.88	1327.52	(X1)		56.8	1328.65	x108		60.22	1328.63	XS1-09		57.78	1328.88	xs						
62.21	1,328.02	LEW		64.47	1327.39	(X1)		58.19	1328.59	x108		62.97	1328.53	XS1-09		59	1328.84	xs						
61.05	1,328.20	LB		65.19	1327.94	(X1)		58.74	1328.51	x108		64.39	1328.43	XS1-09		59.95	1328.78	xs						
57.02	1,328.68	BKF		66.04	1328.16	(X1)		59.34	1328.33	x108		68.06	1328.68	XS1-09		61.34	1328.68	xs						
52.68	1,329.10	FP		68.46	1328.35	(X1)		60.88	1328.43	x108		68.51	1328.48	XS1-09		61.82	1328.44	xs						
31.35	1,328.73	FP		68.93	1328.53	(X1W)		62.15	1328.43	x108		69.95	1328.8	XS1-09		62.47	1328.18	xs						
17.4	1,328.62	FP		70.21	1328.55	(X1)		63.3	1328.16	x108		72.34	1328.85	XS1-09		63.25	1328.1	xs						
17.23	1,328.85	PIN1		74.98	1328.98	(X1)		64.01	1328.2	x108		74.39	1328.97	XS1-09		63.71	1328.33	xs						
				82.27	1329.53	(X1)		65.08	1328.45	x108		75.92	1329.18	XS1-09		63.96	1328.48	xs						
				88.95	1330.03	(X1)		65.99	1328.38	x108		79.6	1329.54	XS1-09		64.37	1328.57	xs						
				93.72	1330.48	(X1)		66.45	1328.25	x108		83.9	1329.82	XS1-09		65.87	1328.66	xs						
Adjusted Right	17.23'			101.98	1330.7	(X1)		66.85	1328.22	x108		88.15	1330.11	XS1-09		67.43	1328.62	xs						
				117.2	1331.87	(X1RP)		67.41	1328.47	x108		92.24	1330.37	XS1-09		68.24	1328.62	xs						
				117.43	1331.64	(X1)		68.13	1328.79	x1w08		101.72	1330.75	XS1-09		69.46	1328.67	xs						
				Adusted up	1235.77'			68.98	1328.54	x108		108.9	1331.09	XS1-09		70.58	1328.75	xs						
								69.96	1328.39	x108		114.82	1331.49	XS1-09		71.62	1328.73	xs						
								70.94	1328.48	x108		117.39	1331.85	XS1-RP-05		72.45	1328.75	xs						
								72.04	1328.53	x108						73.02	1328.81	xs						
								73.39	1328.68	x108						74.18	1329.04	xs						
								74.98	1328.83	x108						75.55	1329.15	xs						
								77.04	1329.19	x108						76.64	1329.33	xs						
								78.86	1329.39	x108						78.83	1329.38	xs						
								81.75	1329.53	x108						80.28	1329.44	xs						
								86.27	1329.69	x108						81.95	1329.66	xs						
								89.78	1330.01	x108						83.51	1329.9	xs						
								93.84	1330.38	x108						85.44	1329.93	xs						
								98.97	1330.51	x108						86.29	1330.01	xs						
								104.74	1330.92	x108						88.01	1330.13	xs						
								110.63	1331.14	x108						90.26	1330.27	xs						
								115.42	1331.51	x108						93.3	1330.63	xs						
								117.37	1331.86	x1rp08						98.47	1330.57	xs						
															102.78	1330.91	xs							



Photo of Cross-Section #1 - Looking Downstream

	As-Built	2006	2007	2008	2009	2010
Area	7.31	6.7		3.8	1.1	1.3
Width	17.5	11.1		17.3	9.7	8.1
Mean Depth	0.4	0.6		0.2	0.1	0.2
Max Depth	1.3	1.3		0.5	0.3	0.6
w/d ratio	41.8	18.3		78.8	86.0	50.1
FPW	72	72		72	72	72
ER (greater than)	4.1	6.5		4.2	7.4	8.9
Stream Type	C	C		C	C	C

Note: Area computations for each year relative to as-built bankfull elevation



Project Name	Purlear Phase II
Cross Section	X2 Reach 4
Feature	Pool
Date	8/5/2010
Crew	Price, Emory

2005 As-Built Survey			2006 MY - 01			2007 MY - 02			2008 MY - 03			2009 MY - 04			2010 MY - 05		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
100.11	1,330.72	PIN	7.78	1329.25	(X2LP)	7.78	1329.25	XS2LP07	7.78	1329.24	x2p08	7.78	1329.28	XS2-LP-09	7.76	1329.28	xs2lp10
99.88	1,330.56	FP	7.98	1329.04	(X2)	9.05	1328.97	XS2	8.7	1328.97	x208	9.56	1328.95	XS2-09	7.84	1329.03	xs2
93.3	1,330.13	FP	18.22	1328.76	(X1)	12.73	1328.8	XS2	17.71	1328.77	x208	16.79	1328.83	XS2-09	14.37	1328.76	xs2
81.2	1,329.58	FP	22.73	1328.92	(X2)	19.36	1328.89	XS2	28.03	1328.73	x208	20.8	1328.88	XS2-09	22.46	1328.97	xs2
73.76	1,328.91	RB	32.76	1328.75	(X2)	25.81	1328.88	XS2	36.33	1328.88	x208	26.27	1328.81	XS2-09	31.81	1328.86	xs2
71.44	1,328.67	RB	40.84	1328.76	(X2)	31.5	1328.86	XS2	43.28	1328.67	x208	29.64	1328.87	XS2-09	38.21	1328.87	xs2
69.83	1,327.90	RB	45.94	1328.43	(X2)	38.54	1328.79	XS2	47.57	1328.18	x208	36.6	1328.76	XS2-09	42.83	1328.51	xs2
69.31	1,326.80	SB	52.71	1327.85	(X2)	44.09	1328.57	XS2	53.03	1327.89	x208	41.45	1328.76	XS2-09	44.5	1328.43	xs2
69.12	1,326.79	SB	60.34	1327.88	(X2)	51.57	1327.83	XS2	56.76	1327.92	x208	45.61	1328.42	XS2-09	45.97	1328.49	xs2
68.12	1,326.74	SB	62.44	1327.78	(X2)	59.22	1327.93	XS2	58.82	1327.92	x208	47.98	1328.59	XS2-09	47.88	1328.27	xs2
67.64	1,326.88	SB	64.16	1327.64	(X2W)	66.44	1326.94	XS2	60.96	1327.98	x208	48.42	1328.22	XS2-09	50.37	1328.39	xs2
67.02	1,326.96	LEW	66.24	1327.1	(X2)	67.57	1326.93	XS2	61.78	1328.04	x208	49.41	1328.11	XS2-09	54.32	1328.43	xs2
65.28	1,327.20	LB	67.14	1326.81	(X2)	68.61	1327.18	XS2W	63.25	1327.87	x208	50.36	1328.07	XS2-09	57.64	1328.51	xs2
63.12	1,327.85	BKF	68.2	1326.88	(X2)	69.73	1326.94	XS2	63.78	1327.67	x208	52.49	1328.04	XS2-09	60.39	1328.29	xs2
56.23	1,327.70	LB	69.11	1326.95	(X2)	69.92	1326.95	XS2	64.66	1327.54	x208	54.1	1328.15	XS2-09	61.37	1328.44	xs2
46.24	1,328.35	FP	69.35	1327.59	(W)	69.97	1327.59	XS2	65.54	1327.64	x208	56.06	1328.05	XS2-09	62.63	1328.2	xs2
31.83	1,328.75	FP	69.38	1327.64	(X2W)	78.86	1329.54	XS2	66.47	1327.56	x208	57.7	1328.13	XS2-09	63.69	1328.22	xs2
7.86	1,329.03	FP	69.74	1327.93	(X2)	85.67	1330.02	XS2	67.16	1327.5	x208	58.64	1328.13	XS2-09	64.56	1328.07	xs2
7.78	1,329.29	PIN	70.93	1328.69	(X2)	90.6	1330.28	XS2	67.6	1327.09	x208	60.33	1328.13	XS2-09	65.38	1327.9	xs2
			72.44	1328.88	(X2)	97.94	1330.36	XS2	68.13	1326.78	x208	61.96	1328.27	XS2-09	66.02	1327.77	xs2
			75.98	1329.11	(X2)	98.38	1330.19	XS2	68.92	1326.74	x208	64.02	1328.02	XS2-09	66.38	1327.49	xs2
			80.54	1329.56	(X2)	99.42	1330.76	XS2RP07	69.25	1327.89	x2w08	65.08	1327.87	XS2-09	66.92	1327.43	xs2
			86.94	1330	(X2)				69.82	1327.96	x208	65.45	1327.76	XS2-09	67.39	1327.61	xs2
			95.87	1330.26	(X2)				70.85	1328.59	x208	66.36	1327.73	XS2-09	67.91	1328.04	xs2
			99.34	1330.53	(X2)				72.25	1328.87	x208	67.66	1327.56	XS2-09	68.58	1328.24	xs2
					(X2RP)				75.17	1328.97	x208	68.64	1327.82	XS2-09	69.78	1328.57	xs2
									76.88	1329.21	x208	69.16	1327.95	XS2-09	71.11	1328.95	xs2
									83.79	1329.7	x208	70.45	1328.29	XS2-09	74.69	1329.15	xs2
									87.53	1330.01	x208	71.43	1328.62	XS2-09	79.16	1329.57	xs2
									92.41	1330.23	x208	72.71	1328.94	XS2-09	85.98	1330.18	xs2
									98.38	1330.53	x208	73	1328.93	XS2-09	96.49	1330.46	xs2
									99.56	1330.74	x2rp08	75.12	1329.07	XS2-09	97.79	1330.72	xs2
												79.32	1329.29	XS2-09	99.53	1330.77	xs2rp10
												87.22	1330.1	XS2-09			

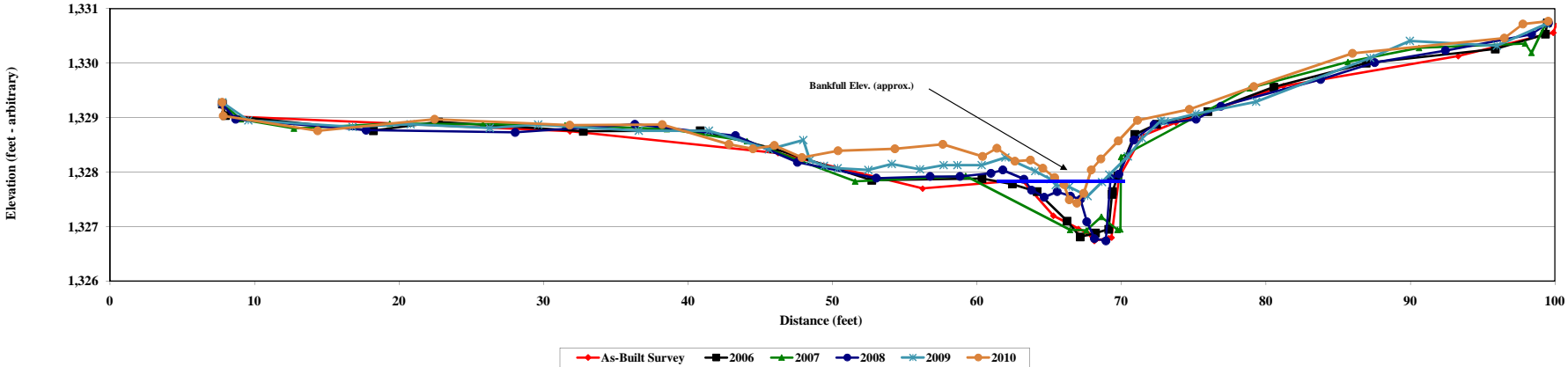


Photo of Cross-Section #2 - Looking Downstream

	As-Built	2006	2007	2008	2009	2010
Area	4.9	4.2	5.9	2.7	0.5	0.5
Width	6.2	9.4	10.8	7.5	4.6	2.5
Mean Depth	0.8	0.4	0.6	0.4	0.1	0.2
Max Depth	1.1	1.0	0.9	1.1	0.3	0.4

Note: Area computations for each year relative to as-built bankfull elevation

Reach 4 Pool Cross Section #2 - Station 1+60
Purlear Phase II



Project Name	Purlear Phase II
Cross Section	X3 Reach 4
Feature	Riffle
Date	8/5/2010
Crew	Price, Emory

2005 As-Built Survey			2006 MY - 01			2007 MY - 02			2008 MY - 03			2009 MY - 04			2010 MY - 05		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
91.67	1,323.51	PIN	15.76	1322.23 (X3LP)		15.76	1322.1 XS3LP07		15.32	1322.1 xs3lp08		15.76	1322.09 XS3-LP-09		14.26	1321.94 xs3	
91.18	1,323.06	FP	16.1	1322.08 (X3)		29.41	1321.84 XS3		23.41	1321.56 xs308		18.34	1321.34 XS3		14.84	1322.31 xs3	
77.99	1,322.45	FP	19.34	1321.63 (X3)		45.06	1321.95 XS3		29.06	1321.98 xs308		22.22	1321.56 XS3		15.94	1322.31 xs3lp10	
63.63	1,322.15	FP	27.75	1321.94 (X3)		47.42	1321.68 XS3		33.6	1321.95 xs308		27.99	1321.98 XS3		16.4	1322.42 xs3	
55.9	1,321.72	RB	34.36	1321.99 (X3)		48.28	1320.36 XS3		37.53	1321.95 xs308		29.66	1321.81 XS3		17.8	1321.88 xs3	
53.13	1,321.52	BKF	38.43	1321.9 (X3)		49.84	1320.58 XS3		40.91	1321.97 xs308		35.16	1322.13 XS3		19.33	1322.04 xs3	
52.12	1,321.46	RB	45.03	1321.99 (X3)		50.95	1321.1 XS3W		44.88	1321.93 xs308		39.56	1322.09 XS3		21.21	1322.2 xs3	
51.27	1,321.06	REW	46.65	1321.95 (X3)		52.31	1321.49 XS3		45.76	1321.93 xs308		43.45	1322.3 XS3		27.39	1321.8 xs3	
51.19	1,320.98	SB	47.79	1321.36 (X3)		54.73	1321.89 XS3		46.97	1321.85 xs308		45.82	1322.15 XS3		30.67	1322 xs3	
50.61	1,320.84	SB	48.68	1320.5 (X3)		58.65	1321.96 XS3		47.75	1321.54 xs3w08		46.92	1322 XS3		34.23	1322.17 xs3	
50	1,320.48	SB	49.75	1320.3 (X3)		61.92	1322.18 XS3		47.79	1321.55 xs308		47.16	1321.8 XS3		37.66	1322.13 xs3	
49.3	1,320.26	SB	51.01	1320.44 (X3)		67.72	1322.16 XS3		48	1321.25 xs308		47.46	1321.58 XS3		39.87	1322.13 xs3	
48.67	1,320.24	SB	51.33	1321.31 (X3W)		74.34	1322.28 XS3		48.54	1321.27 xs308		48.87	1321.32 XS3		42.84	1322.16 xs3	
48.13	1,320.75	SB	52.02	1321.58 (X3)		80.09	1322.56 XS3		49.13	1320.98 xs308		49.12	1320.87 XS3		45.13	1321.96 xs3	
48.1	1,321.09	LEW	53.06	1321.63 (X3)		85.99	1322.86 XS3		49.69	1320.8 XS308		49.71	1321 XS3		46.5	1322.09 xs3	
47.8	1,321.58	LB	54.49	1321.76 (X3)		90.85	1323.37 XS3RP07		50.71	1320.88 xs308		49.9	1321.1 XS3		47.03	1321.87 xs3	
47.03	1,321.69	LB	57.36	1321.84 (X3)					50.89	1321.24 xs308		49.98	1321.21 XS3		47.61	1321.58 xs3	
44.63	1,321.74	BKF	62.5	1322.32 (X3)					51.77	1321.34 xs308		50.48	1321.29 XS3		48.23	1321.21 xs3	
42.38	1,321.75	FP	74.83	1322.38 (X3)					53.15	1321.6 xs308		50.93	1321.26 XS3		48.65	1320.41 xs3	
15.91	1,322.05	FP	79.14	1322.51 (X3)					55.99	1321.79 xs308		51.54	1321.48 XS3		49.22	1320.51 xs3	
15.76	1,322.29	PIN	90.72	1323.07 (X3)					58.25	1321.84 xs308		51.93	1321.7 XS3		49.89	1320.67 xs3	
			90.85	1323.43 (X3RP)					61.55	1322.1 xs308		52.11	1321.69 XS3		50.4	1321.12 xs3	
			101.55	1323.98 (FENCE)					63.46	1322.1 xs308		53.36	1321.69 XS3		50.75	1321.21 xs3	
									67.41	1322.09 xs308		57.46	1321.88 XS3		51.13	1321.83 xs3	
									72.24	1322.01 xs308		59.46	1322.13 XS3		51.88	1321.76 xs3	
									77.26	1322.3 xs308		63.77	1322.32 XS3		52.85	1321.95 xs3	
									84.06	1322.87 xs308		68.5	1322.49 XS3		54.18	1321.86 xs3	
									87.3	1322.85 xs308		75.48	1322.55 XS3		55.28	1322.04 xs3	
									90.46	1323.08 xs308		75.55	1322.59 XS3		57.08	1322.05 xs3	
									90.91	1323.42 xs3rp08		81.93	1322.74 XS3		59.98	1322.19 xs3	
												89.92	1323.05 XS3		65.07	1322.32 xs3	
												90.8	1323.42 XS3-RP-09		74.44	1322.41 xs3	
															82.53	1322.7 xs3	
															89.89	1323.02 xs3	
															90.91	1323.43 xs3rp10	

