601 North II
Stream Restoration Site
NCEEP Project Number: 95925
Monitoring Contract Number: 003991
Monitoring Year 1
2013

Prepared for:
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601 North II
Stream Restoration Site
2013 Monitoring Report (MY 1)

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1.0 EXECUTIVE SUMMARY/PROJECT ABSTRACT

The goals and objectives stated in the 601 North II Restoration Plan (NCEEP 2013) are as follows:

Project Goals

- Re-establish the capacity to store and transport watershed flows and sediment loads by restoring stable dimension, pattern, and profile
- Reduce sediment within on-site and downstream receiving waters through the stabilization of eroding stream banks, introduction of livestock exclusion fencing and responsible grazing techniques, and restoration of a forested riparian buffer
- Elevate the water table and introduce surface water flood hydrodynamics within the floodplain by re-establishing characteristic bankfull dimensions and flood frequency;
- Remove non-point sources of pollution associated with pesticides, herbicides, fertilizer, and livestock waste by filtering sheet flow through a restored riparian buffer and installed Riparian Best Management Practice (RBMP) detention devices
- Improve aquatic habitat by reducing sedimentation, removing in-stream culverts, enhancing stream bed variability, and introducing shading, woody debris, and detritus from riparian planting
- Enhance terrestrial wildlife habitat by extending a terrestrial wildlife corridor and refuge to connect with the existing and adjacent 601 North Site, as well as to the downstream reaches of Wicker Branch and Lanes Creek
- Improve water quality for two populations of freshwater mussels documented to occur in Lanes Creek (Savannah Lilliput (*Toxolasma pullus*) and Carolina creekshell (*Villosa vaughniana*), both state listed and Federal Species of Concern)
- Expand on and integrate the restoration and enhancement work with the adjacently positioned, companion 601 North Restoration Site.

Project Objectives

- Restoration (Priority 1 and 2) of approximately 3,354 linear feet of perennial stream channel(3,169 linear feet of credited stream) to reconnect the floodplain and restore stable channel dimension, pattern, and profile
- Enhancement (Level I) of approximately 225 linear feet of perennial stream channel by stream bank grading, and slight adjustments to either stream pattern or dimension
- Enhancement (Level II) of approximately 615 linear feet of perennial stream channel by restoring a minimum 50 foot planted buffer
- Removal of an existing culvert on Wicker Branch;
- Installation of Riparian Best Management Practice (RBMP) detention devices, and livestock exclusion fencing to prohibit grazing on the floodplain and hoof shear on stream banks
- Re-vegetating floodplains adjacent to streams
- Providing a permanent conservation easement on approximately 12.3 acres of riparian buffer along approximately 4,194 feet of restored and enhanced stream channels.

The monitoring year one (MY1) vegetation plot data were collected during December 2013. Data indicated average planted stem density across all plots to be 469 stems/acre; a 27% decline in stem density between MY0 and MY1. The decline in density was mainly due to seven missing stems and 34 dead stems in the plots. With the exception of Plot 12, all monitoring plots met the success criteria for MY1. Supplemental plantings in the vicinity of Plot 12 as well as other areas in need are scheduled for February 2014. Regarding invasive-exotic vegetation, one area of privet was documented on the eastern (downstream end) of the easement, totaling approximately 0.25 acres. Two separate treatments of privet are scheduled for winter and summer of 2014.

Stream longitudinal profiles remained stable between MY0 and MY1. Five small areas of aggradation and ten areas of degradation, restricted to pools, were documented in MY. However, no other significant instability in the stream channel was identified. MY1 cross-section data indicated little change between MY0 and MY1, with the exception of XS5-P. XS5 showed a significant change in bankfull width (Table 11a), resulting in changes in Width/Depth Ratio and Bankfull Entrenchment Ratio. Examination of overlays of MY1 and MY0 (Appendix D) cross-section data shows little change between years, suggesting error in the calculations. Of note, no water was present in a majority of the reach during the MY1 morphological survey. As a result, water surface slope and riffle slope values were not generated for MY1. One bankfull event was documented since construction was completed.

Summary information/data related to the occurrence of items such as easement 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 restoration plan on EEP's website (NCEEP 2007). All raw data supporting tables and figures in the appendices are available from EEP upon request.

2.0 Methodology

The stream monitoring methodologies utilized in MY1 were intended to replicate those employed during the previous monitoring year (MY0) and are based on standard guidance and procedures documents (Rosgen 1996; USACE 2003). Vegetation monitoring data were collected following the standard CVS-EEP Protocol for Recording Vegetation, Level II, Version 4.2 (Lee et al. 2008).

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. The University of North Carolina at Chapel Hill, Department of Biology.

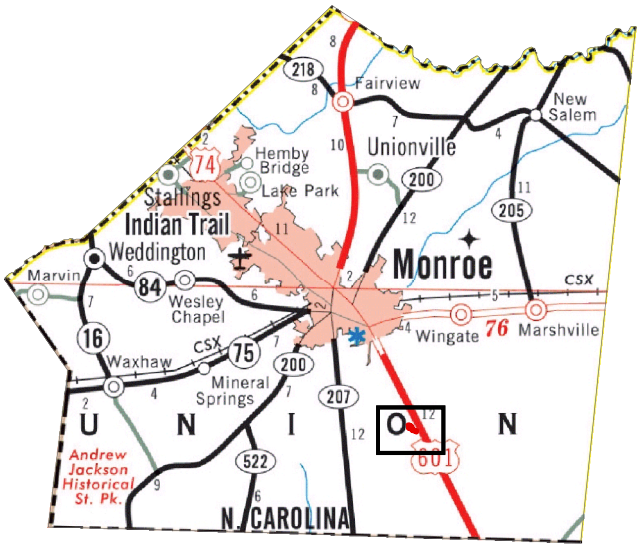
NCEEP (North Carolina Ecosystem Enhancement Program). 2013. 601 North II Restoration Site Baseline Monitoring Document and As-Build Baseline Report. NCEEP Project No. 95925/Contract No. 003991. Raleigh.

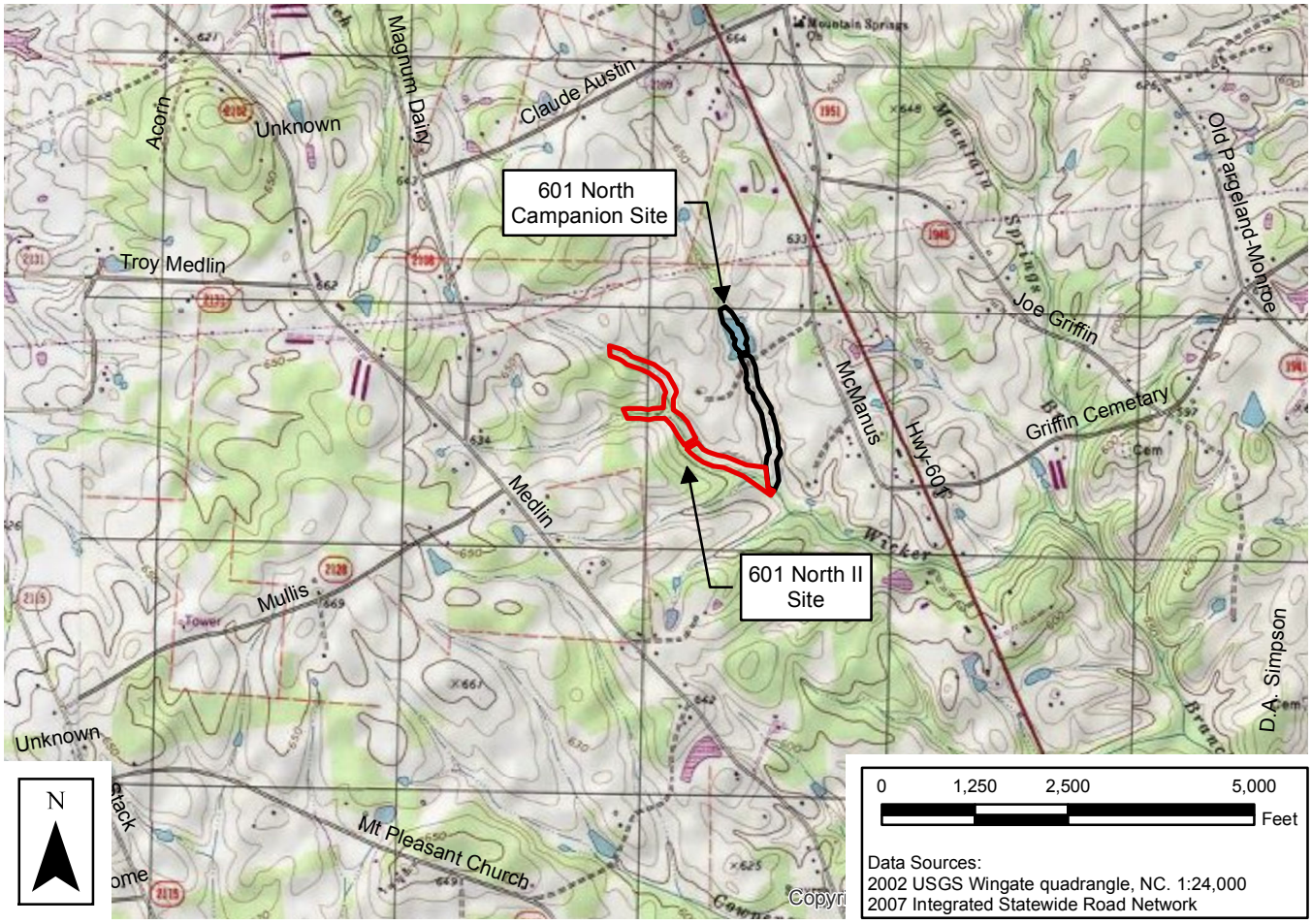
Rosgen, D.L. 1996. Applied River Morphology. Wildland Hydrology Books, Pagosa Springs, Colorado.

USACE (U.S. Army Corps of Engineers). 2003. Stream Mitigation Guidelines. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, North Carolina Wildlife Resources Commission, North Carolina Department of Environment and Natural Resources-Division of Water Quality. Wilmington District.

Appendix A
Project Vicinity Map and Background Tables

Driving Directions: From Monroe drive south on Hwy. 601. Turn right on McManus Circle at the southern intersection with Hwy. 601. Site is on left and is accessed by a farm path located on the west side of McManus Circle just before the road ends.
The subject project site is an environmental restoration site of the NCDENR EEP and is encompassed by a recorded conservation easement, but is bordered by land under private ownership. Accessing the site may require traversing areas near or along the easment boundary and therefore access by the general public is not permitted. Access by authorized personel of state and federal agencies or their designee/contractors involved in the development, oversight, and stewardship of the restoration site is permitted within the terms and timeframes of their defined role. Any intended site visitation or activity by any person outside of these previously sanctioned roles and activities requires prior coordination with EEP.





Prepared By:	Prepared For:
EBX	Ecosystem Enhancement Program

SITE LOCATION

601 NORTH II STREAM RESTORATION SITE

UNION COUNTY, NORTH CAROLINA

Dwn By:	MCG
Ckd By:	JWG
Date:	JUNE 2013
Project No.:	100024976

FIGURE 1

Table 1. Project Components and Mitigation Credits
601 North II Stream Restoration Site – EEP Contract No. 003991

Mitigation Credits

	Stream		Riparian Wetland	Non-riparian Wetland	Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	R	RE					
Totals	3169	396					

Project Components

Project Component -or- Reach ID	Stationing /Location	Existing Footage	Approach	Restoration -or- Restoration Equivalent	Restoration Footage	Mitigation Ratio
Wicker Branch (Reach 1)	00+00-06+60	630[1]	P1	Restoration	660	1:01
Wicker Branch (Reach 2)	06+60-24+35	1356	P1, P2	Restoration	1713[2]	1:01
Wicker Branch (Reach 3)	24+35-27+08	414	P2	Restoration	150[3]	1:01
UT to Wicker Branch (Reach 4)	00+00-02+25	218	EI	Restoration Equivalent	225	01:01.5
	02+25-08+40	608	EII	Restoration Equivalent	615	01:02.5
UT to Wicker Branch (Reach 5)	08+40-14+86	534	P1	Restoration	646	1:01

Component Summation

Restoration Level	Stream (linear feet)	Riparian Wetland (acres)		Non-riparian Wetland (acres)	Buffer (square feet)	Upland (acres)
		Riverine	Non-Riverine			
Restoration	3169	--	--	--	--	12.3
Enhancement I	225	--	--	--	--	
Enhancement II	615	--	--	--	--	

BMP Elements

Element	Location	Purpose/Function	Notes
Vernal Pools (12)	See as-built plans	Treat on-site storm water from adjacent agricultural fields. Remove suspended solids, help infiltration of water and remove excess nutrients prior to entering stream. Will reduce livestock waste in on-site streams	Target at base of drainages coming from adjacent agricultural fields.
Farm Crossing Improvements	See as-built plans	Two off-site farm crossings located above the restored streams will be improved at their existing location and incorporated into the restoration design.	
Cattle Exclusion Fencing	Along the western site boundary	Will eliminate hoof shear on banks and livestock waste into on-site streams	To be installed in 2013

[1]Includes 169 feet of hydrologic connectivity through a linear wetland persisting in the location of the relic channel.

[2]Does not include the restored portion of Wicker Branch located outside of the conservation easement (Station 11+63-12+25).

[3]Does not include the restored portion of Wicker Branch located outside of the conservation easement (Station 25+85-27+08).

Table 2. Project Activity and Reporting History 601 North II Stream Restoration Site – EEP Contract No. 003991		
Activity Report	**Data Collection Complete**	**Completion or Delivery**
Final Mitigation Plan	N/A	Oct-12
Final Design (90 percent)	N/A	Nov-12
Construction	N/A	Apr-13
Temporary S&E mix applied to entire project area	N/A	February-April 2013
Permanent seed mix applied to reach/segments	N/A	Apr-13
Bare Root Seedling Installation	N/A	Apr-13
Installation of permanent cross-sections and vegetation plots	N/A	May-13
Baseline Monitoring Report	Jun-13	Jun-13
Year 1 Vegetation Monitoring	Dec-13	Dec-13
Year 1 Stream Monitoring	Nov-13	Dec-13
Year 2 Vegetation Monitoring		
Year 2 Stream Monitoring		
Year 3 Vegetation Monitoring		
Year 3 Stream Monitoring		
Year 4 Vegetation Monitoring		
Year 4 Stream Monitoring		
Year 5 Vegetation Monitoring		
Year 5 Stream Monitoring		
*N/A- Activities and reporting history for these items are not applicable to this restoration project		

Table 3. Project Contacts 601 North II Stream Restoration Site – EEP Contract No. 003991	
Prime Contractor	Environmental Banc & Exchange, LLC
	909 Capability Drive, Suite 3100
	Raleigh NC 27606
	Phone: (919) 829-9909
	Contact: Martin Hovis
Designer	Atkins North America, Inc.
	1616 East Millbrook Road, Suite 310
	Raleigh, NC 27609
	(919) 876-6888
	Contact: Jens Geratz or Michael Gloden
Construction Contractor	Wright Contracting
	PO Box 545
	Siler City, NC 27344
	(919) 663-0810
	Contact: Stephen James
Planting Contractor	KBS Earthworks
	5616 Cable Church Road
	Julian, NC 27283
	(336) 314-2935
	Contact: Keneth Strader
As-built Surveys	Kee Mapping and Surveying
	PO Box 2566
	Ashville, NC 28802
	Contact: Phillip Kee
Seeding Mix Source	Evergreen Seed
	Fuquay Varina, NC
	(919) 567-1333
	Contact: Wistar Taylor
Nursery Stock Suppliers	Arbor Gen Super Tree Nursery
	(800) 222-1290
	Contact: Polly Creech
Monitoring Performers (Yo)- 2013	Atkins North America, Inc.
	1616 East Millbrook Road, Suite 310
	Raleigh, NC 27609
	(919) 876-6888
	Contact: Jim Cooper
Monitoring Performers (Y1)- 2013	Equinox Environmental Consultation and Design, Inc.
	37 Haywood Street, Suite 100
	Asheville, NC
Stream Monitoring POC	Hunter Terrell (828) 253-6856
Vegetation Monitoring POC	Hunter Terrell (828) 253-6857

Table 4. Project Baseline Information and Attributes
601 North II Stream Restoration Site – EEP Contract No. 003991

Project Information					
Project Name	601 North II Stream Restoration Site				
County	Union County				
Project Area (acres)	12.3				
Project Coordinates (latitude and longitude)	34.897274, -80.473416				
Project Watershed Summary Information					
Physiographic Province	Piedmont				
River Basin	Yadkin				
USGS Hydrologic Unit 8-digit	3040105				
USGS Hydrologic Unit 14-digit	3040105081010				
DWQ Sub-basin	3/7/2014				
Project Drainage Area (acres)	453				
Project Drainage Area Percent Impervious Area	<1%				
CGIA Land Use Classification	Cultivated, Managed Herbaceous Cover, Mixed Hardwood				
Reach Summary Information					
Parameters	**Wicker Branch (Reach 1)**	**Wicker Branch (Reach 2)**	**Wicker Branch (Reach 3)**	**UT to Wicker Branch (Reach 4)**	**UT to Wicker Branch (Reach 5)**
Length of reach (linear feet)	630	1356	414	826	534
Valley classification	VIII	VIII	VIII	VIII	VIII
Drainage area (acres)	169	286	365	85	88
NCDWQ stream identification score	23.5	35	35	23	23
NCDWQ Water Quality Classification	WS-V	WS-V	WS-V	WS-V	WS-V
Morphological Description (stream type)	F6	E1/C1	G4	B4	B4
Evolutionary trend	E-G-F	E-G-C-E	E-G	E-G-B	E-G-B
Underlying mapped soils	Cid channery silt loam (CmB)	Cid channery silt loam (CmB)	Cid channery silt loam (CmB)	Badin channery silty clay loam (BdB2), Cid channery silt loam (CmB)	Badin channery silty clay loam (BdB2), Cid channery silt loam (CmB)
Drainage class	Moderately well drained	Moderately well drained	Moderately well drained	BdB2: Well drained, CmB: Moderately well drained	BdB2: Well drained, CmB: Moderately well drained
Soil Hydric status	Not hydric	Not hydric	Not hydric	Not hydric	Not hydric
Valley Slope	0.0095	0.0098	0.0165	0.013	0.0124
FEMA classification	Project streams are not located within a FEMA regulated area				
Native vegetation community	N/A (cultivated land)	N/A (cultivated land)	Mesic Mixed Hardwood Forest	N/A (cultivated land)	N/A (cultivated land)
Percent composition of exotic invasive vegetation	0%	0%	60% (Chinese privet)	0%	0%

Wetland Summary Information	
Parameters	**Wetland 1**
Size of Wetland (acres)	0.05
Wetland Type	Palustrine emergent
Mapped Soil Series	Cid channery silt loam (CmB)
Drainage class	Moderately well drained
Soil Hydric Status	Not hydric
Source of Hydrology	Groundwater
Hydrologic Impairment	NA
Native vegetation community	N/A (cultivated land)
Percent composition exotic invasive vegetation	0%

Regulatory Considerations			
Regulation	**Applicable?**	**Resolved?**	**Documentation**
Waters of the United States – Section 404	Yes	Yes	JD Notification / NWP27
Waters of the United States – Section 401	Yes	Yes	401 Water Quality Certification
Endangered Species Act	Yes	Yes	CE Documentation (Mitigation Plan, Appendix B)
Historic Preservation Act	No	NA	CE Documentation (Mitigation Plan, Appendix B)
Coastal Zone Management Act (CZMA)/ Coastal Area Management Act (CAMA)	No	NA	NA
FEMA Floodplain Compliance	No	NA	FEMA Floodplain Checklist (Mitigation Plan, Appendix B)
Essential Fisheries Habitat	No	NA	NA

Appendix B
Visual Assessment Data

Figure 2. Integrated Current Condition Plan View Final

Prepared for Ecosystem Enhancement Program	**Project:** 601 North II Year 1 Monitoring Union County, North Carolina	Notes: 1) Base Map Data Provided by Akins North America, INC. 2) 2010 Aerial Photo	Prepared by EQUINOX ENVIRONMENTAL CONSULTATION & DESIGN
	Sheet 1 of 1		
	Date December 2013	Project Number NCEEP # 95925	

Table 5. Visual Stream Morphology Stability Assessment
601 North II / Project No. 95925 - Wicker Branch (R1)
Assessed Length 660 feet

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	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	**1. Vertical Stability** (Riffle and Run Units)	1. 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.	20	22			91%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6).	19	19			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	19	19			100%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	21	21			100%			
		2. Thalweg centering at downstream of meander bend (Glide).	21	21			100%			
2. Bank	**1. Scoured / Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	N/A	N/A	N/A
	3. Mass Wasting	Bank slumping, calving, or collapse.			0	0	100%	N/A	N/A	N/A
				Totals	0	0	100%	N/A	N/A	N/A
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	8	8			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	8	8			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	8	8			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does NOT exceed 15%.	8	8			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow.	8	8			100%			

N/A - Item does not apply.

Table 5 cont'd. Visual Stream Morphology Stability Assessment
601 North II / Project No. 95925 - Wicker Branch Reach 2
Assessed Length 1,775 feet

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	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	**1. Vertical Stability** (Riffle and Run Units)	1. 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.	31	33			94%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6).	32	33			97%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	33	33			100%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	33	33			100%			
		2. Thalweg centering at downstream of meander bend (Glide).	33	33			100%			
2. Bank	**1. Scoured / Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	N/A	N/A	N/A
	3. Mass Wasting	Bank slumping, calving, or collapse.			0	0	100%	N/A	N/A	N/A
				Totals	0	0	100%	N/A	N/A	N/A
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	13	13			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	13	13			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	13	13			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does NOT exceed 15%.	13	13			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow.	13	13			100%			

N/A - Item does not apply.

Table 5 cont'd. Visual Stream Morphology Stability Assessment
601 North II / Project No. 95925 - Unnamed Tributary - Wicker Branch Reach 3
Assessed Length 273 feet

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	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	**1. Vertical Stability** (Riffle and Run Units)	1. 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.	5	5			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6).	5	5			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	5	5			100%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	5	5			100%			
		2. Thalweg centering at downstream of meander bend (Glide).	5	5			100%			
2. Bank	**1. Scoured / Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	N/A	N/A	N/A
	3. Mass Wasting	Bank slumping, calving, or collapse.			0	0	100%	N/A	N/A	N/A
				Totals	0	0	100%	N/A	N/A	N/A
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	2	2			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	2	2			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	2	2			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does NOT exceed 15%.	2	2			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow.	2	2			100%			

N/A - Item does not apply.

Table 5 cont'd. Visual Stream Morphology Stability Assessment
601 North II / Project No. 95925 - Unnamed Tributary - Wicker Branch Reach 5
Assessed Length 646 feet

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	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjusted % for Stabilizing Woody Vegetation
1. Bed	**1. Vertical Stability** (Riffle and Run Units)	1. 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.	18	18			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6).	19	19			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstream riffle).	19	19			100%			
	4. Thalweg Position	1. Thalweg centering at upstream of meander bend (Run).	19	19			100%			
		2. Thalweg centering at downstream of meander bend (Glide).	19	19			100%			
2. Bank	**1. Scoured / Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	N/A	N/A	N/A
	3. Mass Wasting	Bank slumping, calving, or collapse.			0	0	100%	N/A	N/A	N/A
				Totals	0	0	100%	N/A	N/A	N/A
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	9	9			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	9	9			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	9	9			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does NOT exceed 15%.	9	9			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth Ratio ≥ 1.6. Rootwads/logs providing some cover at base-flow.	9	9			100%			

N/A - Item does not apply.

Table 6. Vegetation Condition Assessment 601 North II/Project No. 95925 Planted Acreage 12.3					
Vegetation Category	**Definitions**	**CCPV Depiction**	**Number of Polygons**	**Combined Acreage**	**% of Planted Acreage**
1. Bare Areas	Very limited cover of both woody and herbaceous material.	N/A	0	0.00	0%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	N/A	0	0.00	0%
		Totals	0	0.00	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.	N/A	0	0.00	0%
		Cumulative Totals	0	0.00	0%
Easement Acreage 12.3					
Vegetation Category	**Definitions**	**CCPV Depiction**	**Number of Polygons**	**Combined Acreage**	**% of Easement Acreage**
4. Invasive Areas of Concern	Areas or points (if too small to render as polygons at map scale).	Cross Hatch (Red - Dense/Yellow - Present)	1	0.25	2%
5. Easement Encroachment Areas	Areas or points (if too small to render as polygons at map scale).	N/A	1	0.02	0%

N/A - Item does not apply.

