

Purlear Creek - Phase I Stream Restoration Annual Monitoring Report

Monitoring Year: 2007

Measurement Year: 3

As-built Date: 2004

NCEEP Project Number: 294



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1619 Mail Service Center
Raleigh, NC 27699-1619

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**PURLEAR CREEK - PHASE I STREAM RESTORATION
2007 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 3 for the Purlear Creek Phase I stream restoration project in Wilkes County, North Carolina. The project is comprised of six reaches (Reach 1 – 6).

The channel has remained stable since construction. Study reaches show no significant bed profile or channel pattern changes. Channel cross sections are stable and remain similar to as built conditions, except for a decrease in bankfull area in the Reach 1, Reach 2, and Reach 4 pool cross sections and Reach 2 riffle cross section. Sediment load from upstream sources is the likely cause. The majority of channel banks are well-covered with vegetation. Planted trees and shrubs are doing well throughout the buffer.

The primary area of concern from previous monitoring years is the grade drops at several of the cross vanes on the project. The majority of these vanes are no longer considered problem areas as dense vegetation has established along the vane arms, reducing the risk of piping or undermining. No action is recommended at this time but these structures should be monitored closely in upcoming monitoring events. Other concern areas are primarily small erosional areas that appear to be localized.

No immediate action is recommended for problem areas.

Vegetation is generally successful at Purlear Phase I. In 2007, the lower reaches showed low flow and dry conditions on the terrace, with reduced herbaceous growth compared to previous years. However, planted stem survival between 2006 and 2007 was 95% in plots, and surviving planted stem density can be extrapolated from the 25 plots and estimated at 1068 planted stems per acre. Most trees were unaffected by cattle at the time of monitoring, but trees are at risk from repeated cattle incursions into the buffer. Trampling, manure, and grazing effects from individual cattle were sporadically in evidence throughout the upper half of the project. A few meters of electric fencing were trailing on the ground just downstream of the bridge halfway through the project, and a cow was observed inside the buffer during monitoring.

II. Project Background

Project background information can be obtained from the as-built monitoring report prepared by Kimley-Horn and Associates dated 2004.

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.

**Table I. Project Mitigation Structure and Objectives
Purlear Creek Phase I / Project # 294**

Project Segment or Reach ID	Mitigation Type	Approach	Linear Footage or Acreage	Monitoring Stationing*	Comment
Reach 1 - Upper Main Reach	R	P1	2,260 lf	-0+50 to 10+00	From Channel start to confluence with Upper Middle Tributary
Reach 2 - Upper Middle Tributary	R	P1	1,340 lf	0+00 to 2+60	
Reach 3 - Middle Main Reach	R	P1	2,850 lf	0+00 to 7+00	From confluence with Upper Middle Tributary to confluence with Lower Middle Tributary
Reach 4 – Lower Middle Tributary (upper reach)	R	P1	700 lf	0+00 to 6+50	From start of Lower Middle Tributary to first culvert crossing
Reach 5 - Lower Middle Tributary (lower reach)	R	P1	2,750 lf	0+00 to 7+00	From first culvert crossing below Lower Middle Tributary to confluence with Middle Main Reach
Reach 6 - Lower Main Reach	R	P1	1,600 lf	0+00 to 9+00	From confluence with Lower Middle Tributary to end of Phase I
Total Project			11,500 lf		

* Only a portion of each reach was surveyed for monitoring

R = Restoration

EI = Enhancement I

EII = Enhancement II

S = Stabilization

P1 = Priority I

P2 = Priority II

P3 = Priority III

SS = Stream Bank stabilization

Table II. Project Activity and Reporting History			
Purlear Creek Phase I / Project # 294			
Activity or Report	Scheduled Completion	Data Collection Complete	Actual Completion or Delivery
Restoration Plan	Unknown	N/A*	October-02
Final Design - 90%	Unknown	N/A*	N/A*
Construction	Unknown	N/A*	November-03
Temporary S&E mix applied to entire project area	Unknown	N/A*	November-03
Permanent seed mix applied to reach	Unknown	N/A*	November-03
Containerized and B&B plantings	Unknown	N/A*	N/A*
Mitigation Plan / As-built (Year 0 Monitoring – baseline)	January-04	January-04	March-04
Structural maintenance (Bank repair and revegetation)	N/A*	March-05	March-05
Initial – Year 1 monitoring	January-05	January-05	March-05
Year 2 Monitoring	August-06	August-06	December-06
Year 3 Monitoring	August-07	August-07	December-07
Year 4 Monitoring	August-08		
Year 5 Monitoring	August-09		
Year 5+ Monitoring			

* Historical project documents necessary to provide these data were unavailable at the time of report submission

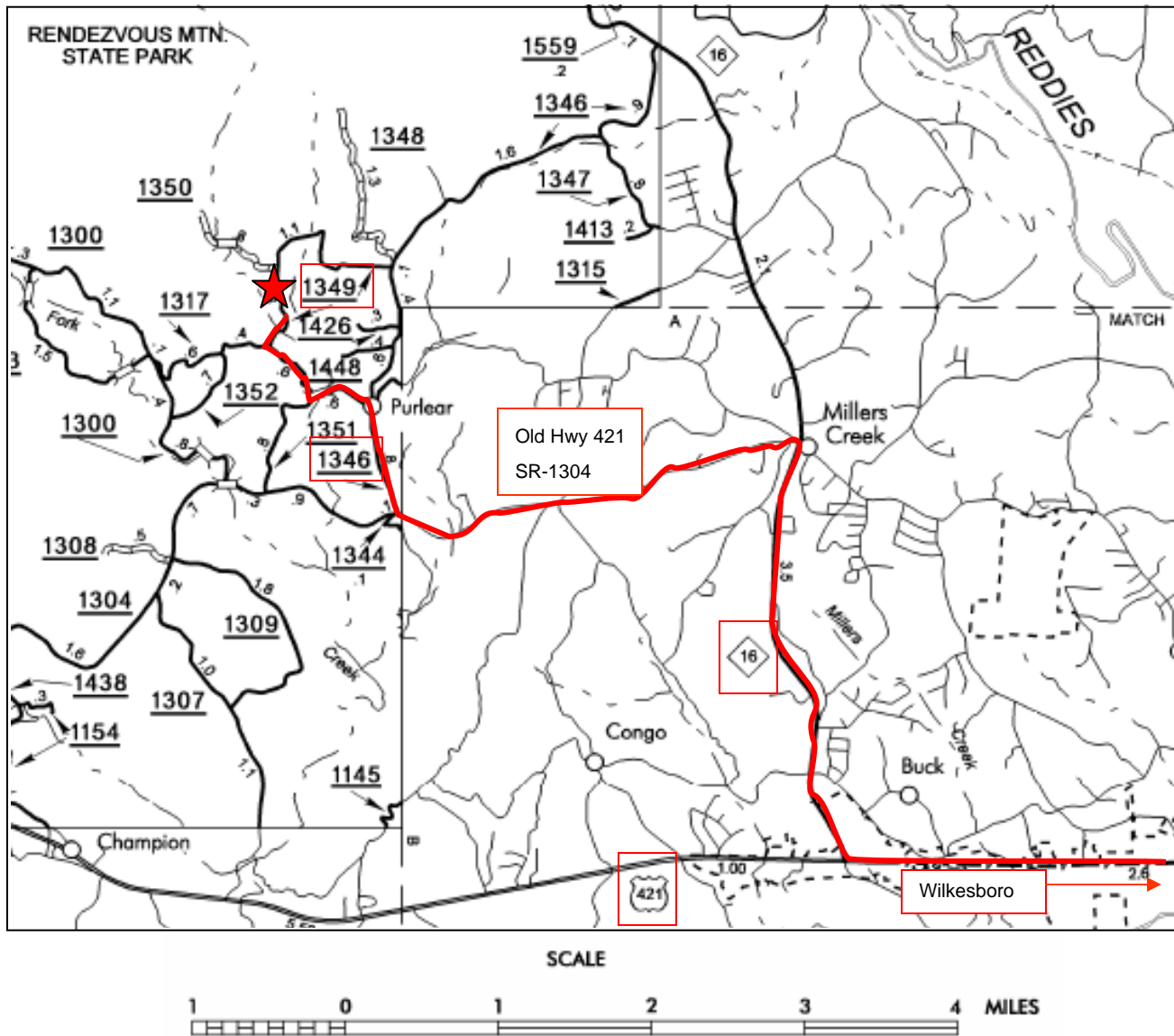
Table III. Project Contact Table Purlear Creek Phase I / Project # 294	
Designer Primary project design POC	Kimley-Horn and Associates 3001 Weston Parkway Cary, NC 27513 (919)-677-2000 Will Wilhelm, PE
Construction Contractor	L-J Inc.
Planting Contractor Planting contractor POC	N/A*
Seeding Contractor Planting contractor point of contact	N/A*
Seeding Contractor Planting contractor point of contact	N/A*
Nursery Stock Suppliers	N/A*
Monitoring Performers	Biological & Agricultural Engineering North Carolina State University Campus Box 7625 Raleigh, NC 27695
Stream Monitoring POC	Zan Price (828) 545-8347
Vegetation Monitoring POC	Zan Price (828) 545-8347

*Historical project documents necessary to provide these data were unavailable at the time of report submission.

Table IV. Project Background Table Purlear Creek Phase I / Project # 294	
Project County	Wilkes
Drainage Area	1.3 - 2.6 mi ² (Main Reach) 0.1 - 0.8mi ² (Tributaries)
Drainage impervious cover estimate (%)	Estimated at <5%
Stream Order	1st and 2nd Order
Physiographic Region	Piedmont
Ecoregion	Northern Inner Piedmont (45e)
Rosgen Classification of As-built	B and E-streamtypes
Cowardin Classification	N/A*
Dominant soil types	N/A*
Reference site ID	Big Warrior and Basin Creek
USGS HUC for Project and Reference	3040101
NCDWQ Sub-basin for Project and Reference	03-07-01
NCDWQ classification for Project and Reference	C
Any portion of any project segment 303d listed?	No
Any portion of any project segment upstream of a 303d listed segment?	No
Reasons for 303d listing or stressor	N/A
% of project easement fenced	100%

*Historical project documents necessary to provide these data were unavailable at the time of report submission.

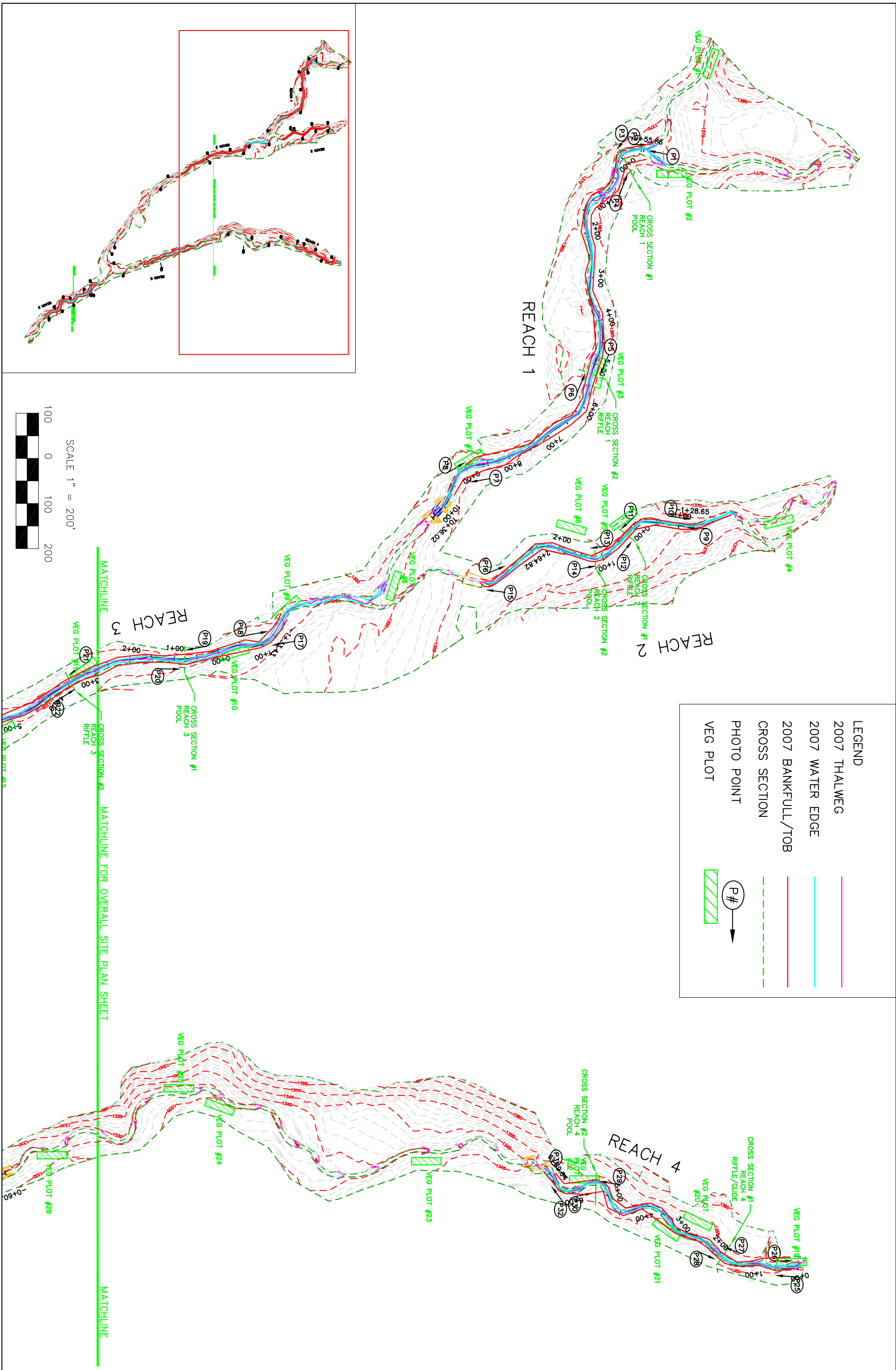
Figure 1. Project Location



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.



LEGEND

- 2007 THALWEG
- 2007 WATER EDGE
- 2007 BANKFULL/TOP
- CROSS SECTION
- PHOTO POINT
- VEG PLOT

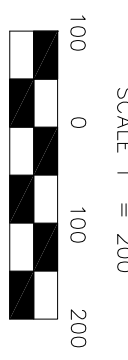
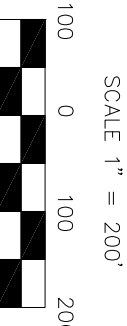
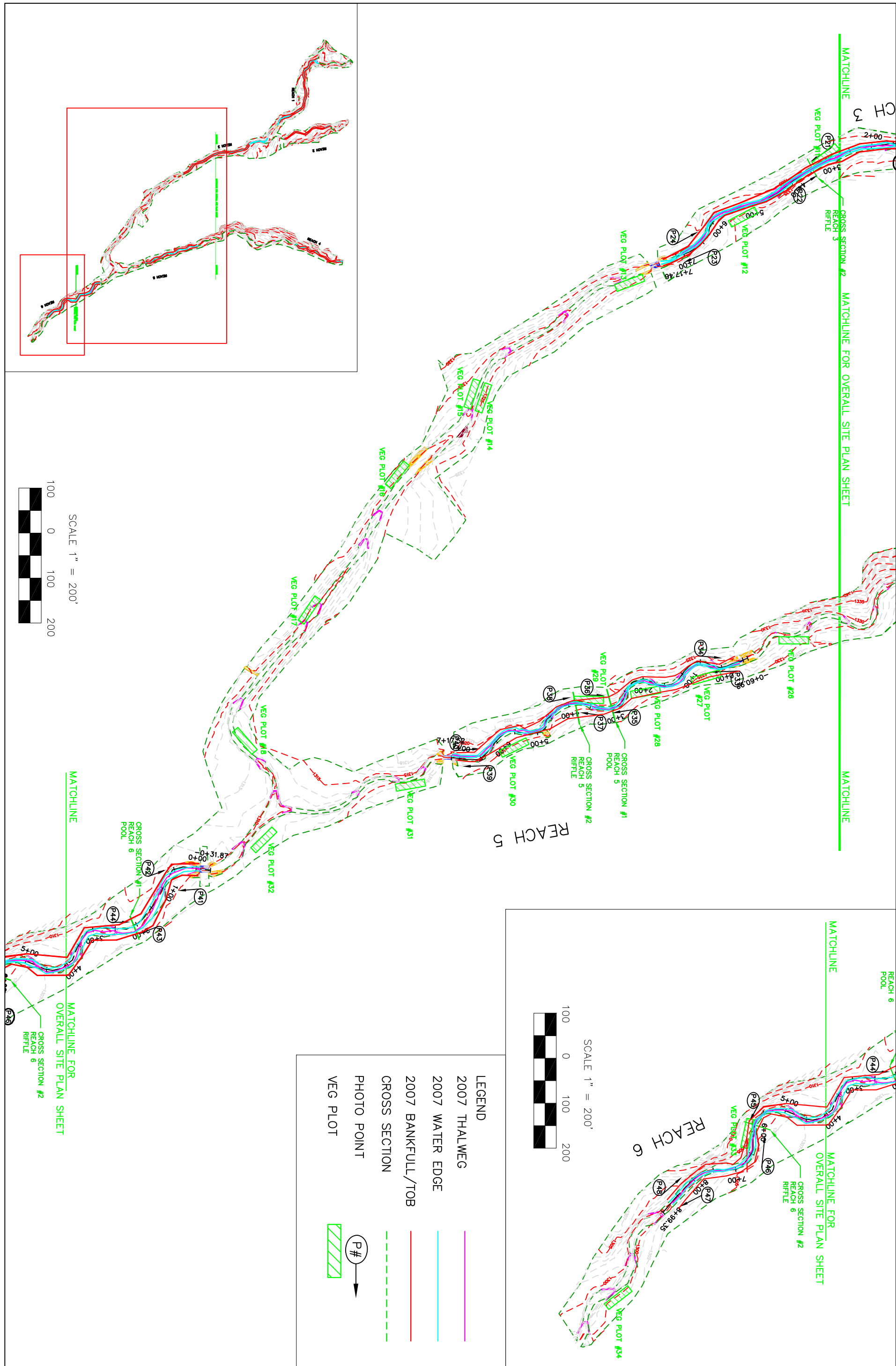
NO	REVISIONS	DRN	CHK	DATE
1	AS-BUILT PLAN	DRC	DAB	03/01/06
2	MONITORING YEAR 03	ZP	JMP	12/1/07



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

PURLEAR CREEK – PHASE 1
 WILKES COUNTY, N.C.
**FIGURE 2a – REACH 1, 2, 3, & 4
 MONITORING PLAN SHEET**

DATE: 03/01/2006
 PROJECT NO: 294
 FILENAME: PURLEAR ASBUILT
 SHEET NO: MON OVERALL 1 of 2



LEGEND	
	2007 THALWEG
	2007 WATER EDGE
	2007 BANKFULL/TOP
	CROSS SECTION
	PHOTO POINT
	VEG PLOT

PURLEAR CREEK – PHASE 1
 WILKES COUNTY, N.C.
 FIGURE 2b – REACH 5 & 6
 MONITORING PLAN SHEET

NC STATE UNIVERSITY

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

NO.	REVISIONS	DRN	CHK	DATE
1	AS-BUILT PLAN	DRC	DAB	03/01/06
2	MONITORING YEAR 03	ZP	JMP	12/1/07

DATE	03/01/2006
PROJECT NO.	294
FILENAME	PURLEAR ASBUILT
SHEET NO.	MON OVERALL 2 of 2

III. Project Condition and Monitoring Results

A. Vegetation Assessment

Twenty-eight (28) vegetation monitoring plots were surveyed in the riparian buffer of the Purlear Phase I project. All the plots had been previously established and sampled in 2005 and 2006. Plot numbering is consistent with numbering from previous monitoring reports.

Vegetation is generally successful at Purlear Phase I. In 2007, the lower reaches showed low flow and dry conditions on the terrace, with reduced herbaceous growth compared to previous years. However, planted stem survival between 2006 and 2007 was 95% in plots, and surviving planted stem density can be extrapolated from the 25 plots and estimated at 1068 planted stems per acre. Most trees were unaffected by cattle at the time of monitoring, but trees are at risk from repeated cattle incursions into the buffer. Trampling, manure, and grazing effects from individual cattle were sporadically in evidence throughout the upper half of the project. A few meters of electric fencing were trailing on the ground just downstream of the bridge halfway through the project, and a cow was observed inside the buffer during monitoring.

Vegetation data is presented in Appendix A of this 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 for a graduate student research project. Table V lists the number of events equal to or greater than bankfull. The graduate research project ended in fall 2006 and no bankfull events were recorded in 2007.

Table V. Verification of Bankfull Events			
Purlear Creek Phase I / Project # 294			
Date of Data Collection	Date of Occurrence	Method	Photo # (if available)
7/1/2006	06/26/2006	On-site transducer/data logger	
9/1/2006	08/30/2006	On-site transducer/data logger	
11/1/2006	10/21/2006	On-site transducer/data logger	

Note: No peak flow data was collected prior to the 2006 monitoring period.

Bank Stability Assessment - Monitoring Year 05

Table VI. BEHI and Sediment Export Estimates shall be included in the monitoring year 5 report.

Project Problem Area

The problem area Table B1, plan sheet and photographs can be found in Appendix B. The table lists current problem areas for 2007.

Several problem areas identified in previous monitoring years have been stabilized with a dense stand of vegetation. These previous areas of concern include cross vane structures with large bed elevation drops (> 0.5 feet) and localized areas of bank erosion. These areas have been removed from Table B1 since they are no longer considered problem areas.

Stream Visual Assessment

Table VII 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 Tables B2 in Appendix B.

Table VII. Categorical Stream Feature Visual Stability Assessment						
Purlear Creek Phase I / Project # 294						
Reaches 1 - 6						
Feature	Initial	MY-01	MY-02	MY-03	MY-04	MY-05
A. Riffles						
Reach 1	100%	N/A	77%	85%		
Reach 2	100%	N/A	60%	75%		
Reach 3	100%	N/A	100%	100%		
Reach 4	100%	N/A	92%	83%		
Reach 5	100%	N/A	100%	80%		
Reach 6	100%	N/A	100%	100%		
B. Pools						
Reach 1	100%	N/A	85%	92%		
Reach 2	100%	N/A	91%	100%		
Reach 3	100%	N/A	91%	89%		
Reach 4	100%	N/A	100%	83%		
Reach 5	100%	N/A	100%	93%		
Reach 6	100%	N/A	100%	100%		
C. Thalweg						
Reach 1	100%	N/A	100%	100%		
Reach 2	100%	N/A	100%	100%		
Reach 3	100%	N/A	100%	100%		
Reach 4	100%	N/A	100%	100%		
Reach 5	100%	N/A	100%	100%		
Reach 6	100%	N/A	100%	100%		
D. Meanders						
Reach 1	100%	N/A	100%	100%		
Reach 2	100%	N/A	89%	100%		
Reach 3	100%	N/A	99%	99%		
Reach 4	100%	N/A	100%	100%		
Reach 5	100%	N/A	100%	100%		
Reach 6	100%	N/A	82%	100%		
E. Bed General						
Reach 1	100%	N/A	92%	100%		
Reach 2	100%	N/A	89%	89%		
Reach 3	100%	N/A	95%	95%		
Reach 4	100%	N/A	71%	100%		
Reach 5	100%	N/A	84%	100%		
Reach 6	100%	N/A	83%	100%		
F. Bank						
Reach 1	100%	N/A	92%	100%		
Reach 2	100%	N/A	89%	100%		
Reach 3	100%	N/A	95%	100%		
Reach 4	100%	N/A	71%	100%		
Reach 5	100%	N/A	84%	100%		
Reach 6	100%	N/A	83%	100%		
G. Vanes / J Hooks etc.						
Reach 1	100%	N/A	80%	55%		
Reach 2	100%	N/A	70%	70%		
Reach 3	100%	N/A	87%	87%		
Reach 4	100%	N/A	94%	94%		
Reach 5	100%	N/A	100%	95%		
Reach 6	100%	N/A	85%	75%		
H. Wads and Boulders						
Reach 1	N/A	N/A	N/A	N/A		
Reach 2	N/A	N/A	N/A	N/A		
Reach 3	N/A	N/A	N/A	N/A		
Reach 4	N/A	N/A	N/A	N/A		
Reach 5	N/A	N/A	N/A	N/A		
Reach 6	N/A	N/A	N/A	N/A		

Reach 1 – Upper Main Reach

The channel profile is similar to the as-built survey condition, with bedform features maintaining their locations and depths. This reach includes 8 cross vane grade controls with downstream elevation drops of greater than 0.5 ft. Three of these were located within the monitored reach, and four were located upstream. All were of concern in the 2005 monitoring report. Three vanes remain a concern in the current monitoring period due to the large elevation difference through the vane. Dense vegetation has established around all of the vanes minimizing the risk of failure.

Channel cross sections showed no significant changes in riffle cross sectional area but a large decrease in pool area was observed in the 2006 and 2007 survey compared to the as built condition. The source of the aggradation in the pool is likely off-site bank erosion directly upstream of the project. The pool section is located at the upper end of the project. This aggradation is not typical of the other pools in this reach. The reduction in area occurred in the point bar area although the max depth did decrease 0.4 to 0.7 feet from as built conditions. Overall pool quality has decreased but the section is not eroding and the meander is not migrating. Riffle dimensions remain consistent with as-built conditions.

A visual assessment of this reach showed a total decrease in number of riffles compared to the as built condition, but those that remain are mostly stable. Meanders are maintaining location and stability throughout the reach.

Reach 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. This reach includes seven cross vane grade controls with downstream elevation drops of greater than 0.5 ft. Of the seven, only one remains a concern for future stability. The remaining six have become embedded with dense vegetation around the vane arms. This vegetation has greatly reduced the risk of the vanes failing in the future. The average water surface slope is consistent with as-built conditions.

Channel cross sections have decreased in area significantly over the past year. Similar to Reach 1, sediment coming from off-site is the likely source. Throughout this reach, aggradation is evident along all channel banks. Dense vegetation is doing an excellent job of inducing aggradation along the channel banks. Channel thalweg is being maintained in the proper location and banks show no signs of degrading.

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.

Reach 3 – Middle Main Reach

The channel profile is similar to the as-built survey condition, with bedform features maintaining their locations and depths. This reach includes six cross vane grade controls with downstream elevation drops of greater than 0.5 ft. Three of these were removed from concern since dense vegetation is establishing along the vane arm, reducing the risk of piping or undermining. The three remaining structures continue to be at risk, but have not changed condition over the past year.

Channel cross sections are stable and remain similar to as-built conditions. Channel banks on both cross sections remain well vegetated and stable.

No aggradation or degradation has occurred in the channel, indicating the channel appears to be transporting the sediment load delivered to it by its watershed.

Channel pattern is similar to as-built conditions. Since the channel in this area is mostly straight, no pattern measurements were conducted. Dense vegetation is establishing along the channel banks. This vegetation is providing an excellent root mass to stabilize the banks.

Reach 4 – Lower Middle Tributary (Upper Section)

The channel profile is similar to the as-built survey condition, with bedform features maintaining their locations and depths. This reach includes four cross vane grade controls with downstream elevation drops of greater than 0.5 ft. However, all of the vanes appear stable due to the dense vegetation surrounding the vane arms. The vegetation has reduced the risk of piping or undercutting.

Channel cross sections are stable and remain similar to as-built conditions. A small decrease in area has occurred in both sections and is likely the result of a large sediment load entering the project from channel instability above this project. Channel banks are well vegetated and appear stable.

The typical bed material particle size continues to decrease as further evidence of the large sediment load entering the project from up stream. Dense vegetation has engulfed the channel which is adding to the sediment trapping along this reach. No erosion areas were observed along this reach.

A visual assessment of this reach showed bedform degraded slightly as a result of sediment deposition.

Area 5 - Lower Middle Tributary (Lower Section)

The channel profile is similar to the as-built survey condition, with bedform features maintaining their locations and depths. This reach includes five cross vane grade controls with downstream elevation drops of greater than 0.5 ft. All of these vanes appear stable due to the dense vegetation surrounding the vane arms. The vegetation has reduced the risk of piping or undercutting.

Channel cross sections are very stable and remain similar to as-built conditions. A small decrease in area has occurred in the riffle section. Vegetation has become well established within the active channel and is adding to the sediment deposition along the channel banks. Channel banks are well vegetated and appear stable. 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 bedform degraded slightly as a result of sediment deposition.

Reach 6 – Lower Main Reach

The channel profile is similar to the as-built survey condition, with bedform features maintaining their locations and depths. This reach includes five cross vane grade controls with downstream elevation drops of greater than 0.5 ft. Four of the vanes are within the study reach and one is located upstream. All of these vanes appear to have stabilized with dense vegetation and are no longer a concern.

The riffle cross section has increased slightly over the past two years. The riffle continues to increase in maximum depth and appears to be transitioning into a pool feature. The right bank is building as dense vegetation traps sediment. Both banks remain well vegetated and stable.

The left bank of the pool cross-section has not continued to migrate as it had between 2004 and 2005. Dense herbaceous cover and willow stakes are quickly establishing and the bank appears to have stabilized.

Channel pattern is similar to as-built conditions. Dense vegetation is establishing along the channel banks in most areas. This vegetation is providing an excellent root mass to stabilize the banks. The only observed area of meander migration is the area along the pool cross-section although this appears to have stabilized.

Two drain tiles that were installed in fall 2005 are still draining water through the buffer and adjacent field.

Quantitative Measures Summary Tables

The tables below present all of the quantitative summary data from the survey cross-sectional surveys, longitudinal surveys, and pebble counts. The associated raw data and plots are located in Appendix B of this report.

Table VIIIa. Baseline Morphology and Hydraulic Summary
Purlear Creek Phase I / Project # 294 - Main Stem

Parameter	USGS Gage Data			Regional Curve Interval			Pre-Existing				Design				Project Reference Stream			
	Min	Max	Med	Middle Main			Main Channel				Proposed Reach	Proposed Reach	Proposed Reach	Proposed Reach	Reach Upstream 1	Upper Big Warrior Creek	Reach Basin Creek 2	Reach Basin Creek
				(2A2)'	(2A)'	(2)'	(1A)'	(2A2)'	(2A)'	(2)'	(1A)'							
Dimension																		
BF Width (ft)	USGS gage data is unavailable for this project						22	14.8	16.2	37	17.2	17.6	18	25	12.5	15.7	30.7	33.2
Floodprone Width (ft)										31	31.7	30.6	70	18	30	85	329	
BF Cross Sectional Area (ft ²)							10.6	15.6	17.8	33.1	19	20	22.7	29	7.4	21.9	57.4	68.4
BF Mean Depth (ft)							0.5	1.1	1.1	0.9	1	1.1	1.3	1.1	0.6	1.4	1.9	2.1
BF Max Depth (ft)							1.3	1.5	1.6	2.2	1.5	1.7	1.8	1.5	1	1.8	2.5	3.1
Width/Depth Ratio							44	13.5	14.7	41.1	17.2	16	13.8	22.7	20.8	11.2	16.2	15.8
Entrenchment Ratio							1.4	2.2	4.3	2.2	1.8	1.8	1.7	2.8	1.4	1.9	2.8	9.9
Wetted Perimeter (ft)																		
Hydraulic radius (ft)																		
Pattern																		
Channel Beltwidth (ft)							N/A	N/A	N/A	N/A	29.2	29.9	30.6	67.5	21	N/A	105	64.7
Radius of Curvature (ft)							N/A	N/A	N/A	N/A	27.5	28.2	28.8	62.5	20.6	N/A		51.2
Meander Wavelength (ft)							N/A	N/A	N/A	N/A	172	176	180	275	100	N/A		350
Meander Width ratio							N/A	N/A	N/A	N/A	1.7	1.7	1.7	2.7	1.7	N/A		1.9
Profile																		
Riffle length (ft)																		
Riffle slope (ft/ft)														0.03	N/A	0.051	0.021	
Pool length (ft)																		
Pool spacing (ft)							106	124	N/A	43	108	111	113	205	100	N/A	224	305
Substrate																		
d50 (mm)																		
d84 (mm)																		
Additional Reach Parameters																		
Valley Length (ft)																		
Channel Length (ft)																		
Valley Slope (ft)							0.022	0.016	0.015	0.01	0.013	0.013	0.011	0.01	0.017	N/A	0.014	N/A
Sinuosity							1	1	1.1	1	1.2	1.2	1.2	1.2	1.06	N/A	1.4	N/A
Water Surface Slope (ft/ft)																		
BF slope (ft/ft)																		
Rosgen Classification							F3	ncised)	C4	(Incised)→	B3c	B4c	B4c	C4c	B4c	B	C4	C4
Number of Bankfull Events																		
Extent of BF floodplain (acres)																		
Drainage Area (sq mile)							1.3	1.5	1.71	2.59	1.3	1.5	1.71	2.59	0.57	0.7	6.8	7.2
Max d(riff) / d(bkf) ratio							2.6	1.4	1.5	2.4	1.5	1.5	1.4	1.4	1.7	1.3	1.3	1.5
Low Bank Height to max Dbkf ratio							1.8	2.2	1.5	1.8	1	1	1	1	2.8	N/A	N/A	1.2
Avg Stream Slope							0.022	0.016	0.014	0.0096	0.016	0.016	0.013	0.009	0.016	N/A	0.01	0.014
Riffle Slope							0.028	0.03	0.01	0.01	0.03	0.03	0.02	0.01	0.03	N/A	0.051	0.021
Ratio of Riffle Slope to Avg. Slope							1.273	1.875	1	1	1.8	1.8	1.8	1.5	1.8	N/A	3.6	1.5
Pool Slope							0.001	0.001	0.01	0.002	0.002	0.002	0.001	0.003	0.002	N/A	0.0055	0.002
Ratio of Pool Slope to Avg. Slope							0	0.1	0.7	0.2	0.1	0.1	0.1	0.4	0.1	N/A	0.6	0.1
Maximum Pool Depth							1.9	2.3	2.2	2.1	2.2	2.4	2.9	2.2	1.3	N/A	3.1	4.8
Ratio of Pool Depth to Avg. Depth							3.8	2.1	2	2.3	2.2	2.2	2.2	2	2.2	N/A	1.6	2.3
Pool Width							21.4	13.6	30.6	20.2	17.2	17.6	18	35	12.5	N/A	40.6	50.3
Ratio of Pool Width to Bankfull Width							1	0.9	1.9	0.5	1	1	1	1.4	1	N/A	1.3	1.5
Pool Area							21.2	24.4	36.9	26.9	20.9	22	25	40.6	8	N/A	64.4	109.6
Ratio of Pool Area to Bankfull Area							2	1.6	2.1	0.8	1.1	1.1	1.1	1.4	1.1	N/A	1.1	1.6
Ratio of Pool to Pool Spacing							4.8	8.4	N/A	1.2	6.3	6.3	6.3	8.2	6.3	N/A	7.3	9.2
*BEHL																		
Bankfull Mean Velocity							N/A	N/A	5.3	4								
Bankfull Discharge, cfs							N/A	N/A	94.3	132.4								
Ratio of Meander Length to Meander Bankfull							N/A	N/A	N/A	N/A	10	10	10	11	8	N/A	11.4	10.5
Ratio of Radius of Curvature to Bankfull Width							N/A	N/A	N/A	N/A	1.6	1.6	1.6	2.5	1.6	N/A	3.4	1.5

Note: Reaches 2A2, 2A, and 2 compare to As-built study reach 2. Reach 1A compares to As-built study reaches 1, 3, and 6.

**Table VIIIb. Baseline Morphology and Hydraulic Summary
Purlear Creek Phase I / Project # 294 - Tributaries**

Parameter	USGS Gage Data			Regional Curve			Pre-Existing			Design			Project Reference Stream			
	Min	Max	Med	Middle Main			Tributary			Proposed Reach	Proposed Reach	Proposed Reach	Reach Upstream 1	Upper Big Warrior Creek	Reach Basin Creek 2	Reach Basin Creek
				2A1	2B	3	(2A1)	(2B)	3	Med	Med	Med				
Dimension																
BF Width (ft)	USGS gage data is unavailable for this project						5.1	8.9	10	8.9	6.5	15	12.5	15.7	30.7	33.2
Floodprone Width (ft)							19	14	16	15.1	18.2	42	18	30	85	329
BF Cross Sectional Area (ft ²)							2.8	6.1	13.4	5.2	2.8	15.8	7.4	21.9	57.4	68.4
BF Mean Depth (ft)							0.5	0.7	1.3	0.6	0.4	1	0.6	1.4	1.9	2.1
BF Max Depth (ft)							1.1	1.2	2	0.8	0.6	1.5	1	1.8	2.5	3.1
Width/Depth Ratio							10.2	12.7	7.7	17.6	17.6	15	20.8	11.2	16.2	15.8
Entrenchment Ratio							3.7	1.6	1.6	1.7	2.8	2.8	1.4	1.9	2.8	9.9
Wetted Perimeter(ft)																
Hydraulic radius (ft)																
Pattern																
Channel Beltwidth (ft)									N/A	15.1	17.6	40.5	21	N/A	105	64.7
Radius of Curvature (ft)									N/A	14.2	16.3	37.5	20.6	N/A	105.3	51.2
Meander Wavelength (ft)									N/A	89	71.5	165	100	N/A	350	350
Meander Width ratio									N/A	1.7	2.7	2.7	1.7	N/A	3.4	1.9
Profile																
Riffle length (ft)																
Riffle slope (ft/ft)													0.03	N/A	0.051	0.021
Pool length (ft)																
Pool spacing (ft)							31	40	N/A	62	53	123	100	N/A	224	305
Substrate																
d50 (mm)																
d84 (mm)																
Additional Reach Parameters																
Valley Length (ft)																
Channel Length (ft)																
Valley Slope (ft)							0.018	0.023	0.014	0.015	0.007	0.012	0.017	N/A	0.014	N/A
Sinuosity							1.5	1.2	1.1	1.2	1.2	1.2	1.06	N/A	1.4	N/A
Water Surface Slope (ft/ft)																
BF slope (ft/ft)																
Rosgen Classification							E5b	B5c	G4	B4c	C4	C4	B4c	B	C4	C4
Number of Bankfull Events																
Extent of BF floodplain (acres)																
Drainage Area (sq mile)							0.2	0.08	0.72	0.2	0.08	0.8	0.57	0.7	6.8	7.2
Max d(riff) / d(bkf) ratio							2.2	1.7	1.5	1.4	1.5	1.5	1.7	1.3	1.3	1.5
Low Bank Height to max Dbkf ratio							1.1	2.6	2.4	1	1	1	2.8	N/A	N/A	1.2
Avg Stream Slope							0.012	0.019	0.013	0.018	0.008	0.014	0.016	N/A	0.01	0.014
Riffle Slope							0.017	0.028	0.02	0.03	0.01	0.02	0.03	N/A	0.051	0.021
Ratio of Riffle Slope to Avg. Slope							1.417	1.474	1.5	1.8	1.5	1.5	1.8	N/A	3.6	1.5
Pool Slope							0.001	0.001	0.01	0.002	0.003	0.005	0.002	N/A	0.0055	0.002
Ratio of Pool Slope to Avg. Slope							0.1	0.1	0.4	0.1	0.4	0.4	0.1	N/A	0.6	0.1
Maximum Pool Depth							1.4	1.5	2.2	1.3	0.8	2	1.3	N/A	3.1	4.8
Ratio of Pool Depth to Avg. Depth							2.8	2.1	1.7	2.2	2	2	2.2	N/A	1.6	2.3
Pool Width							7.7	24.3	18.5	10.7	9.1	21	12.5	N/A	40.6	50.3
Ratio of Pool Width to Bankfull Width							1.5	2.7	1.9	1.2	1.4	1.4	1	N/A	1.3	1.5
Pool Area							5.7	19.8	24.1	6.2	3.9	22.1	8	N/A	64.4	109.6
Ratio of Pool Area to Bankfull Area							2	3.2	1.8	1.2	1.4	1.4	1.1	N/A	1.1	1.6
Ratio of Pool to Pool Spacing							6.1	4.5	N/A	7	8.2	8.2	6.3	N/A	7.3	9.2
*BEHI																
Bankfull Mean Velocity							N/A	N/A	6.4							
Bankfull Discharge, cfs							N/A	N/A	85.8							
Ratio of Meander Length to Meander Bankfull							N/A	N/A	N/A	10	11	11	8	N/A	11.4	10.5
Ratio of Radius of Curvature to Bankfull Width							N/A	N/A	N/A	1.6	2.5	2.5	1.6	N/A	3.4	

Note: Reaches 2A1, 2B, and 3 compare to As-built study reaches 4 and 5.

