Valley Fields Farm
Monitoring Report
Year 1 (2010)

Davidson County, North Carolina

USGS HUC: 03040103

EEP Project ID #407

EEP Project Manager: Melonie Allen

Submitted to:

NCDENR-Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, North Carolina 27699-1652

Submitted December 2010
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Executive Summary

The project site is located in the USGS Hydrologic Unit Code 03040103. It began as a North Carolina Department of Transportation (NCDOT) feasibility report performed by Kimley-Horn and Associates, Inc. (KHA) in May of 2003. The Ecosystem Enhancement Program (EEP) oversaw the project after completion of the feasibility study. KHA finalized the construction plans in January of 2007. North State Environmental, Inc. (North State) completed construction of the project in June of 2008 with repairs to Reach B completed in November 2008.

The goals of the restoration project are to improve the hydrologic function, water quality and biological habitat of the site's streams and wetlands through the following objectives:

- Preserve stable on-site streams, wetlands, and riparian buffers in catchments draining into the primary enhancement / restoration reaches
- Enhance and restore (pattern, dimension, and profile) unstable streams using natural channel design techniques
- Installing in-stream structures such as rock vanes, log vanes, and constructed riffles
- Removing invasive vegetation
- Re-establish riparian buffers
- Remove crowns from wetland areas
- Reconnect the floodplain by raising the streambed and/or lower the floodplains
- Enhance and restore wetlands through modifications to hydrology, vegetation, and soils.
- Improve water quality of non point source stormwater through Best Management Practices.

KHA performed stream and riparian monitoring in the fall of 2010 for this Year 1 Monitoring Report. During the monitoring process KHA assessed eighteen (18) vegetation quads. Seven (7) of the eighteen plots met or exceeded the success criteria of 320 stems/area (minimum stem count after 3 years). Areas of isolated non-native/invasive species were located along all project reaches. The planted vegetation of Rich Fork Tributary (Reach B) is distressed and/or lacks the sufficient density to achieve vegetation goals. A confounding factor to the lack of sufficient vegetation density appears to be beaver activity. There is evidence of active beavers within the project boundaries. Future site remediation is being planned and scheduled, which will include supplemental bare root and live stake plantings. Wracklines were present in the floodplain, which indicated that a bankfull event occurred during this monitoring period.

A visual assessment and geomorphic survey were completed for the site, and indicated that the majority of the project reaches were performing within established success criteria ranges as shown below. Reach Upper A2 has some erosion on the outsides of the meander bends. This bank erosion was not considered significant at the time of the survey, but should be monitored in subsequent years. Reach B also had a 200 foot section of bank erosion occurring on both banks. Repairs for Reach B are also being planned and scheduled as part of the upcoming site remediation. Two large beaver dams were observed on lower Reach A and one smaller dam is located on upper Reach A. The beaver dams found on the lower Reach A are causing backwater to extend upstream of the confluence for Reach A and Reach B. The beaver dams on upper Reach A are causing backwater to extend upstream to the Colonial Pipeline crossing. Morphology monitoring includes twenty-two (22) cross sections and seven (7) longitudinal

profile segments. Channel stability assessment includes the entire restored length and includes thirty-eight (38) permanent photo point locations.

Stream Success Criteria (from approved Restoration/Mitigation Plan):

- Stream Type: Maintenance of the design stream type or progression or conversion to stable stream type such as B, C, or E will indicate stability
- Bank Height Ratio: Bank height ratio between 1.0 and 1.1 will indicate flood flows have access to the active floodplain and that higher flows do not apply excessive stresses to stream banks

The restored wetland area was visually assessed as part of the monitoring. The low areas were inundated and the entire wetland was covered by wetland indicator vegetation species. The wetland area should meet United States Army Corps of Engineers (ACOE) minimum criteria for hydrology which states that the area should be inundated for a minimum of 5% of the growing season (11 consecutive days). Per the Natural Resource Conservation Service (NRCS) Davidson County Soil Survey the growing season in Davidson County is from March 26 until November 6 (225 total days). All four of the groundwater gages indicate that the wetland is meeting the minimum ACOE definition for hydrology.

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

Methodology

- Surveys/topographic data collections shall be performed via total station, survey grade GPS, or equivalent such that each survey point has three-dimensional coordinates, and is georeferenced (NAD83-State Plane Feet – FIPS3200).
- Longitudinal stationing was developed using the as-built survey thalweg as a baseline.
- The particle size distribution protocol used is the Modified-Wolman pebble count.
- CVS level 2 is used as the vegetation plot methodology.

References

Rosgen, David L. 1996. Applied River Morphology, Second Edition., Wildland Hydrology, Pagosa Springs, Colorado.

Lee, Michael T., Peet, Robert K., Roberts, Steven D., Wentworth, Thomas R. 2006. CVS-EEP Protocol for Recording Vegetation, All Levels of Sampling, Version 4.0.,

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. United States Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.
LeGrand, H.E. and S.P. Hall.

