Jacob's Landing
Stream Restoration Monitoring Report
EEP Project # 95024
EEP Contract # 003984
Monitoring Year 01

Submitted to:

Ecosystem Enhancement PROGRAM

NCDENR-EEP, 1652 Mail Service Center, Raleigh, NC 27699-1652

Construction Completed: January 2014
Data Collection: 2014
Submitted: January 2015

Design and Monitoring Firm

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4601 Six Forks Road
Raleigh, NC 27609
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Project Manager: Adam Spiller
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Project No: 20110675

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1.0 EXECUTIVE SUMMARY / PROJECT ABSTRACT

The Jacob's Landing Stream Restoration Site is a full-delivery project that was developed for the North Carolina Ecosystem Enhancement Program (EEP). Construction was completed in November 2013. The site restored 4,484 linear feet and implemented 109 linear feet of enhancement on four tributaries to Irish Buffalo Creek in the Yadkin-Pee Dee River Basin. The project is located west of China Grove and north of Kannapolis off of Saw Road in Rowan County (Figure 1, Appendix A). This project will expand aquatic and terrestrial habitat in the Rocky River Watershed (03040105). The project is within the 03040105020040 Irish Buffalo Creek Local Watershed Unit (14-digit HUC) (NCDENR, EEP 2009). In the North Carolina Ecosystem Enhancement Program's (EEP) most recent publication of excluded and Targeted Local Watersheds/Hydrologic Units, the 03040105020040 14-digit HUC has been identified as a Targeted Local Watershed. The project is located in the Piedmont Physiographic Province and the project streams initiate as headwater systems out of moderately-sloped, forested hills before reaching the floodplain of Irish Buffalo Creek. The site's 0.72-square mile watershed is mostly pasture and mixed hardwoods with small pockets of rural residential development. Prior to construction the site was actively used for timber and cattle production for over five generations.

The project goals and objectives are listed below.

Project Goals

- Restore a diverse riparian corridor that connects forested stream systems upstream and downstream of the project.
- Reduce the sediment supply entering Irish Buffalo Creek.

Project Objectives

- Restore stable channel planforms to streams that have been straightened and modified.
- Reshape and stabilize eroding stream banks.
- Plant the site with native trees to help reestablish a diverse riparian corridor.
- Install exclusion fencing and alternative watering options to keep livestock out of the project streams.

Vegetation success is based on the criteria established in the USACE Stream Mitigation Guidelines (2003). This document states that vegetation monitoring results should have the following planted stem density minimums in the corresponding monitoring years: 320 stems/acre through Year Three, 288 stems/acre in Year Four, and 260 stems/acre in Year Five. The first-year vegetation monitoring was based on the Level 2 CVS-EEP vegetation monitoring protocol. The site's average density for this monitoring period is 464 planted stems/acre, with none of the plots having live stakes planted in them. Eleven of the thirteen plots had greater than 320 planted stems/acre. There are two monitoring plots that have calculated planted stem densities less than 320 stems/acre; (Plots 3 and 7). This is not seen as problematic given the high potential for desirable volunteers to become established in the plots and across the site. Like natural vegetative communities, some areas will have slightly higher densities than others, but the data from the vegetation monitoring plots reveal that the site has an adequate average stem density. To ensure continued vegetative success, some parts of the site will receive supplemental planting in early 2015. Including volunteers, the monitoring plots averaged 1,382 total stems/acre. The overall vegetation assessment found the site to be on track to meeting the vegetative success criterion.

First-year monitoring found the Jacob's Landing Site to be stable, with only minor changes from the as-built conditions. No areas show signs of serious bank erosion or bed degradation potential. The monitoring components were installed in February/March 2014. Two automatic recording gauges have been installed along T1 and T2. The stream gauges have not recorded any bankfull events since the project was constructed early this year. The monitoring plan for each tributary is as follows: T1 has a 1500 foot longitudinal profile, 3 riffle cross-sections,

and 1 pool cross-section; T2 has a 1500 foot longitudinal profile, 5 riffle cross0sections and 2 pool cross-sections; T1A and T2A are being monitored visually since they are short reaches and small channels. Pebble counts were conducted at all eleven cross-sections. Ten permanent photo reference points have been established with a total of twenty-two photos to be taken annually. The first year of monitoring found the site to be functioning as designed and all of these features show little change from the baseline conditions.

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

2.0 METHODOLOGY

The survey data were collected with a total station instrument between October 29 and November 4, 2014.

Some of the cross-sections have shown minor settling in the floodplain. The bankfull elevations at these cross sections have not been changed to reflect this. For calculating cross-sectional morphologic data the cross-section width has been limited to a width that appropriately reflects the top of bank location so as not to inaccurately skew data.

The CVS-EEP protocol, Level 2 (http://cvs.bio.unc.edu/methods.htm) was used to collect vegetation data from the site. The vegetation monitoring was completed on September 30, 2014

3.0 REFERENCES

Lee, M.T., R.K. Peet, S.D. Roberts, and T.R. Wentworth. 2008. CVS-EEP Protocol for Recording Vegetation, Version 4.2 (http://cvs.bio.unc.edu/methods.htm)

NCDENR, Ecosystem Enhancement Program. 2009. Lower Yadkin Pee-Dee River Basin Priorities 2009. Raleigh, NC. http://www.nceep.net/services/restplans/Yadkin_Pee_Dee_RBRP_2009_Final.pdf

USACE. 2003. Stream Mitigation Guidelines. USACE, NCDENR-DWQ, USEPA, NCWRC.

Appendix A

Project Vicinity Map and Background Tables

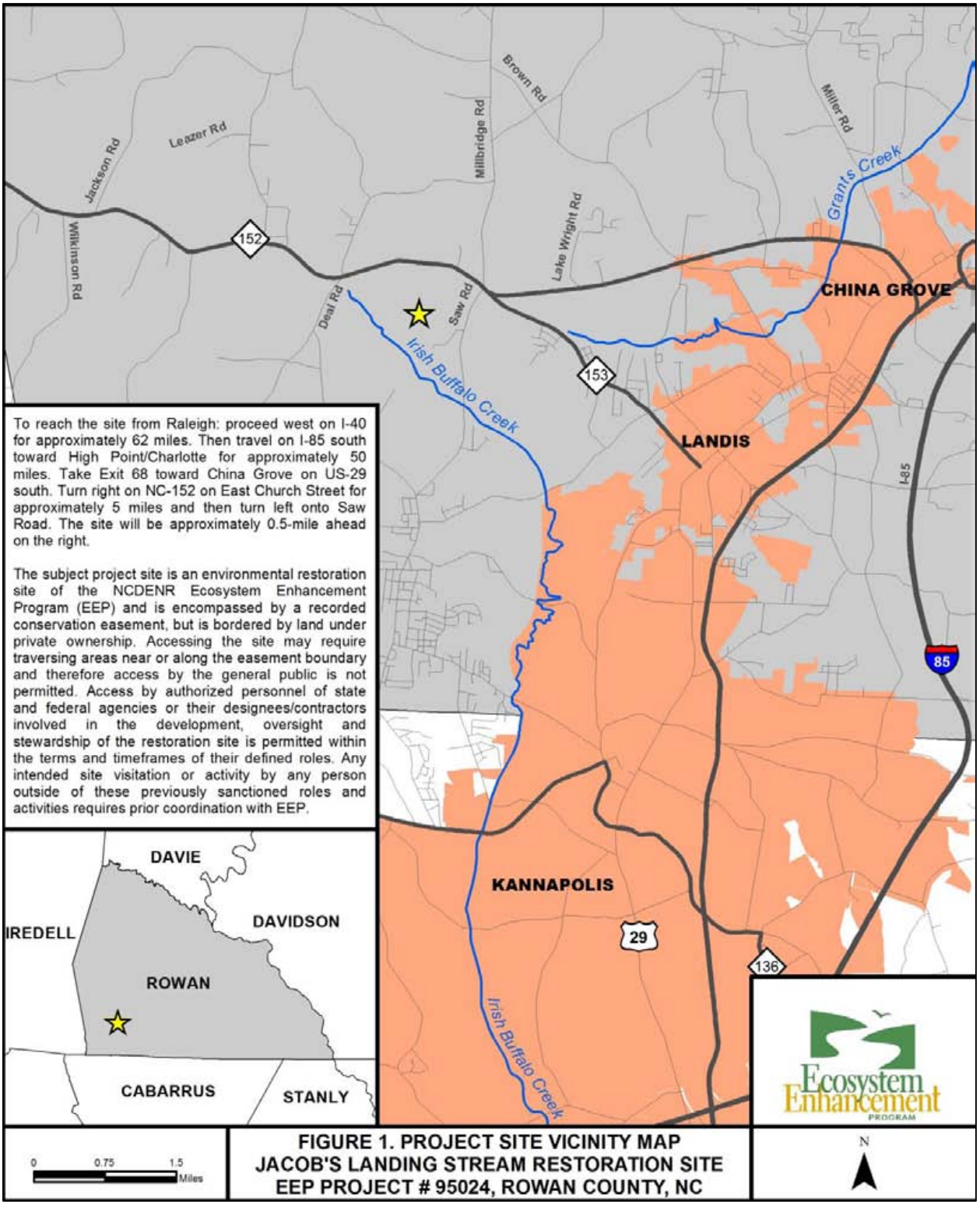


FIGURE 1. PROJECT SITE VICINITY MAP
JACOB'S LANDING STREAM RESTORATION SITE
EEP PROJECT # 95024, ROWAN COUNTY, NC

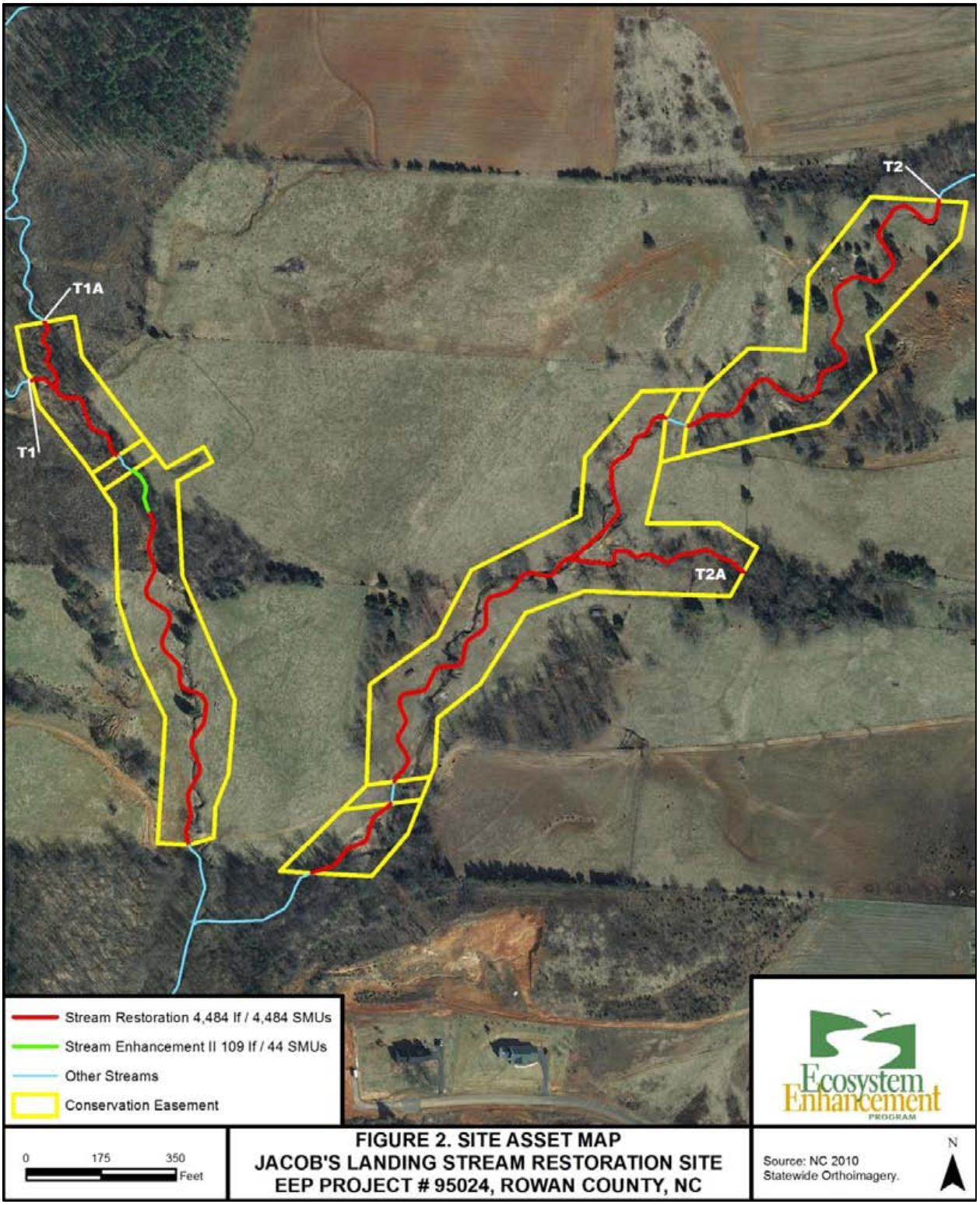

T1A
T1
T2
T2A
Stream Restoration 4,484 lf / 4,484 SMUs
Stream Enhancement II 109 lf / 44 SMUs
Other Streams
Conservation Easement
Ecosystem Enhancement
PROGRAM
0
175
350
Feet
FIGURE 2. SITE ASSET MAP
JACOB'S LANDING STREAM RESTORATION SITE
EEP PROJECT # 95024, ROWAN COUNTY, NC
Source: NC 2010
Statewide Orthoimagery.
N

Table 1. Project Components and Mitigation Credits
Jacob's Landing Stream Restoration Site, EEP Project # 95024

Mitigation Credits

	Stream		Riparian Wetland	Non-riparian Wetland	Buffer	Nitrogen Nutrient Offset
Type	R	EII				
Length	4,484	109				
Credits	4,484	44				
TOTAL CREDITS	4,528					

Project Components

Project Component -or- Reach ID	Design Stationing/ Location	Existing Footage	Approach (PI, PII etc.)	Restoration -or- Restoration Equivalent	Restoration Footage	Mitigation Ratio
T1	10+00 – 13+03	326	P2	Restoration	303	1:1
T1	13+52 – 14+61	158	-	Enhancement II	109*	1:2.5
T1	14+61 – 23+54	846	P2	Restoration	893	1:1
T1A	40+00 – 41+78	294	P2	Restoration	178	1:1
T2	50+00 – 77+45	2,935	P2	Restoration	2,645*	1:1
T2A	100+00 – 104+65	465	P2	Restoration	465	1:1

Component Summation

Restoration Level	Stream (linear feet)	Mitigation Units (SMU)
Total Restoration	4,484	4,484
Total Enhancement II	109	44
TOTAL SMU		**4,528**

*Mitigation units have been calculated to exclude the easement exceptions and water utility easements.

Though not formal BMPs, several small water quality detention structures were installed throughout the project to improve water quality from the surrounding drainage area.

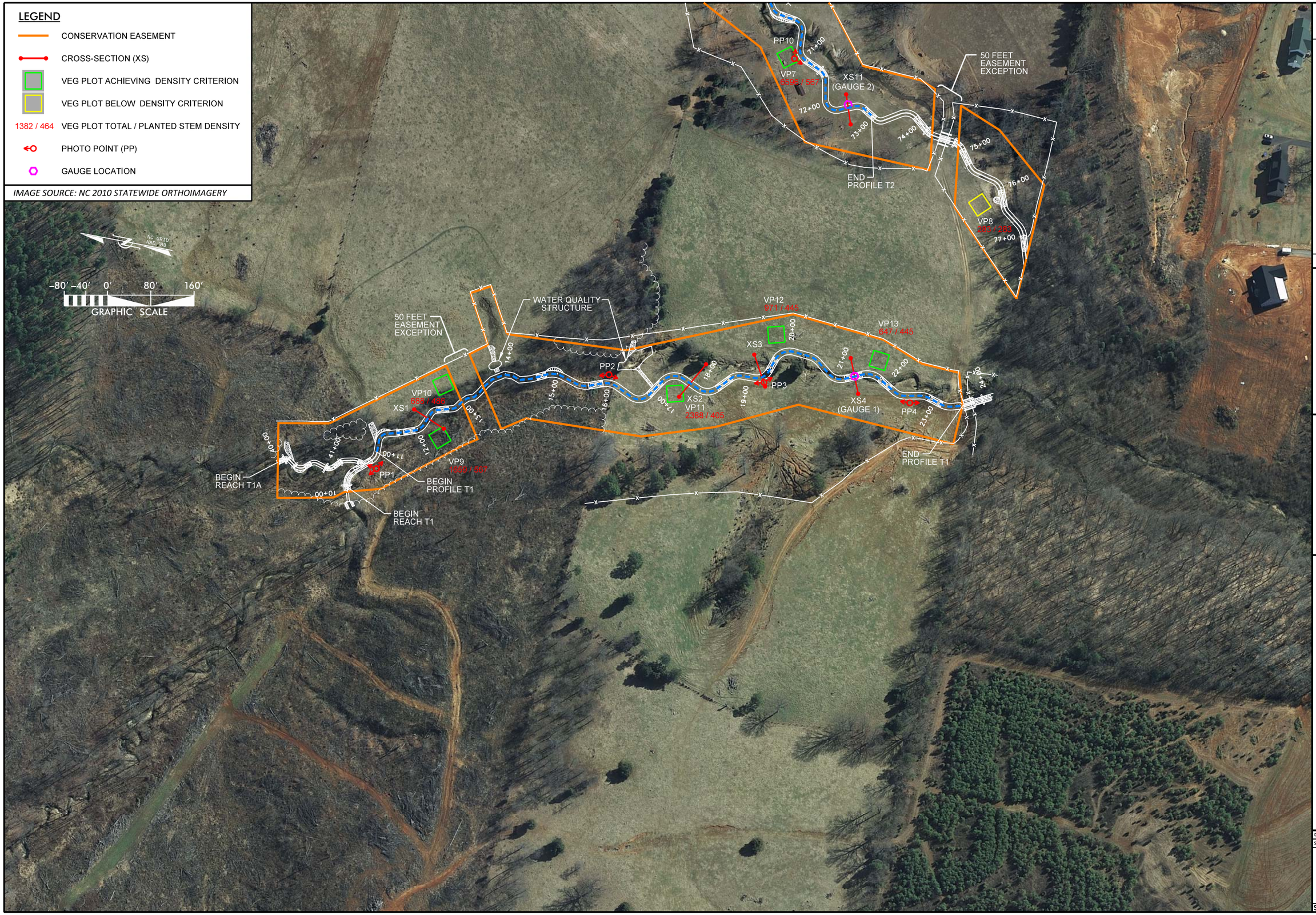
Table 2. Project Activity & Reporting History Jacob's Landing Stream Restoration Site, EEP Project # 95024		
Activity or Report	**Data Collection Complete**	**Actual Completion or Delivery**
Mitigation Plan		Sept 12
Final Design - Construction Plans		Dec 12
Construction		Nov 13
Planting		Jan 14
Baseline Monitoring/Report	Feb/March 14	April 14
Year 1 Monitoring	Nov 14	Nov 14