**Table IXa. Morphology and Hydraulic Monitoring Summary
Purlear Creek Phase I / Project # 294 - Upper Main
Reach 1 - 1050 Feet**

Parameter	Cross Section 1						Cross Section 2											
	Reach 1 Pool						Reach 1 Riffle											
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5						
BF Width (ft)	29.9	29.6	22.7	18.7			26.7	26.4	31.4	28.3								
Floodprone Width (ft) (approx)							53	53	53	53								
BF Cross Sectional Area (ft ²)	36.7	35.5	14.8	11.3			39.6	39.6	41	41.3								
BF Mean Depth (ft)	1.2	1.2	0.6	0.6			1.5	1.5	1.3	1.5								
BF Max Depth (ft)	2.3	2.6	1.9	1.6			2.3	2.3	2.5	2.5								
Width/Depth Ratio							18.1	17.6	24.154	18.867								
Entrenchment Ratio (greater)							2.0	2.0	1.7	1.9								
Bank Height Ratio	1.0	1	1	1			1.0	1	1	1								
Wetted Perimeter (ft)							29.7	29.4	34.0	31.3								
Hydraulic radius (ft)							1.3	1.3	1.2	1.3								
Substrate																		
d50 (mm)	13.4	0.006	0.4	27.3			17.73	0.6	1.01	0.2								
d84 (mm)	35.7	0.2	1.14	68			36.4	1.5	4.42	4.43								
Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	25	87		-	-	202	37	202	46	37	202	46						
Radius of Curvature (ft)	18	96		-	-	-	41	58	55	41	59	57						
Meander Wavelength (ft)	160	200		-	-	-	117	171	144	117	171	144						
Meander Width ratio	0.8	2.9		-	-	-	1.2	6.4	1.5	1.3	7.1	1.6						
Profile																		
Riffle length (ft)	-	-	-	30.0	116.0	43.5	24	99	41	30	88	40.5						
Riffle slope (ft/ft)	0.020	0.120	0.060	0.011	0.040	0.018	0.013	0.029	0.019	0.013	0.028	0.019						
Pool length (ft)	29	136	58	13.0	56.0	25.0	15	48	26	13	48	23						
Pool spacing (ft)	74	193	120	28	225	64	28	117	68	28	118	73.5						
Additional Reach Parameters	MY-0 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Valley Length (ft)							1022											
Channel Length (ft)							1091											
Sinuosity							1.07											
Water Surface Slope (ft/ft)	0.009			0.014			0.015			0.015								
BF slope (ft/ft)	0.008			0.016			0.015			0.015								
Rosgen Classification	B4			B4			B4			B4								

**Table IXb. Morphology and Hydraulic Monitoring Summary
Purlear Creek Phase I / Project # 294 - Upper Middle Trib
Reach 2 - 260 Feet**

Parameter	Cross Section 1						Cross Section 2											
	Reach 2 Riffle						Reach 2 Pool											
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5						
BF Width (ft)	17.4	16.2	17.3	10.1			19.4	19.3	18.5	15.5								
Floodprone Width (ft) (approx)	40	40	40	40														
BF Cross Sectional Area (ft ²)	11.9	12.4	8.6	3.2			12.8	13.4	7.6	8.8								
BF Mean Depth (ft)	0.7	0.8	0.5	0.3			0.7	0.7	0.4	0.6								
BF Max Depth (ft)	1.5	1.7	1.4	0.8			1.6	1.6	1.1	1.1								
Width/Depth Ratio	25.5	21.1	34.6	31.8														
Entrenchment Ratio (greater)	2.3	2.5	2.3	3.9														
Bank Height Ratio	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1.0								
Wetted Perimeter (ft)	18.8	17.8	18.3	10.7														
Hydraulic radius (ft)	0.6	0.7	0.5	0.3														
Substrate																		
d50 (mm)	0.06	17.42	0.06	0.06			0.16	17.42	0.06	0.06								
d84 (mm)	4.23	50.98	0.06	0.27			1	72	0.45	0.3								
Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	-	-	-	69	70	69	69	70	69	69	70	69						
Radius of Curvature (ft)	-	-	17	62	81	73	56	68	63	56	68	63						
Meander Wavelength (ft)	-	-	-	236	255	245	236	255	245	236	255	245						
Meander Width ratio	-	-	-	4.3	4.3	4.3	4.0	4.0	4.0	4.5	4.5	4.5						
Profile																		
Riffle length (ft)	-	-	-	15.0	73.0	35.0	21	74	30	22	66	37.5						
Riffle slope (ft/ft)	-	-	-	0.003	0.017	0.007	0.016	0.024	0.019	0.008	0.016	0.015						
Pool length (ft)	10	18	13	5.0	25.0	11.0	16	23	19	11	19	16						
Pool spacing (ft)	42	100	71	29	93	45	40.5	95	67.75	40.5	136	88.25						
Additional Reach Parameters	MY-0 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Valley Length (ft)							358											
Channel Length (ft)							393											
Sinuosity							1.10											
Water Surface Slope (ft/ft)	0.016			0.015			0.016			0.016								
BF slope (ft/ft)	0.020			0.018			0.014			0.016								
Rosgen Classification	C4			C4			C4			C5								

**Table IXc. Morphology and Hydraulic Monitoring Summary
Purlear Creek Phase I / Project # 294 - Middle Main
Reach 3 - 700**

Parameter	Cross Section 1						Cross Section 2											
	Reach 3 Pool						Reach 3 Riffle											
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5						
BF Width (ft)	26.8	26.2	24.2	25.1			24.5	24.2	25.1	24.1								
Floodprone Width (ft) (approx)							60	60	60	60								
BF Cross Sectional Area (ft ²)	45.2	44.8	37	36.9			28.3	28.1	27.2	29.4								
BF Mean Depth (ft)	1.7	1.7	1.5	1.5			1.2	1.2	1.1	1.2								
BF Max Depth (ft)	3.1	3.3	2.5	2.5			2.1	2.1	2.4	2.5								
Width/Depth Ratio							21.3	20.9	23	19.7								
Entrenchment Ratio (greater)							2.4	2.5	2.4	2.5								
Bank Height Ratio	1.2	1.2	1.2	1.2			1.0	1.0	1.0	1.0								
Wetted Perimeter (ft)							26.9	26.6	27.3	26.5								
Hydraulic radius (ft)							1.1	1.1	1.0	1.1								
Substrate																		
d50 (mm)	6.1	0.19	12.85	26.5			0.56	12.32	6.85	47.9								
d84 (mm)	22.63	8.25	37.94	54.5			14.36	36.86	33.46	77.6								
Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	37	58		-	-	-	-	-	-	-	-	-						
Radius of Curvature (ft)	27	94		-	-	-	-	-	-	-	-	-						
Meander Wavelength (ft)	230	356		-	-	-	-	-	-	-	-	-						
Meander Width ratio	1.4	2.2		-	-	-	-	-	-	-	-	-						
Profile																		
Riffle length (ft)				16	94	35	17	59	46	24	68	46						
Riffle slope (ft/ft)	0.010	0.030	0.020	0.003	0.028	0.014	0.005	0.051	0.014	0.004	0.030	0.013						
Pool length (ft)	24	74	51	9	84	20	17	68	29	29	50	36						
Pool spacing (ft)	79	132	112	29	120	66	36	145	73	46	128.5	97.5						
Additional Reach Parameters	MY-0 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Valley Length (ft)							821											
Channel Length (ft)							850											
Sinuosity							1.04											
Water Surface Slope (ft/ft)	0.014			0.014			0.013			0.013								
BF slope (ft/ft)	0.015			0.013			0.015			0.013								
Rosgen Classification	C4			C4			C4			C4								

Table IXd. Morphology and Hydraulic Monitoring Summary
Purlear Creek Phase I / Project # 294 - Lower Middle Trib (Upper Section)
Reach 4 - 650 Feet

Parameter	Cross Section 1						Cross Section 2											
	Reach 4 Riffle						Reach 4 Pool											
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5						
BF Width (ft)	25.1	25.1	22.3	19.3			22.6	21.2	20.3	19.3								
Floodprone Width (ft) (approx)	50	50	50	50														
BF Cross Sectional Area (ft ²)	21.8	19.1	18.8	17.5			21.5	18.1	13.9	13.2								
BF Mean Depth (ft)	0.9	0.8	0.8	0.9			1	0.9	0.7	0.7								
BF Max Depth (ft)	1.6	1.5	2.2	2.1			2.3	2.2	2.2	2.0								
Width/Depth Ratio	28.9	32.9	26.5	21.4														
Entrenchment Ratio (greater)	2.0	2.0	2.2	2.6														
Bank Height Ratio	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1.0								
Wetted Perimeter(ft)	26.9	26.7	23.9	21.1														
Hydraulic radius (ft)	0.8	0.7	0.8	0.8														
Substrate																		
d50 (mm)	10.36	0.69	0.09	0.11			3.93	3	0.38	0.2								
d84 (mm)	20.74	11.89	1.35	0.73			13.53	13.14	1.95	1.92								
Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	28	71		28	55	47	28	55	47	28	55	47						
Radius of Curvature (ft)	81	81		37	77	49	37	77	49	37	77	49						
Meander Wavelength (ft)	116	170		120	157	135	120	157	135	120	157	135						
Meander Width ratio	1.1	2.8		1.1	2.2	1.9	1.3	2.5	2.1	1.5	2.8	2.4						
Profile																		
Riffle length (ft)				7	60	19	24	50	44.5	16	50	31						
Riffle slope (ft/ft)				0.007	0.019	0.012	0.008	0.036	0.015	0.004	0.023	0.015						
Pool length (ft)	54	85	70	6	45	23	15	91	27	14	64	26.5						
Pool spacing (ft)	88	184	131	29	115	49	26	106	63	30.5	90	62.5						
Additional Reach Parameters	MY-0 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Valley Length (ft)							599											
Channel Length (ft)							669											
Sinuosity							1.12											
Water Surface Slope (ft/ft)	0.015			0.013			0.014			0.014								
BF slope (ft/ft)	0.015			0.015			0.015			0.014								
Rosgen Classification	B4			B4			B4			C5								

**Table IXe. Morphology and Hydraulic Monitoring Summary
Purlear Creek Phase I / Project # 294 - Lower Middle Trib (Lower Section)
Reach 5 - 700 Feet**

Parameter	Cross Section 1						Cross Section 2											
	Reach 5 Pool						Reach 5 Riffle											
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5						
BF Width (ft)	21.4	21.4	23.7	22.3			26.3	25	23.5	20.9								
Floodprone Width (ft) (approx)							60	60	60	60								
BF Cross Sectional Area (ft ²)	26.8	29.4	27.4	29.3			23.1	19.8	17.9	17.6								
BF Mean Depth (ft)	1.3	1.4	1.2	1.3			0.9	0.8	0.8	0.8								
BF Max Depth (ft)	2.5	3.3	2.9	3.1			1.7	1.7	1.4	1.7								
Width/Depth Ratio							30	31.7	30.9	24.8								
Entrenchment Ratio (greater)							2.3	2.4	2.6	2.9								
Bank Height Ratio	1.0	1.0	1.0	1.0			1.2	1.2	1.2	1.2								
Wetted Perimeter(ft)							28.1	26.6	25.1	22.5								
Hydraulic radius (ft)							0.8	0.7	0.7	0.8								
Substrate																		
d50 (mm)	0.5	2.06	0.13	0.48			15.85	0.54	0.07	4.3								
d84 (mm)	8.25	13.06	1.48	19.3			29.94	3.33	0.75	34.2								
Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	28	71		36	50	45	36	50	45	36	50	45						
Radius of Curvature (ft)	81	81		40	87	51	40	87	47	40	87	47						
Meander Wavelength (ft)	116	170		113	187	145	113	187	145	113	187	145						
Meander Width ratio	1.3	3.3		1.4	2.0	1.8	1.5	2.1	1.9	1.7	2.4	2.2						
Profile																		
Riffle length (ft)				5	49	28	16	48	33	16	44	32						
Riffle slope (ft/ft)				0.005	0.039	0.014	0.009	0.025	0.016	0.005	0.029	0.014						
Pool length (ft)	23	76	49	11	38	26	13	37	21.5	13	312	21						
Pool spacing (ft)	81	110	97	19	77	51	34	83	44	27	82.5	48						
Additional Reach Parameters	MY-0 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Valley Length (ft)							674											
Channel Length (ft)							778											
Sinuosity							1.15											
Water Surface Slope (ft/ft)	0.012			0.012			0.012			0.011								
BF slope (ft/ft)	0.009			0.011			0.010			0.011								
Rosgen Classification	B4			B4			C4			C4								

**Table IXf. Morphology and Hydraulic Monitoring Summary
Purlear Creek Phase I / Project # 294 - Lower Main
Reach 6 - 900 Feet**

Parameter	Cross Section 1						Cross Section 2											
	Reach 6 Pool						Reach 6 Riffle											
Dimension	MY0	MY1	MY2	MY3	MY4	MY5	MY0	MY1	MY2	MY3	MY4	MY5						
BF Width (ft)	18.9	19.2	17.9	19.7			27.1	26.9	34.3	37.5								
Floodprone Width (ft) (approx)							60	60	60	60								
BF Cross Sectional Area (ft ²)	43.6	36.3	33.2	31.8			40.2	37.8	35.2	35.5								
BF Mean Depth (ft)	2.3	1.9	1.9	1.6			1.5	1.4	1	0.9								
BF Max Depth (ft)	3.8	3.5	3.3	3.4			2.5	2.9	3	3								
Width/Depth Ratio	1.0	1.0	1.0	1.0			18.3	19.2	33.4	39.6								
Entrenchment Ratio (greater)							2.2	2.2	1.7	1.6								
Bank Height Ratio							1.0	1.0	1.0	1.0								
Wetted Perimeter(ft)							30.1	29.7	36.3	39.3								
Hydraulic radius (ft)							1.3	1.3	1.0	0.9								
Substrate																		
d50 (mm)	11.33	0.11	0.29	0.86			0.06	1.5	11.65	18.4								
d84 (mm)	24.5	14.22	12.85	32			11.01	65.75	45.17	47.7								
Parameter	MY-00 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Pattern	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	39	87		55	71	68	66	93	73	66	93	73						
Radius of Curvature (ft)	39	75		50	139	73	43	90	65	43	90	65						
Meander Wavelength (ft)	168	240		182	238	194	188	238	198	188	238	198						
Meander Width ratio	1.4	3.2		2.0	2.6	2.5	1.9	2.7	2.1	1.8	2.5	1.9						
Profile																		
Riffle length (ft)	-	-	-	30	36	34	19	32	24	19	45	30						
Riffle slope (ft/ft)	-	-	-	0.015	0.029	0.019	0.021	0.037	0.032	0.008	0.029	0.016						
Pool length (ft)	40	110	71	37	147	84	29	145	62	29	140	49						
Pool spacing (ft)	160	213	190	47	128	94	47	128	76	55	130	67.5						
Additional Reach Parameters	MY-0 (2004)			MY-01 (2005)			MY-02 (2006)			MY-03 (2007)			MY-04 (2008)			MY-05 (2009)		
Valley Length (ft)	805																	
Channel Length (ft)	931																	
Sinuosity	1.16																	
Water Surface Slope (ft/ft)	0.010			0.010			0.012			0.012								
BF slope (ft/ft)	0.009			0.010			0.012			0.012								
Rosgen Classification	B4			B4			B4			B4								

VI. Methodology Section

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

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).

References:

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

1. Vegetation Data Tables

Table 1. Vegetation Metadata

Table 2. Vegetation Vigor by Species

Table 3. Vegetation Damage by Species

Table 4. Vegetation Damage by Plot

Table 5. Stem Count by Plot and Species

Table 6. Vegetation Problem Area Tables

Table 10. Vigor

Table 11. Damage

2. Vegetation Problem Area Photos

3. Vegetation Monitoring Plot Photos

Notes:

- No separate plan view was established for vegetation conditions. See monitoring plan view for this information.

Table 1. Vegetation Metadata

Report Prepared By	Nathan Buchanan
Date Prepared	10/19/2007 14:23
database name	CVS_EEP_EntryTool_v220.mdb
database location	\\atlantic\group\Nathan B\Purlear\EEP CVS DATA Entry
computer name	WOLFPREP1
DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT-----	
Metadata	This worksheet, which is a summary of the project and the project data.
Proj, planted	Each project is listed with its PLANTED stems, for each year. This excludes live stakes and lists stems per acre.
Proj, total stems	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.
Plots	List of plots surveyed.
Vigor	Frequency distribution of vigor classes.
Vigor by Spp	Frequency distribution of vigor classes listed by species.
Damage	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage by Spp	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
ALL Stems by Plot and spp	Count of total living stems of each species (planted and natural volunteers combined) for each plot; dead and missing stems are excluded.
PROJECT SUMMARY-----	
Project Code	Purlear 1
project Name	Purlear Phase 1
Description	
River Basin	
length(ft)	
stream-to-edge width (ft)	
area (sq m)	
Required Plots (calculated)	
Sampled Plots	25

Table 2. Vegetation Vigor by Species

Species	4	3	2	1	0	Missing	Unknown
<i>Alnus serrulata</i>	31	6				2	4
<i>Aronia arbutifolia</i>		2	1	1			
<i>Betula nigra</i>	23	18	6	6	3		6
<i>Celtis occidentalis</i>		2	3				
<i>Cephalanthus occidentalis</i>			1		1		
<i>Cornus amomum</i>	125	52	24	6	6	5	25
<i>Diospyros virginiana</i>	7	3	3	1	1	1	1
<i>Fraxinus pennsylvanica</i>	47	13	4	1	1		2
<i>Nyssa sylvatica</i>	2	3			1		2
<i>Quercus michauxii</i>	29	20	2	2	1		4
<i>Quercus phellos</i>	30	11	2			3	11
<i>Salix nigra</i>	66	6	8	2	3	6	16
<i>Sambucus canadensis</i>	4						
<i>Carpinus caroliniana</i>		1	2				1
<i>Hamamelis virginiana</i>			1	1			3
<i>Populus deltoides</i>	3	1					1
<i>Acer rubrum</i>			1				1
TOT:	17	367	138	58	20	17	77

Table 3. Vegetation Damage by Species

Species	All Damage Categories	(no damage)	Deer	Diseased	Drought	Flood	Human Trampled	Insects	Livestock	Rodents	Site Too Dry	Site Too Wet	Unknown	(other damage)
<i>Acer rubrum</i>	2	1	1											
<i>Alnus serrulata</i>	43	37						5					1	
<i>Aronia arbutifolia</i>	4	1	1											2
<i>Betula nigra</i>	62	30	1	5	1			4		1	1		19	
<i>Carpinus caroliniana</i>	4	1							3					
<i>Celtis occidentalis</i>	5		1											4
<i>Cephalanthus occidentalis</i>	2													2
<i>Cornus amomum</i>	243	162	44				1	11	5				19	1
<i>Diospyros virginiana</i>	17	10		2				2					3	
<i>Fraxinus pennsylvanica</i>	68	49	10					2	2	2	1		1	1
<i>Hamamelis virginiana</i>	5	2	3											
<i>Nyssa sylvatica</i>	8	5						1						2
<i>Populus deltoides</i>	5	4												1
<i>Quercus michauxii</i>	58	35	6	1	1			3		1	2		9	
<i>Quercus phellos</i>	57	41	4	3	1			2					6	
<i>Salix nigra</i>	107	86	3	1		1		3		2	1	2	8	
<i>Sambucus canadensis</i>	4	3						1						
TOT:	17	694	74	12	3	1	1	34	10	6	5	2	77	2

Table 4. Vegetation Damage by Plot

plot	All Damage Categories	(no damage)	Deer	Diseased	Drought	Flood	Human Trampled	Insects	Livestock	Rodents	Site Too Dry	Site Too Wet	Unknown	(other damage)	
3	21	11	10												
4	39	33						3		1			2		
5	32	20	6		1					1			4		
6	37	21	10	2				1				1	2		
7	39	24	10	1				2					2		
9	8		1	1				1					5		
10	22	7	3					2	10						
11	24	8	6					2			1		7		
12	24	10	12		2										
13	22	17	2					1			1		1		
14	14	8	1			1		1					3		
15	21	10	6					2					3		
16	43	36	2										5		
17	38	33		1				1				1	2		
18	9	1	1					1					6		
21	11	3	2	1						3	1		1		
23	18	13	1								1		3		
24	29	27											2		
26	15	12											3		
29	21	14		1				5					1		
30	23	22											1		
31	61	56											5		
32	36	24	1	4				6					1		
33	35	27		1				1		1	1		4		
34	52	30					1	5					14	2	
TOT:	25	694	467	74	12	3	1	1	34	10	6	5	2	77	2

Table 5. Stem Count by Plot and Species

Species	Total Planted Stems	# plots	avg# stems	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	21	23	24	26	29	30	31	32	33	34	
<i>Acer rubrum</i>	2	2	1									1			1														
<i>Alnus serrulata</i>	41	12	3.42	1	2	1	2	1					2		3						7		1		6	8		7	
<i>Aronia arbutifolia</i>	4	4	1							1											1			1				1	
<i>Betula nigra</i>	59	17	3.47		4	2	1	2			4	1	5	6		1	2	5				3		1	7	7	5	3	
<i>Carpinus caroliniana</i>	4	1	4							4																			
<i>Celtis occidentalis</i>	5	3	1.67												2			2	1										
<i>Cephalanthus occidentalis</i>	1	1	1																									1	
<i>Cornus amomum</i>	232	21	11.05	16	18	6	8	23		9	7	12	5		5	24	10				2	9	2	11	13	11	12	1	28
<i>Diospyros virginiana</i>	15	7	2.14						1			1					1			2	1						6	3	
<i>Fraxinus pennsylvanica</i>	67	19	3.53	1	7	12	2			5	2	1	2	2	5	2	4		4		1	6	7		2	1		1	
<i>Hamamelis virginiana</i>	5	2	2.5						1			4																	
<i>Nyssa sylvatica</i>	7	4	1.75																	1	1				3		2		
<i>Populus deltoides</i>	5	4	1.25							1															1		2	1	
<i>Quercus michauxii</i>	57	20	2.85		3	6	4			1	7	2	2	3	1	2	1	1	3	4	3	1		6		4	2	1	
<i>Quercus phellos</i>	54	14	3.86		1	3	7	4	5			2				10	1			2	2	1	1		7		8		
<i>Salix nigra</i>	98	21	4.67	3	3	1	11	3	1		2		6	2	4	2	17		1	5	2	1	1	1	18		9	5	
<i>Sambucus canadensis</i>	4	4	1											1							1				1	1			
TOT:	17	660	17	21	38	31	35	33	8	21	22	24	22	14	21	41	36	8	9	16	28	14	21	22	56	33	35	51	

Table 6. Vegetation Problem Areas

Issue	UTM N	UTM E	Probable Cause	Photo
Bare flood plain	4006028	0473744	Head cut from pasture channel	VPA-1
Bare flood plain	4006168	0473771	Head cut from pasture channel	VPA-2
Bare bank	4006343	0473269	Constructed steep slope	VPA-3

Table 10. Vigor

vigor	Count	Percent
0	17	2.4
1	20	2.9
2	58	8.4
3	138	19.9
4	367	52.9
Missing	17	2.4
Unknown	77	11.1

Table 11. Damage

Damage	Count	Percent Of Stems
(no damage)	467	67.3
Unknown	77	11.1
Deer	74	10.7
Insects	34	4.9
Diseased	12	1.7
Livestock	10	1.4
Rodents	6	0.9
Site Too Dry	5	0.7
Drought	3	0.4
Site Too Wet	2	0.3
(other damage)	2	0.3
Human Trampled	1	0.1
Flood	1	0.1

Vegetation Problem Area Photos

Purlear 1



VPA-1



VPA-2

Purlear 1



VPA-3

Vegetation Monitoring Plot Photos

Purlear 1



Plot 3, 19-Jun-2007



Plot 4, 19-Jun-2007



Plot 5, 19-Jun-2007



Plot 6, 21-Jun-2007



Plot 7, 21-Jun-2007



Plot 9, 19-Jun-2007

Purlear 1



Plot 10, 19-Jun-07



Plot 11, 18-Jun-07



Plot 12, 19-Jun-07



Plot 13, 18-Jun-07



Plot 14, 18-Jun-07



Plot 15, 21-Jun-07

Purlear 1



Plot 16, 20-Jun-07



Plot 17, 18-Jun-07



Plot 18, 20-Jun-07



Plot 21, 20-Jun-07



Plot 23, 20-Jun-07



Plot 24, 20-Jun-07

Purlear 1



Plot 26, 20-Jun-07



Plot 29, 22-Jun-07



Plot 30, 20-Jun-07



Plot 31, 21-Jun-07



Plot 32, 22-Jun-07



Plot 33, 18-Jun-07

Purlear 1



Plot 34, 20-Jun-07

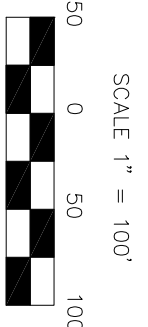
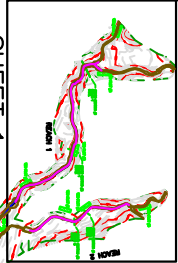
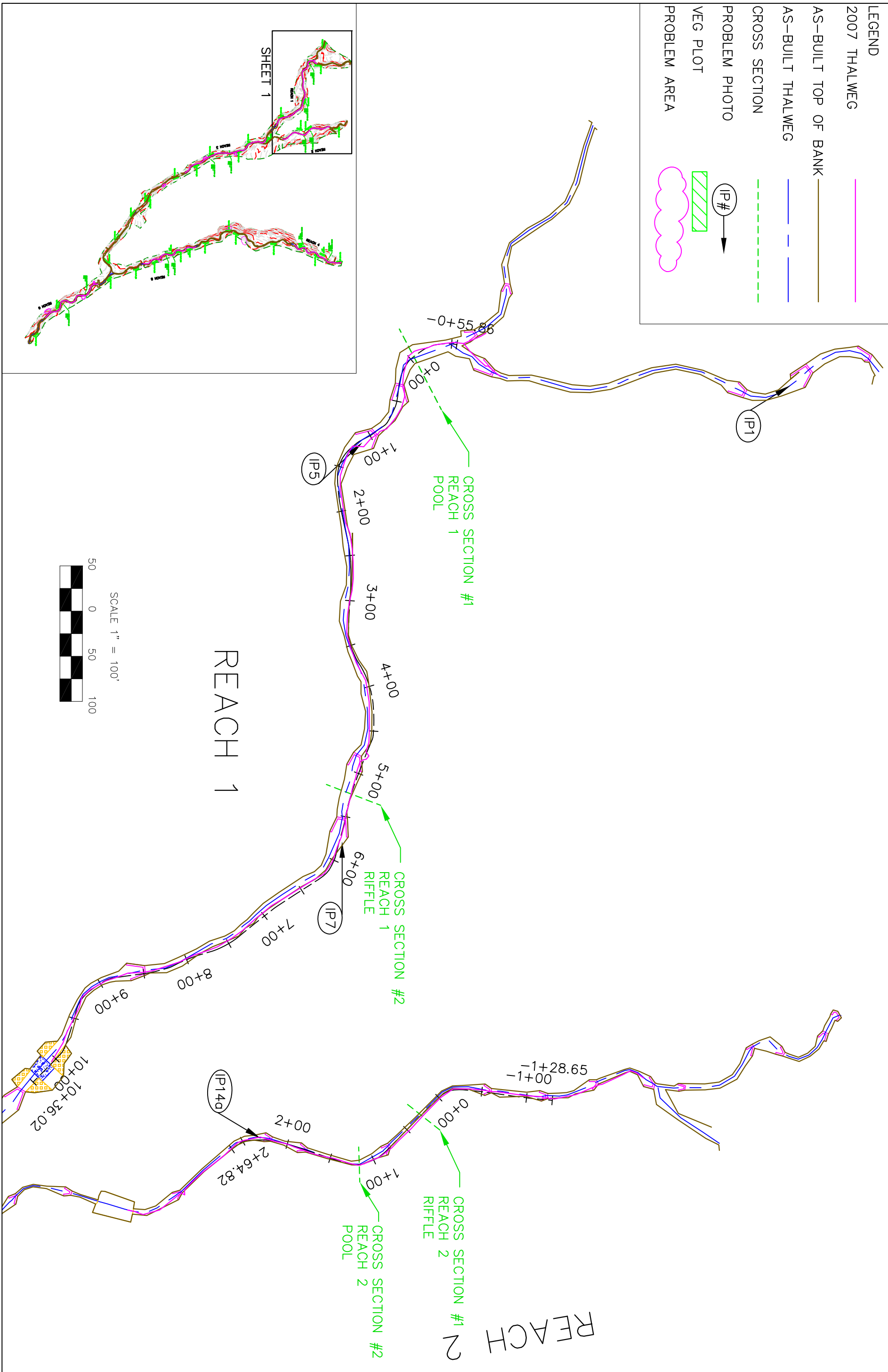
APPENDIX B

Morphology Raw Data

1. Current Conditions Plan View
2. Stream Problem Area Table
3. Stream Problem Area Photos/Project Photo Log
4. Visual Morphological Stability Assessment Tables
5. Cross section and Pebble Count Plots and Raw Data Tables
6. Longitudinal Plots and Raw Data Tables
7. Feature Slope and Length Calculations
8. Channel Pattern Measurements

LEGEND

- 2007 THALWEG
- AS-BUILT TOP OF BANK
- AS-BUILT THALWEG
- CROSS SECTION
- PROBLEM PHOTO
- VEG PLOT
- PROBLEM AREA



REACH 1

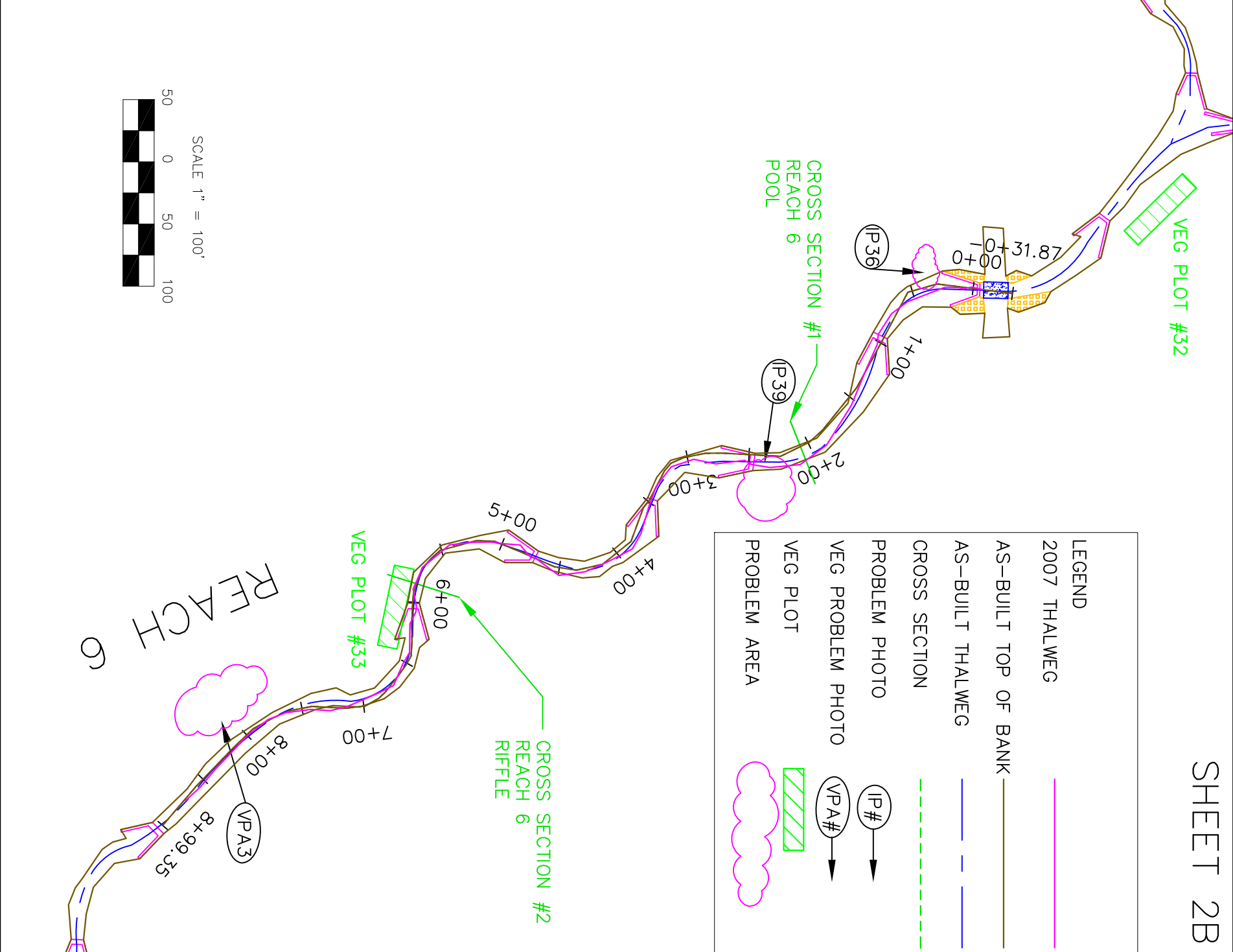
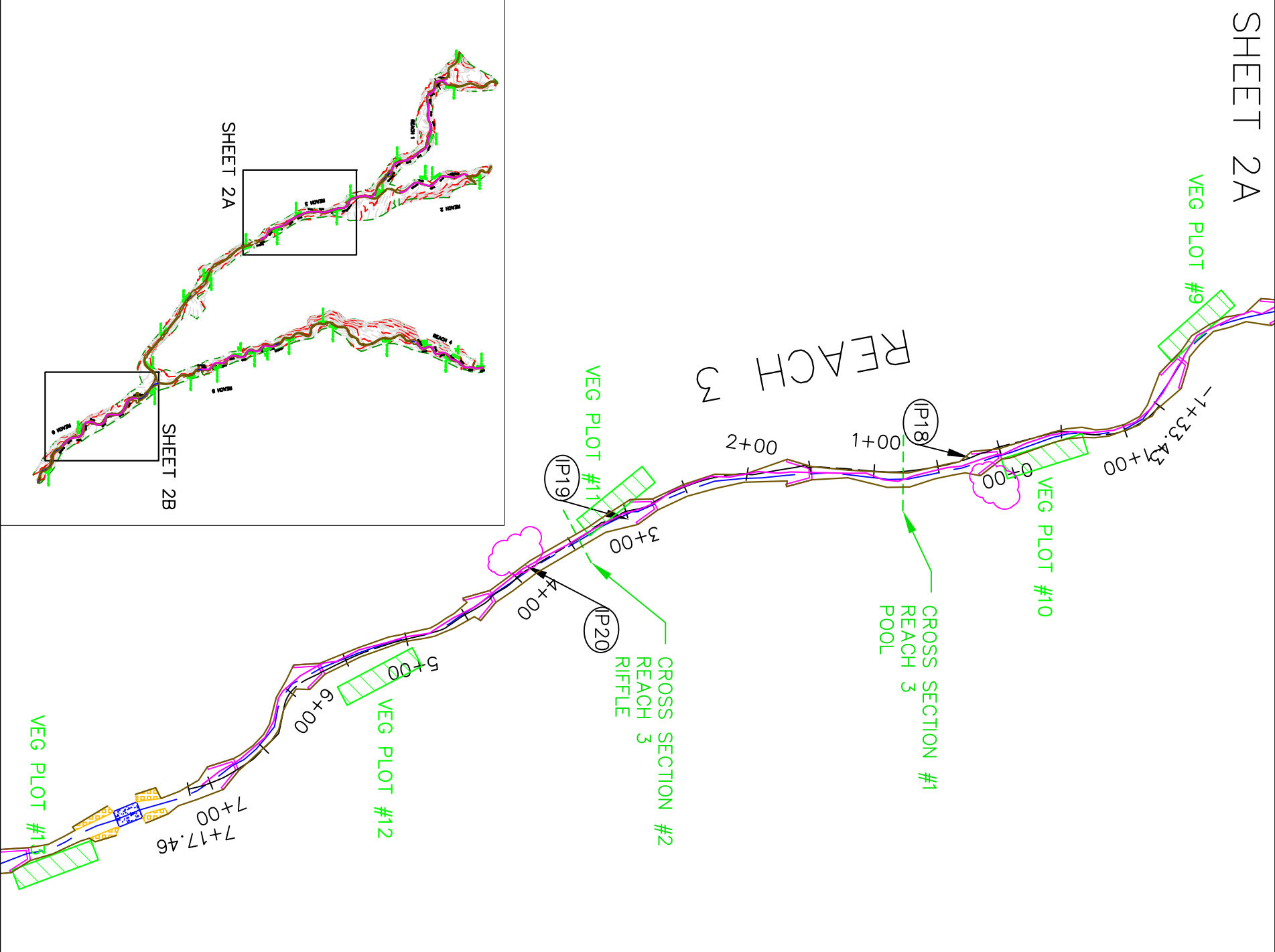
REACH 2

PURLEAR CREEK - PHASE 1	
WILKES COUNTY, N.C.	
CURRENT CONDITION PLAN VIEW	
SHEET 1 of 3	
DATE	03/01/2006
PROJECT NO.	294
FILENAME	PURLEAR ASBUILT
SHEET NO.	CURRENT 1 of 3



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

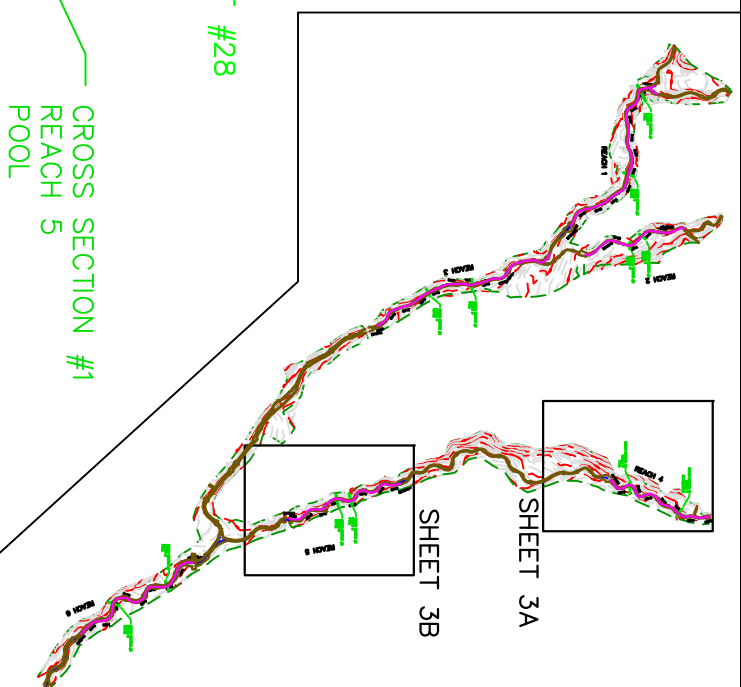
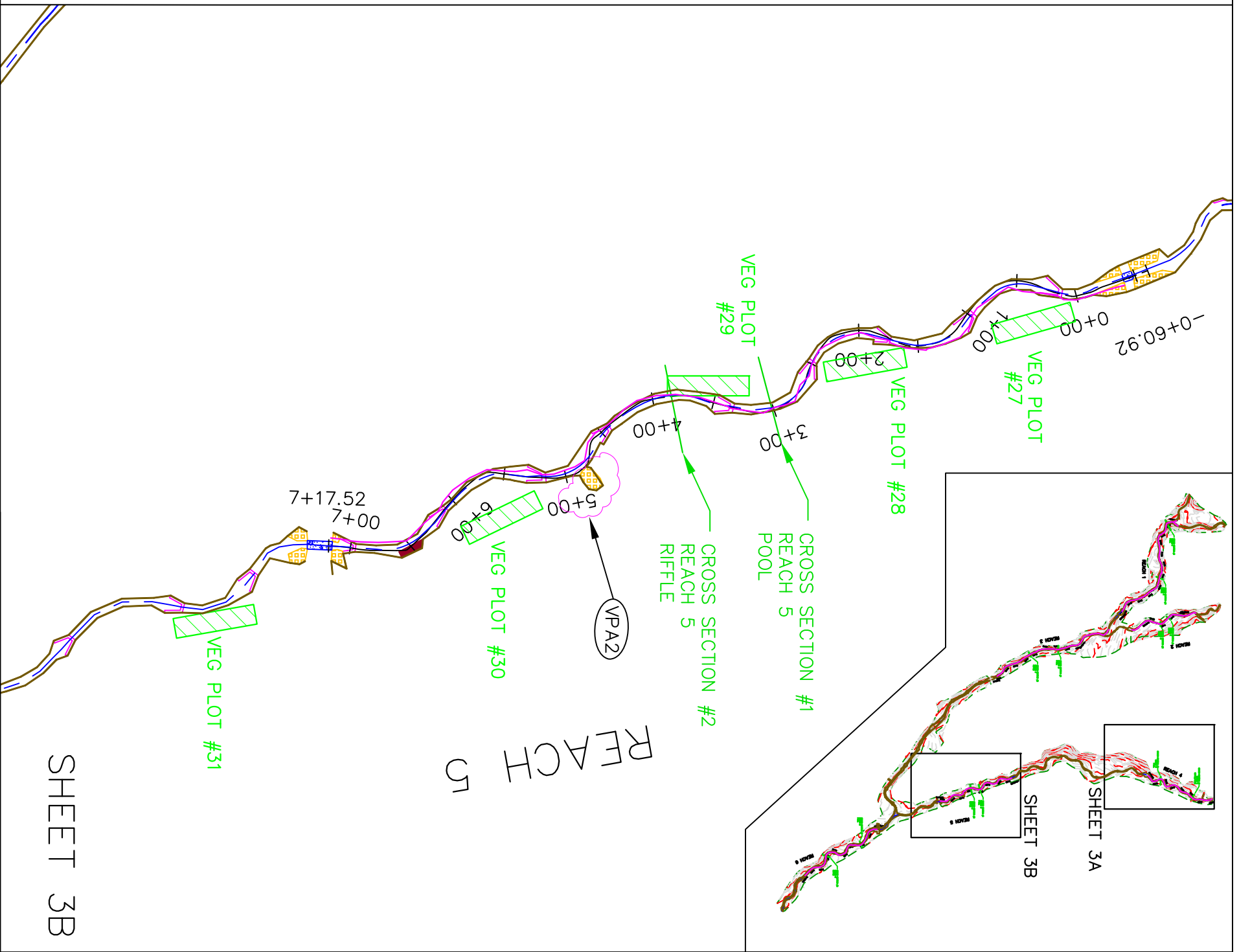
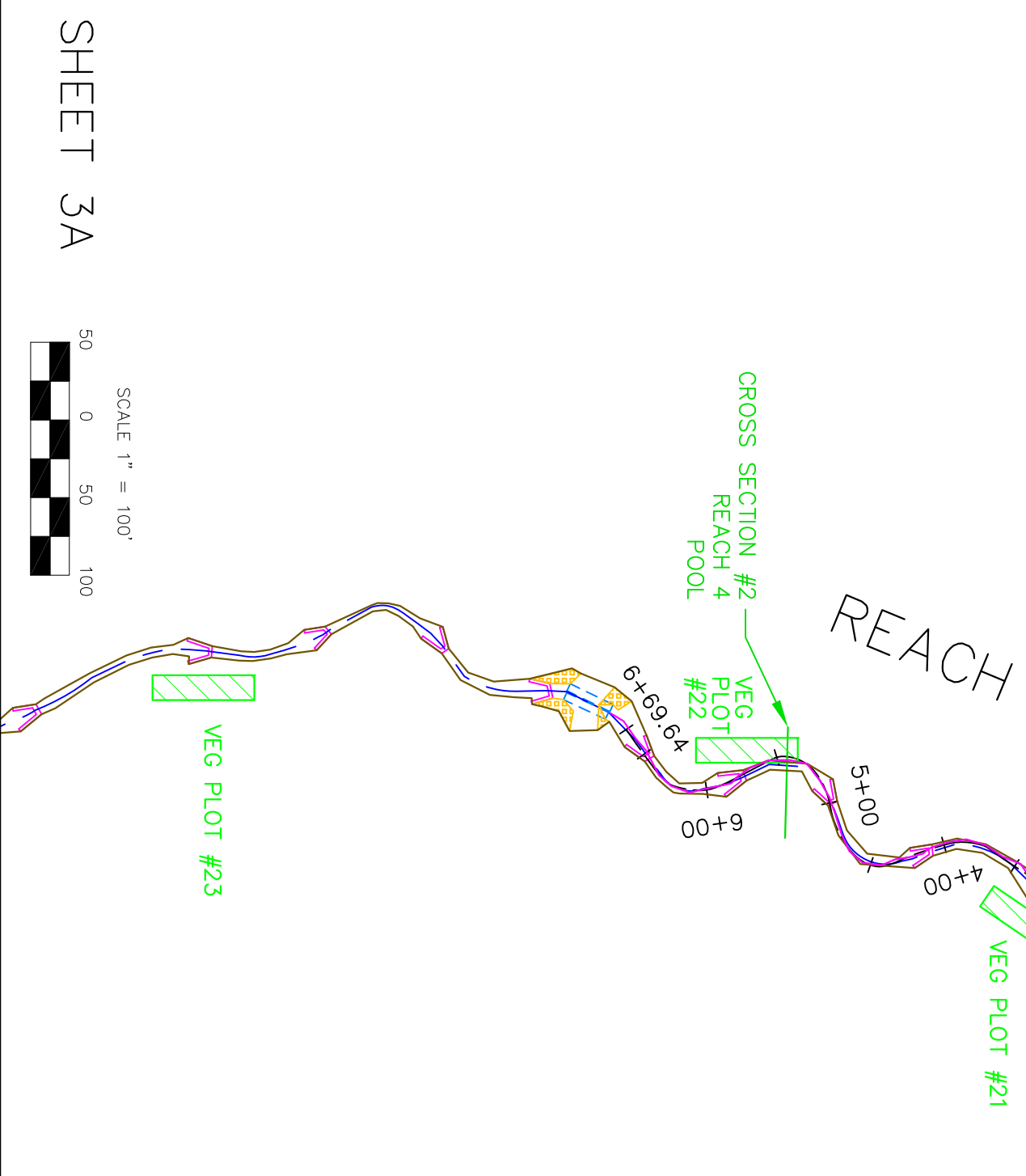
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2	MONITORING YEAR 03	ZP	JMP	12/1/07
NO	REVISIONS	DRN	CHK	DATE



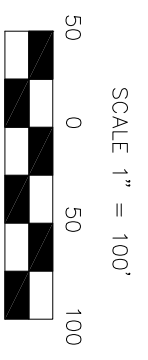
LEGEND	
2007 THALWEG	
AS-BUILT TOP OF BANK	
AS-BUILT THALWEG	
CROSS SECTION	
PROBLEM PHOTO	
VEG PROBLEM PHOTO	
VEG PLOT	
PROBLEM AREA	

PURLEAR CREEK - PHASE 1		NC STATE UNIVERSITY	<table border="1"> <tr> <td>1</td> <td>AS-BUILT PLAN</td> <td>DRC</td> <td>DAB</td> <td>03/01/06</td> </tr> <tr> <td>2</td> <td>MONITORING YEAR 03</td> <td>ZP</td> <td>JMP</td> <td>12/1/07</td> </tr> </table>		1	AS-BUILT PLAN	DRC	DAB	03/01/06	2	MONITORING YEAR 03	ZP	JMP	12/1/07
1	AS-BUILT PLAN		DRC	DAB	03/01/06									
2	MONITORING YEAR 03	ZP	JMP	12/1/07										
WILKES COUNTY, N.C.		<table border="1"> <tr> <th>NO.</th> <th>REVISIONS</th> <th>DRN</th> <th>CHK</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>		NO.	REVISIONS	DRN	CHK	DATE						
NO.	REVISIONS	DRN	CHK	DATE										
CURRENT CONDITION PLAN VIEW		BIOLOGICAL & AGRICULTURAL ENGINEERING Weaver Labs Campus Box 7625 North Carolina State University Raleigh, NC 27695												
SHEET 2 of 3		PROJECT NO. 294 DATE 03/01/2006 FILENAME: PURLEAR ASBUILT SHEET NO. CURRENT 2 of 3												

LEGEND	
2007 THALWEG	
AS-BUILT TOP OF BANK	
AS-BUILT THALWEG	
CROSS SECTION	
PROBLEM PHOTO	
VEG PROBLEM PHOTO	
VEG PLOT	
PROBLEM AREA	



SHEET 3A



SHEET 3B

DATE	03/01/2006
PROJECT NO.	294
FILENAME	PURLEAR ASBUILT
SHEET NO.	CURRENT 3 of 3

PURLEAR CREEK - PHASE 1
WILKES COUNTY, N.C.