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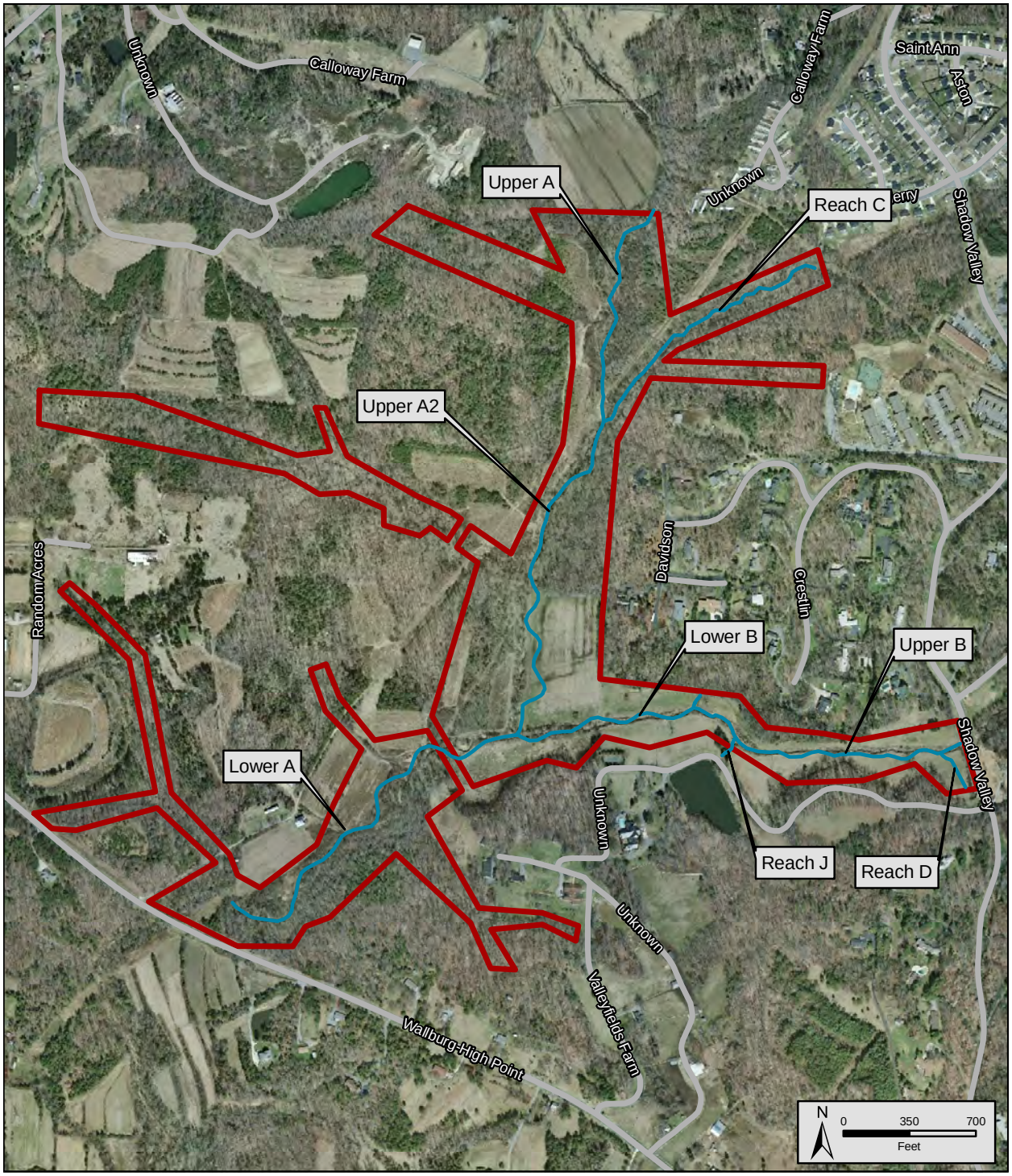
APPENDIX A
PROJECT VICINITY MAP AND BACKGROUND TABLES



Title	Project Setting

Prepared For: Ecosystem Enhancement Program	**Project**	Valley Fields Farm Stream and Wetland Restoration Monitoring Year 1 – 2010 Davidson County, North Carolina	
	Date	**Project Number**	**Figure**
	3/17/11	407	1

Kimley-Horn and Associates, Inc.

Table 1a. Project Components
Valley Fields Farm/407

Project Component or Reach ID	Existing Feet/Acres	Restoration Level[1]	Approach[2]	Footage or Acreage	Stationing	Mitigation Ratio	Mitigation Units	BMP Elements[3]	Comment
Upper A (includes A2)	3100	R	P2	3078	50+00 - 80+78	1:1	3078		
Lower A	2284	R	P2	1935	80+78 - 100+13	1:1	1935		
Reach B	2550	R	P2	2492	1500+00 - 1524+92	1:1	2492		
Reach C	1560	R	P1	1489	1000+00 - 1014+89	1:1	1489		
Reach D	240	R	P1	295	200+00 - 202+95	1:1	295		
Reach J (Pond Tributary)	61	R	P2	61	350+00 - 350+61	1:1	61		
Reach A	276	P	--	276	100+13 - 102+89	5:1	55		
Reach E	2930	P	--	2930	--	5:1	586		
Reach F	1840	P	--	1840	--	5:1	368		
Reach G	1200	P	--	1200	--	5:1	240		
Reach H	1400	P	--	1400	--	5:1	280		
Reach K	240	P	--	240	--	5:1	48		
Reach L	700	P	--	700	--	5:1	140		
Reach M	420	P	--	420	--	5:1	84		
Wetland A-5	--	R	--	3.0	--	1:1	3.00		
Wetland A-4	--	R	--	0.1	--	1:1	0.10		
Wetland B-1	0.1	E	--	0.1	--	2:1	0.05		
Wetland B-2	0.7	E	--	0.4	--	2:1	0.20		
Wetland B-3	0.2	E	--	0.08	--	2:1	0.04		
Wetland D-1	0.2	E	--	0.2	--	2:1	0.10		
Wetland A-6	1.7	E	--	1.7	--	2:1	0.85		
Wetland A-4	1.8	E	--	1.8	--	2:1	0.90		
Wetland A-3	0.2	E	--	0.2	--	2:1	0.10		
Wetland A-1	0.6	P	--	0.6	--	5:1	0.12		
Wetland A-2	0.5	P	--	0.5	--	5:1	0.10		
Wetland A-7	0.4	P	--	0.4	--	5:1	0.08		
Wetland A-8	1.2	P	--	1.2	--	5:1	0.24		

1 = R = Restoration; E1 = Enhancement I; E2 = Enhancement II; P = Preservation

2 = P1 = Priority I; P2 = Priority II; P3 = Priority III

3 = BR = Bioretention Cell; SF = Sand Filter; SW = Stormwater Wetland; WDP = Wet Detention Pond; DDP = Dry Detention Pond;
FS = Filter Strip; Grassed Swale = S; LS = Level Spreader; NI = Natural Infiltration Area, O = Other
CF = Cattle Fencing; WS = Watering System; CH = Livestock Housing

Table 1b. Component Summations
Valley Fields Farm/407

Restoration Level	Stream (lf)	Riparian Wetland (Ac)		Non-Ripar (Ac)	Upland (Ac)	Buffer (Ac)	BMP
		Riverine	Non-Riverine				
Restoration	9,350	3.1					
Enhancement		4.5					
Enhancement I							
Enhancement II							
Creation							
Preservation	9,006	2.7					
HQ Preservation							
		10.3	0				
Totals (Feet/Acres)	**18,356**	**10.3**		**0**	**0**	**0**	**0**
MU Totals	**11,151**	**5.9**		**0**	**0**	**0**	**0**