Table 3. Project Contacts Jacob's Landing Stream Restoration Site, EEP Project # 95024	
Design Firm	KCI Associates of North Carolina, PC Landmark Center II, Suite 220 4601 Six Forks Rd. Raleigh, NC 27609 Contact: Mr. Tim Morris Phone: (919) 278-2512 Fax: (919) 783-9266
Construction Contractor	Wright Contracting, LLC 160 Walker Road Lawndale, NC 28090 Contact: Mr. Stephen James Phone: (704) 692-4633
Planting Contractor	Forestree Management Co. 1280 Maudis Road Bailey, NC 27807 Contact: Mr. Tony Cortez Phone: (252) 243-2513
Monitoring Performers	
MY-00 - MY-01	KCI Associates of North Carolina, PC Landmark Center II, Suite 220 4601 Six Forks Rd. Raleigh, NC 27609 Contact: Mr. Adam Spiller Phone: (919) 278-2514 Fax: (919) 783-9266

Table 4. Project Information **Jacob's Landing Stream Restoration Site, EEP Project # 95024**				
Project Name	Jacob's Landing Stream Restoration Site			
County	Rowan County			
Project Area (acres)	13.9 acres			
Project Coordinates (lat. and long.)	35.552956 N, 80.653116 W			
Project Watershed Summary Information				
Physiographic Province	Piedmont			
River Basin	Yadkin-Pee Dee			
USGS Hydrologic Unit 8-digit	03040105	USGS Hydrologic Unit 14-digit	03040105020040	
DWQ Sub-basin	13-17-09			
Project Drainage Area	459 acres/0.72 square miles			
Project Drainage Area Percentage of Impervious Area	2.3% / 6 acres			
CGIA Land Use Classification	4.8% Cultivated, 60.1% Managed Herbaceous Cover, and 35.1% Mixed Upland Hardwoods.			
Reach Summary Information (Post-Restoration)				
Parameters	**T1**	**T1A**	**T2**	**T2A**
Length of reach (linear feet)	1,305	178	2,645	465
Valley classification	VIII	VIII	VIII	VIII
Drainage area (acres)	258.6 acres	136.9 acres	200.6 acres	35.7 acres
NCDWQ Water Quality Classification	Class C, WSIII	Class C, WSIII	Class C, WSIII	Class C, WSIII
Morphological Description (stream type)	C4	B4c/C4	C4	B4c/C4
Evolutionary trend	Stage II (Constructed)	Stage II (Constructed)	Stage II (Constructed)	Stage II (Constructed)
Mapped Soil Series	Chewacla loam	Chewacla loam	Pacolet sandy loam and Chewacla loam	Pacolet sandy loam
Drainage class	Poorly drained	Well drained	Poor to Well drained	Well drained
Soil Hydric status	Non hydric	Non hydric	Non hydric	Non hydric
Slope	0-2%	0-2%	0-2%	0-2%
FEMA classification	N/A	N/A	N/A	N/A
Native vegetation community	Piedmont Alluvial Forest	Piedmont Alluvial Forest	Piedmont Alluvial Forest	Mesic Mixed Hardwood Forest
Percent composition of exotic invasive vegetation	0%	0%	0%	0%
Regulatory Considerations				
Regulation	**Applicable?**	**Resolved?**		**Supporting Documentation**
Waters of the United States – Section 404	Yes	Yes, received 404 permit.		N/A
Waters of the United States – Section 401	Yes	Yes, received 401 permit.		N/A
Endangered Species Act*	No	N/A		N/A
Historic Preservation Act*	No	N/A		N/A
Coastal Zone Management Act * (CZMA)/ Coastal Area Management Act (CAMA)	No	N/A		N/A
FEMA Floodplain Compliance	Yes	Floodplain development permit obtained through Rowan County		N/A
Essential Fisheries Habitat*	No	N/A		N/A

Appendix B

Visual Assessment Data



REVISIONS

SYM.	DESCRIPTION	DATE

Ecosystem Enhancement Program

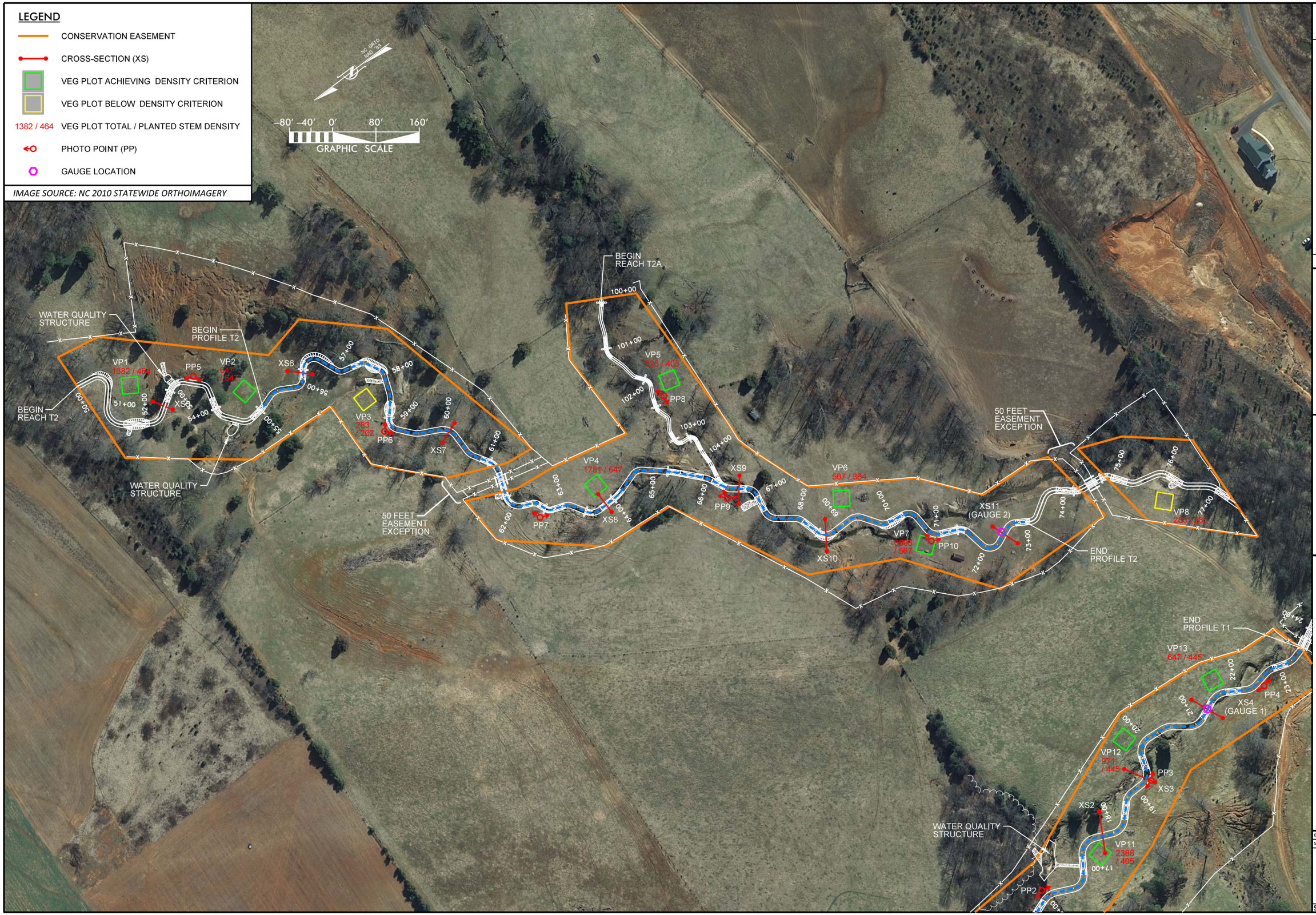
KCI ASSOCIATES OF NC
ENGINEERS • PLANNERS • SCIENTISTS
4601 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27609

JACOB'S LANDING
STREAM MITIGATION PROJECT
MONITORING YEAR 1
CHINA GROVE, ROWAN COUNTY, NORTH CAROLINA
REACH T1

DATE: NOV 2014
SCALE: GRAPHIC

CURRENT CONDITION PLAN VIEW

SHEET 1 OF 2



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JACOB'S LANDING
STREAM MITIGATION PROJECT
MONITORING YEAR 1
CHINA GROVE, ROWAN COUNTY, NORTH CAROLINA
REACH T2

DATE: NOV 2014
SCALE: GRAPHIC

CURRENT CONDITION PLAN VIEW

Table 5. Visual Stream Morphology Stability Assessment
Jacob's Landing Stream Restoration Site, EEP Project # 95024

Assessed Length 2,389 **Reach - T1**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%
		2. Degradation - Evidence of downcutting			0	0	100%
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	21	21			100%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	14	16			88%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	14	16			88%
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	11	11			100%
		2. Thalweg centering at downstream of meander (Glide)	10	10			100%
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	6	6			100%
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	6	6			100%
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	0	0			N/A
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	6	6			100%
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	0	0			N/A

Table 5. Visual Stream Morphology Stability Assessment
Jacob's Landing Stream Restoration Site, EEP Project # 95024
Assessed Length 2,084 **Reach - T2**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended
1. Bed	1. **Vertical Stability** (Riffle and Run units)	1. Aggradation - Bar formation/growth sufficient to significantly deflect flow laterally (not to include point bars)			0	0	100%
		2. Degradation - Evidence of downcutting			0	0	100%
	2. Riffle Condition	1. Texture/Substrate - Riffle maintains coarser substrate	15	23			65%
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	26	26			100%
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	26	26			100%
	4.**Thalweg Position**[+]	1. Thalweg centering at upstream of meander bend (Run)					N/A
		2. Thalweg centering at downstream of meander (Glide)					N/A
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%
				Totals	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	15	15			100%
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	15	15			100%
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	1	1			100%
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	6	6			100%
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	0	0			N/A

[+]Due to this reach's small size and the scale of the pattern, the exact position of the thalweg in relation to the meanders and morphological features is inconsistent and not practical to evaluate .

Table 6. Vegetation Condition Assessment

Jacob's Ladder Stream Restoration Site, EEP Project # 95023

Planted Acreage 12.83 **Easement Acreage 13.9**

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Planted Acreage
1. Bare Areas	Very limited cover of both woody and herbaceous material.	0.1 acre	Pattern and Color	0	0.00	0.0%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1 acre	Pattern and Color	0	0.00	0.0%
			Total	0	0.00	0.0%
3. Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 acre	Pattern and Color	0	0.00	0.0%
			Cumulative Total	0	0.00	0.0%
4. Invasive Areas of Concern	Areas or points (if too small to render as polygons at map scale).	1,000 SF	Pattern and Color	0	0.00	0.0%
5. Easement Encroachment Areas	Areas or points (if too small to render as polygons at map scale).	none	Pattern and Color	0	0.00	0.0%

Stream Station Photos

Photo Point 1u: MY-00 – 3/11/14

Photo Point 1u: MY-01 – 10/29/14

Photo Point 1d: MY-00 – 3/11/14

Photo Point 1d: MY-01 – 10/29/14

Photo Point 1 Tributary: MY-00 – 3/11/14

Photo Point 1 Tributary: MY-01 – 10/29/14

Photo Point 2u: MY-00 – 3/11/14

Photo Point 2u: MY-01 – 10/29/14

Photo Point 2d: MY-00 – 3/11/14

Photo Point 2d: MY-01 – 10/29/14

Photo Point 3u: MY-00 – 3/11/14

Photo Point 3u: MY-01 – 10/29/14

Photo Point 3d: MY-00 – 3/11/14

Photo Point 3d: MY-01 – 10/29/14

Photo Point 4u: MY-00 – 3/11/14

Photo Point 4u: MY-01 – 10/29/14

Photo Point 4d: MY-00 – 3/11/14

Photo Point 4d: MY-01 – 10/29/14

Photo Point 5u: MY-00 – 3/11/14

Photo Point 5u: MY-01 – 10/29/14

Photo Point 5d: MY-00 – 3/11/14

Photo Point 5d: MY-01 – 10/29/14

Photo Point 6u: MY-00 – 3/11/14

Photo Point 6u: MY-01 – 10/29/14

Photo Point 6d: MY-00 – 3/11/14

Photo Point 6d: MY-01 – 10/29/14

Photo Point 7u: MY-00 – 3/11/14

Photo Point 7u: MY-01 – 10/29/14

Photo Point 7d: MY-00 – 3/11/14

Photo Point 7d: MY-01 – 10/29/14

Photo Point 8u: MY-00 – 3/11/14

Photo Point 8u: MY-01 – 10/29/14

Photo Point 8d: MY-00 – 3/11/14

Photo Point 8d: MY-01 – 10/29/14

Photo Point 9u: MY-00 – 3/11/14

Photo Point 9u: MY-01 – 10/29/14

Photo Point 9d: MY-00 – 3/11/14

Photo Point 9d: MY-01 – 10/29/14

Photo Point 9 Tributary: MY-00 – 3/11/14

Photo Point 9 Tributary: MY-01 – 10/29/14

Photo Point 10u: MY-00 – 3/11/14

Photo Point 10u: MY-01 – 10/29/14

Photo Point 10d: MY-00 – 3/11/14

Photo Point 10d: MY-01 – 10/29/14

Vegetation Monitoring Plot Photos

Plot 1 Photo: 10/1/14 – MY01

Plot 2 Photo: 10/1/14 – MY01

Plot 3 Photo: 10/1/14 – MY01

Plot 4 Photo: 10/1/14 – MY01

Plot 5 Photo: 10/1/14 – MY01

Plot 6 Photo: 10/1/14 – MY01

Plot 7 Photo: 10/1/14 – MY01

Plot 8 Photo: 10/1/14 – MY01

Plot 9 Photo: 10/1/14 – MY01

Plot 10 Photo: 10/1/14 – MY01

Plot 11 Photo: 10/1/14 – MY01

Plot 12 Photo: 10/1/14 – MY01

Plot 13 Photo: 10/1/14 – MY01

Appendix C

Vegetation Plot Data

Table 7. Vegetation Plot Criteria Attainment
Jacob's Landing Stream Restoration Site, EEP Project # 95024

Vegetation Plot ID	Vegetation Survival Threshold Met?	Monitoring Year 01 Planted Stem Density (stems/acre)	Monitoring Year 01 Total Stem Density (stems/acre)
1	Yes	567	931
2	Yes	647	647
3	No	202	283
4	Yes	647	1,781
5	Yes	405	526
6	Yes	364	567
7	Yes	567	6,596
8	No	283	283
9	Yes	567	1,659
10	Yes	486	688
11	Yes	405	2,388
12	Yes	445	971
13	Yes	445	647

Table 8. CVS Vegetation Plot Metadata Jacob's Landing Stream Restoration Site, EEP Project # 95024	
Report Prepared By	April Eason
Date Prepared	10/9/2014 9:30
database name	KCI-2014-L.mdb
database location	M:\2011\20110675-Jacobs Landing\Monitoring\Vegetaton CVS Database
computer name	12-J1V5CX1
file size	62001152
DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT----------	
Metadata	Description of database file, the report worksheets, and a summary of project(s) and project data.
Proj, planted	Each project is listed with its PLANTED stems per acre, for each year. This excludes live stakes.
Proj, total stems	Each project is listed with its TOTAL stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Plots	List of plots surveyed with location and summary data (live stems, dead stems, missing, etc.).
Vigor	Frequency distribution of vigor classes for stems for all plots.
Vigor by Spp	Frequency distribution of vigor classes listed by species.
Damage	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage by Spp	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
Planted Stems by Plot and Spp	A matrix of the count of PLANTED living stems of each species for each plot; dead and missing stems are excluded.
ALL Stems by Plot and spp	A matrix of the 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	95024
project Name	Jacob's Landing
Description	Stream Restoration Site
River Basin	Yadkin-Pee Dee
length(ft)	4593
area (sq m)	0.72
Required Plots (calculated)	13
Sampled Plots	13

Table 9. CVS Stem Count Total and Planted by Plot and Species

			Current Plot Data (MY1 2014)																						
			95024-01-0001			95024-01-0002			95024-01-0003			95024-01-0004			95024-01-0005			95024-01-0006			95024-01-0007			95024-01-0008		
Scientific Name	**Common Name**	**Species Type**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Boxelder	Tree																							
Betula nigra	River Birch	Tree	4	4	4	13	13	13	2	2	2	5	5	5				5	5	5	10	10	10			
Callicarpa americana	American Beautyberry	Shrub																							
Diospyros virginiana	Common Persimmon	Tree																		1					
Fraxinus pennsylvanica	Green Ash	Tree																							
Liquidambar styraciflua	Sweetgum	Tree			8						2			28			3			4			147			
Liriodendron tulipifera	Tuliptree	Tree	2	2	2							6	6	6				1	1	1	2	2	4			
Platanus occidentalis	American Sycamore	Tree	8	8	8				3	3	3	5	5	5				2	2	2	2	2	2	1	1	1
Quercus	Oak	Tree																							
Quercus alba	White Oak	Tree			1	2	2	2							1	1	1									
Quercus palustris	Pin Oak	Tree													5	5	5									
Quercus phellos	Willow Oak	Tree				1	1	1																5	5	5
Quercus rubra	Northern Red Oak	Tree													4	4	4									
Sambucus canadensis	Common Elderberry	Shrub																								
Unknown		Shrub or Tree																1	1	1				1	1	1
		Stem count	14	14	23	16	16	16	5	5	7	16	16	44	10	10	13	9	9	14	14	14	163	7	7	7
		size (ares)	1			1			1			1			1			1			1			1		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
		Species count	3	3	5	3	3	3	2	2	3	3	3	4	3	3	4	4	4	6	3	3	4	3	3	3
		Stems per ACRE	567	567	931	647	647	647	202	202	283	647	647	1781	405	405	526	364	364	567	567	567	6596	283	283	283