601 North II – Permanent Photo Station 1
Looking Downstream

601 North II – Permanent Photo Station 2
Looking Downstream

601 North II – Permanent Photo Station 2
Looking Upstream

601 North II – Permanent Photo Station 3
Looking Upstream

601 North II – Permanent Photo Station 4
Looking Downstream

601 North II – Permanent Photo Station 5
Looking Downstream

601 North II – Permanent Photo Station 5
Looking Upstream

601 North II – Permanent Photo Station 6
Looking Downstream

601 North II -Permanent Photo Station 6
Looking Upstream

Appendix C
Vegetation Plot Data

Table 7. Vegetation Plot Criteria Attainment		
601 North II / Project No. 95925		
Vegetation Plot ID	Vegetation Survival Threshold Met?	Tract Mean
1	Yes	92%
2	Yes	
3	Yes	
4	Yes	
5	Yes	
6	Yes	
7	Yes	
8	Yes	
9	Yes	
10	Yes	
11	Yes	
12	No	

Vegetation Monitoring Plot 1

Vegetation Monitoring Plot 2

Vegetation Monitoring Plot 3

Vegetation Monitoring Plot 4

Vegetation Monitoring Plot 5

Vegetation Monitoring Plot 6

Vegetation Monitoring Plot 7

Vegetation Monitoring Plot 8

Vegetation Monitoring Plot 9

Vegetation Monitoring Plot 10

Vegetation Monitoring Plot 11

Vegetation Monitoring Plot 12

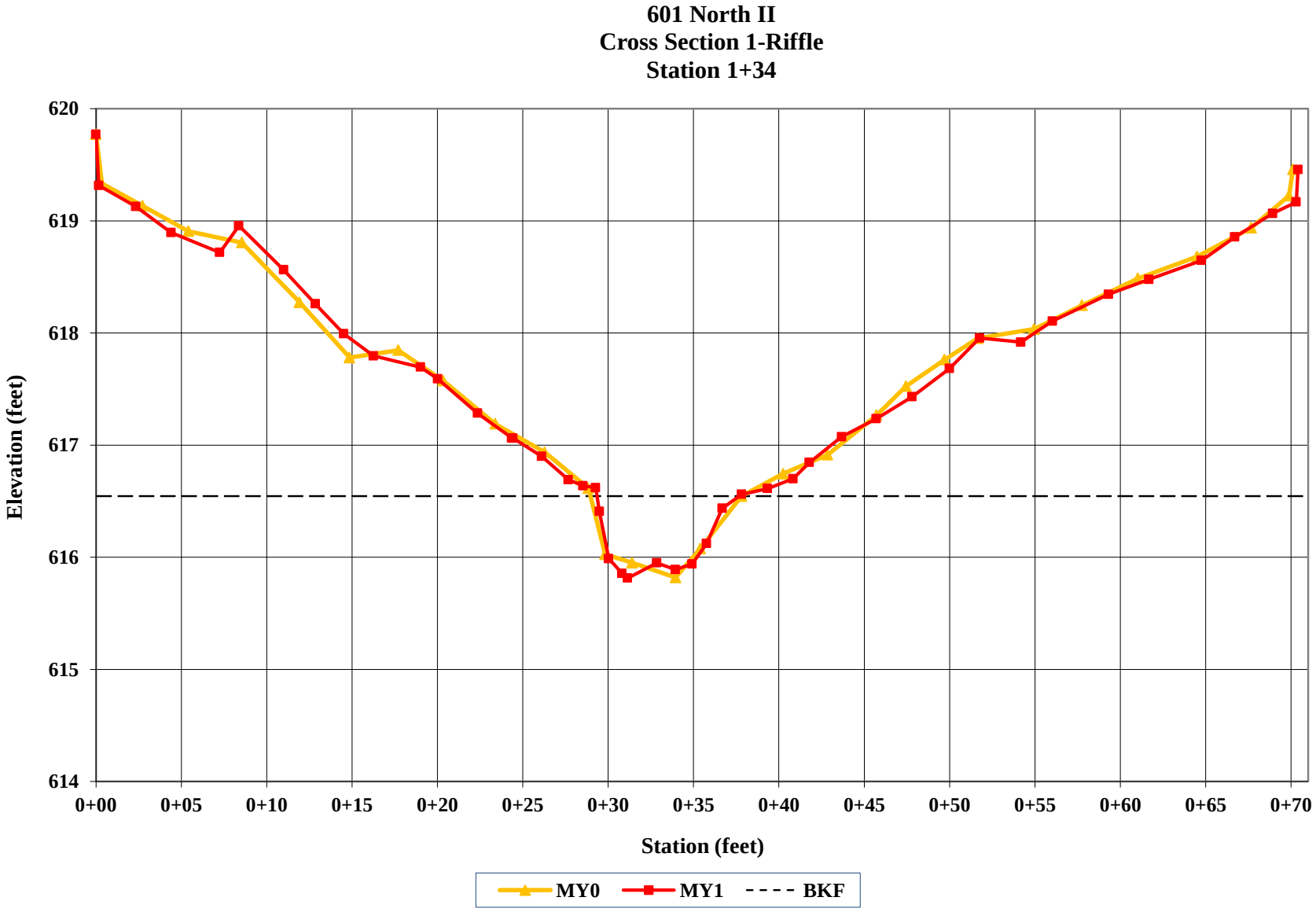
Table 8. CVS Vegetation Plot Metadata 601 North II / Project No. 95925	
Report Prepared By	Drew Alderman
Date Prepared	12/11/2013 13:27
database name	601NII_CVS_Working.mdb
database location	Z:\ES\NRI&M\EBX Monitoring\601_N_II\601N-II-MY1-2013\Data\Veg
computer name	SENIORSCIENTIST
file size	46923776
DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT	
Metadata	Description of database file, the report worksheets, and a summary of project(s)
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	95925
project Name	601 North II Stream Restoration Site
Description	Stream Restoration Site
River Basin	Yadkin-Pee Dee
length(ft)	4248
stream-to-edge width (ft)	350
area (sq m)	47348.22
Required Plots (calculated)	12
Sampled Plots	12

Table 9. Planted Total Stem Counts (Species by Plot with Annual Means) EEP Project Code 95925. Project Name: 601 North II Stream Restoration Site																				
			Current Plot Data (MY1 2013)																	
		Species	95925-01-0001			95925-01-0002			95925-01-0003			95925-01-0004			95925-01-0005			95925-01-0006		
Scientific Name	Common Name	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
Betula nigra	river birch	Tree	3	3	3	3	3	3	5	5	5	2	2	2	3	3	3	4	4	4
Celtis laevigata	sugarberry	Tree																		
Cercis canadensis	eastern redbud	Tree										2	2	2	3	3	3			
Fraxinus pennsylvanica	green ash	Tree	1	1	1				1	1	1							1	1	1
Nyssa sylvatica	blackgum	Tree	1	1	1															
Platanus occidentalis	American sycamore	Tree	1	1	1	4	4	4	2	2	2				5	5	5			
Quercus michauxii	swamp chestnut oak	Tree	7	7	7	1	1	1	4	4	4	6	6	6	2	2	2	2	2	2
Quercus phellos	willow oak	Tree	1	1	1							2	2	2				4	4	4
Quercus rubra	northern red oak	Tree													2	2	2	3	3	3
		Stem count	14	14	14	8	8	8	12	12	12	12	12	12	15	15	15	14	14	14
		size (ares)	1			1			1			1			1			1		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02			0.02		
		Species count	6	6	6	3	3	3	4	4	4	4	4	4	5	5	5	5	5	5
		Stems per ACRE	567	567	567	324	324	324	486	486	486	486	486	486	607	607	607	567	567	567

Table 9 cont'd. Planted Total Stem Counts (Species by Plot with Annual Means) EEP Project Code 95925. Project Name: 601 North II Stream Restoration Site																				
			Current Plot Data (MY1 2013)																	
		Species	95925-01-0007			95925-01-0008			95925-01-0009			95925-01-0010			95925-01-0011			95925-01-0012		
Scientific Name	Common Name	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
Betula nigra	river birch	Tree				1	1	1	3	3	3	3	3	3	4	4	4			
Celtis laevigata	sugarberry	Tree																		
Cercis canadensis	eastern redbud	Tree				3	3	3	1	1	1	1	1	1	1	1	1			
Fraxinus pennsylvanica	green ash	Tree	2	2	2	1	1	1	2	2	2							1	1	1
Nyssa sylvatica	blackgum	Tree																2	2	2
Platanus occidentalis	American sycamore	Tree	5	5	5				4	4	4							1	1	1
Quercus michauxii	swamp chestnut oak	Tree	1	1	1	1	1	1	2	2	2	4	4	4				1	1	1
Quercus phellos	willow oak	Tree	2	2	2	2	2	2	1	1	1	4	4	4	3	3	3			
Quercus rubra	northern red oak	Tree	4	4	4	2	2	2							1	1	1	1	1	1
		Stem count	14	14	14	10	10	10	13	13	13	12	12	12	9	9	9	6	6	6
		size (ares)	1			1			1			1			1			1		
		size (ACRES)	0.02			0.02			0.02			0.02			0.02			0.02		
		Species count	5	5	5	6	6	6	6	6	6	4	4	4	4	4	4	5	5	5
		Stems per ACRE	567	567	567	405	405	405	526	526	526	486	486	486	364	364	364	243	243	243

Table 9 cont'd. Planted Total Stem Counts (Species by Plot with Annual EEP Project Code 95925. Project Name: 601 North II Stream Restoration Site					
Annual Means					
MY1 (2013)			MY0 (2013)		
PnoLS	P-all	T	PnoLS	P-all	T
31	31	31	51	51	51
					2
11	11	11	19	19	19
9	9	9	10	10	10
3	3	3	7	7	7
22	22	22	19	19	19
31	31	31	44	44	44
19	19	19	27	27	27
13	13	13	14	14	14
139	139	139	191	191	193
12			12		
0.30			0.30		
8	8	8	8	8	9
469	469	469	644	644	651

Appendix D
Stream Survey Data

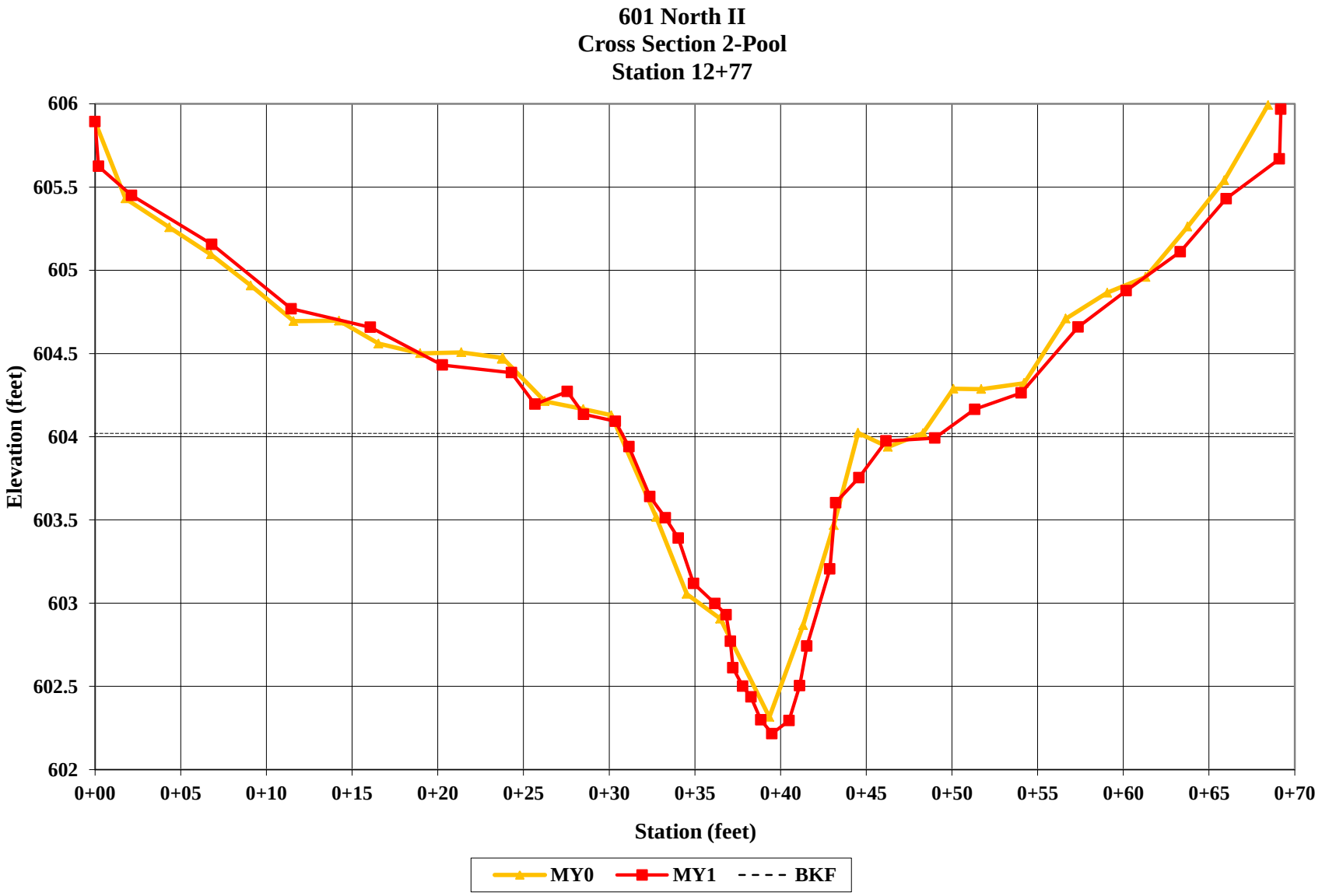

601 North II
Cross Section 1-Riffle
Station 1+34
620
619
618
617
616
615
614
Elevation (feet)
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
0+55
0+60
0+65
0+70
Station (feet)
MY0
MY1
BKF

601 North II – Cross-Section 1 – Riffle
Left Bank Descending
Monitoring Year 1 – Nov 20, 2013

601 North II – Cross-Section 1 – Riffle
Right Bank Descending
Monitoring Year 1 – Nov 20, 2013

601 North II – Cross-Section 1 – Riffle
Looking Downstream
Monitoring Year 1 – Nov 20, 2013

601 North II – Cross-Section 1 – Riffle
Looking Upstream
Monitoring Year 1 – Nov 20, 2013

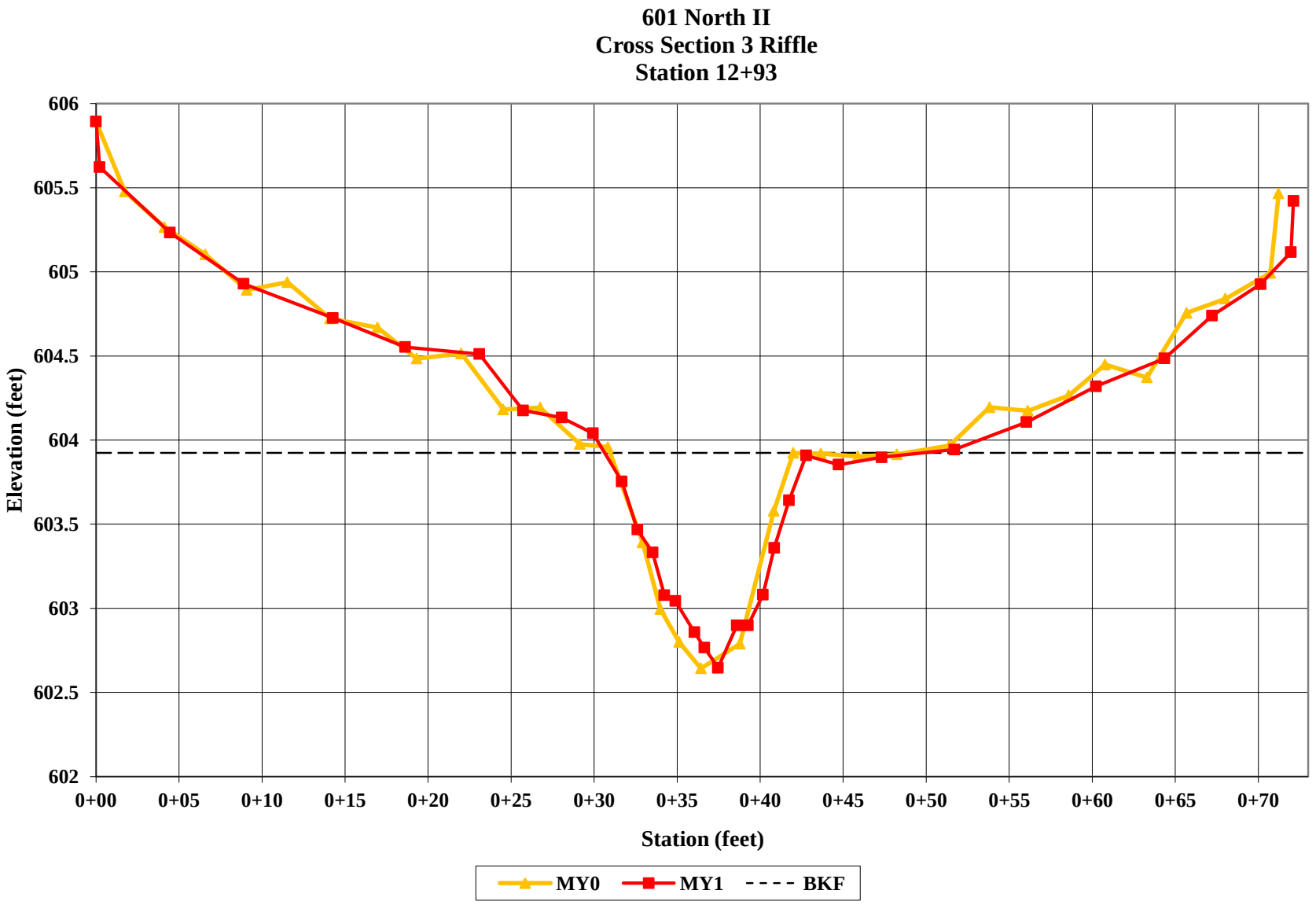

601 North II
Cross Section 2-Pool
Station 12+77
606
605.5
605
604.5
604
603.5
603
602.5
602
Elevation (feet)
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
0+55
0+60
0+65
0+70
Station (feet)
MY0
MY1
BKF

601 North II – Cross-Section 2 – Pool
Left Bank Descending
Monitoring Year 1 – Nov 20, 2013

601 North II – Cross-Section 2 – Pool
Right Bank Descending
Monitoring Year 1 – Nov 20, 2013

601 North II – Cross-Section 2 – Pool
Downstream
Monitoring Year 1 – Nov 20, 2013

601 North II – Cross-Section 2 – Pool
Upstream
Monitoring Year 1 – Nov 20, 2013

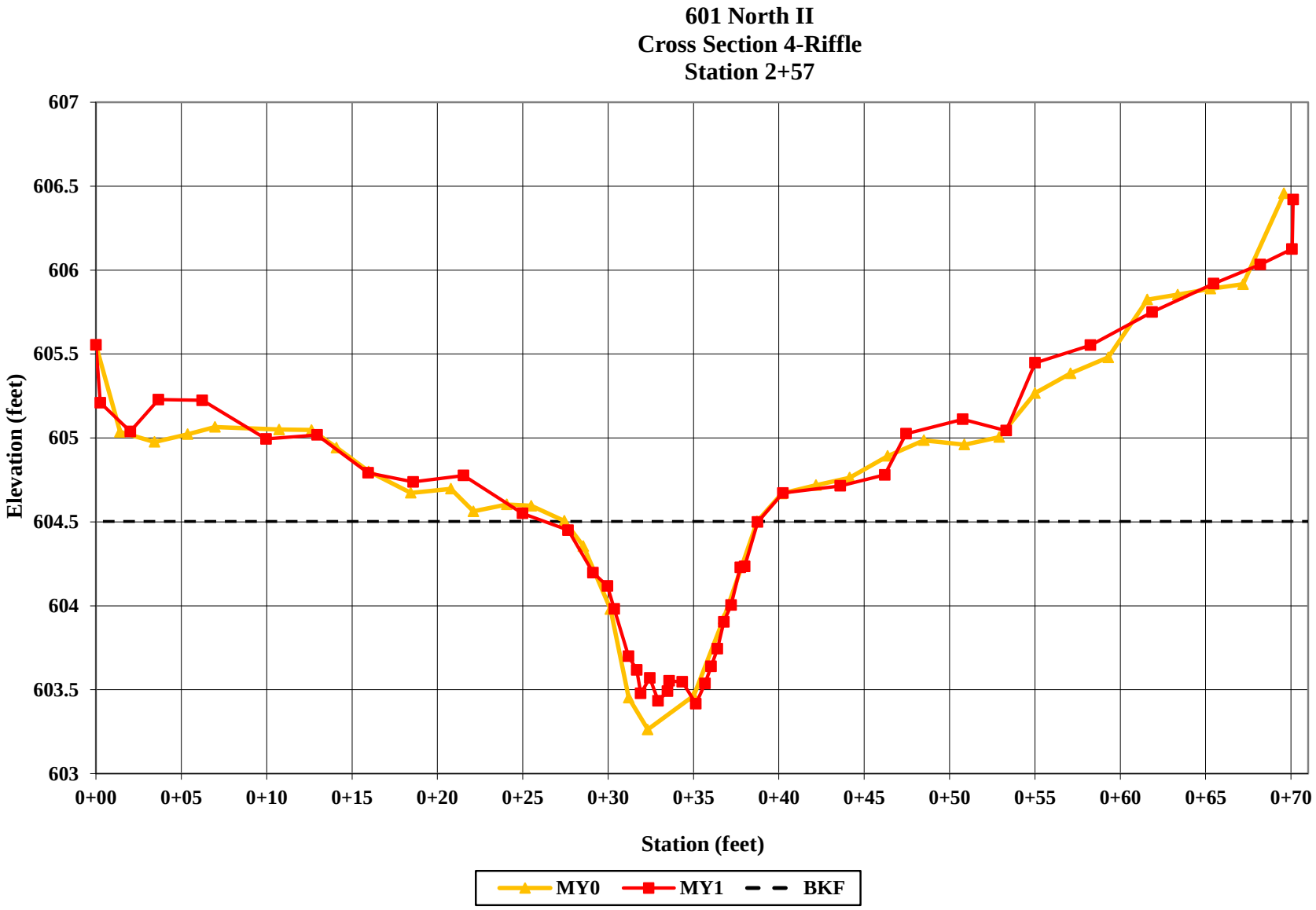

601 North II
Cross Section 3 Riffle
Station 12+93
606
605.5
605
604.5
604
603.5
603
602.5
602
Elevation (feet)
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
0+55
0+60
0+65
0+70
Station (feet)
MY0
MY1
BKF

601 North II – Cross-Section 3 – Riffle
Left Bank Descending
Monitoring Year 1 – Nov 20, 2013

601 North II – Cross-Section 3 – Riffle
Right Bank Descending
Monitoring Year 1 – Nov 20, 2013

601 North II – Cross-Section 3 – Riffle
Looking Downstream
Monitoring Year 1 – Nov 20, 2013

601 North II – Cross-Section 3 – Riffle
Looking Upstream
Monitoring Year 1 – Nov 20, 2013

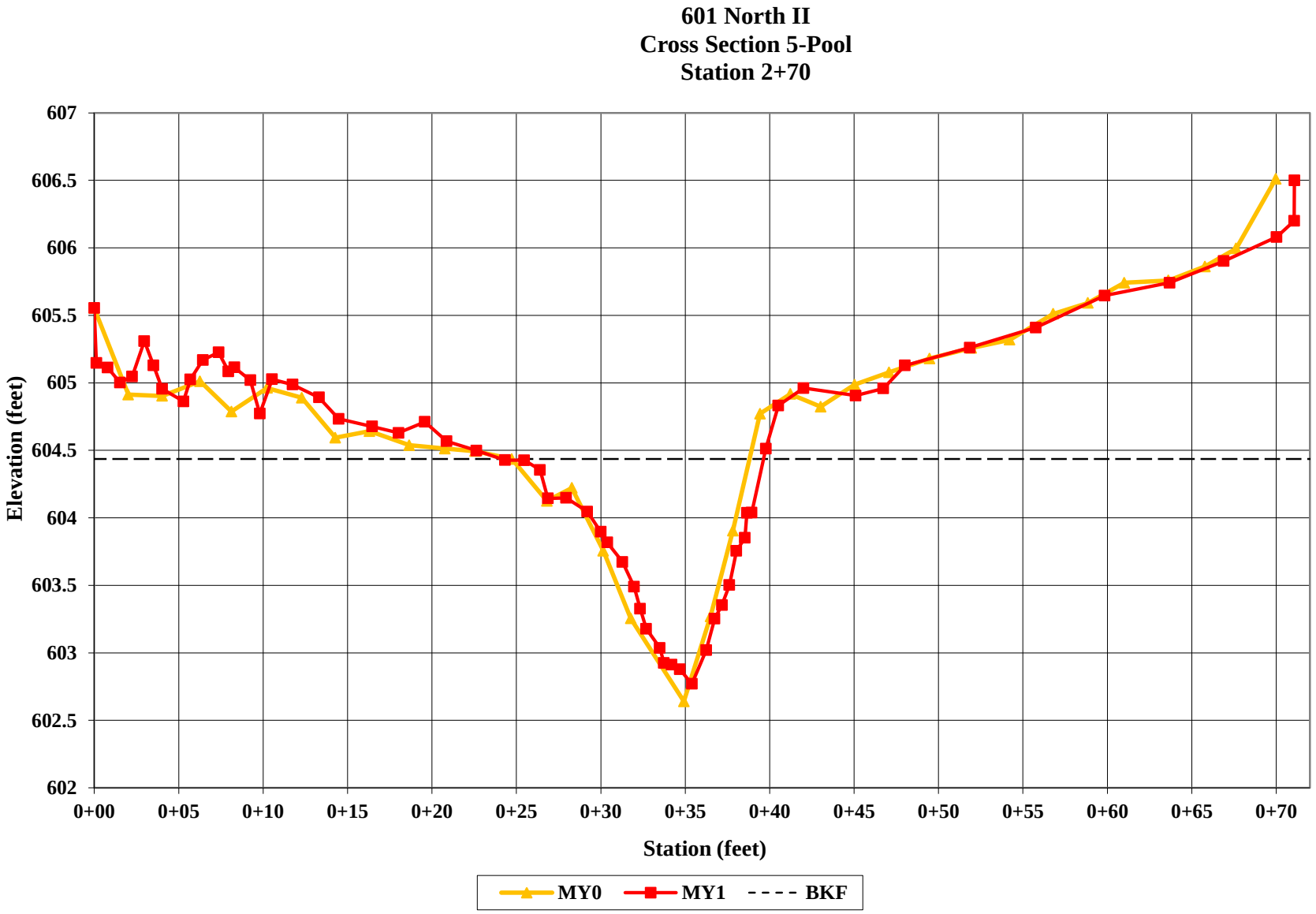

601 North II
Cross Section 4-Riffle
Station 2+57
607
606.5
606
605.5
605
604.5
604
603.5
603
Elevation (feet)
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
0+55
0+60
0+65
0+70
Station (feet)
MY0
MY1
BKF