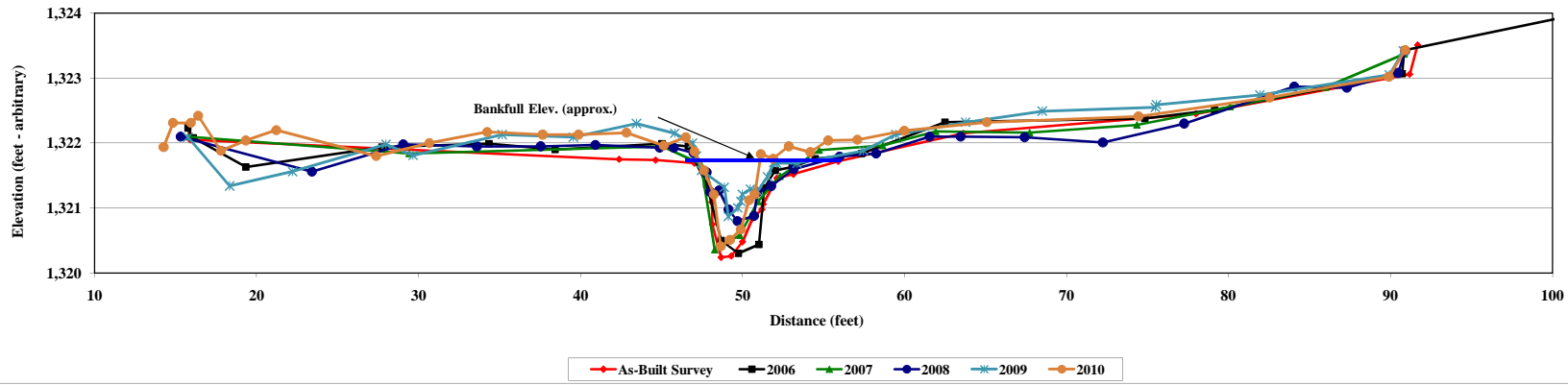


Photo of Cross-Section #3 - Looking Downstream

	As-Built	2006	2007	2008	2009	2010
Area	4.93	4.8	4.3	3.2	2.1	2.9
Width	10.3	7.8	7.3	9.0	6.2	4.1
Mean Depth	0.5	0.6	0.6	0.4	0.3	0.7
Max Depth	1.5	1.4	1.4	0.9	0.9	1.3
w/d ratio	21.5	12.9	12.3	25.3	18.7	5.9
FPW	72	72	72	72	72	72
ER (greater than)	7.0	9.2	9.9	8.0	11.6	17.6
Stream Type	C	C	C	C	C	E

Note: Area computations for each year relative to as-built bankfull elevation

Reach 4 Riffle Cross Section #3 - Station 4+63 Purlear Phase II



Project Name	Purlear Phase II
Cross Section	X4 Reach 4
Feature	Pool
Date	9/1/2010
Crew	Price

2005 As-Built Survey				2006 MY - 01				2007 MY - 02				2008 MY - 03				2009 MY - 04				2010 MY - 05			
Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes	
86.06	1,319.58	PIN		16.74	1317.58	(XS4LP)		16.74	1317.54	XS4LP07		16.9	1317.58	xs4lp08		16.93	1317.56	XS4-LP-08		16.94	1317.53	XS4LP10	
85.66	1,319.38	FP		17.07	1317.4	(XS4)		17.59	1317.2	XS4		18.27	1317.32	xs408		19.66	1317.27	XS4		17.95	1317.41	XS4	
65.6	1,318.58	RB		19.98	1317.37	(XS4)		23.92	1317.08	XS4		23.41	1317.25	xs408		23.85	1317.39	XS4		21.36	1317.31	XS4	
51.23	1,317.95	RB		25.97	1317.14	(XS4)		27.86	1317.13	XS4		26.92	1317.26	xs408		28.61	1317.2	XS4		24.72	1317.32	XS4	
42.27	1,317.21	RB		27.77	1317.12	(XS4)		31.51	1316.45	XS4		28.51	1317.01	xs408		31.36	1316.78	XS4		28.42	1317.25	XS4	
39.8	1,316.73	RB		30.99	1316.51	(XS4)		32	1316.31	XS4		29.23	1316.84	xs408		32.03	1316.47	XS4		29.53	1317.09	XS4	
38.93	1,316.45	RB		31.88	1316.41	(XS4W)		32.79	1315.99	XS4		30.21	1316.7	xs408		33.87	1316.44	XS4		31.15	1316.82	XS4	
38.54	1,316.00	REW		32.4	1316.41	(W)		33.23	1315.96	XS4		31.22	1316.61	xs408		34.12	1315.31	XS4		32.42	1316.62	XS4	
38.45	1,315.38	SB		32.82	1316.12	(XS4)		33.32	1315.96	XS4W		31.48	1316.45	xs4w08		34.95	1315.11	XS4		33.46	1316.47	XS4	
37.98	1,315.07	SB		34.12	1315.16	(XS4)		33.58	1315.38	XS4		32.18	1316.37	xs408		35.72	1314.91	XS4		34.2	1315.44	XS4	
36.93	1,314.71	SB		36.17	1314.62	(XS4)		33.78	1315.19	XS4		32.88	1316.17	xs408		36.13	1314.73	XS4		34.89	1315.3	XS4	
35.98	1,314.79	SB		37.87	1314.43	(XS4)		35.01	1314.92	XS4		33.51	1315.88	xs408		36.82	1314.59	XS4		36.03	1314.99	XS4	
35.23	1,315.06	SB		38.47	1315.52	(XS4)		36.01	1314.62	XS4		34.04	1315.07	xs408		37.4	1314.48	XS4		37.1	1314.91	XS4	
34.06	1,315.36	SB		39.11	1316.47	(XS4W)		36.61	1314.35	XS4		34.64	1315.04	xs408		37.49	1314.43	XS4		37.91	1315.05	XS4	
32.92	1,316.00	LEW		39.16	1316.43	(W)		37.35	1314.54	XS4		35.66	1314.76	xs408		37.98	1316.14	XS4		38.79	1315.61	XS4	
32.45	1,316.30	LB		39.72	1316.59	(XS4)		38.56	1315.98	XS4W		36.26	1314.89	xs408		38.15	1316.49	XS4		39.13	1316.26	XS4	
30.05	1,316.95	BKF		41.42	1316.83	(XS4)		40.29	1316.64	XS4		37.08	1314.48	xs408		38.7	1316.57	XS4		39.5	1316.59	XS4	
26.53	1,317.38	FP		44.62	1317.11	(XS4)		42.32	1317.03	XS4		38.14	1314.62	xs408		39.02	1316.56	XS4		40.92	1316.78	XS4	
16.74	1,317.86	PIN		50.85	1317.54	(XS4)		45.01	1317.13	XS4		38.46	1316.14	xs408		40.16	1316.63	XS4		41.82	1316.89	XS4	
				60.8	1318.2	(XS4)		47.82	1317.36	XS4		39.7	1316.45	xs408		41.19	1316.8	XS4		43.46	1317.08	XS4	
				78.19	1318.53	(XS4)		49.29	1317.58	XS4		40.39	1316.65	xs408		43.81	1317.03	XS4		45.88	1317.29	XS4	
				85.18	1319.1	(XS4)		52.83	1317.85	XS4		41.7	1316.92	xs408		48.11	1317.5	XS4		49.65	1317.54	XS4	
				85.21	1319.35	(X4RP)		57.51	1318.12	XS4		43	1317.21	xs408		53.59	1317.88	XS4		54.31	1317.78	XS4	
								62.01	1318.21	XS4		44.9	1317.18	xs408		64.75	1318.41	XS4		61.56	1318.35	XS4	
								69.14	1318.53	XS4		46.02	1317.25	xs408		75.01	1318.69	XS4		71.53	1318.83	XS4	
								75.72	1318.5	XS4		51.12	1317.52	xs408		83.77	1319.03	XS4		77.24	1318.62	XS4	
								80.75	1318.87	XS4		57.15	1317.9	xs408		85.01	1319.33	XS4-RP-05		79.87	1318.69	XS4	
								85.1	1319.34	XS4RP07		62	1318.24	xs408						83.28	1319.02	XS4	
								69.23	1318.5	xs408		69.23	1318.5	xs408						85.29	1319.33	XS4RP10	
								76.5	1318.57	xs408		76.5	1318.57	xs408									
								82.87	1319.01	xs408		82.87	1319.01	xs408									
								85.22	1319.34	xs4rp08		85.22	1319.34	xs4rp08									

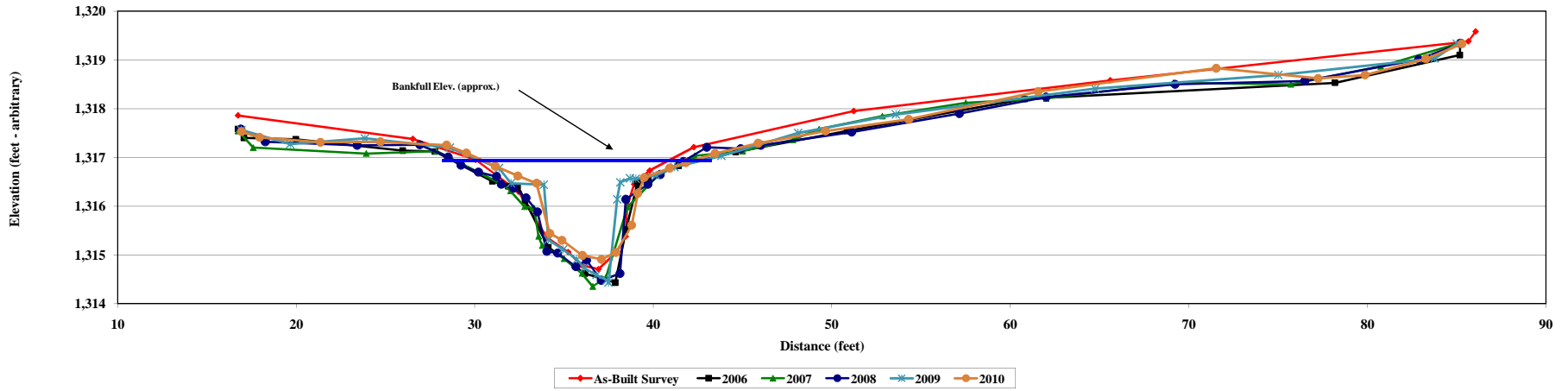


Photo of Cross-Section #4 - Looking Downstream

	As-Built	2006	2007	2008	2009	2010
Area	12.1	14.2	13.3	13.6	10.6	10.9
Width	11.3	13.7	11.8	13.2	12.6	12.3
Mean Depth	1.1	1.0	1.1	1.0	0.8	0.9
Max Depth	2.2	2.5	2.6	2.5	2.5	2.0

Note: Area computations for each year relative to as-built bankfull elevation

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 9/1/2010
 Crew Price

2005 As-Built Survey			2006 MY - 01			2007 MY - 02			2008 MY - 03			2009 MY - 04			2010 MY - 05		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
110.02	1,316.20	pin	10.83	1313.57	(X5LP)	10.83	1313.46	XSSLP07	10.83	1313.53	xs5lp08	11	1313.56	XSSLP09	10.95	1313.54	xs5lp10
102.75	1,315.64	fp	10.91	1313.27	(X5)	11.63	1313.28	XSS5	12.27	1313.42	xs508	16.75	1313.34	XSS5	12.5	1313.26	XSS5
92.16	1,314.95	fp	17.77	1313.28	(X5)	20.79	1313.12	XSS5	17.16	1313.27	xs508	23.74	1313.14	XSS5	16.43	1313.28	XSS5
81.44	1,314.59	fp	23.07	1312.94	(X5)	33.37	1313.31	XSS5	33.37	1313.31	XSS5	22.89	1312.98	xs508	29.89	1313.25	XSS5
74.22	1,314.33	fp	30.97	1313.18	(X5)	38.89	1313.02	XSS5	27.7	1313.07	xs508	35.47	1313.33	XSS5	25.55	1313.13	XSS5
66.38	1,313.72	fp	34.95	1313.26	(X5)	41.33	1312.34	XSS5	32.02	1313.31	xs508	38	1313.24	XSS5	28.33	1313.18	XSS5
61.91	1,313.55	fp	37.93	1313.13	(X5)	42.53	1312.17	XSS5W	34.91	1313.33	xs508	40.08	1312.95	XSS5	31.22	1313.28	XSS5
59.1	1,313.40	fp	39.65	1313.01	(X5)	42.7	1311.89	XSS5	38.42	1313.19	xs508	40.87	1312.65	XSS5	34.61	1313.39	XSS5
55.78	1,313.32	fp	40.54	1312.53	(X5W)	43.49	1311.61	XSS5	40.35	1312.73	xs508	41.99	1312.6	XSS5	36.95	1313.22	XSS5
53.39	1,313.03	bank	42.01	1312.21	(X5)	44.58	1311.45	XSS5	41.65	1312.38	xs508	42.86	1312.48	XSS5	38.94	1313.17	XSS5
51.29	1,312.71	bkf	43.08	1311.63	(X5)	45.09	1311.34	XSS5	42.85	1312.19	xs508	43.18	1312.43	XSS5	40.45	1312.98	XSS5
48.64	1,312.32	bank	44.24	1311.2	(X5)	45.93	1311.49	XSS5	43.15	1311.8	xs508	44.2	1311.57	XSS5	42.03	1312.59	XSS5
47.5	1,312.04	rew	45.97	1311.49	(X5)	47.07	1311.58	XSS5	43.99	1311.42	xs508	44.46	1311.39	XSS5	43.18	1312.14	XSS5
46.58	1,311.78	sb	47.65	1311.95	(X5)	47.2	1311.7	XSS5	45.09	1311.45	xs508	45.17	1311.37	XSS5	44.56	1311.64	XSS5
44.05	1,311.73	sb	49.4	1312.38	(X5)	47.56	1312.19	XSS5W	45.8	1311.47	xs508	45.9	1311.44	XSS5	45.33	1311.15	XSS5
42.73	1,311.96	lew	50.24	1312.33	(X5)	50.13	1312.51	XSS5	45.86	1311.75	xs508	46.07	1311.7	XSS5	45.99	1311.24	XSS5
41.16	1,312.48	bkf	50.45	1312.59	(W)	52.53	1312.68	XSS5	47.11	1311.54	xs508	47.06	1312.15	XSS5	47.33	1311.5	XSS5
39.69	1,313.09	fp	50.6	1312.53	(X5W)	54.53	1313.18	XSS5	47.47	1312.05	xs508	48	1312.29	XSS5	48.1	1311.66	XSS5
38.51	1,313.20	fp	51.5	1312.58	(X5)	58.42	1313.22	XSS5	47.57	1312.44	xs5w08	50.38	1312.32	XSS5	48.24	1312.26	XSS5
34.85	1,313.37	fp	53.37	1313.06	(X5)	62.83	1313.45	XSS5	48.6	1312.48	xs508	55.61	1313.16	XSS5	49.08	1312.53	XSS5
30.28	1,313.31	fp	59.63	1313.24	(X5)	68.06	1313.91	XSS5	49.52	1312.42	xs508	64.92	1313.53	XSS5	52.04	1312.57	XSS5
25.38	1,313.05	fp	77.84	1314.23	(X5)	75.46	1314.38	XSS5	50.62	1312.54	xs508	76.75	1314.33	XSS5	55.95	1313.19	XSS5
17	1,313.36	fp	92.2	1314.89	(X5)	80.78	1314.41	XSS5	52.31	1312.77	xs508	92.61	1314.97	XSS5	60.68	1313.25	XSS5
10.83	1,313.67	pin	106.85	1315.43	(X5)	86.72	1314.67	XSS5	53.6	1313.04	xs508	103.81	1315.51	XSS5	70.93	1313.99	XSS5
			107.92	1315.74	(X5)	86.84	1314.7	XSS5	57.31	1313.29	xs508	110.13	1316.07	XSS5RP09	84.95	1314.64	XSS5
			109.86	1315.83	(X5)	92.79	1315.05	XSS5	62.71	1313.59	xs508				94.15	1315.19	XSS5
			110.1	1316.05	(XSRP)	97.55	1315.33	XSS5	67.62	1313.64	xs508				104.37	1315.54	XSS5
						103.86	1315.54	XSS5	73.57	1314.11	xs508				110.23	1316.07	XSSRP10
						110.01	1316.06	XSSRP07	79.95	1314.33	xs508				110.48	1316.11	XSS5
									87.59	1314.59	xs508						
									94.74	1315.07	xs508						
									100.07	1315.47	xs508						
									106.67	1315.77	xs508						
									110.11	1316.06	xs5rp08						