Table 9. CVS Stem Count Total and Planted by Plot and Species

			Current Plot Data (MY1 2014)														Annual Means					
			95024-01-0009			95024-01-0010			95024-01-0011			95024-01-0012			95024-01-0013			MY1 (2014)			MY0 (2014)		
Scientific Name	**Common Name**	**Species Type**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Boxelder	Tree									1			1			1			3			
Betula nigra	River Birch	Tree				1	1	1	3	3	3	1	1	1				44	44	44	44	44	44
Callicarpa americana	American Beautyberry	Shrub	4	4	4	3	3	3	4	4	5							11	11	12			
Diospyros virginiana	Common Persimmon	Tree																		1			
Fraxinus pennsylvanica	Green Ash	Tree	1	1	1													1	1	1			
Liquidambar styraciflua	Sweetgum	Tree			22			5			39			10			4			272			
Liriodendron tulipifera	Tuliptree	Tree			1						3							11	11	17			
Platanus occidentalis	American Sycamore	Tree			4						5			2				21	21	32	3	3	3
Quercus	Oak	Tree																			11	11	11
Quercus alba	White Oak	Tree																3	3	4	1	1	1
Quercus palustris	Pin Oak	Tree																5	5	5			
Quercus phellos	Willow Oak	Tree	8	8	8	8	8	8				10	10	10	9	9	9	41	41	41	54	54	54
Quercus rubra	Northern Red Oak	Tree							1	1	1							5	5	5			
Sambucus canadensis	Common Elderberry	Shrub	1	1	1													1	1	1			
Unknown		Shrub or Tree							2	2	2				2	2	2	6	6	6	133	133	133
		Stem count	14	14	41	12	12	17	10	10	59	11	11	24	11	11	16	149	149	444	246	246	246
		size (ares)	1			1			1			1			1			13			13		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02			0.32			0.32		
		Species count	4	4	7	3	3	4	4	4	8	2	2	5	2	2	4	11	11	14	6	6	6
		Stems per ACRE	567	567	1659	486	486	688	405	405	2388	445	445	971	445	445	647	464	464	1382	766	766	766

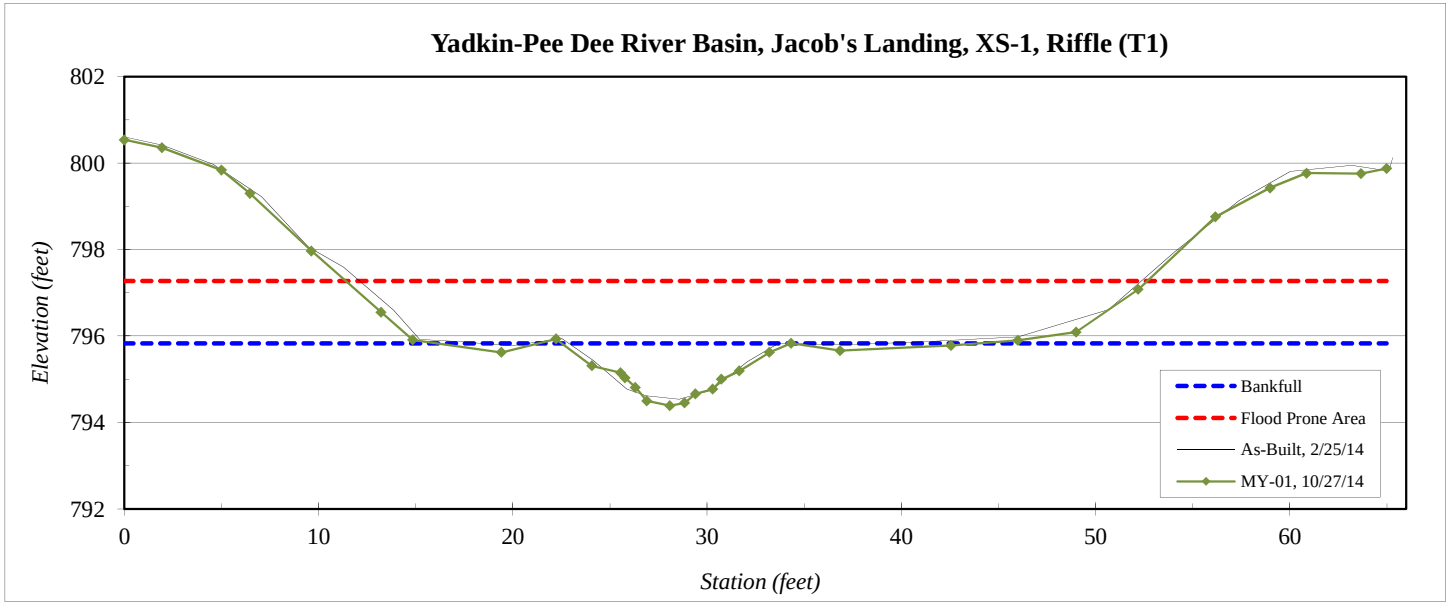
Appendix D

Stream Survey Data

River Basin:	Yadkin-Pee Dee
Watershed:	Jacob's Landing
XS ID	XS-1, Riffle (T1)
Drainage Area (sq mi):	0.37
Date:	10/27/2014
Field Crew:	T. Seelinger and M. Underwood

Station	Elevation
0.0	800.54
2.0	800.36
5.0	799.84
6.5	799.30
9.6	797.97
13.2	796.55
14.9	795.91
19.4	795.62
22.2	795.93
24.1	795.31
25.6	795.15
25.8	795.03
26.3	794.81
26.9	794.50
28.1	794.39
28.9	794.45
29.4	794.66
30.3	794.77
30.8	795.00
31.7	795.19
33.2	795.62
34.3	795.83
36.9	795.66
42.6	795.78
46.0	795.90
49.0	796.09
52.2	797.08
56.2	798.76
59.0	799.43
60.9	799.77
63.7	799.76
65.0	799.88

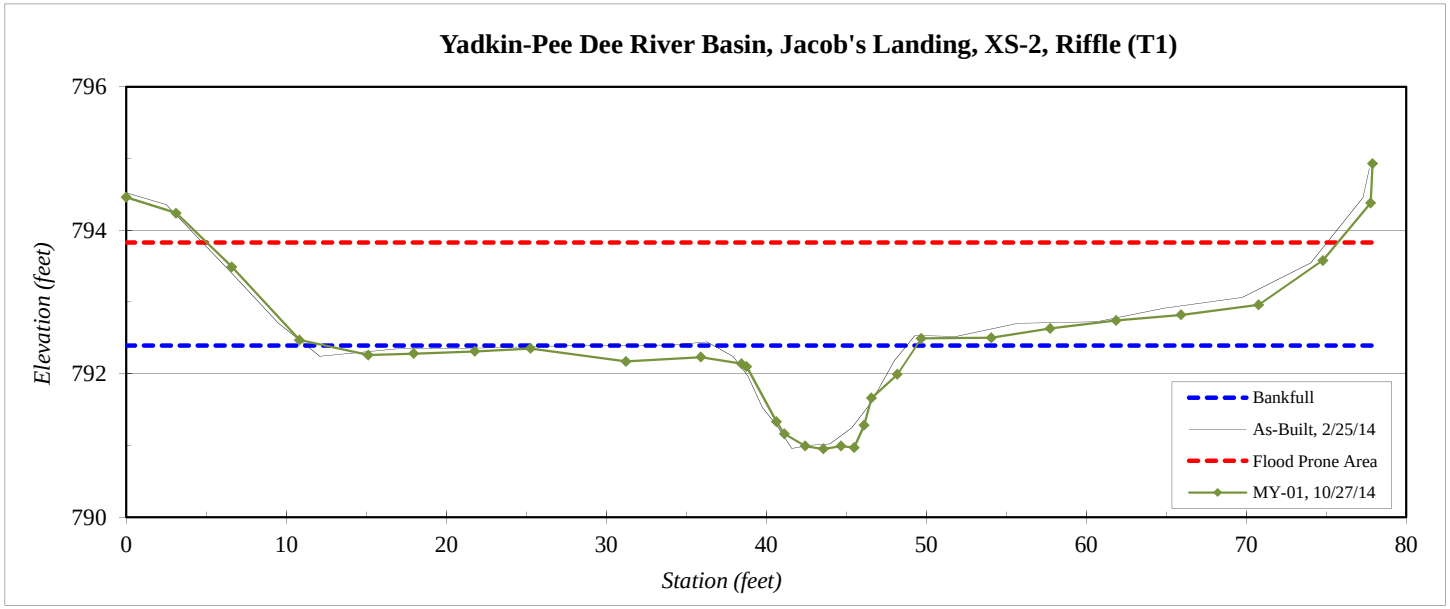
SUMMARY DATA	
Bankfull Elevation:	795.8
Bankfull Cross-Sectional Area:	8.9
Bankfull Width:	11.8
Flood Prone Area Elevation:	797.3
Flood Prone Width:	41.2
Max Depth at Bankfull:	1.4
Mean Depth at Bankfull:	0.8
W / D Ratio:	15.6
Entrenchment Ratio:	3.5
Bank Height Ratio:	1.0



River Basin:	Yadkin-Pee Dee
Watershed:	Jacob's Landing
XS ID	XS-2, Riffle (T1)
Drainage Area (sq mi):	0.38
Date:	10/27/2014
Field Crew:	T. Seelinger and M. Underwood

Station	Elevation
0.0	794.46
3.1	794.24
6.6	793.49
10.9	792.47
15.1	792.26
18.0	792.28
21.8	792.31
25.3	792.35
31.3	792.17
35.9	792.23
38.5	792.14
38.8	792.10
40.7	791.33
41.1	791.16
42.4	790.99
43.6	790.95
44.7	790.99
45.5	790.97
46.1	791.28
46.6	791.66
48.2	791.99
49.7	792.49
54.1	792.50
57.8	792.63
61.9	792.74
65.9	792.82
70.8	792.96
74.8	793.58
77.8	794.38
77.9	794.93

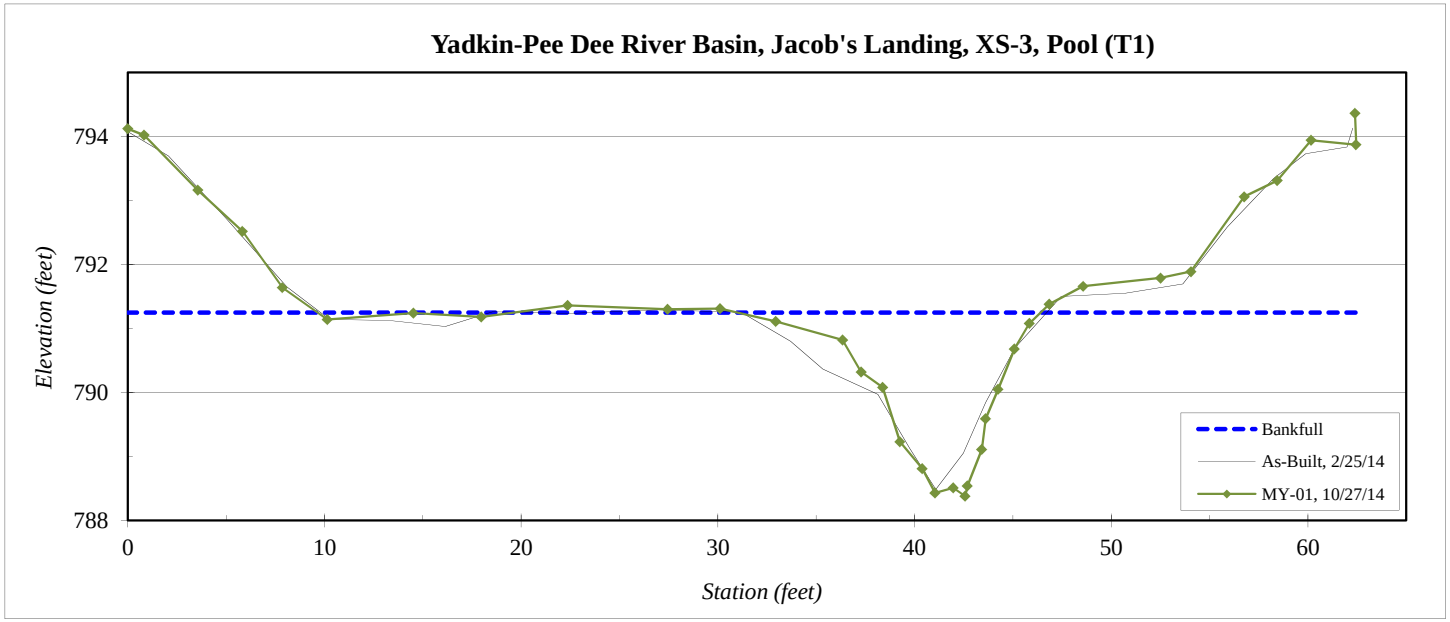
SUMMARY DATA	
Bankfull Elevation:	792.4
Bankfull Cross-Sectional Area:	10.3
Bankfull Width:	10.9
Flood Prone Area Elevation:	793.8
Flood Prone Width:	70.7
Max Depth at Bankfull:	1.4
Mean Depth at Bankfull:	0.9
W / D Ratio:	11.5
Entrenchment Ratio:	6.5
Bank Height Ratio:	1.0



River Basin:	Yadkin-Pee Dee
Watershed:	Jacob's Landing
XS ID	XS-3, Pool (T1)
Drainage Area (sq mi):	0.4
Date:	10/27/2014
Field Crew:	T. Seelinger and M. Underwood

Station	Elevation
0.0	794.12
0.8	794.02
3.6	793.16
5.8	792.52
7.9	791.64
10.2	791.14
14.5	791.24
18.0	791.18
22.4	791.36
27.4	791.30
30.1	791.31
33.0	791.11
36.3	790.82
37.3	790.32
38.4	790.08
39.3	789.23
40.4	788.81
41.1	788.43
42.0	788.51
42.6	788.38
42.7	788.54
43.4	789.11
43.6	789.59
44.3	790.05
45.1	790.68
45.8	791.08
46.9	791.38
48.6	791.66
52.5	791.79
54.1	791.89
56.8	793.06
58.4	793.31
60.2	793.94
62.5	793.87
62.4	794.36

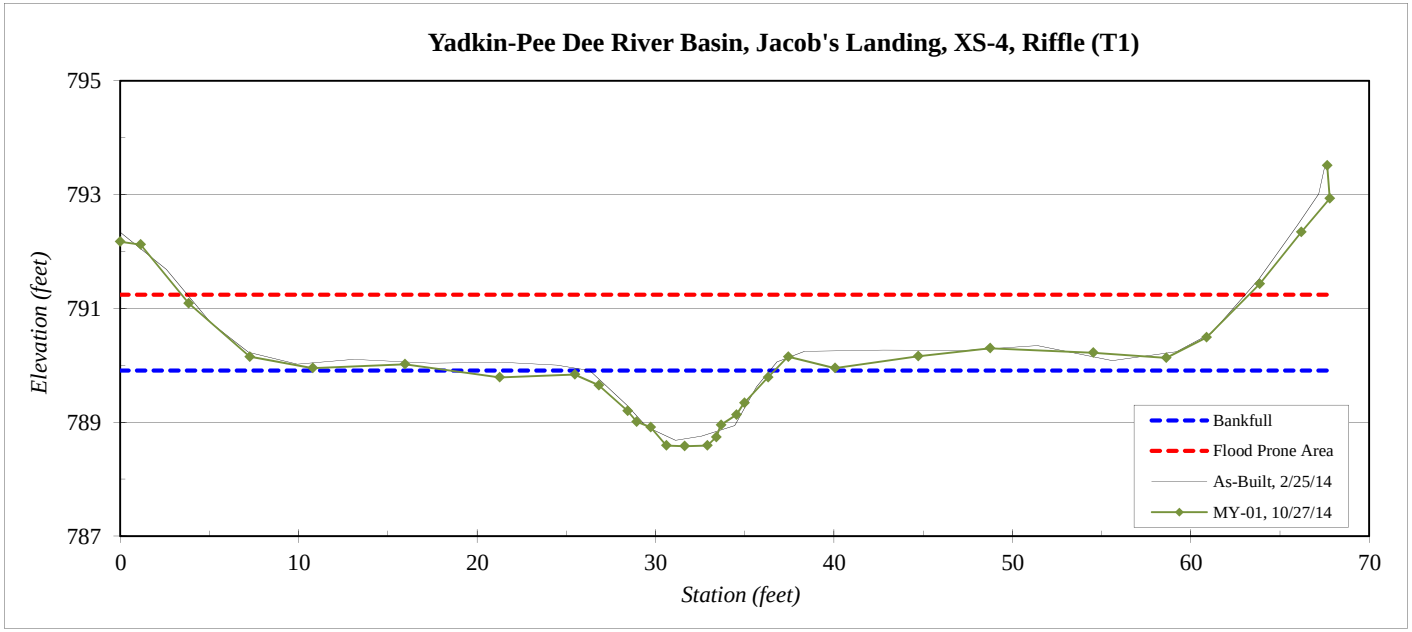
SUMMARY DATA	
Bankfull Elevation:	791.3
Bankfull Cross-Sectional Area:	17.2
Bankfull Width:	15.5
Flood Prone Area Elevation:	-
Flood Prone Width:	-
Max Depth at Bankfull:	2.9
Mean Depth at Bankfull:	1.1
W / D Ratio:	-
Entrenchment Ratio:	-
Bank Height Ratio:	-



River Basin:	Yadkin-Pee Dee
Watershed:	Jacob's Landing
XS ID	XS-4, Riffle (T1)
Drainage Area (sq mi):	0.40
Date:	10/27/2014
Field Crew:	T. Seelinger and M. Underwood

Station	Elevation
0.0	792.17
1.2	792.12
3.8	791.09
7.3	790.15
10.8	789.95
16.0	790.02
21.3	789.79
25.5	789.84
26.8	789.65
28.4	789.20
28.9	789.01
29.7	788.91
30.6	788.59
31.6	788.58
32.9	788.59
33.4	788.74
33.7	788.95
34.5	789.13
35.0	789.34
36.3	789.79
37.4	790.15
40.1	789.95
44.7	790.16
48.7	790.30
54.5	790.22
58.6	790.13
60.9	790.49
63.9	791.43
66.2	792.34
67.8	792.93
67.6	793.51