601 North II – Cross-Section 4 – Riffle
Left Bank Descending
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 4 – Riffle
Right Bank Descending
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 4 – Riffle
Looking Downstream
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 4 – Riffle
Looking Upstream
Monitoring Year 1 – Nov 21, 2013

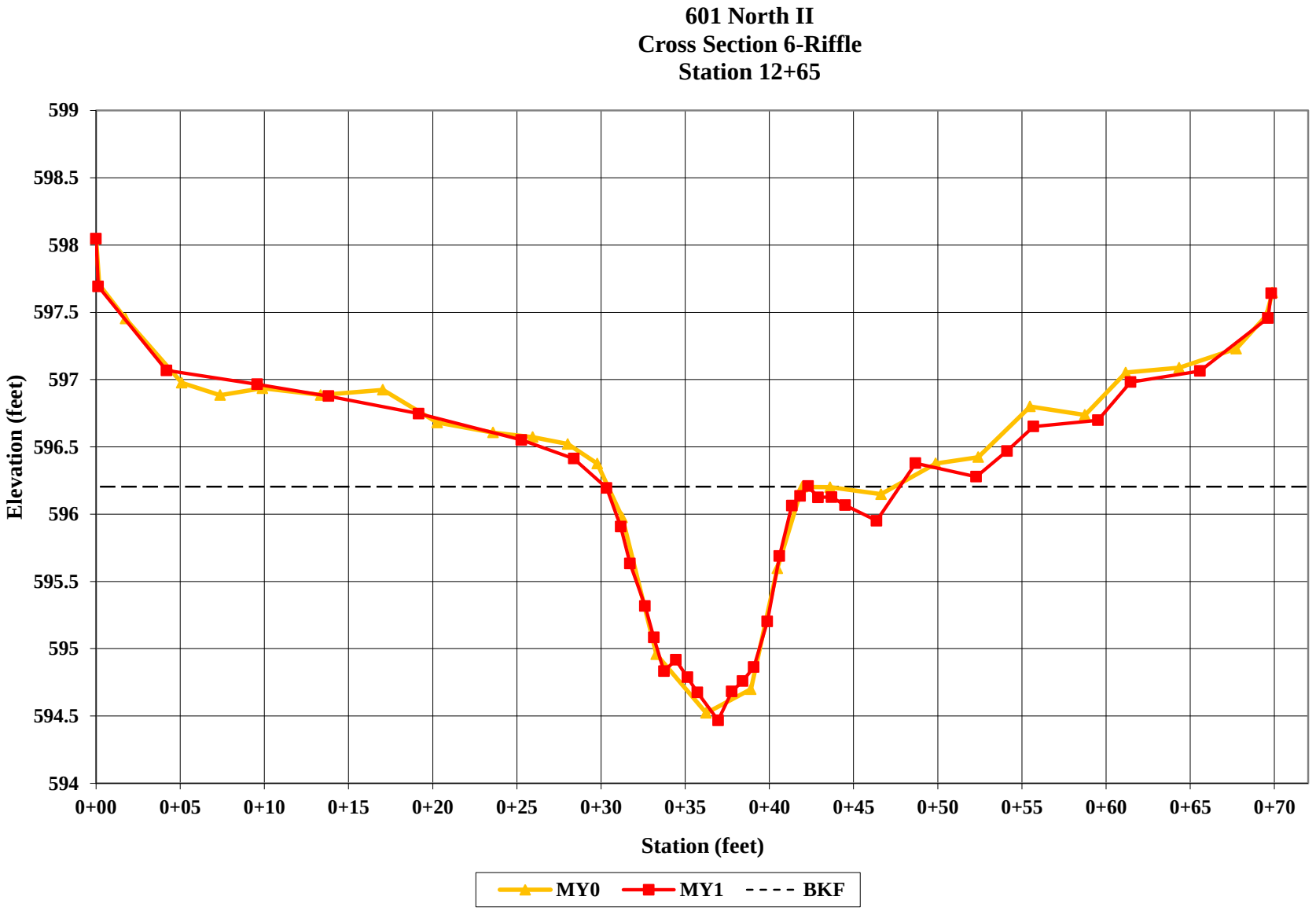

601 North II
Cross Section 5-Pool
Station 2+70
Elevation (feet)
607
606.5
606
605.5
605
604.5
604
603.5
603
602.5
602
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
0+55
0+60
0+65
0+70
Station (feet)
MY0
MY1
BKF

601 North II – Cross-Section 5 – Pool
Left Bank Descending
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 5 – Pool
Right Bank Descending
Monitoring Year 1 –Nov 21, 2013

601 North II – Cross-Section 5 – Pool
Looking Downstream
Monitoring Year 1 –Nov 21, 2013

601 North II – Cross-Section 5 – Pool
Looking Upstream
Monitoring Year 1 –Nov 21, 2013

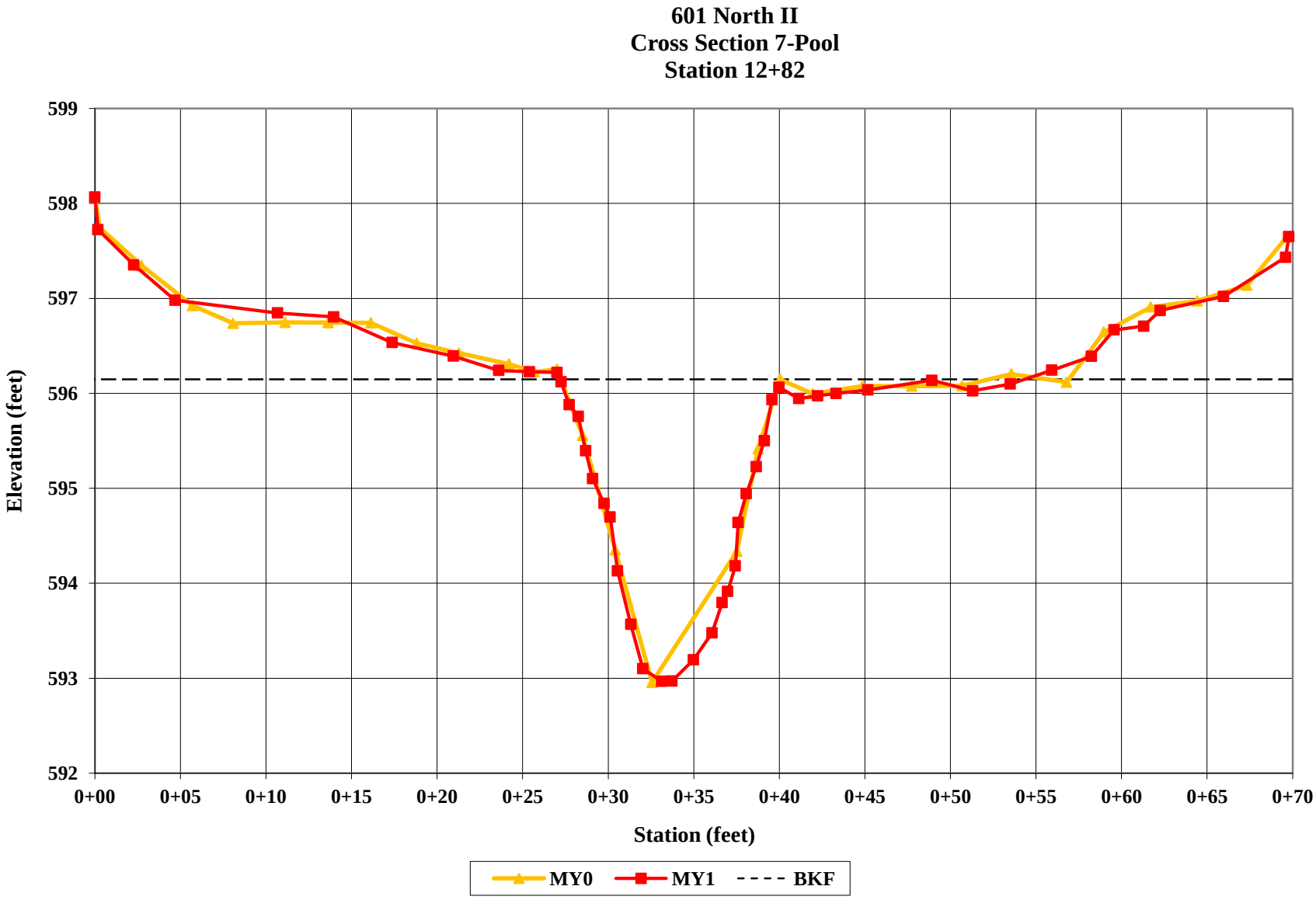

601 North II
Cross Section 6-Riffle
Station 12+65
599
598.5
598
597.5
597
596.5
596
595.5
595
594.5
594
Elevation (feet)
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
0+55
0+60
0+65
0+70
Station (feet)
MY0
MY1
BKF

601 North II – Cross-Section 6 – Riffle
Left Bank Descending
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 6 – Riffle
Right Bank Descending
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 6 – Riffle
Looking Downstream
Monitoring Year 1 –Nov 21, 2013

601 North II – Cross-Section 6 – Riffle
Looking Upstream
Monitoring Year 1 – Nov 21, 2013

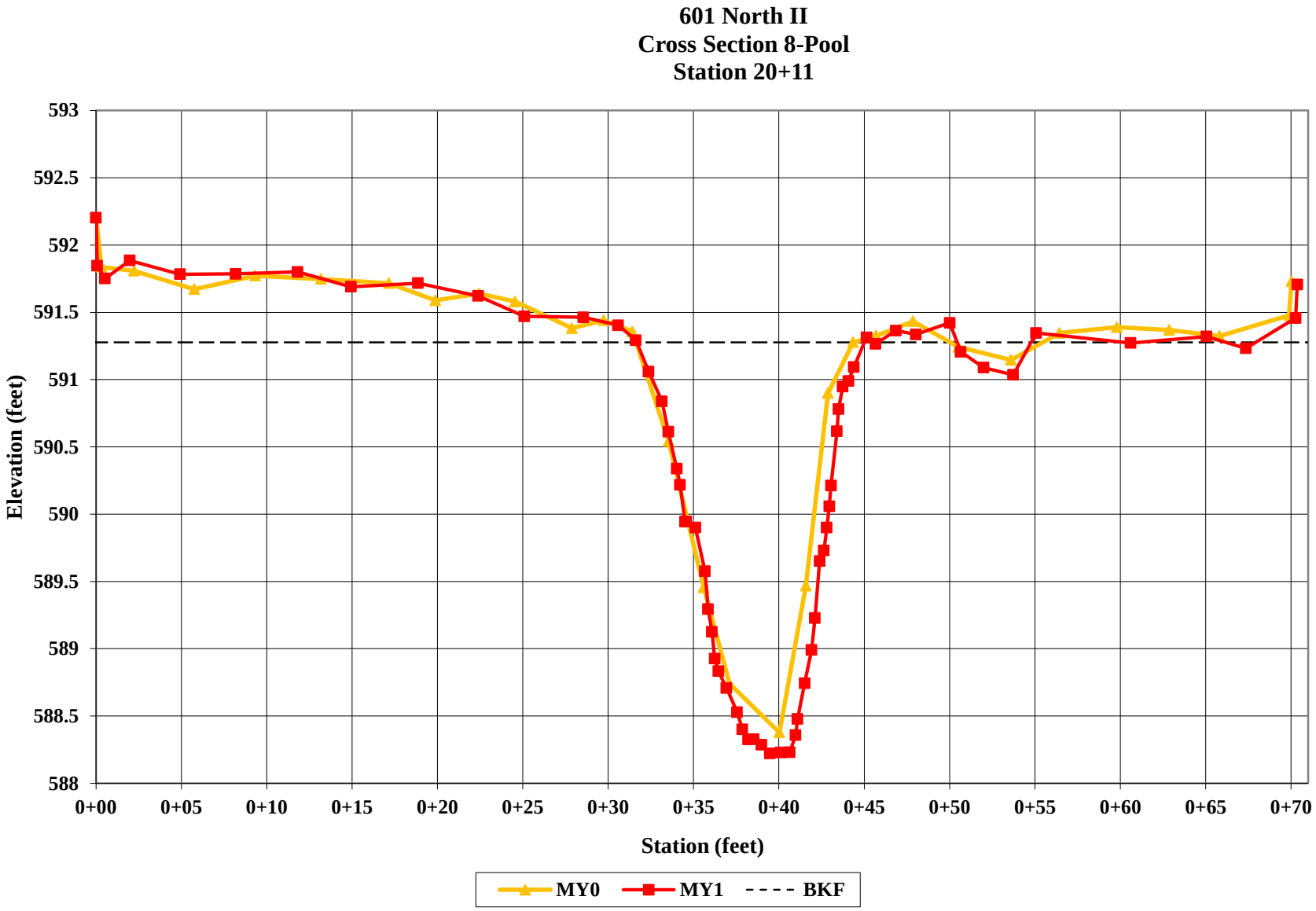

601 North II
Cross Section 7-Pool
Station 12+82
599
598
597
596
595
594
593
592
Elevation (feet)
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
0+55
0+60
0+65
0+70
Station (feet)
MY0
MY1
BKF

601 North II – Cross-Section 7 – Pool
Left Bank Descending
Monitoring Year 1–Nov 21, 2013

601 North II – Cross-Section 7 – Pool
Right Bank Descending
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 7 – Pool
Looking Downstream
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 7 – Pool
Looking Upstream
Monitoring Year 1 – Nov 21, 2013

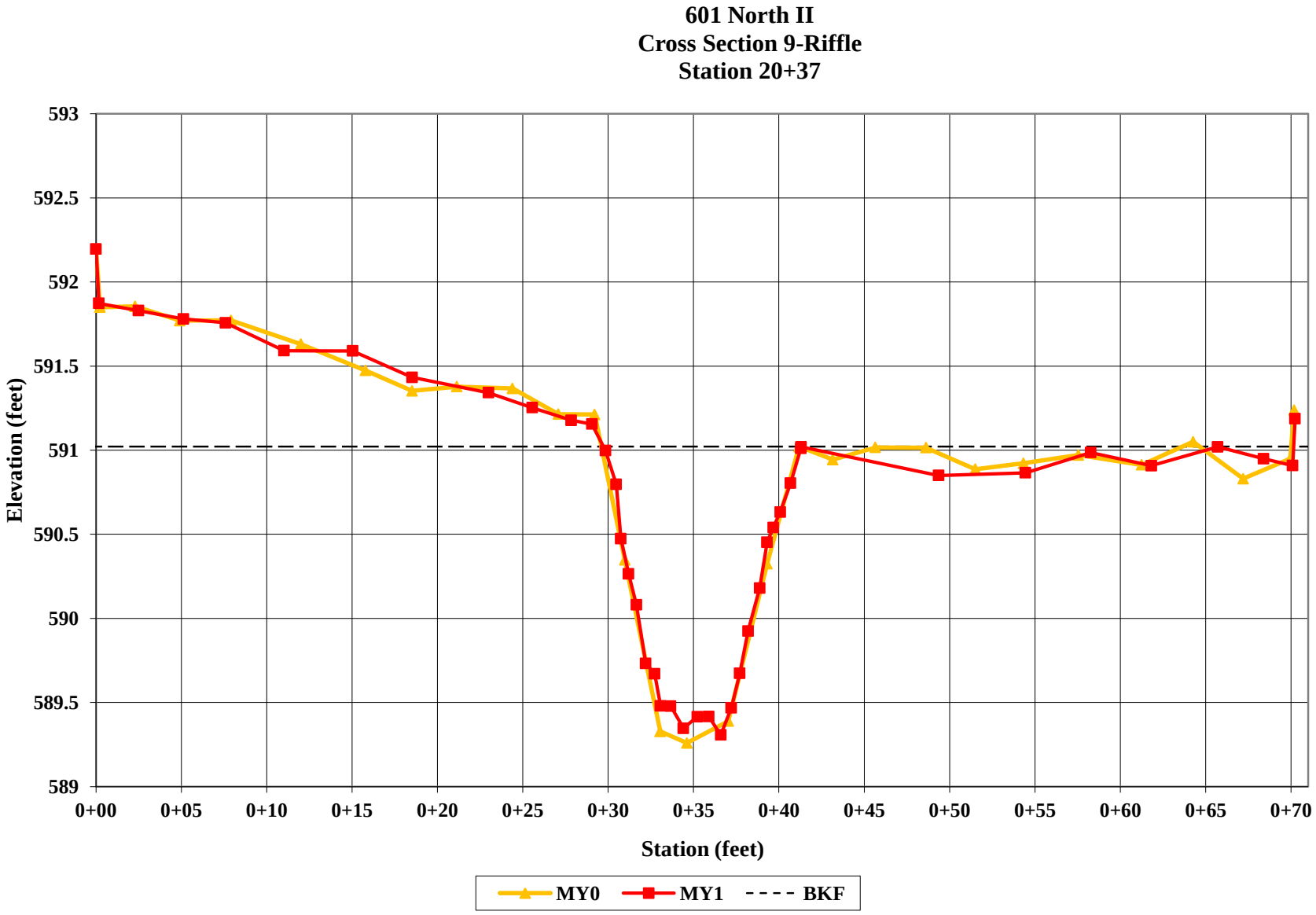

601 North II
Cross Section 8-Pool
Station 20+11
Elevation (feet)
593
592.5
592
591.5
591
590.5
590
589.5
589
588.5
588
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
0+55
0+60
0+65
0+70
Station (feet)
MY0
MY1
BKF

601 North II – Cross-Section 8 – Pool
Left Bank Descending
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 8 – Pool
Right Bank Descending
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 8 – Pool
Looking Downstream
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 8 – Pool
Looking Upstream
Monitoring Year 1 – Nov 21, 2013

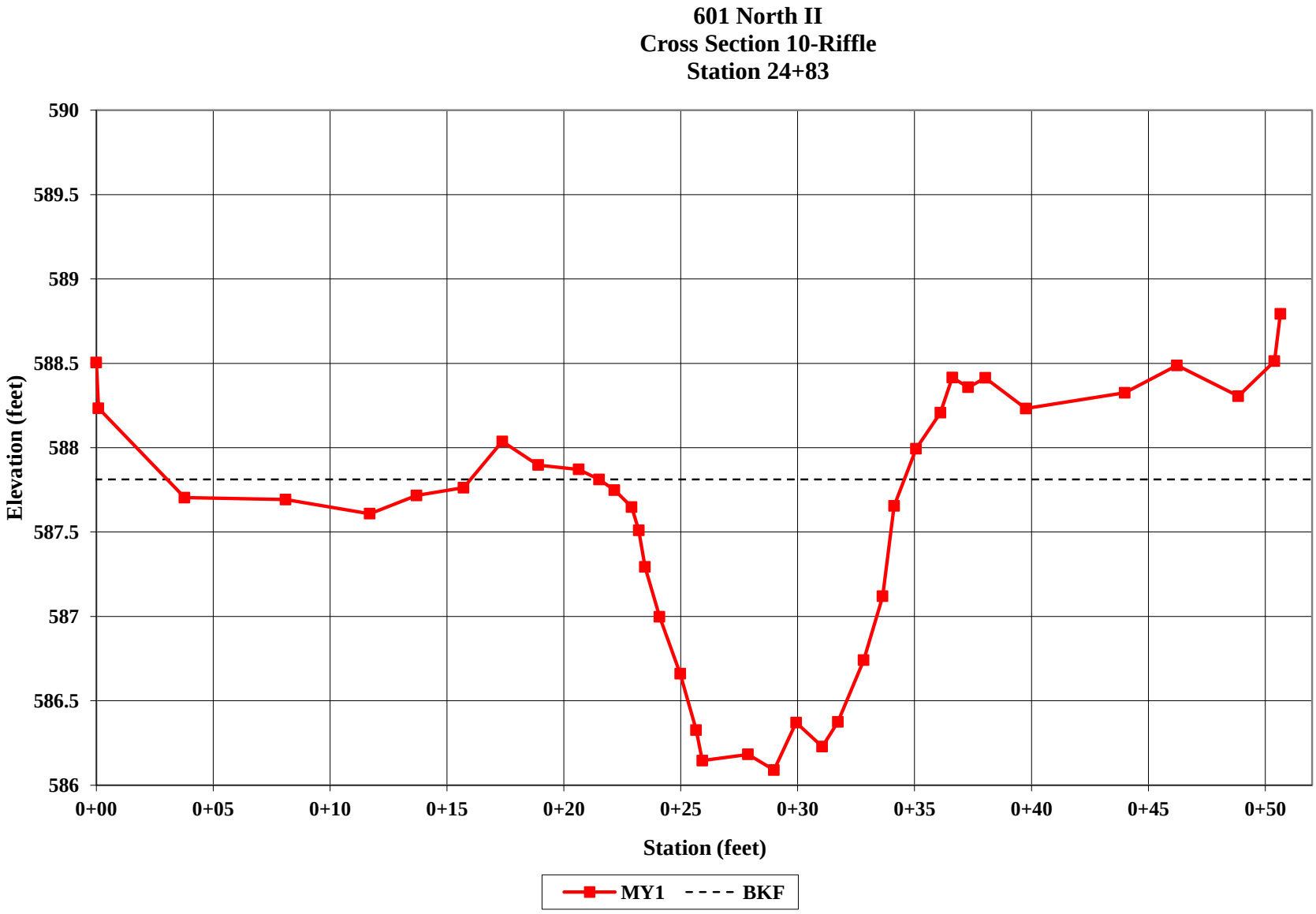

601 North II
Cross Section 9-Riffle
Station 20+37
Elevation (feet)
593
592.5
592
591.5
591
590.5
590
589.5
589
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
0+55
0+60
0+65
0+70
Station (feet)
MY0
MY1
BKF

601 North II – Cross-Section 9 – Riffle
Left Bank Descending
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 9 – Riffle
Right Bank Descending
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 9 – Riffle
Looking Downstream
Monitoring Year 1 – Nov 21, 2013

601 North II – Cross-Section 9 – Riffle
Looking Upstream
Monitoring Year 1 – Nov 21, 2013


601 North II
Cross Section 10-Riffle
Station 24+83
590
589.5
589
588.5
588
587.5
587
586.5
586
Elevation (feet)
0+00
0+05
0+10
0+15
0+20
0+25
0+30
0+35
0+40
0+45
0+50
Station (feet)
MY1
BKF