Non-Applicable

Table 2. Project Activity and Reporting History
Valley Fields Farm/407

Elapsed Time Since Grading Complete: 2 yrs 6 months
Elapsed Time Since Planting Complete: 2 yrs 6 Months
Number of Reporting Years[1]: 1

Activity or Deliverable	Data Collection Complete	Completion or Delivery
Restoration Plan	N/A	3/1/2006
Final Design – Construction Plans	N/A	1/31/2007
Construction	N/A	5/16/2008
Temporary S&E mix applied to entire project area	N/A	5/16/2008
Permanent seed mix applied	N/A	5/16/2008
Baseline Monitoring Report	5/1/2008	N/A
Repair Plans – Construction Plans (Reach B - repair)	**N/A**	**11/12/2008**
Structural maintenance (new alignment, bench expansion) Reach B	**N/A**	**12/5/2008**
Temporary S&E mix applied to Reach B	**N/A**	**12/5/2008**
Permanent seed mix applied to Reach B	**N/A**	**12/5/2008**
Baseline Monitoring Report	6/1/2009	8/17/2009
Year 1 Monitoring	10/15/2010	12/1/2010
Year 2 Monitoring		
Year 3 Monitoring		
Year 4 Monitoring		
Year 5 Monitoring		
Closeout		

Bolded items are examples of those items that are not standard, but may come up and should be included
Non-bolded items represent events that are standard components over the course of a typical project.
The above are obviously not the extent of potential relevant project activities, but are just provided as example as part of this exhibit.
If planting and morphology are on split monitoring schedules that should be made clear in the table
1 = Equals the number of reports or data points produced excluding the baseline

Table 3. Project Contacts Table Valley Fields Farm/407	
Designer Kimley-Horn and Associates, Inc.	P.O. BOX 33068 Raleigh, North Carolina 27636-3068 Will Wilhelm Phone: (704) 333-5131
Construction Contractor North State Environmental	2889 Lowery Street Winston-Salem, NC 27101 Phone: (336)725-2010
Survey Contractor Cavanaugh and Associates, P.A.	530 North Trade Street, Suite 302 Winston-Salem, NC 27101 Phone: (336)759.9001
Planting Contractor North State Environmental	2889 Lowery Street Winston-Salem, NC 27101 Phone: (336)725-2010
Seeding Contractor North State Environmental	2889 Lowery Street Winston-Salem, NC 27101 Phone: (336)725-2010
Seed Mix Sources	Green Resource, LLC (800) 225-6061
Nursery Stock Suppliers	Green Resource, LLC (800) 225-6061
Monitoring Performers	Kimley-Horn and Associates, Inc. P.O. BOX 33068 Raleigh, North Carolina 27636-3068
Stream Monitoring POC Vegetation Monitoring POC Wetland Monitoring POC	Daren Pait Phone: (919) 677-2000 Daren Pait Phone: (919) 677-2000 Daren Pait Phone: (919) 677-2000

Table 4. Project Attribute Table Valley Fields Farm/407						
Project County	Davidson County					
Physiographic Region	Piedmont					
Ecoregion	Southern Outer Piedmont					
Project River Basin	Yadkin					
USGS HUC for Project (14 digit)	3040103030030					
NCDWQ Sub-basin for Project	Yadkin Sub Basin					
Within extent of EEP Watershed Plan?	Yadkin Pee-Dee River Basin Restoration Priorities 2009					
WRC Hab Class (Warm, Cool, Cold)	Cool					
% of project easement fenced or demarcated	0					
Beaver activity observed during design phase?	Yes					
Restoration Component Attribute Table						
	Reach A	Reach B	Reach C	Reach D	Reach J	Wetland A-5
Drainage area (mi2)	6.5	2.3	0.2	0.2	0.1	N/A
Stream order	3	2	1	1	1	N/A
Restored length (feet)	5013	2492	1489	295	61	N/A
Perennial (P) or Intermittent (I)	P	P	P	P	P	N/A
Watershed type (Rural, Urban, Developing etc.)	Developing	Developing	Developing	Developing	Developing	N/A
Watershed LULC Distribution (e.g.)						
Developed	0.35					
Cultivated	0.22					
Forested	0.43					
Watershed impervious cover (%)	4.7	23.5	1.9	1	1	N/A
NCDWQ AU/Index number	C/3	C/2	C/1	C/1	C/1	N/A
NCDWQ classification	C	C	C	C	C	N/A
303d listed?	Yes	Yes	Yes	Yes	Yes	N/A
Upstream of a 303d listed segment?	Yes	Yes	Yes	Yes	Yes	N/A
Reasons for 303d listing or stressor	Degraded water quality due to sediment					
Total acreage of easement	31	8.5	2.3	0.5	0.1	N/A
Total vegetated acreage within the easement	22.4	6.9	1.7	0.4	0.08	N/A
Total planted acreage as part of the restoration	22.4	6.9	1.7	0.4	0.08	N/A
Rosgen classification of pre-existing	G5	G5	Incised B5	Incised B5	G	N/A
Rosgen classification of As-built	B5	B5c	C5	B5c	Ba	N/A
Valley type	VIII	VIII	VIII	VIII	VIII	N/A
Valley slope	0.003	0.005	0.011	0.011	0.15	N/A
Valley side slope range (e.g. 2-3.%)	15-20%	12-20%	15-40%	25-30%	30-35%	N/A
Valley toe slope range (e.g. 2-3.%)	2-3%	1-3%	3-5%	10-14%	1-2%	N/A
Cowardin classification	N/A	N/A	N/A	N/A	N/A	NC
Trout waters designation	No	No	No	No	No	N/A
Species of concern, endangered etc.? (Y/N)	Greensboro burrowing crayfish is of concern					
Dominant soil series and characteristics	Chewacla loam and Wehadkee loam					
Series	N/A	N/A	N/A	N/A	N/A	ChA
Depth	N/A	N/A	N/A	N/A	N/A	80"
Clay%	N/A	N/A	N/A	N/A	N/A	5-40%
K	N/A	N/A	N/A	N/A	N/A	0.28
T	N/A	N/A	N/A	N/A	N/A	5