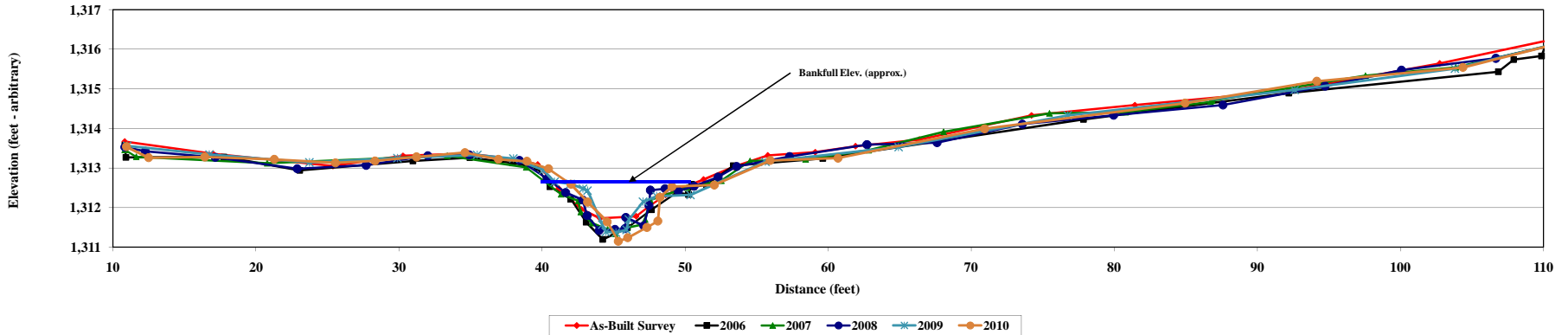


Photo of Cross-Section #5 - Looking Downstream

	As-Built	2006	2007	2008	2009	2010
Area	5.1	7.0	6.2	5.6	4.6	5.9
Width	10.1	9.9	8.8	10.1	10.1	10.0
Mean Depth	0.5	0.7	0.7	0.6	0.5	0.6
Max Depth	0.9	1.4	1.3	1.2	1.2	1.5
w/d ratio	20.0	14.0	12.5	18.2	22.0	16.8
FPW	46	46	46	46	46	46
ER (greater than)	4.5	4.6	5.2	4.6	4.6	4.6
Stream Type	C	C	C	C	C	C

Note: Area computations for each year relative to as-built bankfull elevation

Reach 4 Riffle Cross Section #5 - Station 10+75 Purlear Phase II



Project Name	Purlear Phase II
Cross Section	X6 Reach 4
Feature	Pool
Date	9/1/2010
Crew	Price

2005 As-Built Survey			2006 MY - 01			2007 MY - 02			2008 MY - 03			2009 MY - 04			2010 MY - 05		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
81.7	1,317.03	pin	8.38	1312.56	(X6LP)	8.38	1312.58	XS6LP07	8.42	1312.53	xs6lp08	8.4	1312.51	XS6LP09	8.42	1312.52	xs6lp10
81.4	1,316.76	ltr	8.66	1312.34	(X6)	9.1	1312.23	XS6	10.21	1312.37	xs608	13.16	1312.23	XS6	10.16	1312.3	XS6
75.58	1,315.65	ltr	19.08	1312.32	(X6)	16.76	1312.26	XS6	15.51	1312.36	xs608	21.29	1312.19	XS6	12.4	1312.3	XS6
72.33	1,315.15	ltr	24.98	1311.9	(X6)	24.8	1311.86	XS6	22.9	1312.01	xs608	26.86	1311.98	XS6	18.85	1312.34	XS6
69.35	1,314.59	ltr	28.31	1312.42	(VP)	31.31	1312.17	XS6	27.15	1311.88	xs608	32.47	1312.29	XS6	25.79	1311.9	XS6
66.62	1,313.85	ltr	32.95	1312.31	(X6)	34.29	1311.78	XS6	29.43	1312.16	xs608	34.68	1312.08	XS6	30.88	1312.15	XS6
63.33	1,313.45	fp	34.6	1311.98	(X6)	35.56	1311.37	XS6	31.47	1312.19	xs608	35.16	1311.81	XS6	33.99	1312.19	XS6
60.21	1,312.96	fp	35.25	1311.73	(X6W)	36.38	1311.21	XS6W	32.69	1312.14	xs608	35.15	1311.78	XS6	34.32	1312.14	XS6
54.73	1,312.81	fp	36.27	1311.08	(X6)	36.47	1310.62	XS6	34.25	1311.81	xs608	35.9	1311.54	XS6	35.77	1311.78	XS6
49.3	1,312.59	fp	37	1310.38	(X6)	37.11	1310.23	XS6	35.74	1311.43	xs608	36.22	1310.8	XS6	36.76	1311.44	XS6
44.76	1,312.46	fp	38.41	1310.63	(X6)	37.62	1310.34	XS6	36.12	1310.74	xs608	36.75	1310.29	XS6	37.28	1310.42	XS6
42.6	1,312.18	bkf	38.95	1310.63	(X6)	38.89	1310.83	XS6	36.7	1310.16	xs608	36.85	1310.41	XS6	37.88	1310.2	XS6
40.3	1,311.31	rew	40.57	1310.93	(X6)	39.78	1310.89	XS6	39.78	1310.89	XS6	37.13	1310.15	XS6	38.49	1310.18	XS6
39.48	1,311.24	sb	40.98	1311.56	(X6)	39.94	1311.14	XS6W	37.85	1310.79	xs608	37.82	1310.39	XS6	39.2	1310.42	XS6
38.18	1,310.79	sb	41.22	1311.66	(X6W)	40.79	1311.54	XS6	38.54	1310.92	xs608	38.41	1310.49	XS6	40.06	1310.71	XS6
35.85	1,311.34	lew	41.51	1311.73	(W)	42.22	1312.02	XS6	39.47	1311.15	xs608	38.72	1310.67	XS6	40.86	1311.08	XS6
34.24	1,312.03	bkf	42.22	1311.86	(X6)	44.77	1312.3	XS6	39.58	1311.46	xs6w08	39.32	1311	XS6	41.19	1311.01	XS6
32.85	1,312.43	fp	42.62	1312.12	(X6)	47.77	1312.42	XS6	39.85	1311.6	xs608	39.97	1311.26	XS6	41.97	1311.81	XS6
29.48	1,312.32	fp	44.48	1312.48	(X6)	50.04	1312.57	XS6	41.39	1311.75	xs608	40.42	1311.74	XS6	43.79	1312.18	XS6
25.86	1,312.11	fp	51.78	1312.55	(X6)	52.96	1312.59	XS6	42.52	1312.12	xs608	41.48	1311.84	XS6	45.38	1312.47	XS6
20.04	1,312.31	fp	61.93	1313.13	(X6)	56.14	1312.75	XS6	43.77	1312.3	xs608	44.57	1312.24	XS6	46.82	1312.5	XS6
14.4	1,312.43	fp	65.97	1313.54	(X6)	56.25	1312.75	XS6	45.64	1312.38	xs608	50.15	1312.6	XS6	50.13	1312.51	XS6
8.38	1,312.74	pin	72	1315.14	(X6)	56.25	1312.73	XS6	48.28	1312.4	xs608	58.86	1313.02	XS6	55.3	1312.61	XS6
			81.56	1316.69	(X6)	59.75	1312.87	XS6	50.3	1312.49	xs608	69.54	1314.64	XS6	59.35	1312.8	XS6
			81.72	1316.85	(X6RP)	59.96	1312.96	XS6	52.32	1312.58	xs608	78.3	1316.11	XS6	62.31	1313.02	XS6
						63.53	1313.39	XS6	54.76	1312.6	xs608	81.82	1316.84	XS6RP09	62.92	1313.16	XS6
						66.39	1313.6	XS6	57.57	1312.73	xs608				67.02	1313.58	XS6
						66.41	1313.6	XS6	60.01	1312.9	xs608				75.62	1315.53	XS6
						66.55	1313.55	XS6	62.67	1313.11	xs608				78.61	1315.86	XS6
						68.28	1314.24	XS6	64.99	1313.6	xs608				81.02	1316.45	XS6
						70.95	1314.74	XS6	66.81	1313.99	xs608				81.82	1316.84	XS6RP10
						73.14	1315.26	XS6	68.92	1314.52	xs608				82.46	1316.66	XS6
						76.31	1315.65	XS6	70.68	1314.72	xs608						
						80.24	1316.55	XS6	72.56	1315.21	xs608						
						81.85	1316.88	XS6RP07	76.34	1315.79	xs608						

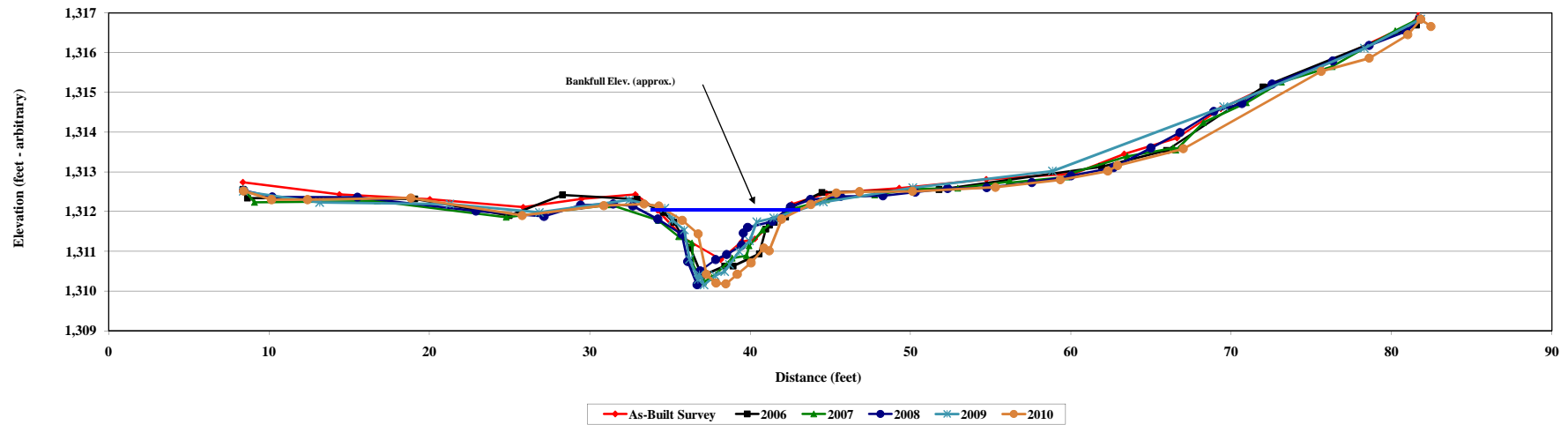


Photo of Cross-Section #6 - Looking Downstream

	As-Built	2006	2007	2008	2009	2010
Area	6.1	7.9	8.2	7.0	7.0	8.1
Width	8.4	8.0	10.9	9.8	9.0	8.6
Mean Depth	0.7	1.0	0.8	0.7	0.8	0.9
Max Depth	1.3	1.7	1.9	1.9	2.0	1.9

Note: Area computations for each year relative to as-built bankfull elevation

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	8/4/2010
Crew	Price, Emory

2005 As-Built Survey			2006 MY - 01			2007 MY - 02			2008 MY - 03			2009 MY - 04			2010 MY - 05		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
4.14	1,296.68	PIN	4.14	1296.95	(xs7lp)	4.14	1296.87	XS7LP07	4.14	1296.9	XS7LP08	4.14	1296.9	XS7-LP-09	4.32	1296.9	xs7lp10
10.94	1,296.08	FP	4.35	1296.75	(XS7)	5.59	1296.68	XS7	4.58	1296.82	XS7	5.28	1296.69	XS7-09	6.56	1296.92	xs7
14.68	1,296.00	BKF	4.41	1296.68	(XS7)	12.56	1296.1	XS7	10.36	1296.34	XS7	9.01	1296.53	XS7-09	7.37	1296.82	xs7
17.92	1,295.53	LB	4.44	1296.81	(xs7lp)	17.89	1295.67	XS7	13.87	1296.17	XS7	13	1296.17	XS7-09	9.29	1296.71	xs7
19.92	1,294.67	LEW	4.47	1296.68	(xs7)	19.88	1294.86	XS7	16.66	1296.05	XS7	15.03	1296.18	XS7-09	11.32	1296.59	xs7
20.73	1,294.26	SB	16.35	1295.94	(xs7)	20.22	1294.69	XS7W	18.16	1295.55	XS7	16.89	1295.99	XS7-09	12.9	1296.33	xs7
21.43	1,294.15	SB	19.81	1294.83	(xs7w)	20.75	1294.19	XS7	18.19	1295.66	XS7	18.24	1295.65	XS7-09	14.71	1296.27	xs7
22.51	1,294.14	SB	20.84	1294.55	(xs7)	22.18	1294.2	XS7	20.38	1294.53	XS7W	19.3	1295.31	XS7-09	16.69	1296.25	xs7
25.25	1,294.52	SB	21.6	1294.27	(xs7)	24.17	1294.56	XS7	21.19	1294.18	XS7	20.31	1294.1	XS7-09	17.42	1296.29	xs7
27.08	1,294.55	REW	22.66	1294.2	(xs7)	26.01	1294.64	XS7	22.58	1294.2	XS7	20.7	1293.93	XS7-09	18.86	1296.04	xs7
29.64	1,294.55	BAR	24.19	1294.4	(xs7)	26.33	1294.72	XS7W	24.48	1294.51	XS7W	21.49	1293.84	XS7-09	20.1	1295.74	xs7
30.81	1,294.45	REW	25.22	1294.56	(xs7)	28.93	1294.8	XS7	25.79	1294.63	XS7	22.28	1293.77	XS7-09	21.13	1295.43	xs7
31.63	1,294.83	RB	26.4	1294.79	(xs7)	31.51	1294.97	XS7	29.5	1294.77	XS7	22.66	1293.83	XS7-09	21.74	1295.08	xs7
33.31	1,295.29	RB	29.1	1294.72	(xs7)	32.17	1294.99	XS7	32	1295.11	XS7	23.32	1294.68	XS7-09	22.04	1294.68	xs7
36.13	1,295.95	BKF	30.53	1294.85	(xs7)	33.86	1295.54	XS7	36.4	1296.02	XS7	23.51	1293.97	XS7-09	22.67	1294.04	xs7
39.53	1,296.27	TOB	31.14	1294.78	(xs7)	34.82	1294.78	XS7	43.44	1296.74	XS7	23.96	1294.09	XS7-09	23.61	1293.72	xs7
46.18	1,296.88	FP	31.78	1294.84	(xs7w)	36.67	1296.25	XS7	53.2	1297.19	XS7	24.61	1294.56	XS7-09	24.15	1293.7	xs7
53.26	1,297.07	FP	33.61	1295.28	(xs7)	39.33	1296.5	XS7	53.68	1297.25	XS7RP08	25.62	1294.75	XS7-09	24.99	1293.83	xs7
53.35	1,297.16	FP	36.1	1295.85	(xs7)	41.6	1296.65	XS7				26.28	1294.77	XS7-09	25.85	1293.93	xs7
102.6	1,296.75	PIN	36.76	1295.94	(xs7)	44.18	1296.9	XS7				27.31	1295.03	XS7-09	26.36	1294.53	xs7
			46.41	1296.86	(xs7)	47.37	1296.99	XS7				28.01	1295.17	XS7-09	27.12	1294.85	xs7
			52.03	1296.91	(xs7)	49.42	1296.97	XS7				29.85	1294.88	XS7-09	27.51	1294.89	xs7
			53.48	1297.14	(xs7rp)	51.69	1297.19	XS7				32.37	1295.37	XS7-09	28.19	1294.75	xs7
			53.61	1297.16	(XS7)	53.05	1297.23	XS7RP07				32.6	1295.23	XS7-09	28.76	1294.87	xs7w
												33.01	1295.31	XS7-09	29.28	1294.95	xs7
												34.84	1295.8	XS7-09	30.14	1295.22	xs7
												36.43	1296.04	XS7-09	31.63	1295.08	xs7
												37.86	1296.25	XS7-09	33.23	1295.19	xs7
												40.51	1296.51	XS7-09	34.83	1295.47	xs7
												43.33	1296.73	XS7-09	36.77	1295.91	xs7
												46.21	1297.08	XS7-09	37.86	1296.09	xs7
												49.37	1296.97	XS7-09	39.52	1296.26	xs7
												52.09	1297.09	XS7-09	40.92	1296.37	xs7
												53.43	1297.22	XS7-RP-09	42.44	1296.57	xs7
															44.03	1296.64	xs7