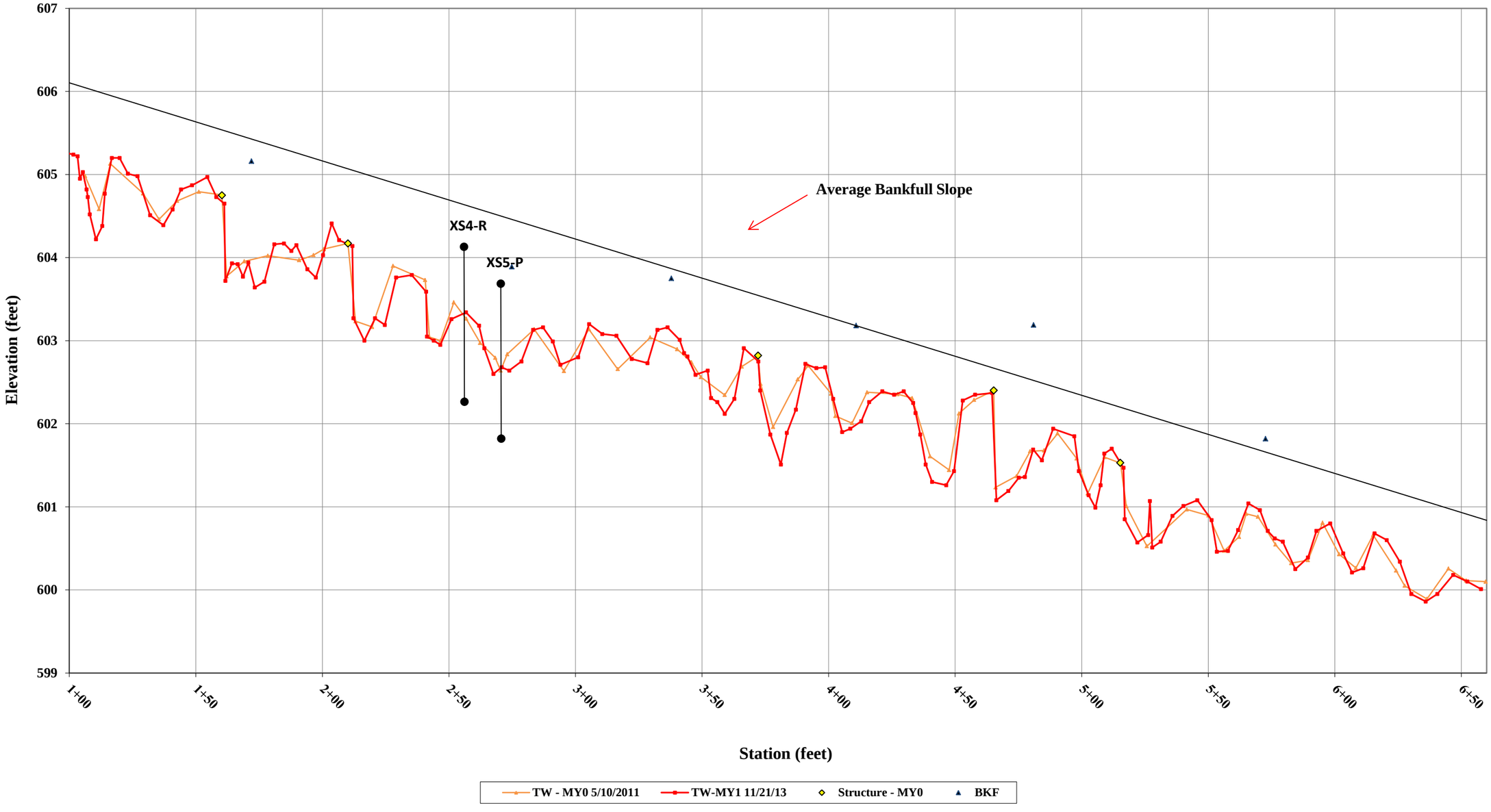
601 North II – Cross-Section 10 – Riffle
Left Bank Descending
Monitoring Year 1 – Dec 10, 2013

601 North II – Cross-Section 10 – Riffle
Right Bank Descending
Monitoring Year 1 – Dec 10, 2013

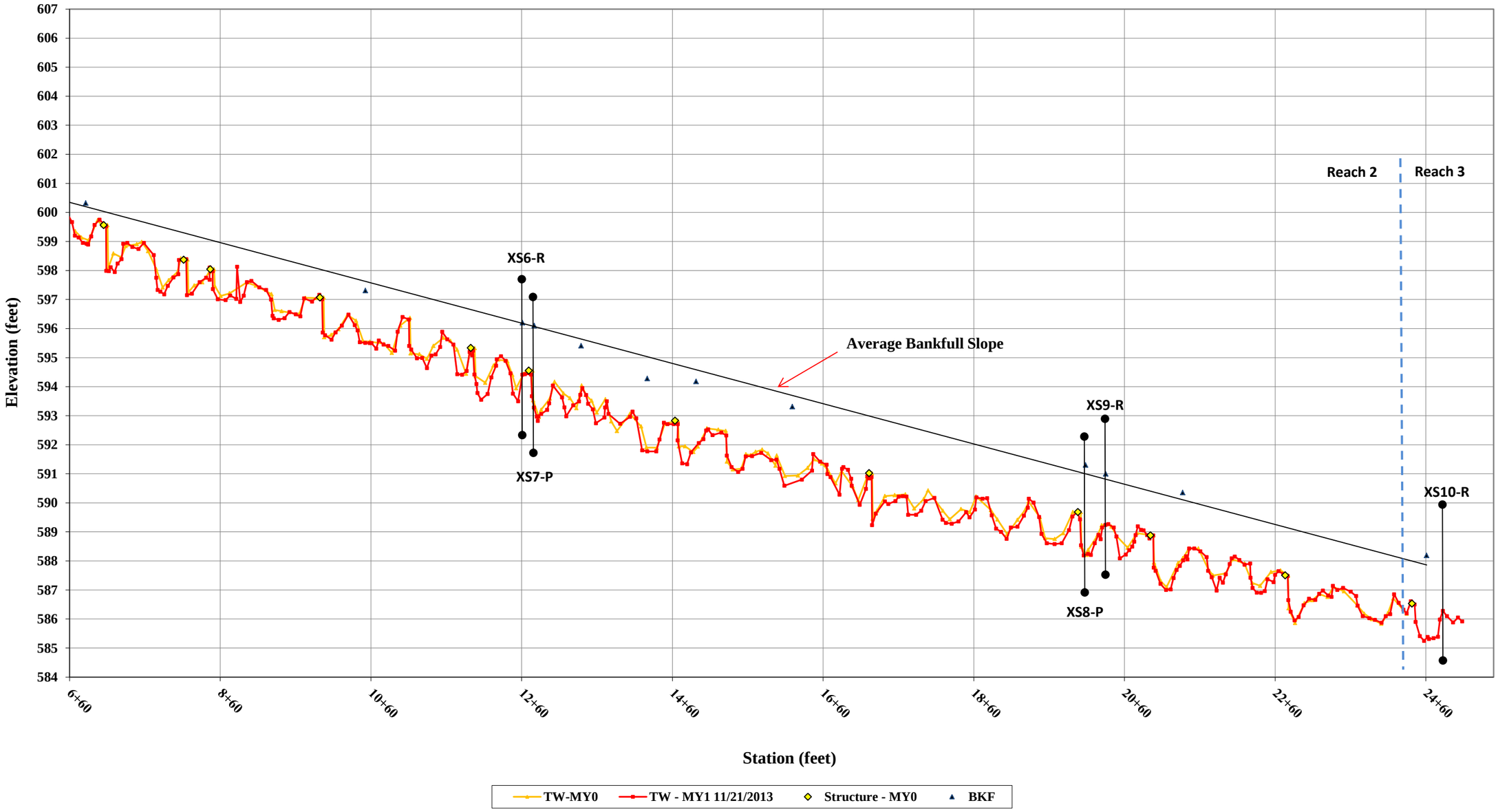
601 North II – Cross-Section 10 – Riffle
Looking Downstream
Monitoring Year 1 – Dec 10, 2013

601 North II – Cross-Section 10 – Riffle
Looking Upstream
Monitoring Year 1 – Dec 10, 2013

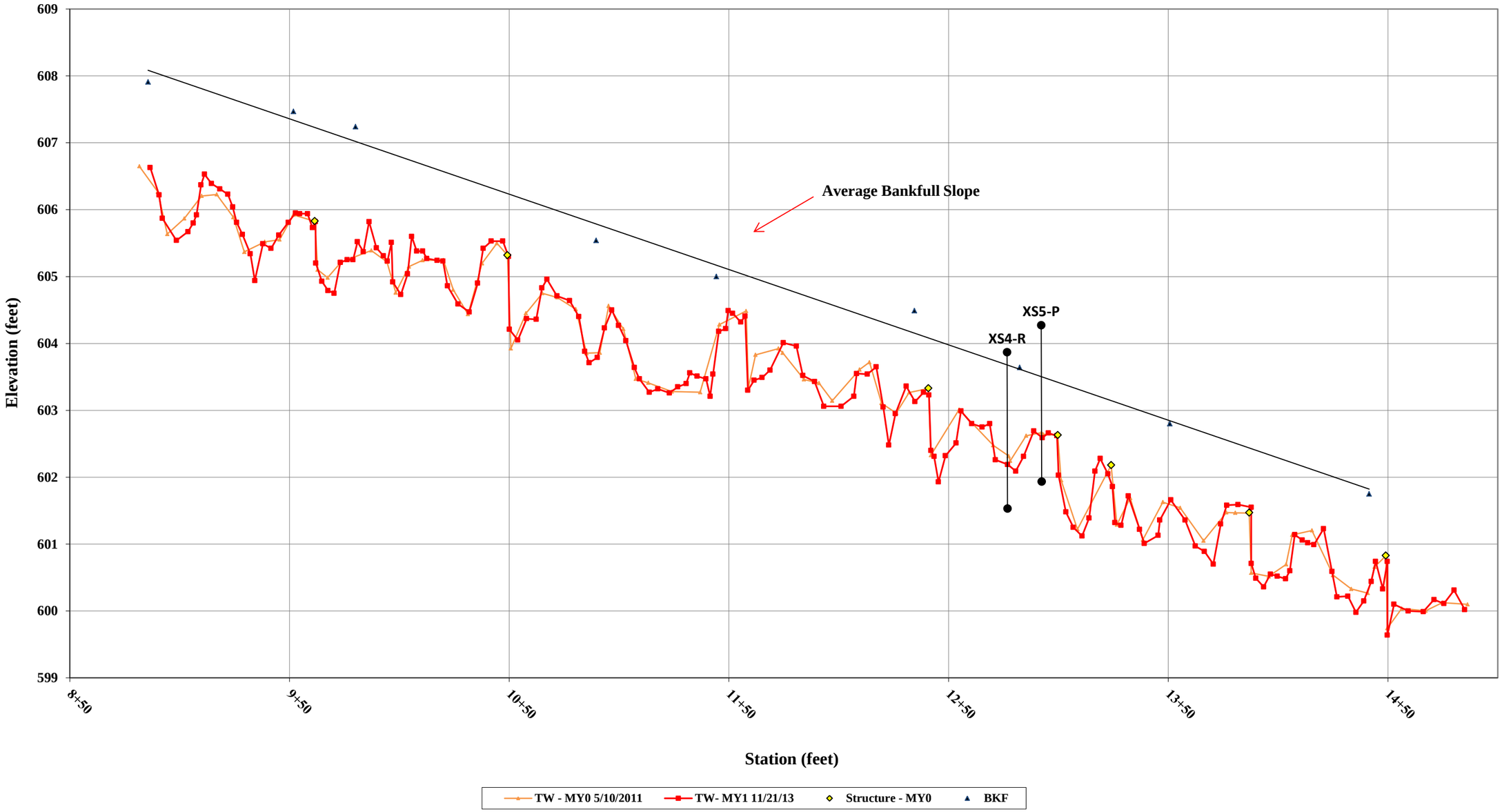
601 North II Wicker Branch
Reach 1
Longitudinal Profile
Staioning 1+00 to 6+60



601 North II Reach 2/3
Longitudinal Profile
Reach 2 - Stationing 6+60 to 24+35
Reach 3 - Stationing 24+35 to 25+08

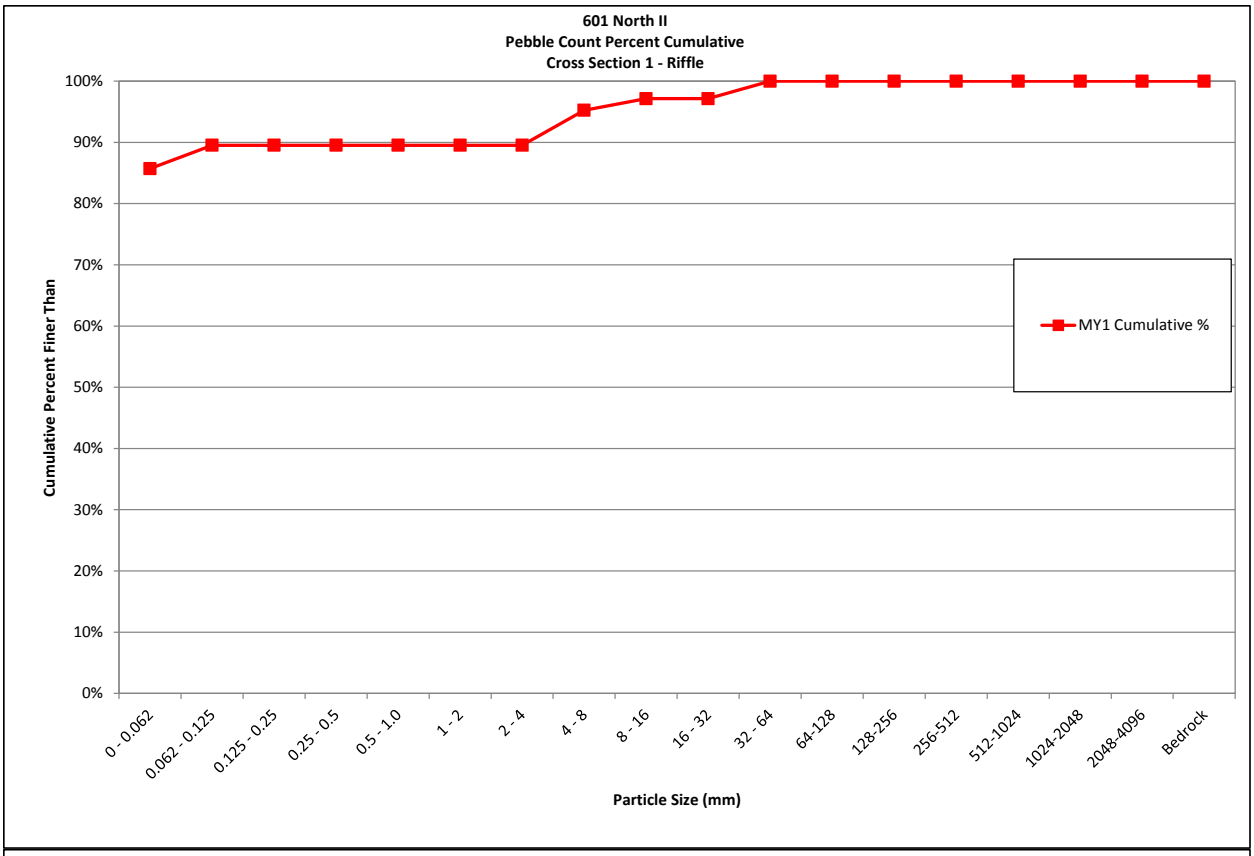


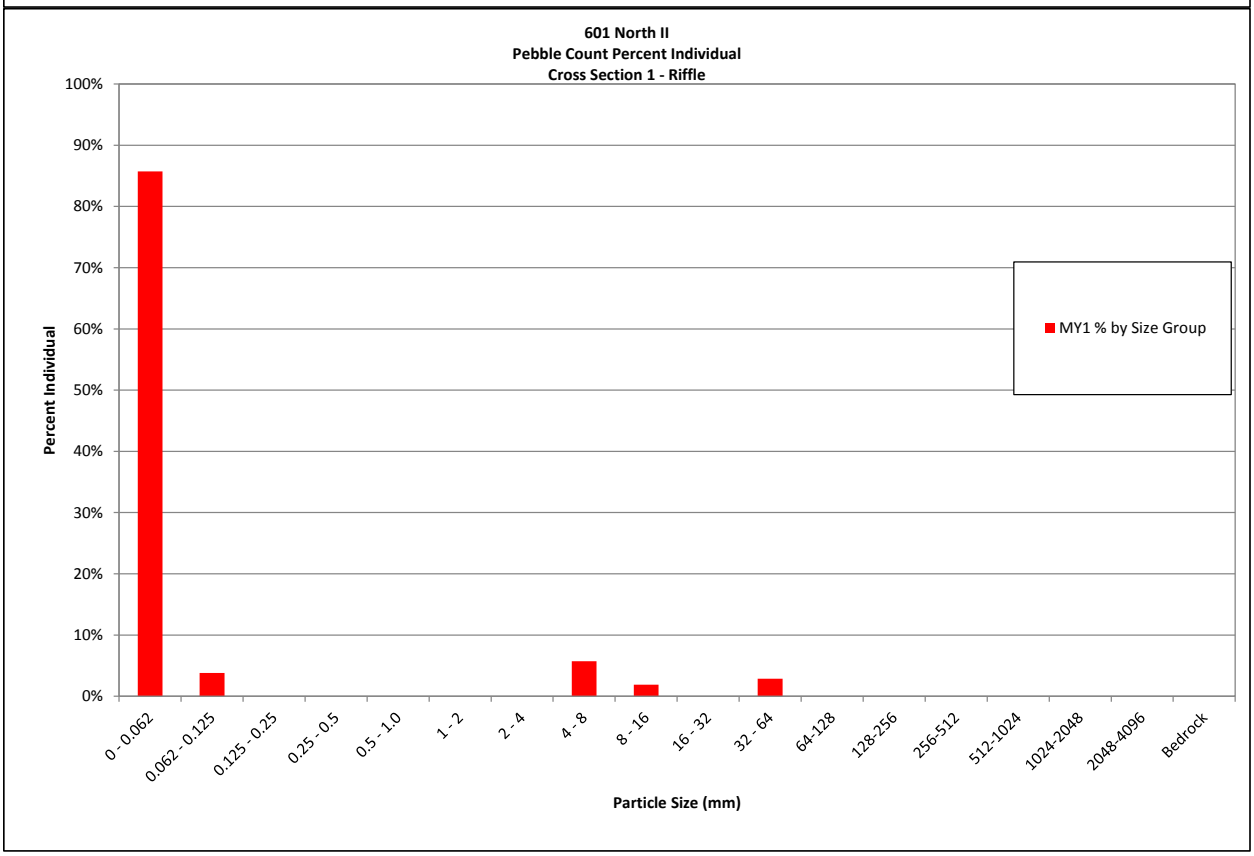
601 North II UT-Wicker Branch
Reach 5
Longitudinal Profile
Stationing 8+86 to 14+84



601 North II/ Project No. 95925					
Cross Section 1- Pebble Count Summary Riffle					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/ Clay	silt/clay	0.062	90	86%	86%
Sand	very fine sand	0.13	4	4%	90%
	fine sand	0.25	0	0%	90%
	medium sand	0.50	0	0%	90%
	coarse sand	1.00	0	0%	90%
	very coarse sand	2.0	0	0%	90%
Gravel	very fine gravel	4.0	0	0%	90%
	fine gravel	8.0	6	6%	95%
	medium gravel	16.0	2	2%	97%
	coarse gravel	32.0	0	0%	97%
	very coarse gravel	64.0	3	3%	100%
Cobble	medium cobble	128	0	0%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			105	100%	100%

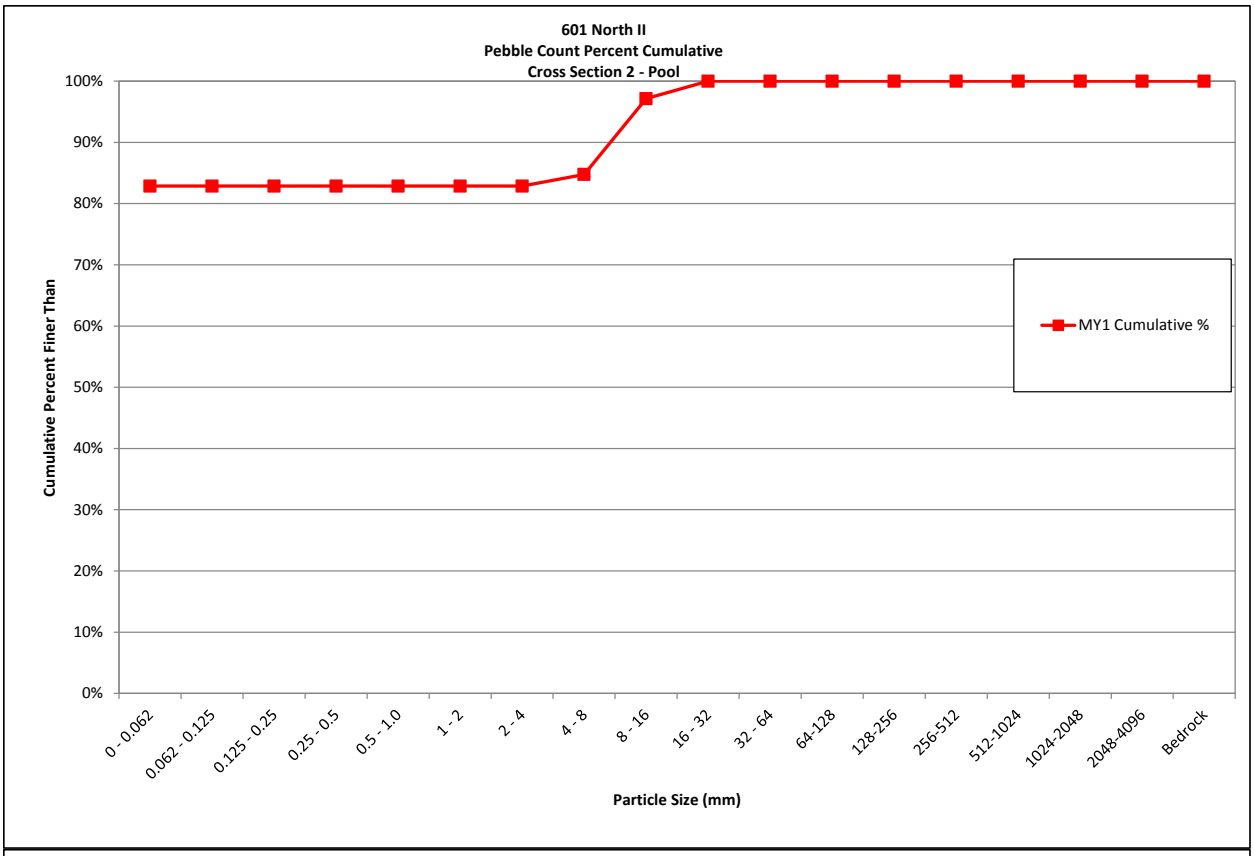
Summary Data	
D50	0.062
D84	0.062
D95	7.9

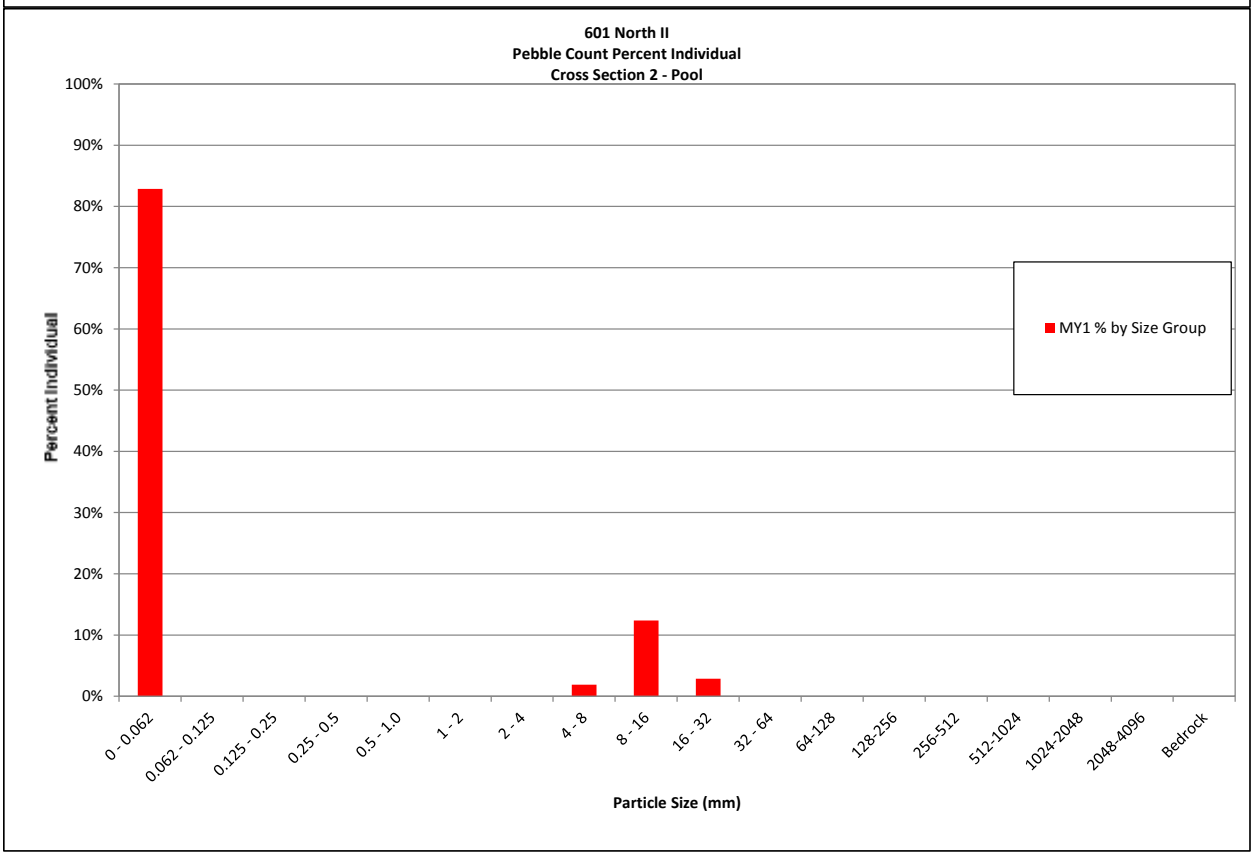

601 North II
Pebble Count Percent Cumulative
Cross Section 1 - Riffle
Cumulative Percent Finer Than
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)


601 North II
Pebble Count Percent Individual
Cross Section 1 - Riffle
Percent Individual
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 % by Size Group
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)