CURRENT CONDITION PLAN VIEW
SHEET 3 of 3

NC STATE UNIVERSITY

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

1	MONITORING PLAN	DRC	DAB	03/01/06
2	MONITORING YEAR 03	ZP	JMP	12/1/07
NO	REVISIONS	DRN	CHK	DATE

Table B1. Stream Problem Area Table**Purlear Creek Phase I / Project # 294****Reaches 1 - 6**

Feature Issue	Reach	Problem/ Photo Number	Station Numbers	Suspected Cause
Bed Elevation Drop	Reach 1	IP1 IP5 IP7	Above Study Reach 1+00 5+50	Steep Channel Grade Drop Designed into Structure
Piping	Reach 2	IP 14a	2+20	Large grade drop through the structure.
Bed Elevation Drop	Reach 3	IP19	2+77	Steep Channel Grade Drop Designed into Structure
Slump Arm		IP21	Below Study Reach	
Erosion / Ground Hog Tunnels		IP 18	0+00	Poor Soils, Lack of sufficient footers
		IP20	4+00	Ground Hogs
Slump Arm		IP 22	Below Study Reach	Poor Soils, Lack of sufficient footers
Drainage Tile	Reach 6	IP36	Above Study Reach	Farmer
Drainage Tile		IP39	2+10	Farmer

2007 Purlear Phase I
Stream
Problem Areas

Reach 1

Sept. 5, 2006



October 17, 2007



IP 1 Bed Elevation Drop (Upstream of Study Reach)



IP 5 Bed Elevation Drop (Station 0+89)



IP 7 Bed Elevation Drop (Station 5+50)

Reach 2

Sept. 5, 2006



October 17, 2007



IP14a Piping through cross vane (Station 2+20) – Creek bed dry in 2007

Reach 3



IP 18 Slump Arm (Station 0+00)



IP 19 Bed Elevation Drop (Station 2+77)

2007 Purlear Creek Phase I Stream Problem Area Photos

Sept. 5, 2006



October 17, 2007



IP 20 Erosion Ground Hog Tunnels (Station 4+00)



IP 21 Bed Elevation Drop (Below Study Reach)



IP 22 Slump Arm and Piping (Below Study Reach)

Reach 6

Jan. 2006



October 18, 2007



IP 36 Tile (Above Study Reach)

Jan. 2006



October 18, 2007



IP 39 Tile (Station 2+10)

Purlear Creek Photo Log 2007

Reach 1

September 5, 2006



October 17, 2007



P1. Start Downstream



P2. Start Upstream



P3. X1 Downstream (Station 0+00)

Purlear Creek Photo Log 2007

September 5, 2006



October 17, 2007



P4. X1 Upstream (Station 0+00)



P5. X2 Downstream (Station 5+25)



P6. X2 Upstream (Station 5+25)

September 5, 2006



October 17, 2007



P7. End Downstream



P8. End Upstream

Reach 2

September 5, 2006



October 17, 2007



P9. Start Downstream

Purlear Creek Photo Log 2007

September 5, 2006



October 17, 2007



P10. Start Upstream



P11. X1 Downstream (Station 0+25)



P12. X1 Upstream (Station 0+25)

September 5, 2006



October 17, 2007



P13. X2 Downstream (Station 1+20)



P14. X2 Upstream (Station 1+20)



P15. End Downstream

September 5, 2006



October 17, 2007



P16. End Upstream

Reach 3

September 5, 2006



October 17, 2007



P17. Start Downstream



P18. Start Upstream

September 5, 2006



October 17, 2007



P19. X1 Downstream (Station 0+80)



P20. X1 Upstream (Station 0+80)



P21. X2 Downstream (Station 3+45)

Purlear Creek Photo Log 2007

September 5, 2006



October 17, 2007



P22. X2 Upstream (Station 3+45)



P23. End Downstream



P24. End Upstream

Reach 4

September 5, 2006



October 18, 2007



P25. Start Downstream



P26. Start Upstream



P27. X1 Downstream (Station 1+75)

September 5, 2006



October 18, 2007



P28. X1 Upstream (Station 1+75)



P29. X2 Downstream (Station 5+45)



P30. X2 Upstream (Station 5+45)

September 5, 2006



October 18, 2007



P31. End Downstream



P32. End Upstream

Reach 5

September 5, 2006



October 18, 2007



P33. Start Downstream

September 5, 2006



October 18, 2007



P34. Start Upstream



P35. X1 Downstream (Station 3+00)



P36. X1 Upstream (Station 3+00)

September 5, 2006



October 18, 2007



P37. X2 Downstream (Station 3+85)



P38. X2 Upstream (Station 3+85)



P39. End Downstream

September 5, 2006



October 18, 2007



P40. End Upstream

Reach 6

September 5, 2006



October 18, 2007



P41. Start Downstream



P42. Start Upstream

Purlear Creek Photo Log 2007

September 5, 2006



October 18,



P43. X1 Downstream (Station 2+05)



P44. X1 Upstream (Station 2+05)



P45. X2 Downstream (Station 5+80)

Purlear Creek Photo Log 2007

September 5, 2006



October 18, 2007



P46. X2 Upstream (Station 5+80)



P47. End Downstream



P48. End Upstream

Table B2. Visual Morphological Stability Assessment						
Purlear Creek Phase I / Project # 294 - Upper Main						
Reach 1 - 1050						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state ¹	% Perform in Stable Condition ²	Feature Perform. Mean or Total ³
A. Riffles	1. Present? ⁴	11	13	NA	85	
	2. Armor stable (e.g. no displacement)?	11	13	NA	85	
	3. Facet grade appears stable?	11	13	NA	85	
	4. Minimal evidence of embedding/fining?	11	13	NA	85	
	5. Length appropriate?	11	13	NA	85	85%
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.?) ⁴	13	13	NA	100	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	13	13	NA	100	
	3. Length appropriate?	10	13	NA	77	92%
C. Thalweg	1. Upstream of meander bend (run/inflection) centering? ⁵	8	8	NA	100	
	2. Downstream of meander (glide/inflection) centering? ⁵	8	8	NA	100	100%
D. Meanders	1. Outer bend in state of limited/controlled erosion?	8	8	NA	100	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	NA	100	
	3. Apparent Rc within spec?	3	3	NA	100	
	4. Sufficient floodplain access and relief? ⁶	8	8	NA	100	100%
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	0/0	100	
	2. Channel bed degradation – areas of increasing down-cutting or head cutting?	NA	NA	0/0	100	100%
F. Bank	1. Actively eroding, wasting, or slumping bank	NA	NA	0/0	100%	100%
G. Vanes	1. Free of back or arm scour?	4	5	NA	80	
	2. Height appropriate?	1	5	NA	20	
	3. Angle and geometry appear appropriate?	5	5	NA	40	
	4. Free of piping or other structural failures?	4	5	NA	80	55%
F. Wads/Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	NA

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

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

2 In the case of categorical metrics for which a feature count is involved, this is simply calculated as the number of functional features that are in a state of stability as a percentage of the total. In the case of those metrics based on footage or aerial extent it is that amount in a state of failure or instability expressed as a proportion of the total amount of that feature. The resulting proportion is then subtracted from 1 and then multiplied by 100 to give a percentage that represents the proportion of that feature category in a state of apparent stability.

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

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

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

6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

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

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

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

Table B2. Visual Morphological Stability Assessment Purlear Creek Phase I / Project # 294 - Upper Middle Trib Reach 2 - 260 Feet						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state	% Perform in Stable Condition	Feature Perform. Mean or Total
A. Riffles	1. Present? ¹	4	4	NA	100	
	2. Armor stable (e.g. no displacement)?	4	4	NA	100	
	3. Facet grade appears stable?	4	4	NA	100	
	4. Minimal evidence of embedding/fining?	0	4	NA	0	
	5. Length appropriate?	3	4	NA	75	75%
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.?) ⁴	3	3	NA	100	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	3	3	NA	100	
	3. Length appropriate?	3	3	NA	100	100%
C. Thalweg	1. Upstream of meander bend (run/inflection centering?) ⁵	4	4	NA	100	
	2. Downstream of meander (glide/inflection centering?) ⁵	4	4	NA	100	100%
D. Meanders	1. Outer bend in state of limited/controlled erosion?	4	4	NA	100	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	NA	100	
	3. Apparent Rc within spec?	4	4	NA	100	
	4. Sufficient floodplain access and relief? ⁶	4	4	NA	100	100%
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	3/58	78	
	2. Channel bed degradation – areas of increasing down-cutting or head cutting?	NA	NA	0/0	100	89%
F. Bank	1. Actively eroding, wasting, or slumping bank	NA	NA	0/0	100%	100%
G. Vanes	1. Free of back or arm scour?	5	5	NA	100	
	2. Height appropriate?	1	5	NA	20	
	3. Angle and geometry appear appropriate?	5	5	NA	100	
	4. Free of piping or other structural failures?	3	5	NA	60	70%
H. Wads/ Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	N/A

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

- 1 Metrics that are spatial estimates should be entered as: The number of locales over the reach for which the failing condition is observed /
- 2 In the case of categorical metrics for which a feature count is involved, this is simply calculated as the number of functional features that are in a state of stability as a percentage of the total. In the case of those metrics based on footage or aerial extent it is that amount in a state of failure or instability expressed as a proportion of the total amount of that feature. The resulting proportion is then subtracted from 1 and then multiplied by 100 to give a percentage that represents the proportion of that feature category in a state of apparent stability.
- 3 The mean of the metrics for a given feature category.
- 4 Was the feature actually present as compared to the As-built or has the feature been completely obscured (aggraded) or removed (degraded).
- 5 Is the Thalweg centering up on the channel in between meander bends?
- 6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

USDA-NRCS (1998) *Stream Visual Assessment Protocol* National Water and Climate Center (Technical Note 99-)
 Rosgen, D.L. (1996) *Applied River Morphology*. Wildland Hydrology Books, Pagosa Springs, CO
 Phankuch, D.J. (1975) Stream reach inventory and channel stability evaluation. USDA Forest Service, R1-75-002. GPO #696-260/20

Table B2. Visual Morphological Stability Assessment Purlear Creek Phase I / Project # 294 - Middle Main Reach 3 - 700						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state ¹	% Perform in Stable Condition	Feature Perform. Mean or Total ³
A. Riffles	1. Present? ⁴	7	7	NA	100	
	2. Armor stable (e.g. no displacement)?	7	7	NA	100	
	3. Facet grade appears stable?	7	7	NA	100	
	4. Minimal evidence of embedding/fining?	7	7	NA	100	
	5. Length appropriate?	7	7	NA	100	100%
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.?) ⁴	8	9	NA	89	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	8	9	NA	89	
	3. Length appropriate?	8	9	NA	89	89%
C. Thalweg	1. Upstream of meander bend (run/inflexion centering?) ⁵	6	6	NA	100	
	2. Downstream of meander (glide/inflexion) centering? ⁵	6	6	NA	100	100%
D. Meanders	1. Outer bend in state of limited/controlled erosion?	5	6	NA	96	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	NA	100	
	3. Apparent Re within spec?	6	6	NA	100	
	4. Sufficient floodplain access and relief? ⁶	6	6	NA	100	99%
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	0/0	100	
	2. Channel bed degradation - areas of increasing down-cutting or head cutting?	NA	NA	2/70	90	95%
F. Bank	1. Actively eroding, wasting, or slumping bank	NA	NA	0/0	100%	100%
G. Vanes	1. Free of back or arm scour?	6	6	NA	100	
	2. Height appropriate?	4	6	NA	66	
	3. Angle and geometry appear appropriate?	6	6	NA	100	
	4. Free of piping or other structural failures?	5	6	NA	83	87%
H. Wads/Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	NA

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

- 1 Metrics that are spatial estimates should be entered as: The number of locales over the reach for which the failing condition is observed / followed by the total linear distance (feet) or area for which the failing or unstable condition is observed.
- 2 In the case of categorical metrics for which a feature count is involved, this is simply calculated as the number of functional features that are in a state of stability as a percentage of the total. In the case of those metrics based on footage or aerial extent it is that amount in a state of failure or instability expressed as a proportion of the total amount of that feature. The resulting proportion is then subtracted from 1 and then multiplied by 100 to give a percentage that represents the proportion of that feature category in a state of apparent stability.
- 3 The mean of the metrics for a given feature category.
- 4 Was the feature actually present as compared to the As-built or has the feature been completely obscured (aggraded) or removed (degraded).
- 5 Is the Thalweg centering up on the channel in between meander bends?
- 6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

USDA-NRCS (1998) *Stream Visual Assessment Protocol* National Water and Climate Center (Technical Note 99-)
 Rosgen, D.L. (1996) *Applied River Morphology*. Wildland Hydrology Books, Pagosa Springs, CO
 Phankuch, D.J. (1975) Stream reach inventory and channel stability evaluation. USDA Forest Service, R1-75-002. GPO #696-260/20

Table B2. Visual Morphological Stability Assessment
Purlear Creek Phase I / Project # 294 - Lower Middle Trib (Upper Section)
Reach 4 - 650 Feet

Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state ¹	% Perform in Stable Condition	Feature Perform. Mean or Total ³
A. Riffles	1. Present? ⁴	7	8	NA	88	
	2. Armor stable (e.g. no displacement)?	7	8	NA	88	
	3. Facet grade appears stable?	7	8	NA	88	
	4. Minimal evidence of embedding/fining?	5	8	NA	63	
	5. Length appropriate?	7	8	NA	88	83%
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.) ⁴	10	12	NA	83	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	10	12	NA	83	
	3. Length appropriate?	10	12	NA	83	83%
C. Thalweg	1. Upstream of meander bend (run/inflection) centering? ⁵	9	9	NA	100	
	2. Downstream of meander (glide/inflection) centering? ⁵	9	9	NA	100	100%
D. Meanders	1. Outer bend in state of limited/controlled erosion?	9	9	NA	100	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	NA	100	
	3. Apparent Rc within spec?	9	9	NA	100	
	4. Sufficient floodplain access and relief? ⁶	9	9	NA	100	100%
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	0/0	100	
	2. Channel bed degradation - areas of increasing down-cutting or head cutting?	NA	NA	0/0	100	100%
F. Bank	1. Actively eroding, wasting, or slumping bank	NA	NA	0/0	100%	100%
G. Vanes	1. Free of back or arm scour?	8	8	NA	100	
	2. Height appropriate?	6	8	NA	75	
	3. Angle and geometry appear appropriate?	8	8	NA	100	
	4. Free of piping or other structural failures?	8	8	NA	100	94%
H. Wads/Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	NA

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

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

2 In the case of categorical metrics for which a feature count is involved, this is simply calculated as the number of functional features that are in a state of stability as a percentage of the total. In the case of those metrics based on footage or aerial extent it is that amount in a state of failure or instability expressed as a proportion of the total amount of that feature. The resulting proportion is then subtracted from 1 and then multiplied by 100 to give a percentage that represents the proportion of that feature category in a state of apparent stability.

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

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

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

6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

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

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

Phankuch, D.J. (1975) Stream reach inventory and channel stability evaluation. USDA Forest Service, R1-75-002. GPO #696-260/20

Table B2. Visual Morphological Stability Assessment						
Purlear Creek Phase I / Project # 294 - Lower Middle Trib (Lower Section)						
Reach 5 - 700 Feet						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state ¹	% Perform in Stable Condition ²	Feature Perform. Mean or Total ³
A. Riffles	1. Present? ⁴	8	10	NA	80	
	2. Armor stable (e.g. no displacement)?	8	10	NA	80	
	3. Facet grade appears stable?	8	10	NA	80	
	4. Minimal evidence of embedding/fining?	8	10	NA	80	
	5. Length appropriate?	8	10	NA	80	80%
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.?) ⁴	14	15	NA	93	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	14	15	NA	93	
	3. Length appropriate?	14	15	NA	93	93%
C. Thalweg	1. Upstream of meander bend (run/inflection) centering? ⁵	9	9	NA	100	
	2. Downstream of meander (glide/inflection) centering? ⁵	9	9	NA	100	100%
D. Meanders	1. Outer bend in state of limited/controlled erosion?	9	9	NA	100	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	NA	100	
	3. Apparent Rc within spec?	9	9	NA	100	
	4. Sufficient floodplain access and relief? ⁶	9	9	NA	100	100%
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	0/0	100	
	2. Channel bed degradation – areas of increasing down-cutting or head cutting?	NA	NA	0/0	100	100%
F. Bank	1. Actively eroding, wasting, or slumping bank	NA	NA	0/0	100%	100%
G. Vanes	1. Free of back or arm scour?	5	5	0/0	100	
	2. Height appropriate?	4	5	0/0	80	
	3. Angle and geometry appear appropriate?	5	5	0/0	100	
	4. Free of piping or other structural failures?	5	5	0/0	100	95%
H. Wads/Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	NA

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

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

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

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

6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

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

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

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

Table B2. Visual Morphological Stability Assessment Purlear Creek Phase I / Project # 294 - Lower Main Reach 6 - 900 Feet						
Feature Category	Metric (per As-built and reference baselines)	(# Stable) Number Performing as Intended	Total number per As-built	Total Number / feet in unstable state	% Perform in Stable Condition	Feature Perform. Mean or Total
A. Riffles	1. Present? ⁴	4	4	NA	100	
	2. Armor stable (e.g. no displacement)?	4	4	NA	100	
	3. Facet grade appears stable?	4	4	NA	100	
	4. Minimal evidence of embedding/fining?	4	4	NA	100	
	5. Length appropriate?	4	4	NA	100	100%
B. Pools	1. Present? (e.g not subject to severe aggrad. or migrat.?) ⁴	9	9	NA	100	
	2. Sufficiently deep (Max Pool D:Mean Bkf >1.6?)	9	9	NA	100	
	3. Length appropriate?	9	9	NA	100	100%
C. Thalweg	1. Upstream of meander bend (run/inflection) centering? ⁵	7	7	NA	100	
	2. Downstream of meander (glide/inflection) centering? ⁵	7	7	NA	100	100%
D. Meanders	1. Outer bend in state of limited/controlled erosion?	7	7	NA	100	
	2. Of those eroding, # w/concomitant point bar formation?	0	0	NA	100	
	3. Apparent Rc within spec?	7	7	NA	100	
	4. Sufficient floodplain access and relief? ⁶	7	7	NA	100	100%
E. Bed General	1. General channel bed aggradation areas (bar formation)	NA	NA	0/0	100	
	2. Channel bed degradation – areas of increasing down-cutting or head cutting?	NA	NA	0/0	66	100%
F. Bank	1. Actively eroding, wasting, or slumping bank	NA	NA	0/0	100%	100%
G. Vanes	1. Free of back or arm scour?	5	5	NA	100	
	2. Height appropriate?	0	5	NA	0	
	3. Angle and geometry appear appropriate?	5	5	NA	100	
	4. Free of piping or other structural failures?	5	5	NA	100	75%
H. Wads/Boulders	1. Free of scour?	NA	NA	NA	NA	
	2. Footing stable?	NA	NA	NA	NA	NA

Footnotes:

The above table should be completed using the visual assessment data form for each project reach/segment

It is recognized that the various metrics within a feature category may not have equal influence on the overall stability of that feature and that this does not incorporate weighting or scoring; however, at this time, EEP requires documentation of the relevant observations for these feature categories.

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

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

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

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

6 Is the meander bend in a state of constriction?

Documents referenced in the construct of the above assessment table

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

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

Phankuch, D.J. (1975) Stream reach inventory and channel stability evaluation. USDA Forest Service, R1-75-002. GPO #696-260/20

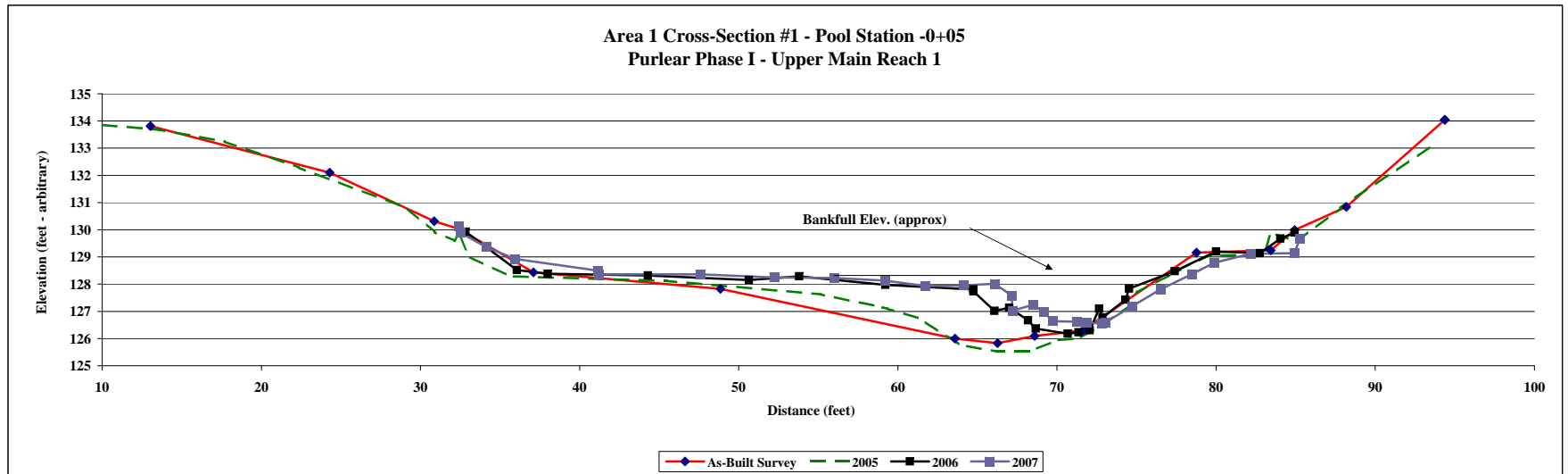
Project Name	Purlear Phase I
Cross Section	1 - Upper Main Reach 1
Feature	Pool
Date	7/23/2007
Crew	Roberts, Price, Zink

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			2007 MY-03				
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elevation	Notes
13.04	133.81	XS4	10.03	133.86	X1	201	32.84	129.93	(R1X1LP)	40082	31.39	130.13	(2007-R1X1)
24.29	132.1	XS4	13.58	133.68	X1	202	36.06	128.52	(R1X1)	40079	32.4	129.9	(2007-R1X1LP07)
30.85	130.32	XS4	17.69	133.25	X1	203	37.99	128.38	(R1X1)	40085	32.49	129.37	(2007-R1X1)
32.4	130.03	XS4LP	22.36	132.29	X1	204	44.29	128.32	(R1X1)	40089	34.13	128.93	(2007-R1X1)
37.1	128.44	BKF	29.17	130.79	X1	205	50.64	128.15	(R1X1)	40092	35.94	128.5	(2007-R1X1)
48.85	127.83	XS4	30.89	129.92	x1lp	206	53.8	128.29	(R1X1)	40096	41.14	128.36	(2007-R1X1)
63.6	126	XS4	32.14	129.6	X1	207	59.22	127.97	(R1X1)	40093	41.21	128.36	(2007-R1X1)
66.26	125.83	XS4	32.4	129.86	X1LP	208	64.73	127.8	(R1X1)	40099	47.57	128.25	(2007-R1X1)
68.6	126.09	XS4	33.04	129.01	X1	212	64.76	127.73	(R1X1)	40102	52.22	128.22	(2007-R1X1)
71.64	126.3	XS4	35.62	128.29	BKF	211	66.07	127.02	(R1X1W)	40105	56.01	128.13	(2007-R1X1)
78.77	129.16	XS4BF	45.44	128.12	X1	209	67	127.13	(R1X1)	40106	59.2	127.93	(2007-R1X1)
83.42	129.24	XS4	55.17	127.63	X1	210	68.18	126.67	(R1X1)	40108	61.75	127.95	(2007-R1X1)
84.94	129.99	XS4LP	59.03	127.14	X1W	213	68.66	126.37	(R1X1)	40109	64.11	128.01	(2007-R1X1)
88.18	130.84	XS4	59.34	127.1	w	215	70.68	126.18	(R1X1)	40107	66.09	127.58	(2007-R1X1)
94.37	134.04	XS4	61.4	126.73	X1	216	71.35	126.23	(R1X1)	40095	67.14	127.03	(2007-R1X1)
94.37	134.04	XS4	63.89	125.77	X1	217	72.06	126.3	(R1X1)	40090	67.22	127.24	(2007-R1X1W)
			66.2	125.52	X1	214	72.65	127.1	(R1X1W)	40097	68.48	126.97	(2007-R1X1)
			68.27	125.53	X1T	218	72.87	126.77	(R1X1)	40100	69.19	126.64	(2007-R1X1)
			70.05	125.95	m	219	74.3	127.43	(R1X1)	40104	69.71	126.62	(2007-R1X1)
			71.36	126	X1	221	74.53	127.84	(R1X1)	40103	71.24	126.59	(2007-R1X1)
			72.82	126.49	X1	222	77.41	128.48	(R1X1)	40101	71.85	126.55	(2007-R1X1)
			74.47	127.19	X1W	220	80	129.2	(R1X1)	40098	72.79	126.6	(2007-R1X1)
			75.06	127.7	X1	223	82.75	129.14	(R1X1)	40094	73.05	127.18	(2007-R1X1)
			77.76	128.54	X1	224	84.04	129.67	(R1X1)	40091	74.72	127.82	(2007-R1X1)
			79.49	129.04	X1B	225	84.94	129.9	(R1X1RP)	40088	76.52	128.37	(2007-R1X1)
			83.01	129.09	X1					40086	78.5	128.78	(2007-R1X1)
			83.42	129.87	x1rp					40083	79.85	129.12	(2007-R1X1)
			84.28	129.74	X1RP					40081	82.15	129.14	(2007-R1X1)
			85.08	129.57	X1					40087	84.89	129.67	(2007-R1X1)
			87.8	130.8	X1					40080	85.28	129.88	(2007-R1X1RP07)
			93.87	133.23	X1								



Photo of Area 1 Cross-Section #1 - Looking Downstream

	As-Built	2005	2006	2007
Area	36.7	35.5	14.8	11.34
Width	29.9	29.6	22.7	18.7
Mean Depth	1.2	1.2	0.6	0.6
Max Depth	2.3	2.6	1.9	1.6



Project Name	Purlear Phase I
Cross Section	2 - Upper Main Reach 1
Feature	Riffle
Date	7/23/2007
Crew	Roberts, Price, Zink

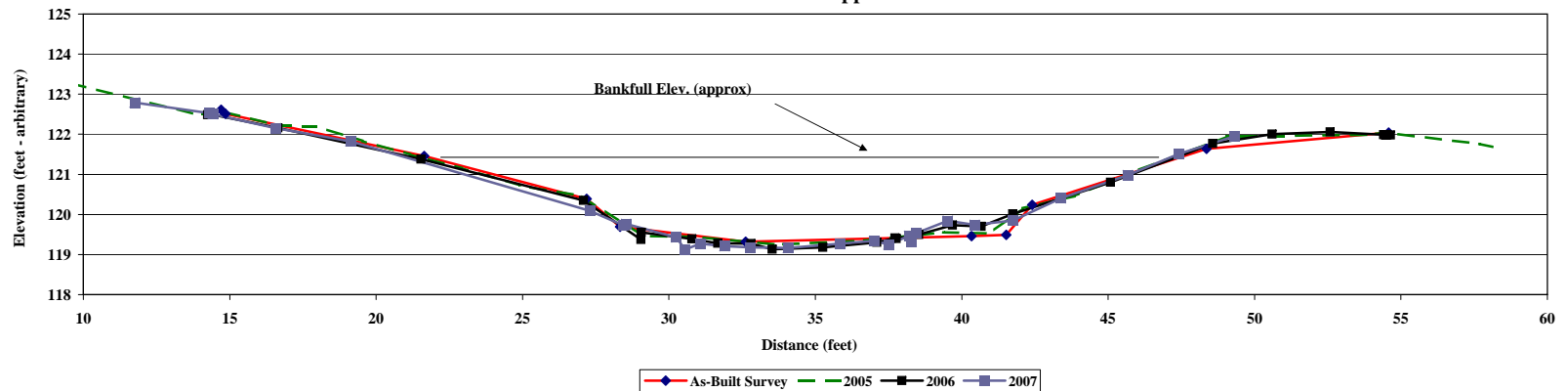
2004 As-Built Survey				2005 MY - 01			2006 MY - 02			2007 MY - 03				
Station	Elev.	Notes		Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
14.71	122.61	XPR		5.91	123.92	X2	491	14.25	122.49	R1X2LP	40443	11.75	122.79	R1X2
14.86	122.51	XSRPL		13.78	122.51	X2lp	395	14.39	122.5	R1X2LP	40438	14.31	122.53	R1X2LP07
21.64	121.46	XSR3		14.67	122.51	X2	463	14.42	122.5	R1X2LP	40004	14.42	122.5	R1X2LP
27.19	120.39	XSR3		14.86	122.55	X2LP	200	14.42	122.5	R1X2LP	40445	16.57	122.15	R1X2
28.33	119.69	XSR3		16.74	122.21	X2	486	14.43	122.49	R1X2LP	40449	19.12	121.82	R1X2
32.62	119.32	XSR3		17.94	122.2	2lp	462	16.65	122.16	R1X2	40456	27.3	120.09	R1X2
40.34	119.46	XSR3		19.54	121.83	X2B	461	21.53	121.38	R1X2	40459	28.43	119.73	R1X2
41.52	119.49	XSR3		21.16	121.5	X2	460	27.08	120.35	R1X2	40462	28.53	119.76	R1X2
42.41	120.24	XSR3		22.93	121.15	X2	392	29.05	119.37	R1X2W	40440	30.25	119.43	R1X2W
48.36	121.64	XSR3		24.92	120.72	X2	459	29.06	119.55	R1X2	40458	30.55	119.12	R1X2
54.58	122.04	XSR3		27.04	120.46	X2	458	30.79	119.39	R1X2W	40460	31.06	119.27	R1X2
				29.12	119.46	X2	457	31.67	119.28	R1X2	40463	31.9	119.21	R1X2
				30.77	119.44	X2	456	32.8	119.27	R1X2	40464	32.78	119.18	R1X2
				33.71	119.25	X2T	455	33.53	119.13	R1X2	40461	34.06	119.16	R1X2
				36.67	119.35	X2	454	35.26	119.18	R1X2	40457	35.85	119.27	R1X2
				39.37	119.55	X2	453	37.1	119.3	R1X2	40455	37.02	119.34	R1X2
				40.95	119.53	X2	452	37.72	119.41	R1X2W	40447	37.5	119.25	R1X2
				42.08	120.15	X2	393	37.76	119.4	R1X2W	40441	38.2	119.47	R1X2W
				43.86	120.46	X2	451	38.53	119.5	R1X2	40454	38.29	119.32	R1X2
				46.07	121.11	X2	450	39.68	119.73	R1X2	40300	38.46	119.54	W
				49.05	121.94	X2B	449	40.67	119.7	R1X2	40453	39.52	119.84	R1X2
				53.92	121.99	X2rp	448	41.74	120.01	R1X2	40452	40.44	119.74	R1X2
				54.29	122.03	X2	447	45.08	120.8	R1X2	40451	41.75	119.85	R1X2
				54.6	122.03	X2RP	446	48.57	121.77	R1X2	40450	43.39	120.4	R1X2
				57.68	121.76	X2	445	50.6	122	R1X2	40448	45.67	120.98	R1X2
				58.12	121.68	2rp	394	52.58	122.06	R1X2	40446	47.42	121.51	R1X2
							485	54.41	121.99	R1X2RP	40444	49.31	121.95	R1X2
							444	54.47	121.99	R1X2RP	40442	51.96	122.01	R1X2
							391	54.48	121.97	R1X2RP	40423	53.7	122.06	TOB
							490	54.53	121.98	R1X2RP	40439	54.43	122	R1X2RP07
							199	54.64	121.98	R1X2RP	40003	54.47	121.99	R1X2RP



Photo of Area 1 Cross-Section #2 - Looking Downstream

	As-Built	2005	2006	2007
Area	39.6	39.6	41.0	41.32
Width	26.7	26.4	31.4	28.3
Mean Depth	1.5	1.5	1.3	1.5
Max Depth	2.3	2.3	2.5	2.5
w/d ratio	18.1	17.6	24.1	19.4
FPW	53	53	53	53
ER (greater than)	2.0	2.0	1.7	1.9
Stream Type	C4	C4	C4	C4

Area 1 Cross-Section #2 - Riffle Station 5+25
Purlear Phase I - Upper Main



Project Name	Purlear Phase I
Cross Section	1 - Upper Middle Trib Reach 2
Feature	Riffle
Date	7/24/2007
Crew	Roberts, Price, Zink

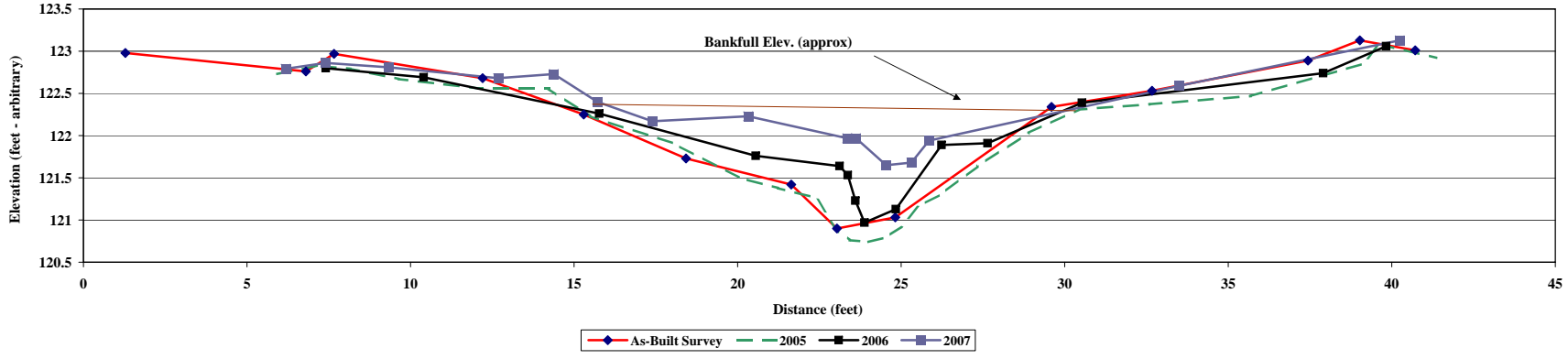
2004 As-Built Survey			2005 MY - 01			2006 MY - 02			2007 MY - 03				
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
1.28	122.98	X1	5.93	122.73	X1	65	7.41	122.8 (R1X1LP)		40616	6.18	122.79 (2007-R2X1)	
6.8	122.76	X1TPL	7.15	122.83	X1LP	63	10.4	122.69 (R1X1)		40615	7.4	122.86 (2007-R2X1LP07)	
7.66	122.97	X1	7.25	122.82	X1LP	61	15.77	122.26 (R1X1)		40618	9.34	122.81 (2007-R2X1)	
12.2	122.68	X1	7.36	122.82	x1lp	59	20.56	121.76 (R1X1)		40617	12.68	122.68 (2007-R2X1)	
15.3	122.25	XB	8.16	122.79	X1	64	23.12	121.64 (R1X1)		40620	14.38	122.73 (2007-R2X1)	
18.42	121.73	X1	9.64	122.67	X1	62	23.37	121.53 (R1X1W)		40619	15.72	122.4 (2007-R2X1)	
21.64	121.42	X1	12.08	122.56	X1	60	23.6	121.23 (R1X1)		40621	17.39	122.17 (2007-R2X1)	
23.04	120.9	XT	14.22	122.56	X1	58	23.88	120.97 (R1X1)		40622	20.32	122.23 (2007-R2X1)	
24.82	121.03	W	15.49	122.23	X1	57	24.84	121.13 (R1X1)		40623	23.35	121.97 (2007-R2X1)	
29.6	122.34	XB	18.1	121.9	X1	55	26.24	121.89 (R1X1)		40624	23.62	121.97 (2007-R2X1W)	
32.67	122.53	X1	20.05	121.5	X1	54	27.64	121.91 (R1X1)		40626	24.54	121.65 (2007-R2X1)	
37.44	122.89	X1	21.24	121.38	X1	53	30.53	122.39 (R1X1)		40627	25.31	121.68 (2007-R2X1)	
39.02	123.13	X1TPR	22.4	121.26	X1	52	37.9	122.74 (R1X1)		40625	25.85	121.94 (2007-R2X1W)	
40.72	123.01	X1	23	120.9	X1	51	39.83	123.06 (R1X1RP)		40629	33.5	122.59 (2007-R2X1)	
			23.43	120.76	X1					40630	40.24	123.13 (2007-R2X1RP07)	
			24	120.74	X1								
			24.52	120.79	X1								
			24.99	120.92	X1								
			25.54	121.16	X1								
			26.28	121.32	X1								
			27.34	121.64	X1								
			28.9	122.03	X1								
			30.44	122.31	X1								
			32.6	122.37	X1								
			35.69	122.47	X1								
			39.11	122.85	X1								
			39.6	123.07	X1rp								
			39.76	123.05	x1rp								
			39.79	123.07	X1RP								
			41.36	122.92	X1								



Photo of Area 2 Cross-Section #1 - Looking Downstream

	As-Built	2005	2006	2007
Area	11.9	12.4	8.6	3.23
Width	17.4	16.2	17.3	10.1
Mean Depth	0.7	0.8	0.5	0.3
Max Depth	1.5	1.7	1.4	0.8
w/d ratio	25.5	21.1	34.6	31.8
FPW	40	40	40	40
ER (greater than)	2.3	2.5	2.3	3.9
Stream Type	C4	C4	C4	C4

Area 2 Cross-Section #1 - Riffle Station 0+25
Purlear Phase I - Upper Middle Trib



Project Name	Purlear Phase I
Cross Section	2 - Upper Middle Trib Reach 2
Feature	Pool
Date	7/24/2007
Crew	Roberts, Price, Zink