Use N/A for items that may not apply. Use "-" for items that are unavailable and "U" for items that are unknown

APPENDIX B
VISUAL ASSESSMENT DATA

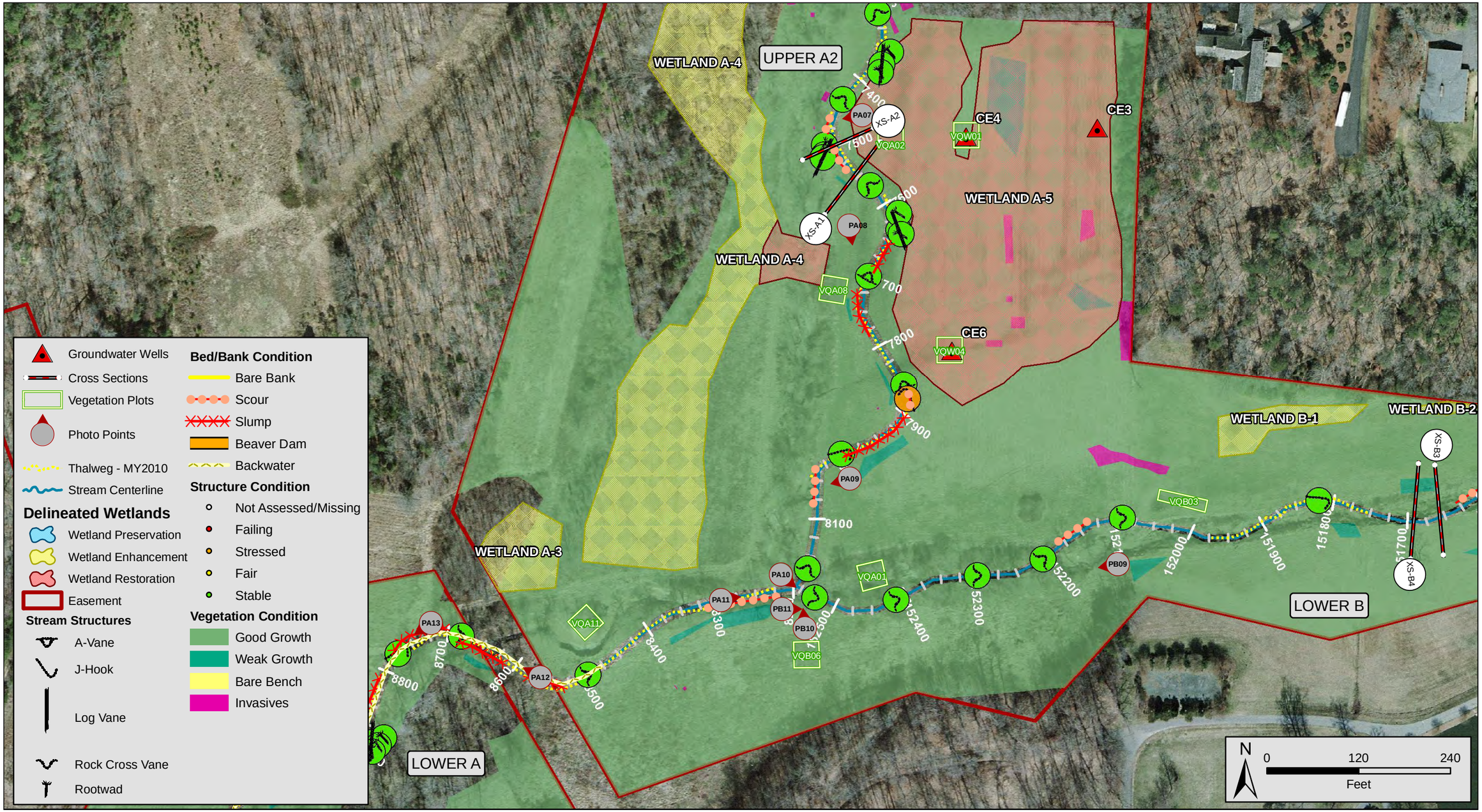
Title	Current Conditions Plan View (2006 Aerial courtesy of NC One Map)

Prepared For:

Ecosystem Enhancement Program

Project	Valley Fields Farm Stream and Wetland Restoration Monitoring Year 1 – 2010 Davidson County, North Carolina		
Date		**Project Number**	**Figure**
3/18/11		407	2

Kimley-Horn and Associates, Inc.



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Prepared For:

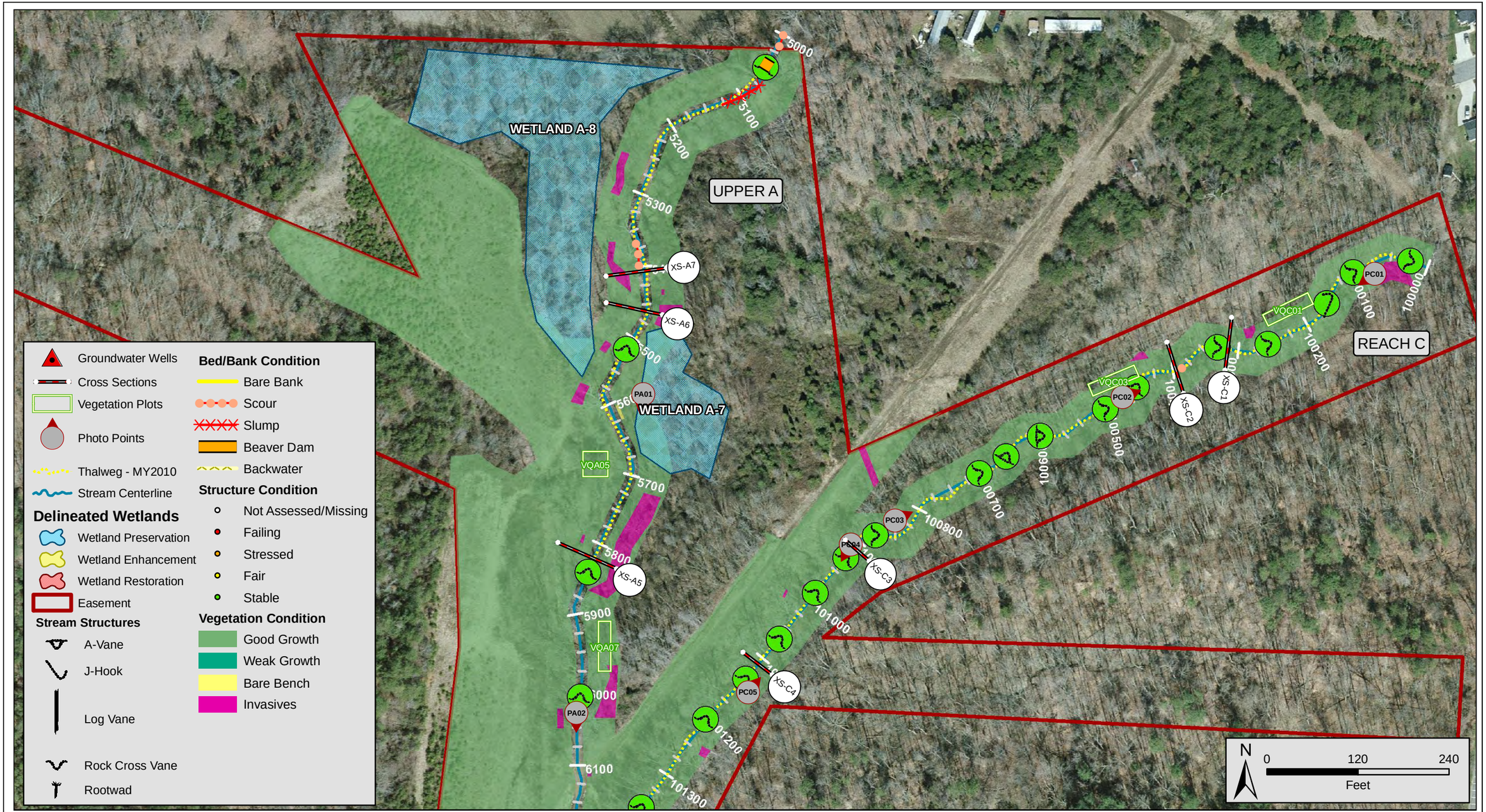
Ecosystem Enhancement Program

Project	Valley Fields Farm Stream and Wetland Restoration Monitoring Year 1 – 2010 Davidson County, North Carolina		
Date		**Project Number**	**Figure**
3/18/11		407	3

Kimley-Horn and Associates, Inc.

Title	Current Conditions Plan View (2006 Aerial courtesy of NC One Map)
Prepared For: Ecosystem Enhancement Program	**Project**: Valley Fields Farm Stream and Wetland Restoration Monitoring Year 1 – 2010 Davidson County, North Carolina

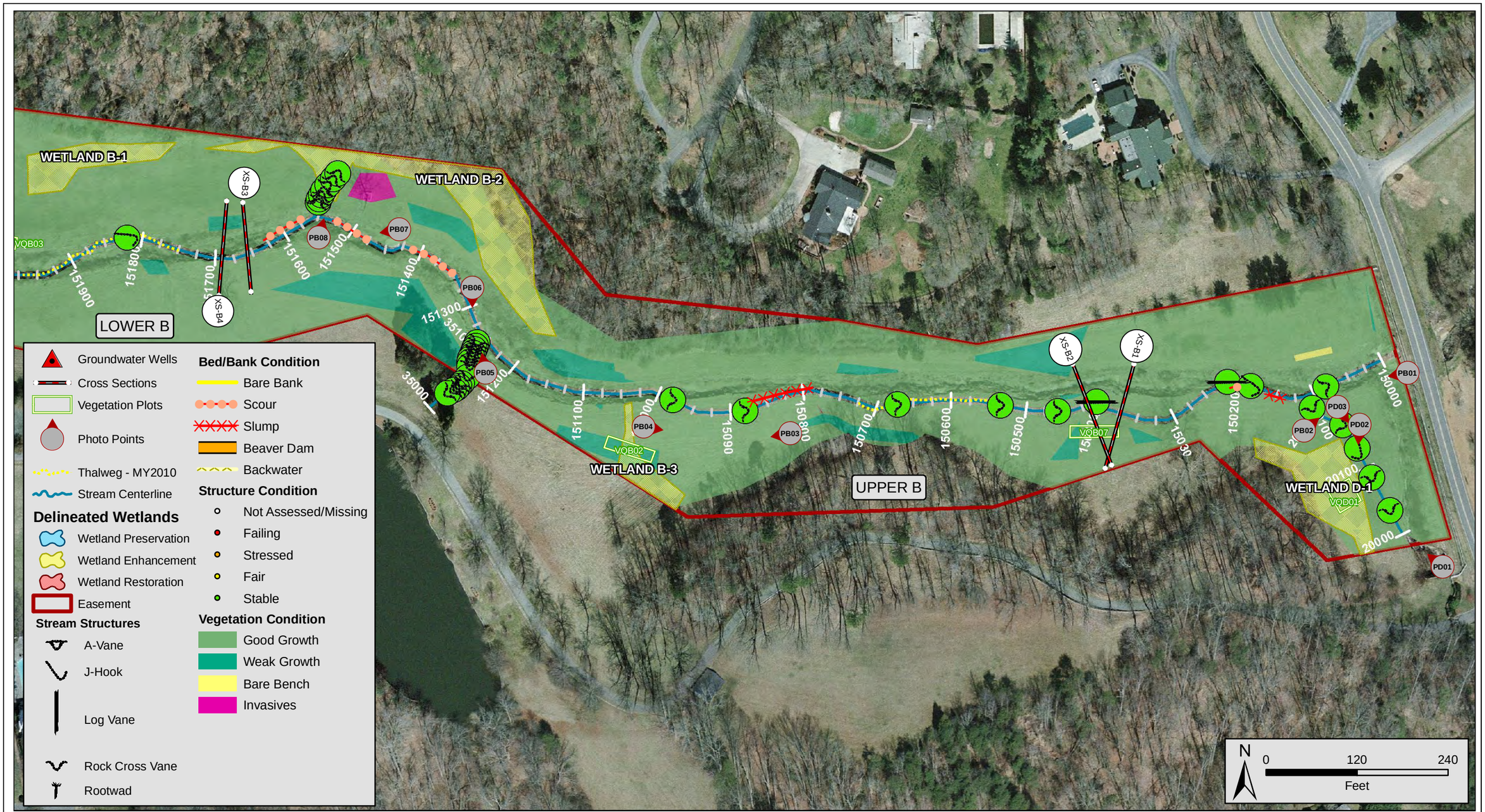
Date	Project Number	Figure
3/18/11	407	4



Title	Current Conditions Plan View (2006 Aerial courtesy of NC One Map)
Prepared For: Ecosystem Enhancement Program	**Project** Valley Fields Farm Stream and Wetland Restoration Monitoring Year 1 – 2010 Davidson County, North Carolina

Date	Project Number	Figure
3/18/11	407	5

Kimley-Horn and Associates, Inc.