601 North II/ Project No. 95925					
Cross Section 2- Pebble Count Summary Pool					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/ Clay	silt/clay	0.062	87	83%	83%
Sand	very fine sand	0.13	0	0%	83%
	fine sand	0.25	0	0%	83%
	medium sand	0.50	0	0%	83%
	coarse sand	1.00	0	0%	83%
	very coarse sand	2.0	0	0%	83%
Gravel	very fine gravel	4.0	0	0%	83%
	fine gravel	8.0	2	2%	85%
	medium gravel	16.0	13	12%	97%
	coarse gravel	32.0	3	3%	100%
	very coarse gravel	64.0	0	0%	100%
Cobble	medium cobble	128	0	0%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			105	100%	100%

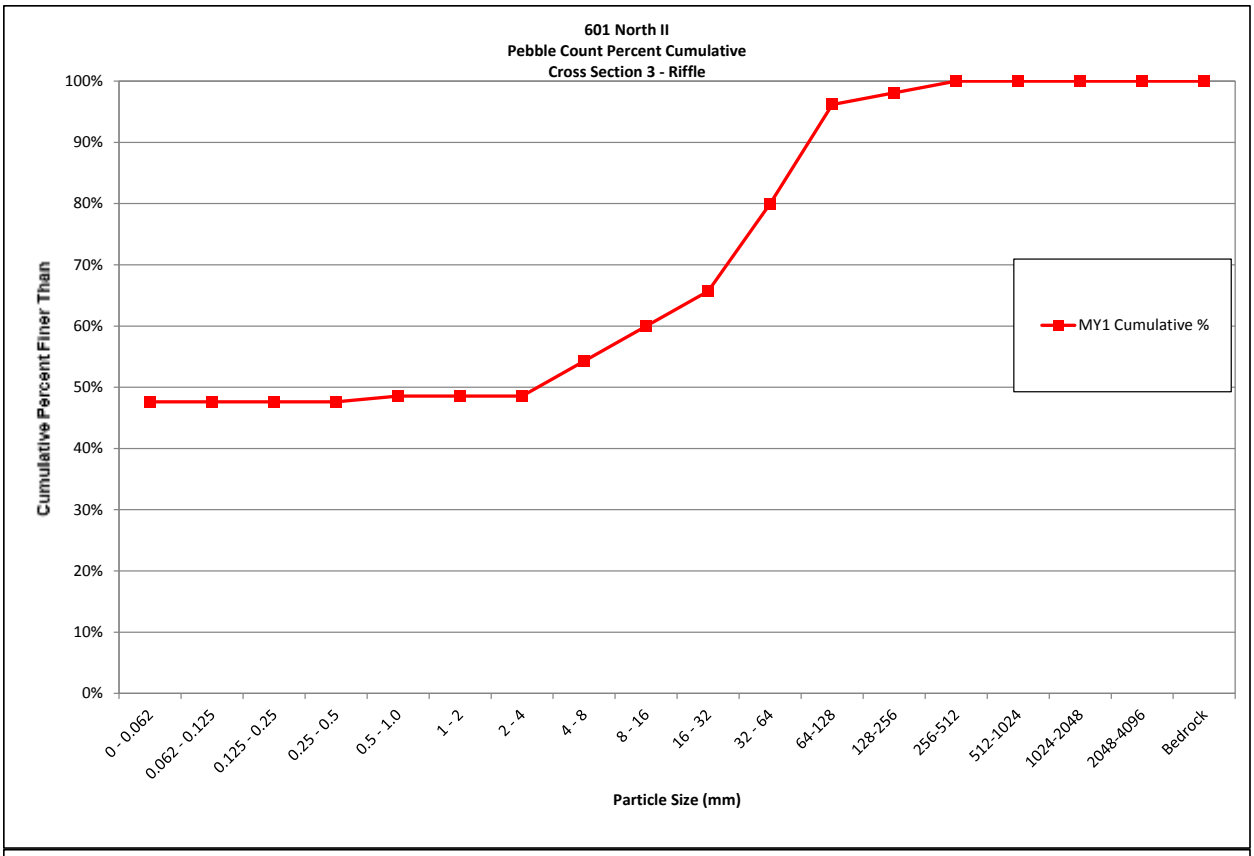
Summary Data	
D50	0.062
D84	7.1
D95	14

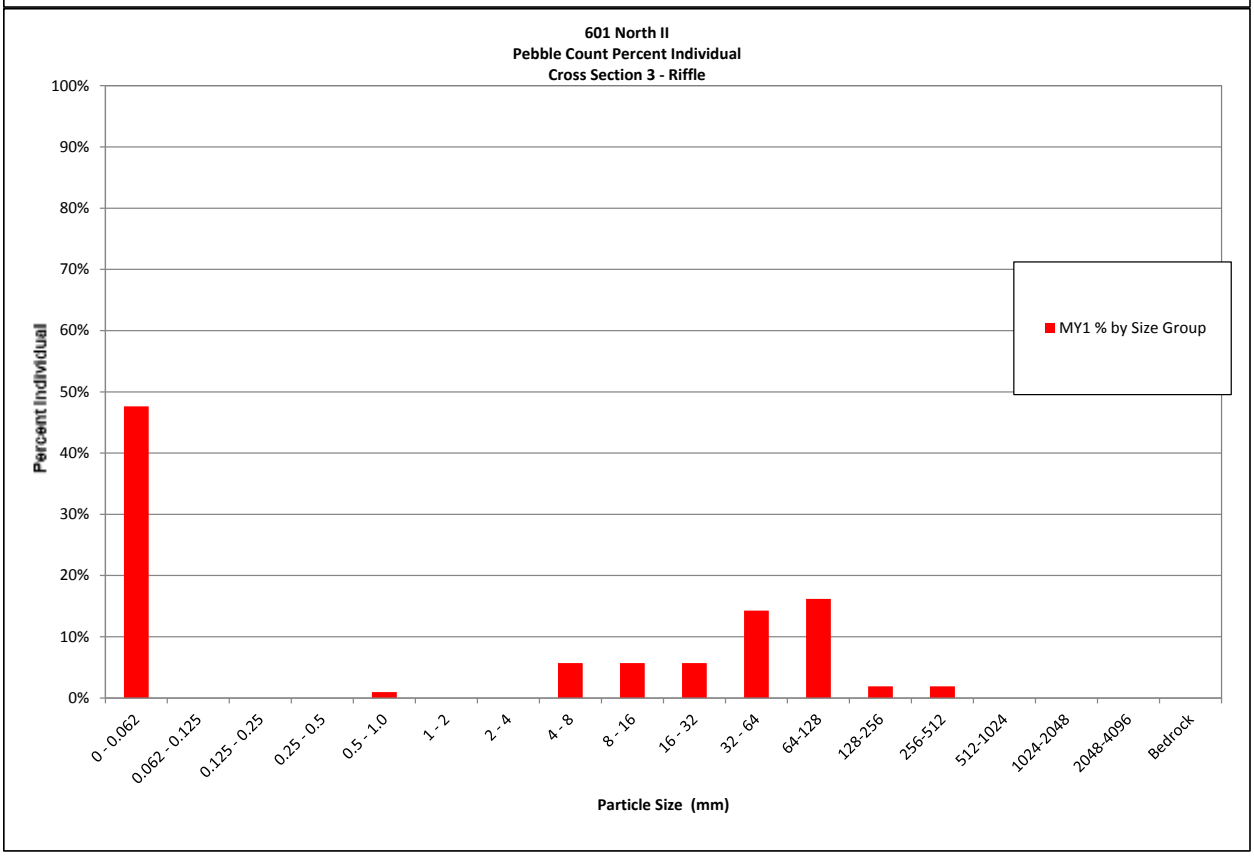

601 North II
Pebble Count Percent Cumulative
Cross Section 2 - Pool
Cumulative Percent Finer Than
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)


601 North II
Pebble Count Percent Individual
Cross Section 2 - Pool
Percent Individual
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 % by Size Group
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)

601 North II/ Project No. 95925					
Cross Section 3- Pebble Count Summary Riffle					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/ Clay	silt/clay	0.062	50	48%	48%
Sand	very fine sand	0.13	0	0%	48%
	fine sand	0.25	0	0%	48%
	medium sand	0.50	0	0%	48%
	coarse sand	1.00	1	1%	49%
	very coarse sand	2.0	0	0%	49%
Gravel	very fine gravel	4.0	0	0%	49%
	fine gravel	8.0	6	6%	54%
	medium gravel	16.0	6	6%	60%
	coarse gravel	32.0	6	6%	66%
	very coarse gravel	64.0	15	14%	80%
Cobble	medium cobble	128	17	16%	96%
	very large cobble	256	2	2%	98%
Boulder	small boulder	512	2	2%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			105	100%	100%

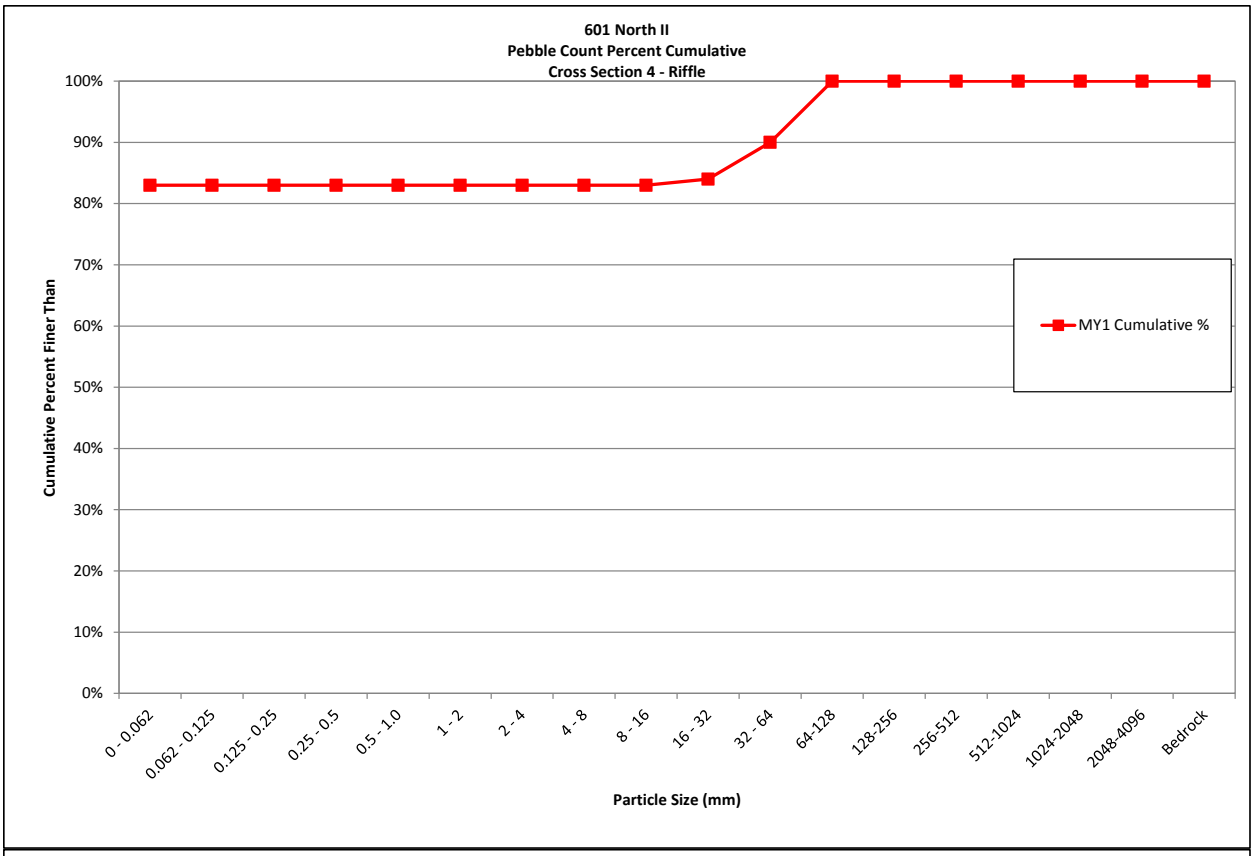
Summary Data	
D50	4.9
D84	79
D95	120

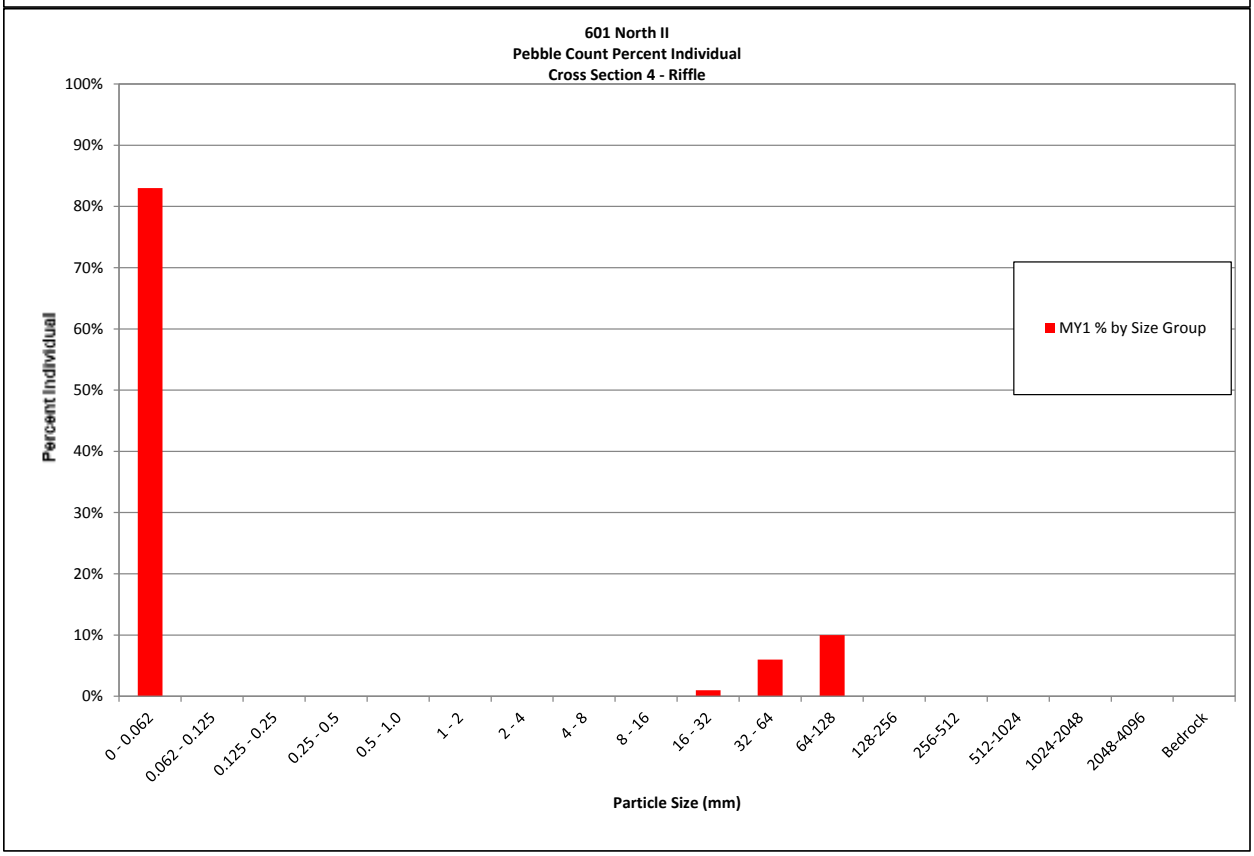

601 North II
Pebble Count Percent Cumulative
Cross Section 3 - Riffle
Cumulative Percent Finer Than
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)


601 North II
Pebble Count Percent Individual
Cross Section 3 - Riffle
Percent Individual
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 % by Size Group
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)

601 North II/ Project No. 95925					
Cross Section 4- Pebble Count Summary Riffle					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/ Clay	silt/clay	0.062	83	83%	83%
Sand	very fine sand	0.13	0	0%	83%
	fine sand	0.25	0	0%	83%
	medium sand	0.50	0	0%	83%
	coarse sand	1.00	0	0%	83%
	very coarse sand	2.0	0	0%	83%
Gravel	very fine gravel	4.0	0	0%	83%
	fine gravel	8.0	0	0%	83%
	medium gravel	16.0	0	0%	83%
	coarse gravel	32.0	1	1%	84%
	very coarse gravel	64.0	6	6%	90%
Cobble	medium cobble	128	10	10%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			100	100%	100%

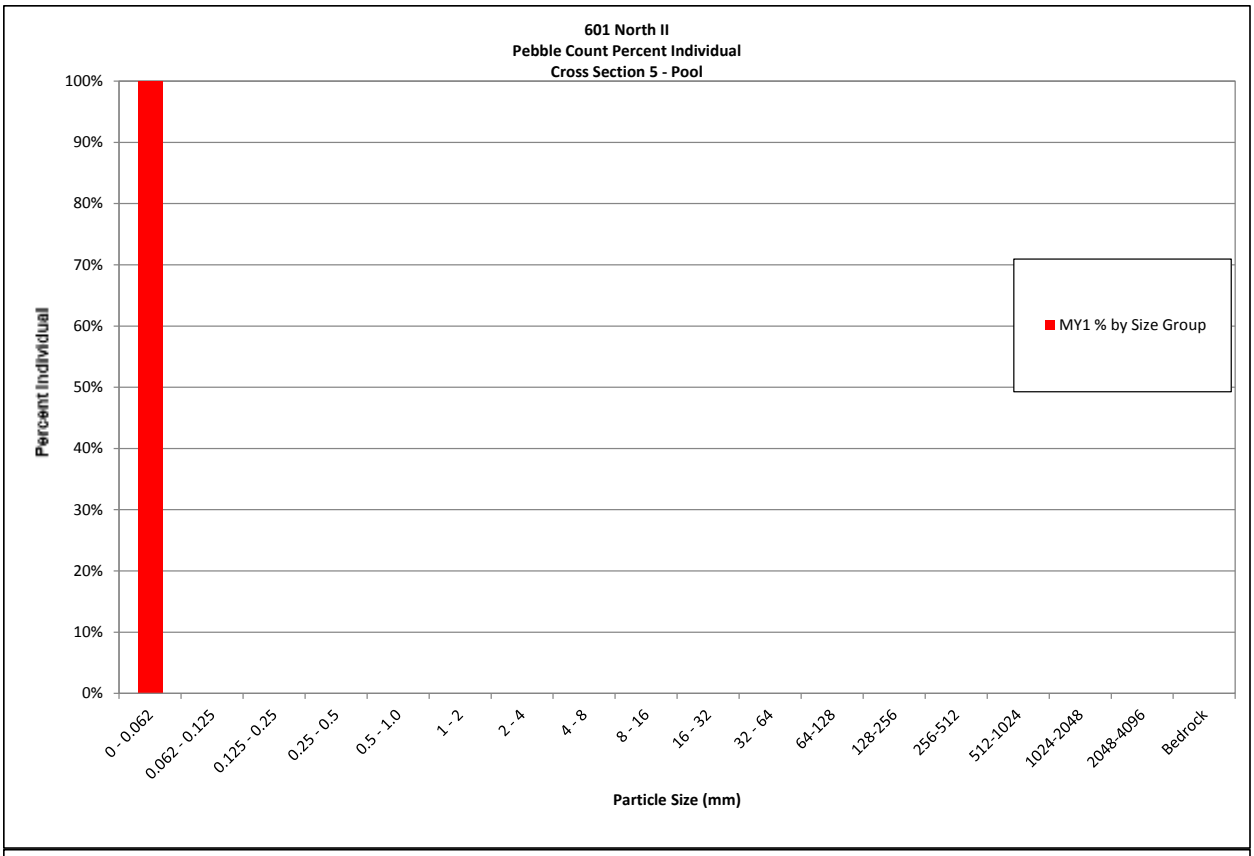
Summary Data	
D50	0.062
D84	22
D95	82

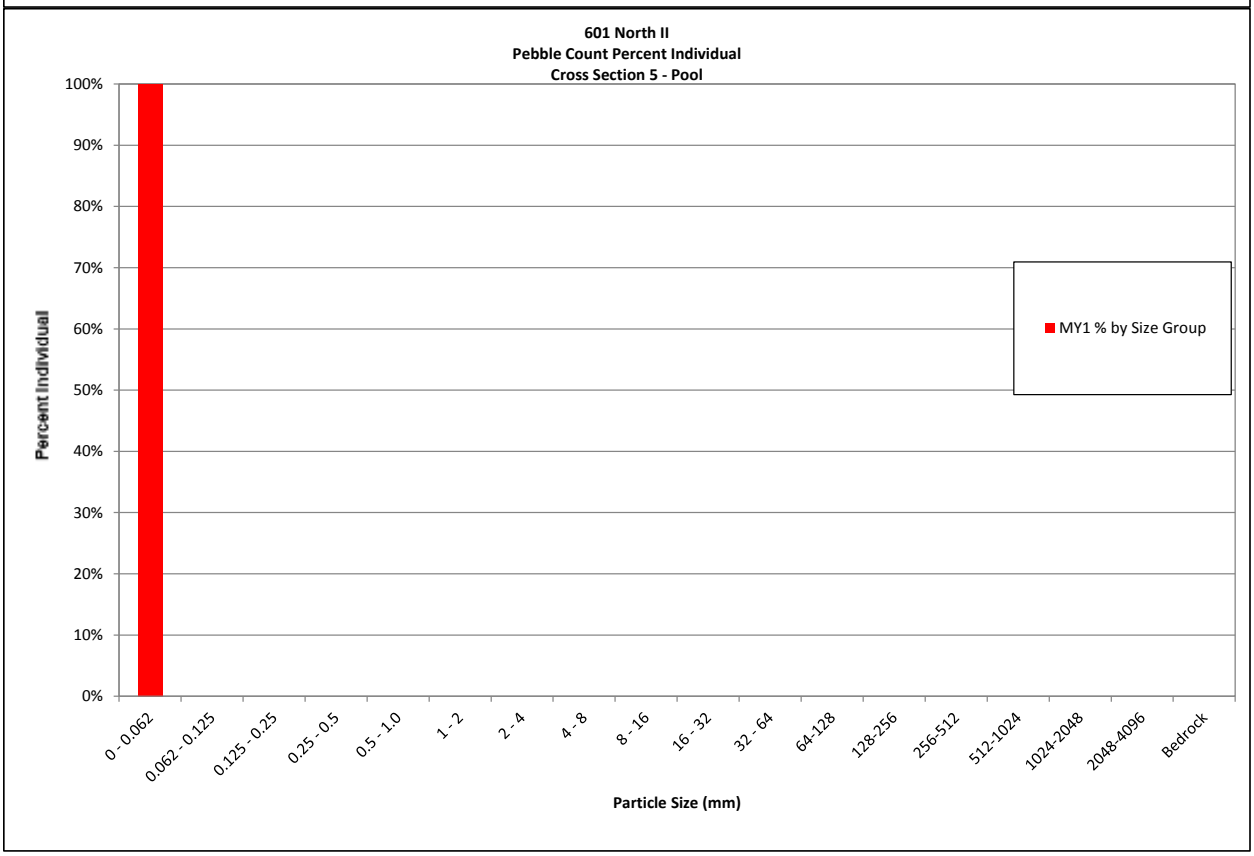

601 North II
Pebble Count Percent Cumulative
Cross Section 4 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Cumulative Percent Finer Than
MY1 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)


601 North II
Pebble Count Percent Individual
Cross Section 4 - Riffle
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent Individual
MY1 % by Size Group
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)

601 North II/ Project No. 95925					
Cross Section 5- Pebble Count Summary Pool					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/ Clay	silt/clay	0.062	100	100%	100%
Sand	very fine sand	0.13	0	0%	100%
	fine sand	0.25	0	0%	100%
	medium sand	0.50	0	0%	100%
	coarse sand	1.00	0	0%	100%
	very coarse sand	2.0	0	0%	100%
Gravel	very fine gravel	4.0	0	0%	100%
	fine gravel	8.0	0	0%	100%
	medium gravel	16.0	0	0%	100%
	coarse gravel	32.0	0	0%	100%
	very coarse gravel	64.0	0	0%	100%
Cobble	medium cobble	128	0	0%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			100	100%	100%