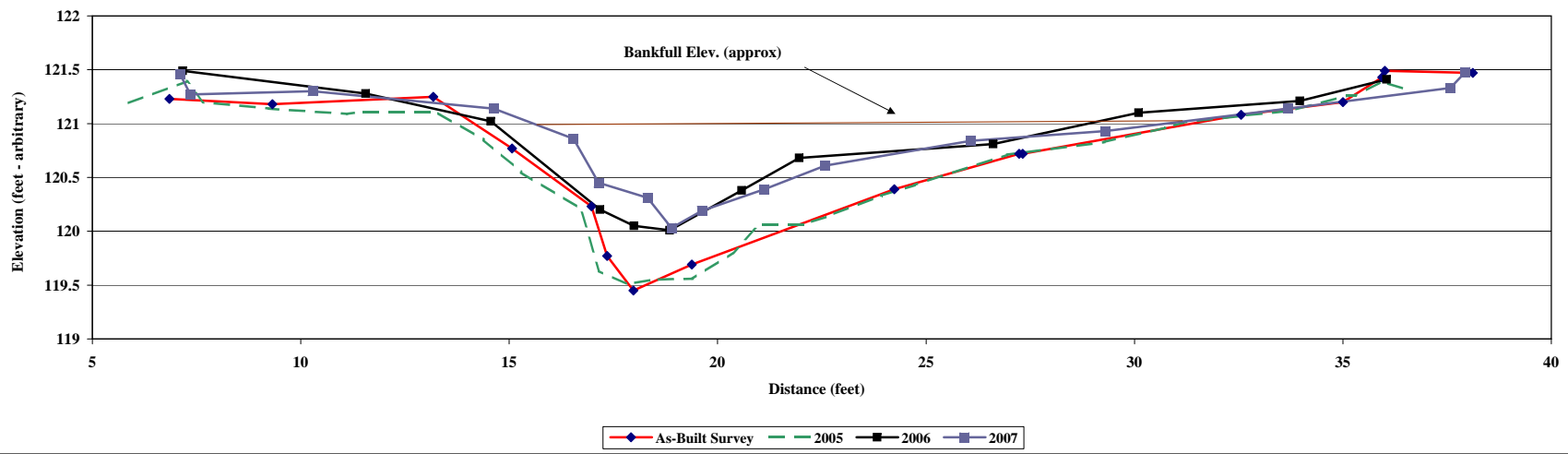
2004 As-Built Survey			2005 MY - 01			2006 MY - 02				2007 MY - 03			
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
6.85	121.23	X2TPL	5.88	121.19	X2	109	7.17	121.49 (R1X2LP)		40631	7.1	121.46 (2007-R2X2LP07)	
9.32	121.18	X2	7.26	121.39	X2LP	108	11.56	121.28 (R1X2)		40632	7.35	121.27 (2007-R2X2)	
13.18	121.25	X2	7.66	121.2	X2	106	14.56	121.02 (R1X2)		40633	10.28	121.3 (2007-R2X2)	
15.07	120.77	XB	9.24	121.14	X2	102	17.18	120.2 (R1X2)		40634	14.63	121.14 (2007-R2X2)	
16.97	120.23	X2	11.11	121.09	B	107	17.99	120.05 (R1X2)		40635	16.54	120.86 (2007-R2X2)	
17.35	119.77	X2	11.4	121.11	X2	105	18.85	120.01 (R1X2)		40636	17.14	120.45 (2007-R2X2)	
17.98	119.45	XT	13.25	121.11	X2	104	20.58	120.38 (R1X2)		40637	18.32	120.31 (2007-R2X2W)	
19.38	119.69	XW	14.39	120.85	X2	101	21.96	120.68 (R1X2)		40638	18.89	120.03 (2007-R2X2)	
24.24	120.39	X2	15.29	120.55	X2	100	26.61	120.81 (R1X2)		40639	19.62	120.19 (2007-R2X2)	
27.23	120.72	XB	16.71	120.21	X2	99	30.1	121.1 (R1X2)		40640	21.12	120.39 (2007-R2X2W)	
27.32	120.72	7	17.16	119.63	X2	97	33.97	121.21 (R1X2)		40641	22.58	120.61 (2007-R2X2)	
32.56	121.08	X2	17.82	119.51	X2	98	36.05	121.41 (R1X2RP)		40642	26.08	120.84 (2007-R2X2)	
35	121.2	X2	18.45	119.55	X2					40643	29.3	120.93 (2007-R2X2)	
35.94	121.43	X2RP	19.4	119.56	X2					40644	33.68	121.14 (2007-R2X2)	
36.01	121.49	X2RT	20.36	119.8	X2					40645	37.58	121.33 (2007-R2X2)	
38.12	121.47	X2	21.01	120.06	X2					40646	37.94	121.48 (2007-R2X2RP07)	
			22.04	120.06	X2								
			22.66	120.14	X2								
			23.93	120.33	X2								
			24.73	120.43	X2								
			26.95	120.71	X2								
			29.28	120.83	X2								
			30.74	120.96	X2								
			31.17	121.01	B								
			32.52	121.07	X2								
			33.74	121.12	X2								
			35.11	121.26	X2								
			35.31	121.26	X2								
			35.94	121.39	X2RP								
			36.57	121.31	X2								



Photo of Area 2 Cross-Section #2 - Looking Downstream

	As-Built	2005	2006	2007
Area	12.8	13.4	7.6	8.82
Width	19.4	19.3	18.5	15.5
Mean Depth	0.7	0.7	0.4	0.6
Max Depth	1.6	1.6	1.1	1.1

Area 2 Cross-Section #2 - Pool Station 1+15
Purlear Phase I - Upper Middle Trib



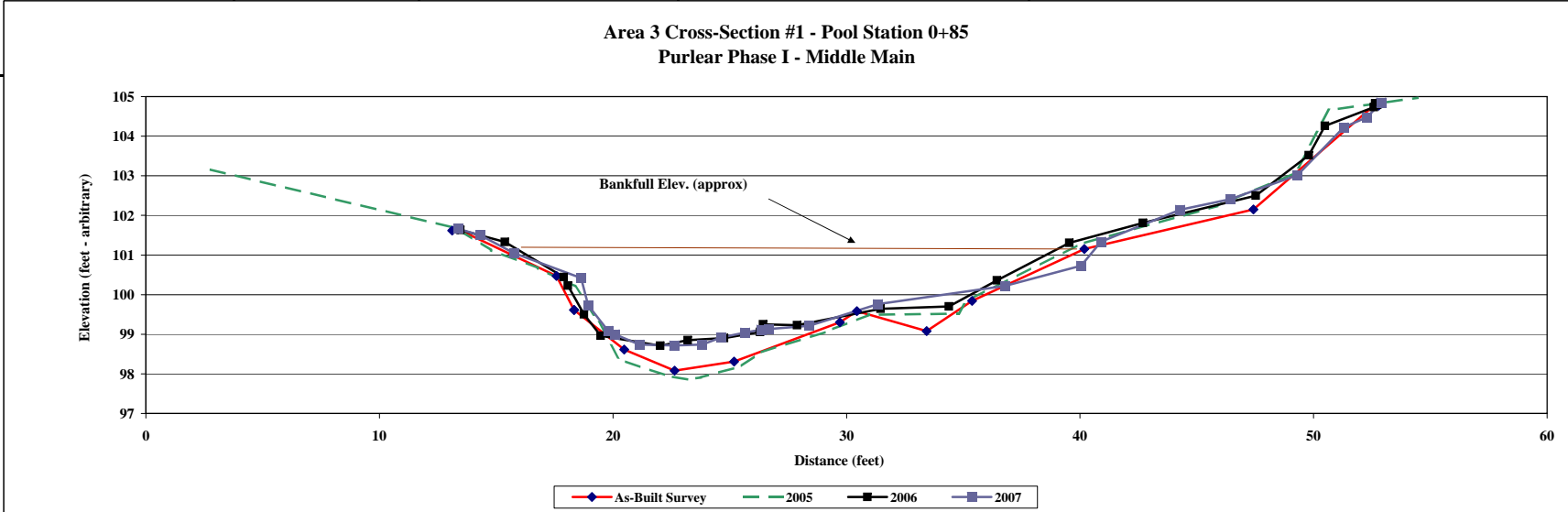
Project Name Purlear Phase I
Cross Section 1 - Middle Main Reach 3
Feature Pool
Date 7/23/2007
Crew Roberts, Price, Zink

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			2007 MY - 03				
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
13.12	101.62	X2P	2.79	103.16	fl	630	13.42	101.65	(R3X2LP)	41015	13.37	101.66	(2007-R3XS1LP07)
13.37	101.65	X2PLP	13.37	101.66	x2lp	707	13.47	101.63	(R3X1LP)	41041	14.32	101.5	(2007-R3XS1)
17.58	100.47	X2P	14.78	101.12	bf	709	15.37	101.33	(R3X1)	41040	15.76	101.05	(2007-R3XS1)
18.33	99.61	X2P	16.79	100.67	x2	711	17.9	100.44	(R3X1)	41039	18.63	100.42	(2007-R3XS1)
18.34	99.61	X2P	18.36	100.21	x2	712	18.07	100.23	(R3X1)	41038	18.94	99.73	(2007-R3XS1W)
20.48	98.61	X2P	19.3	99.39	x2	714	18.76	99.5	(R3X1)	41037	19.79	99.09	(2007-R3XS1W)
22.64	98.08	X2P	20.27	98.37	x2	710	19.48	98.96	(R3X1W)	41036	20.08	99	(2007-R3XS1)
25.19	98.31	X2P	22.33	97.95	x2	713	22.03	98.71	(R3X1)	41035	21.13	98.74	(2007-R3XS1)
29.72	99.3	X2P	23.19	97.86	m	715	23.2	98.85	(R3X1)	41034	22.62	98.72	(2007-R3XS1)
30.44	99.58	WS	23.77	97.91	x2	716	24.76	98.9	(R3X1)	41033	23.82	98.74	(2007-R3XS1)
33.43	99.08	X2P	25.49	98.19	x2	717	26.31	99.06	(R3X1W)	41032	24.62	98.92	(2007-R3XS1)
35.38	99.84	X2P	26.28	98.53	x2	719	26.43	99.25	(R3X1)	41031	25.66	99.04	(2007-R3XS1)
40.19	101.15	X2P	29.21	99.08	x2	718	27.88	99.23	(R3X1)	41030	26.36	99.12	(2007-R3XS1W)
47.43	102.15	X2P	30.95	99.49	x2	720	31.46	99.64	(R3X1)	41029	26.68	99.13	(2007-R3XS1)
52.7	104.83	X2PRP	34.79	99.52	x2	721	34.38	99.7	(R3X1)	41028	28.4	99.21	(2007-R3XS1)
52.79	104.77	X2P	35.13	99.83	x2	722	36.45	100.36	(R3X1)	41027	31.35	99.76	(2007-R3XS1)
			39.94	101.26	x2	723	39.55	101.31	(R3X1)	41026	36.78	100.22	(2007-R3XS1)
			45.88	102.24	x2	725	42.7	101.81	(R3X1)	41025	40.04	100.73	(2007-R3XS1)
			49.19	103.07	x2	724	47.53	102.5	(R3X1)	41024	40.9	101.34	(2007-R3XS1)
			50.66	104.66	x2	726	49.8	103.52	(R3X1)	41023	44.29	102.14	(2007-R3XS1)
			52.49	104.81	x2rp	727	50.49	104.26	(R3X1)	41021	46.43	102.41	(2007-R3XS1)
			54.45	104.97	fl	728	52.58	104.73	(R3X1)	41020	49.31	103.02	(2007-R3XS1)
						629	52.64	104.82	(R3X2RP)	41019	51.29	104.22	(2007-R3XS1)
						729	52.65	104.83	(R3X1RP)	41018	52.3	104.48	(2007-R3XS1)
						708	52.73	104.79	(R3X1RP)	41016	52.9	104.85	(2007-R3XS1RP07)



Photo of Area 3 Cross-Section #1 - Looking Downstream

	As-Built	2005	2006	2007
Area	43.7	44.8	37.0	36.90
Width	22.6	26.2	24.2	25.1
Mean Depth	1.9	1.7	1.5	1.5
Max Depth	3.1	3.3	2.5	2.5



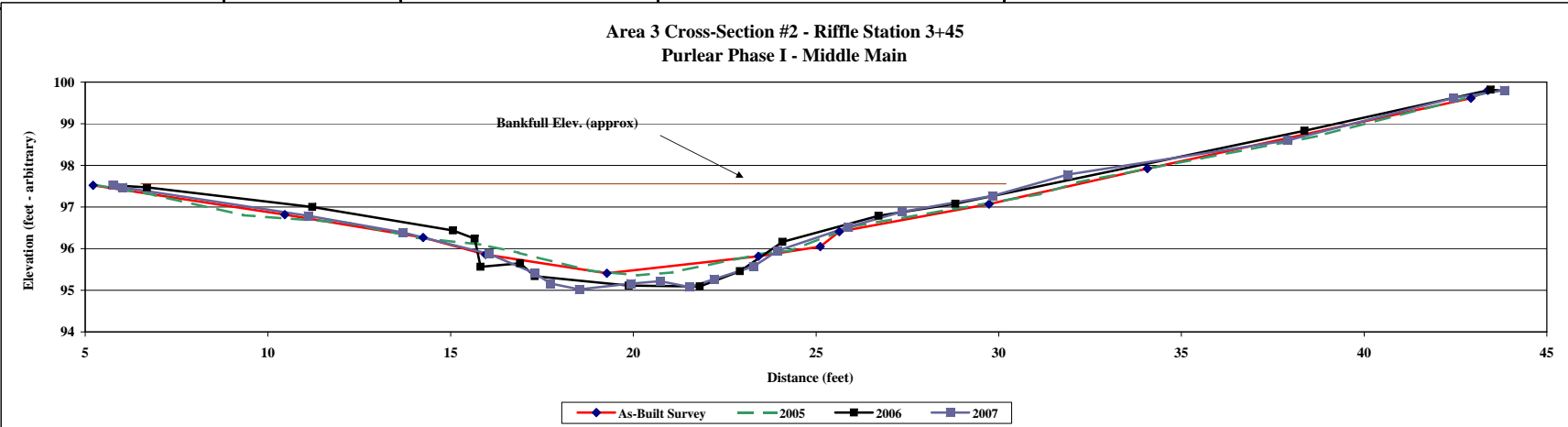
Project Name Purlear Phase I
Cross Section 2 - Middle Main Reach 3
Feature Riffle
Date 7/23/2007
Crew Roberts, Price, Zink

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			2007 MY - 03				
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
5.22	97.52	X1L	5.22	97.54	x1rp	791	5.75	97.52 (R3X2LP)		40012	5.76	97.52 R3X2LP	
10.46	96.82	X1	6.89	97.29	x1	632	5.76	97.52 (R3X2LP06)		40954	6.02	97.47 R3XS2LP07	
14.25	96.27	X1	9.33	96.8	x1	794	6.69	97.47 (R3X2)		40957	11.1	96.79 R3XS2	
15.96	95.86	X1LEW	12.24	96.61	x1	796	11.22	97 (R3X2)		40958	13.7	96.39 R3XS2	
19.28	95.41	X1	14.08	96.26	x1	798	15.07	96.44 (R3X2)		40959	16.05	95.87 R3XS2	
23.42	95.82	X1REW	15.82	96.1	x1	800	15.66	96.24 (R3X2)		40960	17.3	95.41 R3XS2W	
25.12	96.05	X1	16.86	95.9	x1	802	15.82	95.56 (R3X2)		40982	17.74	95.16 R3X2	
25.64	96.41	X1	18.8	95.47	x1	805	16.9	95.65 (R3X2)		40985	18.52	95.02 R3XS2	
29.74	97.07	X1	20.13	95.36	x1	793	17.3	95.34 (R3X2W)		40988	19.94	95.16 R3XS2	
34.07	97.92	X1	21.07	95.43	x1	797	19.88	95.11 (R3X2)		40989	20.74	95.22 R3XS2	
42.92	99.61	X1	23.48	95.87	x1	801	21.82	95.09 (R3X2)		40990	21.54	95.08 R3XS2	
43.39	99.8	X1R	24.33	95.96	x1	803	22.92	95.46 (R3X2W)		40991	22.21	95.27 R3XS2	
			25.99	96.53	x1	804	24.08	96.16 (R3X2)		40993	23.29	95.57 R3XS2W	
			31.13	97.31	x1	806	26.71	96.79 (R3X2)		40994	23.95	95.95 R3XS2	
			32.16	97.59	x1	807	28.81	97.08 (R3X2)		40998	25.89	96.52 R3XS2	
			38.87	98.73	x1	799	38.37	98.83 (R3X2)		40999	27.36	96.89 R3XS2	
			43.55	99.79	x1rp	795	43.46	99.82 (R3X2RP)		41000	29.83	97.27 R3XS2	
						631	43.85	99.79 (R3X2RP06)		41002	31.9	97.78 R3XS2	
										41003	37.9	98.6 R3XS2	
										41006	42.45	99.62 R3XS2	
										41010	43.84	99.8 R3XS2RP07	
										40011	43.85	99.79 R3X2RP	
										41007	43.99	100.02 R3XS2	



Photo of Area 3 Cross-Section #2 - Looking Downstream

	As-Built	2005	2006	2007
Area	28.3	28.1	27.2	29.41
Width	24.5	24.2	25.1	24.1
Mean Depth	1.2	1.2	1.1	1.2
Max Depth	2.1	2.1	2.4	2.5
w/d ratio	21.3	20.9	23.0	19.7
FPW	60	60	60	60
ER (greater than)	2.4	2.5	2.4	2.5
Stream Type	C4	C4	C4	C4



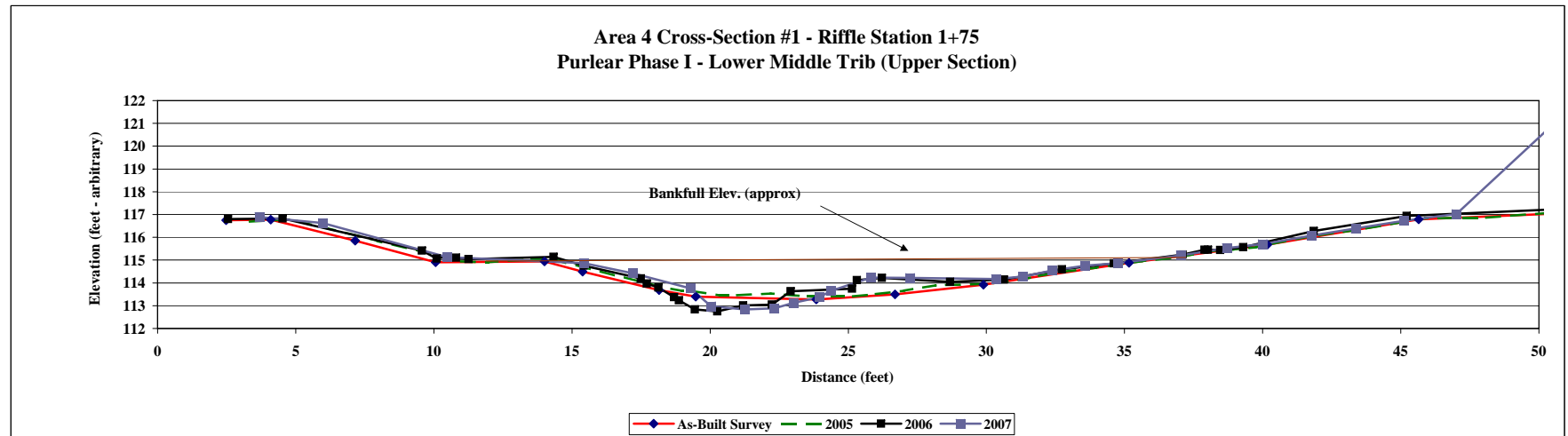
Project Name	Purlear Phase I
Cross Section	1 - Lower Middle Trib (Upper Section) Reach 4
Feature	Riffle
Date	7/25/2006
Crew	Roberts, Price, Zink

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			2007 MY - 03				
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
2.48	116.75	X1	3.34	116.69	x1	1036	2.55	116.8 (x1r4)	41336	3.68	116.89 (2007-R4XS1)		
4.1	116.78	X1	4.85	116.79	x1	1037	4.53	116.82 (x1r4)	41337	5.98	116.63 (2007-R4XS1)		
7.15	115.85	X1	7.96	115.84	x1	1038	9.57	115.42 (x1r4)	41339	10.49	115.13 (2007-R4XS1LP07)		
10.06	114.9	X1	10.49	115.1	x1lp	1039	10.1	115.07 (x1r4)	41344	15.43	114.87 (2007-R4XS1)		
14	114.94	X1B	10.72	114.95	x1	1127	10.49	115.16 (r4x1lp)	41347	17.21	114.42 (2007-R4XS1)		
15.38	114.49	X1	11.97	114.9	x1	1040	10.49	115.15 (x1r4lp)	41349	19.29	113.76 (2007-R4XS1W)		
18.15	113.68	X1EW	13.34	115.02	x1	1199	10.8	115.1 (r4x1lp)	41351	20.03	112.97 (2007-R4XS1)		
19.48	113.4	X1	14.22	115.11	x1	1041	11.26	115.04 (x1r4)	41353	21.26	112.83 (2007-R4XS1)		
23.84	113.27	X1	14.65	114.93	bf	1042	14.33	115.14 (x1r4)	41355	22.33	112.89 (2007-R4XS1)		
26.69	113.5	X1EW	18.05	113.87	x1	1043	15.43	114.75 (x1r4)	41357	23.01	113.12 (2007-R4XS1)		
29.89	113.92	X1	18.98	113.65	x1	1044	17.49	114.19 (x1r4)	41359	23.96	113.37 (2007-R4XS1)		
35.16	114.88	X1	19.29	113.66	w	1045	17.71	113.97 (x1r4)	41361	24.37	113.64 (2007-R4XS1W)		
40.17	115.68	X1RP	20.35	113.45	x1	1046	18.13	113.79 (x1r4)	41363	25.82	114.23 (2007-R4XS1)		
45.65	116.79	X1	20.83	113.45	x1	1047	18.7	113.37 (x1r4)	41364	27.24	114.22 (2007-R4XS1)		
50.51	117.04	X1	22.2	113.53	x1	1048	18.87	113.24 (x1r4)	41366	30.35	114.17 (2007-R4XS1)		
			23.43	113.41	x1	1049	19.45	112.84 (x1r4)	41365	31.33	114.28 (2007-R4XS1)		
			24.42	113.41	x1	1050	20.26	112.75 (x1r4)	41362	32.38	114.54 (2007-R4XS1)		
			25.14	113.41	x1	1051	21.2	113.01 (x1r4)	41360	33.57	114.75 (2007-R4XS1)		
			25.96	113.51	x1	1052	22.24	113.05 (x1r4)	41358	34.77	114.87 (2007-R4XS1)		
			27.03	113.66	x1	1053	22.92	113.63 (x1r4)	41356	37.03	115.2 (2007-R4XS1)		
			28.16	113.89	x1	1054	25.14	113.75 (x1r4)	41354	38.7	115.53 (2007-R4XS1RP07)		
			30.04	113.96	x1	1055	25.31	114.12 (x1r4)	41352	40	115.7 (2007-R4XS1)		
			31.19	114.12	x1	1056	26.22	114.22 (x1r4)	41350	41.78	116.08 (2007-R4XS1)		
			31.8	114.28	bf	1057	28.69	114.04 (x1r4)	41348	43.36	116.39 (2007-R4XS1)		
			32.59	114.46	x1	1058	30.63	114.15 (x1r4)	41346	45.11	116.73 (2007-R4XS1)		
			33.97	114.67	x1	1059	32.73	114.59 (x1r4)	41345	47.02	117.03 (2007-R4XS1)		
			35.63	114.96	x1	1060	34.62	114.85 (x1r4)	41340	50.43	120.87 (2007-R4XS1)		
			37.06	115.14	x1	1061	37.11	115.24 (x1r4)					
			38.11	115.39	x1rp	1087	37.9	115.45 (x1r4rp)					
			38.94	115.47	x1	1128	38.02	115.46 (r4x1rp)					
			39.77	115.57	x1	1200	38.46	115.44 (r4x1rp)					
			41.63	116.03	x1	1062	39.3	115.56 (x1r4)					
						1063	41.85	116.28 (x1r4)					
						1064	45.21	116.94 (x1r4)					
						1065	50.52	117.22 (x1r4)					



Photo of Area 4 Cross-Section #1 - Looking Downstream

	As-Built	2005	2006	2007
Area	21.8	19.1	18.8	17.49
Width	25.1	25.1	22.3	19.3
Mean Depth	0.9	0.8	0.8	0.9
Max Depth	1.6	1.5	2.2	2.1
w/d ratio	28.9	32.9	26.5	21.4
FPW	50	50	50	50
ER (greater than)	2.0	2.0	2.2	2.6
Stream Type	C4	C4	C4	C4



Project Name	Purlear Phase I
Cross Section	2 - Lower Middle Trib (Upper Section) Reach 4
Feature	Pool
Date	7/25/2007
Crew	Roberts, Price, Zink

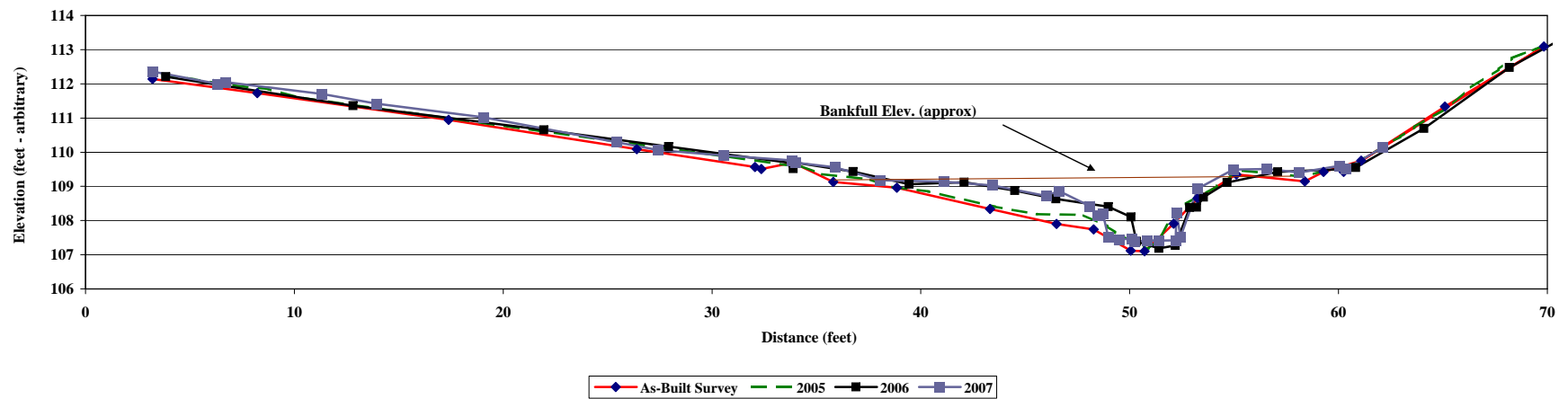
2004 As-Built Survey			2005 MY - 01			2006 MY - 02			2007 MY - 03				
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
3.21	112.14	X2	3.7	112.27	x2	1106	3.85	112.21 (x2)		41276	3.2	112.36	R4XS2
8.23	111.73	X2	5.21	112.13	x2	1107	12.81	111.36 (x2)		41278	6.34	112	R4XS2
17.39	110.95	X2	6.85	111.97	x2	1108	21.94	110.65 (x2)		41280	6.72	112.05	R4XS2
26.4	110.09	X2	8.77	111.85	x2	1109	27.93	110.16 (x2)		41282	11.33	111.7	R4XS2
32.06	109.57	VP	10.13	111.61	x2	1035	33.88	109.68 (R4x2LP)		41283	13.95	111.42	R4XS2
32.36	109.51	X2	33.72	109.61	lp	1110	33.89	109.52 (x2)		41284	19.04	111.02	R4XS2
33.88	109.69	X2LP	33.88	109.68	x2lp	1091	33.98	109.68 (x2lp)		41295	25.44	110.29	R4XS2
35.81	109.13	X2	35.27	109.36	x2	1102	34.01	109.69 (r4x2lp)		41293	27.41	110.06	R4XS2
38.85	108.96	X2	37.48	109.21	bf	1111	36.75	109.43 (x2)		41289	30.56	109.9	R4XS2
43.32	108.34	X2	38.6	108.99	x2	1112	39.44	109.06 (x2)		41288	33.84	109.76	R4XS2LP07
46.49	107.9	X2EW	40.37	108.85	x2	1113	42.08	109.12 (x2)		40016	34.01	109.69	R4X2LP
48.28	107.74	X2	43.55	108.41	x2	1114	44.5	108.88 (x2)		41297	35.89	109.56	R4XS2
50.05	107.12	T	45.56	108.19	x2	1115	46.47	108.63 (x2)		41298	38.07	109.18	R4XS2
50.71	107.1	X2	47.76	108.16	x2	1116	48.98	108.41 (x2w)		41299	41.08	109.14	R4XS2
52.1	107.91	X2EW	48.93	107.83	x2	1117	50.06	108.1 (x2)		41302	43.43	109.03	R4XS2
53.25	108.65	X2	49.31	107.66	x2	1118	50.33	107.39 (x2)		41303	46.03	108.72	R4XS2
55.11	109.35	X2BF	49.91	107.44	x2	1119	51.4	107.19 (x2)		41307	46.6	108.87	R4XS2
58.38	109.15	X2	50.42	107.25	x2	1120	52.19	107.27 (x2)		41306	46.63	108.86	R4XS2
59.28	109.42	X2RP	50.91	107.18	x2	1121	52.88	108.38 (x2w)		41308	48.1	108.42	R4XS2
61.08	109.75	X2	51.38	107.43	x2	1105	53.21	108.39 (x2)		41310	48.47	108.14	R4XS2W
65.1	111.33	X2	51.81	107.87	x2	1122	53.54	108.68 (x2)		41309	48.72	108.2	R4XS2
69.83	113.09	X2	52.07	107.87	x2	1104	54.67	109.11 (x2)		41311	48.97	107.51	R4XS2
60.24	109.42	X2	52.46	108.36	x2	1103	57.09	109.42 (x2)		41312	49.48	107.45	R4XS2
			52.7	108.49	x2	1101	60.36	109.51 (r4x2rp)		41305	50.12	107.47	R4XS2
			54.19	109.01	x2	1123	60.82	109.55 (x2)		41208	50.23	107.38	T
			54.82	109.28	x2	1124	64.09	110.69 (x2)		41304	50.84	107.42	R4XS2
			55.09	109.38	bf	1126	68.18	112.48 (x2)		41313	51.4	107.41	R4XS2
			55.4	109.46	x2	1125	70.91	113.39 (x2)		41301	52.2	107.42	R4XS2
			57.01	109.37	x2					41296	52.24	108.24	R4XS2W
			58.28	109.28	x2					41300	52.44	107.52	R4XS2
			59.96	109.55	x2rp					41294	53.26	108.94	R4XS2
			59.96	109.58	rp					41292	54.96	109.49	R4XS2
										41291	56.56	109.51	R4XS2
										41290	58.13	109.41	R4XS2



Photo of Area 4 Cross-Section #2 - Looking Downstream

	As-Built	2005	2006	2007
Area	21.5	18.1	13.9	13.16
Width	22.6	21.2	20.3	19.3
Mean Depth	1.0	0.9	0.7	0.7
Max Depth	2.3	2.2	2.2	2.0

Area 4 Cross-Section #2 - Pool Station 5+45
Purlear Phase I - Lower Middle Trib (Upper Section)



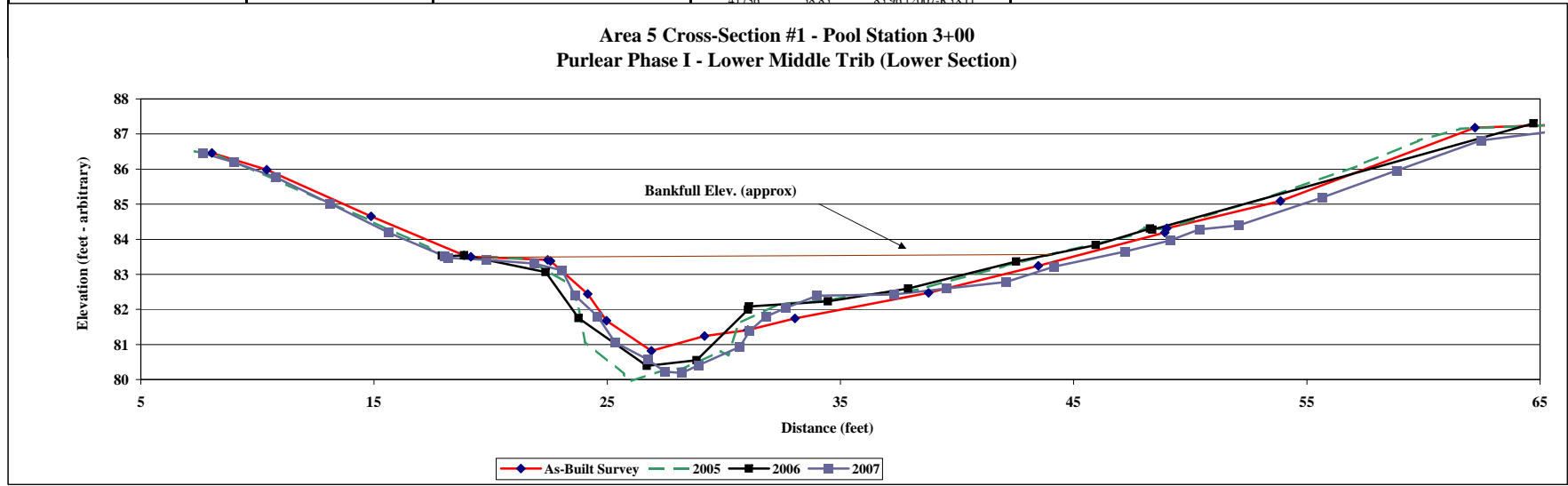
Project Name	Purlear Phase I
Cross Section	1 -Lower Middle Trib (Lower Section) Reach 5
Feature	Pool
Date	7/25/2007
Crew	Roberts, Price, Zink

2004 As-Built Survey			2005 MY - 01			2006 MY - 02			2007 MY - 03				
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
8.05	86.46	X1	7.32	86.51	x1	2028	17.91	83.53 (x1p)		41705	7.67	86.45 (2007-R5X1)	
10.4	85.98	X1	8.35	86.39	x1	2828	18.02	83.5 (r5x1p)		41706	9.01	86.19 (2007-R5X1)	
14.88	84.65	X1	11.25	85.56	x1	3097	18.02	83.51 (r5x1p)		41707	10.77	85.77 (2007-R5X1)	
18.86	83.54	X1LP	14.78	84.55	x1	2067	18.86	83.54 (X1LP)		41708	13.12	85.02 (2007-R5X1)	
19.15	83.5	X1	17.32	83.77	x1	2827	22.36	83.06 (r5x1)		41709	15.62	84.19 (2007-R5X1)	
22.45	83.41	X1	17.91	83.53	x1p	2826	23.77	81.75 (r5x1)		41711	18.02	83.52 (2007-R5X1LP07)	
22.57	83.38	X1B	17.99	83.53	lp	2825	26.7	80.39 (r5x1)		41710	18.17	83.47 (2007-R5X1)	
24.16	82.44	X1	18.71	83.55	x1	2824	28.83	80.55 (r5x1)		41712	19.82	83.41 (2007-R5X1)	
24.97	81.68	X1EW	21.61	83.44	x1	2823	31.04	81.99 (r5x1w)		41713	21.86	83.31 (2007-R5X1)	
26.89	80.82	X1	23.35	82.72	x1	2822	31.07	82.08 (r5x1)		41714	23.07	83.11 (2007-R5X1)	
29.17	81.24	X1	23.71	82.21	x1	2821	34.46	82.23 (r5x1)		41715	23.61	82.4 (2007-R5X1)	
31.03	81.41	X1	24.05	81.09	x1	2820	37.9	82.59 (r5x1)		41717	24.59	81.8 (2007-R5X1W)	
33.05	81.74	X1EW	25.72	80.15	x1	2819	42.53	83.36 (r5x1)		41716	25.33	81.06 (2007-R5X1)	
38.78	82.47	X1	26.04	79.96	t	2818	45.95	83.83 (r5x1)		41718	26.75	80.57 (2007-R5X1)	
43.49	83.24	X1	27.48	80.28	x1	2029	48.27	84.3 (x1p)		41719	27.47	80.23 (2007-R5X1)	
48.91	84.19	X1	28.34	80.33	x1	2816	48.37	84.27 (r5x1rp)		41720	28.2	80.19 (2007-R5X1)	
48.99	84.31	X1	29.87	80.81	x1	2817	64.72	87.3 (r5x1)		41721	28.93	80.41 (2007-R5X1)	
53.87	85.09	X1	30.19	80.89	x1					41722	30.68	80.93 (2007-R5X1)	
62.21	87.18	X1	30.63	81.6	x1					41723	31.1	81.38 (2007-R5X1)	
66.44	87.28	X1	32.32	82.15	x1					41724	31.8	81.79 (2007-R5X1W)	
			34.54	82.25	x1					41725	32.66	82.04 (2007-R5X1)	
			35.17	82.36	x1					41726	34	82.39 (2007-R5X1)	
			38.32	82.56	x1					41727	37.29	82.42 (2007-R5X1)	
			42.02	83.23	x1					41728	39.54	82.59 (2007-R5X1)	
			44.13	83.58	x1					41729	42.1	82.78 (2007-R5X1)	
			47.61	84.13	x1					41730	44.16	83.22 (2007-R5X1)	
			48.04	84.34	rp					41731	47.19	83.65 (2007-R5X1)	
			48.27	84.3	x1p					41732	49.13	83.96 (2007-R5X1)	
			48.92	84.29	x1					41733	50.39	84.28 (2007-R5X1RP07)	
			51.14	84.77	x1					41734	52.07	84.39 (2007-R5X1)	
			53.38	85.2	x1					41735	55.65	85.19 (2007-R5X1)	
										41736	58.85	85.96 (2007-R5X1)	



Photo of Area 5 Cross-Section #1 - Looking Downstream

	As-Built	2005	2006	2007
Area	26.8	29.4	27.4	29.30
Width	21.4	21.4	23.7	22.3
Mean Depth	1.3	1.4	1.2	1.3
Max Depth	2.5	3.3	2.9	3.1



Project Name	Purlear Phase I
Cross Section	2 -Lower Middle Trib (Lower Section) Reach 5
Feature	Riffle
Date	7/25/2007
Crew	Roberts, Price, Zink

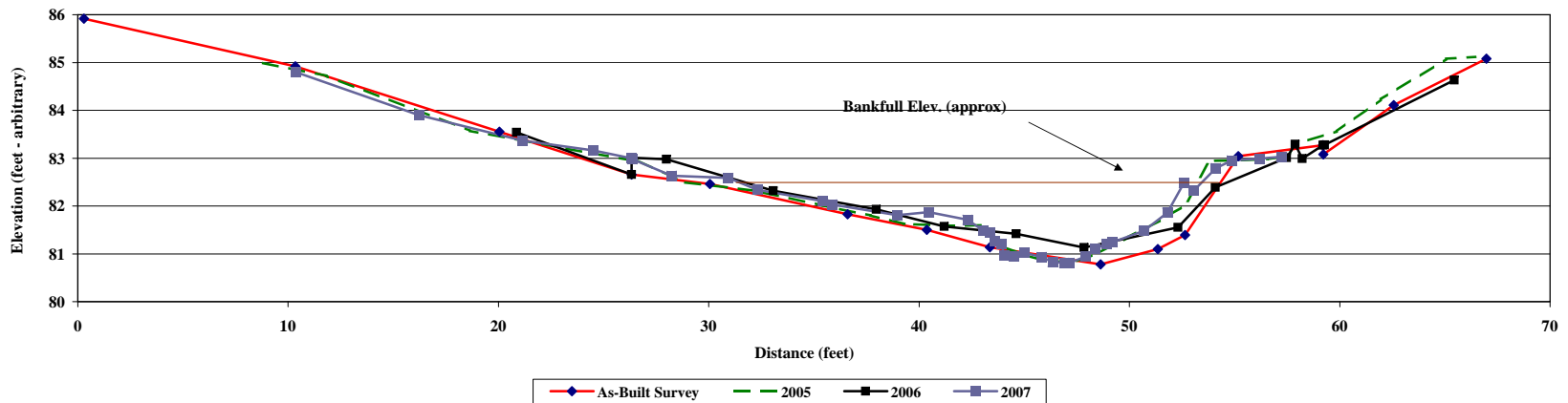
2004 As-Built Survey			2005 MY - 01			2006 MY - 02				2007 MY - 03			
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
0.29	85.92	X2	8.82	84.99	x2	2830	20.86	83.54 (r5x2)		41640	10.37	84.8 R5X2	
10.35	84.92	X2	11.83	84.72	x2	2069	26.33	82.66 (X2LP)		41641	16.24	83.9 R5X2	
20.04	83.55	X2	18.65	83.57	x2	2026	26.33	83.01 (x2lp)		41642	21.15	83.37 R5X2	
26.33	82.66	X2LP	22.97	83.22	x2	2829	27.99	82.98 (r5x2lp)		41643	24.5	83.16 R5X2	
30.06	82.46	X2	26.32	82.95	x2	2831	33.07	82.32 (r5x2)		41644	26.33	83 R5X2LP07	
36.6	81.83	X2	26.33	83.01	x2lp	2832	37.97	81.93 (r5x2)		40020	26.37	82.98 R5X2LP	
40.37	81.5	X2T	28.8	82.5	x2	2833	41.2	81.57 (r5x2)		41646	28.24	82.63 R5X2	
43.37	81.14	X2EW	32.19	82.32	x2	2834	44.61	81.42 (r5x2w)		41647	30.92	82.59 R5X2	
48.63	80.78	X2	35.39	82.01	x2	2835	47.85	81.13 (r5x2)		41648	32.31	82.34 R5X2	
51.35	81.1	X2EW	37.71	81.8	x2	2838	52.31	81.55 (r5x2w)		41649	35.41	82.1 R5X2	
52.65	81.39	X2	39.3	81.62	x2	2836	54.09	82.39 (r5x2)		41650	35.86	82.03 R5X2	
55.18	83.04	X2B	41.39	81.59	x2	2837	57.47	83.01 (r5x2)		41651	38.97	81.81 R5X2	
59.21	83.27	X2RP	42.98	81.6	x2	2027	57.88	83.29 (x2rp)		41652	40.45	81.87 R5X2	
59.22	83.08	X2	43.91	81.16	x2	2839	58.22	82.99 (r5x2)		41653	42.3	81.71 R5X2	
62.57	84.11	X2	45	80.98	x2	2068	59.21	83.27 (X2RP)		41654	43.05	81.49 R5X2	
66.98	85.08	X2	45.89	80.86	x2	2840	59.28	83.28 (r5x2rp)		41655	43.36	81.45 R5X2	
			47.3	80.82	x2	2841	65.44	84.63 (r5x2)		41656	43.6	81.26 R5X2	
			48.5	81.01	x2					41657	43.9	81.2 R5X2W	
			49.93	81.34	x2					41658	44.07	80.97 R5X2	
			51.54	81.72	x2					41659	44.5	80.95 R5X2	
			52.65	82.02	x2					41660	45.01	81.02 R5X2	
			53.81	82.94	x2					41661	45.83	80.93 R5X2	
			56.56	82.98	x2					41662	46.35	80.83 R5X2	
			57.54	83.05	x2					41663	46.9	80.81 R5X2	
			57.88	83.29	x2rp					41664	47.15	80.81 R5X2	
			59.86	83.56	x2					41665	47.91	80.94 R5X2	
			61.96	84.23	x2					41666	48.39	81.11 R5X2	
			65.07	85.08	x2					41667	48.9	81.2 R5X2W	
			66.45	85.12	x2					41668	49.18	81.24 R5X2	
										41669	50.69	81.48 R5X2	
										41670	51.8	81.86 R5X2	
										41671	52.59	82.48 R5X2	
										41676	53.05	82.32 R5X2	
										41675	54.11	82.79 R5X2	
										41674	54.87	82.95 R5X2	