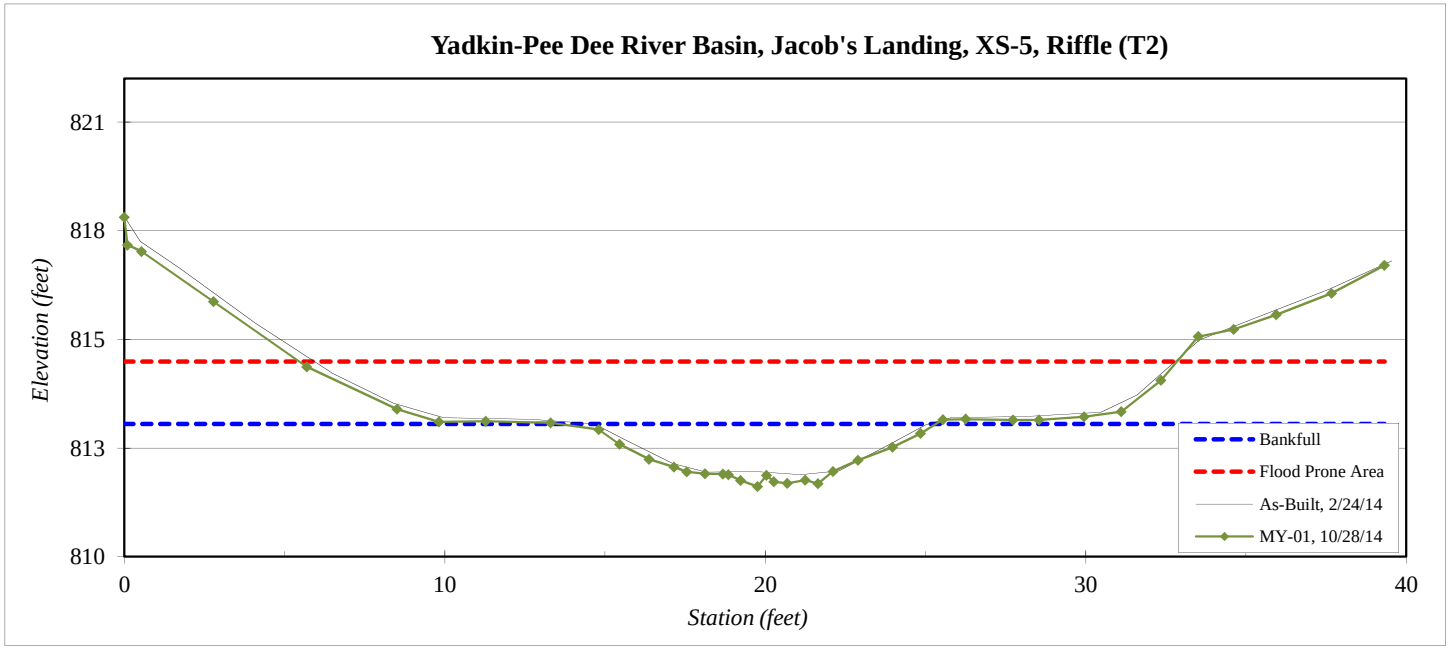
SUMMARY DATA	
Bankfull Elevation:	789.9
Bankfull Cross-Sectional Area:	8.7
Bankfull Width:	11.2
Flood Prone Area Elevation:	791.2
Flood Prone Width:	59.8
Max Depth at Bankfull:	1.3
Mean Depth at Bankfull:	0.8
W / D Ratio:	14.4
Entrenchment Ratio:	5.3
Bank Height Ratio:	1.0



River Basin:	Yadkin-Pee Dee
Watershed:	Jacob's Landing
XS ID	XS-5, Riffle (T2)
Drainage Area (sq mi):	0.23
Date:	10/28/2014
Field Crew:	T. Seelinger and M. Underwood

Station	Elevation
0.0	818.52
0.1	817.82
0.5	817.66
2.8	816.40
8.5	813.70
9.8	813.38
11.3	813.40
13.3	813.36
14.8	813.19
15.5	812.82
17.2	812.25
17.6	812.13
18.1	812.08
18.7	812.07
18.9	812.06
19.2	811.91
19.8	811.76
20.0	812.04
20.3	811.88
20.7	811.84
21.3	811.92
21.7	811.83
22.1	812.14
22.9	812.42
24.9	813.09
25.6	813.44
26.3	813.45
28.5	813.43
31.1	813.64
32.3	814.42
33.5	815.52
34.6	815.70
37.7	816.61
39.3	817.31

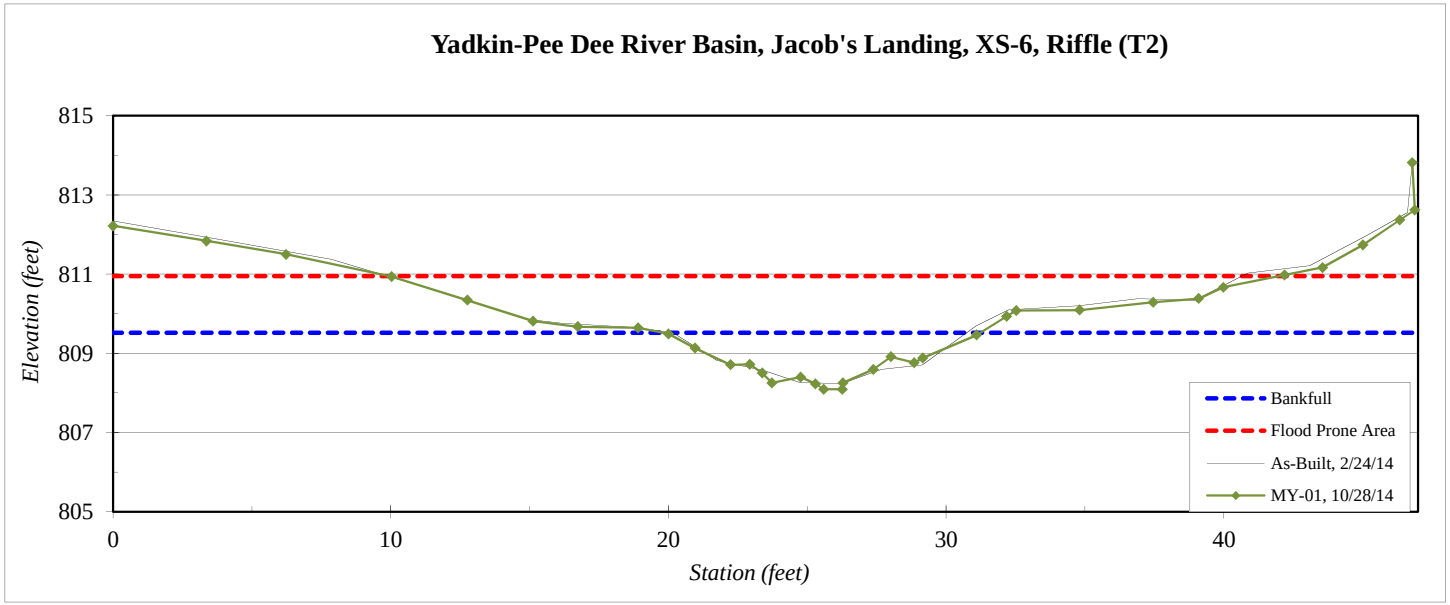
SUMMARY DATA	
Bankfull Elevation:	813.3
Bankfull Cross-Sectional Area:	10.5
Bankfull Width:	11.8
Flood Prone Area Elevation:	814.9
Flood Prone Width:	27.4
Max Depth at Bankfull:	1.6
Mean Depth at Bankfull:	0.9
W / D Ratio:	13.3
Entrenchment Ratio:	2.3
Bank Height Ratio:	1.0



River Basin:	Yadkin-Pee Dee
Watershed:	Jacob's Landing
XS ID	XS-6, Riffle (T2)
Drainage Area (sq mi):	0.23
Date:	10/28/2014
Field Crew:	T. Seelinger and M. Underwood

Station	Elevation
0.0	812.22
3.4	811.84
6.2	811.50
10.0	810.94
15.1	809.81
16.7	809.67
18.9	809.64
20.0	809.49
21.0	809.13
22.2	808.71
22.9	808.72
23.4	808.50
23.7	808.25
24.8	808.40
25.3	808.23
25.6	808.09
26.3	808.09
26.3	808.25
27.4	808.59
28.0	808.91
28.9	808.76
29.2	808.88
31.1	809.46
32.2	809.9
32.5	810.08
34.8	810.1
37.5	810.29
39.1	810.4
40.0	810.67
42.2	811.0
43.6	811.2
46.3	812.37
46.9	812.62
46.8	813.82

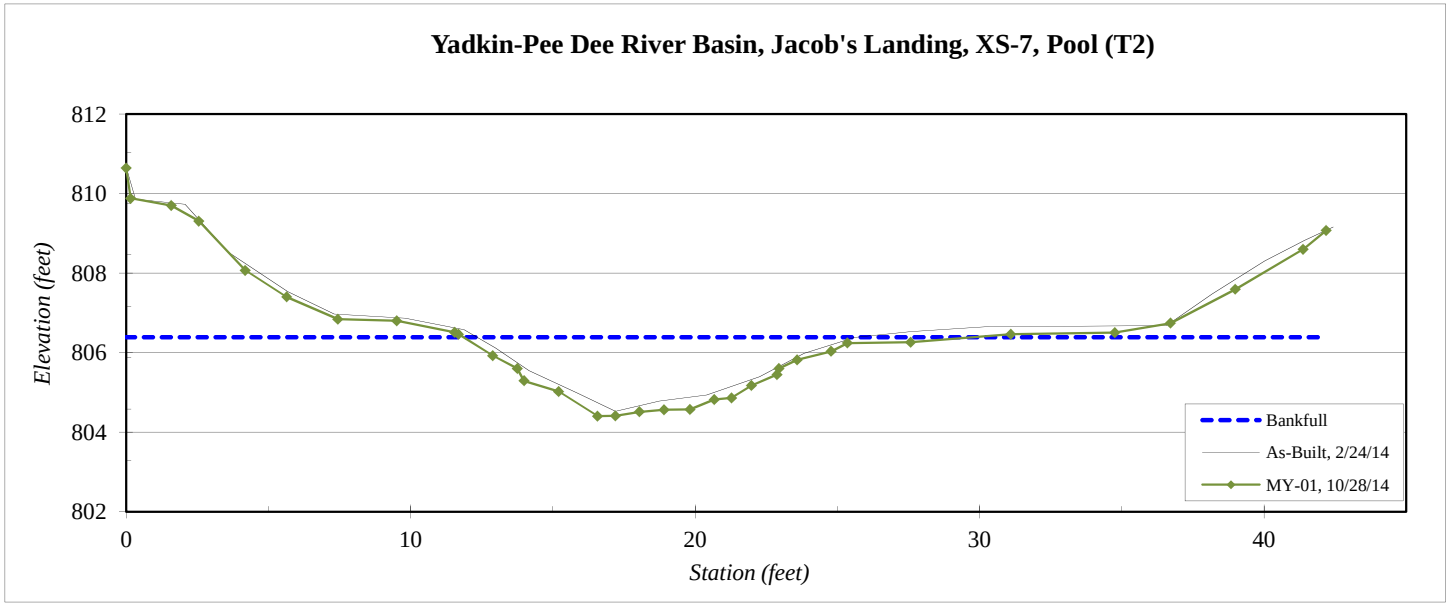
SUMMARY DATA	
Bankfull Elevation:	809.5
Bankfull Cross-Sectional Area:	8.8
Bankfull Width:	11.4
Flood Prone Area Elevation:	811.0
Flood Prone Width:	32.0
Max Depth at Bankfull:	1.4
Mean Depth at Bankfull:	0.8
W / D Ratio:	14.8
Entrenchment Ratio:	2.8
Bank Height Ratio:	1.0



River Basin:	Yadkin-Pee Dee
Watershed:	Jacob's Landing
XS ID	XS-7, Pool (T2)
Drainage Area (sq mi):	0.23
Date:	10/27/2014
Field Crew:	T. Seelinger and M. Underwood

Station	Elevation
0.0	810.64
0.2	809.88
1.6	809.70
2.6	809.31
4.2	808.07
5.7	807.40
7.5	806.84
9.5	806.80
11.6	806.51
11.7	806.46
12.9	805.92
13.8	805.60
14.0	805.29
15.2	805.02
16.6	804.40
17.2	804.41
18.1	804.51
18.9	804.56
19.8	804.57
20.7	804.82
21.3	804.86
22.0	805.17
22.9	805.45
23.0	805.60
23.6	805.82
24.8	806.03
25.4	806.24
27.6	806.26
31.1	806.46
34.8	806.50
36.7	806.74
39.0	807.59
41.4	808.60
42.2	809.07

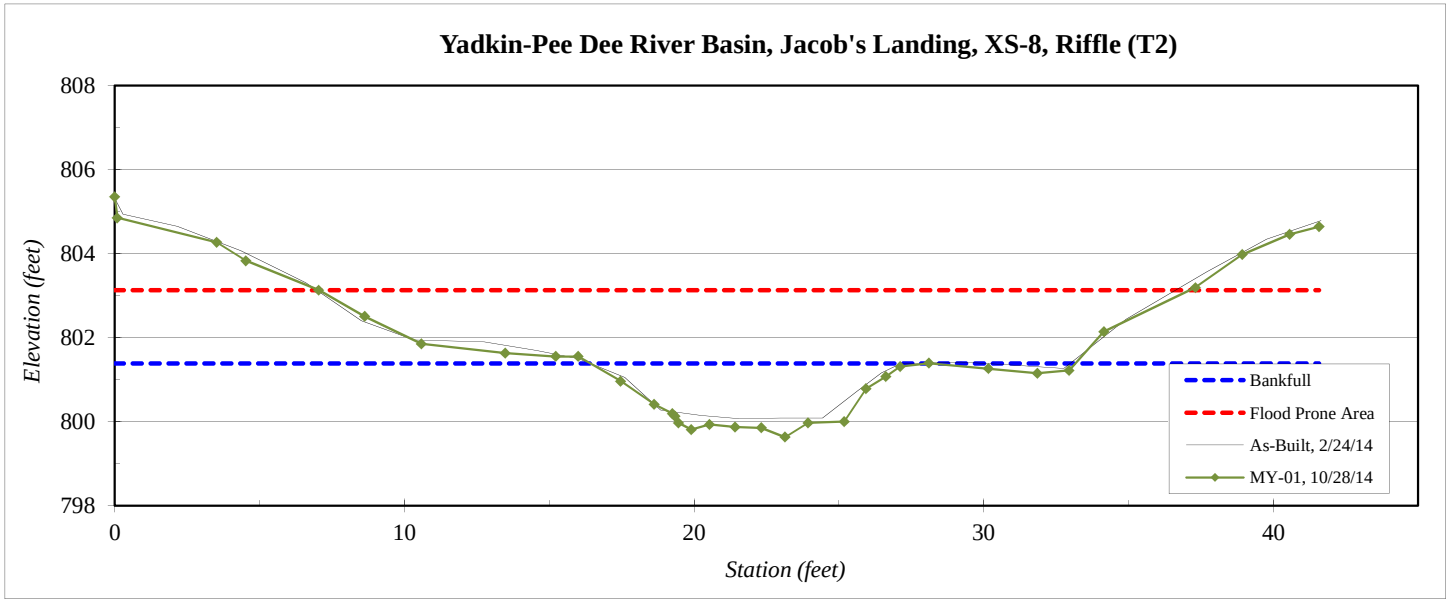
SUMMARY DATA	
Bankfull Elevation:	806.4
Bankfull Cross-Sectional Area:	16.9
Bankfull Width:	13.5
Flood Prone Area Elevation:	-
Flood Prone Width:	-
Max Depth at Bankfull:	2.0
Mean Depth at Bankfull:	1.3
W / D Ratio:	-
Entrenchment Ratio:	-
Bank Height Ratio:	-



River Basin:	Yadkin-Pee Dee
Watershed:	Jacob's Landing
XS ID	XS-8, Riffle (T2)
Drainage Area (sq mi):	0.23
Date:	10/28/2014
Field Crew:	T. Seelinger and M. Underwood

Station	Elevation
0.0	805.35
0.1	804.85
3.5	804.27
4.5	803.83
7.0	803.13
8.6	802.50
10.6	801.85
13.5	801.63
15.2	801.55
16.0	801.55
17.5	800.96
18.6	800.41
19.3	800.19
19.3	800.13
19.5	799.97
19.9	799.81
20.5	799.93
21.4	799.87
22.3	799.85
23.1	799.63
23.9	799.97
25.2	800.00
25.9	800.78
26.6	801.07
27.1	801.31
28.1	801.39
30.2	801.26
31.9	801.15
33.0	801.22
34.2	802.14
37.3	803.19
38.9	803.98
40.6	804.46
41.6	804.64

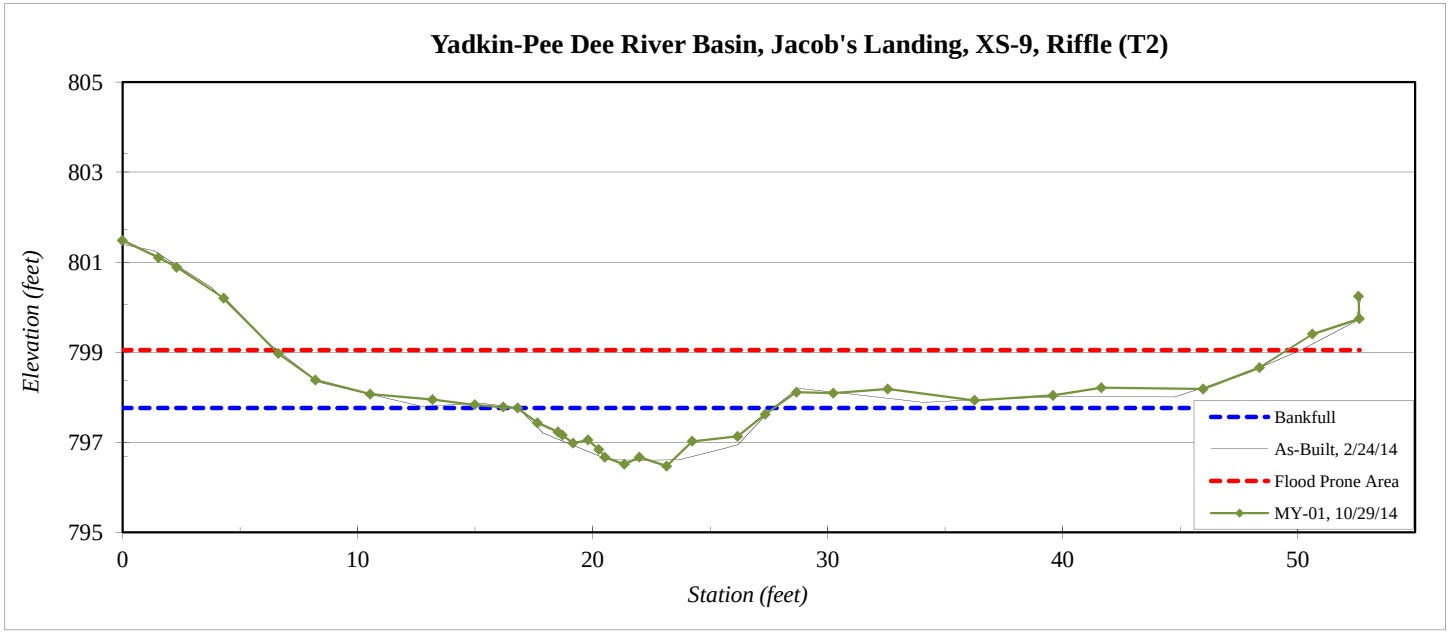
SUMMARY DATA	
Bankfull Elevation:	801.4
Bankfull Cross-Sectional Area:	11.8
Bankfull Width:	11.6
Flood Prone Area Elevation:	803.1
Flood Prone Width:	30.1
Max Depth at Bankfull:	1.8
Mean Depth at Bankfull:	1.0
W / D Ratio:	11.4
Entrenchment Ratio:	2.6
Bank Height Ratio:	1.0