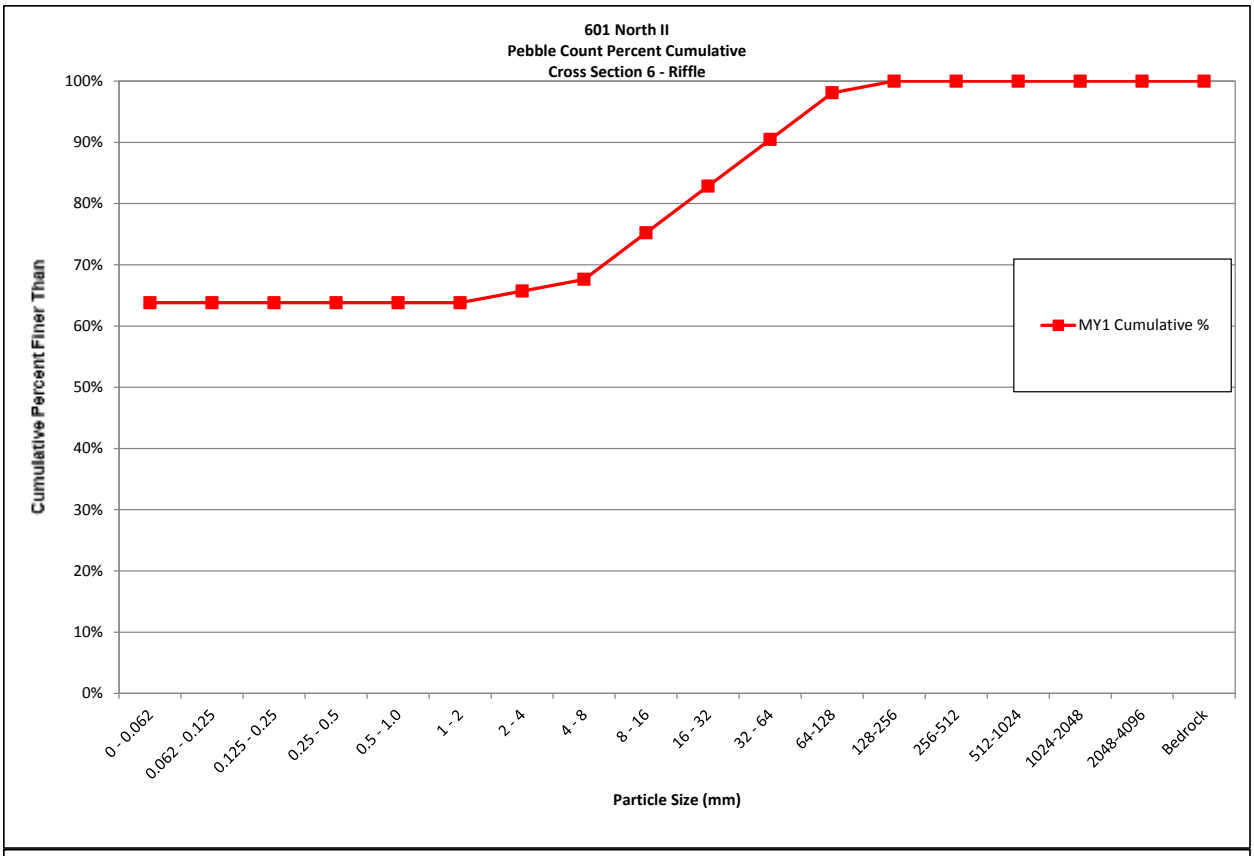
Summary Data	
D50	0.062
D84	0.062
D95	0.062

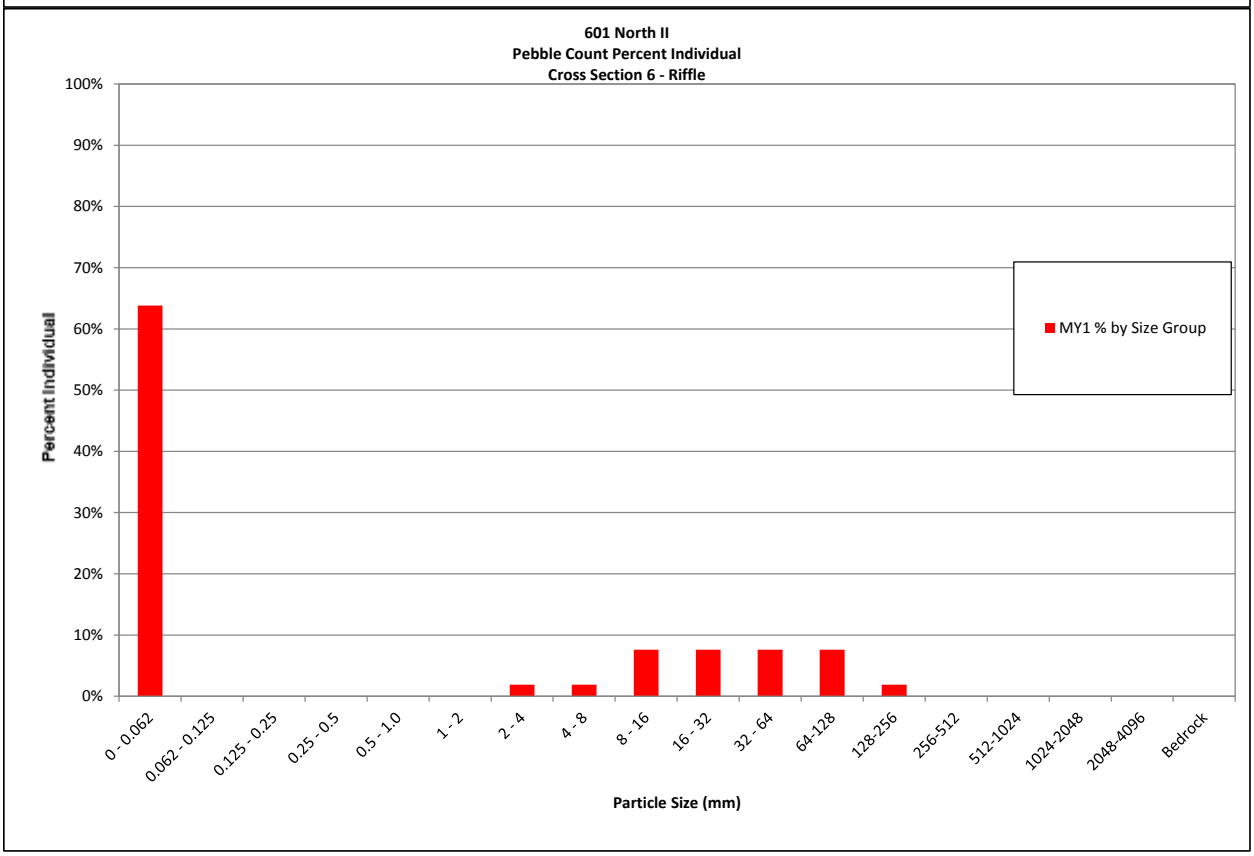

601 North II
Pebble Count Percent Individual
Cross Section 5 - Pool
Percent Individual
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 % by Size Group
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)


601 North II
Pebble Count Percent Individual
Cross Section 5 - Pool
Percent Individual
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 % by Size Group
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)

601 North II/ Project No. 95925					
Cross Section 6- Pebble Count Summary Riffle					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/ Clay	silt/clay	0.062	67	64%	64%
Sand	very fine sand	0.13	0	0%	64%
	fine sand	0.25	0	0%	64%
	medium sand	0.50	0	0%	64%
	coarse sand	1.00	0	0%	64%
	very coarse sand	2.0	0	0%	64%
Gravel	very fine gravel	4.0	2	2%	66%
	fine gravel	8.0	2	2%	68%
	medium gravel	16.0	8	8%	75%
	coarse gravel	32.0	8	8%	83%
	very coarse gravel	64.0	8	8%	90%
Cobble	medium cobble	128	8	8%	98%
	very large cobble	256	2	2%	100%
Boulder	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			105	100%	100%

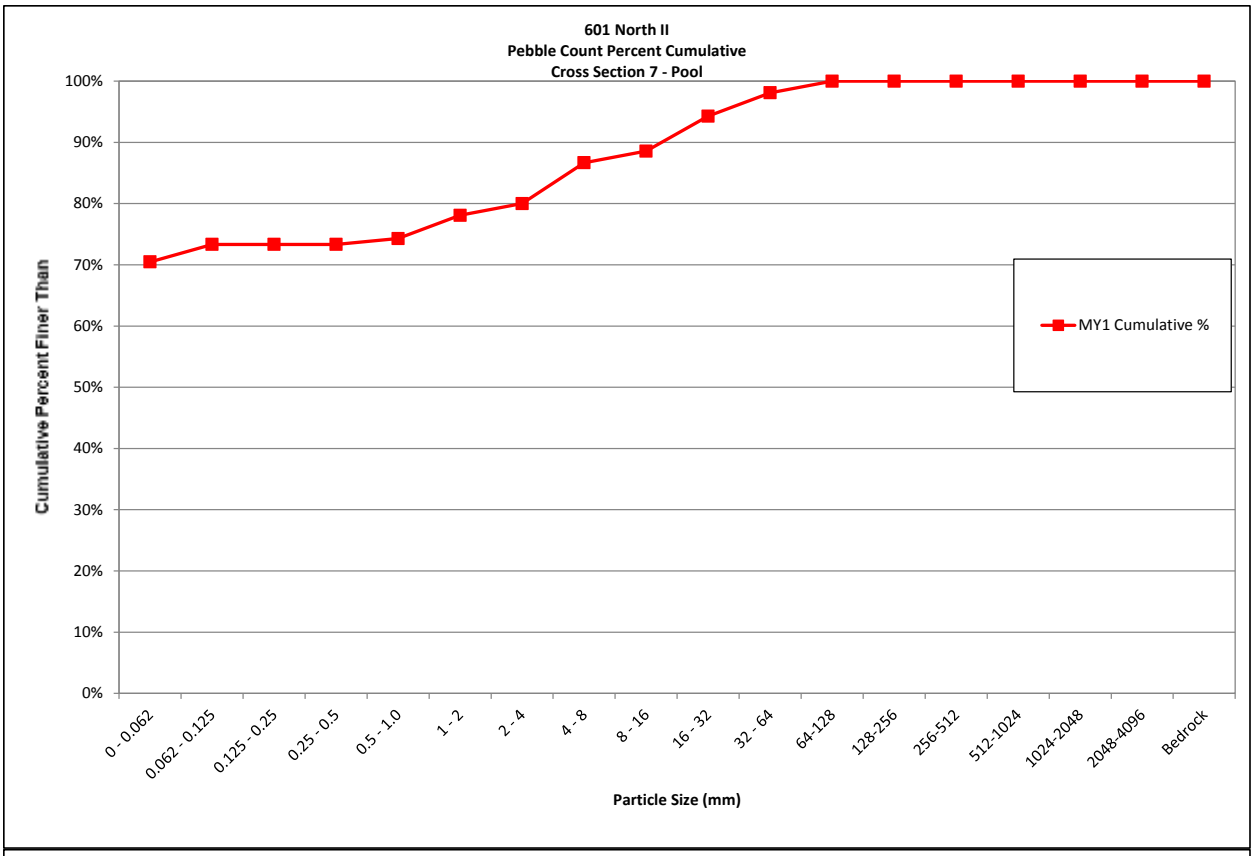
Summary Data	
D50	0.062
D84	45
D95	81

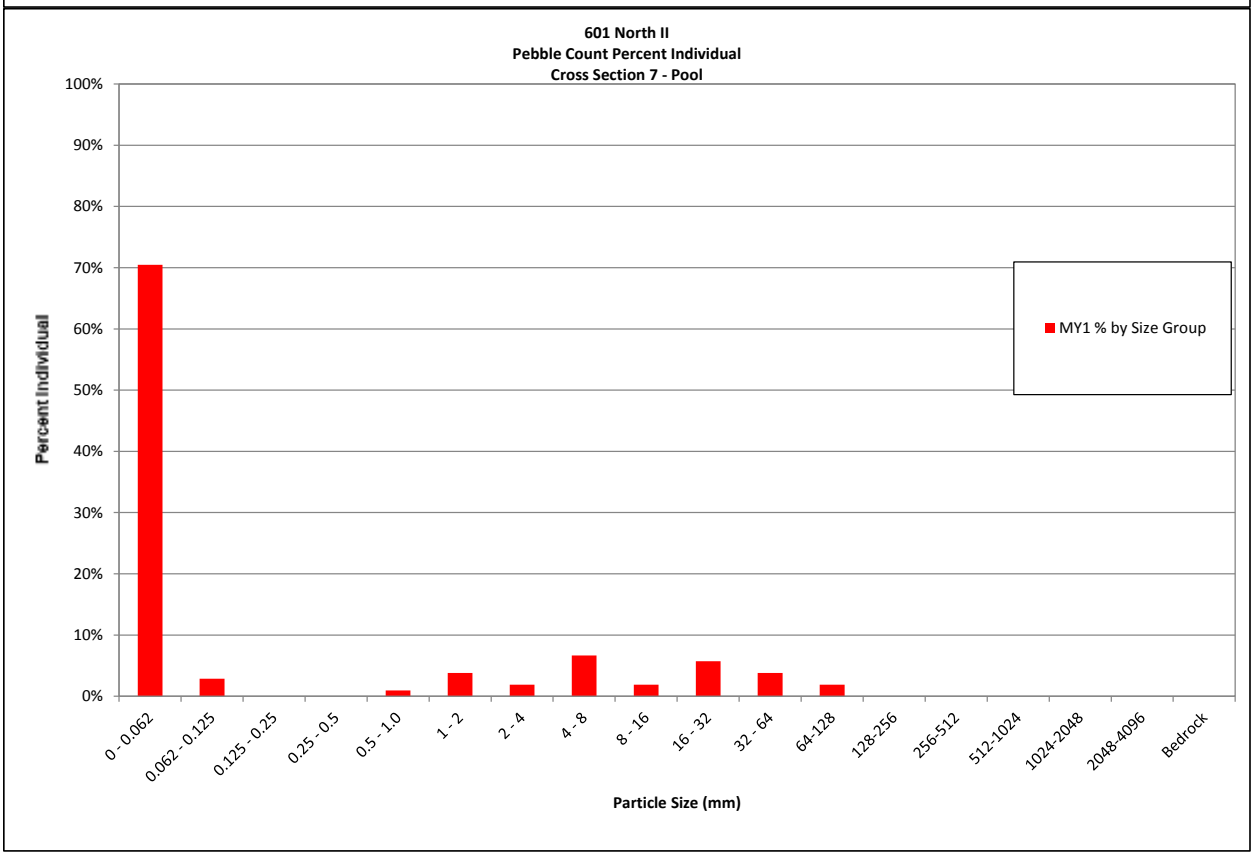

601 North II
Pebble Count Percent Cumulative
Cross Section 6 - Riffle
Cumulative Percent Finer Than
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)


601 North II
Pebble Count Percent Individual
Cross Section 6 - Riffle
Percent Individual
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 % by Size Group
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)

601 North II/ Project No. 95925					
Cross Section 7- Pebble Count Summary Pool					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/ Clay	silt/clay	0.062	74	70%	70%
Sand	very fine sand	0.13	3	3%	73%
	fine sand	0.25	0	0%	73%
	medium sand	0.50	0	0%	73%
	coarse sand	1.00	1	1%	74%
	very coarse sand	2.0	4	4%	78%
Gravel	very fine gravel	4.0	2	2%	80%
	fine gravel	8.0	7	7%	87%
	medium gravel	16.0	2	2%	89%
	coarse gravel	32.0	6	6%	94%
	very coarse gravel	64.0	4	4%	98%
Cobble	medium cobble	128	2	2%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			105	100%	100%

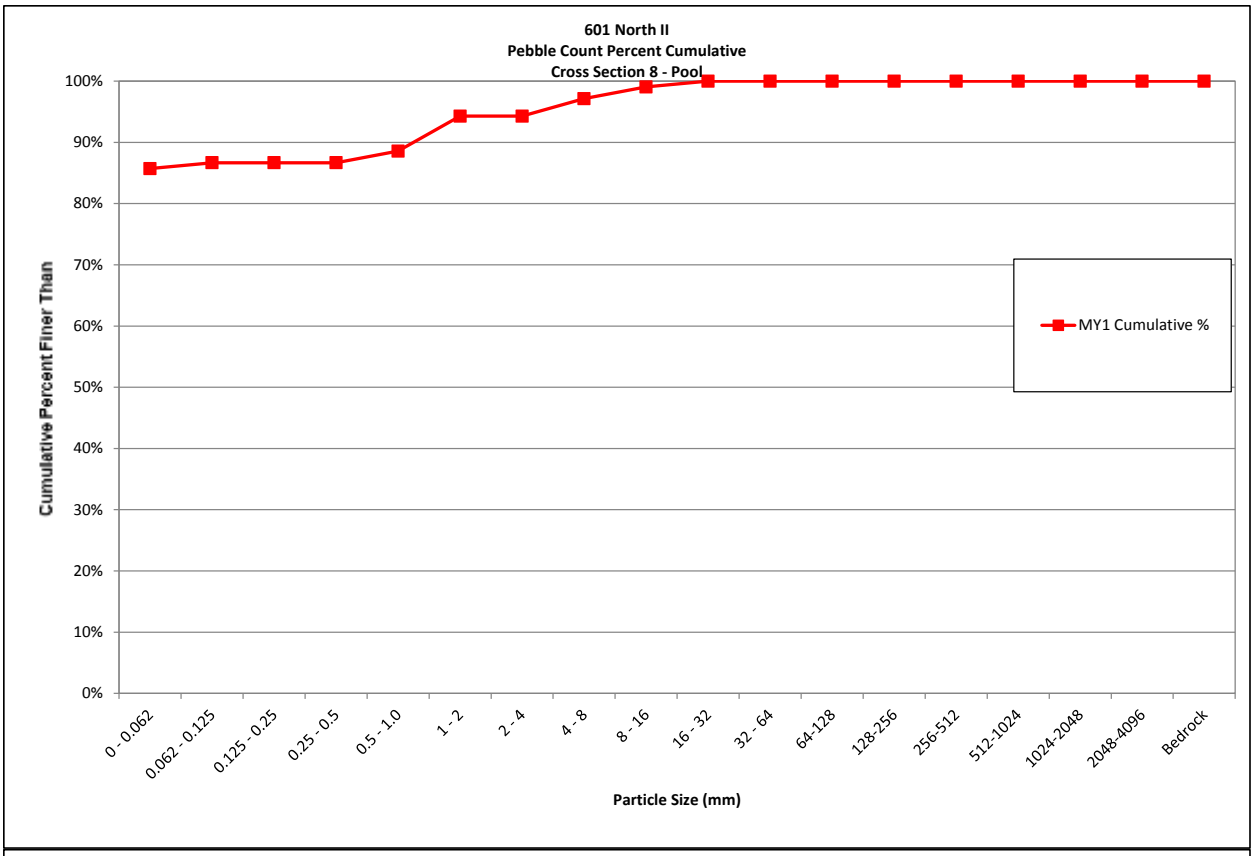
Summary Data	
D50	0.062
D84	5.6
D95	36

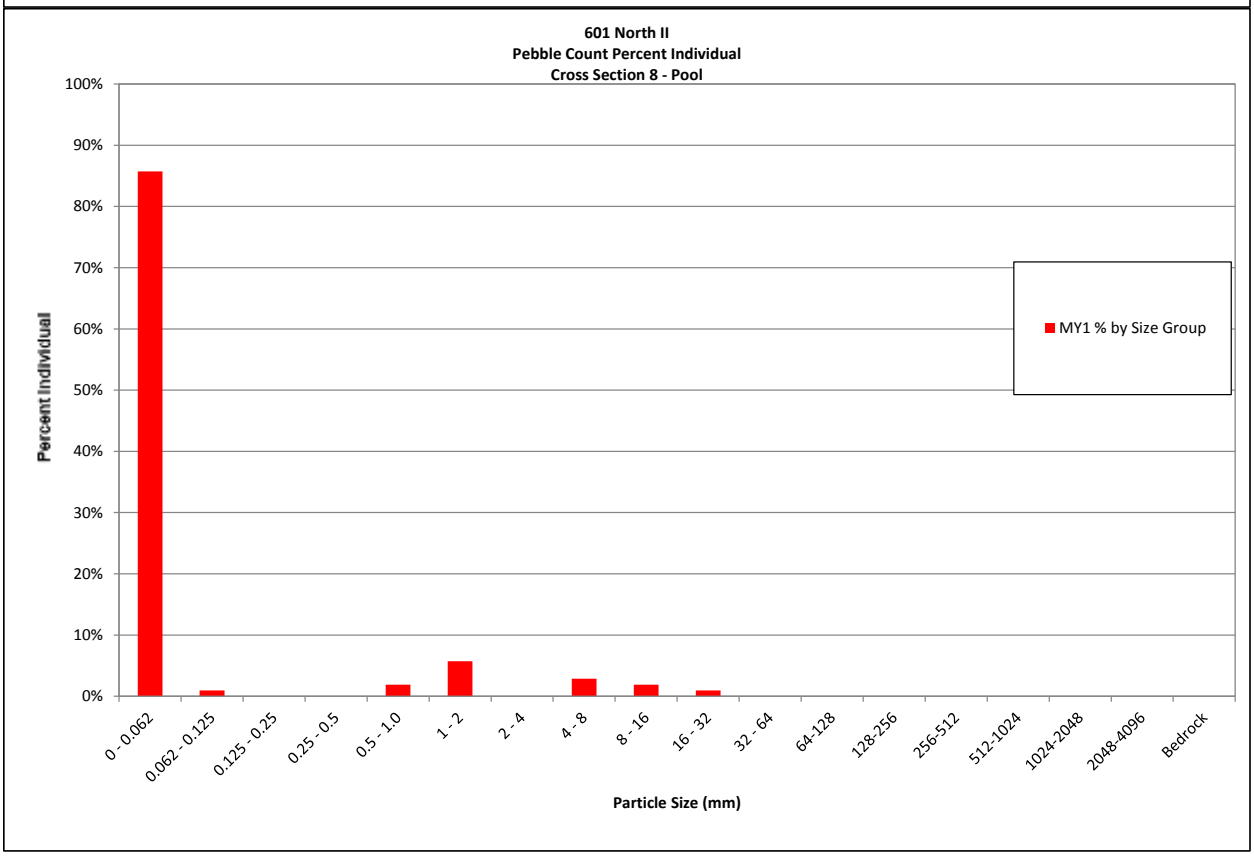

601 North II
Pebble Count Percent Cumulative
Cross Section 7 - Pool
Cumulative Percent Finer Than
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)


601 North II
Pebble Count Percent Individual
Cross Section 7 - Pool
Percent Individual
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 % by Size Group
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)

601 North II/ Project No. 95925					
Cross Section 8- Pebble Count Summary Pool					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/ Clay	silt/clay	0.062	90	86%	86%
Sand	very fine sand	0.13	1	1%	87%
	fine sand	0.25	0	0%	87%
	medium sand	0.50	0	0%	87%
	coarse sand	1.00	2	2%	89%
	very coarse sand	2.0	6	6%	94%
Gravel	very fine gravel	4.0	0	0%	94%
	fine gravel	8.0	3	3%	97%
	medium gravel	16.0	2	2%	99%
	coarse gravel	32.0	1	1%	100%
	very coarse gravel	64.0	0	0%	100%
Cobble	medium cobble	128	0	0%	100%
	very large cobble	256	0	0%	100%
Boulder	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			105	100%	100%

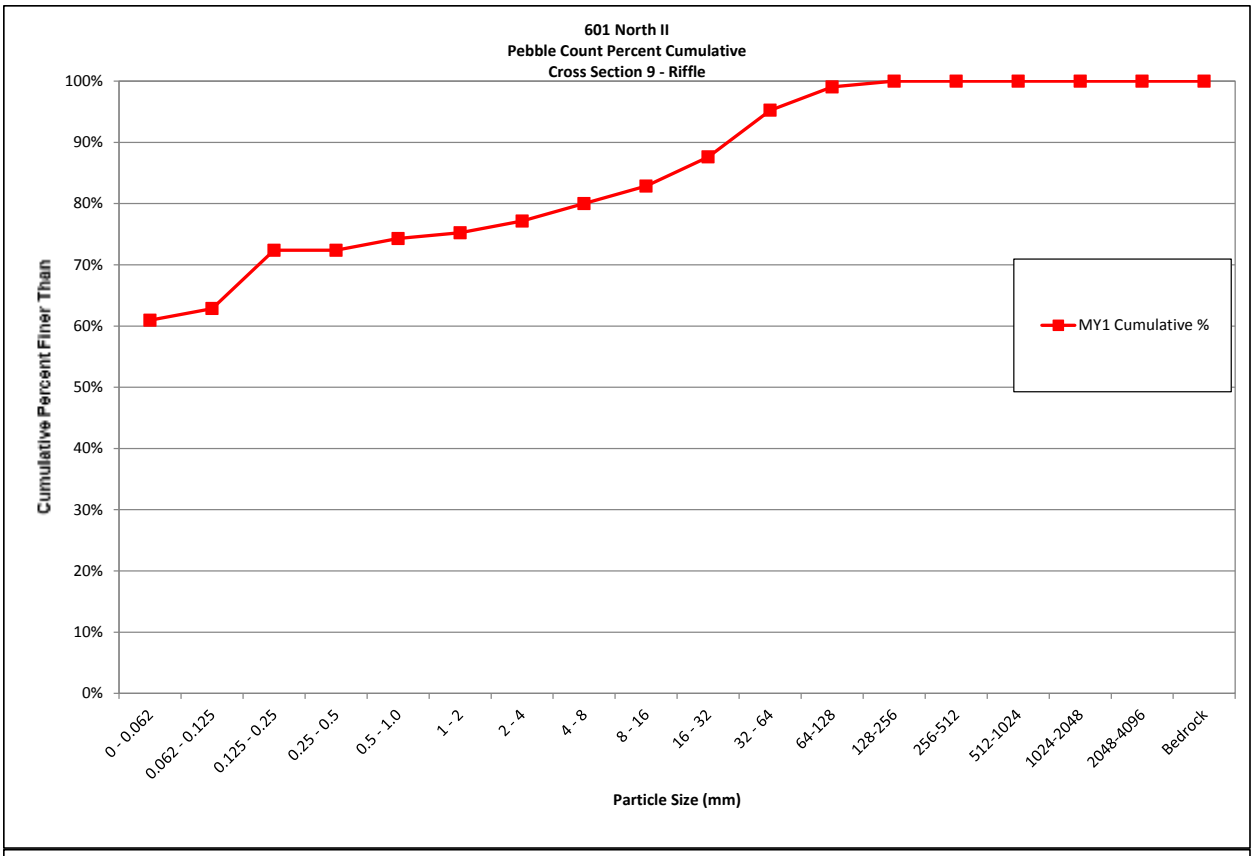
Summary Data	
D50	0.062
D84	0.062
D95	6.4