Title	Current Conditions Plan View (2006 Aerial courtesy of NC One Map)

Prepared For:

Ecosystem Enhancement Program

Project	Valley Fields Farm Stream and Wetland Restoration Monitoring Year 1 – 2010 Davidson County, North Carolina	
Date	**Project Number**	**Figure**
3/18/11	407	6

Kimley-Horn and Associates, Inc.

Table 5.1 **Visual Stream Morphology Stability Assessment**
Reach ID **Upper A**
Assessed Length **1250**

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 downstrem 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 (Glide)	5	5			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			1	34	99%	0	0	99%
	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.			1	57	98%	0	0	98%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	2	91	96%	0	0	96%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	3	3			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	3	3			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	3	3			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	3	3			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	3	3			100%			

Table 5.2 **Visual Stream Morphology Stability Assessment**
Reach ID **Upper A2**
Assessed Length **2050**

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	20			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	20	20			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	20	20			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	20	20			100%			
		2. Thalweg centering at downstream of meander (Glide)	20	20			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			10	292	93%	0	0	93%
	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.			3	198	95%	0	0	95%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	13	490	88%	0	0	88%
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.	12	13			92%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	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%			

Table 5.3 **Visual Stream Morphology Stability Assessment**
Reach ID **Lower A**
Assessed Length **2000**

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	10	10			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	10	10			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	10	10			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	10	10			100%			
		2. Thalweg centering at downstream of meander (Glide)	10	10			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			1	93	98%	0	0	98%
	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.			6	396	90%	0	0	90%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	7	489	88%	0	0	88%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	3	6			50%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	3	6			50%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	3	6			50%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	3	6			50%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	3	6			50%			

Table 5.4 **Visual Stream Morphology Stability Assessment**
Reach ID **Upper B**
Assessed Length **1275**

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	2	2			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	2	2			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	2	2			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	2	2			100%			
		2. Thalweg centering at downstream of meander (Glide)	2	2			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			2	20	99%	0	0	99%
	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.			2	101	96%	0	0	96%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	4	121	95%	0	0	95%
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%. (See guidance for this table in EEP monitoring guidance document)	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%			

Table 5.5 **Visual Stream Morphology Stability Assessment**
Reach ID **Lower B**
Assessed Length **1275**

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	2	2			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	2	2			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	2	2			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	2	2			100%			
		2. Thalweg centering at downstream of meander (Glide)	2	2			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.			4	222	91%	0	0	91%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	4	222	91%	0	0	91%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	1	1			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	1	1			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	1	1			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	1	1			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	1	1			100%			

Table 5.6 **Visual Stream Morphology Stability Assessment**
Reach ID **Reach C**
Assessed Length **1500**

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	24	24			100%			
	3. Meander Pool Condition	1. Depth Sufficient (Max Pool Depth : Mean Bankfull Depth ≥ 1.6)	24	24			100%			
		2. Length appropriate (>30% of centerline distance between tail of upstream riffle and head of downstrem riffle)	24	24			100%			
	4.**Thalweg Position**	1. Thalweg centering at upstream of meander bend (Run)	24	24			100%			
		2. Thalweg centering at downstream of meander (Glide)	24	24			100%			
2. Bank	**1. Scoured/Eroding**	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion			1	8	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%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	1	8	100%	0	0	100%
3. Engineered Structures	**1. Overall Integrity**	Structures physically intact with no dislodged boulders or logs.	17	17			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	17	17			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	17	17			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%. (See guidance for this table in EEP monitoring guidance document)	17	17			100%			
	4. Habitat	Pool forming structures maintaining ~ Max Pool Depth : Mean Bankfull Depth ratio ≥ 1.6 Rootwads/logs providing some cover at base-flow.	17	17			100%			

Table 6 Vegetation Condition Assessment

Planted Acreage[1] **81.6**

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Planted Acreage
1. Bare Areas	Very limited cover of both woody and herbaceous material.	0.1 acres	Pattern and Color	2	0.01	0.0%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1 acres	Pattern and Color	30	0.96	1.2%
			Total	32	0.97	1.2%
3. Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 acres	Pattern and Color	0	0.00	0.0%
			Cumulative Total	32	0.97	1.2%

Easement Acreage[2] **97.5**

Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Easement Acreage
4. Invasive Areas of Concern[4]	Areas or points (if too small to render as polygons at map scale).	1000 SF	Pattern and Color	60	0.46	0.5%
5. Easement Encroachment Areas[3]	Areas or points (if too small to render as polygons at map scale).	none	Pattern and Color	0	0.00	0.0%

1 = Enter the planted acreage within the easement. This number is calculated as the easement acreage minus any existing mature tree stands that were not subject to supplemental planting of the understory, the channel acreage, crossings or any other elements not directly planted as part of the project effort.

2 = The acreage within the easement boundaries.

3 = Encroachment may occur within or outside of planted areas and will therefore be calculated against the overall easement acreage. In the event a polygon is cataloged into items 1, 2 or 3 in the table and is the result of encroachment, the associated acreage should be tallied in the relevant item (i.e., item 1,2 or 3) as well as a parallel tally in item 5.