River Basin:	Yadkin-Pee Dee
Watershed:	Jacob's Landing
XS ID	XS-9, Riffle (T2)
Drainage Area (sq mi):	0.31
Date:	10/29/2014
Field Crew:	T. Seelinger and M. Underwood

Station	Elevation
0.0	801.48
1.5	801.10
2.3	800.89
4.3	800.20
6.6	798.97
8.2	798.38
10.5	798.07
13.2	797.95
15.0	797.83
16.2	797.78
16.8	797.76
17.7	797.43
18.5	797.23
18.7	797.16
19.2	796.98
19.8	797.05
20.3	796.84
20.5	796.67
21.4	796.51
22.0	796.67
23.2	796.47
24.2	797.02
26.2	797.13
27.3	797.62
28.7	798.11
30.2	798.09
32.6	798.18
36.3	797.93
39.6	798.04
41.7	798.21
46.0	798.18
48.4	798.66
50.6	799.40
52.6	799.74
52.6	800.24

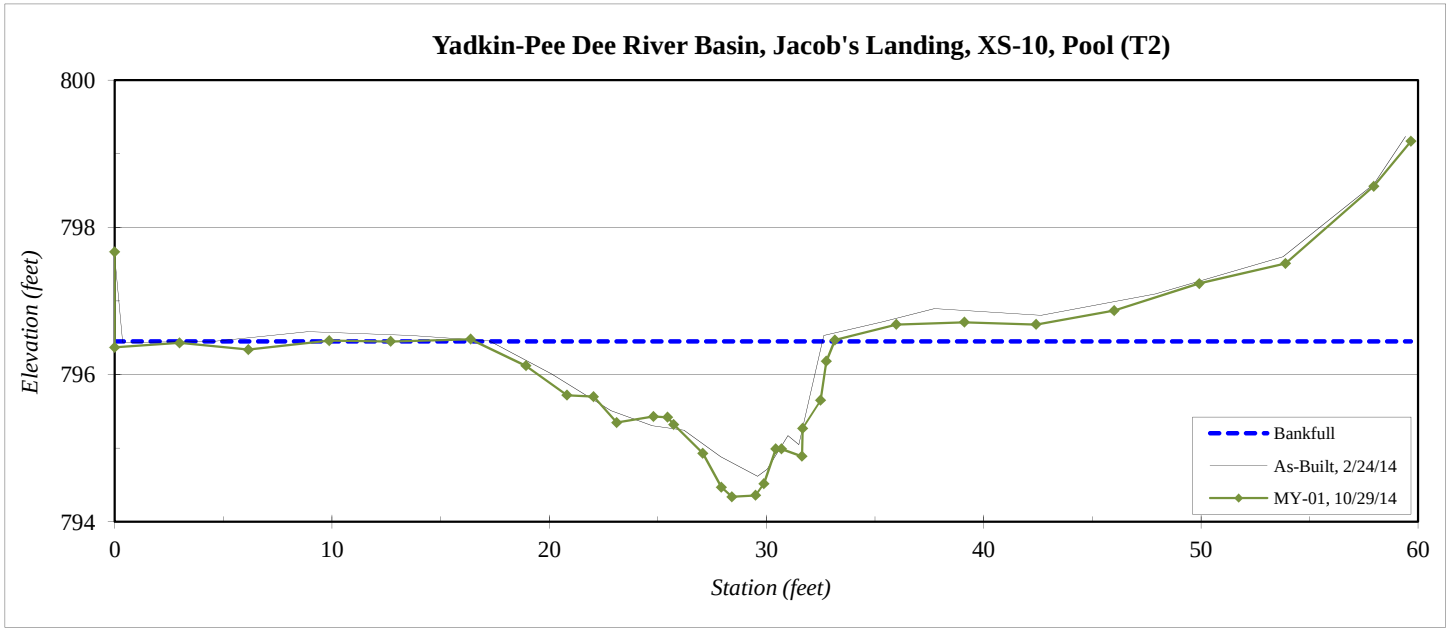
SUMMARY DATA	
Bankfull Elevation:	797.8
Bankfull Cross-Sectional Area:	8.0
Bankfull Width:	10.9
Flood Prone Area Elevation:	799.1
Flood Prone Width:	43.1
Max Depth at Bankfull:	1.3
Mean Depth at Bankfull:	0.7
W / D Ratio:	14.9
Entrenchment Ratio:	4.0
Bank Height Ratio:	1.0



River Basin:	Yadkin-Pee Dee
Watershed:	Jacob's Landing
XS ID	XS-10, Pool (T2)
Drainage Area (sq mi):	0.31
Date:	10/29/2014
Field Crew:	T. Seelinger and M. Underwood

Station	Elevation
0.0	797.67
0.0	796.37
3.0	796.43
6.2	796.34
9.9	796.46
12.7	796.45
16.4	796.48
18.9	796.12
20.8	795.72
22.0	795.70
23.1	795.35
24.8	795.43
25.5	795.42
25.7	795.32
27.1	794.93
27.9	794.47
28.4	794.34
29.5	794.36
29.9	794.52
30.4	794.99
30.7	794.99
31.6	794.89
31.7	795.27
32.5	795.65
32.8	796.18
33.2	796.47
36.0	796.68
39.1	796.71
42.4	796.68
46.0	796.87
49.9	797.24
53.9	797.51
58.0	798.56
59.7	799.17

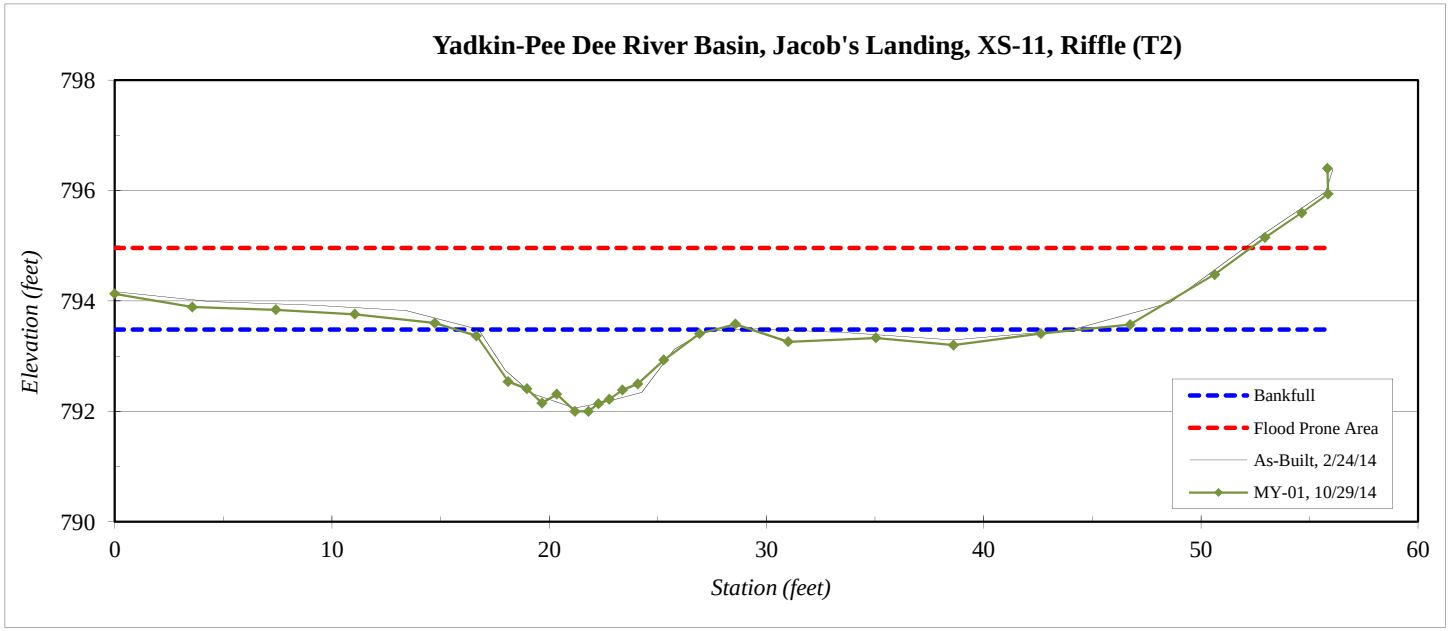
SUMMARY DATA	
Bankfull Elevation:	796.5
Bankfull Cross-Sectional Area:	17.1
Bankfull Width:	16.5
Flood Prone Area Elevation:	-
Flood Prone Width:	-
Max Depth at Bankfull:	2.1
Mean Depth at Bankfull:	1.0
W / D Ratio:	-
Entrenchment Ratio:	-
Bank Height Ratio:	-



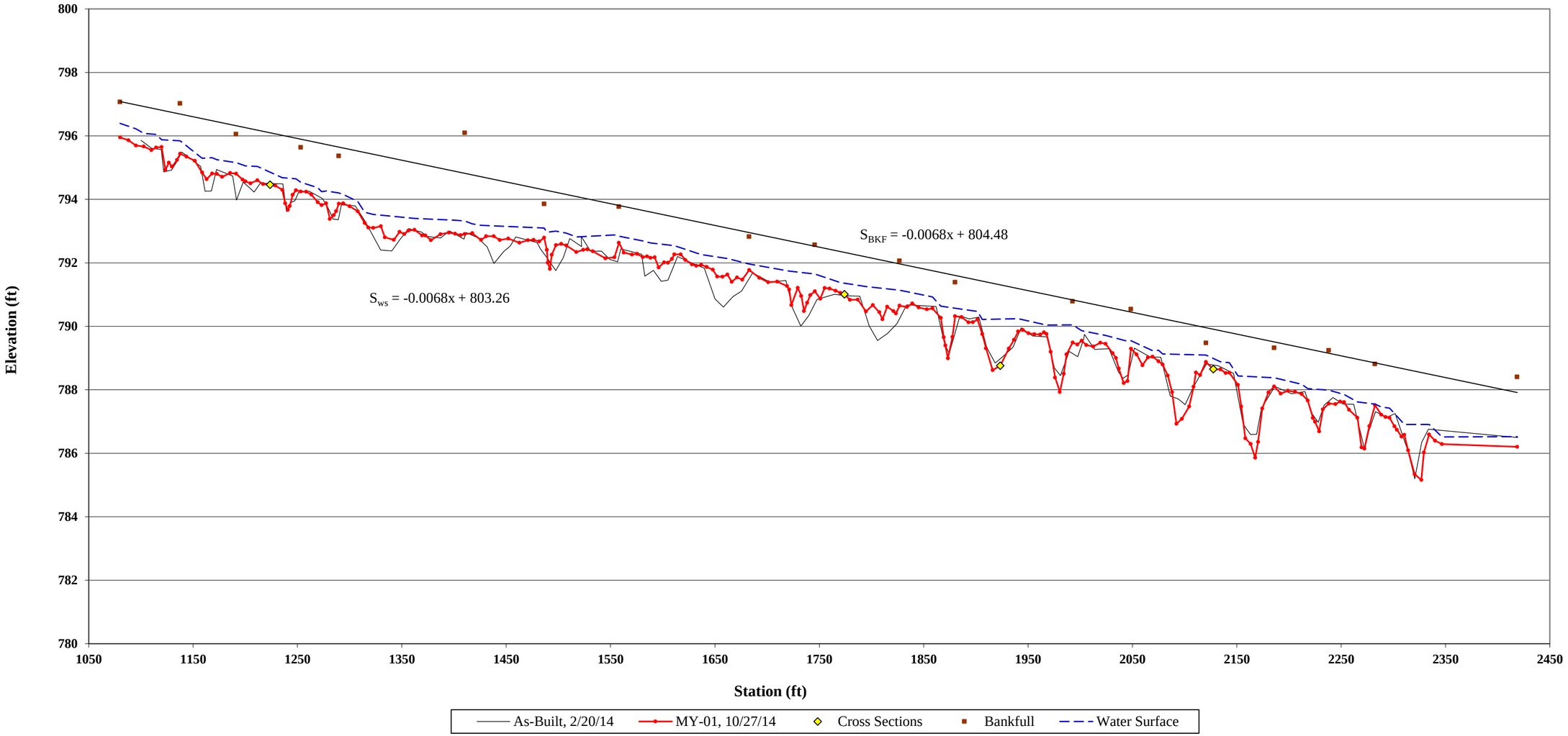
River Basin:	Yadkin-Pee Dee
Watershed:	Jacob's Landing
XS ID	XS-11, Riffle (T2)
Drainage Area (sq mi):	0.31
Date:	10/29/2014
Field Crew:	T. Seelinger and M. Underwood

Station	Elevation
0.0	794.13
3.6	793.89
7.4	793.84
11.1	793.76
14.7	793.60
16.7	793.37
18.1	792.54
19.0	792.41
19.7	792.15
20.4	792.31
21.2	792.00
21.8	792.00
22.3	792.14
22.8	792.22
23.4	792.39
24.1	792.50
25.3	792.93
26.9	793.41
28.6	793.58
31.0	793.26
35.0	793.33
38.6	793.20
42.6	793.41
46.7	793.57
50.6	794.48
53.0	795.15
54.7	795.60
55.9	795.94
55.8	796.40

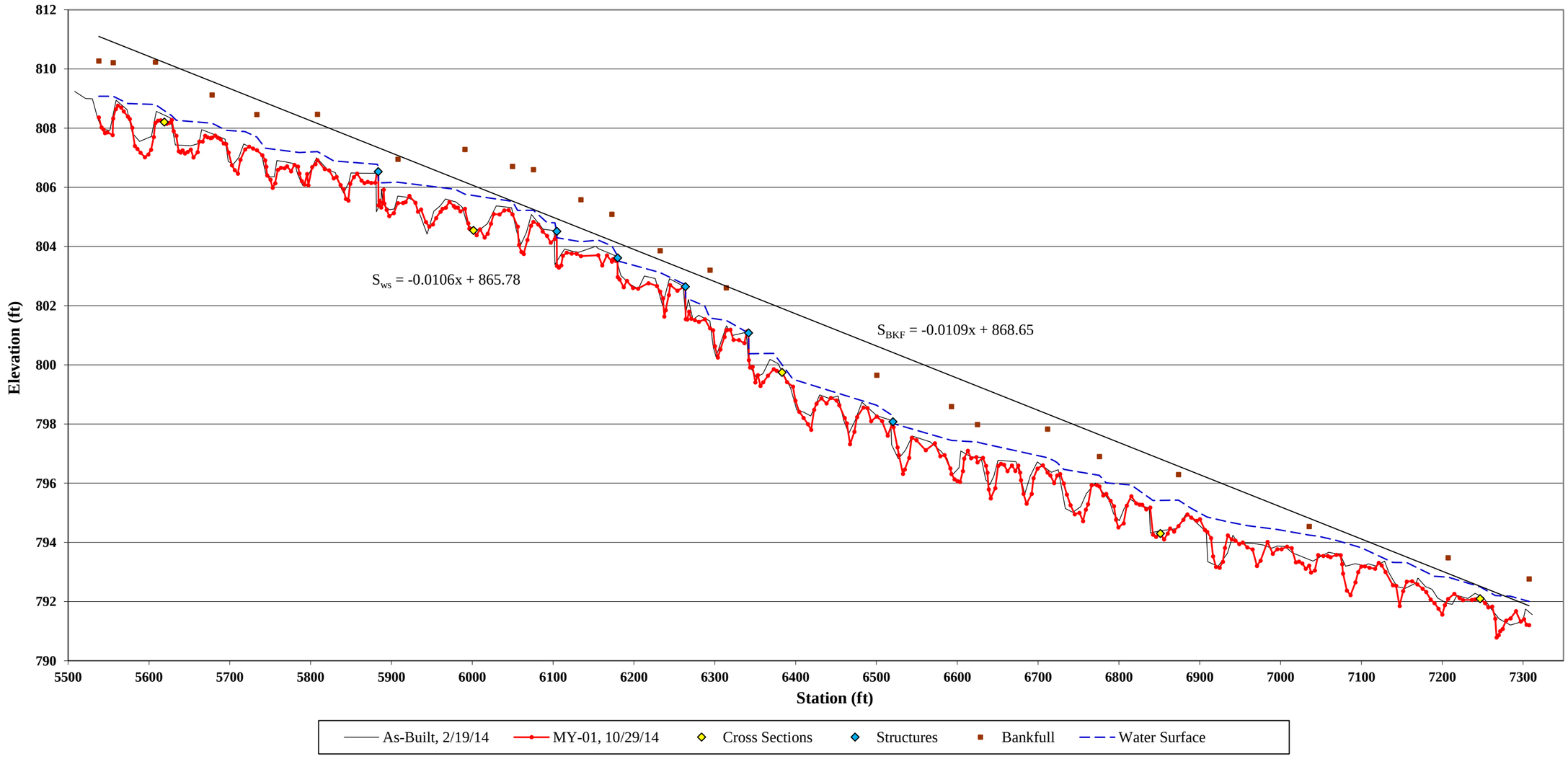
SUMMARY DATA	
Bankfull Elevation:	793.5
Bankfull Cross-Sectional Area:	9.6
Bankfull Width:	11.9
Flood Prone Area Elevation:	795.0
Flood Prone Width:	52
Max Depth at Bankfull:	1.5
Mean Depth at Bankfull:	0.8
W / D Ratio:	14.8
Entrenchment Ratio:	4.4
Bank Height Ratio:	1.0