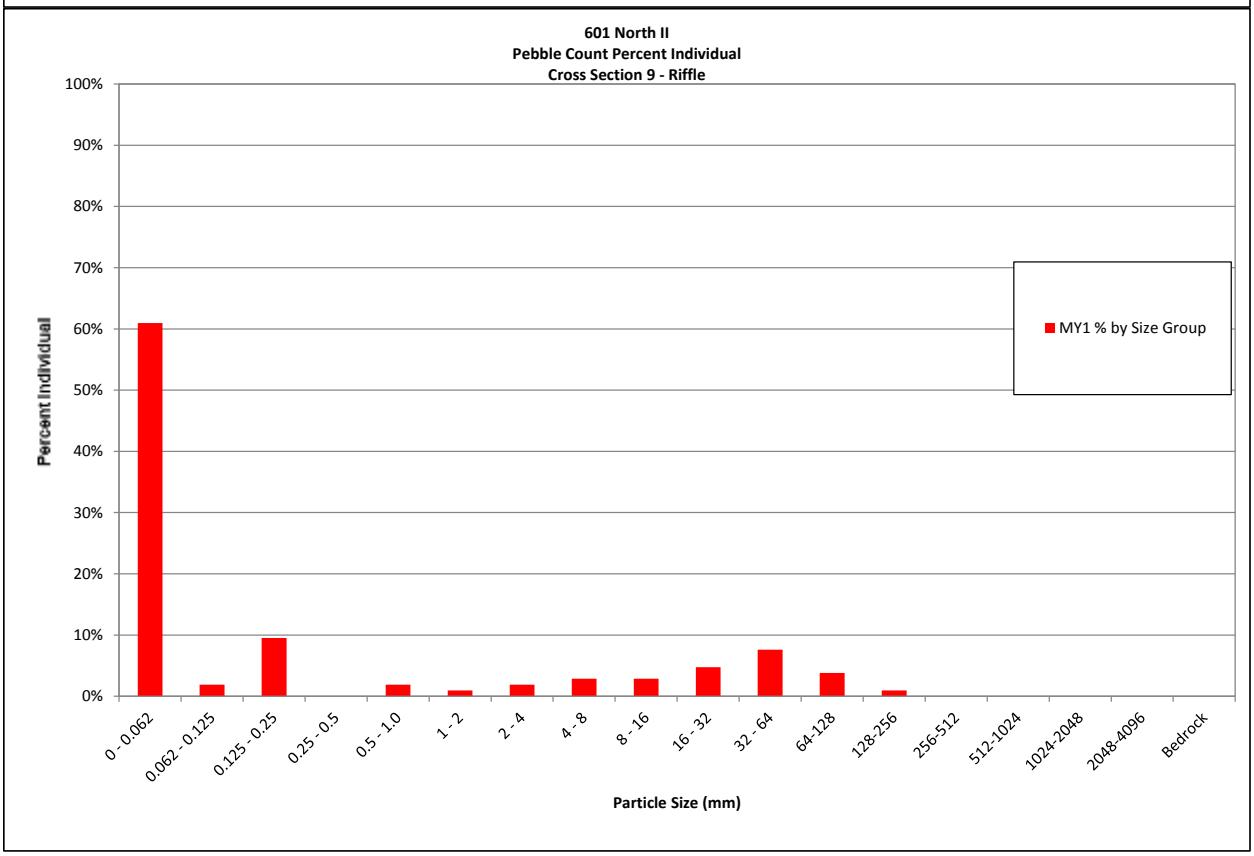

601 North II
Pebble Count Percent Cumulative
Cross Section 8 - Pool
Cumulative Percent Finer Than
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)


601 North II
Pebble Count Percent Individual
Cross Section 8 - Pool
Percent Individual
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 % by Size Group
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)

601 North II/ Project No. 95925					
Cross Section 9- Pebble Count Summary Riffle					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/ Clay	silt/clay	0.062	64	61%	61%
Sand	very fine sand	0.13	2	2%	63%
	fine sand	0.25	10	10%	72%
	medium sand	0.50	0	0%	72%
	coarse sand	1.00	2	2%	74%
	very coarse sand	2.0	1	1%	75%
Gravel	very fine gravel	4.0	2	2%	77%
	fine gravel	8.0	3	3%	80%
	medium gravel	16.0	3	3%	83%
	coarse gravel	32.0	5	5%	88%
	very coarse gravel	64.0	8	8%	95%
Cobble	medium cobble	128	4	4%	99%
	very large cobble	256	1	1%	100%
Boulder	small boulder	512	0	0%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			105	100%	100%

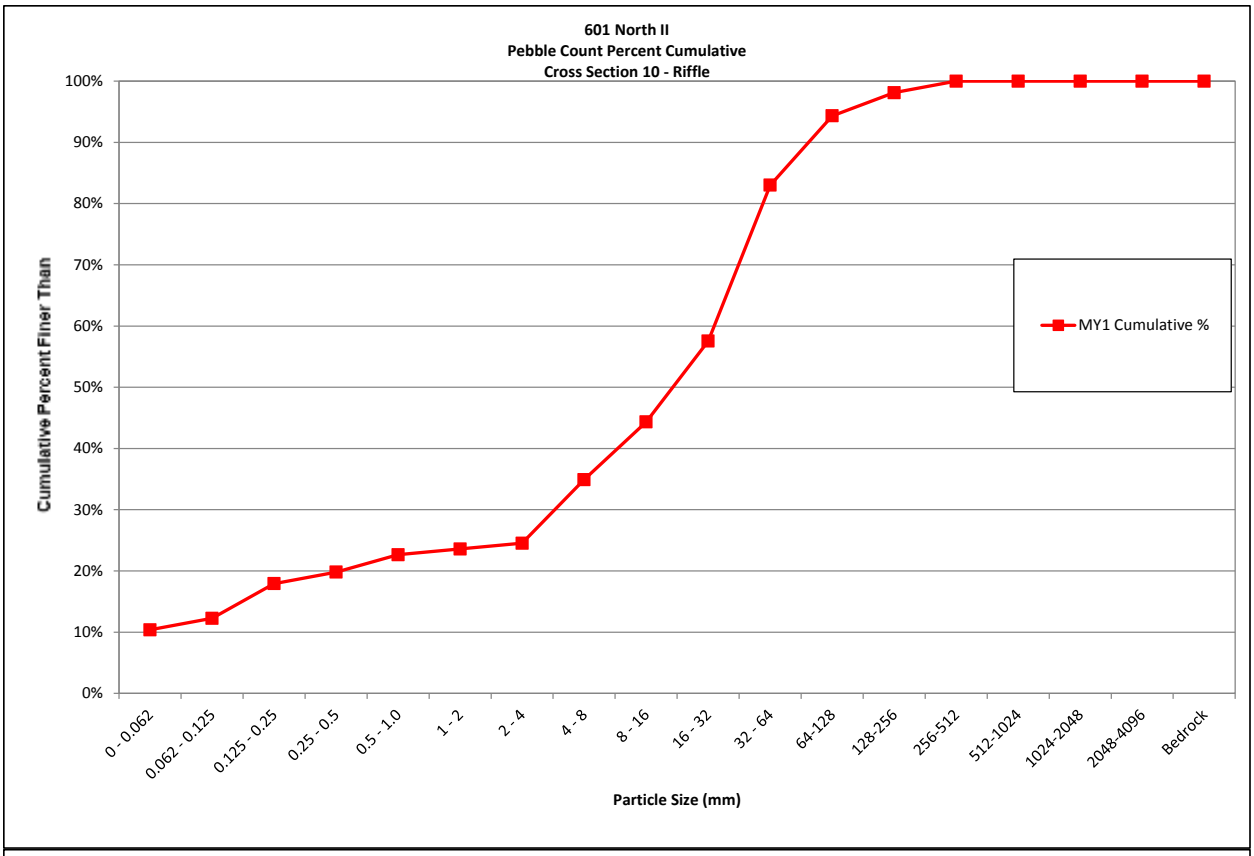
Summary Data	
D50	0.062
D84	22
D95	63


601 North II
Pebble Count Percent Cumulative
Cross Section 9 - Riffle
Cumulative Percent Finer Than
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)


601 North II
Pebble Count Percent Individual
Cross Section 9 - Riffle
Percent Individual
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 % by Size Group
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)

601 North II/ Project No. 95925					
Cross Section 10- Pebble Count Summary Riffle					
			Monitoring Year 1		
Description	**Material**	**Size (mm)**	**Total #**	**Item %**	**Cum %**
Silt/ Clay	silt/clay	0.062	11	10%	10%
Sand	very fine sand	0.13	2	2%	12%
	fine sand	0.25	6	6%	18%
	medium sand	0.50	2	2%	20%
	coarse sand	1.00	3	3%	23%
	very coarse sand	2.0	1	1%	24%
Gravel	very fine gravel	4.0	1	1%	25%
	fine gravel	8.0	11	10%	35%
	medium gravel	16.0	10	9%	44%
	coarse gravel	32.0	14	13%	58%
	very coarse gravel	64.0	27	25%	83%
Cobble	medium cobble	128	12	11%	94%
	very large cobble	256	4	4%	98%
Boulder	small boulder	512	2	2%	100%
	medium boulder	1024	0	0%	100%
	large boulder	2048	0	0%	100%
	very large boulder	4096	0	0%	100%
Bedrock	bedrock	>4096	0	0%	100%
TOTALS			106	100%	100%

Summary Data	
D50	24
D84	68
D95	140


601 North II
Pebble Count Percent Cumulative
Cross Section 10 - Riffle
Cumulative Percent Finer Than
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 Cumulative %
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)

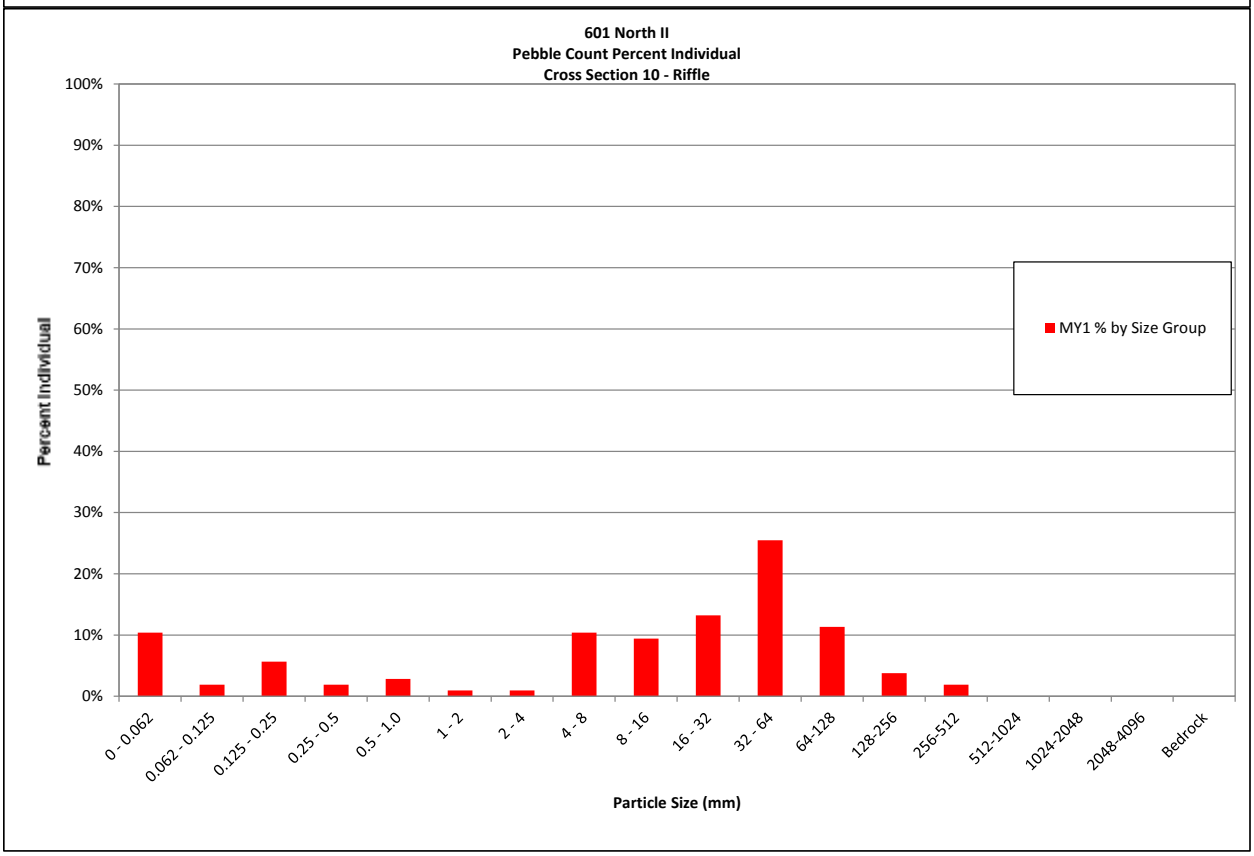

601 North II
Pebble Count Percent Individual
Cross Section 10 - Riffle
Percent Individual
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
MY1 % by Size Group
0 - 0.062
0.062 - 0.125
0.125 - 0.25
0.25 - 0.5
0.5 - 1.0
1 - 2
2 - 4
4 - 8
8 - 16
16 - 32
32 - 64
64-128
128-256
256-512
512-1024
1024-2048
2048-4096
Bedrock
Particle Size (mm)

Table 10. Baseline Stream Data Summary
601 North II Stream Restoration Site – EEP Contract No. 003991- Segment/Reach: Wicker Branch Reach 1 (Sta 0+00 – 6+60)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data (UT to Rays Fork)						Design			Monitoring Baseline					
Dimension and Substrate - Riffle	LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)	---	---	6.8	---	11.7	---	---	---	1	---	8.2	---	---	---	1	---	6.0	---	---	11.4	---	---	---	1
Floodprone Width (ft)				---	15.6	---	---	---	1	---	105.0	---	---	---	1	25	30	35	---	59.7	---	---	---	1
Bankfull Mean Depth (ft)	---	---	1.0	---	0.5	---	---	---	1	---	0.8	---	---	---	1	---	0.9	---	---	0.7	---	---	---	1
[1]Bankfull Max Depth (ft)				---	0.8	---	---	---	1	---	2.2	---	---	---	1	---	1.2	---	---	1.3	---	---	---	1
Bankfull Cross Sectional Area (ft^2)	---	---	8.8	---	5.5	---	---	---	1	---	6.3	---	---	---	1	---	5.5	---	---	7.9	---	---	---	1
Width/Depth Ratio				---	24.9	---	---	---	1	---	10.6	---	---	---	1	---	6.5	---	---	16.6	---	---	---	1
Entrenchment Ratio				---	1.3	---	---	---	1	---	12.8	---	---	---	1	4.2	5.0	5.8	---	5.2	---	---	---	1
[1]Bank Height Ratio				---	2.6	---	---	---	1	---	1.0	---	---	---	1	---	1.0	---	---	1.0	---	---	---	1
d50 (mm)				---	<2.0	---	---	---	1	---	6.5	---	---	---	1	16	24	32	---	28.7	---	---	---	1
Profile																								
Riffle Length (ft)				The existing stream channel did not display riffle-pool sequencing due to historic dredging and straightening.						3.3	7.5	---	15.5	---	---	5.0	8.0	15.0	4.2	12.3	11.5	33.3	6.0	22
Riffle Slope (ft/ft)										0.007	0.042	---	0.085	---	---	0.008	0.023	0.040	0.001	0.017	0.017	0.043	0.013	22
Pool Length (ft)										9.0	13.0	---	19.0	---	---	9.0	13.0	19.0	4.7	10.8	10.4	20.0	4.2	20
Pool Max depth (ft)										0.8	1.3	---	1.9	---	---	---	2.0	---	1.4	1.9	1.9	2.2	0.2	20
Pool Spacing (ft)										14.0	21.0	---	32.0	---	---	14.0	30.0	65.0	18.4	30.7	26.9	57.8	10.0	19
Pattern																								
Channel Beltwidth (ft)				The existing stream channel did not display plan form geometry due to historic dredging and straightening						12.0	19.0	---	23.0	---	---	12.0	19.0	26.0	13.4	20.1	20.2	29.7	4.0	21
Radius of Curvature (ft)										10.0	16.0	---	39.0	---	---	12.0	18.0	39.0	14.4	17.9	16.4	27.7	3.9	23
Rc:Bankfull width (ft/ft)										1.2	2.0	---	4.8	---	---	1.9	2.9	6.5	1.3	1.6	1.4	2.4	0.3	23
Meander Wavelength (ft)										31.4	45.3	---	61.4	---	---	36.0	53.0	73.0	13.7	51.5	51.8	87.9	15.3	21
Meander Width Ratio										1.5	2.3	---	2.8	---	---	2.0	3.1	4.4	1.2	4.5	4.5	7.7	1.3	21
Substrate, bed, and transport parameters																								
[4]d16 / d35 / d50 / d84 / d95 / dip / disp (mm)				<2	<2	<2	<2	<2	<2	<2	6.3	10.6	17.3	57.9	113.9	76.0	123.0							
Reach Shear Stress (competency) lb/f^2				---														0.5	0.4					
Max part size (mm) mobilized at bankfull				---														74.6	77.5					
Stream Power (transport capacity) W/m^2				---														1.6	1.0					
Additional Reach Parameters																								
Drainage Area (SM)				0.3						0.19														
Impervious Surface estimate (%)				<1						<1														
Rosgen Classification				F6						E4								E4	C4					
Bankfull Velocity (fps)	---	---	---	HEC-RAS: 2.8 (1.3-3.9)														HEC-RAS: 3.5 (3.3-4.1)	3.5					
Bankfull Discharge (cfs)	---	---	34.7	19.6																				
Valley length (ft)				610						240														
Channel Thalweg length (ft)				630						284								707	660					
Sinuosity (ft)				1.0						1.2								1.2	1.1					
BF slope (ft/ft)				0.009						0.016								0.008	0.009					
BEHI VL% / L% / M% / H% / VH% / E%				100	0	0	0	0	0	---	---	---	---	---	---									

Table 10 cont'd. Baseline Stream Data Summary
601 North II Stream Restoration Site – EEP Contract No. 003991- Segment/Reach: Wicker Branch Reach 2 (6+60-24+35)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data (UT to Rays Fork)						Design			Monitoring Baseline					
Dimension and Substrate - Riffle	LL	UL	Eq.	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Max	Min	Mean	Med	Max	SD	n
Bankfull Width (ft)	---	---	8.4	10.8	12.0	12.0	13.1	1.6	2	---	8.2	---	---	---	1	---	8.0	---	11.5	11.6	11.6	11.6	0.1	2
Floodprone Width (ft)				30.3	78.3	78.3	126.2	67.8	2	---	105.0	---	---	---	1	35.0	47.5	60.0	69.2	69.5	69.5	69.7	0.4	2
Bankfull Mean Depth (ft)	---	---	1.2	0.9	1.0	1.0	1.0	0.1	2	---	0.8	---	---	---	1	---	1.3	---	1.1	1.1	1.1	1.1	0.0	2
[1]Bankfull Max Depth (ft)				1.3	1.4	1.4	1.5	0.1	2	---	2.2	---	---	---	1	---	1.7	---	1.7	1.8	1.8	1.8	0.1	2
Bankfull Cross Sectional Area (ft^2)	---	---	12.5	10.5	11.1	11.1	11.7	0.8	2	---	6.3	---	---	---	1	---	10.5	---	12.1	12.6	12.6	13.0	0.6	2
Width/Depth Ratio				11.0	12.9	12.9	14.7	2.6	2	---	10.6	---	---	---	1	---	6.1	---	10.4	10.6	10.6	10.8	0.3	2
Entrenchment Ratio				2.3	7.0	7.0	11.7	6.6	2	---	12.8	---	---	---	1	4.3	5.9	7.5	6.0	6.0	6.0	6.0	0.0	2
[1]Bank Height Ratio				1.3	1.6	1.6	1.8	0.4	2	---	1.0	---	---	---	1	---	1.0	---	1.0	1.0	1.0	1.0	0.0	2
d50 (mm)					23.0				1	---	17.3	---	---	---	1	16.0	24.0	32.0	19.3	21.4	21.4	23.5	3.0	2
Profile																								
Riffle Length (ft)				The existing stream channel did not display riffle-pool sequencing due to historic dredging and straightening.						3.3	7.5	---	15.5	---	---	5.0	15.0	25.0	6.3	17.3	18.1	38.7	7.5	33
Riffle Slope (ft/ft)										0.0073	0.0422	---	0.085	---	---	0.005	0.016	0.03	0.001	0.017	0.013	0.062	0.013	33
Pool Length (ft)										9.0	13.0	---	19.0	---	---	5.0	22.0	40.0	6.1	24.2	23.7	62.0	11.9	33
Pool Max depth (ft)										0.8	1.3	---	1.9	---	---	---	2.8	---	1.7	2.9	2.8	3.8	0.4	33
Pool Spacing (ft)										14.0	21.0	---	32.0	---	---	30.0	52.0	80.0	25.5	53.6	53.2	103.3	19.5	32
Pattern																								
Channel Beltwidth (ft)				The existing stream channel did not display plan form geometry due to historic dredging and straightening						12.0	19.0	---	23.0	---	---	16.0	33.0	50.0	18.3	31.1	30.6	49.5	8.8	24
Radius of Curvature (ft)										10.0	16.0	---	39.0	---	---	21.0	38.0	67.0	28.3	40.2	37.8	61.8	10.1	28
Rc:Bankfull width (ft/ft)										1.2	2.0	---	4.8	---	---	2.6	4.8	8.4	2.4	3.5	3.3	5.3	0.9	28
Meander Wavelength (ft)										31.4	45.3	---	61.4	---	---	61.0	104.0	148.0	13.7	114.4	113.3	226.5	46.9	24
Meander Width Ratio										1.5	2.3	---	2.8	---	---	1.9	3.7	5.7	1.2	9.9	9.8	19.5	4.0	24
Substrate, bed, and transport parameters																								
[4]d16 / d35 / d50 / d84 / d95 / dip / disp (mm)				2.9	9.2	23.0	75.8	92.4	100.0	68.	6.3	10.6	17.3	57.9	113.	76.0	123.0							
Reach Shear Stress (competency) lb/f^2				0.5															0.7				0.5	
Max part size (mm) mobilized at bankfull				88.0															116.9				91.3	
Stream Power (transport capacity) W/m^2				2.3															3.2				1.8	
Additional Reach Parameters																								
Drainage Area (SM)				0.5						0.19														
Impervious Surface estimate (%)				<1						<1														
Rosgen Classification				E1/C1						E4									E4				E4	
Bankfull Velocity (fps)	---	---	---	HEC-RAS: 2.7 (1.2-5.2)															HEC-RAS: 4.3 (3.3-5.1)				4.0 (XS6) – 4.1 (XS9)	
Bankfull Discharge (cfs)	---	---	50.1	48.5																				
Valley length (ft)				1400						240													1550	
Channel Thalweg length (ft)				1356						284									1653				1775	
Sinuosity (ft)				1.0						1.2									1.2				1.2	
BF slope (ft/ft)				0.009						0.016									0.009				0.007	
BEHI VL% / L% / M% / H% / VH% / E%				7	0	0	48	10	35	---	---	---	---	---	---									