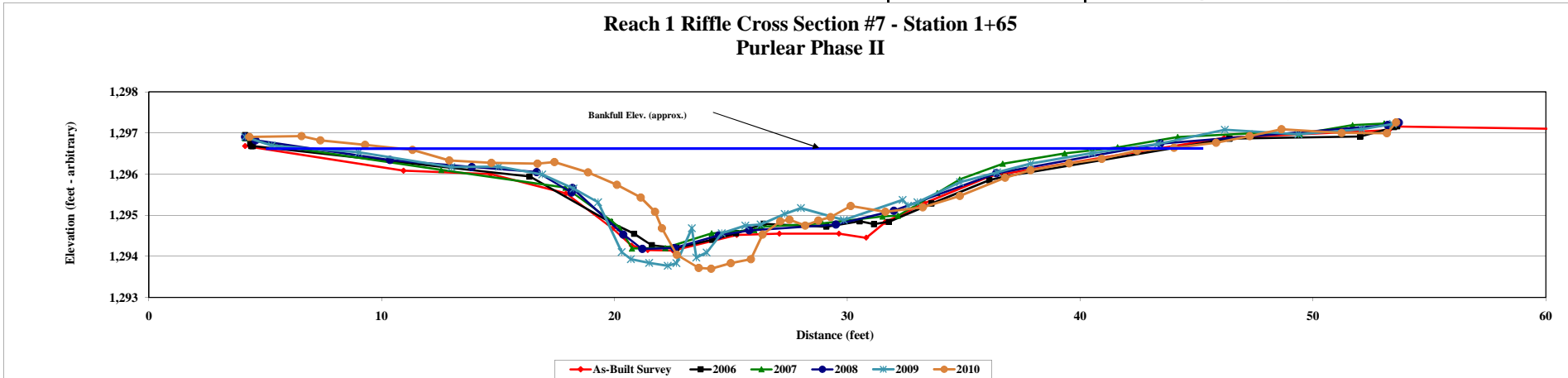


Photo of Cross-Section #7 - Looking Downstream

	As-Built	2006	2007	2008	2009	2010
Area	49.9	50.7	46.9	47.1	46.0	43.6
Width	35.2	42.3	40.0	39.3	39.2	38.5
Mean Depth	1.4	1.2	1.2	1.2	1.2	1.1
Max Depth	2.7	2.7	2.7	2.7	3.1	3.2
w/d ratio	24.9	35.2	34.2	32.8	33.4	34.0
FPW	100	100	100	100	100	100
ER (greater than)	2.8	2.4	2.5	2.5	2.6	2.6
Stream Type	C	C	C	C	C	C

Note: Area computations for each year relative to as-built bankfull elevation

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



Project Name	Purlear Phase II
Cross Section	X8 Reach 1
Feature	Riffle
Date	8/4/2010
Crew	Price, Emory

2005 As-Built Survey			2006 MY - 01			2007 MY - 02			2008 MY - 03			2009 MY - 04			2010 MY - 05		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
8.13	1,297.15	FP	8.02	1297.31	(XS8)	8.13	1297.27	XS8LP07	8.13	1297.04	XS8LP08	8.13	1297.22	XS8-LP-09	8.37	1297.4	xs8lp10
12.7	1,296.87	TOB	8.04	1297.07	(xs8)	8.52	1297.15	XS8	8.5	1297.16	XS8	8.76	1297.08	XS8-09	8.46	1297.26	xs8
15.42	1,296.17	LB	8.13	1297.19	(xs8lp)	11.41	1297.01	XS8	11.55	1297.02	XS8	10.84	1297	XS8-09	10.73	1297.06	xs8
17.31	1,295.55	BKF	8.48	1297.31	(xs8lp)	15.04	1296.34	XS8	13.09	1296.8	XS8	12.5	1296.83	XS8-09	12.5	1296.81	xs8
20.04	1,294.44	LB	13.33	1296.61	(xs8)	18.1	1295.03	XS8	16.3	1295.84	XS8	12.87	1296.76	XS8-09	14.44	1296.48	xs8
21.04	1,293.58	LB	20.27	1294.29	(xs8)	21.05	1293.82	XS8	17.31	1,295.55	XS8	15.29	1,296.37	XS8-09	15.5	1296.18	xs8
21.57	1,293.15	LEW	21.45	1293.11	(xs8w)	21.91	1293.04	XS8W	19.78	1294.69	XS8	16.34	1295.85	XS8-09	17.34	1295.54	xs8
22.43	1,292.75	SB	21.73	1292.86	(xs8)	22.01	1292.73	XS8	21.23	1293.5	XS8w	18.7	1295	XS8-09	18.51	1295.11	xs8
28.17	1,292.20	SB	23.43	1292.23	(xs8)	23.02	1292.28	XS8	22.01	1292.83	XS8	19.53	1294.66	XS8-09	19.52	1294.84	xs8
30.63	1,292.18	SB	24.95	1292.04	(xs8)	25.45	1292.16	XS8	22.21	1293.07	XS8	20.4	1294.28	XS8-09	20.6	1294.34	xs8
32.27	1,292.78	SB	26.5	1292.17	(xs8)	28.24	1292.08	XS8	23.1	1292.44	XS8	21.23	1293.76	XS8-09	21.27	1293.92	xs8
33.06	1,293.12	REW	29.2	1292.11	(xs8)	28.49	1292.07	XS8	24.62	1292.2	XS8	21.54	1292.97	XS8-09	21.58	1293.61	xs8
34.43	1,293.82	RB	30.34	1292.04	(xs8)	29.05	1292.06	XS8	26.78	1292.02	XS8	22.86	1292.78	XS8-09	22.1	1293.25	xs8w
36.58	1,294.43	RB	32.5	1293.06	(xs8w)	30.35	1293.02	XS8	28.71	1292.11	XS8	23.74	1292.35	XS8-09	22.25	1292.65	xs8
38.39	1,294.73	RB	33.24	1293.28	(xs8)	32.59	1292.62	XS8	30.2	1292.21	XS8	24.89	1292.43	XS8-09	23.42	1292.39	xs8
41.05	1,295.27	RB	37.4	1294.58	(xs8)	33.14	1293.06	XS8W	31.82	1292.64	XS8	26.74	1292.16	XS8-09	24.54	1291.91	xs8
46.1	1,295.97	RB	40.6	1295.05	(xs8)	33.67	1293.19	XS8	32.03	1292.74	XS8w	28.4	1292.14	XS8-09	25.66	1291.92	xs8
52.69	1,296.35	FP	49.77	1296.18	(xs8)	34.22	1293.82	XS8	32.05	1293.03	XS8	28.62	1292.08	XS8-09	26.74	1292.08	xs8
56.9	1,296.31	FP	56.87	1296.55	(XS8)	36.3	1294.23	XS8	32.85	1293.67	XS8	29.98	1292.06	XS8-09	28.04	1292.05	xs8
56.99	1,296.55	PIN	56.98	1296.42	(xs8rp)	38.25	1294.66	XS8	33.56	1293.69	XS8	30.76	1292.36	XS8-09	29.86	1292.19	xs8
			57.01	1296.21	(xs8)	40.93	1295.03	XS8	35.4	1294.18	XS8	31.88	1292.34	XS8-09	31.4	1292.37	xs8
						43.22	1295.45	XS8	40.1	1295.09	XS8	32.81	1292.66	XS8-09	32.82	1292.73	xs8
						46.93	1295.96	XS8	47.43	1296.12	XS8	33.72	1293.69	XS8-09	33.32	1293.04	xs8
						49.65	1296.27	XS8	56.68	1296.23	XS8RP08	34.91	1294.11	XS8-09	34.08	1293.59	xs8
						55.76	1296.36	XS8	57.17	1296.53		35.99	1294.22	XS8-09	34.61	1293.9	xs8
						56.98	1296.49	XS8RP07				37.52	1294.61	XS8-09	36.28	1294.3	xs8
												38.33	1294.73	XS8-09	37.96	1294.78	xs8
												40.46	1294.93	XS8-09	39.82	1294.86	xs8
												41.66	1295.16	XS8-09	42.87	1295.44	xs8
												44.09	1295.66	XS8-09	46.85	1295.88	xs8
												47.06	1296.07	XS8-09	50.94	1296.38	xs8
												49.6	1296.21	XS8-09	53.9	1296.35	xs8
												51.72	1296.32	XS8-09	56.9	1296.32	xs8
												53.7	1296.36	XS8-09	57.21	1296.5	xs8rp10
												54.9	1296.43	XS8-09			
												55.55	1296.43	XS8-09			

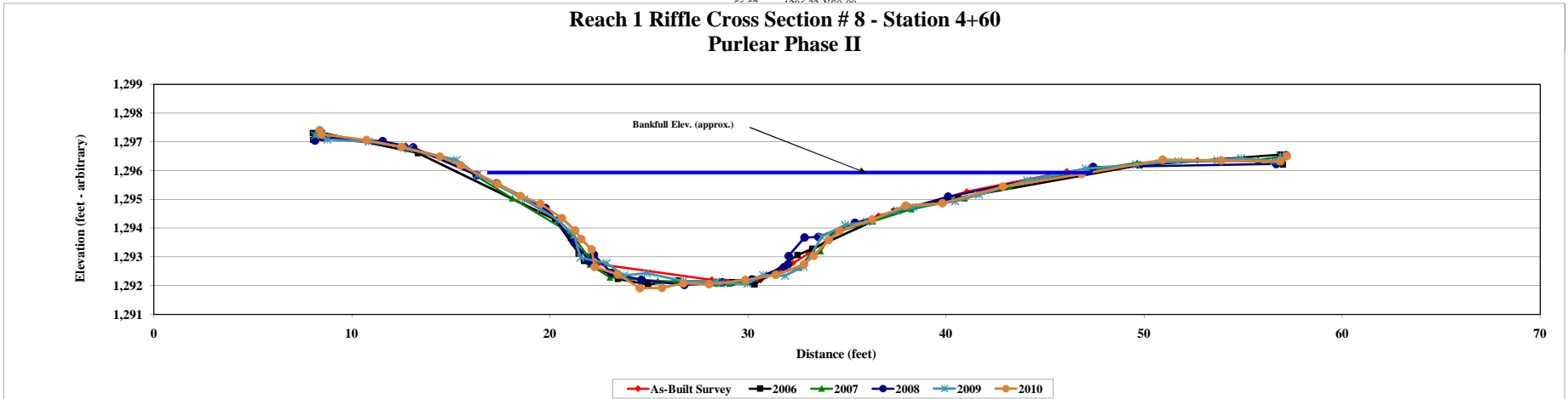


Photo of Cross-Section #8 - Looking Downstream

	As-Built	2006	2007	2008	2009	2010
Area	48.59	53.4	51.4	48.2	50.3	50.9
Width	23.7	27.3	25.1	25.0	25.3	25.5
Mean Depth	2.0	2.0	2.0	1.9	2.0	2.0
Max Depth	3.4	3.5	3.5	3.5	3.5	3.6
w/d ratio	11.6	13.9	12.3	12.9	12.7	12.8
FPW	98	98	98	98	98	98
ER (greater than)	4.1	3.6	3.9	3.9	3.9	3.8
Stream Type	C	C	C	C	C	C

Note: Area computations for each year relative to as-built bankfull elevation

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	8/4/2010
Crew	Price, Emory

2005 As-Built Survey				2006 MY - 01				2007 MY - 02				2008 MY - 03				2009 MY - 04				2010 MY - 05							
Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes		Station	Elevation	Notes					
15.04	1,297.97	PIN		14.99	1297.97	(XS9)		15.04	1297.91	XS9LP07		15.04	1297.97	XS9LP08		15.04	1297.66	XS9-LP-08		15.19	1297.57	xs9					
15.23	1,297.66	FP		15.04	1297.82	(xs9lp)		16.46	1297.55	XS9		15.75	1297.67	XS9		15.81	1297.59	XS9-09		15.31	1297.69	xs9lp10					
19.23	1,297.36	TOB		15.32	1297.95	(xs9lp)		19.27	1297.26	XS9		19.68	1296.95	XS9		17.97	1297.42	XS9-09		15.85	1297.56	xs9					
21.42	1,296.18	LB		15.59	1297.7	(xs9)		22.34	1295.51	XS9		21.31	1296.2	XS9		20.29	1296.81	XS9-09		17.23	1297.37	xs9					
22.24	1,295.34	LB		18.96	1297.46	(xs9)		24.56	1294.52	XS9		22.25	1295.18	XS9		22.29	1295.5	XS9-09		18.41	1296.26	xs9					
23.72	1,295.00	LB		22.51	1295.34	(xs9)		26.43	1294.01	XS9		24.11	1294.66	XS9		24.14	1295.01	XS9-09		19.75	1294.9	xs9					
24.86	1,294.13	LB		24.16	1294.94	(xs9)		28.53	1293.86	XS9		27.31	1293.66	XS9		24.98	1293.99	XS9-09		20.82	1293.43	xs9					
26.98	1,293.74	LB		25.93	1293.91	(xs9)		30.25	1293.32	XS9		28.45	1293.63	XS9		26.72	1293.66	XS9-09		21.29	1292.52	xs9					
28.87	1,293.59	BKF		29	1293.62	(xs9)		31.53	1292.33	XS9W		29.3	1291.54	XS9		27.73	1293.48	XS9-09		22.1	1292.18	xs9					
29.57	1,291.82	SB		30.36	1291.96	(xs9)		31.88	1292.43	XS9W		31.56	1293.07	XS9		29.07	1293.68	XS9-09		22.23	1292.04	xs9w					
31.18	1,291.56	SB		30.45	1291.83	(xs9)		32.35	1290.15	XS9		32.44	1291.89	XS9		30.49	1290.48	XS9-09		22.81	1291.8	xs9					
32.01	1,291.44	SB		30.93	1291.66	(xs9)		33.12	1290.18	XS9		32.96	1291.83	XS9w		30.91	1290.5	XS9-09		23.73	1290.97	xs9					
32.31	1,290.18	SB		31.41	1291.33	(xs9)		35.34	1290.41	XS9		33.7	1290.49	XS9		31.35	1290.56	XS9-09		24.61	1290.7	xs9					
33.71	1,290.24	SB		31.45	1291.23	(xs9)		36.32	1290.87	XS9		34.32	1290.27	XS9		32.23	1290.49	XS9-09		26.14	1290.54	xs9					
35.6	1,291.08	SB		31.84	1291.23	(xs9)		37.44	1291.25	XS9		36.97	1290.46	XS9		33.62	1290.45	XS9-09		27.93	1290.6	xs9					
37.26	1,291.68	SB		32.42	1291.59	(xs9)		38.22	1291.62	XS9		38.7	1291.48	XS9		34.72	1290.62	XS9-09		30.5	1290.9	xs9					
38.26	1,291.99	SB		33.11	1290.36	(xs9)		38.72	1292.39	XS9W		38.78	1291.76	XS9		35.77	1290.77	XS9-09		33.15	1291.73	xs9					
39.11	1,292.20	REW		33.62	1290.46	(xs9)		40.39	1292.64	XS9		38.84	1291.89	XS9w		36.7	1290.94	XS9-09		33.82	1291.92	xs9					
40.1	1,292.43	PB		34.77	1290.67	(xs9)		41.64	1290.99	XS9		39.45	1292.3	XS9		37.36	1291.22	XS9-09		34.25	1292.14	xs9					
45.22	1,293.09	PB		36.27	1291.38	(xs9)		43.56	1293.23	XS9		44.06	1293.34	XS9		38.55	1291.51	XS9-09		35.96	1292.85	xs9					
52.49	1,293.08	PB		38.26	1291.99	(xs9w)		45.73	1291.91	XS9		52.68	1293.11	XS9		39.64	1291.7	XS9-09		36.93	1292.77	xs9					
55.08	1,293.18	PB		39.7	1292.45	(xs9)		49.19	1293.25	XS9		61.26	1293.93	XS9		39.84	1292.79	XS9-09-W		37.6	1292.68	xs9					
63.39	1,294.14	RE		40.05	1292.43	(XS9)		49.66	1293.24	XS9		69.31	1294.74	XS9		40.72	1293.46	XS9-09		38.51	1292.84	xs9					
71.06	1,294.96	TOB		41.19	1292.74	(xs9)		53.21	1293.11	XS9		79.79	1295.5	XS9		41.64	1293.62	XS9-09		40.17	1293.32	xs9					
				44.7	1293.13	(xs9)		57.79	1293.57	XS9		87.69	1295.73	XS9		43.63	1293.94	XS9-09		42.61	1294.11	xs9					
				45.18	1293.09	(XS9)		60.7	1293.97	XS9		87.9	1296.12	XS9RP08		46.4	1293.67	XS9-09		44.17	1294.32	xs9					
				52.44	1293.08	(XS9)		64.9	1294.52	XS9						49.26	1293.88	XS9-09		46.08	1293.98	xs9					
				53.3	1293.06	(xs9)		65.21	1294.48	XS9						52.97	1293.64	XS9-09		48.44	1293.82	xs9					
				55.04	1293.18	(XS9)		67.82	1294.68	XS9						56.59	1293.53	XS9-09		51.82	1293.8	xs9					
				57.77	1293.6	(xs9)		70.53	1295.08	XS9						58.62	1293.67	XS9-09		56.34	1293.71	xs9					
				62.67	1294.07	(xs9)		72.91	1295.07	XS9						61.85	1293.89	XS9-09		62.84	1294.14	xs9					
				65.65	1294.54	(xs9)		75.39	1295.33	XS9						64.03	1294.09	XS9-09		66.91	1294.62	xs9					
				71.5	1294.98	(xs9)		76.89	1295.43	XS9						65.97	1294.51	XS9-09		70.91	1295.01	xs9					
				87.44	1296.19	(XS9)		78.57	1295.47	XS9						67.28	1294.49	XS9-09		75.47	1295.29	xs9					
				87.76	1296.2	(xs9rp)		83.1	1295.56	XS9						69.11	1294.65	XS9-09		80.26	1295.61	xs9					
								86.01	1295.59	XS9						70.91	1294.85	XS9-09		86.03	1295.65	xs9					
								86.07	1295.61	XS9						73.54	1295.31	XS9-09		87.77	1296.15	xs9rp10					
								87.31	1296.12	XS9RP						75.96	1295.32	XS9-09									