Jacob's Landing Stream Restoration Site
Longitudinal Profile
T1 MY-01

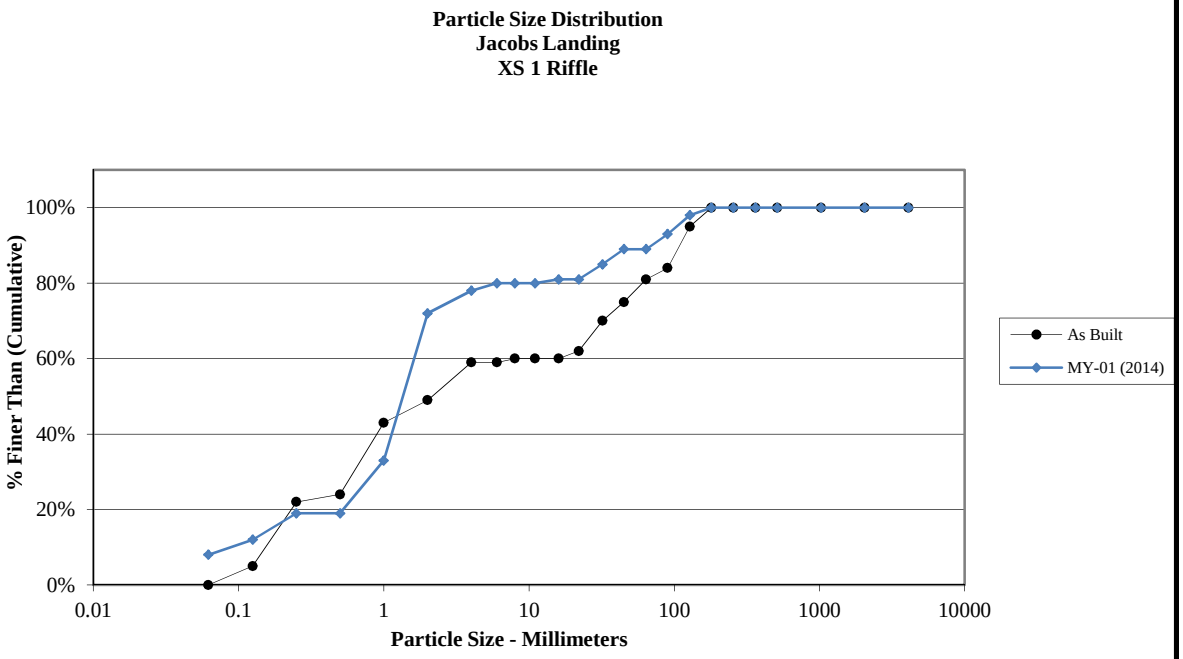


Jacob's Landing Stream Restoration Site
Longitudinal Profile
T2 MY-01



Cross-Section 1 Riffle - MY-01			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	8
Very Fine	.062 - .125	S	4
Fine	.125 - .25	A	7
Medium	.25 - .50	N	
Coarse	.50 - 1	D	14
Very Coarse	1 - 2	S	39
Very Fine	2 - 4		6
Fine	4 - 5.7	G	2
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	1
Coarse	16 - 22.6	E	
Coarse	22.6 - 32	L	4
Very Coarse	32 - 45	S	4
Very Coarse	45 - 64		
Small	64 - 90	C	4
Small	90 - 128	O	5
Large	128 - 180	B	2
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



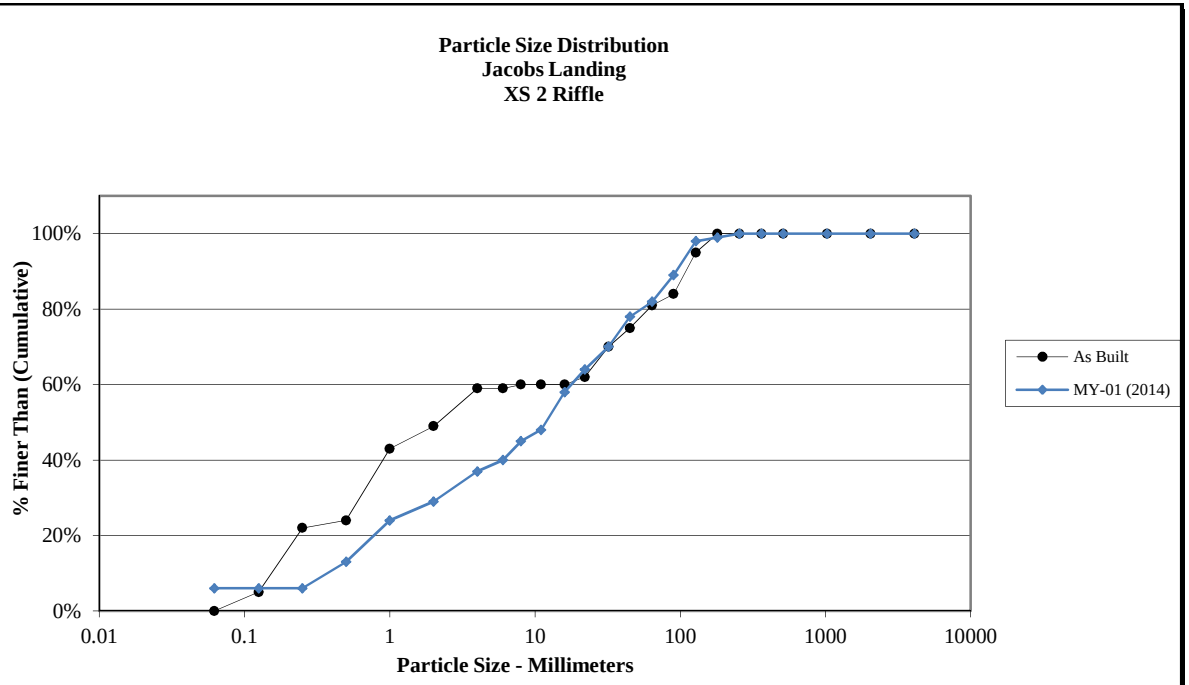
Size (mm)	
D16	0.19
D35	1
D50	1.4
D65	1.8
D84	29
D95	100

Size Distribution	
mean	2.3
dispersion	14.0
skewness	0.15

Type	
silt/clay	8%
sand	64%
gravel	17%
cobble	11%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 2 Riffle - MY-01			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	6
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	7
Coarse	.50 - 1	D	11
Very Coarse	1 - 2	S	5
Very Fine	2 - 4		8
Fine	4 - 5.7	G	3
Fine	5.7 - 8	R	5
Medium	8 - 11.3	A	3
Medium	11.3 - 16	V	10
Coarse	16 - 22.6	E	6
Coarse	22.6 - 32	L	6
Very Coarse	32 - 45	S	8
Very Coarse	45 - 64		4
Small	64 - 90	C	7
Small	90 - 128	O	9
Large	128 - 180	B	1
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



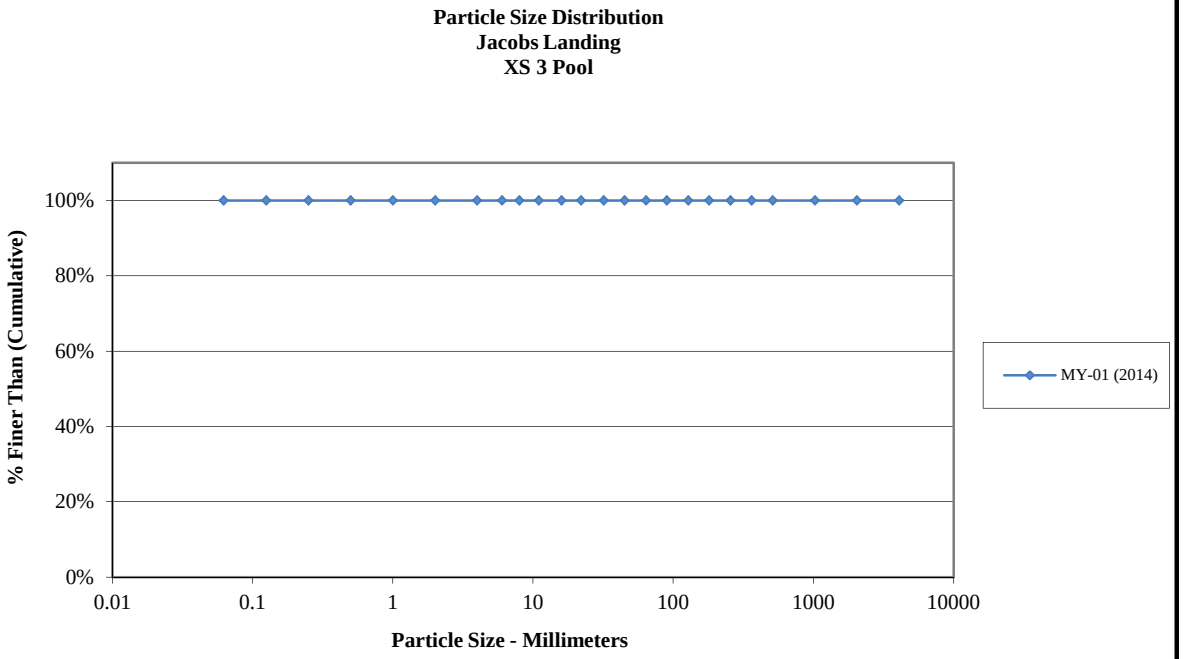
Size (mm)	
D16	0.6
D35	3.4
D50	12
D65	23
D84	71
D95	110

Size Distribution	
mean	6.5
dispersion	13.0
skewness	-0.18

Type	
silt/clay	6%
sand	23%
gravel	53%
cobble	18%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 3 Pool - MY-01			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	100
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	
Very Fine	2 - 4		
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	
Coarse	16 - 22.6	E	
Coarse	22.6 - 32	L	
Very Coarse	32 - 45	S	
Very Coarse	45 - 64		
Small	64 - 90	C	
Small	90 - 128	O	
Large	128 - 180	B	
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



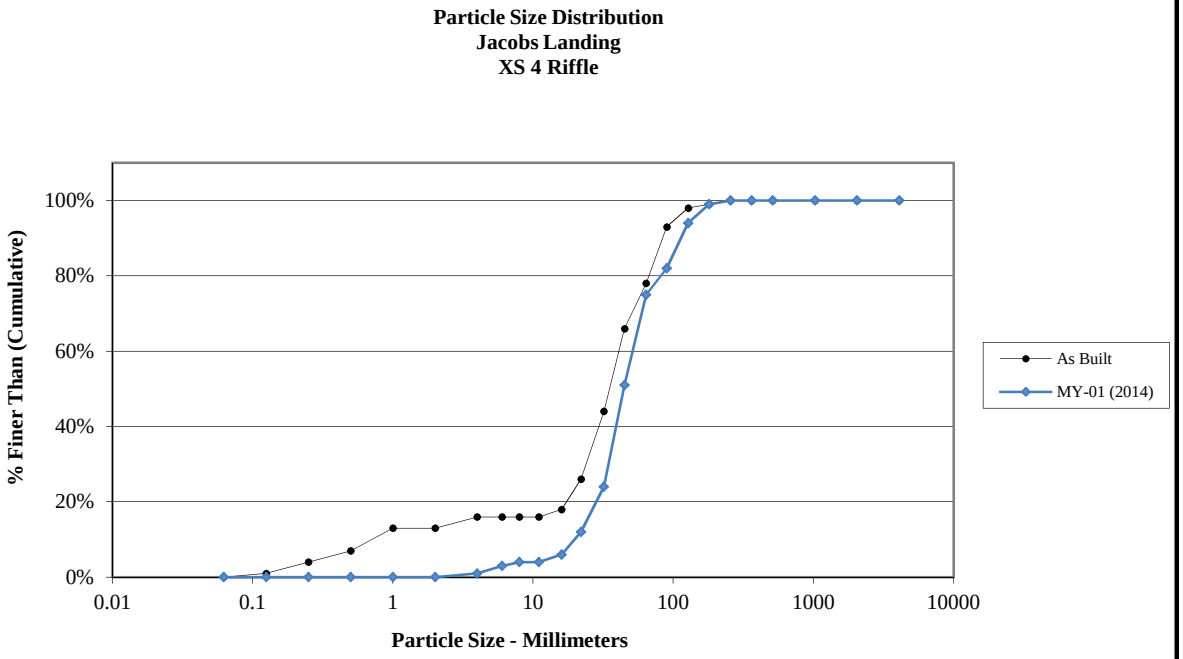
Size (mm)	
D16	0.062
D35	0.062
D50	0.062
D65	0.062
D84	0.062
D95	0.062

Size Distribution	
mean	0.1
dispersion	1.0
skewness	---

Type	
silt/clay	100%
sand	0%
gravel	0%
cobble	0%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 4 Riffle - MY-01			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	
Very Fine	2 - 4		1
Fine	4 - 5.7	G	2
Fine	5.7 - 8	R	1
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	2
Coarse	16 - 22.6	E	6
Coarse	22.6 - 32	L	12
Very Coarse	32 - 45	S	27
Very Coarse	45 - 64		24
Small	64 - 90	C	7
Small	90 - 128	O	12
Large	128 - 180	B	5
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



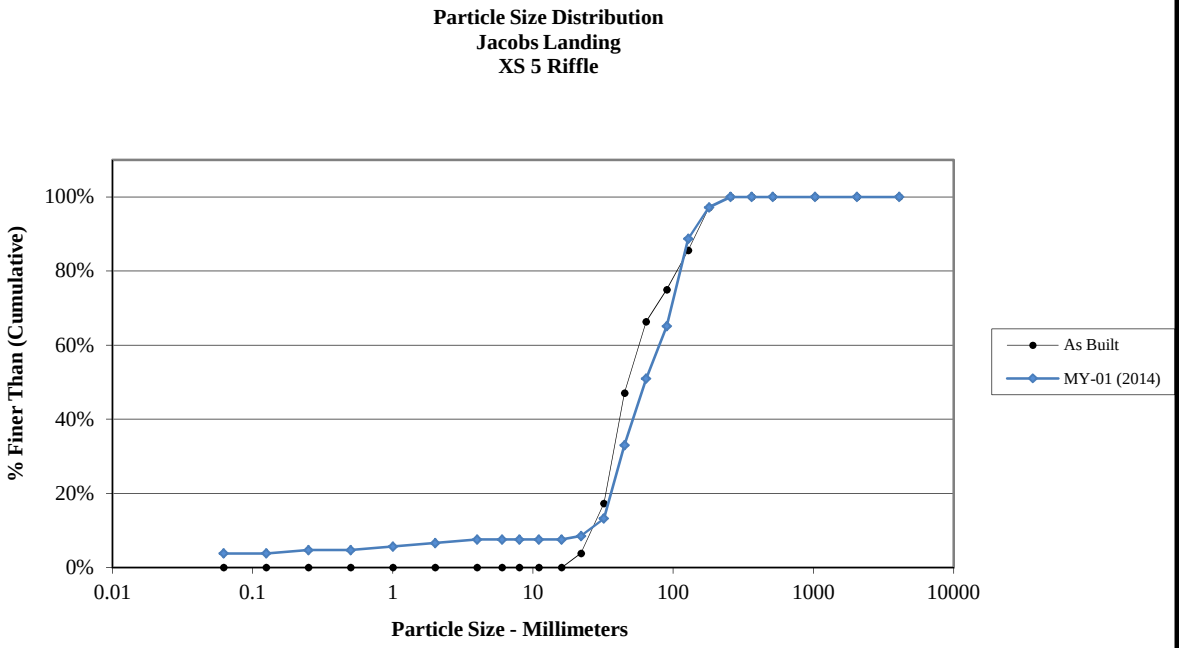
Size (mm)	
D16	25
D35	37
D50	44
D65	55
D84	95
D95	140

Size Distribution	
mean	48.7
dispersion	2.0
skewness	0.06

Type	
silt/clay	0%
sand	0%
gravel	75%
cobble	25%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 5 Riffle - MY-01			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	4
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	1
Medium	.25 - .50	N	
Coarse	.50 - 1	D	1
Very Coarse	1 - 2	S	1
Very Fine	2 - 4		1
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	
Coarse	16 - 22.6	E	1
Coarse	22.6 - 32	L	5
Very Coarse	32 - 45	S	21
Very Coarse	45 - 64		19
Small	64 - 90	C	15
Small	90 - 128	O	25
Large	128 - 180	B	9
Large	180 - 256	L	3
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	106

Note:



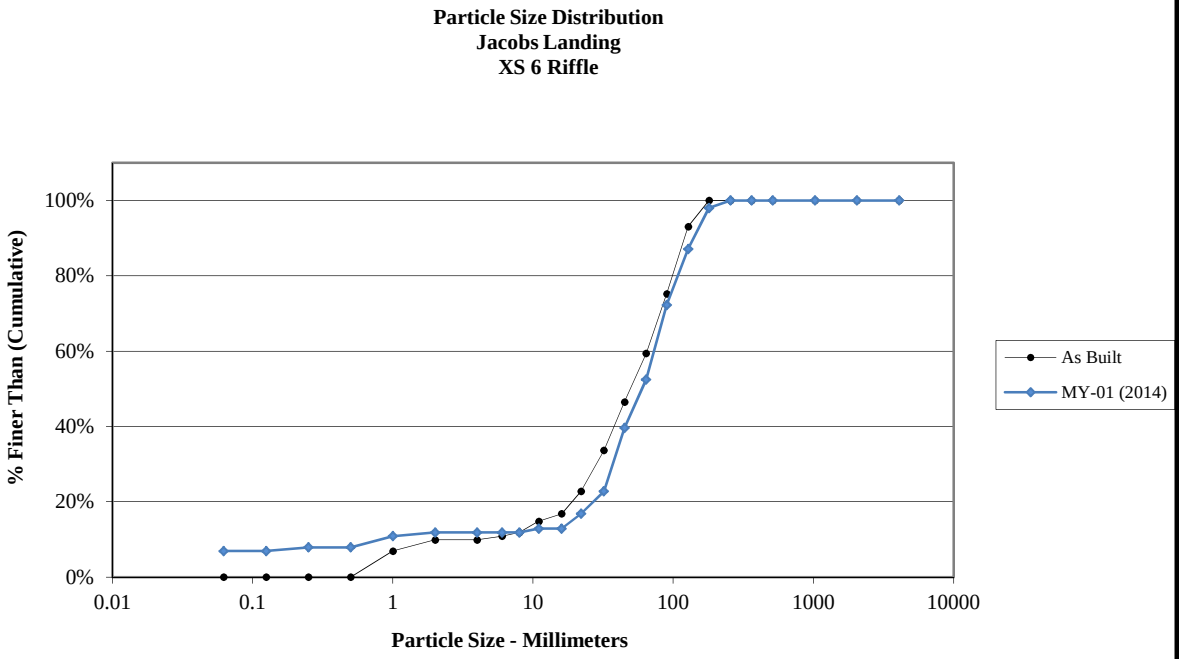
Size (mm)	
D16	34
D35	47
D50	63
D65	90
D84	120
D95	160