Table 10 cont'd. Baseline Stream Data Summary
601 North II Stream Restoration Site – EEP Contract No. 003991- Segment/Reach: Wicker Branch Reach 3 (24+35-27+08)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data (UT to Rays						Design			Monitoring Baseline					
Dimension and Substrate - Riffle	LL	UL	Eq.	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Max	Min	Mean	Med	Max	SD	n
Bankfull Width (ft)	---	---	9.3	---	10.0	---	---	---	1	---	8.2	---	---	---	1	---	10.0	---	---	---	---	---	---	---
Floodprone Width (ft)				---	11.9	---	---	---	1	---	105.0	---	---	---	1	40.0	55.0	70.0	---	---	---	---	---	---
Bankfull Mean Depth (ft)	---	---	1.3	---	1.4	---	---	---	1	---	0.8	---	---	---	1	---	1.4	---	---	---	---	---	---	---
[1]Bankfull Max Depth (ft)				---	1.9	---	---	---	1	---	2.2	---	---	---	1	---	1.8	---	---	---	---	---	---	---
Bankfull Cross Sectional Area (ft^2)	---	---	14.6	---	14.1	---	---	---	1	---	6.3	---	---	---	1	---	14.1	---	---	---	---	---	---	---
Width/Depth Ratio				---	7.0	---	---	---	1	---	10.6	---	---	---	1	---	7.1	---	---	---	---	---	---	---
Entrenchment Ratio				---	1.2	---	---	---	1	---	12.8	---	---	---	1	4.0	5.5	7.0	---	---	---	---	---	---
[1]Bank Height Ratio				---	2.0	---	---	---	1	---	1.0	---	---	---	1	---	1.0	---	---	---	---	---	---	---
d50 (mm)				---	8.0	---	---	---	1	---	17.3	---	---	---	1	16.0	24.0	32.0	---	---	---	---	---	---
Profile																								
Riffle Length (ft)				The existing stream channel did not display riffle-pool sequencing due to historic dredging and straightening.						3.3	7.5	---	15.5	---	---	10.0	20.0	30.0	---	---	---	---	---	---
Riffle Slope (ft/ft)										0.007	0.0422	---	0.0854	---	---	0.009	0.016	0.03	---	---	---	---	---	---
Pool Length (ft)										9.0	13.0	---	19.0	---	---	5.0	24.0	50.0	---	---	---	---	---	---
Pool Max depth (ft)										0.8	1.3	---	1.9	---	---	---	3.0	---	---	---	---	---	---	---
Pool Spacing (ft)										14.0	21.0	---	32.0	---	---	30.0	61.0	95.0	---	---	---	---	---	---
Pattern																								
Channel Beltwidth (ft)				The existing stream channel did not display plan form geometry due to historic dredging and straightening						12.0	19.0	---	23.0	---	---	23.0	41.0	57.0	---	---	---	---	---	---
Radius of Curvature (ft)										10.0	16.0	---	39.0	---	---	30.0	37.0	40.0	---	---	---	---	---	---
Rc:Bankfull width (ft/ft)										1.2	2.0	---	4.8	---	---	3.0	3.7	4.0	---	---	---	---	---	---
Meander Wavelength (ft)										31.4	45.3	---	61.4	---	---	112.0	127.0	142.0	---	---	---	---	---	---
Meander Width Ratio										1.5	2.3	---	2.8	---	---	2.3	4.1	5.7	---	---	---	---	---	---
Substrate, bed, and transport parameters																								
[4]d16 / d35 / d50 / d84 / d95 / dip / disp (mm)				2.0	5.2	8.0	20.3	29.7	34.0	45.0	6.3	10.6	17.3	57.9	113.9	76.0	123.0							
Reach Shear Stress (competency) lb/f^2				0.75														0.73	---					
Max part size (mm) mobilized at bankfull				123														120	---					
Stream Power (transport capacity) W/m^2				3.7														3.6	---					
Additional Reach Parameters																								
Drainage Area (SM)				0.6							0.19													
Impervious Surface estimate (%)				<1							<1													
Rosgen Classification				G4							E4							E4	---					
Bankfull Velocity (fps)	---	---	---	HEC-RAS: 3.6 (2.4-4.8)							---							HEC-RAS: 4.0 (3.2-4.7)	---					
Bankfull Discharge (cfs)	---	---	59.4	69.2																				
Valley length (ft)				360							240								235					
Channel Thalweg length (ft)				414							284							470	273					
Sinuosity (ft)				1.2							1.2							1.2	1.2					
BF slope (ft/ft)				0.009							0.016							0.008	---					
BEHI VL% / L% / M% / H% / VH% / E%				0	0	0	0	0	100		---	---	---	---	---	---	---							

Table 10 cont'd. Baseline Stream Data Summary
601 North II Stream Restoration Site – EEP Contract No. 003991- Segment/Reach: UT to Wicker Branch Reach 5 (8+40-14+86)

Parameter	Regional Curve			Pre-Existing Condition						Reference Reach Data (UT to Rays						Design			Monitoring Baseline					
Dimension and Substrate - Riffle	LL	UL	Eq.	Min	Mean	Med	Max	SD	n	Min	Mean	Med	Max	SD	n	Min	Mean	Max	Min	Mean	Med	Max	SD	n
Bankfull Width (ft)	---	---	5.1	---	8.6	---	---	---	1	---	8.2	---	---	---	---	---	6.0	---	---	11.0	---	---	---	1
Floodprone Width (ft)				---	12.4	---	---	---	1	---	105.0	---	---	---	---	20.0	25.0	30.0	---	65.5	---	---	---	1
Bankfull Mean Depth (ft)	---	---	0.8	---	0.6	---	---	---	1	---	0.8	---	---	---	---	---	0.9	---	---	0.8	---	---	---	1
[1]Bankfull Max Depth (ft)				---	0.9	---	---	---	1	---	2.2	---	---	---	---	---	1.2	---	---	1.3	---	---	---	1
Bankfull Cross Sectional Area (ft^2)	---	---	5.6	---	5.4	---	---	---	1	---	6.3	---	---	---	---	---	5.5	---	---	8.5	---	---	---	1
Width/Depth Ratio				---	13.7	---	---	---	1	---	10.6	---	---	---	---	---	6.5	---	---	14.1	---	---	---	1
Entrenchment Ratio				---	1.4	---	---	---	1	---	12.8	---	---	---	---	3.3	4.1	5.0	---	6.0	---	---	---	1
[1]Bank Height Ratio				---	2.3	---	---	---	1	---	1.0	---	---	---	---		1.0		---	1.0	---	---	---	1
d50 (mm)				---	49.4	---	---	---	1	---	17.3	---	---	---	---	16.0	24.0	32.0	---	25.7	---	---	---	1
Profile*																								
Riffle Length (ft)				The existing stream channel did not display riffle-pool sequencing due to historic dredging and straightening.						3.3	7.5	---	15.5	---	---	5.0	10.0	15.0	5.1	12.8	12.4	23.2	4.5	16
Riffle Slope (ft/ft)										0.0073	0.0422	---	0.0854	---	---	0.010	0.025	0.060	0.001	0.016	0.016	0.035	0.010	16
Pool Length (ft)										9.0	13.0	---	19.0	---	---	4.0	12.0	27.0	3.2	12.4	12.3	29.5	6.3	18
Pool Max depth (ft)										0.8	1.3	---	1.9	---	---	---	2.0	---	1.6	2.2	2.3	2.6	0.3	18
Pool Spacing (ft)										14.0	21.0	---	32.0	---	---	20.0	30.0	45.0	14.5	30.2	31.7	42.2	6.9	17
Pattern																								
Channel Beltwidth (ft)				The existing stream channel did not display plan form geometry due to historic dredging and straightening						12.0	19.0	---	23.0	---	---	13.0	20.0	28.0	15.7	24.3	25.6	29.8	4.7	18
Radius of Curvature (ft)										10.0	16.0	---	39.0	---	---	12.0	17.0	30.0	12.3	19.9	18.8	31.4	5.8	19
Rc:Bankfull width (ft/ft)										1.2	2.0	---	4.8	---	---	2.0	2.8	5.0	1.1	1.8	1.7	2.9	0.5	19
Meander Wavelength (ft)										31.4	45.3	---	61.4	---	---	46.0	55.0	81.0	23.3	54.3	52.3	88.5	15.6	18
Meander Width Ratio										1.5	2.3	---	2.8	---	---	2.1	3.3	4.6	2.1	4.9	4.8	8.0	1.4	18
Substrate, bed, and transport parameters																								
[4]d16 / d35 / d50 / d84 / d95 / dip / disp (mm)				10.6	23.6	49.4	75.3	82.7	86.0	78.0	6.3	10.	17.3	57.9	113.9	76.0	123.0							
Reach Shear Stress (competency) lb/f^2				0.50														0.6	0.6					
Max part size (mm) mobilized at bankfull				91.0														107.0	107.0					
Stream Power (transport capacity) W/m^2				2.1														2.6	1.4					
Additional Reach Parameters																								
Drainage Area (SM)				0.2						0.19														
Impervious Surface estimate (%)				<1						<1														
Rosgen Classification				B4						E4								E4	C4					
Bankfull Velocity (fps)	---	---	---	HEC-RAS: 3.0 (2.0-4.0)														HEC-RAS: 4.4 (3.8-5.1)	3.9					
Bankfull Discharge (cfs)	---	---	22.7	23.1																				
Valley length (ft)				530						240														
Channel Thalweg length (ft)				534						284								646	646					
Sinuosity (ft)				1.0						1.2								1.2	1.2					
BF slope (ft/ft)				0.012						0.016								0.011	0.011					
BEHI VL% / L% / M% / H% / VH% / E%				34	25	17	24	0	0	---	---	---	---	---	---									

Table 11a. Baseline Morphology & Hydraulic Monitoring Summary
601 North II / Project No. 95925

	Cross-Section 1 (Riffle) UT to Wicker (Reach 4)						Cross-Section 2 (Pool) UT to Wicker (Reach 5)						Cross-Section 3 (Riffle) UT to Wicker (Reach 5)						Cross-Section 4 (Riffle) Wicker (Reach 1)						Cross-Section 5 (Pool) Wicker (Reach 1)					
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**
Record Elevation (datum) Used	616.5	616.5					604.0	604.0					603.9	603.9					604.5	605.0					604.4	604.4				
Bankfull Width (ft)	8.9	8.3					17.6	15.4					11.0	11.1					11.4	11.1					14.2	7.7				
Floodprone Width (ft)	23.1	>23					64.1	>100					65.5	>100					59.7	>100					65.6	>100				
Bankfull Mean Depth (ft)	0.5	0.5					0.7	0.9					0.8	0.8					0.7	0.6					0.8	0.8				
Bankfull Max Depth (ft)	0.7	0.7					1.7	1.8					1.3	1.3					1.3	1.1					1.8	1.7				
Bankfull Cross Sectional Area (ft^2)	4.2	4.1					12.8	13.6					8.5	8.5					7.9	7.2					11.5	6.1				
Bankfull Width/Depth Ratio	18.5	16.9					24.5	17.5					14.1	14.6					16.6	17.1					17.6	9.8				
Bankfull Entrenchment Ratio	2.6	>2.8					3.6	>6.5					6.0	>9					5.2	>9					4.6	>13				
Bankfull Bank Height Ratio	1.0	1.0					1.0	1.0					1.0	1.0					1.0	1.0					1.0	1.0				
Cross Sectional Area between End Pins (ft^2)	-	4.1					-	13.6					-	8.5					-	7.2					-	6.1				
d50 (mm)	-	0.062					-	0.062					-	4.9					-	0.06					-	0.062				
	Cross-Section 6 (Riffle) Wicker (Reach 2)						**Cross-Section 7 (Pool) Wicker (Reach 2)**						**Cross-Section 8 (Pool) Wicker (Reach 2)**						**Cross-Section 9 (Riffle) Wicker (Reach 2)**						**Cross-Section 10 (Riffle) Wicker (Reach 3)**					
Dimension	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**Base**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**
Record Elevation (datum) Used	596.2	596.2					596.1	596.1					591.3	591.3					591.0	591.0					-	587.8				
Bankfull Width (ft)	11.5	11.9					12.8	12.8					12.7	13.3					11.6	11.5					-	12.0				
Floodprone Width (ft)	69.2	>90					69.5	>125					69.5	>200					69.7	>200					_	>200				
Bankfull Mean Depth (ft)	1.1	1.0					1.8	1.9					1.6	1.7					1.1	1.1					-	1.2				
Bankfull Max Depth (ft)	1.7	1.7					3.2	3.2					2.9	3.1					1.8	1.7					-	1.7				
Bankfull Cross Sectional Area (ft^2)	12.1	12.0					23.2	24.2					19.9	22.9					13.0	12.3					-	14.4				
Bankfull Width/Depth Ratio	10.8	11.8					7.0	6.8					8.1	7.8					10.4	10.7					-	9.9				
Bankfull Entrenchment Ratio	6.0	>7.5					5.4	>9.8					5.5	>15					6.0	>17.5					-	>16.7				
Bankfull Bank Height Ratio	1.0	1.0					1.0	1.0					1.0	1.0					1.0	1.0					-	1.0				
Cross Sectional Area between End Pins (ft^2)	-	12.0					-	24.2					-	22.9					-	12.3					-	14.4				
d50 (mm)	-	0.062					-	0.062					-	0.062					-	0.06					-	24				

N/A - Item does not apply.

Table 11b. Monitoring Data - Stream Reach Data Summary
601 North II - Wicker Branch Reach 1 (630 feet)

Parameter	Baseline						MY - 1 [1]						MY - 2						MY - 3						MY - 4						MY - 5					
Dimension & Substrate - Riffle	**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**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	-	11.4	-	-	-	1	-	11.1	-	-	-	1																								
Floodprone Width (ft)	-	59.7	-	-	-	1	-	>100	-	-	-	1																								
Bankfull Mean Depth (ft)	-	0.7	-	-	-	1	-	0.6	-	-	-	1																								
Bankfull Max Depth (ft)	-	1.3	-	-	-	1	-	1.1	-	-	-	1																								
Bankfull Cross-Sectional Area (ft^2)	-	7.9	-	-	-	1	-	7.2	-	-	-	1																								
Width/Depth Ratio	-	16.6	-	-	-	1	-	17.1	-	-	-	1																								
Entrenchment Ratio	-	5.2	-	-	-	1	-	>9	-	-	-	1																								
Bank Height Ratio	-	1.0	-	-	-	1	-	1.0	-	-	-	1																								
Profile																																				
Riffle Length (ft)	4.2	12.3	11.5	33.3	6.0	22.0	3.3	6.9	6.3	11.0	2.1	18.0																								
Riffle Slope (ft/ft)	0.001	0.017	0.017	0.043	0.0	22	-	-	-	-	-	-																								
Pool Length (ft)	4.7	10.8	10.4	20.0	4.2	20	7.3	14.1	12.0	37.6	6.8	19.0																								
Pool Max Depth (ft)	1.4	1.9	1.9	2.2	0.2	20	1.1	1.6	1.6	2.0	0.3	19.0																								
Pool Spacing (ft)	13.4	30.7	26.9	57.8	10.0	19	16.4	27.7	26.9	41.8	7.0	19.0																								
Pattern																																				
Channel Belt Width (ft)	13.4	20.1	20.2	29.7	4.00	21																														
Radius of Curvature (ft)	14.4	17.9	16.4	27.7	3.90	23																														
Rc: Bankfull Width (ft/ft)	1.30	1.60	1.40	2.40	0.3	23																														
Meander Wavelength (ft)	13.7	51.5	51.8	87.9	15.30	21																														
Meander Width Ratio	1.2	4.5	4.5	7.7	1.30	21																														
Additional Reach Parameters																																				
Rosgen Classification	C4						C4																													
Channel Thalweg Length (ft)	660						557																													
Sinuosity (ft)	1.1						1.1																													
Water Surface Slope (Channel) (ft/ft)	-						-																													
Bankfull Slope (ft/ft)	0.0090						0.0094																													
Ri% / Ru% / P% / G% / S%	-	-	-	-	-		24%	10%	52%	14%	0%																									

N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step
*Percentages based on riffle and pool pebble counts.
[1]No water present at time of survey; MY1 profile values based on bedform only.

Table 11b. Monitoring Data - Stream Reach Data Summary
601 North II - Wicker Branch Reach 2 (1356 feet)

Parameter	Baseline						MY - 1 [1]						MY - 2						MY - 3						MY - 4						MY - 5					
Dimension & Substrate - Riffle	**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**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	11.5	11.6	11.6	11.6	0.1	2	11.5	11.7	11.7	11.9	0.28	2																								
Floodprone Width (ft)	69.2	69.5	69.5	69.7	0.4	2	90	145	145	200	78	2																								
Bankfull Mean Depth (ft)	1.1	1.1	1.1	1.1	0	2	1.0	1.0	1.0	1.1	0.04	2																								
Bankfull Max Depth (ft)	1.7	1.8	1.8	1.8	0.1	2	1.7	1.7	1.7	1.7	0.02	2																								
Bankfull Cross-Sectional Area (ft^2)	12.1	12.6	12.6	13.0	0.6	2	12.0	12.2	12.2	12.3	0.21	2																								
Width/Depth Ratio	10.4	10.6	10.6	10.8	0.3	2	10.7	11.3	11.3	11.8	0.78	2																								
Entrenchment Ratio	6.0	6.0	6.0	6.0	0	2	7.5	12.5	12.5	17.5	7.07	2																								
Bank Height Ratio	19.3	21.4	21.4	23.5	3	2	1.0	1.0	1.0	1.0	0	2																								
Profile																																				
Riffle Length (ft)	6.3	17.3	18.1	38.7	7.5	33	8.1	17.1	15.7	32.9	7.0	31																								
Riffle Slope (ft/ft)	0.001	0.017	0.013	0.062	0.013	33	-	-	-	-	-	-																								
Pool Length (ft)	6.1	24.2	23.7	62.0	11.9	33.0	12.6	29.2	26.2	57.3	11.3	33																								
Pool Max Depth (ft)	1.7	2.9	2.8	3.8	0.4	33.0	1.4	2.8	2.8	3.8	0.5	33																								
Pool Spacing (ft)	25.5	53.6	53.2	103.3	19.5	33.0	24.4	54.0	52.2	112.6	18.3	32																								
Pattern																																				
Channel Belt Width (ft)	18.3	31.1	30.6	49.5	8.8	24																														
Radius of Curvature (ft)	28.3	40.2	37.8	61.8	10.1	28																														
Rc: Bankfull Width (ft/ft)	2.40	3.50	3.30	5.30	0.9	28																														
Meander Wavelength (ft)	13.7	114.4	113.3	226.5	46.9	24																														
Meander Width Ratio	1.2	9.9	9.8	19.5	4.0	24																														
Additional Reach Parameters																																				
Rosgen Classification	E4						E4																													
Channel Thalweg Length (ft)	1,775						1,777																													
Sinuosity (ft)	1.2						1.2																													
Water Surface Slope (Channel) (ft/ft)	-						-																													
Bankfull Slope (ft/ft)	0.0070						0.0071																													
Ri% / Ru% / P% / G% / S%	-	-	-	-	-		31%	2%	57%	9%	0%																									

N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step
*Percentages based on riffle and pool pebble counts.

[1]No water present at time of survey; MY1 profile values based on bedform only.

Table 11b. Monitoring Data - Stream Reach Data Summary
601 North II- Wicker Branch Reach 3 (414 feet)

Parameter	Baseline[1]						MY - 1[2]						MY - 2						MY - 3						MY - 4						MY - 5					
Dimension & Substrate - Riffle	**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**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	-	-	-	-	-	-	-	12.0	-	-	-	1																								
Floodprone Width (ft)	-	-	-	-	-	-	-	>200	-	-	-	1																								
Bankfull Mean Depth (ft)	-	-	-	-	-	-	-	1.2	-	-	-	1																								
Bankfull Max Depth (ft)	-	-	-	-	-	-	-	1.7	-	-	-	1																								
Bankfull Cross-Sectional Area (ft^2)	-	-	-	-	-	-	-	14.4	-	-	-	1																								
Width/Depth Ratio	-	-	-	-	-	-	-	9.9	-	-	-	1																								
Entrenchment Ratio	-	-	-	-	-	-	-	>16.7	-	-	-	1																								
Bank Height Ratio	-	-	-	-	-	-	-	1.0	-	-	-	1																								
Profile																																				
Riffle Length (ft)	-	-	-	-	-	-	-	27.6	-	-	-	1																								
Riffle Slope (ft/ft)	-	-	-	-	-	-	-	-	-	-	-	-																								
Pool Length (ft)	-	-	-	-	-	-	-	29.0	-	-	-	1																								
Pool Max Depth (ft)	-	-	-	-	-	-	-	2.7	-	-	-	1																								
Pool Spacing (ft)	-	-	-	-	-	-	-	-	-	-	-	0																								
Pattern																																				
Channel Belt Width (ft)	-	-	-	-	-	-																														
Radius of Curvature (ft)	-	-	-	-	-	-																														
Rc: Bankfull Width (ft/ft)	-	-	-	-	-	-																														
Meander Wavelength (ft)	-	-	-	-	-	-																														
Meander Width Ratio	-	-	-	-	-	-																														
Additional Reach Parameters																																				
Rosgen Classification	-						E4																													
Channel Thalweg Length (ft)	-						80																													
Sinuosity (ft)	-						1.17																													
Water Surface Slope (Channel) (ft/ft)	-						NA																													
Bankfull Slope (ft/ft)	-						0.0073																													
Ri% / Ru% / P% / G% / S%	-	-	-	-	-		44%	-	46%	10%	-																									

N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step
*Percentages based on riffle and pool pebble counts.
[1]Reach 3 cross-section was added during MY1; no data available for MY0
[2]No water present at time of MY1 survey, metrics based on bedform only.

Table 11b. Monitoring Data - Stream Reach Data Summary
601 North II - UT to Wicker Branch Reach 4 (826 feet)

Parameter	Baseline						MY - 1						MY - 2						MY - 3						MY - 4						MY - 5					
Dimension & Substrate - Riffle	**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**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	-	8.9	-	-	-	1	-	8.3	-	-	-	1																								
Floodprone Width (ft)	-	23.1	-	-	-	1	-	>23	-	-	-	1																								
Bankfull Mean Depth (ft)	-	0.5	-	-	-	1	-	0.5	-	-	-	1																								
Bankfull Max Depth (ft)	-	0.7	-	-	-	1	-	0.7	-	-	-	1																								
Bankfull Cross-Sectional Area (ft^2)	-	4.2	-	-	-	1	-	4.1	-	-	-	1																								
Width/Depth Ratio	-	18.5	-	-	-	1	-	16.9	-	-	-	1																								
Entrenchment Ratio	-	2.6	-	-	-	1	-	>2.8	-	-	-	1																								
Bank Height Ratio	-	1.0	-	-	-	1	-	1.0	-	-	-	1																								
Profile																																				
Riffle Length (ft)	-	-	-	-	-	-	-	-	-	-	-	-																								
Riffle Slope (ft/ft)	-	-	-	-	-	-	-	-	-	-	-	-																								
Pool Length (ft)	-	-	-	-	-	-	-	-	-	-	-	-																								
Pool Max Depth (ft)	-	-	-	-	-	-	-	-	-	-	-	-																								
Pool Spacing (ft)	-	-	-	-	-	-	-	-	-	-	-	-																								
Pattern																																				
Channel Belt Width (ft)	-	-	-	-	-	-																														
Radius of Curvature (ft)	-	-	-	-	-	-																														
Rc: Bankfull Width (ft/ft)	-	-	-	-	-	-																														
Meander Wavelength (ft)	-	-	-	-	-	-																														
Meander Width Ratio	-	-	-	-	-	-																														
Additional Reach Parameters																																				
Rosgen Classification	-						-																													
Channel Thalweg Length (ft)	-						-																													
Sinuosity (ft)	-						-																													
Water Surface Slope (Channel) (ft/ft)	-						-																													
Bankfull Slope (ft/ft)	-						-																													
Ri% / Ru% / P% / G% / S%																																				

N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step
*Percentages based on riffle and pool pebble counts.

Table 11b. Monitoring Data - Stream Reach Data Summary
601 North II -UT to Wicker Branch Reach 5 (534 feet)

Parameter	Baseline						MY - 1 [1]						MY - 2						MY - 3						MY - 4						MY - 5					
Dimension & Substrate - Riffle	**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**	**Min**	**Mean**	**Med**	**Max**	**SD**	**n**
Bankfull Width (ft)	-	11.0	-	-	-	-	-	11.1	-	-	-	1																								
Floodprone Width (ft)	-	65.5	-	-	-	-	-	>100	-	-	-	1																								
Bankfull Mean Depth (ft)	-	0.8	-	-	-	-	-	0.8	-	-	-	1																								
Bankfull Max Depth (ft)	-	1.3	-	-	-	-	-	1.3	-	-	-	1																								
Bankfull Cross-Sectional Area (ft^2)	-	8.5	-	-	-	-	-	8.5	-	-	-	1																								
Width/Depth Ratio	-	14.1	-	-	-	-	-	14.6	-	-	-	1																								
Entrenchment Ratio	-	6.0	-	-	-	-	-	>9	-	-	-	1																								
Bank Height Ratio	-	1.0	-	-	-	-	-	1.0	-	-	-	1																								
Profile																																				
Riffle Length (ft)	5.1	12.8	12.4	23.2	4.5	16	2.7	9.1	9.1	18.5	4.3	18																								
Riffle Slope (ft/ft)	0.001	0.016	0.016	0.035	0.010	16	-	-	-	-	-	-																								
Pool Length (ft)	3.2	12.4	12.3	29.5	6.3	18	6.0	16.0	14.5	38.3	7.3	19																								
Pool Max Depth (ft)	1.6	2.2	2.3	2.6	0.3	18	1.5	2.0	2.0	2.6	0.3	19																								
Pool Spacing (ft)	14.5	30.2	31.7	42.2	6.9	17	10.8	28.7	30.8	42.0	8.8	19																								
Pattern																																				
Channel Belt Width (ft)	15.7	24.3	25.6	29.8	4.7	18																														
Radius of Curvature (ft)	12.3	19.9	18.8	31.4	5.8	19																														
Rc: Bankfull Width (ft/ft)	1.10	1.80	1.70	2.90	0.5	19																														
Meander Wavelength (ft)	23.3	54.3	52.3	88.5	15.6	18																														
Meander Width Ratio	2.1	4.9	4.8	8.0	1.4	18																														
Additional Reach Parameters																																				
Rosgen Classification	C4						C4																													
Channel Thalweg Length (ft)	646						600																													
Sinuosity (ft)	1.2						1.25																													
Water Surface Slope (Channel) (ft/ft)	-						-																													
Bankfull Slope (ft/ft)	0.0110						0.0114																													
Ri% / Ru% / P% / G% / S%	-	-	-	-	-		30%	5%	56%	8%	-																									

N/A - Information does not apply.
Ri = Riffle / Ru = Run / P = Pool / G = Glide / S = Step
*Percentages based on riffle and pool pebble counts.

[1]No water present at time of survey; MY1 profile values based on beform only.