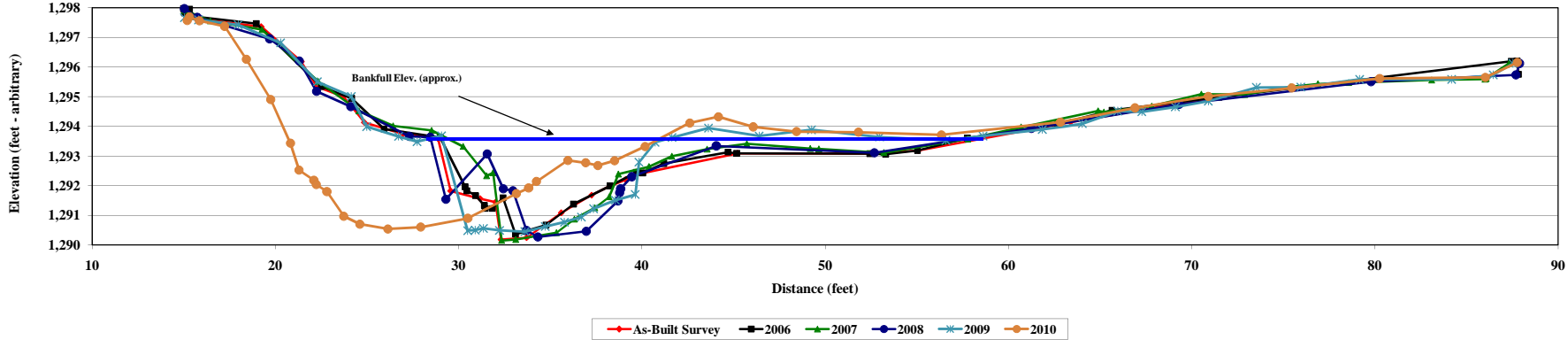


Photo of Cross-Section #9 - Looking Downstream

	As-Built	2006	2007	2008	2009	2010
Area	33.8	31.5	28.6	30.2	28.0	36.9
Width	29.2	28.8	29.3	28.6	12.6	20.4
Mean Depth	1.2	1.1	1.0	1.1	2.2	1.8
Max Depth	3.4	3.2	3.4	3.3	3.1	3.0

Note: Area computations for each year relative to as-built bankfull elevation

Reach 1 Pool Cross Section # 9 - Station 5+98
Purlear Phase II



Project Name	Purlear Phase II
Cross Section	X10 Reach 1
Feature	Pool
Date	8/4/2010
Crew	Price, Emory

2005 As-Built Survey			2006 MY - 01			2007 MY - 02			2008 MY - 03			2009 MY - 04			2010 MY - 05		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
20.66	1,291.11	FP	20.66	1290.84	(xs10lp)	20.66	1290.79	XS10LP07	19.47	1290.84	XS10	20.69	1290.82	XS10-LP-09	17.87	1290.78	xs10
23.41	1,290.38		20.79	1290.84	(xs10lp)	21.47	1290.64	XS10	20.66	1290.77	XS10LP08	21.54	1290.6	XS10-09	20.68	1290.82	xs10lp10
30.71	1,289.00	BKF	21.02	1290.71	(xs10)	24.39	1290.12	XS10	23.56	1290.22	XS10	24.63	1290.45	XS10-09	21.75	1290.05	xs10
32.26	1,288.49	LB	24.2	1290.22	(xs10)	28.27	1289.34	XS10	28.18	1289.3	XS10	28	1289.38	XS10-09	25.75	1289.31	xs10
33.14	1,288.08	LB	31.52	1288.9	(xs10)	34.36	1287.9	XS10	30.69	1288.84	XS10	32.63	1288.52	XS10-09	31.42	1288.65	xs10
36.25	1,288.00	PB	33.17	1288.14	(xs10)	38.01	1287.79	XS10	33.22	1287.99	XS10	36.98	1288.16	XS10-09	33.64	1288.38	xs10
39.16	1,287.71	PB	35.2	1287.97	(xs10)	41.36	1287.51	XS10	40.21	1287.93	XS10	37.69	1288.01	XS10-09	35.83	1288.51	xs10
40.58	1,287.54	LEW	35.24	1288	(XS10)	42.3	1287.32	XS10W	41.36	1287.3	XS10	38.84	1288.43	XS10-09	37.38	1287.9	xs10
41.62	1,287.43		38.14	1287.71	(XS10)	42.61	1287.33	XS10	42.51	1287.23	XS10w	39.99	1288.48	XS10-09	38.5	1287.44	xs10
43.73	1,287.13	SB	38.35	1287.82	(xs10)	44.68	1286.73	XS10	42.79	1287.08	XS10	41.31	1287.78	XS10-09	39.7	1287.09	xs10
47.1	1,286.89	SB	40.87	1287.53	(xs10)	45.04	1286.65	XS10	43.84	1286.83	XS10	42.45	1287.56	XS10-09	41.89	1286.51	xs10
49.89	1,286.55	SB	41.46	1287.43	(xs10)	48.4	1286.03	XS10	45.66	1286.57	XS10	42.67	1287.38	XS10-09	44.38	1286.23	xs10
51.74	1,286.09	SB	42.08	1287.38	(xs10)	50.07	1285.87	XS10	48.15	1286.43	XS10	43.31	1287.07	XS10-09	46.7	1286.27	xs10
52.47	1,286.52	SB	42.93	1287.22	(xs10)	50.94	1286.3	XS10	49.75	1286.05	XS10	43.38	1287.09	XS10-09	48.78	1285.95	xs10
52.93	1,287.35	REW	45.03	1286.84	(xs10)	52.14	1286.69	XS10	50.17	1286.07	XS10	44.99	1286.89	XS10-09	49.8	1287.57	xs10
54.1	1,287.80	RB	46.14	1286.77	(xs10)	53.11	1287.2	XS10W	52.03	1285.91	XS10	46.44	1286.66	XS10-09	51.03	1287.8	xs10
55.81	1,288.26	RB	47.73	1286.58	(xs10)	54.4	1287.69	XS10	52.2	1286.38	XS10	47.74	1286.22	XS10-09	52.78	1288.33	xs10
62.51	1,289.83	RB	49.21	1286.38	(xs10)	56.21	1288.33	XS10	53.15	1287.31	XS10	48.78	1286.06	XS10-09	54.49	1288.76	xs10
65.03	1,290.78	RB	49.9	1286.36	(xs10)	58.3	1288.86	XS10	53.48	1286.93	XS10	49.37	1286.46	XS10-09	56.27	1289.46	xs10
68.78	1,291.69	TOB	51.68	1286.06	(xs10)	60.73	1289.23	XS10	56.67	1287.89	XS10	50.1	1286.4	XS10-09	57.82	1289.41	xs10
73.09	1,292.24	FP	52.62	1286	(xs10)	63.16	1289.79	XS10	57.56	1287.82	XS10	50.8	1286.04	XS10-09	59.82	1289.87	xs10
77.12	1,292.61	FP	53.26	1287.49	(xs10)	64.73	1290.49	XS10	60.21	1289.19	XS10	51.31	1286.28	XS10-09	61.97	1290.7	xs10
80.49	1,292.87	FP	53.3	1287.43	(xs10w)	67.08	1291.11	XS10	64.02	1290.05	XS10	51.79	1286.96	XS10-09	64.07	1291.22	xs10
80.55	1,293.33	PIN	56	1288.08	(xs10)	69.1	1291.53	XS10	67.19	1291	XS10	52.89	1287.55	XS10-09	66.62	1291.69	xs10
			57.86	1288.84	(xs10)	70.26	1291.89	XS10	69.29	1291.6	XS10	53.29	1287.82	XS10-09	66.63	1291.72	xs10
			58.71	1288.84	(xs10)	73.12	1291.94	XS10	72.12	1291.77	XS10	54.66	1287.87	XS10-09	69.6	1292.04	xs10
			61.96	1289.66	(xs10)	75.4	1292.23	XS10	76.55	1289.36	XS10	56.23	1288.06	XS10-09	73.63	1292.45	xs10
			67.43	1291.37	(xs10)	77.51	1292.41	XS10	80.82	1292.71	XS10	57.03	1288.25	XS10-09	76.06	1292.73	xs10
			70.2	1291.79	(xs10)	79.71	1292.74	XS10	81.04	1293.19	XS10RP08	57.79	1288.61	XS10-09	80.6	1293.19	xs10rp10
			73.97	1292.25	(xs10)	80.82	1293.18	XS10RP07				62.42	1289.65	XS10-09			
			79.41	1293.33	(XS10)							64.78	1290.72	XS10-09			
			80.7	1293.22	(xs10rp)							67.13	1291.35	XS10-09			
												69.17	1291.66	XS10-09			
												73.88	1292.2	XS10-09			
												74.29	1292.2	XS10-09			

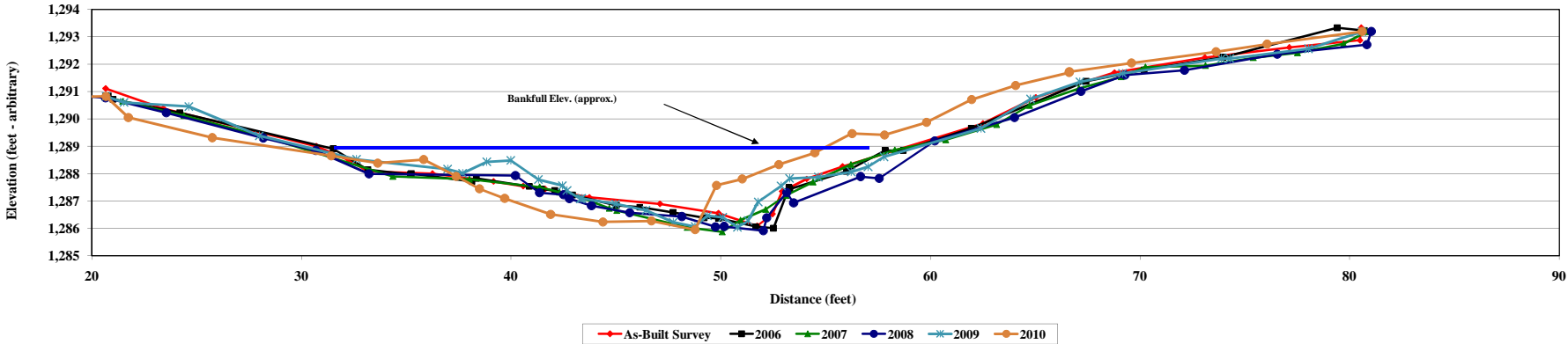


Photo of Cross-Section #10 - Looking Downstream

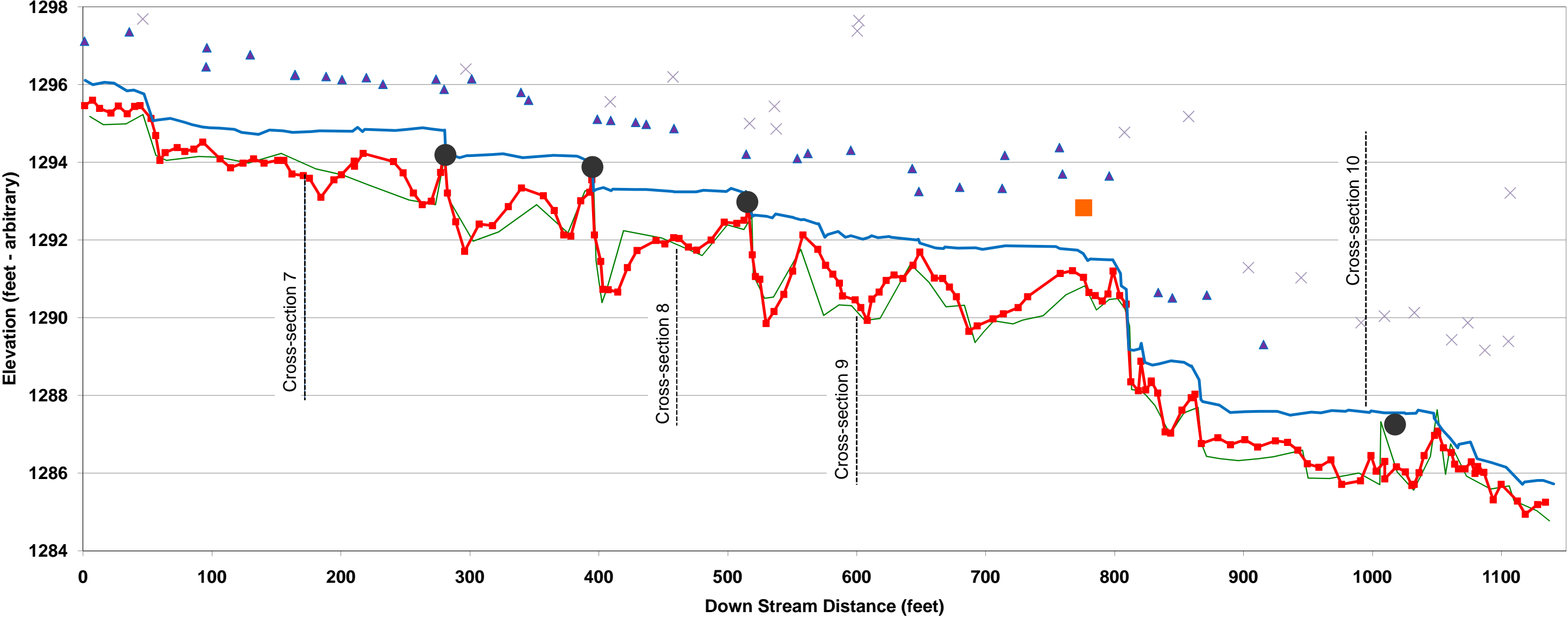
	As-Built	2006	2007	2008	2009	2010
Area	40.0	42.4	45.2	46.1	38.0	38.2
Width	28.3	34.5	30.0	29.4	29.8	28.7
Mean Depth	1.4	1.2	1.5	1.6	1.3	1.3
Max Depth	2.9	3.0	3.1	3.1	3.0	3.0