Photo of Area 5 Cross-Section #2 - Looking Downstream

	As-Built	2005	2006	2007
Area	23.1	19.8	17.9	17.60
Width	26.3	25.0	23.5	20.9
Mean Depth	0.9	0.8	0.8	0.8
Max Depth	1.7	1.7	1.4	1.7
w/d ratio	30.0	31.7	30.9	24.8
FPW	60	60	60	60
ER (greater than)	2.3	2.4	2.6	2.9
Stream Type	C4	C4	C4	C4

Area 5 Cross-Section #2 - Riffle Station 3+85
Purlear Phase I - Lower Middle Trib (Lower Section)



Project Name	Purlear Phase I
Cross Section	1 - Lower Main Reach 6
Feature	Pool
Date	8/2/2007
Crew	Roberts, Price, Zink

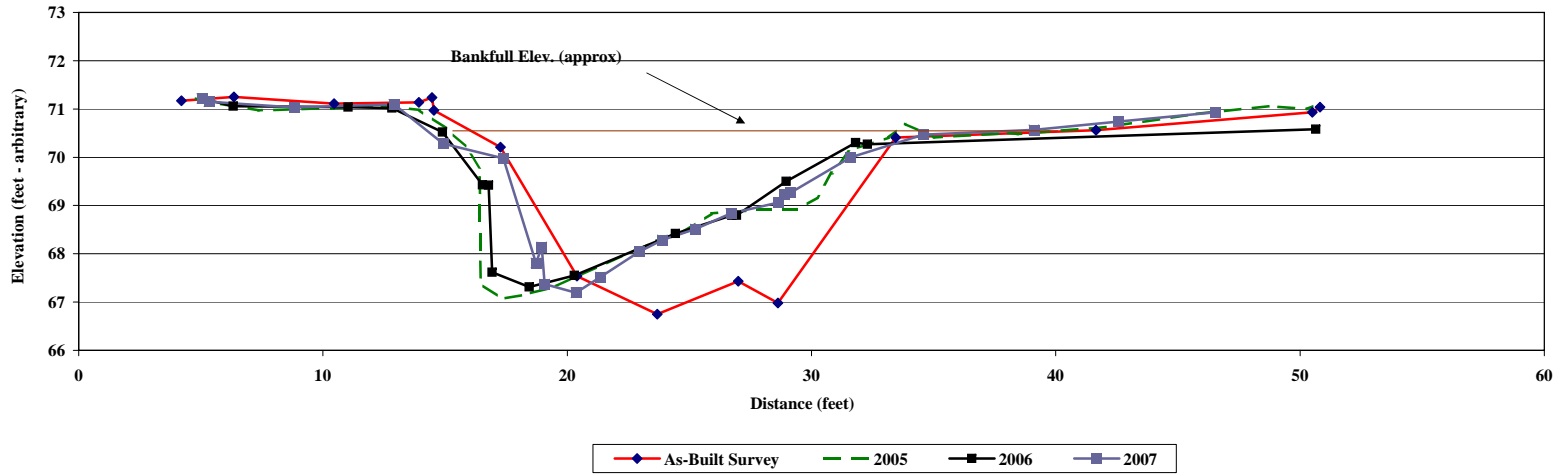
2004 As-Built Survey			2005 MY - 01			2006 MY - 02			2007 MY - 03				
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
4.21	71.17	X1	4.81	71.22	xlp	2666	5.05	71.22 (r6x1lp)		40022	5.05	71.22 R6X1LP	
6.35	71.25	X2LP	5.32	71.15	x	2671	6.33	71.06 (r6x1)		41814	5.33	71.15 R6X1	
10.45	71.11	X1	7.36	70.97	x	2672	11.03	71.04 (r6x1)		41813	8.84	71.03 R6X1	
13.92	71.14	X1	10.42	71.02	x	2674	12.83	71.02 (r6x1)		41812	12.91	71.1 R6X1	
14.46	71.24	B	12.27	71.08	x	2677	14.89	70.52 (r6x1)		41811	14.92	70.28 R6X1	
14.54	70.97	X1	13.96	70.98	x	2683	16.53	69.43 (r6x1w)		41810	17.38	69.98 R6X1	
17.27	70.21	X1	15.04	70.6	x	2680	16.78	69.42 (r6x1)		41807	18.72	67.81 R6X1	
20.4	67.54	X1	15.83	70.23	x	2681	16.93	67.62 (r6x1)		41808	18.96	68.14 R6X1	
23.69	66.75	X1	16.42	69.79	x	2682	18.44	67.31 (r6x1)		41806	19.07	67.37 R6X1	
27	67.43	X1	16.45	67.38	x	2676	20.29	67.55 (r6x1)		41805	20.36	67.19 R6X1	
28.63	66.98	X1	17.35	67.07	x	2673	24.43	68.42 (r6x1)		41804	21.35	67.52 R6X1	
33.44	70.41	X1	18.32	67.16	x	2670	26.74	68.8 (r6x1)		41803	22.96	68.05 R6X1	
41.64	70.56	X1	19.5	67.32	x	2669	26.93	68.8 (r6x1)		41802	23.9	68.29 R6X1	
50.5	70.93	X1RP	23.5	68.24	x	2667	28.97	69.5 (r6x1w)		41801	25.24	68.51 R6X1	
50.82	71.04	X1	24.77	68.46	x	2665	31.81	70.3 (r6x1)		41800	26.7	68.84 R6X1	
			25.91	68.84	x	2668	32.29	70.27 (r6x1)		41799	28.65	69.06 R6X1	
			27.79	68.91	x	2662	50.64	70.58 (r6x1rp)		41797	28.9	69.22 R6X1	
			29.4	68.91	x					41798	29.15	69.27 R6X1W	
			30.23	69.17	x					41796	31.6	70 R6X1	
			30.83	69.67	x					41795	34.57	70.47 R6X1	
			31.58	70.14	x					41794	39.1	70.57 R6X1	
			33.16	70.41	x					41793	42.57	70.74 R6X1	
			33.84	70.69	bf					41790	46.54	70.93 R6X1	
			35.02	70.41	x					40021	50.64	70.58 R6X1RP	
			38.05	70.5	bf								
			38.45	70.48	x								
			42.09	70.63	x								
			45.65	70.89	x								
			48.74	71.06	x								
			50.29	71	x								
			50.5	71.06	xrp								



Photo of Area 6 Cross-Section #1 - Looking Downstream

	As-Built	2005	2006	2007
Area	43.6	36.3	33.2	31.8
Width	18.9	19.2	17.9	19.7
Mean Depth	2.3	1.9	1.9	1.6
Max Depth	3.8	3.5	3.3	3.4

Area 6 Cross-Section #1 - Pool Station 2+05
Purlear Phase I - Lower Main



Project Name Purlear Phase I
Cross Section 2 - Lower Main Reach 6
Feature Riffle
Date 8/2/2007
Crew Roberts, Price, Zink

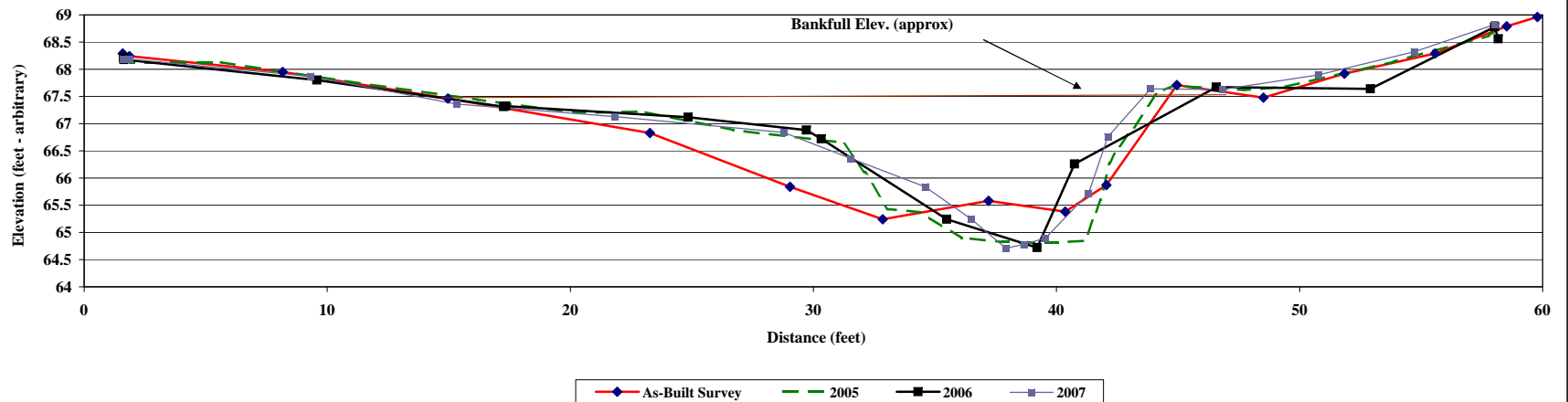
2004 As-Built Survey			2005 MY - 01			2006 MY - 02			2007 MY - 03				
Station	Elev.	Notes	Station	Elev.	Notes	Pt #	Station	Elev.	Notes	Pt #	Station	Elev.	Notes
1.59	68.29	X2LP	1.62	68.22	xlp	2553	1.62	68.21 (r6x2lp)		41949	1.61	68.19 r6x2LP07	
1.86	68.24	X2	1.9	68.13	x	2555	1.64	68.18 (r6x2)		41950	1.85	68.19 r6x2	
8.17	67.95	X2	5.63	68.13	x	2558	9.57	67.8 (r6x2)		41951	9.31	67.87 r6x2	
14.96	67.46	X2	10.28	67.81	x	2562	17.26	67.31 (r6x2)		41952	15.32	67.36 r6x2	
23.27	66.83	X2	16.19	67.44	x	2560	17.34	67.32 (r6x2)		41953	21.85	67.13 r6x2	
29.04	65.84	X2EW	20.27	67.2	bf	2563	24.85	67.12 (r6x2)		41954	28.77	66.84 r6x2	
32.85	65.24	X2	23	67.22	x	2565	29.71	66.88 (r6x2)		41955	31.54	66.36 r6x2	
37.2	65.58	X2	26.72	66.88	x	2557	30.33	66.72 (r6x2)		41956	34.6	65.84 r6x2w	
40.36	65.38	X2	31.22	66.65	x	2559	35.49	65.24 (r6x2)		41960	36.48	65.25 r6x2	
42.05	65.87	X2EW	32.1	66.11	x	2561	39.2	64.72 (r6x2)		41852	37.91	64.71 R6X2	
44.95	67.71	X2B	33.05	65.43	x	2564	40.74	66.26 (r6x2w)		41851	38.66	64.78 R6X2	
48.51	67.48	X2	34.4	65.37	x	2567	46.57	67.67 (r6x2)		41850	39.55	64.9 R6X2	
51.85	67.92	X2	36.11	64.89	x	2566	52.91	67.64 (r6x2)		41849	41.32	65.72 R6X2W	
55.57	68.29	X2	36.37	64.89	x	2554	58.03	68.78 (r6x2rp)		41848	42.11	66.76 R6X2	
58.52	68.79	X2RP	37.79	64.82	x	2556	58.17	68.56 (r6x2)		41847	43.87	67.64 R6X2	
59.78	68.96	X2	40.02	64.81	x					41846	46.83	67.63 R6X2	
			41.19	64.85	x					41845	50.79	67.9 R6X2	
			41.57	65.32	x					41844	54.72	68.32 R6X2	
			41.82	65.6	x					41843	58.03	68.82 R6X2RP07	
			42.18	66.28	x								
			42.5	66.54	x								
			43.12	66.9	x								
			44.16	67.57	x								
			44.8	67.7	x								
			47.71	67.62	x								
			49.42	67.68	x								
			53.89	68.14	x								
			57.79	68.62	x								
			58.23	68.76	xrp								



Photo of Area 6 Cross-Section #2 - Looking Downstream

	As-Built	2005	2006	2007
Area	40.2	37.8	35.2	35.5
Width	27.1	26.9	34.3	37.5
Mean Depth	1.5	1.4	1.0	0.9
Max Depth	2.5	2.9	3.0	3.0
w/d ratio	18.3	19.2	33.4	39.6
FPW	60	60	60	60
ER (greater than)	2.2	2.2	1.7	1.6
Stream Type	C4	C4	C4	C4

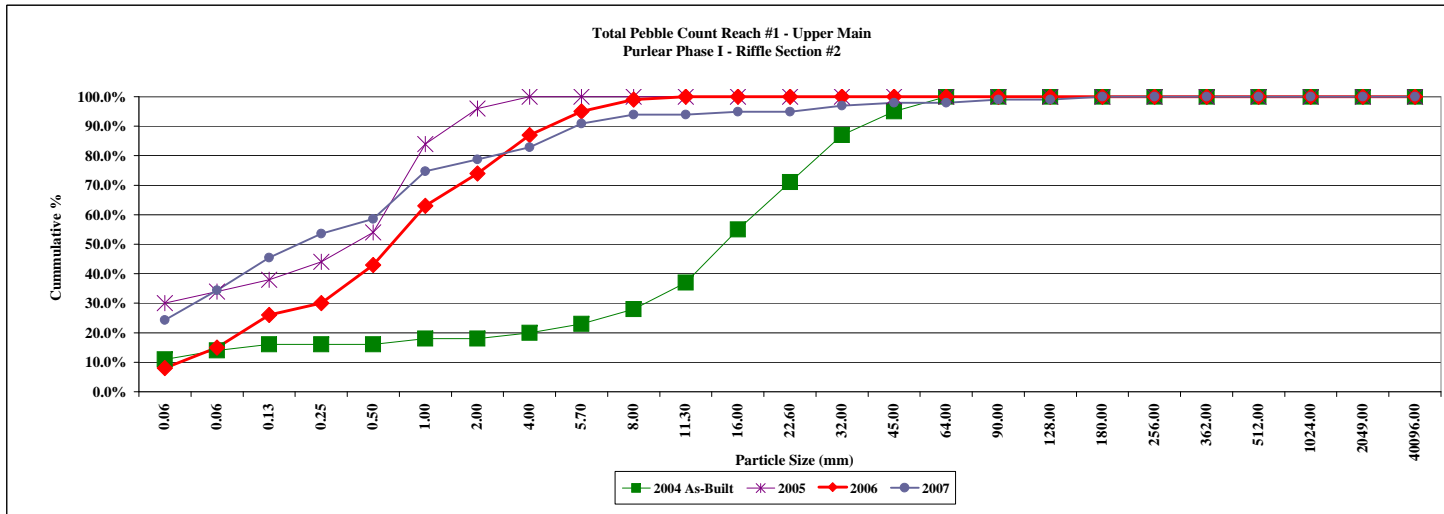
Area 6 Cross-Section #2 - Riffle Station 5+85
Purlear Phase I - Lower Main



Project Name	Purlear Phase I
Cross Section	2 - Reach #1 - Upper Main
Feature	Riffle
Date	7/23/2007
Crew	Roberts, Price, Zink

Description	Material	2004 As-Built				2005				2006				2007			
		Size (mm)	Riffle	%	Cum %	Riffle - Bed	Riffle - Bank	%	Cum %	Riffle - Bed	Riffle - Bank	%	Cum %	Riffle	%	Cum %	
Silt/Clay	silt/clay	0.061	11	11.0%	11.0%	9	6	30.0%	30.0%	3	5	8.0%	8.0%	24	24.2%	24.2%	
	very fine sand	0.062	3	3.0%	14.0%	0	2	4.0%	34.0%	0	7	7.0%	15.0%	10	10.1%	34.3%	
	fine sand	0.125	2	2.0%	16.0%	0	2	4.0%	38.0%	3	8	11.0%	26.0%	11	11.1%	45.5%	
	medium sand	0.25	0	0.0%	16.0%	3	0	6.0%	44.0%	4	0	4.0%	30.0%	8	8.1%	53.5%	
	course sand	0.50	0	0.0%	16.0%	5	0	10.0%	54.0%	13	0	13.0%	43.0%	5	5.1%	58.6%	
Gravel	very coarse sand	1.0	2	2.0%	18.0%	15	0	30.0%	84.0%	20	0	20.0%	63.0%	16	16.2%	74.7%	
	very fine gravel	2.0	0	0.0%	18.0%	6	0	12.0%	96.0%	11	0	11.0%	74.0%	4	4.0%	78.8%	
	fine gravel	4.0	2	2.0%	20.0%	2	0	4.0%	100.0%	13	0	13.0%	87.0%	4	4.0%	82.8%	
	fine gravel	5.7	3	3.0%	23.0%	0	0	0.0%	100.0%	8	0	8.0%	95.0%	8	8.1%	90.9%	
	medium gravel	8.0	5	5.0%	28.0%	0	0	0.0%	100.0%	4	0	4.0%	99.0%	3	3.0%	93.9%	
	medium gravel	11.3	9	9.0%	37.0%	0	0	0.0%	100.0%	1	0	1.0%	100.0%	0	0.0%	93.9%	
	course gravel	16.0	18	18.0%	55.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	1.0%	94.9%	
	course gravel	22.6	16	16.0%	71.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	94.9%	
	very coarse gravel	32	16	16.0%	87.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	2	2.0%	97.0%	
	very coarse gravel	45	8	8.0%	95.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	1.0%	98.0%	
	Cobble	small cobble	64	5	5.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	98.0%
		medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	1.0%	99.0%
		large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	99.0%
very large cobble		180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	1.0%	100.0%	
Boulder		small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
TOTAL / %of whole count			100	100.0%		40	10	100%		80	20	100%		99	100.0%		

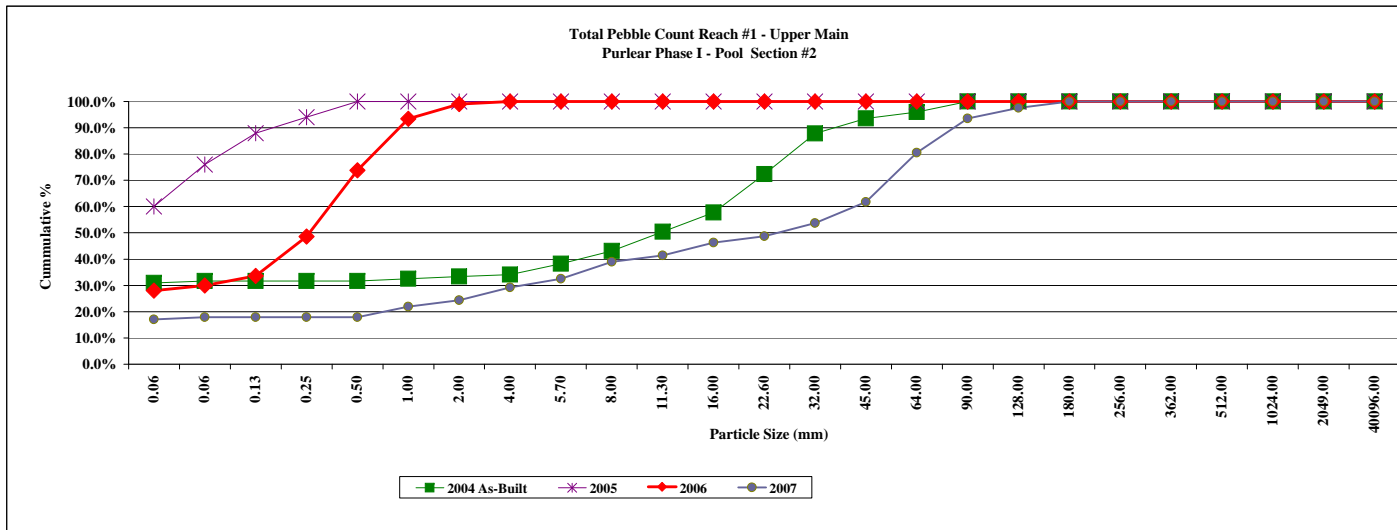
	d16	d35	d50	d84	d95
2004 As-Built	0.38	12.76	17.73	36.40	54.50
2005	0.00	0.12	0.60	1.50	2.88
2006	0.10	0.52	1.01	4.42	6.85
2007	0	0.062	0.2	4.43	19.3
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	1 - Reach #1 - Upper Main
Feature	Pool
Date	7/23/2007
Crew	Roberts, Price, Zink

Description	Material	2004 As-Built				2005				2006				2007		
		Size (mm)	Pool	%	Cum %	Pool - Bed	Pool - Bank	%	Cum %	Pool - Bed	Pool - Bank	%	Cum %	Pool	%	Cum %
Silt/Clay	silt/clay	0.061	38	30.9%	30.9%	20	10	60.0%	60.0%	10	20	28.0%	28.0%	21	17.1%	17.1%
	very fine sand	0.062	1	0.8%	31.7%	8	0	16.0%	76.0%	2	0	1.9%	29.9%	1	0.8%	17.9%
Sand	fine sand	0.125	0	0.0%	31.7%	6	0	12.0%	88.0%	4	0	3.7%	33.6%	0	0.0%	17.9%
	medium sand	0.25	0	0.0%	31.7%	3	0	6.0%	94.0%	16	0	15.0%	48.6%	0	0.0%	17.9%
	course sand	0.50	0	0.0%	31.7%	3	0	6.0%	100.0%	27	0	25.2%	73.8%	0	0.0%	17.9%
	very course sand	1.0	1	0.8%	32.5%	0	0	0.0%	100.0%	21	0	19.6%	93.5%	5	4.1%	22.0%
	very fine gravel	2.0	1	0.8%	33.3%	0	0	0.0%	100.0%	6	0	5.6%	99.1%	3	2.4%	24.4%
Gravel	fine gravel	4.0	1	0.8%	34.1%	0	0	0.0%	100.0%	1	0	0.9%	100.0%	6	4.9%	29.3%
	fine gravel	5.7	5	4.1%	38.2%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	4	3.3%	32.5%
	medium gravel	8.0	6	4.9%	43.1%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	8	6.5%	39.0%
	medium gravel	11.3	9	7.3%	50.4%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	3	2.4%	41.5%
	course gravel	16.0	9	7.3%	57.7%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	6	4.9%	46.3%
	course gravel	22.6	18	14.6%	72.4%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	3	2.4%	48.8%
	very course gravel	32	19	15.4%	87.8%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	6	4.9%	53.7%
	very course gravel	45	7	5.7%	93.5%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	10	8.1%	61.8%
Cobble	small cobble	64	3	2.4%	95.9%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	23	18.7%	80.5%
	medium cobble	90	5	4.1%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	16	13.0%	93.5%
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	5	4.1%	97.6%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	3	2.4%	100.0%
	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
Boulder	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
Bedrock	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
TOTAL / %of whole count			123	100.0%		40	10	100%		87	20	100%		123	100.0%	

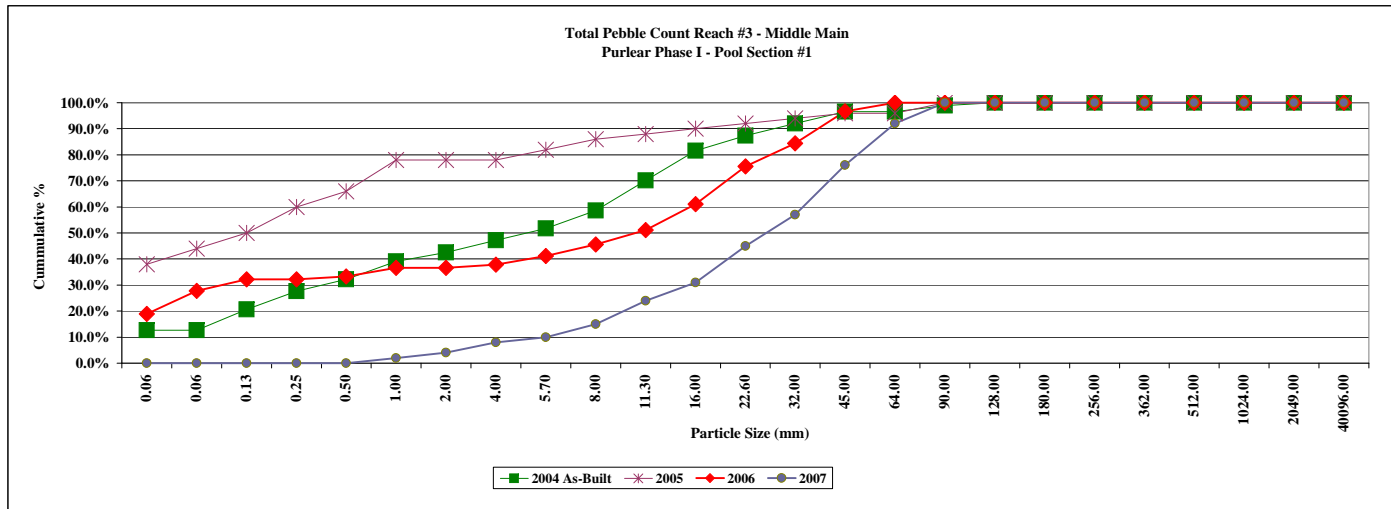
	d16	d35	d50	d84	d95
2004 As-Built	0.00	5.27	13.43	35.74	68.37
2005	0.00	0.00	0.00	0.16	0.44
2006	0.00	0.20	0.40	1.14	1.91
2007	0.06	6.85	27.30	68.00	109.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	1 - Reach #3 - Middle Main
Feature	Pool
Date	7/23/2007
Crew	Roberts, Price, Zink

Description	Material	2004 As-Built				2005				2006				2007		
		Size (mm)	Pool - Bed	%	Cum %	Pool - Bed	Pool - Bank	%	Cum %	Pool - Bed	Pool - Bank	%	Cum %	Pool - Bed	%	Cum %
Silt/Clay	silt/clay	0.061	11	12.6%	12.6%	12	7	38.0%	38.0%	0	17	18.9%	18.9%	0	0.0%	0.0%
	very fine sand	0.062	0	0.0%	12.6%	0	3	6.0%	44.0%	0	8	8.9%	27.8%	0	0.0%	0.0%
	fine sand	0.125	7	8.0%	20.7%	1	2	6.0%	50.0%	1	3	4.4%	32.2%	0	0.0%	0.0%
	medium sand	0.25	6	6.9%	27.6%	2	3	10.0%	60.0%	0	0	0.0%	32.2%	0	0.0%	0.0%
	course sand	0.50	4	4.6%	32.2%	2	1	6.0%	66.0%	0	1	1.1%	33.3%	0	0.0%	0.0%
	very course sand	1.0	6	6.9%	39.1%	4	2	12.0%	78.0%	2	1	3.3%	36.7%	2	2.0%	2.0%
Gravel	very fine gravel	2.0	3	3.4%	42.5%	0	0	0.0%	78.0%	0	0	0.0%	36.7%	2	2.0%	4.0%
	fine gravel	4.0	4	4.6%	47.1%	0	0	0.0%	78.0%	1	0	1.1%	37.8%	4	4.0%	8.0%
	fine gravel	5.7	4	4.6%	51.7%	2	0	4.0%	82.0%	3	2	3.3%	41.1%	2	2.0%	10.0%
	medium gravel	8.0	6	6.9%	58.6%	0	2	4.0%	86.0%	4	0	4.4%	45.6%	5	5.0%	15.0%
	medium gravel	11.3	10	11.5%	70.1%	1	0	2.0%	88.0%	5	0	5.6%	51.1%	9	9.0%	24.0%
	course gravel	16.0	10	11.5%	81.6%	1	0	2.0%	90.0%	9	0	10.0%	61.1%	7	7.0%	31.0%
	course gravel	22.6	5	5.7%	87.4%	1	0	2.0%	92.0%	13	0	14.4%	75.6%	14	14.0%	45.0%
	very course gravel	32	4	4.6%	92.0%	1	0	2.0%	94.0%	8	0	8.9%	84.4%	12	12.0%	57.0%
	very course gravel	45	4	4.6%	96.6%	1	0	2.0%	96.0%	11	0	12.2%	96.7%	19	19.0%	76.0%
	small cobble	64	0	0.0%	96.6%	0	0	0.0%	96.0%	3	0	3.3%	100.0%	16	16.0%	92.0%
	medium cobble	90	2	2.3%	98.9%	2	0	4.0%	100.0%	0	0	0.0%	100.0%	8	8.0%	100.0%
Cobble	large cobble	128	1	1.1%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
Boulder	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
TOTAL / %of whole count			87	100.0%		30	20	100.0%		60	30	100.0%		100	100.0%	

	d16	d35	d50	d84	d95
2004 As-Built	0.13	1.06	6.10	22.63	49.10
2005	0.00	0.00	0.19	8.25	46.50
2006	0.00	1.13	12.85	37.94	52.32
2007	8.37	17.89	26.52	54.50	73.75
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00

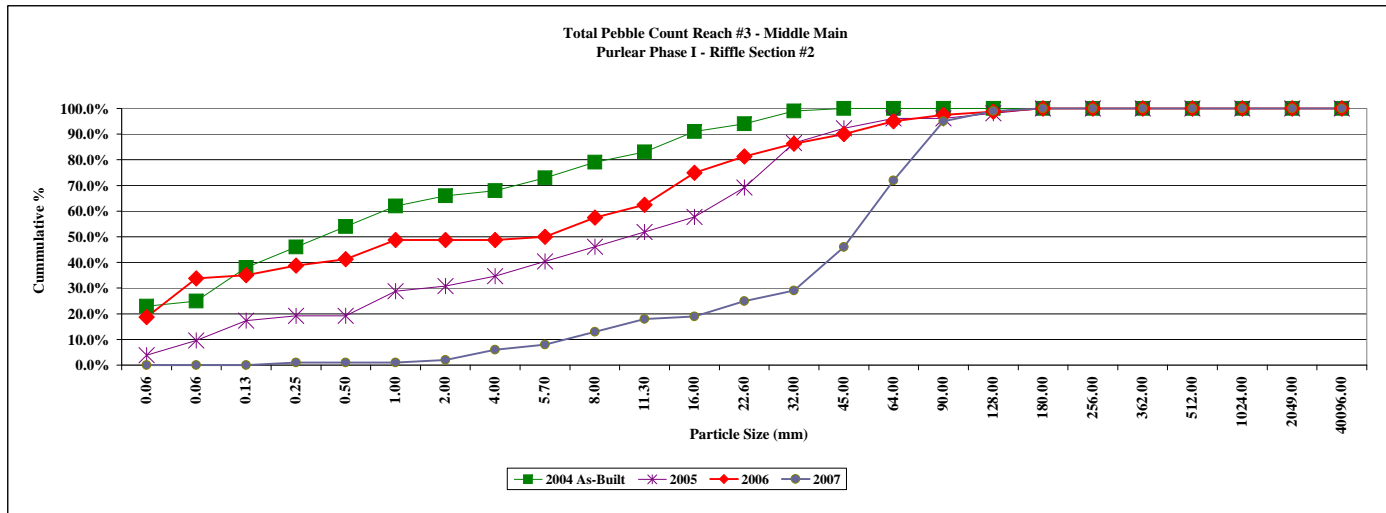


Project Name Purlear Phase I
Cross Section 2 - Reach #3 - Middle Main
Feature Riffle
Date 7/23/2007
Crew Roberts, Price, Zink

Cross Section #1

Description	Material	2004 As-Built				2005				2006				2007		
		Size (mm)	Riffle - Bed	%	Cum %	Riffle - Bed	Riffle - Bank	%	Cum %	Riffle - Bed	Riffle - Bank	%	Cum %	Riffle - Bed	%	Cum %
Silt/Clay	silt/clay	0.061	23	23.0%	23.0%	0	2	3.8%	3.8%	0	15	18.8%	18.8%	0	0.0%	0.0%
	very fine sand	0.062	2	2.0%	25.0%	0	3	5.8%	9.6%	0	12	15.0%	33.8%	0	0.0%	0.0%
	fine sand	0.125	13	13.0%	38.0%	0	4	7.7%	17.3%	0	1	1.3%	35.0%	0	0.0%	0.0%
	medium sand	0.25	8	8.0%	46.0%	0	1	1.9%	19.2%	3	0	3.8%	38.8%	1	1.0%	1.0%
	course sand	0.50	8	8.0%	54.0%	0	0	0.0%	19.2%	1	1	2.5%	41.3%	0	0.0%	1.0%
	very course sand	1.0	8	8.0%	62.0%	5	0	9.6%	28.8%	5	1	7.5%	48.8%	0	0.0%	1.0%
Gravel	very fine gravel	2.0	4	4.0%	66.0%	1	0	1.9%	30.8%	0	0	0.0%	48.8%	1	1.0%	2.0%
	fine gravel	4.0	2	2.0%	68.0%	2	0	3.8%	34.6%	0	0	0.0%	48.8%	4	4.0%	6.0%
	fine gravel	5.7	5	5.0%	73.0%	3	0	5.8%	40.4%	1	0	1.3%	50.0%	2	2.0%	8.0%
	medium gravel	8.0	6	6.0%	79.0%	3	0	5.8%	46.2%	6	0	7.5%	57.5%	5	5.0%	13.0%
	medium gravel	11.3	4	4.0%	83.0%	3	0	5.8%	51.9%	4	0	5.0%	62.5%	5	5.0%	18.0%
	course gravel	16.0	8	8.0%	91.0%	3	0	5.8%	57.7%	10	0	12.5%	75.0%	1	1.0%	19.0%
	course gravel	22.6	3	3.0%	94.0%	6	0	11.5%	69.2%	5	0	6.3%	81.3%	6	6.0%	25.0%
	very course gravel	32	5	5.0%	99.0%	9	0	17.3%	86.5%	4	0	5.0%	86.3%	4	4.0%	29.0%
	very course gravel	45	1	1.0%	100.0%	3	0	5.8%	92.3%	3	0	3.8%	90.0%	17	17.0%	46.0%
	very course gravel	64	0	0.0%	100.0%	2	0	3.8%	96.2%	4	0	5.0%	95.0%	26	26.0%	72.0%
Cobble	small cobble	90	0	0.0%	100.0%	0	0	0.0%	96.2%	2	0	2.5%	97.5%	23	23.0%	95.0%
	medium cobble	128	0	0.0%	100.0%	1	0	1.9%	98.1%	1	0	1.3%	98.8%	4	4.0%	99.0%
	large cobble	180	0	0.0%	100.0%	1	0	1.9%	100.0%	1	0	1.3%	100.0%	1	1.0%	100.0%
	very large cobble	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
Boulder	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
TOTAL / % of whole count				100	100.0%		42	10	100%		50	30	100%	100	100.0%	

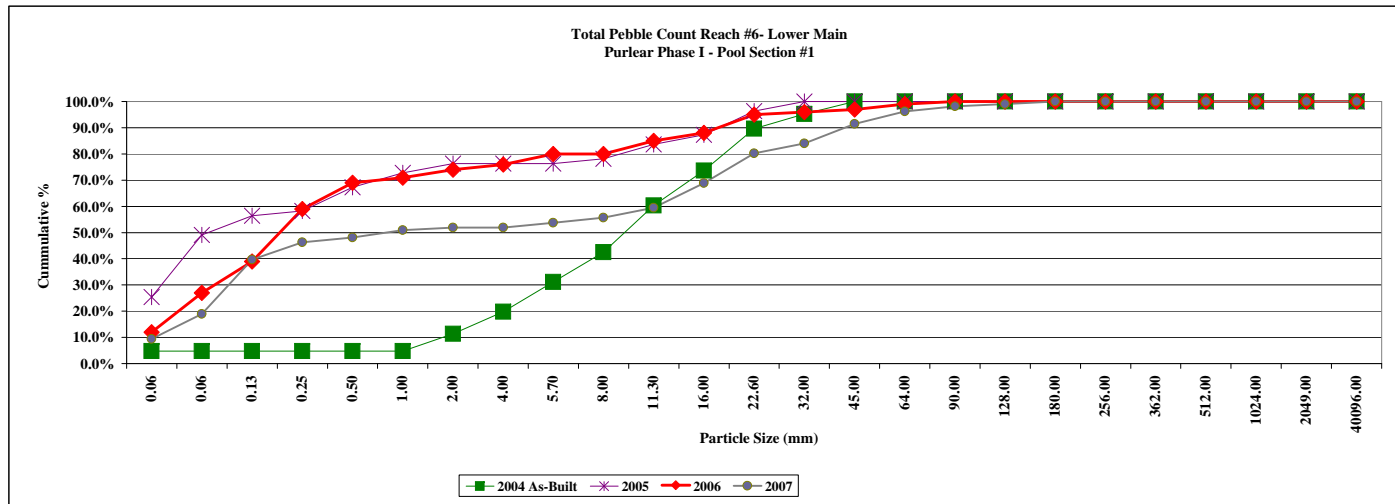
	d16	d35	d50	d84	d95
2004 As-Built	0.00	0.17	0.56	14.36	29.54
2005	0.17	4.98	12.32	36.86	70.25
2006	0.00	0.19	6.85	33.46	77.00
2007	0.00	36.59	47.92	77.57	90.00
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Parlear Phase I
Cross Section	1 - Reach #6 - Lower Main
Feature	Pool
Date	8/2/2007
Crew	Roberts, Price, Zink

Description	Material	Size (mm)	2004 As-Built				2005				2006				2007	
			Pool - Bed	%	Cum %		Pool - Bed	Pool - Bank	%	Cum %	Pool - Bed	Pool - Bank	%	Cum %	Pool - Bed	%
Silt/Clay	silt/clay	0.061	5	4.7%	4.7%	12	2	25.5%	25.5%	3	9	12.0%	12.0%	10	9.4%	9.4%
	very fine sand	0.062	0	0.0%	4.7%	7	6	23.6%	49.1%	8	7	15.0%	27.0%	10	9.4%	18.9%
Sand	fine sand	0.125	0	0.0%	4.7%	3	1	7.3%	56.4%	8	4	12.0%	39.0%	22	20.8%	39.6%
	medium sand	0.25	0	0.0%	4.7%	1	0	1.8%	58.2%	20	0	20.0%	59.0%	7	6.6%	46.2%
	course sand	0.50	0	0.0%	4.7%	4	1	9.1%	67.3%	10	0	10.0%	69.0%	2	1.9%	48.1%
	very course sand	1.0	0	0.0%	4.7%	3	0	5.5%	72.7%	2	0	2.0%	71.0%	3	2.8%	50.9%
		2.0	7	6.6%	11.3%	2	0	3.6%	76.4%	3	0	3.0%	74.0%	1	0.9%	51.9%
Gravel	very fine gravel	4.0	9	8.5%	19.8%	0	0	0.0%	76.4%	2	0	2.0%	76.0%	0	0.0%	51.9%
	fine gravel	5.7	12	11.3%	31.1%	0	0	0.0%	76.4%	4	0	4.0%	80.0%	2	1.9%	53.8%
	medium gravel	8.0	12	11.3%	42.5%	1	0	1.8%	78.2%	0	0	0.0%	80.0%	2	1.9%	55.7%
	medium gravel	11.3	19	17.9%	60.4%	3	0	5.5%	83.6%	5	0	5.0%	85.0%	4	3.8%	59.4%
	course gravel	16.0	14	13.2%	73.6%	2	0	3.6%	87.3%	3	0	3.0%	88.0%	10	9.4%	68.9%
	course gravel	22.6	17	16.0%	89.6%	5	0	9.1%	96.4%	7	0	7.0%	95.0%	12	11.3%	80.2%
	very course gravel	32	6	5.7%	95.3%	2	0	3.6%	100.0%	1	0	1.0%	96.0%	4	3.8%	84.0%
	very course gravel	45	5	4.7%	100.0%	0	0	0.0%	100.0%	0	0	1.0%	97.0%	8	7.5%	91.5%
	small cobble	64	0	0.0%	100.0%	0	0	0.0%	100.0%	2	0	2.0%	99.0%	5	4.7%	96.2%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	1	0	1.0%	100.0%	2	1.9%	98.1%
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	0.9%	99.1%
Boulder	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	0.9%	100.0%
	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
Bedrock	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
TOTAL / % of whole count																
			106	100.0%		45	10	100%		80	20	100%		106	100.0%	

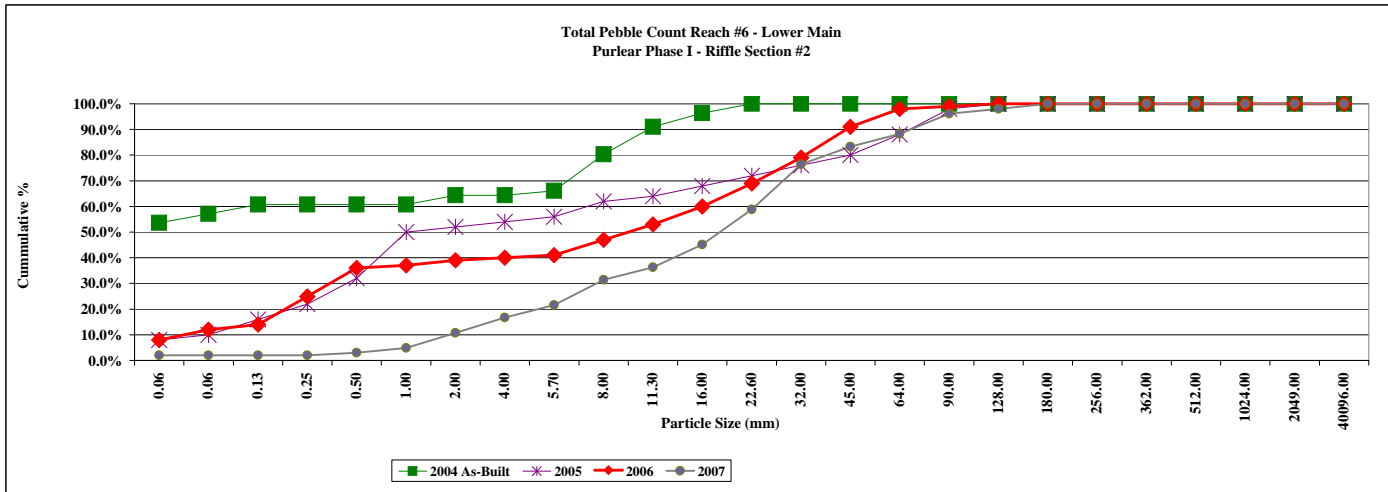
	d16	d35	d50	d84	d95
2004 As-Built	4.02	7.81	11.33	24.50	37.94
2005	0.00	0.07	0.11	14.22	26.10
2006	0.07	0.16	0.29	12.85	27.30
2007	0.06	0.11	0.86	32.00	63.19
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	2 - Reach #6 - Lower Main
Feature	Riffle
Date	8/2/2007
Crew	Roberts, Price, Zink