Size Distribution	
mean	63.9
dispersion	1.9
skewness	0.01

Type	
silt/clay	4%
sand	3%
gravel	44%
cobble	49%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 6 Riffle -MY-01			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	7
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	1
Medium	.25 - .50	N	
Coarse	.50 - 1	D	3
Very Coarse	1 - 2	S	1
Very Fine	2 - 4		
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	1
Medium	11.3 - 16	V	
Coarse	16 - 22.6	E	4
Coarse	22.6 - 32	L	6
Very Coarse	32 - 45	S	17
Very Coarse	45 - 64		13
Small	64 - 90	C	20
Small	90 - 128	O	15
Large	128 - 180	B	11
Large	180 - 256	L	2
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	101

Note:



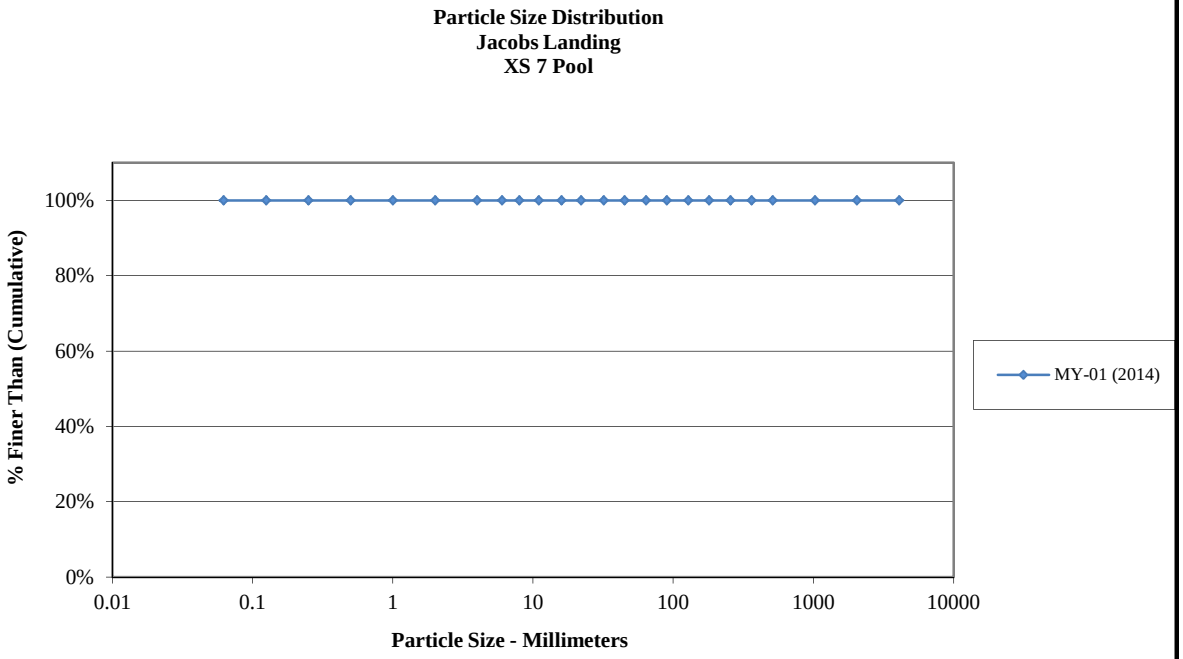
Size (mm)	
D16	21
D35	41
D50	60
D65	79
D84	120
D95	160

Size Distribution	
mean	50.2
dispersion	2.4
skewness	-0.09

Type	
silt/clay	7%
sand	5%
gravel	41%
cobble	48%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 7 Pool -MY-01			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	100
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	
Very Fine	2 - 4		
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	
Coarse	16 - 22.6	E	
Coarse	22.6 - 32	L	
Very Coarse	32 - 45	S	
Very Coarse	45 - 64		
Small	64 - 90	C	
Small	90 - 128	O	
Large	128 - 180	B	
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



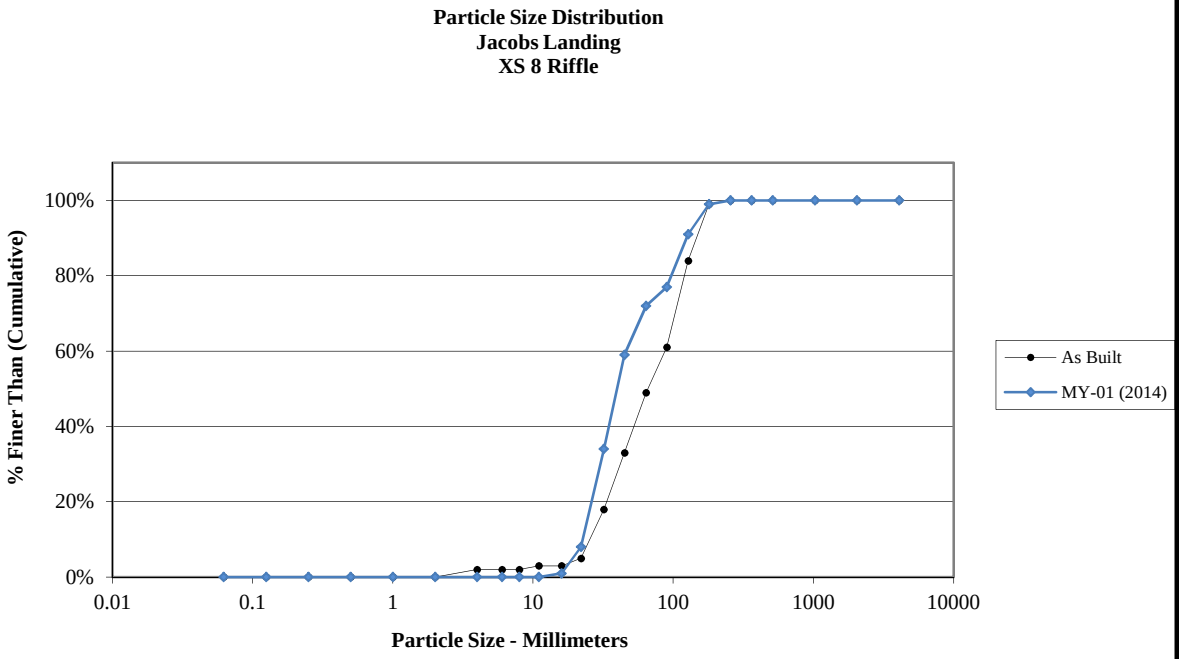
Size (mm)	
D16	0.062
D35	0.062
D50	0.062
D65	0.062
D84	0.062
D95	0.062

Size Distribution	
mean	0.1
dispersion	1.0
skewness	---

Type	
silt/clay	100%
sand	0%
gravel	0%
cobble	0%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 8 Riffle -MY-01			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	
Coarse	.50 - 1	D	
Very Coarse	1 - 2	S	
Very Fine	2 - 4		
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	1
Coarse	16 - 22.6	E	7
Coarse	22.6 - 32	L	26
Very Coarse	32 - 45	S	25
Very Coarse	45 - 64		13
Small	64 - 90	C	5
Small	90 - 128	O	14
Large	128 - 180	B	8
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



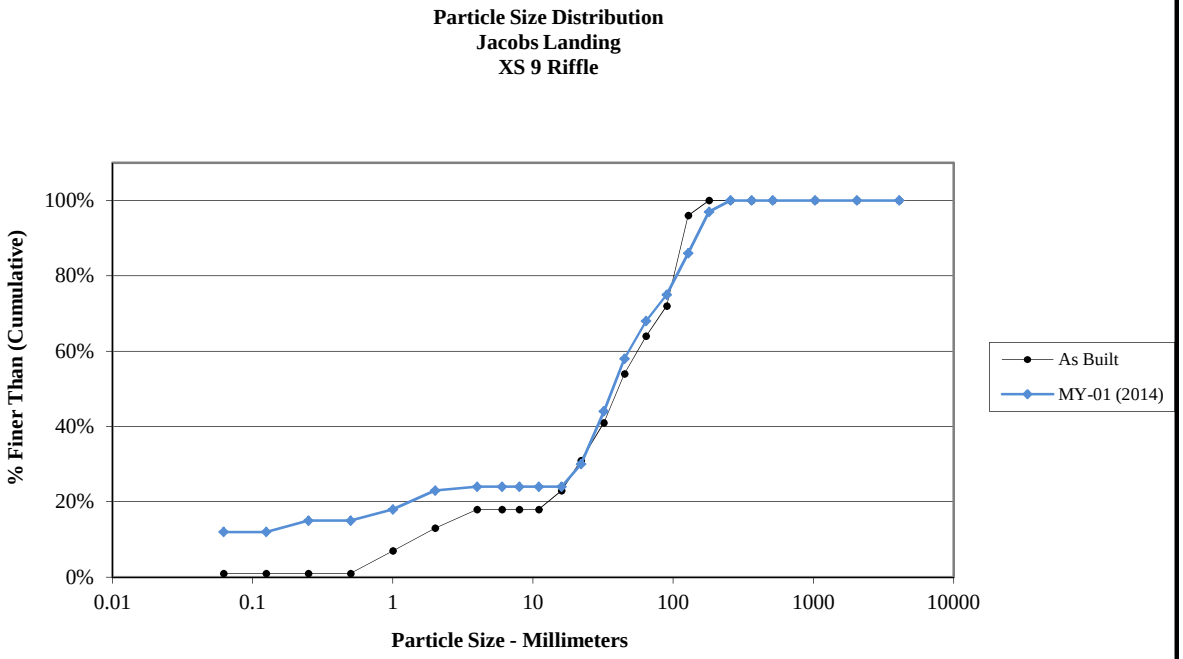
Size (mm)	
D16	25
D35	32
D50	40
D65	53
D84	110
D95	150

Size Distribution	
mean	52.4
dispersion	2.2
skewness	0.15

Type	
silt/clay	0%
sand	0%
gravel	72%
cobble	28%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 9 Riffle - MY-01			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	12
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	3
Medium	.25 - .50	N	
Coarse	.50 - 1	D	3
Very Coarse	1 - 2	S	5
Very Fine	2 - 4		1
Fine	4 - 5.7	G	
Fine	5.7 - 8	R	
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	
Coarse	16 - 22.6	E	6
Coarse	22.6 - 32	L	14
Very Coarse	32 - 45	S	14
Very Coarse	45 - 64		10
Small	64 - 90	C	7
Small	90 - 128	O	11
Large	128 - 180	B	11
Large	180 - 256	L	3
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



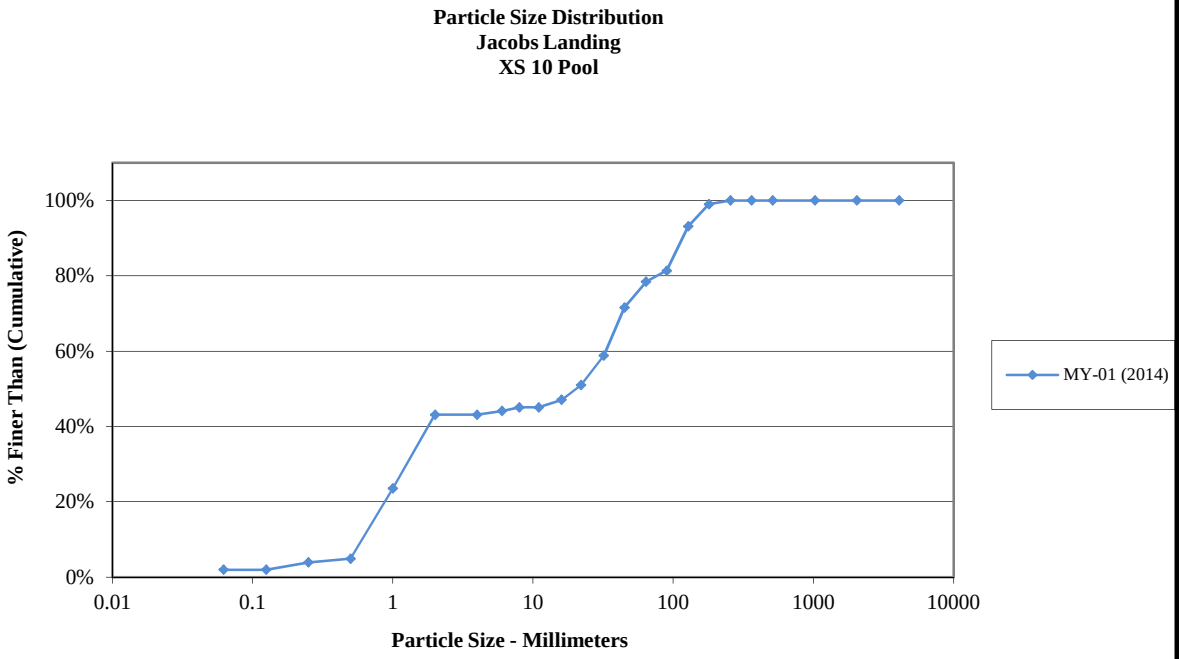
Size (mm)	
D16	0.63
D35	25
D50	37
D65	58
D84	120
D95	170

Size Distribution	
mean	8.7
dispersion	31.0
skewness	-0.42

Type	
silt/clay	12%
sand	11%
gravel	45%
cobble	32%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 10 Pool - MY-01			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	2
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	2
Medium	.25 - .50	N	1
Coarse	.50 - 1	D	19
Very Coarse	1 - 2	S	20
Very Fine	2 - 4		
Fine	4 - 5.7	G	1
Fine	5.7 - 8	R	1
Medium	8 - 11.3	A	
Medium	11.3 - 16	V	2
Coarse	16 - 22.6	E	4
Coarse	22.6 - 32	L	8
Very Coarse	32 - 45	S	13
Very Coarse	45 - 64		7
Small	64 - 90	C	3
Small	90 - 128	O	12
Large	128 - 180	B	6
Large	180 - 256	L	1
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	102

Note:



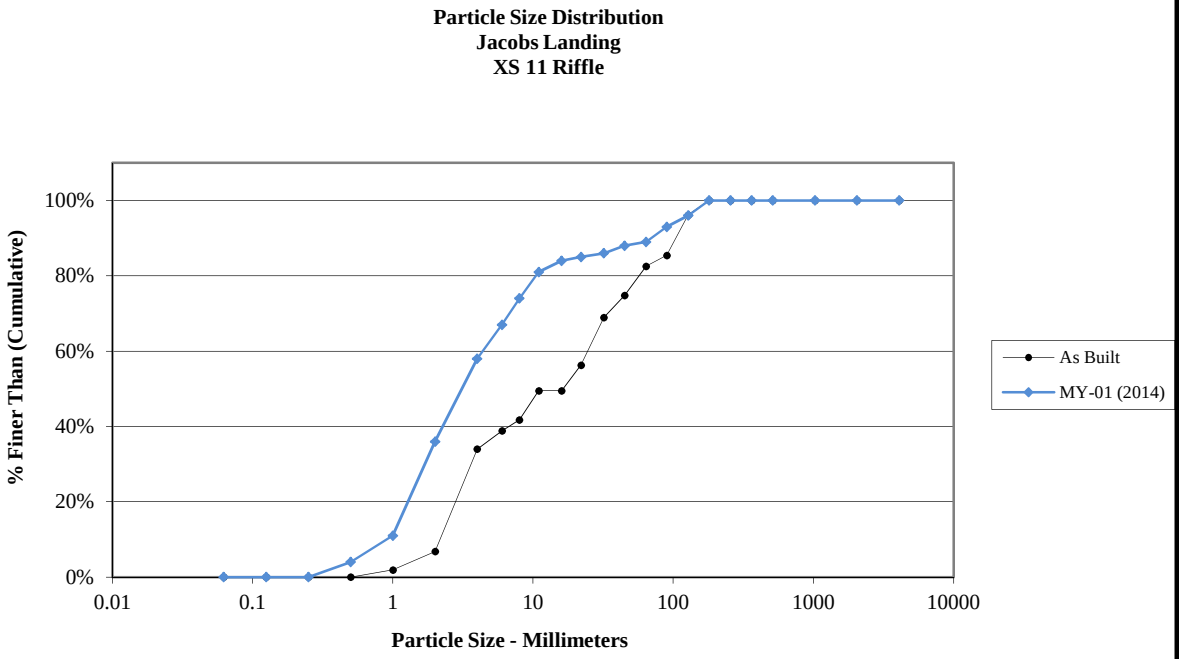
Size (mm)	
D16	0.76
D35	1.5
D50	20
D65	38
D84	97
D95	140

Size Distribution	
mean	8.6
dispersion	15.6
skewness	-0.25

Type	
silt/clay	2%
sand	41%
gravel	35%
cobble	22%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Cross-Section 11 Riffle - MY-01			
Particle	Millimeter		Count
Silt/Clay	< 0.062	S/C	
Very Fine	.062 - .125	S	
Fine	.125 - .25	A	
Medium	.25 - .50	N	4
Coarse	.50 - 1	D	7
Very Coarse	1 - 2	S	25
Very Fine	2 - 4		22
Fine	4 - 5.7	G	9
Fine	5.7 - 8	R	7
Medium	8 - 11.3	A	7
Medium	11.3 - 16	V	3
Coarse	16 - 22.6	E	1
Coarse	22.6 - 32	L	1
Very Coarse	32 - 45	S	2
Very Coarse	45 - 64		1
Small	64 - 90	C	4
Small	90 - 128	O	3
Large	128 - 180	B	4
Large	180 - 256	L	
Small	256 - 362	B	
Small	362 - 512	L	
Medium	512 - 1024	D	
Lrg- Very Lrg	1024 - 2048	R	
Bedrock	>2048	BDRK	
		Total	100

Note:



Size (mm)	
D16	1.1
D35	1.9
D50	3.1
D65	5.5
D84	16
D95	110

Size Distribution	
mean	4.2
dispersion	4.0
skewness	0.12

Type	
silt/clay	0%
sand	36%
gravel	53%
cobble	11%
boulder	0%
bedrock	0%
hardpan	0%
wood/det	0%
artificial	0%

Table 10a. T1 Baseline Stream Data Summary
Jacob's Landing Stream Restoration Site, EEP Project # 95024