Note: Area computations for each year relative to as-built bankfull elevation

Reach 1 Pool Cross Section #10 - Station 9+93 Purlear Phase II

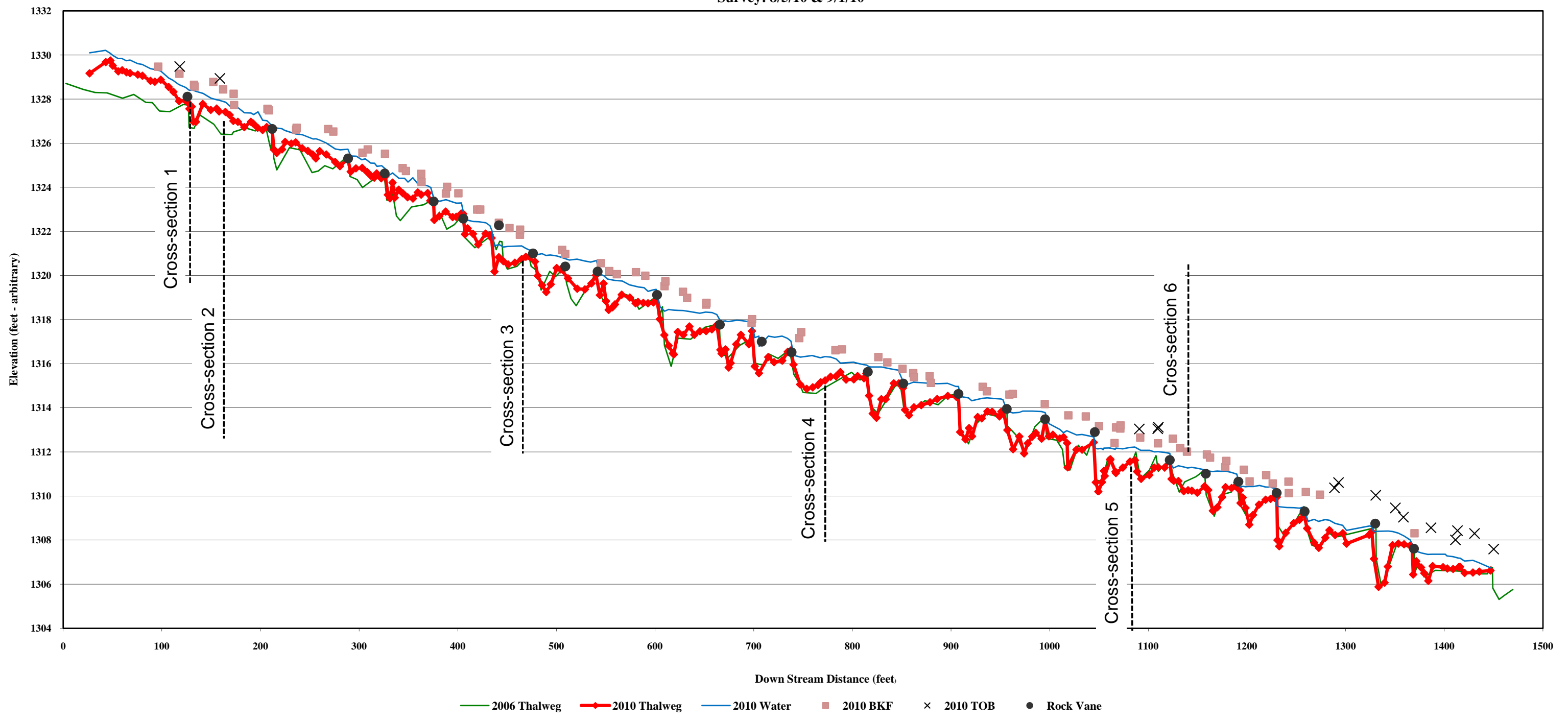


Purlear Phase II
Longitudinal Profile
2010 - Reach 1
Main Channel
Survey: 8/04/10



— 2006 Thalweg —■— 2010 Thalweg — 2010 Water ▲ 2010 Bankfull × 2010 TOB ■ 2009 Beaverdam (Removed) ● Rock Vane

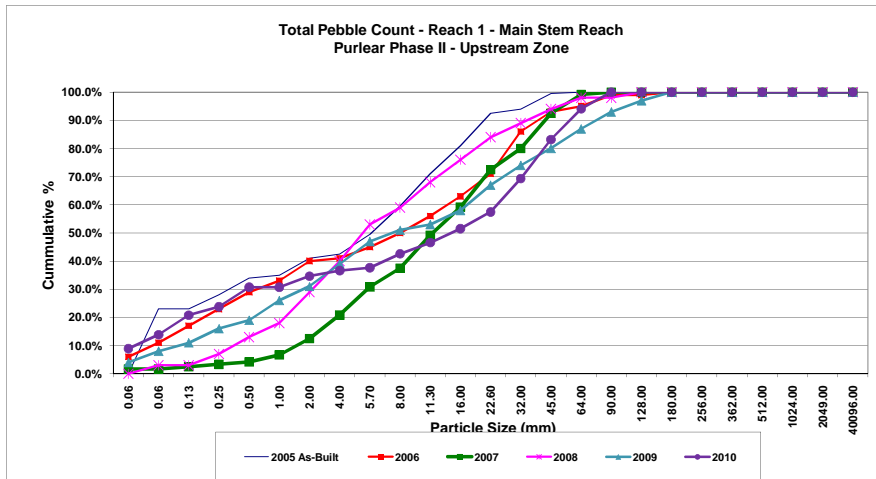
**Purlear Phase II
 Longitudinal Profile
 2010 -Reach 4
 Wetland Area
 Survey: 8/5/10 & 9/1/10**



Project Name	Purlear Phase II
Cross Section	Reach 1 - Main Stem Reach
Feature	Upstream Zone - Active Bed
Date	11/11/2010
Crew	Price

Description	Material	2005 As-Built				2006				2007				2008				2009				2010				
		Size (mm)	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %
Silt/Clay	silt/clay	0.061	0	0	0.0%	0.0%	3	3	6.0%	6.0%	1	1	1.7%	1.7%	0	0	0.0%	0.0%	4	0	4.0%	4.0%	5	4	8.9%	8.9%
	very fine sand	0.062	37	9	23.0%	23.0%	5	0	5.0%	11.0%	0	0	0.0%	1.7%	3	0	3.0%	3.0%	4	0	4.0%	8.0%	4	1	5.0%	13.9%
	fine sand	0.125	0	0	0.0%	23.0%	4	2	6.0%	17.0%	0	1	0.8%	2.5%	0	0	0.0%	3.0%	2	1	3.0%	11.0%	4	3	6.9%	20.8%
	medium sand	0.25	7	3	5.0%	28.0%	5	1	6.0%	23.0%	1	0	0.8%	3.3%	3	1	4.0%	7.0%	5	0	5.0%	16.0%	0	3	3.0%	23.8%
	course sand	0.50	9	3	6.0%	34.0%	5	1	6.0%	29.0%	1	0	0.8%	4.2%	4	2	6.0%	13.0%	2	1	3.0%	19.0%	4	3	6.9%	30.7%
Gravel	very course sand	1.0	0	2	1.0%	35.0%	3	1	4.0%	33.0%	3	0	2.5%	6.7%	3	2	5.0%	18.0%	3	4	7.0%	26.0%	0	0	0.0%	30.7%
	very fine gravel	2.0	5	7	6.0%	41.0%	5	2	7.0%	40.0%	3	4	5.8%	12.5%	6	5	11.0%	29.0%	4	1	5.0%	31.0%	4	0	4.0%	34.7%
	fine gravel	4.0	3	0	1.5%	42.5%	0	1	1.0%	41.0%	4	6	8.3%	20.8%	7	4	11.0%	40.0%	5	3	8.0%	39.0%	1	1	2.0%	36.6%
	fine gravel	5.7	4	10	7.0%	49.5%	4	0	4.0%	45.0%	4	8	10.0%	30.8%	7	6	13.0%	53.0%	6	2	8.0%	47.0%	1	0	1.0%	37.6%
	medium gravel	8.0	1	19	10.0%	59.5%	2	3	5.0%	50.0%	4	4	6.7%	37.5%	3	3	6.0%	59.0%	2	2	4.0%	51.0%	5	0	5.0%	42.6%
	medium gravel	11.3	4	19	11.5%	71.0%	3	3	6.0%	56.0%	5	9	11.7%	49.2%	4	5	9.0%	68.0%	0	2	2.0%	53.0%	0	4	4.0%	46.5%
	course gravel	16.0	12	8	10.0%	81.0%	1	6	7.0%	63.0%	2	10	10.0%	59.2%	1	7	8.0%	76.0%	2	3	5.0%	58.0%	0	5	5.0%	51.5%
	course gravel	22.6	8	15	11.5%	92.5%	2	6	8.0%	71.0%	8	8	13.3%	72.5%	3	5	8.0%	84.0%	1	8	9.0%	67.0%	3	3	5.9%	57.4%
	very course gravel	32	3	0	1.5%	94.0%	2	13	15.0%	86.0%	6	3	7.5%	80.0%	2	3	5.0%	89.0%	2	5	7.0%	74.0%	6	6	11.9%	69.3%
	very course gravel	45	6	5	5.5%	99.5%	3	4	7.0%	93.0%	5	10	12.5%	92.5%	1	4	5.0%	94.0%	1	5	6.0%	80.0%	7	7	13.9%	83.2%
Cobble	small cobble	64	1	0	0.5%	100.0%	1	1	2.0%	95.0%	2	6	6.7%	99.2%	0	4	4.0%	98.0%	2	5	7.0%	87.0%	5	6	10.9%	94.1%
	medium cobble	90	0	0	0.0%	100.0%	2	2	4.0%	99.0%	1	0	0.8%	100.0%	0	0	0.0%	98.0%	3	3	6.0%	93.0%	1	5	5.9%	100.0%
	large cobble	128	0	0	0.0%	100.0%	0	0	0.0%	99.0%	0	0	0.0%	100.0%	1	1	2.0%	100.0%	1	3	4.0%	97.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0	0.0%	100.0%	0	1	1.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	2	3.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	256	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Bedrock	very large boulder	2049	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	bedrock	40096	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / % of whole count			100	100	100.0%		50	50	100%		50	70	100%		48	52	100%		50	50	100%		50	51	100%	

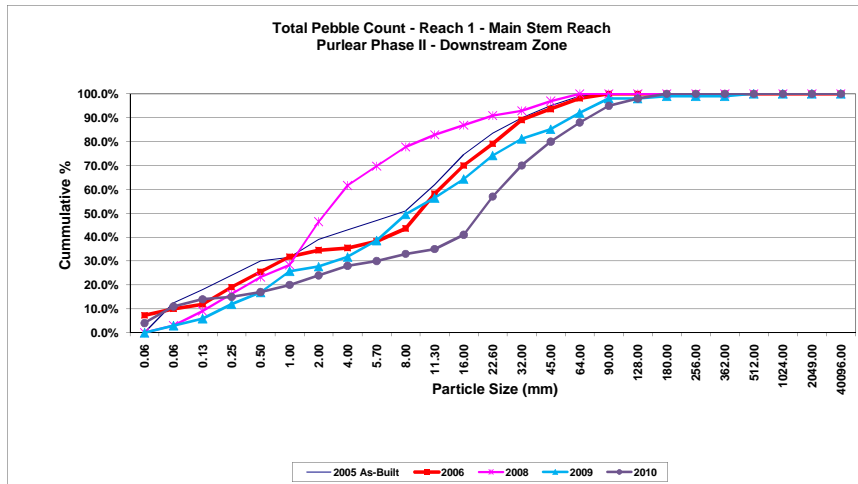
	d16	d35	d50	d84	d95
2005 As-Built	0.08	1.50	6.99	21.39	41.41
2006	0.17	1.93	9.65	37.01	77.00
2007	3.78	8.60	14.12	43.62	62.94
2008	1.20	4.01	6.39	27.30	60.12
2009	0.38	3.93	8.95	67.36	131.50
2010	0.12	3.32	17.61	56.22	82.07



Project Name	Purlear Phase II
Cross Section	Reach 1 - Lower Area
Feature	Downstream Zone - Active Bed
Date	11/11/2010
Crew	Price

Description	Material	2005 As-Built				2006				2008				2009				2010				
		Size (mm)	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %
Silt/Clay	silt/clay	0.061	0	0	0.0%	0.0%	8	0	7.3%	7.3%	0	0	0.0%	0.0%	0	0	0.0%	0.0%	3	1	4.0%	4.0%
	0.062	15	10	12.5%	12.5%	2	1	2.7%	10.0%	3	0	3.0%	3.0%	3	0	3.0%	3.0%	5	2	7.0%	11.0%	
Sand	very fine sand	0.125	6	5	5.5%	18.0%	1	1	1.8%	11.8%	4	2	6.1%	9.1%	2	1	3.0%	5.9%	0	3	3.0%	14.0%
	medium sand	0.25	10	2	6.0%	24.0%	6	2	7.3%	19.1%	5	2	7.1%	16.2%	5	1	5.9%	11.9%	1	0	1.0%	15.0%
	course sand	0.50	9	3	6.0%	30.0%	6	1	6.4%	25.5%	2	5	7.1%	23.2%	4	1	5.0%	16.8%	2	0	2.0%	17.0%
	very coarse sand	1.0	3	0	1.5%	31.5%	5	2	6.4%	31.8%	4	1	5.1%	28.3%	5	4	8.9%	25.7%	2	1	3.0%	20.0%
	2.0	10	5	7.5%	39.0%	2	1	2.7%	34.5%	10	8	18.2%	46.5%	1	1	2.0%	27.7%	3	1	4.0%	24.0%	
Gravel	very fine gravel	4.0	8	0	4.0%	43.0%	1	0	0.9%	35.5%	9	6	15.2%	61.6%	1	3	4.0%	31.7%	3	1	4.0%	28.0%
	fine gravel	5.7	6	2	4.0%	47.0%	1	2	2.7%	38.2%	1	7	8.1%	69.7%	3	4	6.9%	38.6%	0	2	2.0%	30.0%
	medium gravel	8.0	3	5	4.0%	51.0%	6	0	5.5%	43.6%	3	5	8.1%	77.8%	4	7	10.9%	49.5%	0	3	3.0%	33.0%
	medium gravel	11.3	9	13	11.0%	62.0%	6	10	14.5%	58.2%	2	3	5.1%	82.8%	5	2	6.9%	56.4%	1	1	2.0%	35.0%
	course gravel	16.0	8	17	12.5%	74.5%	8	5	11.8%	70.0%	1	3	4.0%	86.9%	1	7	7.9%	64.4%	3	3	6.0%	41.0%
	course gravel	22.6	5	13	9.0%	83.5%	2	8	9.1%	79.1%	0	4	4.0%	90.9%	5	5	9.9%	74.3%	7	9	16.0%	57.0%
	very course gravel	32	3	10	6.5%	90.0%	2	9	10.0%	89.1%	0	2	2.0%	92.9%	3	4	6.9%	81.2%	7	6	13.0%	70.0%
	very course gravel	45	3	7	5.0%	95.0%	1	4	4.5%	93.6%	2	2	4.0%	97.0%	1	3	4.0%	85.1%	3	7	10.0%	80.0%
	small cobble	64	2	6	4.0%	99.0%	0	5	4.5%	98.2%	3	0	3.0%	100.0%	2	5	6.9%	92.1%	4	4	8.0%	88.0%
	medium cobble	90	0	2	1.0%	100.0%	0	2	1.8%	100.0%	0	0	0.0%	100.0%	4	2	5.9%	98.0%	3	4	7.0%	95.0%
Cobble	large cobble	128	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	98.0%	2	1	3.0%	98.0%
	very large cobble	180	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	0	1.0%	99.0%	1	1	2.0%	100.0%
Boulder	small boulder	256	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	99.0%	0	0	0.0%	100.0%
	small boulder	362	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	99.0%	0	0	0.0%	100.0%
	medium boulder	512	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	0	1.0%	100.0%	0	0	0.0%	100.0%
	large boulder	1024	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count			100	100	100.0%		57	53	100%		49	50	100%		51	50	100%		50	50	100%	

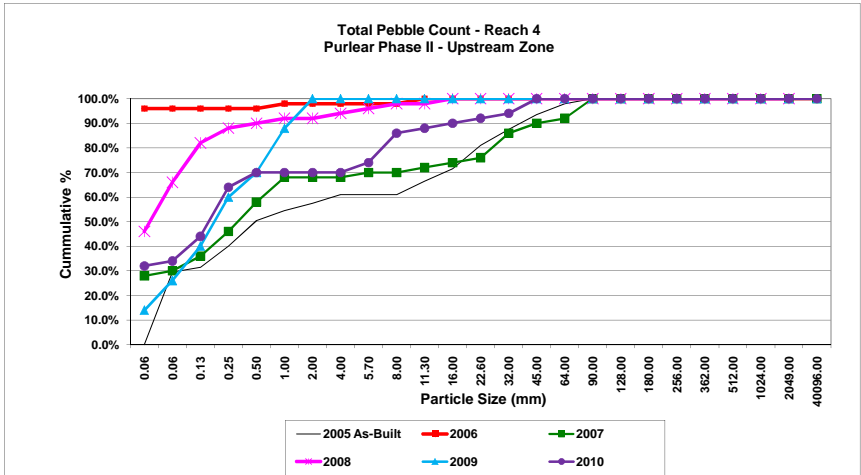
	d16	d35	d50	d84	d95
2005 As-Built	0.15	2.20	8.95	28.16	54.50
2006	0.30	3.93	11.40	32.80	61.25
2007	NA	NA	NA	NA	NA
2008	0.37	2.05	3.43	15.29	46.70
2009	0.69	5.81	9.94	49.86	92.73
2010	0.56	13.65	23.80	65.75	109.00