Description	Material	Size (mm)	2004 As-Built			2005			2006			2007				
			Riffle - Bed	%	Cum %	Riffle - Bed	Riffle - Bank	%	Cum %	Riffle - Bed	Riffle - Bank	%	Cum %	Riffle - Bed	%	Cum %
Silt/Clay	silt/clay	0.061	30	53.6%	53.6%	2	2	8.0%	8.0%	8	0	8.0%	8.0%	2	2.0%	2.0%
Sand	very fine sand	0.062	2	3.6%	57.1%	0	1	2.0%	10.0%	4	0	4.0%	12.0%	0	0.0%	2.0%
	fine sand	0.125	2	3.6%	60.7%	3	0	6.0%	16.0%	2	0	2.0%	14.0%	0	0.0%	2.0%
	medium sand	0.25	0	0.0%	60.7%	2	1	6.0%	22.0%	11	0	11.0%	25.0%	0	0.0%	2.0%
	course sand	0.50	0	0.0%	60.7%	4	1	10.0%	32.0%	11	0	11.0%	36.0%	1	1.0%	2.9%
	very course sand	1.0	0	0.0%	60.7%	7	2	18.0%	50.0%	1	0	1.0%	37.0%	2	2.0%	4.9%
Gravel	very fine gravel	2.0	2	3.6%	64.3%	0	1	2.0%	52.0%	0	2	2.0%	39.0%	6	5.9%	10.8%
	fine gravel	4.0	0	0.0%	64.3%	1	0	2.0%	54.0%	1	0	1.0%	40.0%	6	5.9%	16.7%
	fine gravel	5.7	1	1.8%	66.1%	1	0	2.0%	56.0%	0	1	1.0%	41.0%	5	4.9%	21.6%
	medium gravel	8.0	8	14.3%	80.4%	1	2	6.0%	62.0%	2	4	6.0%	47.0%	10	9.8%	31.4%
	medium gravel	11.3	6	10.7%	91.1%	1	0	2.0%	64.0%	3	3	6.0%	53.0%	5	4.9%	36.3%
	course gravel	16.0	3	5.4%	96.4%	1	1	4.0%	68.0%	2	5	7.0%	60.0%	9	8.8%	45.1%
	course gravel	22.6	2	3.6%	100.0%	2	0	4.0%	72.0%	0	9	9.0%	69.0%	14	13.7%	58.8%
	very course gravel	32	0	0.0%	100.0%	2	0	4.0%	76.0%	0	10	10.0%	79.0%	18	17.6%	76.5%
	very course gravel	45	0	0.0%	100.0%	2	0	4.0%	80.0%	0	12	12.0%	91.0%	7	6.9%	83.3%
	Cobble	small cobble	64	0	0.0%	100.0%	4	0	8.0%	88.0%	0	7	7.0%	98.0%	5	4.9%
medium cobble		90	0	0.0%	100.0%	5	0	10.0%	98.0%	0	1	1.0%	99.0%	8	7.8%	96.1%
large cobble		128	0	0.0%	100.0%	1	0	2.0%	100.0%	0	1	1.0%	100.0%	2	2.0%	98.0%
very large cobble		180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	2	2.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
TOTAL / %of whole count			56	100.0%		40	10	100%		45	55	100%		102	100.0%	

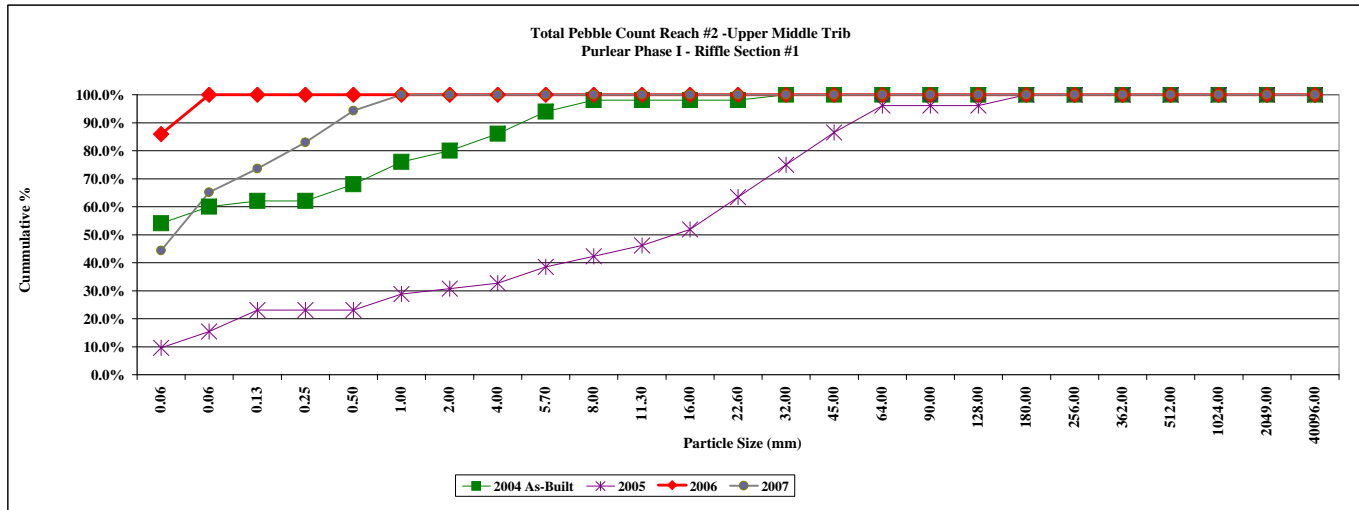
	d16	d35	d50	d84	d95
2004 As-Built	0.00	0.00	0.00	11.01	17.79
2005	0.19	0.88	1.50	65.75	99.40
2006	0.22	0.72	11.65	45.17	67.36
2007	4.10	10.42	18.36	47.71	86.38
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	1 - Reach #2 - Upper Middle Trib
Feature	Riffle
Date	7/24/2007
Crew	Roberts, Price, Zink

Description	Material	Size (mm)	2004 As-Built				2005				2006				2007	
			Riffle	%	Cum %		Riffle	Riffle - Bank	%	Cum %	Riffle	Riffle - Bank	%	Cum %	Riffle	%
Silt/Clay	silt/clay	0.061	27	54.0%	54.0%	1	4	9.6%	9.6%	33	10	86.0%	86.0%	47	44.3%	44.3%
Sand	very fine sand	0.062	3	6.0%	60.0%	0	3	5.8%	15.4%	7	0	14.0%	100.0%	22	20.8%	65.1%
	fine sand	0.125	1	2.0%	62.0%	1	3	7.7%	23.1%	0	0	0.0%	100.0%	9	8.5%	73.6%
	medium sand	0.25	0	0.0%	62.0%	0	0	0.0%	23.1%	0	0	0.0%	100.0%	10	9.4%	83.0%
	course sand	0.50	3	6.0%	68.0%	0	0	0.0%	23.1%	0	0	0.0%	100.0%	12	11.3%	94.3%
	very course sand	1.0	4	8.0%	76.0%	3	0	5.8%	28.8%	0	0	0.0%	100.0%	6	5.7%	100.0%
Gravel	very fine gravel	2.0	2	4.0%	80.0%	1	0	1.9%	30.8%	0	0	0.0%	100.0%	0	0.0%	100.0%
	fine gravel	4.0	3	6.0%	86.0%	1	0	1.9%	32.7%	0	0	0.0%	100.0%	0	0.0%	100.0%
	fine gravel	5.7	4	8.0%	94.0%	3	0	5.8%	38.5%	0	0	0.0%	100.0%	0	0.0%	100.0%
	medium gravel	8.0	2	4.0%	98.0%	2	0	3.8%	42.3%	0	0	0.0%	100.0%	0	0.0%	100.0%
	medium gravel	11.3	0	0.0%	98.0%	2	0	3.8%	46.2%	0	0	0.0%	100.0%	0	0.0%	100.0%
	course gravel	16.0	0	0.0%	98.0%	3	0	5.8%	51.9%	0	0	0.0%	100.0%	0	0.0%	100.0%
	course gravel	22.6	0	0.0%	98.0%	6	0	11.5%	63.5%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very course gravel	32	1	2.0%	100.0%	6	0	11.5%	75.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very course gravel	45	0	0.0%	100.0%	6	0	11.5%	86.5%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very course gravel	64	0	0.0%	100.0%	5	0	9.6%	96.2%	0	0	0.0%	100.0%	0	0.0%	100.0%
Cobble	small cobble	64	0	0.0%	100.0%	5	0	9.6%	96.2%	0	0	0.0%	100.0%	0	0.0%	100.0%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	96.2%	0	0	0.0%	100.0%	0	0.0%	100.0%
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	96.2%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	2	0	3.8%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	medium boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	large boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
TOTAL / % of whole count						42	10	100%		40	10	100%		106	100.0%	

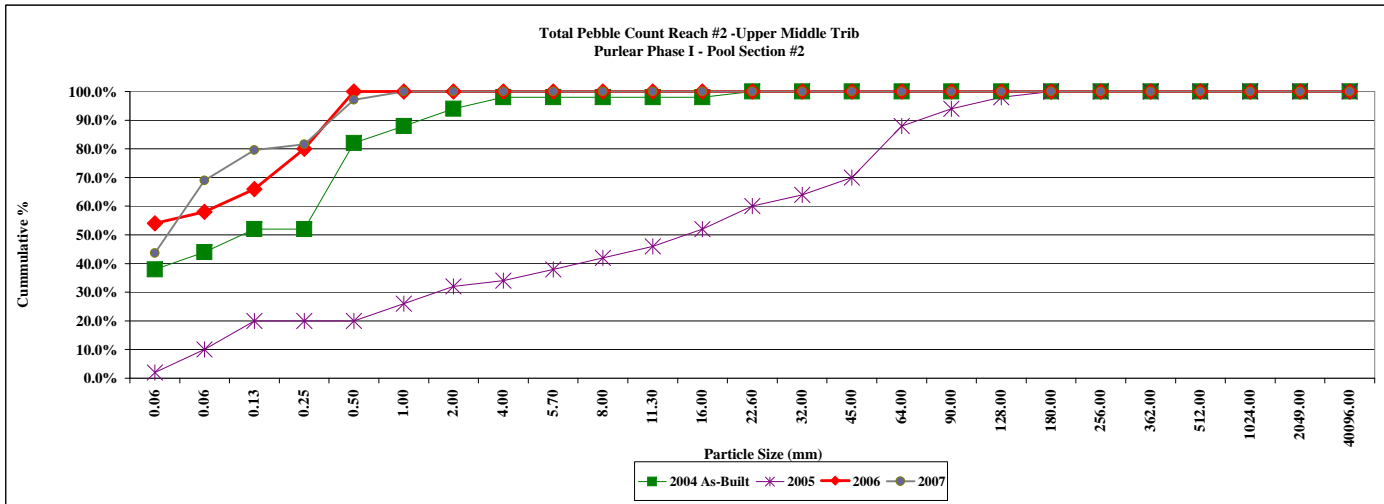
	d16	d35	d50	d84	d95
2004 As-Built	0.00	0.00	0.00	4.23	7.55
2005	0.10	5.65	17.42	50.98	74.30
2006	0.00	0.00	0.00	0.00	0.08
2007	0.00	0.00	0.06	0.27	0.56
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	2 - Reach #2 - Upper Middle Trib
Feature	Pool
Date	7/24/2007
Crew	Roberts, Price, Zink

Description	Material	Size (mm)	2004 As-Built				2005				2006				2007		
			Pool	%	Cum %		Pool	Pool - Bank	%	Cum %	Pool	Pool - Bank	%	Cum %	Pool	%	Cum %
Silt/Clay	silt/clay	0.061	19	38.0%	38.0%	0	1	2.0%	2.0%	19	8	54.0%	54.0%	45	43.7%	43.7%	
Sand	very fine sand	0.062	3	6.0%	44.0%	0	4	8.0%	10.0%	0	2	4.0%	58.0%	26	25.2%	68.9%	
	fine sand	0.125	4	8.0%	52.0%	0	5	10.0%	20.0%	4	0	8.0%	66.0%	11	10.7%	79.6%	
	medium sand	0.25	0	0.0%	52.0%	0	0	0.0%	20.0%	7	0	14.0%	80.0%	2	1.9%	81.6%	
	course sand	0.50	15	30.0%	82.0%	0	0	0.0%	20.0%	10	0	20.0%	100.0%	16	15.5%	97.1%	
	very course sand	1.0	3	6.0%	88.0%	3	0	6.0%	26.0%	0	0	0.0%	100.0%	3	2.9%	100.0%	
Gravel	very fine gravel	2.0	3	6.0%	94.0%	3	0	6.0%	32.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	fine gravel	4.0	2	4.0%	98.0%	1	0	2.0%	34.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	fine gravel	5.7	0	0.0%	98.0%	2	0	4.0%	38.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	medium gravel	8.0	0	0.0%	98.0%	2	0	4.0%	42.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	medium gravel	11.3	0	0.0%	98.0%	2	0	4.0%	46.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	course gravel	16.0	0	0.0%	98.0%	3	0	6.0%	52.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	course gravel	22.6	1	2.0%	100.0%	4	0	8.0%	60.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	very course gravel	32	0	0.0%	100.0%	2	0	4.0%	64.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	very course gravel	45	0	0.0%	100.0%	3	0	6.0%	70.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	Cobble	small cobble	64	0	0.0%	100.0%	9	0	18.0%	88.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
medium cobble		90	0	0.0%	100.0%	3	0	6.0%	94.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
large cobble		128	0	0.0%	100.0%	2	0	4.0%	98.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
very large cobble		180	0	0.0%	100.0%	1	0	2.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
TOTAL / % of whole count			50	100.0%		40	10	100%		40	10	100%		103	100.0%		

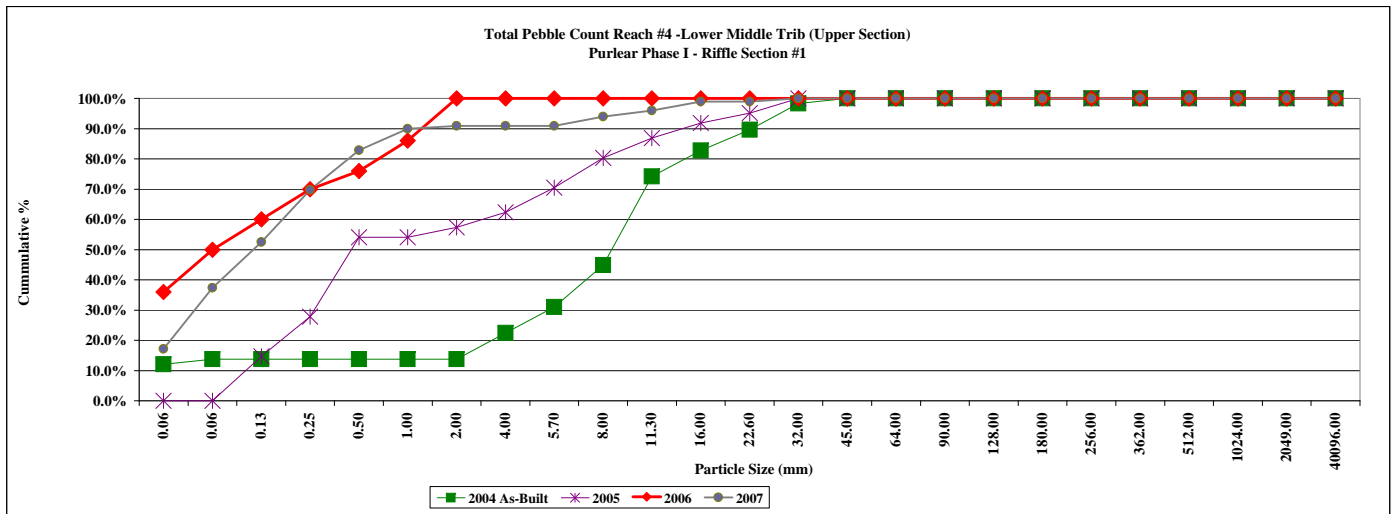
	d16	d35	d50	d84	d95
2004 As-Built	0.00	0.00	0.16	1.00	3.46
2005	0.15	5.35	17.42	72.00	120.25
2006	0.00	0.00	0.00	0.45	0.66
2007	0.00	0.00	0.06	0.30	0.47
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	1 - Reach #4- Lower Middle Trib (Upper section)
Feature	Riffle
Date	7/25/2007
Crew	Roberts, Price, Zink

Description	Material	2004 As-Built				2005				2006				2007			
		Size (mm)	Riffle - Bed	%	Cum %	Riffle - Bed	Riffle - Bank	%	Cum %	Riffle - Bed	Riffle - Bank	%	Cum %	Riffle - Bed	%	Cum %	
Silt/Clay	silt/clay	0.061	7	12.1%	12.1%	0	0	0.0%	0.0%	12	6	36.0%	36.0%	17	17.2%	17.2%	
	very fine sand	0.062	1	1.7%	13.8%	0	0	0.0%	0.0%	4	3	14.0%	50.0%	20	20.2%	37.4%	
Sand	fine sand	0.125	0	0.0%	13.8%	7	2	14.8%	14.8%	4	1	10.0%	60.0%	15	15.2%	52.5%	
	medium sand	0.25	0	0.0%	13.8%	0	8	13.1%	27.9%	5	0	10.0%	70.0%	17	17.2%	69.7%	
	course sand	0.50	0	0.0%	13.8%	16	0	26.2%	54.1%	3	0	6.0%	76.0%	13	13.1%	82.8%	
	very course sand	1.0	0	0.0%	13.8%	0	0	0.0%	54.1%	5	0	10.0%	86.0%	7	7.1%	89.9%	
	very fine gravel	2.0	0	0.0%	13.8%	2	0	3.3%	57.4%	7	0	14.0%	100.0%	1	1.0%	90.9%	
Gravel	fine gravel	4.0	5	8.6%	22.4%	3	0	4.9%	62.3%	0	0	0.0%	100.0%	0	0.0%	90.9%	
	fine gravel	5.7	5	8.6%	31.0%	5	0	8.2%	70.5%	0	0	0.0%	100.0%	0	0.0%	90.9%	
	medium gravel	8.0	8	13.8%	44.8%	6	0	9.8%	80.3%	0	0	0.0%	100.0%	3	3.0%	93.9%	
	medium gravel	11.3	17	29.3%	74.1%	4	0	6.6%	86.9%	0	0	0.0%	100.0%	2	2.0%	96.0%	
	course gravel	16.0	5	8.6%	82.8%	3	0	4.9%	91.8%	0	0	0.0%	100.0%	3	3.0%	99.0%	
	course gravel	22.6	4	6.9%	89.7%	2	0	3.3%	95.1%	0	0	0.0%	100.0%	0	0.0%	99.0%	
	very course gravel	32	5	8.6%	98.3%	3	0	4.9%	100.0%	0	0	0.0%	100.0%	1	1.0%	100.0%	
	very course gravel	45	1	1.7%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	small cobble	64	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
Cobble	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
Boulder	medium boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
TOTAL / %of whole count			58	100.0%		51	10	100%		40	10	100%		99	100.0%		

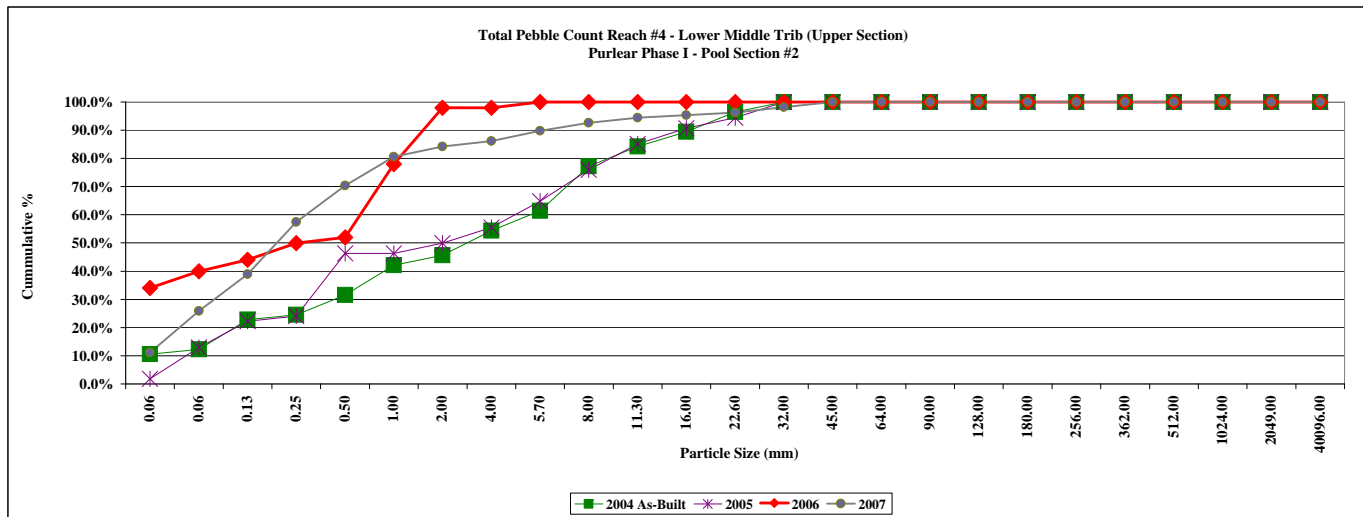
	d16	d35	d50	d84	d95
2004 As-Built	3.47	7.66	10.36	20.74	34.24
2005	0.21	0.48	0.69	11.89	27.10
2006	0.00	0.00	0.09	1.35	2.46
2007	0.00	0.06	0.11	0.73	9.73
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	2 - Reach #4 - Lower Middle Trib (Upper Section)
Feature	Pool
Date	7/25/2007
Crew	Roberts, Price, Zink

Description	Material	2004 As-Built				2005				2006				2007		
		Size (mm)	Rifle - Bed	%	Cum %	Rifle - Bed	Rifle - Bank	%	Cum %	Rifle - Bed	Rifle - Bank	%	Cum %	Pool-Bed	%	Cum %
Silt/Clay	silt/clay	0.061	6	10.5%	10.5%	0	1	1.9%	1.9%	9	8	34.0%	34.0%	12	11.1%	11.1%
	very fine sand	0.062	1	1.8%	12.3%	2	4	11.1%	13.0%	1	2	6.0%	40.0%	16	14.8%	25.9%
	fine sand	0.125	6	10.5%	22.8%	5	0	9.3%	22.2%	2	0	4.0%	44.0%	14	13.0%	38.9%
	medium sand	0.25	1	1.8%	24.6%	0	1	1.9%	24.1%	3	0	6.0%	50.0%	20	18.5%	57.4%
	course sand	0.50	4	7.0%	31.6%	8	4	22.2%	46.3%	1	0	2.0%	52.0%	14	13.0%	70.4%
	very course sand	1.0	6	10.5%	42.1%	0	0	0.0%	46.3%	13	0	26.0%	78.0%	11	10.2%	80.6%
Gravel	very fine gravel	2.0	2	3.5%	45.6%	2	0	3.7%	50.0%	10	0	20.0%	98.0%	4	3.7%	84.3%
	fine gravel	4.0	5	8.8%	54.4%	3	0	5.6%	55.6%	0	0	0.0%	98.0%	2	1.9%	86.1%
	fine gravel	5.7	4	7.0%	61.4%	5	0	9.3%	64.8%	1	0	2.0%	100.0%	4	3.7%	89.8%
	medium gravel	8.0	9	15.8%	77.2%	6	0	11.1%	75.9%	0	0	0.0%	100.0%	3	2.8%	92.6%
	medium gravel	11.3	4	7.0%	84.2%	4	1	9.3%	85.2%	0	0	0.0%	100.0%	2	1.9%	94.4%
	course gravel	16.0	3	5.3%	89.5%	3	0	5.6%	90.7%	0	0	0.0%	100.0%	1	0.9%	95.4%
	course gravel	22.6	4	7.0%	96.5%	2	0	3.7%	94.4%	0	2	0.0%	100.0%	1	0.9%	96.3%
	very course gravel	32	2	3.5%	100.0%	3	0	5.6%	100.0%	0	0	0.0%	100.0%	2	1.9%	98.1%
	very course gravel	45	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	2	1.9%	100.0%
	small cobble	64	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
Cobble	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	medium boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
Boulder	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
TOTAL / % of whole count			57	100.0%		43	11	100%		40	10	100%		108	100.0%	

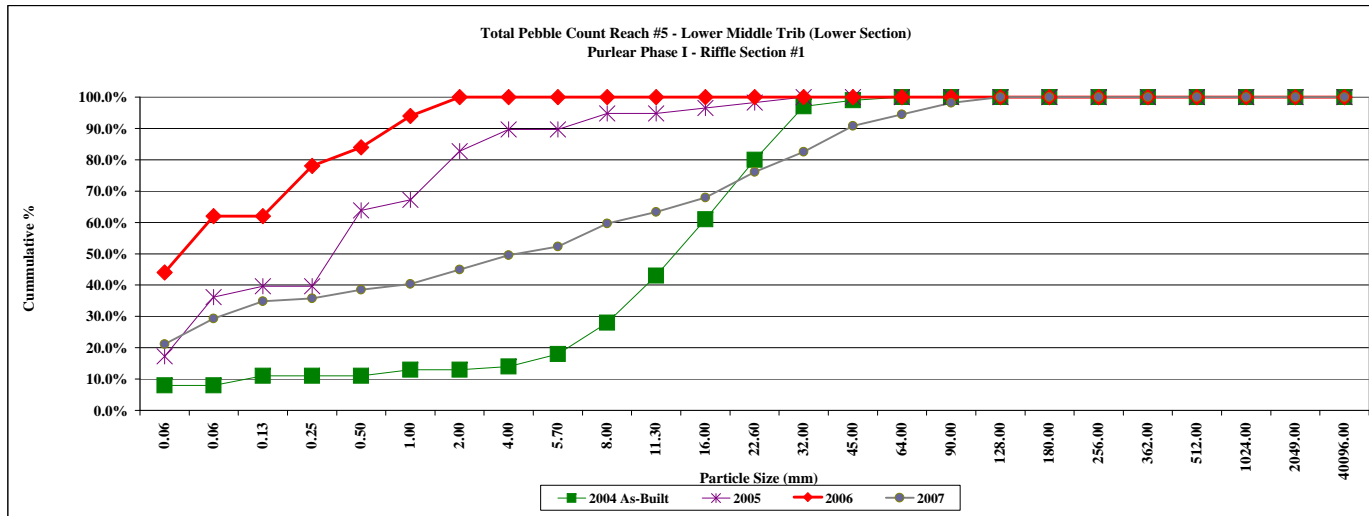
	d16	d35	d50	d84	d95
2004 As-Built	0.13	0.99	3.93	13.53	25.60
2005	0.12	0.56	3.00	13.14	28.42
2006	0.00	0.07	0.38	1.95	2.78
2007	0.06	0.11	0.20	1.92	14.12
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



Project Name	Purlear Phase I
Cross Section	2 - Reach #5 - Lower Middle Trib (Lower Section)
Feature	Riffle
Date	7/25/2007
Crew	Roberts, Price, Zink

Description	Material	2004 As-Built				2005				2006				2007		
		Size (mm)	Riffle - Bed	%	Cum %	Riffle - Bed	Riffle - Bank	%	Cum %	Riffle - Bed	Riffle - Bank	%	Cum %	Riffle - Bed	%	Cum %
Silt/Clay	silt/clay	0.061	8	8.0%	8.0%	7	3	17.2%	17.2%	16	6	44.0%	44.0%	23	21.1%	21.1%
	very fine sand	0.062	0	0.0%	8.0%	4	7	19.0%	36.2%	7	2	18.0%	62.0%	9	8.3%	29.4%
Sand	fine sand	0.125	3	3.0%	11.0%	1	1	3.4%	39.7%	0	0	0.0%	62.0%	6	5.5%	34.9%
	medium sand	0.25	0	0.0%	11.0%	0	0	0.0%	39.7%	8	0	16.0%	78.0%	1	0.9%	35.8%
	course sand	0.50	0	0.0%	11.0%	14	0	24.1%	63.8%	1	2	6.0%	84.0%	3	2.8%	38.5%
	very course sand	1.0	2	2.0%	13.0%	2	0	3.4%	67.2%	5	0	10.0%	94.0%	2	1.8%	40.4%
	very fine gravel	2.0	0	0.0%	13.0%	9	0	15.5%	82.8%	3	0	6.0%	100.0%	5	4.6%	45.0%
Gravel	fine gravel	4.0	1	1.0%	14.0%	4	0	6.9%	89.7%	0	0	0.0%	100.0%	5	4.6%	49.5%
	fine gravel	5.7	4	4.0%	18.0%	0	0	0.0%	89.7%	0	0	0.0%	100.0%	3	2.8%	52.3%
	medium gravel	8.0	10	10.0%	28.0%	3	0	5.2%	94.8%	0	0	0.0%	100.0%	8	7.3%	59.6%
	medium gravel	11.3	15	15.0%	43.0%	0	0	0.0%	94.8%	0	0	0.0%	100.0%	4	3.7%	63.3%
	course gravel	16.0	18	18.0%	61.0%	1	0	1.7%	96.6%	0	0	0.0%	100.0%	5	4.6%	67.9%
	course gravel	22.6	19	19.0%	80.0%	1	0	1.7%	98.3%	0	0	0.0%	100.0%	9	8.3%	76.1%
	very course gravel	32	17	17.0%	97.0%	1	0	1.7%	100.0%	0	0	0.0%	100.0%	7	6.4%	82.6%
	very course gravel	45	2	2.0%	99.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	9	8.3%	90.8%
	small cobble	64	1	1.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	4	3.7%	94.5%
	medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	4	3.7%	98.2%
Cobble	large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	2	1.8%	100.0%
	very large cobble	180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	medium boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
Boulder	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%
TOTAL / %of whole count			100	100.0%		47	11	100%		40	10	100%		109	100.0%	

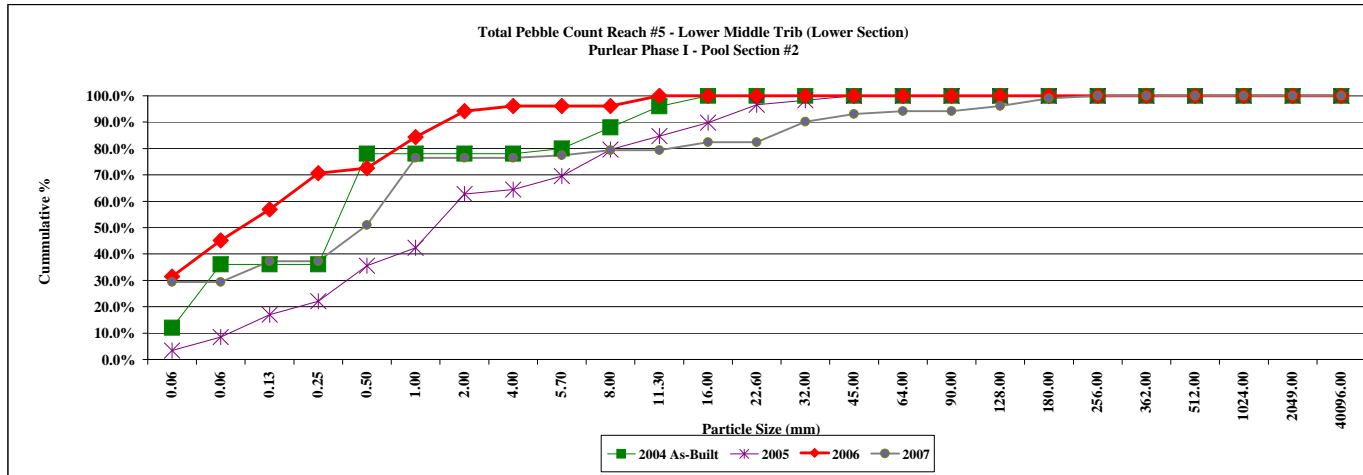
	d16	d35	d50	d84	d95
2004 As-Built	5.85	11.52	15.85	29.94	37.18
2005	0.00	0.09	0.54	3.33	14.22
2006	0.00	0.00	0.07	0.75	1.75
2007	0.00	0.13	4.30	34.22	67.51
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



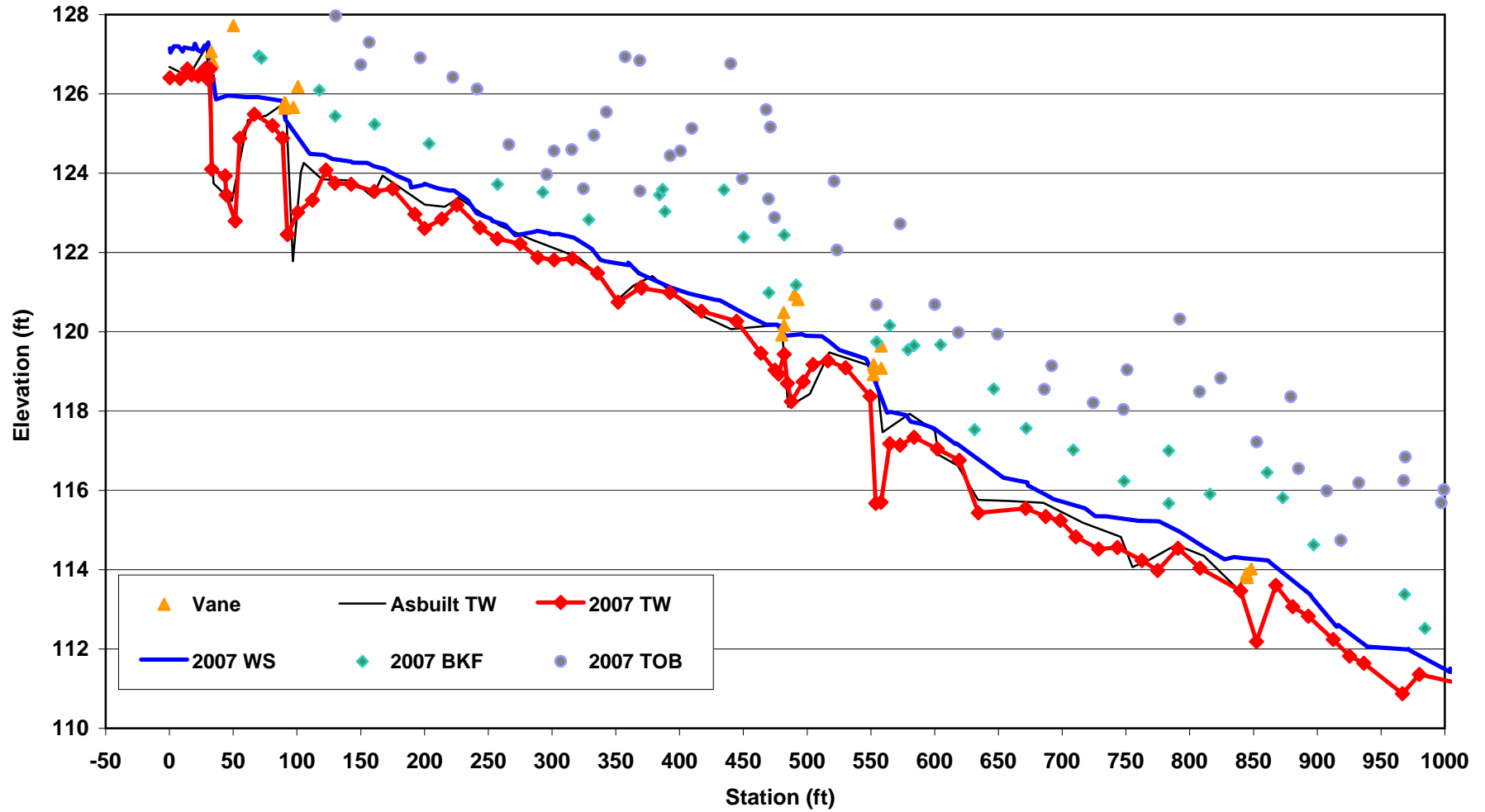
Project Name	Purlear Phase I
Cross Section	1 - Reach #5 - Lower Middle Trib (Lower Section)
Feature	Pool
Date	7/25/2007
Crew	Roberts, Price, Zink

Description	Material	2004 As-Built				2005				2006				2007			
		Size (mm)	Pool - Bed	%	Cum %	Pool - Bed	Pool - Bank	%	Cum %	Pool - Bed	Pool - Bank	%	Cum %	Pool - Bed	%	Cum %	
Silt/Clay	silt/clay	0.061	6	12.0%	12.0%	0	2	3.4%	3.4%	11	5	31.4%	31.4%	30	29.4%	29.4%	
	very fine sand	0.062	12	24.0%	36.0%	0	3	5.1%	8.5%	6	1	13.7%	45.1%	0	0.0%	29.4%	
	fine sand	0.125	0	0.0%	36.0%	0	5	8.5%	16.9%	5	0	11.8%	56.9%	8	7.8%	37.3%	
	medium sand	0.25	0	0.0%	36.0%	1	2	5.1%	22.0%	5	2	13.7%	70.6%	0	0.0%	37.3%	
	course sand	0.50	21	42.0%	78.0%	8	0	13.6%	35.6%	1	0	2.0%	72.5%	14	13.7%	51.0%	
Gravel	very course sand	1.0	0	0.0%	78.0%	4	0	6.8%	42.4%	6	0	11.8%	84.3%	26	25.5%	76.5%	
	very fine gravel	2.0	0	0.0%	78.0%	12	0	20.3%	62.7%	5	0	9.8%	94.1%	0	0.0%	76.5%	
	fine gravel	4.0	0	0.0%	78.0%	1	0	1.7%	64.4%	1	0	2.0%	96.1%	0	0.0%	76.5%	
	fine gravel	5.7	1	2.0%	80.0%	3	0	5.1%	69.5%	0	0	0.0%	96.1%	1	1.0%	77.5%	
	medium gravel	8.0	4	8.0%	88.0%	6	0	10.2%	79.7%	0	0	0.0%	96.1%	2	2.0%	79.4%	
	medium gravel	11.3	4	8.0%	96.0%	3	0	5.1%	84.7%	1	1	3.9%	100.0%	0	0.0%	79.4%	
	course gravel	16.0	2	4.0%	100.0%	3	0	5.1%	89.8%	0	0	0.0%	100.0%	3	2.9%	82.4%	
	course gravel	22.6	0	0.0%	100.0%	4	0	6.8%	96.6%	0	0	0.0%	100.0%	0	0.0%	82.4%	
	very course gravel	32	0	0.0%	100.0%	1	0	1.7%	98.3%	0	0	0.0%	100.0%	8	7.8%	90.2%	
	very course gravel	45	0	0.0%	100.0%	1	0	1.7%	100.0%	0	0	0.0%	100.0%	3	2.9%	93.1%	
	Cobble	small cobble	64	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	1.0%	94.1%
		medium cobble	90	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	94.1%
		large cobble	128	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	2	2.0%	96.1%
very large cobble		180	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	3	2.9%	99.0%	
Boulder	small boulder	256	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	1	1.0%	100.0%	
	small boulder	362	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	medium boulder	512	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	large boulder	1024	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
	very large boulder	2049	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
Bedrock	bedrock	40096	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0	0.0%	100.0%	0	0.0%	100.0%	
TOTAL / %of whole count			50	100.0%		47	12	100%		41	10	100%		102	100.0%		

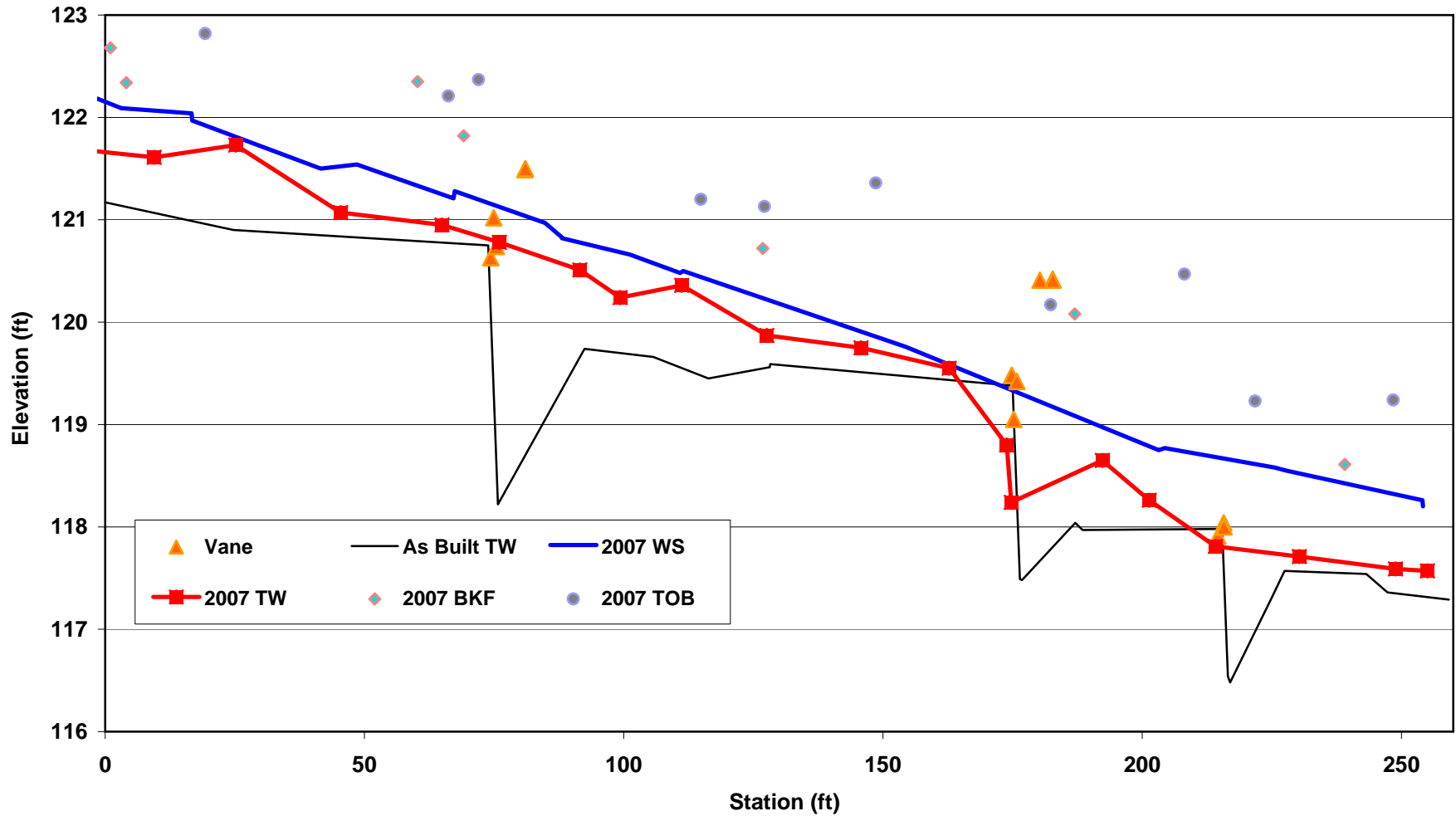
	d16	d35	d50	d84	d95
2004 As-Built	0.07	0.09	0.50	8.25	13.15
2005	0.18	0.73	2.06	13.06	25.40
2006	0.00	0.07	0.13	1.48	3.83
2007	0.00	0.11	0.48	19.28	92.80
2008	0.00	0.00	0.00	0.00	0.00
2009	0.00	0.00	0.00	0.00	0.00