Parameter	Pre-Existing Condition					Reference Reach(es) Data					Design		As-built			
Dimension - Riffle	Min	Mean	Med	Max	n	Min	Mean	Med	Max	n	Min	Max	Min	Mean	Max	n
Bankfull Width (ft)	6.5			9.1	4	6.9				1	11.5	12.2	10.1	11.0	12.1	3
Floodprone Width (ft)	1			26	4	23				1	25	70	40	56	71	3
Bankfull Mean Depth (ft)	0.9			1.8	4	1.1				1	1.0	1.0	0.8	0.8	0.8	3
Bankfull Max Depth (ft)	1.1			2.8	4	1.6				1	1.5	1.6	1.2	1.3	1.4	3
Bankfull Cross-Sectional Area (ft^2)	8.6			12.1	4	7.4				1	11.2	12.6	7.9	8.8	10.0	3
Width/Depth Ratio	3.7			9.6	4	6.4				1	12.0	12.0	12.9	13.8	14.6	3
Entrenchment Ratio	1.5			3.3	4	3.4				1	2.2	4.9	3.7	5.1	5.9	3
Bank Height Ratio	1.6			2.2	4	1.0				1	1.0	1.0	1.0	1.0	1.0	3
Pattern																
Channel Beltwidth (ft)	13			26	2	14	26		38	2	25	50	25	38	50	
Radius of Curvature (ft)	6			30	2	12	19		25	2	20	45	20	33	45	
Rc:Bankfull width (ft/ft)	0.7			4.6	2	1.7	2.7		3.6	2	2.0	4.0	2.0	3.0	4.0	
Meander Wavelength (ft)	75			110	2	43	73		102	2	65	125	65	95	125	
Meander Width Ratio	1.4			4.0	2	2	3.8		5.5	2	1.9	3.5	1.9	3.0	3.5	
Profile																
Riffle Length (ft)													11	22	32	21
Riffle Slope (ft/ft)	0.007			0.043	2	0.011			0.025	2	0.007	0.012	0.001	0.013	0.026	21
Pool Length (ft)						16			23		12	30	6	18	38	23
Pool Spacing (ft)						28			57		20	75	30	56	79	23
Substrate and Transport Parameters																
SC% / Sa% / G% / C% / B% / Be%	0% / 24% / 76% / 0% / 0% / 0%												0% / 25% / 52% / 23% / 0% / 0%			
d16 / d35 / d50 / d84 / d95 (mm)	1 / 5 / 7 / 10 / 17 / 25												5 / 15 / 22 / 38 / 94 / 143			
Additional Reach Parameters																
Channel length (ft)	1,330										1,305		1,305			
Drainage Area (SM)	0.40					0.16					0.40		0.40			
Rosgen Classification	G4					E4					C4		C4			
Sinuosity	1.07-1.15					1.18					1.09-1.12		1.09-1.12			
Water Surface Slope (ft/ft)	0.009-0.014					0.0070					0.007-0.010		0.007			

Table 10b. T1A Baseline Stream Data Summary																
Jacob's Landing Stream Restoration Site, EEP Project # 95024																
Parameter	Pre-Existing Condition					Reference Reach(es) Data					Design		As-built			
Dimension - Riffle	Min	Mean	Med	Max	n	Min	Mean	Med	Max	n	Min	Max	Min	Mean	Max	n
Bankfull Width (ft)	7.7				1	6.9				1	8.5					
Floodprone Width (ft)	15				1	23				1	19					
Bankfull Mean Depth (ft)	0.8				1	1.1				1	0.7					
Bankfull Max Depth (ft)	1.2				1	1.6				1	1.2					
Bankfull Cross-Sectional Area (ft^2)	6.4				1	7.4				1	6.2					
Width/Depth Ratio	9.3				1	6.4				1	12.0					
Entrenchment Ratio	1.9				1	3.4				1	2.2					
Bank Height Ratio	2.2				1	1.0				1	1.0					
Pattern																
Channel Beltwidth (ft)	20			75	1	14	26		38	2	19	24				
Radius of Curvature (ft)	8			24	1	12	19		25	2	10	25				
Rc:Bankfull width (ft/ft)	1			3.1	1	1.7	2.7		3.6	2	1.2	2.9				
Meander Wavelength (ft)	25			50	1	43	73		102	2	50	55				
Meander Width Ratio	2.6			9.7	1	2	3.8		5.5	2	2.2	2.8				
Profile																
Riffle Length (ft)																
Riffle Slope (ft/ft)	0.013			0.019	1	0.011			0.025	2	0.010	0.012				
Pool Length (ft)						16			23		7	14				
Pool Spacing (ft)						28			57		22	34				
Substrate and Transport Parameters																
SC% / Sa% / G% / C% / B% / Be%																
d16 / d35 / d50 / d84 / d95 (mm)																
Additional Reach Parameters																
Channel length (ft)	294										178		178			
Drainage Area (SM)	0.21					0.40					0.21		0.21			
Rosgen Classification	E4					B4c					B4c/C4		B4c/C4			
Sinuosity	2.10					1.20					1.11					
Water Surface Slope (ft/ft)	0.023					0.013					0.017					

Table 10c. T2 Baseline Stream Summary																
Jacob's Landing Stream Restoration Site, EEP Project # 95024																
Parameter	Pre-Existing Condition					Reference Reach(es) Data					Design		As-built			
Dimension - Riffle	Min	Mean	Med	Max	n	Min	Mean	Med	Max	n	Min	Max	Min	Mean	Max	n
Bankfull Width (ft)	8.8			12.3	4	6.9				1	10.4	11.6	10.4	10.9	12.0	5
Floodprone Width (ft)	17			20	4	23				1	23	50	27	32	42	5
Bankfull Mean Depth (ft)	1.0			1.0	4	1.1				1	0.9	1.0	0.8	0.8	0.9	5
Bankfull Max Depth (ft)	1.3			1.8	4	1.6				1	1.4	1.5	1.2	1.3	1.4	5
Bankfull Cross-Sectional Area (ft^2)	9.2			11.7	4	7.4				1	9.1	11.1	8.8	9.2	9.7	5
Width/Depth Ratio	8.4			12.9	4	6.4				1	12.0	12.0	11.8	12.9	15.2	5
Entrenchment Ratio	1.4			2.3	4	3.4				1	2.2	4.3	2.6	3.2	4.2	5
Bank Height Ratio	1.5			4.7	4	1.0				1	1.0	1.0	1.0	1.0	1.0	5
Pattern																
Channel Beltwidth (ft)	10			60	2	14	26		38	2	25	50	25	38	50	
Radius of Curvature (ft)	8			35	2	12	19		25	2	20	45	20	33	45	
Rc:Bankfull width (ft/ft)	0.9			3.9	2	1.7	2.7		3.6	2	2.0	4.0	2.0	3.0	4.0	
Meander Wavelength (ft)	65			130	2	43	73		102	2	60	130	60	95	130	
Meander Width Ratio	1.1			6.8	2	2	3.8		5.5	2	2.2	4.8	2.2	4.0	4.8	
Profile																
Riffle Length (ft)													14	22	36	33
Riffle Slope (ft/ft)	0.003			0.011	2	0.011			0.025	2	0.006	0.017	0.004	0.016	0.041	33
Pool Length (ft)						16			23	2	8	35	7	18	35	31
Pool Spacing (ft)						28			57	2	30	95	42	59	107	31
Substrate and Transport Parameters																
SC% / Sa% / G% / C% / B% / Be%	6% / 25% / 68% / 1% / 0% / 0%												0% / 6% / 58% / 32% / 3% / 0%			
d16 / d35 / d50 / d84 / d95 (mm)	1 / 2 / 3 / 6 / 12 / 24												16 / 30 / 44 / 65 / 109 / 144			
Additional Reach Parameters																
Channel length (ft)	2,935										2,641		2,641			
Drainage Area (SM)	0.31					0.16					0.31		0.31			
Rosgen Classification	E4, F4					E4					C4		C4			
Sinuosity	1.09-1.45					1.18					1.16-1.31		1.16-1.31			
Water Surface Slope (ft/ft)	0.007-0.010					0.0007					0.009-0.0100		0.009			

Table 10d. T2A Baseline Stream Data Summary																
Jacob's Landing Stream Restoration Site, EEP Project # 95024																
Parameter	Pre-Existing Condition					Reference Reach(es) Data					Design		As-built			
Dimension - Riffle	Min	Mean	Med	Max	n	Min	Mean	Med	Max	n	Min	Max	Min	Mean	Max	n
Bankfull Width (ft)	6.6				1	6.9				1	6.5					
Floodprone Width (ft)	11				1	23				1	14					
Bankfull Mean Depth (ft)	0.5				1	1.1				1	0.5					
Bankfull Max Depth (ft)	1.1				1	1.6				1	0.9					
Bankfull Cross-Sectional Area (ft^2)	3.4				1	7.4				1	3.5					
Width/Depth Ratio	12.8				1	6.4				1	12.0					
Entrenchment Ratio	1.7				1	3.4				1	2.2					
Bank Height Ratio	6.3				1	1.0				1	1.0					
Pattern																
Channel Beltwidth (ft)	8			15	1	14	26		38	2	8	15				
Radius of Curvature (ft)	10			12	1	12	19		25	2	10	25				
Rc:Bankfull width (ft/ft)	1.5			1.8	1	1.7	2.7		3.6	2	1.5	3.8				
Meander Wavelength (ft)	50			63	1	43	73		102	2	50	63				
Meander Width Ratio	1.2			2.3	1	2	3.8		5.5	2	1.2	2.3				
Profile																
Riffle Length (ft)																
Riffle Slope (ft/ft)	0.010			0.017	1	0.011			0.025	2	0.010	0.012				
Pool Length (ft)						16			23	2	4	15				
Pool Spacing (ft)						28			57	2	22	42				
Substrate and Transport Parameters																
SC% / Sa% / G% / C% / B% / Be%																
d16 / d35 / d50 / d84 / d95 (mm)																
Additional Reach Parameters																
Channel length (ft)	465										465		465			
Drainage Area (SM)	0.06					0.40					0.06		0.06			
Rosgen Classification	G4					B4c					B4c/C4		B4c/C4			
Sinuosity	1.16					1.20					1.13					
Water Surface Slope (ft/ft)	0.019					0.013					0.014					

Table 11. Cross-Section Morphology Data Tables
Jacob's Landing Stream Restoration Site, EEP Project # 95024

Dimension and Substrate	Cross-Section 1 (T1-Riffle) Station 12+29							Cross-Section 2 (T1-Riffle) Station 17+79							Cross-Section 3 (T1-Pool) Station 19+25							Cross-Section 4 (T1-Riffle) Station 21+36							Cross-Section 5 (T2-Riffle) Station 52+53						
Based on fixed baseline elevation	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Bankfull Width (ft)	10.8	11.8						12.1	10.9						15.5	15.5						10.1	11.2						10.4	11.8					
Floodprone Width (ft)	40.0	41.2						71.0	70.7						-	-						58.0	59.8						27.0	27.4					
Bankfull Mean Depth (ft)	0.8	0.8						0.8	0.9						1.2	1.1						0.8	0.8						0.9	0.9					
Bankfull Max Depth (ft)	1.3	1.4						1.4	1.4						2.8	2.9						1.2	1.3						1.3	6.0					
Bankfull Cross-Sectional Area (ft^2)	8.5	8.9						10.0	10.3						18.1	17.2						7.9	8.7						9.0	10.5					
Bankfull Width/Depth Ratio	13.7	15.6						14.6	11.5						-	-						12.9	14.4						12.0	13.3					
Bankfull Entrenchment Ratio	3.7	3.5						5.9	6.5						-	-						5.7	5.3						2.6	2.3					
Bankfull Bank Height Ratio	1.0	1.0						1.0	1.0						-	-						1.0	1.0						1.0	1.0					
d50 (mm)	2	1						28	12						-	-						35	44						47	63					

	Cross-Section 6 (T2-Riffle) Station 56+18							Cross-Section 7 (T2-Pool) Station 60+09							Cross-Section 8 (T2-Riffle) Station 63+84							Cross-Section 9 (T2-Riffle) Station 66+63							Cross-Section 10 (T2-Pool) Station 68+61						
Based on fixed baseline elevation	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Bankfull Width (ft)	10.6	11.4						13.3	13.5						10.7	11.6						10.8	10.9						12.5	16.5					
Floodprone Width (ft)	29.0	32.0						-	-						30.0	30.1						42.0	43.1						-	-					
Bankfull Mean Depth (ft)	0.8	0.8						1.0	0.9						0.9	1.0						0.9	0.7						1.2	1.0					
Bankfull Max Depth (ft)	1.3	1.4						1.9	2.0						1.3	1.8						1.2	1.3						1.8	2.1					
Bankfull Cross-Sectional Area (ft^2)	8.8	8.8						13.8	16.5						9.7	11.8						9.2	8.0						14.5	17.1					
Bankfull Width/Depth Ratio	12.8	14.8						-	-						11.8	11.4						12.7	14.9						-	-					
Bankfull Entrenchment Ratio	2.7	2.8						-	-						2.8	2.6						3.9	4.0						-	-					
Bankfull Bank Height Ratio	1.0	1.0						-	-						1.0	1.0						1.0	1.0						-	-					
d50 (mm)	49	60						-	-						66	40						41	37						-	-					

	Cross-Section 11 (T2-Riffle) Station 72+48						
Based on fixed baseline elevation	Base	MY1	MY2	MY3	MY4	MY5	MY+
Bankfull Width (ft)	12.0	11.9					
Floodprone Width (ft)	>50	>50					
Bankfull Mean Depth (ft)	0.8	0.8					
Bankfull Max Depth (ft)	1.4	1.5					
Bankfull Cross-Sectional Area (ft^2)	9.5	9.6					
Bankfull Width/Depth Ratio	15.2	14.8					
Bankfull Entrenchment Ratio	4.2	4.4					
Bankfull Bank Height Ratio	1.0	1.0					
d50 (mm)	16	3					

Table 11b. Stream Reach Morphology Data Tables
Jacob's Landing Stream Restoration Site, EEP Project # 95024
Reach: T1 (2,389 ft.)

Parameter	MY01 (2014)						MY02 (2015)						MY03 (2016)						MY04 (2017)						MY05 (2018)					
Dimension	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n
Bankfull Width (ft)	10.9	12.4	11.5	15.5	1.85	4																								
Floodprone Width (ft)	41.2	57.2	59.8	71.0	12.2	3																								
Bankfull Mean Depth (ft)	0.75	0.90	0.86	1.1	0.143	4																								
Bankfull Max Depth (ft)	1.3	1.8	1.4	2.9	0.637	4																								
Bankfull Cross-Sectional Area (ft^2)	8.7	11.3	9.6	17.2	3.48	4																								
Width/Depth Ratio	11.5	13.9	14.4	15.6	1.72	3																								
Entrenchment Ratio	3.5	5.1	5.3	6.5	1.23	3																								
Bank Height Ratio	1.0	1.0	1.0	1.0	0	3																								
Pattern																														
Channel Beltwidth (ft)	25.0	38.0		50.0																										
Radius of Curvature (ft)	20.0	33.0		45.0																										
Rad. of Curv. : Bankfull Width (ft/ft)	2.0	3.0		4.0																										
Meander Wavelength (ft)	65.0	95.0		125.0																										
Meander Width Ratio	1.9	3.0		3.5																										
Profile																														
Riffle Length (ft)	3.0	34.0	32.0	85.0	16.1	21.0																								
Riffle Slope (ft/ft)	0.005	0.015	0.013	0.052	0.010	20																								
Pool Length (ft)	4.0	13.0	10.0	27.0	7.4	14.0																								
Pool Max Depth (ft)	2.9	2.9	2.9	2.9	0	1																								
Pool Spacing (ft)	41.0	83.0	62.0	233.0	60.4	13.0																								
Additional Reach Parameters																														
Channel Thalweg Length (ft)	1,305																													
Sinuosity	1.09-1.12																													
Water Surface Slope (ft/ft)	0.0068																													
Bankfull Slope (ft/ft)	0.0068																													
Rosgen Classification	C4																													
SC% / Sa% / G% / C% / B% / Be%	29%/22%/36%/14%/0%/0%																													
d16/d35/d50 / d84 / d95	7/10/14/49/88																													
% of Reach with Eroding Banks	0%																													

Table 11c. Stream Reach Morphology Data Tables
Jacob's Landing Stream Restoration Site, EEP Project # 95024
Reach: T2 (2,084 ft.)

Parameter	MY01 (2014)						MY02 (2015)						MY03 (2016)						MY04 (2017)						MY05 (2018)					
Dimension	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n
Bankfull Width (ft)	10.9	13.2	11.8	18.0	2.64	7																								
Floodprone Width (ft)	27.4	37.0	32	52.3	9.34	5																								
Bankfull Mean Depth (ft)	0.73	0.88	0.89	1.04	0.110	7																								
Bankfull Max Depth (ft)	1.3	1.7	1.6	2.1	0.280	7																								
Bankfull Cross-Sectional Area (ft^2)	8.0	11.8	10.5	17.1	3.47	7																								
Width/Depth Ratio	11.4	13.8	13.8	14.9	1.34	5																								
Entrenchment Ratio	2.3	3.2	3.2	4.4	0.811	5																								
Bank Height Ratio	1.0	1.0	1.0	1.0	0	5																								
Pattern																														
Channel Beltwidth (ft)	25.0	38.0		50.0																										
Radius of Curvature (ft)	20.0	33.0		45.0																										
Rad. of Curv. : Bankfull Width (ft/ft)	2.0	3.0		4.0																										
Meander Wavelength (ft)	60.0	95.0		130.0																										
Meander Width Ratio	2.2	4.0		4.8																										
Profile																														
Riffle Length (ft)	5.0	14.0	17.0	24.0	5.9	15.0																								
Riffle Slope (ft/ft)	0.007	0.021	0.016	0.047	0.012	14																								
Pool Length (ft)	4.1	15.8	14.7	26.9	6.5	29.0																								
Pool Max Depth (ft)	2.1	2.1	2.1	2.1	0	1																								
Pool Spacing (ft)	31.8	61.8	54.4	160.9	29.0	28.0																								
Additional Reach Parameters																														
Channel Thalweg Length (ft)	2,641																													
Sinuosity	1.16-1.31																													
Water Surface Slope (ft/ft)	0.0106																													
Bankfull Slope (ft/ft)	0.0109																													
Rosgen Classification	C4																													
SC% / Sa% / G% / C% / B% / Be%	29%/22%/36%/14%/0%/0%																													
d16 / d35 / d50 / d84 / d95	12/21/32/46/83/127																													
% of Reach with Eroding Banks	0%																													

Appendix E

Hydrologic Data

Table 12. Verification of Bankfull Events Jacob's Landing Stream Restoration Site, EEP Project # 95024			
Date of Data Collection	**Date of Occurrence**	**Method**	**Photo Number**
None recorded	None recorded	N/A	N/A