Project Name	Purlear Phase II
Cross Section	Reach 4 - Upstream Zone
Feature	Active Bed
Date	9/1/2010
Crew	Price, Zink

Description	Material	Size (mm)	2005 As-Built				2006				2007				2008				2009				2010			
			Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %
Silt/Clay	silt/clay	0.061	0	0	0.0%	0.0%	25	23	96.0%	96.0%	9	5	28.0%	28.0%	13	10	46.0%	46.0%	3	4	14.0%	14.0%	10	6	32.0%	32.0%
	very fine sand	0.062	32	27	29.5%	29.5%	0	0	0.0%	96.0%	0	1	2.0%	30.0%	4	6	20.0%	66.0%	4	2	12.0%	26.0%	1	0	2.0%	34.0%
	fine sand	0.125	0	4	2.0%	31.5%	0	0	0.0%	96.0%	2	1	6.0%	36.0%	4	4	16.0%	82.0%	3	4	14.0%	40.0%	4	1	10.0%	44.0%
	medium sand	0.25	8	9	8.5%	40.0%	0	0	0.0%	96.0%	4	1	10.0%	46.0%	2	1	6.0%	88.0%	4	6	20.0%	60.0%	5	5	20.0%	64.0%
	course sand	0.50	11	10	10.5%	50.5%	0	0	0.0%	96.0%	6	0	12.0%	58.0%	0	1	2.0%	90.0%	4	1	10.0%	70.0%	0	3	6.0%	70.0%
Gravel	very course sand	1.0	6	2	4.0%	54.5%	0	1	2.0%	98.0%	4	1	10.0%	68.0%	0	1	2.0%	92.0%	5	4	18.0%	88.0%	0	0	0.0%	70.0%
	very fine gravel	2.0	0	6	3.0%	57.5%	0	0	0.0%	98.0%	0	0	0.0%	68.0%	0	0	0.0%	92.0%	2	4	12.0%	100.0%	0	0	0.0%	70.0%
	fine gravel	4.0	2	5	3.5%	61.0%	0	0	0.0%	98.0%	0	0	0.0%	68.0%	1	0	2.0%	94.0%	0	0	0.0%	100.0%	0	0	0.0%	70.0%
	fine gravel	5.7	0	0	0.0%	61.0%	0	0	0.0%	98.0%	0	1	2.0%	70.0%	1	0	2.0%	96.0%	0	0	0.0%	100.0%	1	1	4.0%	74.0%
	medium gravel	8.0	0	0	0.0%	61.0%	0	0	0.0%	98.0%	0	0	0.0%	70.0%	0	1	2.0%	98.0%	0	0	0.0%	100.0%	3	3	12.0%	86.0%
	medium gravel	11.3	4	7	5.5%	66.5%	0	1	2.0%	100.0%	0	1	2.0%	72.0%	0	0	0.0%	98.0%	0	0	0.0%	100.0%	0	1	2.0%	88.0%
	course gravel	16.0	3	7	5.0%	71.5%	0	0	0.0%	100.0%	0	1	2.0%	74.0%	0	1	2.0%	100.0%	0	0	0.0%	100.0%	0	1	2.0%	90.0%
	course gravel	22.6	16	3	9.5%	81.0%	0	0	0.0%	100.0%	0	1	2.0%	76.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	1	2.0%	92.0%
	very course gravel	32	3	10	6.5%	87.5%	0	0	0.0%	100.0%	0	5	10.0%	86.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	1	2.0%	94.0%
	very course gravel	45	5	7	6.0%	93.5%	0	0	0.0%	100.0%	0	2	4.0%	90.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	2	6.0%	100.0%
Cobble	small cobble	64	8	1	4.5%	98.0%	0	0	0.0%	100.0%	0	1	2.0%	92.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	medium cobble	90	2	2	2.0%	100.0%	0	0	0.0%	100.0%	0	4	8.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	large cobble	128	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count				100	100	100.0%		25	25	100.0%		25	25	100%		25	25	100%		25	25	100%		25	25	100%

	d16	d35	d50	d84	d95
2005 As-Built	0.08	0.26	0.73	32.47	62.00
2006	silt/clay	silt/clay	silt/clay	silt/clay	silt/clay
2007	silt/clay	0.17	0.50	36.26	89.00
2008	0.06	0.06	0.07	0.25	5.85
2009	0.07	0.15	0.28	1.33	2.38
2010	silt/clay	0.10	0.24	9.18	41.17



Project Name	Purlear Phase II
Cross Section	Reach 4 - Downstream Zone
Feature	Active Bed
Date	9/1/2010
Crew	Price, Zink

Description	Material	Size (mm)	2005 As-Built				2006				2007				2008				2009				2010			
			Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %	Pool	Riffle	%	Cum %
Silt/Clay	silt/clay	0.061	0	0	0.0%	0.0%	11	22	66.0%	66.0%	11	6	34.0%	34.0%	15	11	52.0%	52.0%	10	3	26.0%	26.0%	8	5	25.5%	25.5%
	very fine sand	0.062	23	16	19.5%	19.5%	3	1	8.0%	74.0%	5	2	14.0%	48.0%	4	6	20.0%	72.0%	7	6	26.0%	52.0%	2	1	5.9%	31.4%
Sand	fine sand	0.125	17	4	10.5%	30.0%	0	0	0.0%	74.0%	3	0	6.0%	54.0%	4	3	14.0%	86.0%	2	1	6.0%	58.0%	3	7	19.6%	51.0%
	medium sand	0.25	7	0	3.5%	33.5%	1	0	2.0%	76.0%	1	1	4.0%	58.0%	0	1	2.0%	88.0%	3	4	14.0%	72.0%	3	6	17.6%	68.6%
	course sand	0.50	8	3	5.5%	39.0%	1	0	2.0%	78.0%	1	0	2.0%	60.0%	1	0	2.0%	90.0%	1	1	4.0%	76.0%	2	5	13.7%	82.4%
	very course sand	1.0	3	0	1.5%	40.5%	7	1	16.0%	94.0%	2	7	18.0%	78.0%	0	0	0.0%	90.0%	0	3	6.0%	82.0%	3	2	9.8%	92.2%
	very fine gravel	2.0	5	10	7.5%	48.0%	1	0	2.0%	96.0%	0	0	0.0%	78.0%	0	0	0.0%	90.0%	0	1	2.0%	84.0%	0	0	0.0%	92.2%
Gravel	fine gravel	4.0	10	9	9.5%	57.5%	1	0	2.0%	98.0%	0	2	4.0%	82.0%	1	2	6.0%	96.0%	0	0	0.0%	84.0%	0	0	0.0%	92.2%
	fine gravel	5.7	6	15	10.5%	68.0%	0	0	0.0%	98.0%	0	3	6.0%	88.0%	0	1	2.0%	98.0%	0	0	0.0%	84.0%	2	0	3.9%	96.1%
	medium gravel	8.0	11	12	11.5%	79.5%	0	0	0.0%	98.0%	0	1	2.0%	90.0%	0	0	0.0%	98.0%	0	0	0.0%	84.0%	2	0	3.9%	100.0%
	medium gravel	11.3	3	17	10.0%	89.5%	0	1	2.0%	100.0%	1	2	6.0%	96.0%	0	1	2.0%	100.0%	2	1	6.0%	90.0%	0	0	0.0%	100.0%
	course gravel	16.0	3	10	6.5%	96.0%	0	0	0.0%	100.0%	0	1	2.0%	98.0%	0	0	0.0%	100.0%	0	1	2.0%	92.0%	0	0	0.0%	100.0%
	course gravel	22.6	4	2	3.0%	99.0%	0	0	0.0%	100.0%	1	0	2.0%	100.0%	0	0	0.0%	100.0%	0	1	2.0%	94.0%	0	0	0.0%	100.0%
	very course gravel	32	0	0	0.0%	99.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	94.0%	0	0	0.0%	100.0%
	very course gravel	45	0	0	0.0%	99.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	1	2.0%	96.0%	0	0	0.0%	100.0%
Cobble	small cobble	64	0	0	0.0%	99.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	1	2.0%	98.0%	0	0	0.0%	100.0%
	medium cobble	90	0	2	1.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	98.0%	0	0	0.0%	100.0%
	large cobble	128	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	1	2.0%	100.0%	0	0	0.0%	100.0%
	very large cobble	180	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
	small boulder	256	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
Boulder	small boulder	362	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	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%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%
TOTAL / %of whole count				100	100	100.0%		25	25	100%		25	25	100%		25	25	100%		25	25	100%		25	26	100%

	d16	d35	d50	d84	d95
2005 As-Built	0.09	0.48	3.39	11.45	18.43
2006	silt/clay	silt/clay	silt/clay	1.03	2.25
2007	silt/clay	0.06	0.12	5.52	12.98
2008	0.06	0.06	0.06	0.17	4.54
2009	silt/clay	0.07	0.09	2.00	46.50
2010	silt/clay	0.11	0.18	0.88	6.30

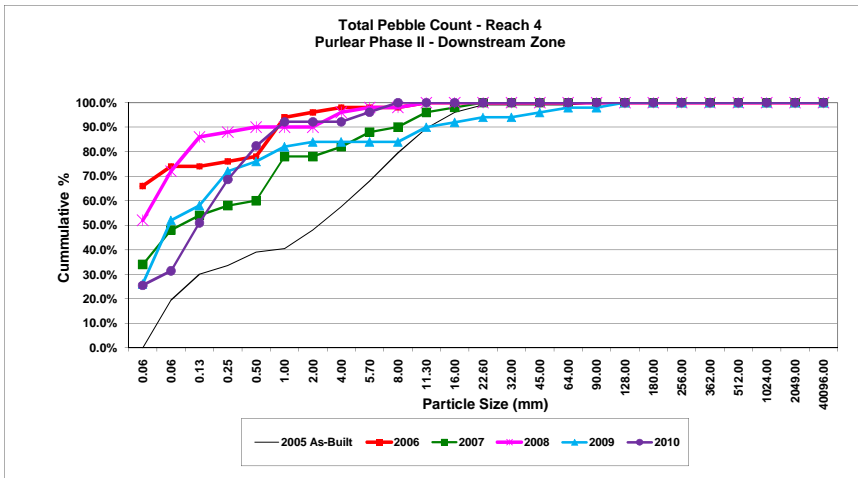


Table 11a. Morphology and Hydraulic Monitoring Summary
Purlear Creek Phase II / Project ID 010559701
Reach 1 (1,140 feet)

Parameter	Units	Cross Section 7					Cross Section 8					Cross Section 9					Cross Section 10				
		Riffle					Riffle					Pool					Pool				
Dimension		MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5
Record elevation (datum) used	ft	1296.9	1296.9	1296.9	1296.9	1296.9	1295.6	1295.6	1295.6	1295.6	1295.6	1293.6	1293.6	1293.6	1293.6	1293.6	1289	1289	1289	1289	1289
BF Width	ft	42.3	40	39.3	39.2	38.5	27.3	25.1	25	25.3	25.5	28.8	29.3	28.6	12.6	20.4	34.5	30	29.4	29.8	28.7
Floodprone Width	ft	100	100	100	100	100	98	98	98	98	98	-	-	-	-	-	-	-	-	-	-
BF Cross Sectional Area	sq ft	50.7	46.9	47.1	46	43.6	53.4	51.4	48.2	50.3	50.9	31.5	28.6	30.2	28	36.9	42.4	45.2	46.1	38	38.1
BF Mean Depth	ft	1.2	1.2	1.2	1.2	1.1	2.0	2.0	1.9	2	2	1.1	1	1.1	2.2	1.8	1.2	1.5	1.6	1.3	1.3
BF Max Depth	ft	2.7	2.7	2.7	3.1	3.1	3.5	3.5	3.5	3.5	3.6	3.2	3.4	3.3	3.1	3.1	3.0	3.1	3.1	3	3.1
Width/Depth Ratio		35.2	34.2	32.8	33.4	34	13.9	12.3	12.9	12.7	12.8	-	-	-	-	-	-	-	-	-	-
Entrenchment Ratio		2.4	2.5	2.5	2.6	2.6	3.6	3.9	3.9	3.9	3.8	-	-	-	-	-	-	-	-	-	-
Bank Height Ratio		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.6	1.6	1.6	1.6	1.6
Wetted Perimeter	ft	44.7	42.3	41.7	41.6	40.7	31.2	29.2	28.8	29.3	29.5	-	-	-	-	-	-	-	-	-	-
Hydraulic radius	ft	1.1	1.1	1.1	1.1	1.1	1.7	1.8	1.7	1.7	1.7	-	-	-	-	-	-	-	-	-	-
		2006		2007		2008		2009		2010											
Substrate		Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower										
d50	mm	9.65	11.4	14.12	-	6.4	3	9	10	17.6	23.8										
d84	mm	37.01	32.8	43.62	-	27.3	15.2	67.4	49.9	56.2	65.8										
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	Mean	Med	Max	SD	n		
Channel Beltwidth	ft	36	44	40	36	44	40	36	44	40	36	44	40	36	40	40	44		2		
Radius of Curvature	ft	38	88	50	38	88	50	38	88	50	38	88	50	38	59	50	88		3		
Rc:BKF Width Ratio					1.2	2.7	1.5	1.2	2.7	1.6	1.2	2.7	1.6	1.2	1.8	1.6	2.8				
Meander Wavelength	ft	201	255	228	201	255	228	201	255	228	201	255	228	201	228	228	255		2		
Meander Width ratio					1.1	1.4	1.2	1.1	1.4	1.2	1.1	1.4	1.2	1.1	1.3	1.3	1.4				
Profile																					
Riffle length	ft	9	50	18	21	47	23	20	48	26	10	35	23	10	21.5333	22.8	35	7.3	9		
Riffle slope	ft/ft	0.004	0.046	0.012	0.001	0.048	0.012	0.003	0.022	0.012	0.003	0.040	0.014	0.003	0.018	0.014	0.040	0.011	9		
Pool length	ft	17	113	74	21	113	74	14	113	65	13	113	56.5	13	60.8333	56.5	113	38.7	12		
Pool spacing	ft	59	134.5	100	59	134.5	100	51	160	102	55.5	142	103.5	55.5	97.0455	103.5	142	27.4	11		
Additional Parameters																					
Valley Length	ft	1021			1021			1021			1021			1021							
Channel Length	ft	1140			1140			1140			1140			1140							
Sinuosity		1.12			1.12			1.12			1.12			1.12							
Water Surface Slope	ft/ft	0.0085			0.0086			0.0086			0.0089			0.0086							
BF slope	ft/ft				0.0071			0.0071			0.0084			0.0087							
Rosgen Classification		C4			C4			C4			C4			C4							

Table 11b. Morphology and Hydraulic Monitoring Summary
Purlear Creek Phase II / Project ID 010559701
Reach 4 (1,480 feet)