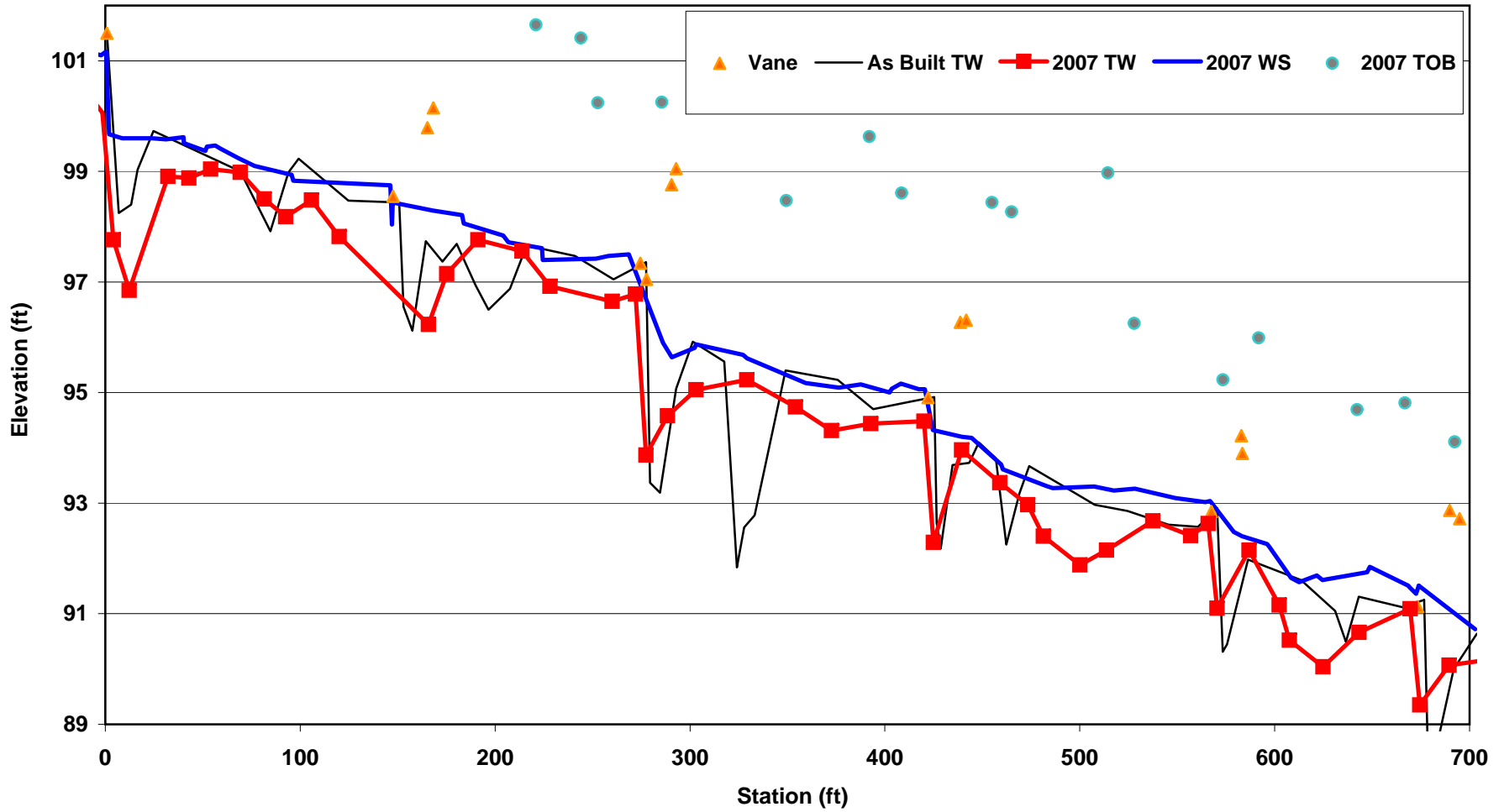
Purlear Creek Reach 1
MY-03 Monitoring - 2007
Survey Date: 07/23/07



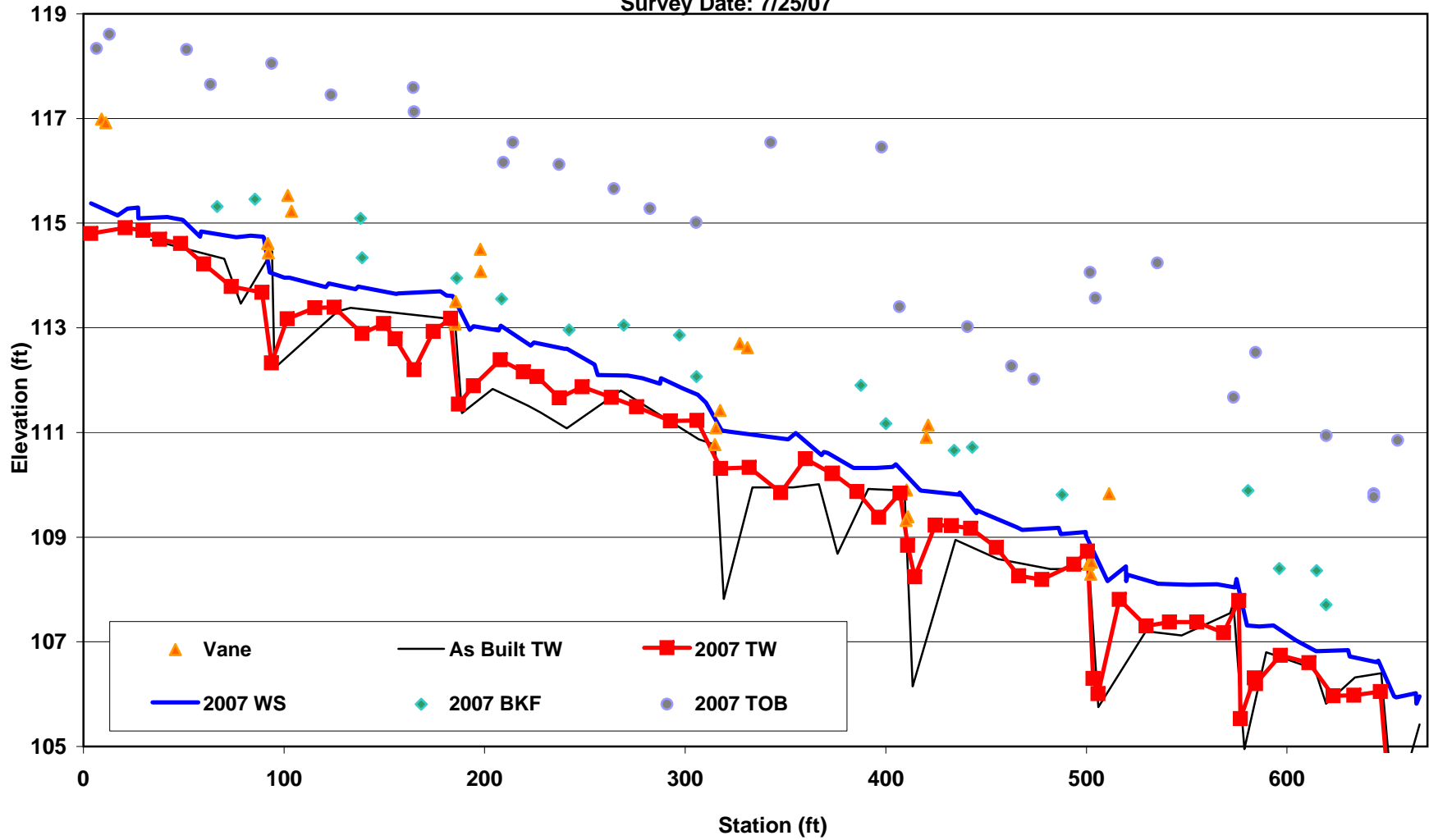
Purlear Creek Reach 2
MY-03 Monitoring - 2007
Survey Date: 7/24/07



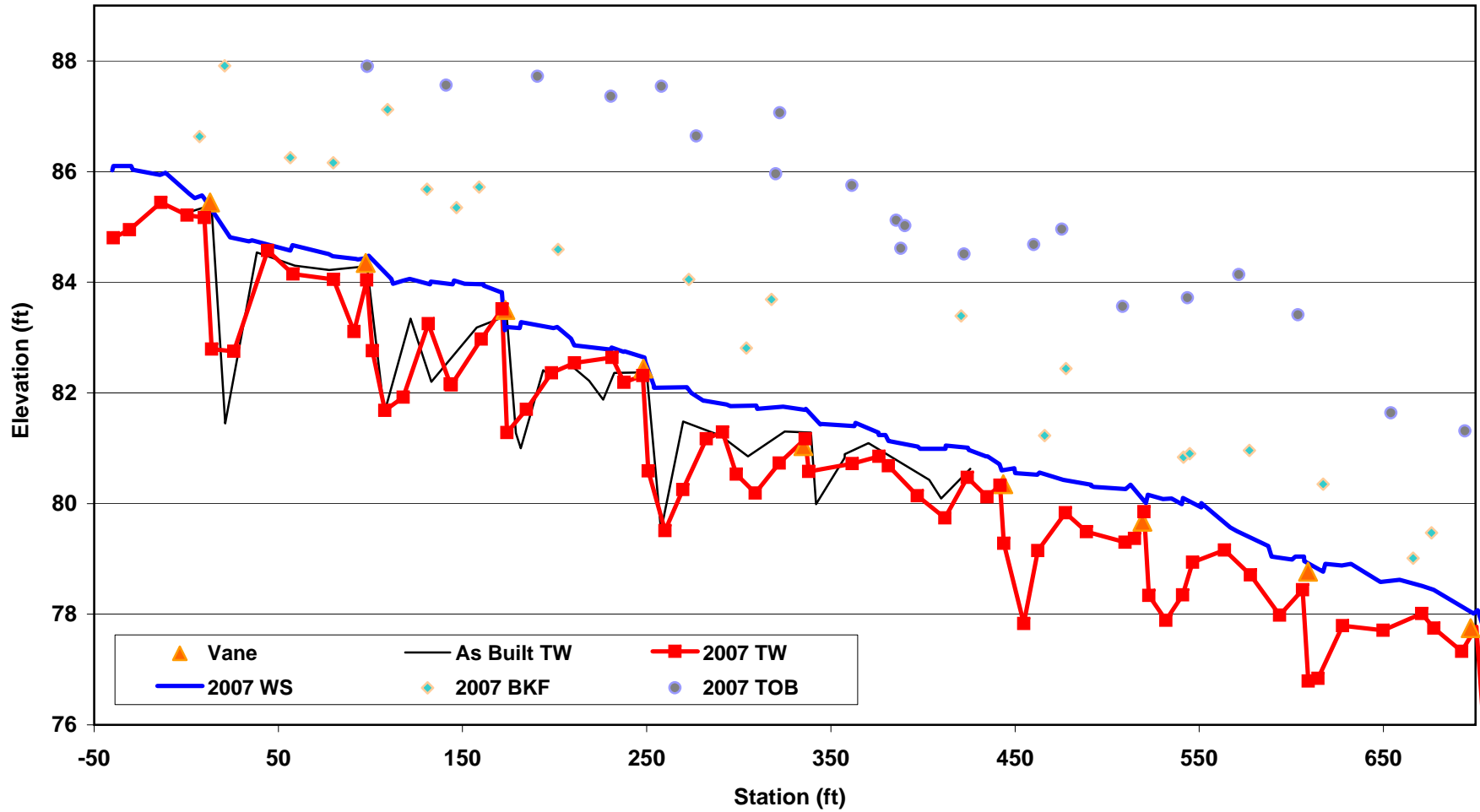
Purlear Creek Reach 3
MY-03 Monitoring - 2007
Survey Date: 7/25/07



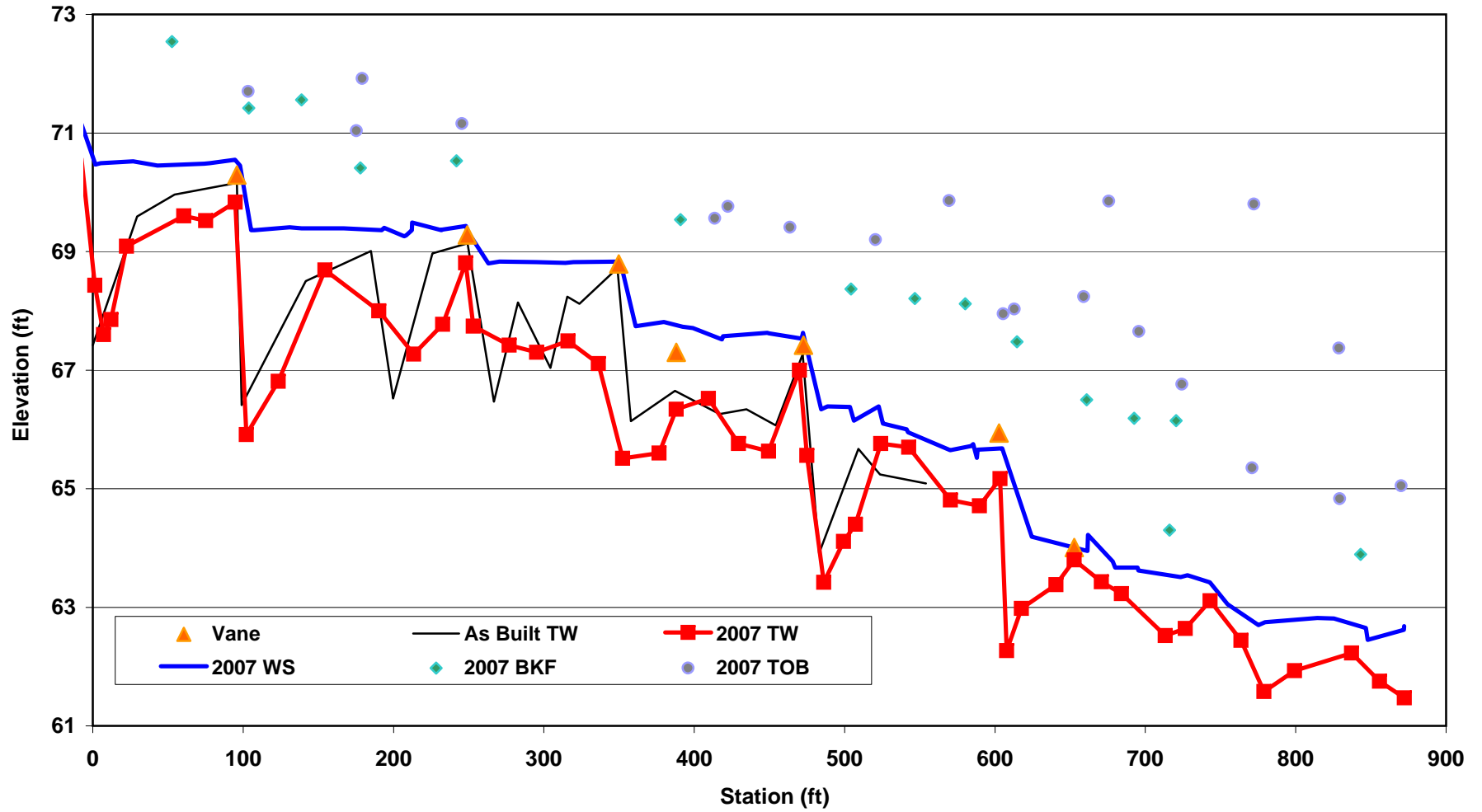
Purlear Creek Reach 4
MY-03 Monitoring - 2007
Survey Date: 7/25/07



Purlear Creek Reach 5
MY-03 Monitoring - 2007
Survey Date: 7/25-26/07



Purlear Creek Reach 6
MY-03 Monitoring - 2007
Survey Date: 8/02/07



2007 Reach 1 Survey Data

Water				
Point	Station	Offset	Elevation	Desc
40111	0.4	0.235592	127.15 (2007-W)	
40112	0.84	4.168193	127.04 (2007-W)	
40113	3.56	0.220287	127.2 (2007-W)	
40077	7.19	0.814813	127.2 (2007-W)	
40117	10.42	-4.32019	127.07 (2007-W)	
40114	11.49	1.226739	127.17 (2007-W)	
40075	13.66	0.042248	127.16 (2007-W)	
40116	18.92	-1.049982	127.13 (2007-W)	
40071	19.85	-0.805068	127.27 (2007-W)	
40072	20.09	-1.014048	127.27 (2007-W)	
40074	22.14	1.287442	127.11 (2007-W)	
40121	24.75	-7.369709	127.06 (2007-W)	
40068	27.55	-3.241302	127.22 (2007-W)	
40070	28.73	2.310051	127.19 (2007-W)	
40120	30.51	-1.875657	127.3 (2007-W)	
40126	36.55	-9.482708	125.86 (2007-W)	
40127	45.52	0.296934	125.96 (2007-W)	
40133	60.21	-0.202237	125.92 (2007-W)	
40139	69.51	-9.478448	125.92 (2007-W)	
40137	88.15	-0.293807	125.83 (2007-W)	
40146	91.03	-8.212118	125.35 (2007-W)	
40147	110.17	0.97359	124.49 (2007-W)	
40149	121.07	2.43093	124.46 (2007-W)	
40152	123.28	-7.227073	124.43 (2007-W)	
40154	127.77	-2.448969	124.36 (2007-W)	
40153	142.5	-1.440067	124.29 (2007-W)	
40157	143.53	-6.896517	124.27 (2007-W)	
40160	155.34	-5.978858	124.26 (2007-W)	
40156	159.96	-1.84218	124.18 (2007-W)	
40162	169.04	-6.702325	124.11 (2007-W)	
40159	170.35	-1.362105	124.08 (2007-W)	
40164	178.51	-5.609261	123.93 (2007-W)	
40165	188.39	-0.938332	123.8 (2007-W)	
40167	189.5	-4.943098	123.64 (2007-W)	
40170	198.76	-5.177787	123.7 (2007-W)	
40168	200.08	-0.059574	123.73 (2007-W)	
40173	210.19	-6.422781	123.82 (2007-W)	
40172	219.9	-1.504414	123.66 (2007-W)	
40174	222.8	-5.308485	123.57 (2007-W)	
40176	233.76	-1.835114	123.32 (2007-W)	
40177	240.97	-4.648421	122.99 (2007-W)	
40179	252.27	-0.612835	122.85 (2007-W)	
40181	253.05	-4.594369	122.79 (2007-W)	
40184	263.23	-0.681156	122.7 (2007-W)	
40188	271.17	-3.52641	122.43 (2007-W)	
40186	286.14	1.222627	122.52 (2007-W)	
40189	288.34	-1.473835	122.55 (2007-W)	
40191	298.48	-2.037443	122.48 (2007-W)	
40194	298.57	-2.07424	122.46 (2007-W)	
40192	305.15	4.203008	122.47 (2007-W)	
40195	317.29	4.781437	122.37 (2007-W)	
40197	331.04	-0.644754	122.09 (2007-W)	
40200	337.95	-1.823716	121.81 (2007-W)	
40198	341.46	1.868737	121.78 (2007-W)	
40203	359.15	3.177446	121.69 (2007-W)	
40201	359.7	2.849844	121.68 (2007-W)	
40204	359.74	-2.912029	121.75 (2007-W)	
40209	367.74	-1.033084	121.49 (2007-W)	
40206	367.59	-1.574218	121.48 (2007-W)	
40210	392.96	-1.427927	121.12 (2007-W)	
40208	407.22	6.40674	120.97 (2007-W)	
40211	427.01	5.689338	120.81 (2007-W)	
40213	431.63	1.211769	120.79 (2007-W)	
40216	455.13	1.526075	120.38 (2007-W)	
40214	467.89	3.629458	120.18 (2007-W)	
40281	476.72	0.129753	120.18 (2007-W)	
40284	479.17	-4.068586	120.08 (2007-W)	
40289	479.19	-4.053538	120.05 (2007-W)	
40280	482.75	4.166858	119.9 (2007-W)	
40293	495.72	6.716555	119.94 (2007-W)	
40291	498.84	-1.384177	119.9 (2007-W)	
40297	511.6	4.309865	119.89 (2007-W)	
40296	518.23	-4.885204	119.73 (2007-W)	
40300	525.41	3.800366	119.54 (2007-W)	
40304	546.06	1.828185	119.32 (2007-W)	
40301	547.3	-4.124718	119.25 (2007-W)	
40310	562.65	2.599162	117.96 (2007-W)	
40307	565.4	-4.648006	117.98 (2007-W)	
40309	577.36	-3.599003	117.9 (2007-W)	
40314	581.21	-1.872342	117.73 (2007-W)	
40315	590.32	-1.871307	117.67 (2007-W)	
40318	598.37	3.832348	117.57 (2007-W)	
40321	616.26	3.30548	117.17 (2007-W)	

Thalweg				
Point	Station	Offset	Elevation	Desc
40115	0.43	4.130531	126.41 (2007-T)	
40078	8.48	4.388961	126.39 (2007-T)	
40076	14	2.57855	126.63 (2007-T)	
40119	17.4	-1.703481	126.48 (2007-T)	
40073	22.51	-0.328479	126.45 (2007-T)	
40122	28.12	-3.546658	126.64 (2007-T)	
40069	30.42	0.160949	126.36 (2007-T)	
40067	30.45	0.094256	126.38 (2007-T)	
40124	31.8	-4.326724	126.63 (2007-T)	
40129	33.08	-5.767839	124.1 (2007-T)	
40132	43.75	-7.693471	123.93 (2007-T)	
40049	44.58	0.565592	123.45 (2007-T)	
40046	51.51	1.811487	122.79 (2007-T)	
40134	55.12	-6.836222	124.88 (2007-T)	
40136	66.61	-5.592168	125.49 (2007-T)	
40138	80.84	-4.515366	125.2 (2007-T)	
40141	88.8	-2.561955	124.88 (2007-T)	
40145	92.44	-3.97792	122.45 (2007-T)	
40144	92.86	-3.356534	122.46 (2007-T)	
40148	100.53	-3.188007	123.01 (2007-T)	
40150	112.16	-7.472986	123.32 (2007-T)	
40151	122.72	0.509325	124.08 (2007-T)	
40155	129.78	-1.399436	123.75 (2007-T)	
40158	142.39	-3.937901	123.72 (2007-T)	
40161	160.59	-2.936392	123.54 (2007-T)	
40163	175.06	-2.424763	123.61 (2007-T)	
40166	192.37	-2.958195	122.97 (2007-T)	
40169	200.16	-2.665639	122.61 (2007-T)	
40171	213.44	-2.034947	122.85 (2007-T)	
40175	225.45	-4.225411	123.2 (2007-T)	
40178	243.31	-3.221488	122.63 (2007-T)	
40180	257.01	-2.898565	122.35 (2007-T)	
40182	274.95	-2.672727	122.22 (2007-T)	
40183	288.77	-1.584034	121.87 (2007-T)	
40185	301.69	0.481531	121.81 (2007-T)	
40187	315.98	1.721307	121.85 (2007-T)	
40190	335.56	1.837814	121.48 (2007-T)	
40193	351.85	0.824289	120.75 (2007-T)	
40196	370.05	2.149593	121.13 (2007-T)	
40199	370.13	2.361067	121.1 (2007-T)	
40202	392.55	1.838032	120.99 (2007-T)	
40205	417.09	4.109231	120.52 (2007-T)	
40207	444.77	4.827661	120.27 (2007-T)	
40212	463.74	2.279371	119.46 (2007-T)	
40215	474.72	1.066214	119.03 (2007-T)	
40278	477.72	-3.626332	118.93 (2007-T)	
40282	482.12	-2.205901	119.43 (2007-T)	
40279	484.47	1.214872	118.7 (2007-T)	
40283	487.56	3.204304	118.24 (2007-T)	
40294	496.96	2.688322	118.74 (2007-T)	
40295	504.7	1.43727	119.17 (2007-T)	
40298	516.26	0.873657	119.27 (2007-T)	
40299	530.2	-0.281008	119.09 (2007-T)	
40302	549.35	-0.099425	118.37 (2007-T)	
40303	553.83	-0.187537	115.67 (2007-T)	
40312	557.96	-0.722963	115.7 (2007-T)	
40311	564.72	-0.422409	117.18 (2007-T)	
40316	572.87	-0.858222	117.14 (2007-T)	
40317	583.92	0.551028	117.34 (2007-T)	
40320	602.15	0.981683	117.05 (2007-T)	
40322	619.22	1.278545	116.76 (2007-T)	
40325	634.23	2.757692	115.43 (2007-T)	
40329	671.43	3.275565	115.55 (2007-T)	
40333	687.12	4.15487	115.34 (2007-T)	
40332	698.42	3.813898	115.24 (2007-T)	
40336	710.72	3.645605	114.83 (2007-T)	
40337	728.62	2.414953	114.52 (2007-T)	
40340	743.29	3.110349	114.56 (2007-T)	
40341	762.62	2.556158	114.23 (2007-T)	
40345	774.82	2.022063	113.98 (2007-T)	
40344	790.87	1.700948	114.54 (2007-T)	
40349	807.99	6.005111	114.04 (2007-T)	
40348	839.93	1.459045	113.47 (2007-T)	
40360	852.46	1.586386	112.19 (2007-T)	
40359	867.6	2.929404	113.61 (2007-T)	
40362	880.81	-0.01185	113.07 (2007-T)	
40363	893.03	-0.443911	112.83 (2007-T)	
40368	912.45	0.704008	112.24 (2007-T)	
40369	925.39	1.005728	111.82 (2007-T)	
40370	936.57	-2.06081	111.64 (2007-T)	
40374	966.87	3.21335	110.87 (2007-T)	
40377	980.07	3.579774	111.36 (2007-T)	
40378	1005.52	1.421183	111.17 (2007-T)	

TOB				
Point	Station	Offset	Elevation	Desc
40263	1.2	23.545583	133.34 (2007-TOB)	
40266	9.97	27.357994	133.39 (2007-TOB)	
40260	12.07	20.331104	130.57 (2007-TOB)	
40268	32.56	21.587499	131.24 (2007-TOB)	
40265	36.69	-106.390395	136.54 (2007-TOB)	
40256	37.03	-28.41158	131.15 (2007-TOB)	
40258	37.5	-28.570551	129.46 (2007-TOB)	
40252	52.77	29.283782	132.53 (2007-TOB)	
40250	78.5	-28.252769	131.13 (2007-TOB)	
40255	89.51	33.888432	129.47 (2007-TOB)	
40253	130.34	16.317742	127.97 (2007-TOB)	
40243	150.15	-33.567966	126.73 (2007-TOB)	
40249	156.65	11.636573	127.3 (2007-TOB)	
40241	196.74	-31.351088	126.91 (2007-TOB)	
40244	222.2	20.271282	126.42 (2007-TOB)	
40236	241.28	-23.537116	126.12 (2007-TOB)	
40240	268.21	24.258439	124.72 (2007-TOB)	
40233	298.85	-6.773606	123.97 (2007-TOB)	
40239	301.71	-24.231155	124.56 (2007-TOB)	
40237	315.65	25.192415	124.59 (2007-TOB)	
40230	324.64	-8.062413	123.61 (2007-TOB)	
40235	332.88	22.001076	124.95 (2007-TOB)	
40234	342.75	18.650964	125.54 (2007-TOB)	
40232	357.4	23.307317	126.93 (2007-TOB)	
40228	368.75	28.470844	126.84 (2007-TOB)	
40227	369.14	-13.998703	123.55 (2007-TOB)	
40226	392.71	19.432343	124.44 (2007-TOB)	
40223	400.68	-15.779773	124.56 (2007-TOB)	
40224	409.61	25.598254	125.13 (2007-TOB)	
40220	440.13	-14.438228	126.76 (2007-TOB)	
40221	449.19	27.530037	123.86 (2007-TOB)	
40218	467.87	-10.474565	125.6 (2007-TOB)	
40428	469.9	25.866464	123.35 (2007-TOB)	
40425	471.28	-12.888066	125.16 (2007-TOB)	
40217	474.			

2007 Reach 2 Survey Data

Water				
Point	Station	Offset	Elevation	Desc
40500	-128.49	0.087345	124.82	(2007-W)
40501	-121.81	3.428306	123.19	(2007-W)
40506	-119.32	2.881551	123.15	(2007-W)
40508	-106.4	2.59833	123.03	(2007-W)
40511	-98.48	2.80044	122.91	(2007-W)
40512	-92.77	1.060807	122.99	(2007-W)
40515	-61.69	2.629368	122.53	(2007-W)
40517	-60.45	-1.186312	122.47	(2007-W)
40518	-47.42	2.773684	122.51	(2007-W)
40521	-16.35	-0.741949	122.16	(2007-W)
40522	-16.21	-0.663451	122.44	(2007-W)
40530	-1.36	-0.179743	122.18	(2007-W)
40531	3.13	-3.23824	122.09	(2007-W)
40533	16.68	-1.050719	122.04	(2007-W)
40535	16.78	-3.511816	121.97	(2007-W)
40538	41.57	-1.396965	121.5	(2007-W)
40539	48.55	-4.076288	121.54	(2007-W)
40543	67.19	-2.439466	121.21	(2007-W)
40542	67.42	-0.813984	121.28	(2007-W)
40546	84.83	1.21935	120.97	(2007-W)
40551	88.04	-2.637935	120.83	(2007-W)
40547	88.09	-2.881518	120.82	(2007-W)
40552	101.17	1.543258	120.66	(2007-W)
40556	110.9	-1.559186	120.48	(2007-W)
40554	111.47	0.373473	120.5	(2007-W)
40560	154.33	0.682391	119.76	(2007-W)
40569	203.2	2.264911	118.75	(2007-W)
40564	204.33	-1.867679	118.77	(2007-W)
40570	225.59	4.571779	118.58	(2007-W)
40573	227.8	-0.465571	118.55	(2007-W)
40574	254.05	3.110235	118.26	(2007-W)
40577	254.16	-0.44995	118.2	(2007-W)

Thalweg				
Point	Station	Offset	Elevation	Desc
40503	-126.26	4.629203	124.98	(2007-T)
40504	-125.89	0.85455	125.26	(2007-T)
40509	-123.52	2.94902	122.04	(2007-T)
40505	-121.29	-3.174583	125.58	(2007-T)
40513	-116.42	2.96725	122.98	(2007-T)
40516	-99.21	2.36851	122.74	(2007-T)
40520	-84.53	2.395911	122.66	(2007-T)
40524	-64.98	2.116247	122.43	(2007-T)
40527	-62.2	1.545378	121.83	(2007-T)
40532	-50.62	1.859024	122.31	(2007-T)
40534	-36.73	1.716549	122.13	(2007-T)
40537	-18.51	1.323715	122.05	(2007-T)
40540	-1.81	-1.329933	121.67	(2007-T)
40541	9.44	-1.74622	121.61	(2007-T)
40544	25.17	-1.947158	121.73	(2007-T)
40545	45.42	-2.65226	121.07	(2007-T)
40548	64.96	-1.894102	120.95	(2007-T)
40550	76.04	-1.890632	120.78	(2007-T)
40553	91.55	-0.650646	120.51	(2007-T)
40555	99.32	0.348314	120.24	(2007-T)
40557	111.21	-0.381271	120.36	(2007-T)
40559	127.63	0.940637	119.87	(2007-T)
40562	145.77	1.120545	119.75	(2007-T)
40563	162.78	-0.937945	119.55	(2007-T)
40565	173.89	-1.433601	118.8	(2007-T)
40567	174.74	-1.111291	118.24	(2007-T)
40579	192.32	-0.794838	118.65	(2007-T)
40581	201.37	0.084593	118.26	(2007-T)
40583	214.13	-0.277029	117.81	(2007-T)
40586	230.32	3.156055	117.71	(2007-T)
40587	248.86	0.501816	117.59	(2007-T)
40588	255.02	2.058741	117.57	(2007-T)

TOB				
Point	Station	Offset	Elevation	Desc
40672	-126.08	18.200653	126.82	(2007-TOB)
40671	-111.82	-18.466138	127.6	(2007-TOB)
40670	-83.79	16.879998	125.44	(2007-TOB)
40669	-73.34	-17.607979	125.06	(2007-TOB)
40668	-36.72	16.714401	124.3	(2007-TOB)
40667	-34.01	-19.479428	123.33	(2007-TOB)
40666	-3.54	10.170267	122.91	(2007-TOB)
40665	19.28	-20.037818	122.82	(2007-TOB)
40663	66.2	12.794301	122.21	(2007-TOB)
40664	72.01	-15.707872	122.37	(2007-TOB)
40662	114.89	14.854453	121.2	(2007-TOB)
40661	127.16	-15.623579	121.13	(2007-TOB)
40660	148.61	16.663043	121.36	(2007-TOB)
40659	182.35	-16.550022	120.17	(2007-TOB)
40658	208.16	15.251543	120.47	(2007-TOB)
40657	221.79	-15.537293	119.23	(2007-TOB)
40656	248.42	13.008467	119.24	(2007-TOB)

Bankfull				
Point	Station	Offset	Elevation	
40495	-105.47	-7.294568	125.01	(2)
40502	-97.13	5.479271	123.92	(2)
40510	-47.14	-5.708999	123.24	(2)
40519	1.02	4.73741	122.68	(2)
40514	4.08	-7.262397	122.34	(2)
40523	60.24	-9.412472	122.35	(2)
40536	69.13	4.347518	121.82	(2)
40549	126.82	6.675764	120.72	(2)
40558	187	-8.497523	120.08	(2)
40561	239.08	-4.984208	118.61	(2)

Vanes				
Point	Station	Offset	Elevation	
40507	-119.45	7.19769	125.32	(2)
40526	-64.76	3.099832	123.01	(2)
40525	-64.5	-0.362783	123.25	(2)
40529	-57.59	5.978565	123.65	(2)
40528	-56.86	-5.587303	124.25	(2)
40571	174.55	0.859037	119.7	(2)
40568	174.63	-1.314025	119.32	(2)
40576	180.55	5.996703	120.39	(2)
40572	181.37	-5.764729	120.48	(2)

2007 Reach 3 Survey Data

Water				
Point	Station	Offset	Elevation	Desc
40781	-120.94	6.838092	102.64	(2007-W)
40779	-118.25	-1.061994	102.72	(2007-W)
40782	-103.02	1.22466	102.36	(2007-W)
40784	-101.95	5.622673	102.4	(2007-W)
40786	-82.49	0.890009	101.78	(2007-W)
40787	-78.3	3.966701	101.74	(2007-W)
40790	-60.5	3.545921	101.76	(2007-W)
40791	-57.59	-3.225843	101.65	(2007-W)
40794	-39.82	2.102576	101.6	(2007-W)
40793	-39.06	-5.040526	101.59	(2007-W)
40797	-21.84	0.460521	101.35	(2007-W)
40796	-21.8	-6.083801	101.28	(2007-W)
40799	-2.23	-1.411387	101.1	(2007-W)
40800	0.44	-9.98759	101.17	(2007-W)
40803	1.89	-2.465087	99.67	(2007-W)
40804	8.72	-9.009623	99.6	(2007-W)
40809	24	-0.70916	99.6	(2007-W)
40808	31.13	-7.204368	99.58	(2007-W)
40818	40.12	0.40985	99.62	(2007-W)
40817	40.34	-0.112978	99.51	(2007-W)
40816	51.38	-6.907994	99.37	(2007-W)
40810	52.15	-6.880081	99.45	(2007-W)
40820	56.36	-7.786733	99.47	(2007-W)
40821	59.2	-0.833702	99.41	(2007-W)
40823	68.25	-7.823469	99.24	(2007-W)
40824	76.61	-2.732488	99.1	(2007-W)
40826	95.67	-0.824972	98.94	(2007-W)
40829	96.45	2.064254	98.83	(2007-W)
40839	146.29	-4.528501	98.7	(2007-W)
40837	147	-2.121818	98.04	(2007-W)
40836	147.52	-1.882627	98.44	(2007-W)
40844	168.03	-8.116345	98.29	(2007-W)
40847	183.03	-5.933033	98.21	(2007-W)
40849	183.95	2.970345	98.06	(2007-W)
40850	204.12	-5.540101	97.84	(2007-W)
40851	206.82	1.822392	97.72	(2007-W)
40854	224.1	-3.798606	97.61	(2007-W)
40853	224.4	1.821371	97.4	(2007-W)
40857	251.83	1.803231	97.42	(2007-W)
40856	258.12	-3.117984	97.47	(2007-W)
40859	268.67	-3.864248	97.5	(2007-W)
40864	286.14	-4.131757	95.9	(2007-W)
40866	290.72	4.21639	95.64	(2007-W)
40869	302.42	1.952786	95.81	(2007-W)
40868	303.09	-4.306466	95.87	(2007-W)
40870	327.22	1.271357	95.68	(2007-W)
40872	329.25	-3.472113	95.62	(2007-W)
40874	359.35	-1.380934	95.17	(2007-W)
40875	376.3	4.479196	95.09	(2007-W)
40877	387.71	-2.267426	95.15	(2007-W)
40878	402.44	6.26588	95	(2007-W)
40880	403.47	-1.177642	95.07	(2007-W)
40881	408.26	6.621644	95.16	(2007-W)
40883	417.48	-2.311031	95.06	(2007-W)
40884	420.55	5.887845	95.06	(2007-W)
40890	424.59	5.995898	94.32	(2007-W)
40891	439.48	-2.67423	94.2	(2007-W)
40893	444.44	4.834273	94.18	(2007-W)
40895	459.63	5.869734	93.7	(2007-W)
40896	460.47	-1.567741	93.61	(2007-W)
40899	482.79	-1.681236	93.31	(2007-W)
40898	486.11	3.616269	93.27	(2007-W)
40903	507.43	-0.793836	93.3	(2007-W)
40902	517.53	6.246597	93.23	(2007-W)
40905	528.27	-1.307782	93.26	(2007-W)
40907	549.11	5.265725	93.09	(2007-W)
40910	564.33	0.916425	93.02	(2007-W)
40909	566.88	8.457125	93.04	(2007-W)
40916	578.99	8.198725	92.48	(2007-W)
40917	583.25	-0.142688	92.4	(2007-W)
40919	596.11	8.662453	92.26	(2007-W)
40920	597.23	1.75523	92.21	(2007-W)
40925	608.34	2.636778	91.65	(2007-W)
40923	612.54	5.404962	91.57	(2007-W)
40926	621.64	6.028037	91.69	(2007-W)
40929	624.52	0.249016	91.61	(2007-W)
40932	647.42	2.872934	91.75	(2007-W)
40928	648.75	9.400821	91.85	(2007-W)
40931	668.49	8.255775	91.51	(2007-W)
40935	669.19	1.384795	91.48	(2007-W)
40934	672.6	6.398952	91.36	(2007-W)
40939	673.89	3.71727	91.51	(2007-W)
40943	702.94	5.948414	90.72	(2007-W)

Thalweg				
Point	Station	Offset	Elevation	Desc
40780	-126.07	3.578611	101.4	(2007-T)
40783	-110.69	2.565779	102.24	(2007-T)
40785	-91.13	2.585862	101.58	(2007-T)
40788	-72.06	1.33549	100.87	(2007-T)
40789	-57.05	-0.058847	100.64	(2007-T)
40792	-40.55	-1.308807	101	(2007-T)
40795	-20.77	-2.485785	100.99	(2007-T)
40798	-1.54	-6.190945	100.06	(2007-T)
40805	4.19	-4.949513	97.76	(2007-T)
40807	12.34	-4.040233	96.85	(2007-T)
40814	32.16	-3.898434	98.91	(2007-T)
40815	42.95	-2.218691	98.88	(2007-T)
40819	54.1	-2.549313	99.04	(2007-T)
40822	69.3	-4.128675	98.98	(2007-T)
40825	81.51	-7.2358	98.5	(2007-T)
40828	92.56	6.193421	98.18	(2007-T)
40831	105.81	-2.001202	98.48	(2007-T)
40832	119.99	-3.459833	97.82	(2007-T)
40838	165.89	-2.893337	96.23	(2007-T)
40842	175.27	-2.34331	97.15	(2007-T)
40845	191.16	1.686313	97.76	(2007-T)
40848	213.82	-1.702613	97.56	(2007-T)
40852	228.14	1.596859	96.92	(2007-T)
40855	260.12	1.176971	96.65	(2007-T)
40858	272.03	-0.918529	96.78	(2007-T)
40863	277.37	-0.745612	93.87	(2007-T)
40865	288.45	-0.388599	94.58	(2007-T)
40867	303.15	-0.806117	95.05	(2007-T)
40871	329.19	-0.562157	95.23	(2007-T)
40873	354.13	0.532562	94.74	(2007-T)
40876	372.65	1.71795	94.31	(2007-T)
40879	392.7	2.434397	94.44	(2007-T)
40882	420.08	2.01844	94.48	(2007-T)
40889	424.85	1.746914	92.29	(2007-T)
40892	439.34	1.548299	93.96	(2007-T)
40894	458.93	2.869569	93.37	(2007-T)
40897	473.35	2.743301	92.97	(2007-T)
40900	481.34	0.186832	92.4	(2007-T)
40901	500.05	1.809694	91.88	(2007-T)
40904	513.7	1.530347	92.15	(2007-T)
40906	537.45	3.194306	92.68	(2007-T)
40908	556.97	2.39457	92.41	(2007-T)
40911	565.93	5.631711	92.63	(2007-T)
40918	570.45	5.762494	91.1	(2007-T)
40921	586.81	4.858372	92.15	(2007-T)
40924	602.3	5.366319	91.16	(2007-T)
40927	607.57	6.021254	90.52	(2007-T)
40930	624.76	5.873266	90.4	(2007-T)
40933	643.36	5.48451	90.66	(2007-T)
40937	669.56	5.663998	91.09	(2007-T)
40945	674.46	5.483523	89.35	(2007-T)
40948	689.57	5.830667	90.07	(2007-T)
40950	706.37	0.890022	90.15	(2007-T)