4 = Invasives may occur in or out of planted areas, but still within the easement and will therefore be calculated against the overall easement acreage. Invasives of concern/interest are listed below. The list of high concern spcies are those with the potential to directly outcompete native, young, woody stems in the short-term (e.g. monitoring period or shortly thereafter) or affect the community structure for existing, more established tree/shrub stands over timeframes that are slightly longer (e.g. 1-2 decades). The low/moderate concern group are those species that generally do not have this capacity over the timeframes discussed and therefore are not expected to be mapped with regularity, but can be mapped, if in the judgement of the observer their coverage, density or distribution is suppressing the viability, density, or growth of planted woody stems. Decisions as to whether remediation will be needed are based on the integration of risk factors by EEP such as species present, their coverage, distribution relative to native biomass, and the practicality of treatment. For example, even modest amounts of Kudzu or Japanese Knotweed early in the projects history will warrant control, but potentially large coverages of Microstegium in the herb layer will not likley trigger control because of the limited capacities to impact tree/shrub layers within the timeframes discussed and the potential impacts of treating extensive amounts of ground cover. Those species with the "watch list" designator in gray shade are of interest as well, but have yet to be observed across the state with any frequency. Those in *red italics* are of particular interest given their extreme risk/threat level for mapping as points where isolated specimens are found, particularly ealry in a projects monitoring history. However, areas of discreet, dense patches will of course be mapped as polygons. The symbology scheme below was one that was found to be helpful for symbolzing invasives polygons, particulalry for situations where the conditon for an area is somewhere between isolated specimens and dense, discreet patches. In any case, the point or polygon/area feature can be symbolized to describe things like high or low concern and species can be listed as a map inset, in legend items if the number of species are limited or in the narrative section of the executive summary.

PA01 (2010)

PA02 (2010)

PA03 (2010)

PA04 (2010)

PA05 (2010)

PA06 (2010)

PA07 (2010)

PA08 (2010)

PA09 (2010)

PA10 (2010)

PA11 (2010)

PA12 (2010)

PA13 (2010)

PA14 (2010)

PA15 (2010)

PA16 (2010)

PA17 (2010)

PB02 (2010)

PB03 (2010)

PB04 (2010)

PB05 (2010)

PB06 (2010)

PB07 (2010)

PB08 (2010)

PB09 (2010)

PB10 (2010)

PB11 (2010)

PC01 (2010)

PC02 (2010)

PC03 (2010)

PC04 (2010)

PC05 (2010)

PC06 (2010)

PD01 (2010)

PD02 (2010)

PD03 (2010)

SP1 (2010)

VQA01 (2010)

VQA02 (2010)

VQA03 (2010)

VQA05 (2010)

VQA07 (2010)

VQA08 (2010)

VQA11 (2010)

VQA12 (2010)

VQA13 (2010)

VQB02 (2010)

VQB03 (2010)

VQB06 (2010)

VQB07 (2010)

VQC01 (2010)

VQC03 (2010)

VQD01 (2010)

VQW01 (2010)

VQW04 (2010)

APPENDIX C
VEGETATION PLOT DATA

Table 7. Vegetation Plot Criteria Attainment		
Valley Fields Farm/407		
Vegetation Plot ID	Vegetation Survival Threshold Met?	Tract Mean
VQA1	N	33%
VQA2	N	
VQA3	N	
VQA5	Y	
VQA7	N	
VQA8	N	
VQA11	Y	
VQA12	N	
VQA13	Y	
VQB2	N	25%
VQB3	Y	
VQB6	N	
VQB7	N	
VQC1	Y	100%
VQC3	Y	
VQD1	N	0%
VQW1	Y	50%
VQW4	N	

Table 8. CVS Vegetation Plot Metadata Valley Fields Farm/407	
Report Prepared By	Josh Allen
Date Prepared	11/29/2010 8:51
database name	cvs-eep-entrytool-v2.2.7.mdb
database location	K:\RAL_Environmental\011795 Valley Fields Farm VFF\VFF VEGETATION
computer name	DD83075
file size	28704768
DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT----------	
Metadata	Description of database file, the report worksheets, and a summary of project(s) and project data.
Proj, planted	Each project is listed with its PLANTED stems per acre, for each year. This excludes live stakes.
Proj, total stems	Each project is listed with its TOTAL stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Plots	List of plots surveyed with location and summary data (live stems, dead stems, missing, etc.).
Vigor	Frequency distribution of vigor classes for stems for all plots.
Vigor by Spp	Frequency distribution of vigor classes listed by species.
Damage	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage by Spp	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
Planted Stems by Plot and Spp	A matrix of the count of PLANTED living stems of each species for each plot; dead and missing stems are excluded.
PROJECT SUMMARY----------	
Project Code	407
project Name	Valley Fields Farm
Description	stream and wetland restoration
River Basin	Yadkin
length(ft)	9350
stream-to-edge width (ft)	100
area (sq m)	167, 540
Required Plots (calculated)	18
Sampled Plots	18