Parameter	Units	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			
Record elevation (datum) used	ft	1328.7	1328.7	1328.7	1328.7	1328.7	1327.9	1327.9	1327.9	1327.9	1327.9	1321.7	1321.7	1321.7	1321.7	1321.7			
BF Width	ft	11.1	-	17.3	9.7	8.1	9.4	10.8	7.5	4.6	2.5	7.8	7.3	9	6.2	4.1			
Floodprone Width	ft	72	-	72	72	72	-	-	-	-	-	72.0	72	72	72	72			
BF Cross Sectional Area	sq ft	6.7	-	3.8	1.1	1.3	4.2	5.9	2.7	0.5	0.5	4.8	4.3	3.2	2.1	2.9			
BF Mean Depth	ft	0.6	-	0.2	0.1	0.2	0.4	0.6	0.4	0.1	0.2	0.6	0.6	0.4	0.3	0.7			
BF Max Depth	ft	1.3	-	0.5	0.3	0.6	1.0	0.9	1.1	0.3	0.4	1.4	1.4	0.9	0.9	1.3			
Width/Depth Ratio		18.4	-	78.8	86.0	50	-	-	-	-	-	12.7	12.3	25.3	18.7	5.9			
Entrenchment Ratio		6.5	-	4.2	7.4	8.9	-	-	-	-	-	9.2	9.9	8.0	11.6	17.6			
Bank Height Ratio		1.0	-	1.0	1.0	1.00	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			
Wetted Perimeter	ft	12.3	-	17.7	9.9	8.5	-	-	-	-	-	9.0	8.5	9.8	6.8	5.5			
Hydraulic radius	ft	0.5	-	0.2	0.1	0.2	-	-	-	-	-	0.5	0.5	0.3	0.3	0.5			
		2006		2007		2008		2009		2010									
Substrate		Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower								
	d50	mm	silt	silt	0.5	0.12	0.07	silt	0.28	0.09	0.24	0.18							
	d84	mm	silt	1.03	36.3	5.5	0.25	0.17	1.33	2	9.18	0.88							
Parameter	Units	Cross Section 4					Cross Section 5					Cross Section 6							
		Pool					Riffle					Pool							
Dimension	Units	MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5	MY1	MY2	MY3	MY4	MY5			
Record elevation (datum) used	ft	1317.0	1316.95	1316.95	1316.95	1316.95	1312.6	1312.6	1312.6	1312.6	1312.6	1312.11	1312.1	1312.1	1312.1	1312.1			
BF Width	ft	13.7	11.8	13.2	12.6	12.3	9.9	8.8	10.1	10.1	10	8	10.9	9.8	9	8.6			
Floodprone Width	ft	-	-	-	-	-	46	46	46	46	46	-	-	-	-	-			
BF Cross Sectional Area	sq ft	14.2	13.3	13.6	10.6	10.9	7.0	6.2	5.6	4.6	5.9	7.9	8.2	7.0	7.0	8.1			
BF Mean Depth	ft	1.0	1.1	1.0	0.8	0.9	0.7	0.7	0.6	0.5	0.6	1.0	0.8	0.7	0.8	0.9			
BF Max Depth	ft	2.5	2.6	2.5	2.5	2	1.4	1.4	1.2	1.2	1.5	1.7	1.9	1.9	2	1.9			
Width/Depth Ratio							14.0	12.5	18.2	22	16.8								
Entrenchment Ratio							4.6	5.2	4.6	4.6	4.6								
Bank Height Ratio		1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	1.4	1.4	1.0	1.0	1.0	1.0	1.0			
Wetted Perimeter	ft						11.3	10.2	11.3	11.1	11.2								
Hydraulic radius	ft						0.6	0.6	0.5	0.4	0.5								
Parameter	Units	MY-01 (2006)			MY-02 (2007)			MY-03 (2008)			MY-04 (2009)			MY-05 (2010)					
		Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Mean	Med	Max	SD	n
Channel Beltwidth	ft	17	42	29	17	42	29	17	42	29	17	42	29	17	29	29	42	8	18
Radius of Curvature	ft	13	112	26	13	112	26	13	112	26	13	112	26	13	33	26	112	21	25
Rc:BKF Width Ratio					1.6	13.9	3.2	1.4	11.7	2.7	1.6	13.7	3.2	1.6	4.1	3.2	13.8		
Meander Wavelength	ft	62	171	88	62	171	88	62	171	88	62	171	88	62	94	88	171	30	17
Meander Width ratio					2.1	5.2	3.6	1.8	4.4	3.0	2.1	5.2	3.6	2.4	4.1	4.0	6.0		
Profile																			
Riffle length	ft	5	93	17	6	38	18	8	35	18	8	43	15	8	17.3	15.2	43	7.62	27
Riffle slope	ft/ft	0.002	0.061	0.021	0.004	0.056	0.020	0.010	0.048	0.020	0.010	0.051	0.023	0.010	0.026	0.023	0.051	0.012	27
Pool length	ft	10	38	21	10	57	24	10	57	24	9	45	22	9	22.9	22	45	8.66	34
Pool spacing	ft	25	73	40	28	66	40	26	67	40	25.5	73	42	25.5	43.0	42	73	12.49	33
Additional Parameters																			
Valley Length	ft	1277			1277			1277			1277			1277					
Channel Length	ft	1480			1480			1480			1480			1480					
Sinuosity		1.2			1.2			1.2			1.2			1.2					
Water Surface Slope	ft/ft	0.016			0.016			0.016			0.017			0.017					
BF slope	ft/ft				0.016			0.016			0.016			0.017					
Rosgen Classification		C6			C5			C5			C5			C5					

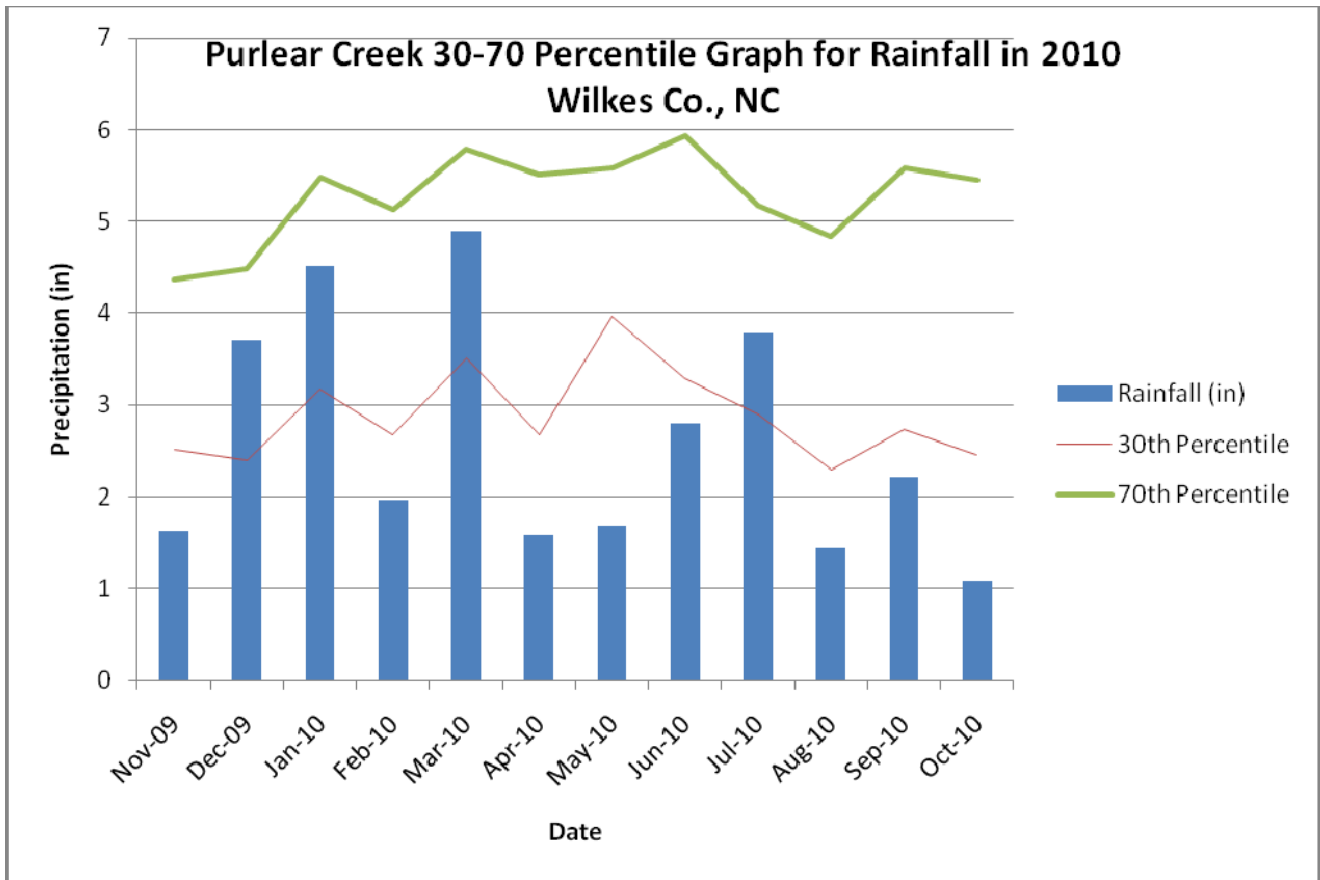
APPENDIX E-
Hydrologic Data

1. Verification of Bankfull Events
2. Monthly Rainfall Data
3. Water Level Plots
4. Wetland Hydrology Criteria Attainment

**Table 12. 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	
Monthly	7/31/2006	On-site transducer/data logger	
8/27/2008	8/27/2008	Proximal USGS Gage Resource*	
5/27/2009	5/27/2009	Proximal USGS Gage Resource*	
1/25/2010	1/25/2010	Proximal USGS Gage Resource*	

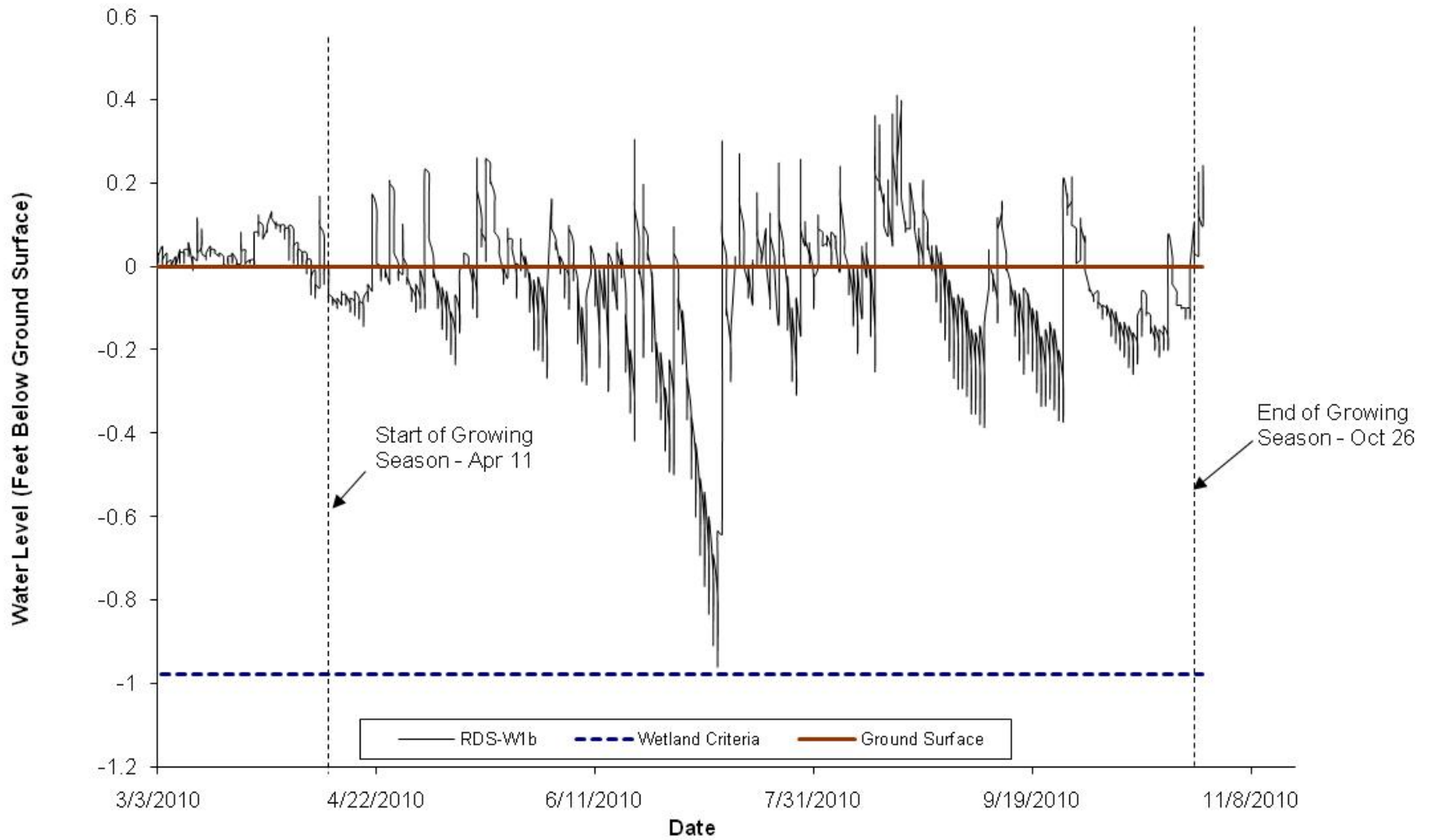
*Bankfull event verified at two proximal USGS gage sites in Wilkes County (Reddies Rivers, North Wilkesboro and Elk Creek, Elkville, NC) using the rural Piedmont regional curve developed by NCSU (Harman et al 1999).



Monthly Precipitation Data: Purlear, NC
 Source: www.wunderground.com
 Phillips Gap, Purlear, Weather Station - KNCPURLE1

Source for 30th and 70th percentile precipitation:
<http://www.wcc.nrcs.usda.gov/ftpref/support/climate/wetlands/nc/37193.txt>
 WETS Station : NORTH WILKESBORO, NC6256

Monitoring Well RDS-W1b



Monitoring Well RDS-W2b

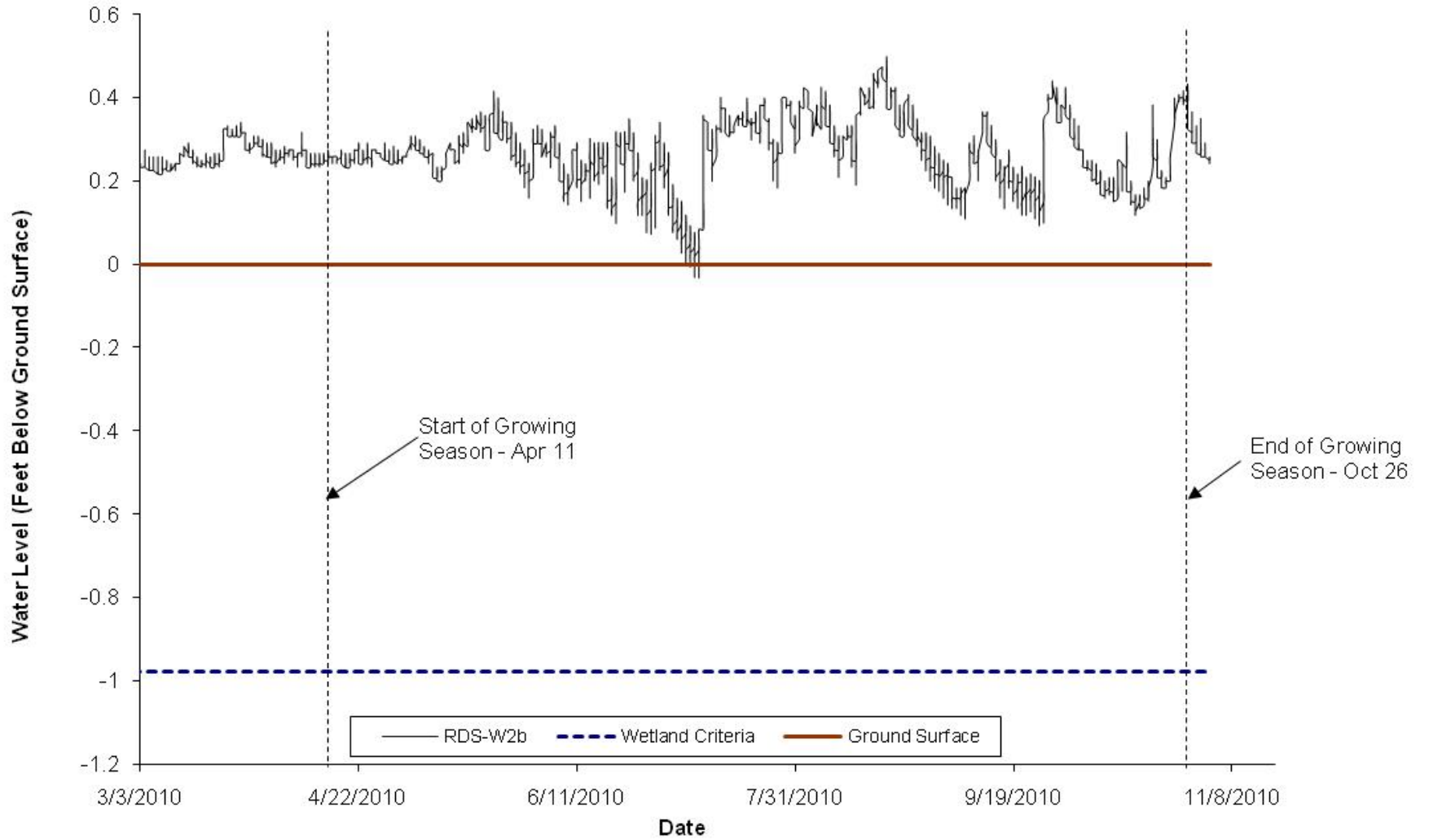


Table 13. Wetland Hydrology Criteria Attainment

Summary of Groundwater Gauge Results for Years 1 through 5					
Gauge	Success Criteria Achieved/Max Consecutive Days During Growing Season (Percentage)				
	Year 1 (2006)	Year 2 (2007)	Year 3 (2008)	Year 4 (2009)	Year 5 (2010)
RDS-W1B	no data	yes/72 days 36%	yes/168 days 85%	yes/198 days 100%	yes/198 days 100%
RDS-W2B	no data	no data	yes/198 days 100%	yes/198 days 100%	yes/198 days 100%

1. Monitoring wells did not function properly in year 1 for both wells and year 2 for RDS-W2.
2. Gauge RDS-W1B located in wetland tract W2 and Gauge RDS-W2B located in tract W1.