TOB				
Point	Station	Offset	Elevation	Desc
40978	-129.85	-18.353311	105.57	(2007-TOB)
40977	-86.28	-16.342626	104.29	(2007-TOB)
41042	-86.04	32.40502	104.62	(2007-TOB)
41022	-40.91	18.37784	104.36	(2007-TOB)
40976	-36.51	-29.503776	103.89	(2007-TOB)
40975	23.54	-26.349732	102.99	(2007-TOB)
41017	42.38	24.791246	105.35	(2007-TOB)
40974	89.68	-26.09952	103.03	(2007-TOB)
41014	107.03	23.855104	103.8	(2007-TOB)
40973	184.71	-27.720497	102.47	(2007-TOB)
41013	203.23	21.647377	104.08	(2007-TOB)
40971	221.05	-28.477442	101.65	(2007-TOB)
40972	243.98	-28.852003	101.41	(2007-TOB)
41011	252.8	20.531955	100.24	(2007-TOB)
40970	285.58	-24.402121	100.25	(2007-TOB)
40969	349.4	-23.780783	98.47	(2007-TOB)
41005	392.14	24.127548	99.63	(2007-TOB)
40968	408.61	-22.207144	98.61	(2007-TOB)
41001	454.93	29.202621	98.44	(2007-TOB)
40967	465.11	-18.251529	98.27	(2007-TOB)
40966	514.42	-20.510508	98.97	(2007-TOB)
40997	528	22.336217	96.25	(2007-TOB)
40965	573.43	-21.569746	95.23	(2007-TOB)
40995	591.83	21.683471	95.99	(2007-TOB)
40964	642.39	-15.499221	94.69	(2007-TOB)
40987	666.88	27.649129	94.81	(2007-TOB)
40963	692.43	-18.305117	94.11	(2007-TOB)

Vanes				
Point	Station	Offset	Elevation	Desc
40801	0.4	-2.655509	101.35	(2007-RV) 07-RV
40802	1.85	-7.462234	101.09	(2007-RV) 07-RV
40806	18.11	-12.12283	102.5	(2007-RV) 07-RV
40811	19.83	4.435224	102.63	(2007-RV) 07-RV
40835	146.92	-1.796182	98.37	(2007-RV) 07-RV
40833	147.18	-3.558693	99.01	(2007-RV) 07-RV
40846	167.04	4.591007	99.45	(2007-RV) 07-RV
40840	169.17	-9.634252	100.14	(2007-RV) 07-RV
40860	273.48	-2.701161	97.21	(2007-RV) 07-RV
40861	274.54	1.461385	97.14	(2007-RV) 07-RV
40862	292.6	9.764459	99.09	(2007-RV) 07-RV
40888	421.93	4.621949	94.83	(2007-RV) 07-RV
40885	422.19	-1.996171	94.95	(2007-RV) 07-RV
40886	438.97	-7.633921	96.22	(2007-RV) 07-RV
40887	442.09	12.03995	96.06	(2007-RV) 07-RV
40912	566.74	2.357712	92.89	(2007-RV) 07-RV
40915	567.5	7.815349	92.91	(2007-RV) 07-RV
40914	581.81	-4.966277	94.1	(2007-RV) 07-RV
40913	584.62	14.47921	93.84	(2007-RV) 07-RV
40942	672.93	3.301189	91.24	(2007-RV) 07-RV
40938	673.17	2.808492	91.22	(2007-RV) 07-RV
40944	673.49	7.375189	91.39	(2007-RV) 07-RV
40940	673.9	3.782043	91.09	(2007-RV) 07-RV
40936	682.56	12.22605	92.14	(2007-RV) 07-RV
40941	689.43	-3.53595	92.76	(2007-RV) 07-RV

2007 Reach 4 Survey Data

Water				
Point	Station	Offset	Elevation	Desc
41062	3.74	5.001511	115.38	(2007-W)
41065	17.06	1.857222	115.15	(2007-W)
41064	22.05	6.999325	115.28	(2007-W)
41067	27.3	7.521806	115.3	(2007-W)
41069	27.38	2.309846	115.09	(2007-W)
41073	41.75	0.565222	115.12	(2007-W)
41072	49.5	2.511962	115.06	(2007-W)
41076	58.15	-1.018096	114.74	(2007-W)
41075	58.67	2.621807	114.84	(2007-W)
41079	76.17	-0.982418	114.73	(2007-W)
41081	83.47	3.063619	114.76	(2007-W)
41084	89.57	-0.63167	114.74	(2007-W)
41083	90	5.543389	114.72	(2007-W)
41086	92.86	4.799049	114.06	(2007-W)
41088	100.21	1.89791	113.96	(2007-W)
41090	102.63	4.151376	113.96	(2007-W)
41095	120.8	4.264676	113.78	(2007-W)
41094	123.3	5.7986	113.85	(2007-W)
41099	135.7	2.882531	113.74	(2007-W)
41097	136.93	4.923921	113.79	(2007-W)
41102	156.01	0.035717	113.65	(2007-W)
41100	157.02	2.33173	113.66	(2007-W)
41105	177.91	4.159678	113.7	(2007-W)
41109	180.9	3.13974	113.62	(2007-W)
41107	184.13	0.045957	113.61	(2007-W)
41111	192.58	4.543101	112.96	(2007-W)
41114	194.48	-0.769038	113.03	(2007-W)
41119	206.97	-2.316633	112.95	(2007-W)
41117	208.12	2.60786	113.04	(2007-W)
41122	223.01	-1.916122	112.66	(2007-W)
41120	224.52	1.811995	112.72	(2007-W)
41124	239.76	1.587113	112.6	(2007-W)
41126	241.04	-2.534494	112.6	(2007-W)
41129	254.79	-5.22333	112.3	(2007-W)
41127	256.41	-2.56967	112.1	(2007-W)
41131	271.47	2.409308	112.09	(2007-W)
41133	278.6	2.296297	112.04	(2007-W)
41135	287.38	3.136293	111.93	(2007-W)
41136	287.87	0.692268	112.04	(2007-W)
41138	298.83	1.88594	111.84	(2007-W)
41141	306.24	-1.989894	111.72	(2007-W)
41140	310.28	0.090276	111.57	(2007-W)
41142	318.15	-0.019709	111.04	(2007-W)
41144	321.34	-5.897732	111.02	(2007-W)
41151	351.25	-0.8093	110.87	(2007-W)
41150	355.1	3.633435	110.99	(2007-W)
41155	367.9	-0.466295	110.57	(2007-W)
41153	369.15	2.333524	110.63	(2007-W)
41159	371.13	-1.434652	110.61	(2007-W)
41158	383.84	2.199532	110.32	(2007-W)
41161	394.97	1.865817	110.32	(2007-W)
41164	403.44	-0.468851	110.34	(2007-W)
41163	404.95	2.932503	110.39	(2007-W)
41169	417.25	2.727058	109.89	(2007-W)
41173	419.75	-5.207141	109.88	(2007-W)
41176	436.81	0.602519	109.81	(2007-W)
41175	436.82	3.674997	109.85	(2007-W)
41181	445.2	-1.549549	109.46	(2007-W)
41179	445.5	1.16928	109.51	(2007-W)
41184	465.39	-3.229	108.19	(2007-W)
41183	467.92	-0.004976	109.14	(2007-W)
41186	486.14	4.163829	109.18	(2007-W)
41188	487.17	0.94657	109.06	(2007-W)
41195	499.65	2.979995	109.1	(2007-W)
41192	499.72	0.923916	109.03	(2007-W)
41200	510.54	-5.1482	108.16	(2007-W)
41198	519.72	1.881808	108.44	(2007-W)
41203	519.79	-1.376321	108.16	(2007-W)
41202	520.65	0.979665	108.28	(2007-W)
41207	535.07	-2.601237	108.12	(2007-W)
41206	535.29	1.036168	108.11	(2007-W)
41211	551.12	-2.950444	108.09	(2007-W)
41214	565.1	0.060399	108.1	(2007-W)
41218	574.05	-0.455248	108.04	(2007-W)
41212	574.77	2.132707	108.2	(2007-W)
41220	580.09	1.895277	107.31	(2007-W)
41222	586.14	-3.996262	107.29	(2007-W)
41225	593.28	2.588217	107.31	(2007-W)
41229	604.3	-1.470361	107.03	(2007-W)
41232	614.54	-1.629879	106.82	(2007-W)
41231	614.55	-0.847592	106.82	(2007-W)
41235	630.49	0.586347	106.84	(2007-W)
41236	631.26	-2.245906	106.72	(2007-W)
41237	644.68	3.233663	106.61	(2007-W)
41242	645.45	0.343366	106.64	(2007-W)
41241	653.39	3.909124	105.96	(2007-W)
41248	654.4	0.277111	105.94	(2007-W)
41251	664.29	5.630307	106.02	(2007-W)
41247	664.5	5.746174	105.82	(2007-W)
41253	666.12	-1.537476	105.96	(2007-W)

Thalweg				
Point	Station	Offset	Elevation	Desc
41060	3.72	2.224874	114.8	(2007-T)
41066	20.79	4.4561	114.91	(2007-T)
41068	29.66	3.40061	114.86	(2007-T)
41070	37.93	1.657263	114.69	(2007-T)
41071	48.44	0.840375	114.61	(2007-T)
41074	59.96	0.032611	114.22	(2007-T)
41077	73.7	0.756104	113.79	(2007-T)
41078	89.01	1.947348	113.68	(2007-T)
41085	93.7	1.955638	112.33	(2007-T)
41087	101.57	1.600742	113.17	(2007-T)
41091	115.31	4.397768	113.38	(2007-T)
41093	124.99	5.750544	113.39	(2007-T)
41096	138.92	2.727242	112.89	(2007-T)
41098	149.69	1.980872	113.08	(2007-T)
41101	155.38	1.981283	112.79	(2007-T)
41103	164.82	0.514759	112.2	(2007-T)
41104	174.41	1.102919	112.93	(2007-T)
41108	183.11	3.079684	113.18	(2007-T)
41113	186.96	3.17955	111.54	(2007-T)
41118	194.48	2.125925	111.89	(2007-T)
41121	207.78	0.897772	112.39	(2007-T)
41123	219.38	0.175853	112.16	(2007-T)
41125	226.16	0.748839	112.07	(2007-T)
41128	237.32	-0.010355	111.66	(2007-T)
41130	248.7	-1.365405	111.87	(2007-T)
41132	263.18	-2.322627	111.67	(2007-T)
41134	275.7	3.148787	111.49	(2007-T)
41137	292.65	1.696575	111.22	(2007-T)
41139	305.88	-1.741772	111.23	(2007-T)
41146	317.71	-0.501766	110.31	(2007-T)
41149	331.87	-2.571176	110.33	(2007-T)
41152	347.57	3.334881	109.85	(2007-T)
41154	359.89	0.910529	110.5	(2007-T)
41160	373.16	0.789534	110.21	(2007-T)
41156	373.4	0.648356	110.22	(2007-T)
41162	385.56	1.807126	109.87	(2007-T)
41165	396.47	1.050196	109.38	(2007-T)
41171	407.06	0.863163	109.84	(2007-T)
41172	410.82	0.319517	108.84	(2007-T)
41174	414.45	-1.387484	108.24	(2007-T)
41177	424.62	-0.307258	109.23	(2007-T)
41178	432.78	1.95043	109.22	(2007-T)
41180	442.27	0.944841	109.17	(2007-T)
41182	455.09	-0.732341	108.8	(2007-T)
41185	466.21	-0.749659	108.26	(2007-T)
41187	477.78	0.953098	108.19	(2007-T)
41189	493.7	2.049992	108.48	(2007-T)
41190	500.54	0.996383	108.73	(2007-T)
41196	503.28	0.835104	106.3	(2007-T)
41197	505.79	0.261189	106.01	(2007-T)
41201	516.38	-0.639056	107.81	(2007-T)
41205	529.72	0.28531	107.3	(2007-T)
41208	541.4	-1.869179	107.38	(2007-T)
41210	555.1	0.187009	107.38	(2007-T)
41213	568.43	1.633335	107.17	(2007-T)
41215	576.04	0.600293	107.79	(2007-T)
41221	576.79	0.894621	105.53	(2007-T)
41226	583.68	-1.487421	106.31	(2007-T)
41223	584.4	-1.466623	106.2	(2007-T)
41228	596.65	0.893799	106.74	(2007-T)
41230	610.89	-1.778885	106.6	(2007-T)
41233	623.01	-0.54182	105.97	(2007-T)
41234	633.4	-0.38596	105.98	(2007-T)
41238	646.54	1.951133	106.05	(2007-T)
41243	651.08	2.594301	103.96	(2007-T)
41245	661.07	1.646378	104.68	(2007-T)

TOB				
Point	Station	Offset	Elevation	Desc
41376	6.56	-21.661412	118.34	(2007-TOB)
41377	12.92	24.594599	118.61	(2007-TOB)
41373	51.44	-18.774111	118.32	(2007-TOB)
41374	63.43	25.432335	117.65	(2007-TOB)
41370	83.83	22.796726	118.05	(2007-TOB)
41371	123.43	-15.393652	117.45	(2007-TOB)
41368	164.41	30.322384	117.59	(2007-TOB)
41333	164.88	-15.089296	117.13	(2007-TOB)
41329	209.41	-24.041476	116.16	(2007-TOB)
41334	214.06	24.625997	116.54	(2007-TOB)
41331	237.12	22.613077	116.12	(2007-TOB)
41328	264.51	35.86595	115.66	(2007-TOB)
41326	282.41	-19.09312	115.28	(2007-TOB)
41324	305.42	-27.062282	115.01	(2007-TOB)
41325	342.61	22.926838	116.54	(2007-TOB)
41321	397.94	27.30319	116.45	(2007-TOB)
41322	406.88	-37.687288	113.4	(2007-TOB)
41319	440.77	-20.519748	113.02	(2007-TOB)
41274	462.78	-18.67147	112.27	(2007-TOB)
41315	473.83	-16.183807	112.02	(2007-TOB)
41273	501.9	36.745694	114.06	(2007-TOB)
41318	504.52	31.340124	113.57	(2007-TOB)
41270	535.41	22.025073	114.24	(2007-TOB)
41267	573.4	33.803382	111.67	(2007-TOB)
41271	584.43	-35.291123	112.53	(2007-TOB)
41268	619.56	-19.356358	110.94	(2007-TOB)
41264	643.24	-20.399904	109.83	(2007-TOB)
41262	643.25	-20.262322	109.77	(2007-TOB)
41265	655.18	33.404695	110.85	(2007-TOB)

Bankfull				
Point	Station	Offset	Elevation	Desc
41378	66.65	3.480092	115.32	(2007-BNKF)
41372	85.52	-2.301845	115.46	(2007-BNKF)
41367	138.16	-1.870729	115.09	(2007-BNKF)
41369	138.92	6.819614	114.34	(2007-BNKF)
41343	186.12	8.452927	113.95	(2007-BNKF)
41338	208.47	-5.00415	113.55	(2007-BNKF)
41335	242.05	-6.881078	112.96	(2007-BNKF)
41332	269.28	4.568427	113.05	(2007-BNKF)
41330	297.15	-4.186122	112.86	(2007-BNKF)
41327	305.67	5.576821	112.07	(2007-BNKF)
41323	387.63	5.739427	111.9	(2007-BNKF)
41320	399.98	-4.848107	111.17	(2007-BNKF)
41317	434.08	9.520507	110.66	(2007-BNKF)
41316	4			

2007 Survey Data Reach 5

Point	Station	Water Offset	levatio	Desc
41382	-40.2	-7.277258	86.02	(2007-W)
41384	-39.63	-1.187663	86.1	(2007-W)
41386	-29.92	-1.191851	86.1	(2007-W)
41387	-29.07	-5.606345	86.03	(2007-W)
41389	-14.2	-3.917537	85.94	(2007-W)
41390	-11.31	-1.741512	85.98	(2007-W)
41393	1.48	-4.14182	85.6	(2007-W)
41392	4.54	-2.737897	85.52	(2007-W)
41396	8.59	-5.277084	85.57	(2007-W)
41395	9.25	-2.169682	85.54	(2007-W)
41402	23.73	-7.30765	84.81	(2007-W)
41405	34.11	-6.652998	84.74	(2007-W)
41406	35.64	-3.515607	84.76	(2007-W)
41408	56.54	-5.850312	84.57	(2007-W)
41409	57.65	-2.846472	84.67	(2007-W)
41412	77.26	-7.65817	84.51	(2007-W)
41411	79.52	-3.152469	84.47	(2007-W)
41416	92.09	-1.420782	84.42	(2007-W)
41415	93.17	-7.46699	84.41	(2007-W)
41420	98.66	-6.137444	84.44	(2007-W)
41421	98.96	-3.577817	84.48	(2007-W)
41426	111.29	-9.799715	84.06	(2007-W)
41425	112.19	-2.640583	83.97	(2007-W)
41431	117.95	-0.037404	84.03	(2007-W)
41430	121.37	-7.114416	84.06	(2007-W)
41434	132.38	-5.968361	83.96	(2007-W)
41433	132.7	-1.751956	84.01	(2007-W)
41436	144.67	-0.918605	83.96	(2007-W)
41438	145.41	-0.070069	84.03	(2007-W)
41439	151.06	-4.554721	83.97	(2007-W)
41442	161.44	0.826552	83.96	(2007-W)
41441	161.56	-3.841283	83.94	(2007-W)
41445	170.77	-1.001569	83.82	(2007-W)
41444	171.28	-3.661144	83.82	(2007-W)
41450	172.92	-2.265152	83.13	(2007-W)
41449	173.53	-0.722971	83.19	(2007-W)
41453	181.05	-6.53747	83.17	(2007-W)
41452	181.69	1.558714	83.28	(2007-W)
41457	199.31	0.254021	83.17	(2007-W)
41458	201.46	-4.84245	83.19	(2007-W)
41461	208.94	-0.171651	82.98	(2007-W)
41460	210.7	-3.756906	82.86	(2007-W)
41464	230.71	0.260207	82.78	(2007-W)
41462	230.92	-1.654658	82.82	(2007-W)
41467	237.45	2.085959	82.74	(2007-W)
41466	237.99	-0.284186	82.75	(2007-W)
41470	248.86	-0.534145	82.64	(2007-W)
41469	249.31	0.388884	82.56	(2007-W)
41474	253.72	1.685134	82.14	(2007-W)
41476	253.91	-4.029122	82.09	(2007-W)
41480	271.83	5.367146	82.1	(2007-W)
41481	274.13	-3.663884	82	(2007-W)
41484	280.78	-3.681267	81.86	(2007-W)
41483	281.33	-1.746625	81.86	(2007-W)
41487	293.42	3.534853	81.79	(2007-W)
41486	295.39	-0.933789	81.76	(2007-W)
41490	309.58	-1.440099	81.77	(2007-W)
41491	309.94	3.205647	81.71	(2007-W)
41493	324.03	-2.205962	81.75	(2007-W)
41494	326.07	2.225116	81.74	(2007-W)
41496	336.01	1.6803	81.69	(2007-W)
41497	336.36	-1.403513	81.71	(2007-W)
41504	344.34	5.015782	81.43	(2007-W)
41501	344.75	-3.894211	81.44	(2007-W)
41507	362.83	-2.035966	81.4	(2007-W)
41508	363.4	2.159936	81.46	(2007-W)
41510	375.81	-1.414828	81.28	(2007-W)
41511	376.04	1.59141	81.24	(2007-W)
41514	379.67	-1.428739	81.24	(2007-W)
41513	381.24	3.934422	81.13	(2007-W)
41516	397.25	-0.430462	81.03	(2007-W)
41517	398.47	5.24191	80.99	(2007-W)
41520	412.27	-0.681299	80.99	(2007-W)
41519	412.36	3.910688	81.05	(2007-W)
41523	424.33	5.124029	81.01	(2007-W)
41522	424.84	0.978845	80.97	(2007-W)

Point	Station	Thalweg Offset	Elevation	Desc
41381	-39.52	-4.524791	84.8	(2007-T)
41385	-30.75	-3.80357	84.95	(2007-T)
41388	-13.77	-2.474802	85.44	(2007-T)
41391	0.49	-3.097854	85.21	(2007-T)
41394	9.8	-3.778172	85.17	(2007-T)
41399	13.74	-2.190933	82.79	(2007-T)
41404	25.85	-3.718154	82.75	(2007-T)
41407	44.14	-8.177783	84.57	(2007-T)
41410	57.89	-4.689021	84.15	(2007-T)
41413	80.02	-5.629744	84.05	(2007-T)
41414	91.17	-3.272542	83.11	(2007-T)
41417	97.98	-3.942943	84.04	(2007-T)
41422	101.04	-5.415732	82.76	(2007-T)
41424	107.86	-7.039527	81.68	(2007-T)
41429	117.82	-6.423551	81.92	(2007-T)
41432	131.52	-2.959605	83.25	(2007-T)
41435	143.98	-4.077535	82.16	(2007-T)
41440	160.22	-2.363145	82.97	(2007-T)
41443	171.55	-2.738147	83.52	(2007-T)
41448	174.11	-1.60029	81.28	(2007-T)
41455	184.75	-3.775769	81.7	(2007-T)
41456	198.3	-1.747078	82.36	(2007-T)
41459	210.75	-2.676467	81.62	(2007-T)
41463	231.23	-1.805964	82.64	(2007-T)
41465	237.68	0.236158	82.19	(2007-T)
41468	247.85	-0.695483	82.31	(2007-T)
41473	250.92	-0.352526	80.59	(2007-T)
41478	259.91	-1.906432	79.51	(2007-T)
41479	269.58	2.764026	80.25	(2007-T)
41482	282.41	-3.025268	81.17	(2007-T)
41485	291.23	-0.079462	81.29	(2007-T)
41488	298.64	2.175934	80.53	(2007-T)
41489	308.96	-0.323447	80.19	(2007-T)
41492	321.97	0.345219	80.73	(2007-T)
41495	336.1	-0.964474	81.17	(2007-T)
41500	337.97	-0.104344	80.58	(2007-T)
41506	361.66	0.941308	80.72	(2007-T)
41509	376.16	0.114366	80.85	(2007-T)
41512	381.29	1.316677	80.68	(2007-T)
41515	396.97	2.199673	80.14	(2007-T)
41518	411.91	2.609271	79.74	(2007-T)
41521	424.05	2.5418	80.47	(2007-T)
41524	434.77	1.062969	80.12	(2007-T)
41527	441.81	0.694894	80.33	(2007-T)
41532	443.85	0.8021	79.28	(2007-T)
41537	454.81	2.592738	77.83	(2007-T)
41538	462.41	2.282173	79.15	(2007-T)
41543	477.3	3.115183	79.83	(2007-T)
41548	488.74	5.142077	79.49	(2007-T)
41551	509.72	3.315119	79.3	(2007-T)
41552	514.9	2.7864	79.37	(2007-T)
41553	520	2.235108	79.85	(2007-T)
41558	522.63	3.009424	78.34	(2007-T)
41563	531.97	5.690415	77.89	(2007-T)
41564	541.03	3.146277	78.35	(2007-T)
41568	546.37	2.60464	78.94	(2007-T)
41570	563.66	2.23806	79.16	(2007-T)
41573	577.74	3.357832	78.71	(2007-T)
41576	593.71	5.57629	77.98	(2007-T)
41579	606.08	4.778508	78.44	(2007-T)
41584	609.14	3.872141	76.79	(2007-T)
41587	614.42	3.021709	76.84	(2007-T)
41590	627.89	5.904961	77.79	(2007-T)
41593	649.81	5.646743	77.71	(2007-T)
41596	670.74	6.720935	78.01	(2007-T)
41597	677.34	6.406877	77.75	(2007-T)
41600	692.52	6.106591	77.33	(2007-T)
41601	700.48	5.435188	77.77	(2007-T)
41607	704.28	5.897875	76.05	(2007-T)
41611	715.93	6.496344	76.15	(2007-T)

Point	Station	TOB Offset	Elevation	Desc
41704	-35.02	-20.448256	91	(2007-TOB)
41701	-34.58	13.952284	89.21	(2007-TOB)
41703	-0.71	-22.508451	89.54	(2007-TOB)
41694	50.83	17.024828	89.72	(2007-TOB)
41700	96.65	-45.113773	89.06	(2007-TOB)
41690	98.24	23.537801	87.9	(2007-TOB)
41691	98.3	23.482775	87.9	(2007-TOB)
41695	141.08	-22.701898	87.56	(2007-TOB)
41687	190.7	25.795918	87.72	(2007-TOB)
41683	230.57	18.902214	87.36	(2007-TOB)
41681	258.04	18.333009	87.54	(2007-TOB)
41686	277.03	-21.38525	86.64	(2007-TOB)
41682	320.08	-19.374825	85.96	(2007-TOB)
41679	322.27	35.965718	87.06	(2007-TOB)
41678	361.42	26.825354	85.75	(2007-TOB)
41639	385.48	21.191575	85.12	(2007-TOB)
41638	388.02	-34.272993	84.61	(2007-TOB)
41677	390.21	21.237251	85.02	(2007-TOB)
41637	422.36	22.178646	84.51	(2007-TOB)
41633	460.22	32.122796	84.68	(2007-TOB)
41634	475.36	-32.323685	84.96	(2007-TOB)
41629	508.39	-13.357355	83.56	(2007-TOB)
41628	543.63	31.228646	83.72	(2007-TOB)
41626	571.55	23.760674	84.14	(2007-TOB)
41623	603.65	26.747563	83.41	(2007-TOB)
41622	654.15	-9.55737	81.64	(2007-TOB)
41617	694.24	-10.628464	81.31	(2007-TOB)
41618	705.28	28.518822	81.75	(2007-TOB)

Point	Station	Water Offset	Elevation	Desc
41525	434.27	-1.900109	80.85	(2007-W)
41526	435.16	2.560878	80.85	(2007-W)
41529	441.58	-0.848663	80.71	(2007-W)
41530	442.67	3.234318	80.6	(2007-W)
41533	449.62	-2.400606	80.64	(2007-W)
41534	450.03	3.21301	80.55	(2007-W)
41540	462.15	4.078248	80.52	(2007-W)
41539	463.27	-2.209447	80.56	(2007-W)
41542	470.03	4.395605	80.49	(2007-W)
41541	476.22	0.975309	80.43	(2007-W)
41545	491.24	2.834315	80.34	(2007-W)
41547	491.34	3.043561	80.32	(2007-W)
41544	492.74	7.178248	80.3	(2007-W)
41550	510.08	1.483393	80.26	(2007-W)
41549	512.75	4.827501	80.34	(2007-W)
41557	521.07	5.22116	80.01	(2007-W)
41556	522.14	-0.2538	80.16	(2007-W)
41561	530.25	0.054282	80.08	(2007-W)
41562	534.96	6.967438	80.09	(2007-W)
41565	540.57	5.819488	79.99	(2007-W)
41566	541.1	-1.998516	80.1	(2007-W)
41569	551.13	0.731361	79.93	(2007-W)
41567	551.13	10.218342	80.01	(2007-W)
41571	566.88	-0.42976	79.57	(2007-W)
41572	570.42	6.014948	79.5	(2007-W)
41574	587.48	6.627725	79.23	(2007-W)
41575	589.25	2.913157	79.04	(2007-W)
41577	600.46	2.023926	78.99	(2007-W)
41578	602.11	5.989655	79.04	(2007

2007 Reach 6 Survey Data

Water				
Point	Station	Offset	Elevation	Desc
41743	-8.27	3.847223	71.17	W
41741	-8.11	-5.068381	71.19	W
41747	1.7	-5.392664	70.47	W
41751	5.18	3.606979	70.49	W
41753	26.89	-10.697079	70.52	W
41754	42.93	-1.537054	70.45	W
41756	74.13	9.361469	70.48	W
41758	77.74	-1.393558	70.49	W
41763	94.59	-0.445925	70.55	W
41762	97.9	8.469251	70.45	W
41765	105.23	4.626012	69.36	W
41766	107.52	-5.68034	69.36	W
41770	130.85	5.628662	69.41	W
41771	138.75	-10.530503	69.39	W
41773	166.96	-15.993377	69.39	W
41780	192.18	-1.238842	69.36	W
41779	193.78	-14.539649	69.4	W
41809	207.16	-13.368837	69.26	W
41798	208.27	-2.858974	69.27	W
41785	212.12	-1.980383	69.36	W
41783	212.33	-14.176347	69.49	W
41789	231.78	-11.332545	69.36	W
41791	232.24	0.592916	69.37	W
41816	248.09	-12.720875	69.43	W
41820	249.51	-1.073916	69.33	W
41823	263.12	-14.416184	68.8	W
41828	270.42	1.872051	68.83	W
41832	294.77	-10.506438	68.82	W
41841	314.41	1.583577	68.81	W
41839	319.68	-8.847945	68.82	W
41856	350.89	3.088349	68.83	W
41862	360.95	2.29332	67.74	W
41867	379.82	-8.214508	67.81	W
41872	392.24	3.544974	67.73	W
41875	399.13	-7.098433	67.71	W
41880	418.43	-4.50097	67.52	W
41881	419.19	3.991175	67.57	W
41887	448.68	1.797339	67.63	W
41885	449.64	-9.657481	67.62	W
41892	471.42	-4.635796	67.53	W
41893	472.21	5.113154	67.63	W
41899	484.46	-6.555014	66.34	w
41900	488.66	8.170674	66.39	w
41916	502.57	-5.333746	66.38	w
41904	503.57	-5.690742	66.38	w
41914	506.18	2.38093	66.15	w
41921	522.64	-4.426353	66.39	w
41924	525.43	2.385116	66.1	w
41931	541.23	4.117272	66	w
41929	542.18	0.241327	65.95	w
41938	570.17	-2.75387	65.65	w
41849	584.29	5.570775	65.72	W
41855	585.57	-0.919841	65.75	W
41959	587.98	3.123095	65.52	w
41957	588.4	-2.724004	65.66	w
41968	604.87	-4.373457	65.68	w
41976	624.41	6.140608	64.19	w
41983	661.46	2.77631	63.95	w
41984	661.89	-4.75417	64.22	w
41987	678.39	5.094327	63.77	w
41988	679.94	-1.716334	63.67	w
41991	694.8	5.240293	63.67	w
41990	695.38	0.374562	63.62	w
41948	723.5	0.748881	63.51	w
41946	728.05	-3.968895	63.54	w
41944	742.95	0.061286	63.42	w
41943	754.67	-2.865776	63.05	w
41941	775.17	3.031803	62.7	w
41937	779.6	-3.625786	62.75	w
41934	814.42	5.25115	62.82	w
41933	825.34	-2.445957	62.81	w
41928	846.69	-5.964097	62.65	w
41930	847.84	1.358363	62.45	w
41886	871.84	-4.799599	62.62	W
41884	872.14	4.161755	62.68	W

Thalweg				
Point	Station	Offset	Elevation	Desc
41740	-7.55	-0.028867	70.57	T
41746	1.32	0.952732	68.43	T
41742	7.28	-1.108248	67.6	T
41748	12.13	-0.856181	67.85	T
41752	22.49	-1.742816	69.09	T
41755	60.55	-3.378152	69.6	T
41757	75.18	3.51646	69.52	T
41759	94.69	5.185347	69.83	T
41764	102.09	2.134922	65.91	T
41769	123.35	0.374064	66.81	T
41772	154.53	-5.549495	68.69	T
41777	190.24	-11.10182	68	T
41782	213.39	-12.91574	67.27	T
41787	232.64	-9.518318	67.77	T
41792	247.94	-7.775071	68.81	T
41821	253.14	-4.853585	67.74	T
41829	276.93	-8.552815	67.42	T
41833	295.23	-2.905476	67.3	T
41837	316.16	-2.035495	67.49	T
41842	336.34	0.200779	67.11	T
41859	352.46	-2.700341	65.51	T
41865	376.59	-5.324394	66.6	T
41871	388.13	-5.358154	66.34	T
41878	409.41	-1.215604	66.52	T
41883	429.39	-2.773649	65.76	T
41888	449.4	-6.353953	65.63	T
41890	470.04	0.049456	67	T
41896	474.89	-0.550949	65.56	t
41898	486.21	4.960051	63.42	t
41902	499.25	0.758788	64.11	t
41912	507.18	-0.633928	64.4	t
41922	524.15	-0.522713	65.76	t
41927	542.6	2.317518	65.7	t
41936	570.39	0.116721	64.81	t
41958	589.7	1.420848	64.71	t
41967	603.34	-3.130925	65.17	t
41973	607.86	-2.892378	62.27	t
41975	617.54	1.415243	62.98	t
41977	640.57	1.441571	63.38	t
41979	652.71	2.508162	63.8	t
41986	670.84	-1.91289	63.43	t
41989	684.17	3.482531	63.23	t
41992	713.18	1.291704	62.52	t
41947	726.63	-2.592395	62.64	t
41945	743.14	-2.193489	63.11	t
41942	763.69	-0.344382	62.44	t
41939	778.87	0.754517	61.58	t
41935	799.25	-0.824346	61.93	t
41932	837.15	-1.613421	62.23	t
41926	855.75	-2.852169	61.75	t
41882	872.26	-1.0343	61.47	T

TOB				
Point	Station	Offset	Elevation	Desc
41775	1.44	16.066879	73.42	TOB
41897	3.35	-27.144818	73.06	TOB
41781	103.36	21.550231	71.7	TOB
41784	175.41	9.760731	71.04	TOB
41906	179.16	-27.528574	71.92	TOB
41907	245.59	-25.295112	71.16	TOB
41908	413.72	-20.641273	69.56	TOB
41827	422.43	31.072193	69.76	TOB
41910	463.7	-19.823949	69.41	TOB
41834	520.64	17.687171	69.2	TOB
41838	569.47	20.127271	69.86	TOB
41860	605.57	23.221444	67.95	TOB
41911	612.93	-26.575056	68.03	TOB
41913	659.06	-20.970562	68.24	TOB
41863	675.72	37.952661	69.85	TOB
41918	695.77	-17.0451	67.65	TOB
41866	724.35	21.890596	66.76	TOB
41920	770.99	-34.529295	65.35	TOB
41870	772.18	13.911726	69.8	TOB
41874	828.74	13.586926	67.37	TOB
41923	829.33	-32.717149	64.83	TOB
41891	870.1	-20.70356	65.05	TOB
41877	870.97	10.237167	66.25	TOB

Bankfull				
Point	Station	Offset	Elevation	Desc
41778	52.67	12.737	72.54	B
41901	103.71	-19.35756	71.42	b
41903	138.87	-20.61844	71.56	b
41786	178.03	2.121942	70.41	B
41818	241.8	9.036789	70.53	B
41825	390.92	11.91477	69.54	B
41830	504.3	15.5371	68.37	B
41836	546.7	13.87168	68.21	B
41840	580.26	14.72974	68.12	B
41861	614.66	14.03855	67.48	B
41915	660.98	-16.81563	66.5	b
41917	692.58	-10.29713	66.19	b
41868	716.09	7.553632	64.3	B
41919	720.43	-13.51073	66.15	b
41925	843.15	-18.7689	63.89	b

Vanes				
Point	Station	Offset	Elevation	Desc
41873	387.99	2.532091	67.3	LV
41981	652.71	3.277679	64.01	lv
41744	-4.07	-2.749631	71.29	RV
41760	95.76	2.103039	70.29	RV
41817	249.12	-11.02476	69.28	RV
41857	349.85	1.097722	68.79	RV
41895	472.72	4.53066	67.42	rv
41972	602.63	-0.322012	65.94	rv
41876	404.35	-3.583922	68.06	LV
41982	663.8	-4.320164	64.94	lv
41745	-2.96	1.44492	70.88	RV
41749	16.73	-15.30196	72.19	RV
41750	16.91	4.240651	72.29	RV
41761	99.21	6.133896	70.43	RV
41767	114.84	5.581963	71.06	RV
41768	117.4	-14.89489	71.82	RV
41819	249.43	-2.653493	69.26	RV
41826	270.77	3.744094	70.68	RV
41831	272.85	-16.90486	70.55	RV
41864	371.69	5.915665	70.26	RV
41869	373.93	-16.62286	70.7	RV
41894	472.92	-2.671252	67.63	rv
41905	491.82	-12.0552	68.53	rv
41909	497.71	12.63826	69.53	rv
41971	603.42	-3.800025	65.58	rv
41970	603.73	-3.921487	65.64	rv
41974	620.63	10.33225	67.21	rv
41980	631.23	-12.46436	67.9	rv

Project Name	Purlear Creek
Task	Feature Slope and Length Calculations
Date	8/2/07
Crew	Roberts, Price, Zink

Area 1 - 2007					Area 2 - 2007					Area 3 - 2007					Area 4 - 2007					Area 5 - 2007					Area 6 - 2007									
Riffle	Station	Change	Water Elev	change	slope	Riffle	Station	Change	Water Elev	change	slope	Riffle	Station	Change	Water Elev	change	slope	Riffle	Station	Change	Water Elev	change	slope	Riffle	Station	Change	Water Elev	change	slope					
	123		124.43				17		121.97				31		99.58				49		115.06				-11		85.98							
	160	37	123.54	0.89	2.41%		67	50	121.21	0.76	1.52%		77	46	99.1	0.48	1.04%		76	27	114.73	0.33	1.22%		5	16	85.52	0.46	2.88%					
	175		123.61				88		120.83				183		98.21				120		113.78				57		84.57							
	213	38	122.85	0.76	2.00%		154	66	119.76	1.07	1.62%		251	68	97.42	0.79	1.16%		156	36	113.65	0.13	0.36%		79	22	84.47	0.1	0.45%					
	233		123.32				203		118.75				303		95.87				208		113.04				209		82.98							
	263	30	122.7	0.62	2.07%		225	22	118.58	0.17	0.77%		359	56	95.17	0.7	1.25%		224	16	112.72	0.32	2.00%		253	44	82.14	0.84	1.91%					
	305		122.47				227		118.58				444		94.18				278		112.04				274		82							
	342	37	121.78	0.69	1.86%		252	25	118.2	0.38	1.52%		482	38	93.31	0.870	2.29%		310	32	111.57	0.47	1.47%		295	21	81.76	0.24	1.14%					
	367		121.49				517		93.23				517		93.23				355		110.99				363		81.46							
	455	88	120.38	1.11	1.26%		564	47	93.02	0.210	0.45%		564	47	93.02	0.210	0.45%		405	50	110.39	0.6	1.20%		397	34	81.03	0.43	1.26%					
	511.5		119.89				583		92.4				583		92.4				437		109.81				463		80.56							
	547	35.5	119.32	0.57	1.61%		608	25	91.65	0.750	3.00%		608	25	91.65	0.750	3.00%		467	30	109.14	0.67	2.23%		493	30	80.3	0.26	0.87%					
	578		117.9				648		91.85				648		91.85				593		107.31				551		79.93							
	653	75	116.32	1.58	2.11%		672	24	91.36	0.490	2.04%		672	24	91.36	0.490	2.04%		614	21	106.82	0.49	2.33%		587	36	79.23	0.7	1.94%					
	672		116.2																					658		78.62								
	734	62	115.35	0.85	1.37%																			698	40	78.01	0.61	1.53%						
	792		114.95																															
	835	43	114.32	0.63	1.47%																													
	863		114.17																															
	938	75	112.1	2.07	2.76%																													
	973		111.96																															
	1004	31	111.42	0.54	1.74%																													
		551.5						163						304						212						243				124				
		11						4						7						7						8				4				
Pool Station	length	p-p spacing				Pool Station	length	p-p spacing				Pool Station	length	p-p spacing				Pool Station	length	p-p spacing				Pool Station	length	p-p spacing				Pool Station	length	p-p spacing		
	35						41						7						58						-40				20					
	83	48					52	11					40	33					90	32				-13	27			96	76					
	105						173						96						95					23				107						
	121	16	54				192	19	136				146	50	97.5				114	19	30.5			58	35	67		247	140	119				
	148						215						149						150					79				263						
	170	22	46				231	16	40.5				185	36	46				184	34	62.5			98	19	48		351	88	130				
	192												224						194					115				363						
	230	38	52										268	44	79				208	14	34			130	15	34		392	29	70.5				
	266												280						256					154				411						
	306	40	75										309	29	48.5				272	16	63			167	13	38		473	62	64.5				
	346												376						319					181				488						
	359	13	66.5										421	45	104				358	39	74.5			207	26	33.5		522	34	63				
	460												486						383					253				570						
	481	21	118										517	31	103				404	21	55			273	20	69		604	34	82				
	487												612						467					298				624						
	510	23	28										648	36	128.5				500	33	90			335	37	53.5		660	36	55				
	563																		510					350				679						
	578	15	72																574	64	58.5			365	15	41		728	49	61.5				
	642																		614					398				780						
	668	26	84.5																630	16	80			426	28	54.5		825	45	99				
	748																							443										
	792	44	115																					465	22	42								
	830																							530										
	866	36	78																					543	13	82.5								
	949																							584										
	972	23	112.5																					611	27	61								
																								617										
																								632	15	27								
		365						46						304							288				312				593					
		13						3						8							10				14				10					
		min	max	median				min	max	median				min	max	median				min	max	median				min	max	median				min	max	median
Riffle Length		30.0	88.0	40.5		Riffle Length		22.0	66.0	37.5		Riffle Length		24.0	68.0	46.0		Riffle Length		16.0	50.0	31.0		Riffle Length		16.0	44.0	32.0		Riffle Length		19.0	45.0	30.0
Riffle Slope		1.26%	2.76%	1.93%		Riffle Slope		0.77%	1.62%	1.52%		Riffle Slope		0.45%	3.00%	1.25%		Riffle Slope		0.36%	2.33%	1.47%		Riffle Slope		0.45%	2.88%	1.39%		Riffle Slope		0.78%	2.89%	1.59%
Pool Length		13.0	48.0	23.0		Pool Length		11.0	19.0	16.0		Pool Length		29.0	50.0	36.0		Pool Length		14.0	64.0	26.5		Pool Length		13.0	312.0	21.0		Pool Length		29.0	140.0	49.0
Pool Spacing		28	118	74		Pool Spacing		41	136	88		Pool Spacing		46	129	98		Pool Spacing		31	90	63		Pool Spacing		27	83	48		Pool Spacing		55	130	68

Project Name	Purlear Phase 1
Task	Channel Pattern Measurements
Date	
Crew	Roberts, Price, Zink

Area 1		
2007		
Radius of Curvature	Meander Wavelength	Channel Beltwidth
41	117	202
55	171	38
58		37
59		53
41	117	37
59	171	202
57	144	46

min
max
median

Area 2		
2007		
Radius of Curvature	Meander Wavelength	Channel Beltwidth
64	255	69
62	245	69
68	236	70
56		
56	236	69
68	255	70
63	245	69

Area 3		
2007		
Radius of Curvature	Meander Wavelength	Channel Beltwidth
Straight Channel No Pattern Measurements Necessary		
0	0	0
0	0	0
-	-	-

min
max
median

Area 4		
2007		
Radius of Curvature	Meander Wavelength	Channel Beltwidth
77	138	28
34	132	32
39	120	47
37	153	50
	157	55
	132	
34	120	28
77	157	55
38	135	47

Area 5		
2007		
Radius of Curvature	Meander Wavelength	Channel Beltwidth
41	113	40
40	134	42
49	134	48
43	174	50
87	187	49
45	145	36
52	149	
66		
40	113	36
87	187	50
47	145	45

min
max
median

Area 6		
2007		
Radius of Curvature	Meander Wavelength	Channel Beltwidth
80	238	78
90	198	68
63	188	93
65	216	66
69	194	
64		
43		
43	188	66
90	238	93
65	198	73