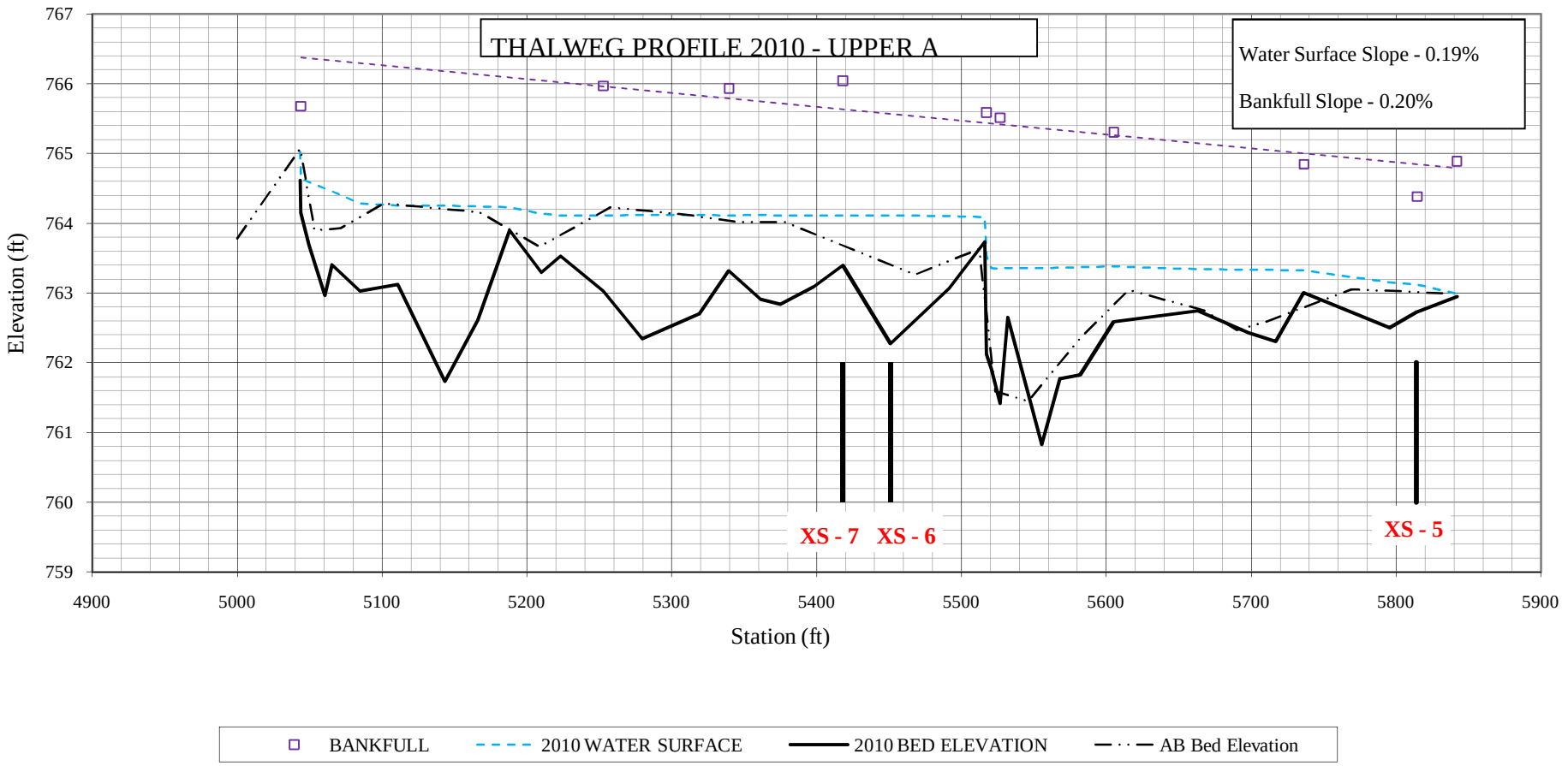
Table 9 Planted and Total Stem Counts (Species by Plot with Annual Means)

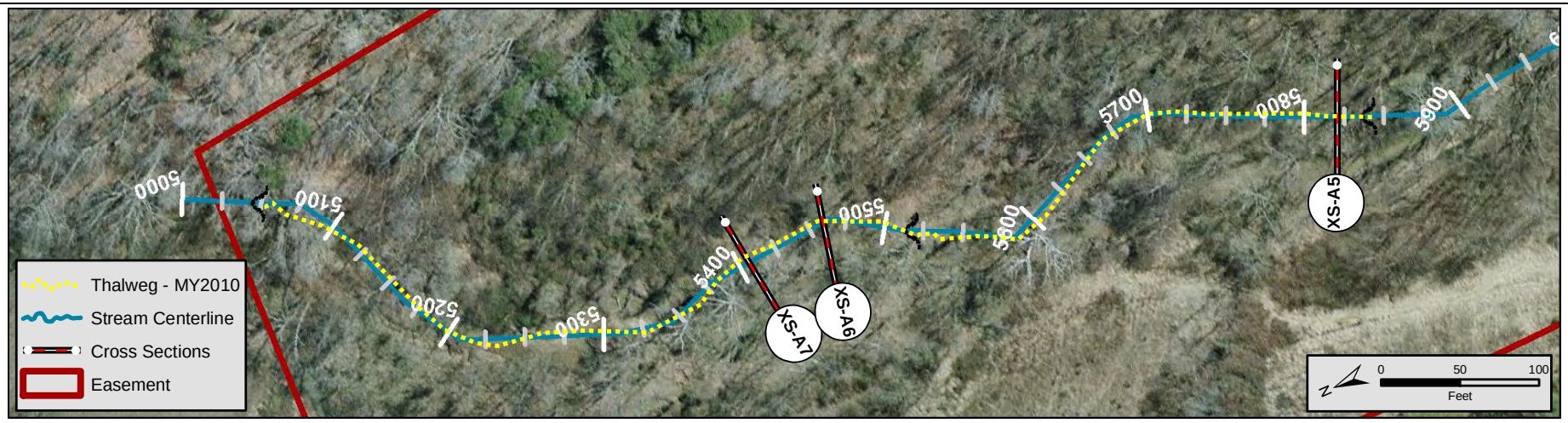
	Common Name	Type	Current Data (MY1 2010)																		Annual Means			
			VQA1		VQA2		VQA3		VQA5		VQA7		VQA8		VQA11		VQA12		VQA13		Current Mean		MY0 (2008)	
			P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T
Liriodendron tulipera		T																			6.0	6.0	1.0	1.0
Unknown																							3.4	3.4
Unidentified																							3.4	3.4
Alnus serrulata																							1.0	1.0
Betula nigra		T			1	1			1	1	1	1					2	2	1	1	1.4	1.4	2.3	2.3
Carpinus caroliniana																							1.5	1.5
Quercus nigra																							1.0	1.0
Fraxinus pennsylvanica		T	2	2											11	11			1	1				
Cephalanthus occidentalis																								
Crategeou crus-gali																								
Quercus michauxii																								
Plantanus occidentalis		T	4	4					8	8	2	2	1	1										
Acer rubrum																								
Pinus echinata																								
Salix nigra		L							1	1									1	1				
Ulmus americana		T	1	1							4	4												
Cornus amomum		L															1	1						
Acer negundo																								
Diospyros virginiana		T																	5	5				
Liquidambar styraciflua		T													1	1	4	4						
Quercus phellos		L																						
Quercus shumardii		T																						
Plot area (acres)			0.0247		0.0247		0.0247		0.0247		0.0247		0.0247		0.0247		0.0247		0.0247					
Species count			3	3	1	1	0	0	3	3	3	3	1	1	2	2	3	3	4	4				
Stem Count			**7**	**7**	**1**	**1**	**0**	**0**	**10**	**10**	**7**	**7**	**1**	**1**	**12**	**12**	**7**	**7**	**8**	**8**				
Stems per Acre			284	284	41	41	0	0	405	405	284	284	41	41	486	486	284	284	324	324				

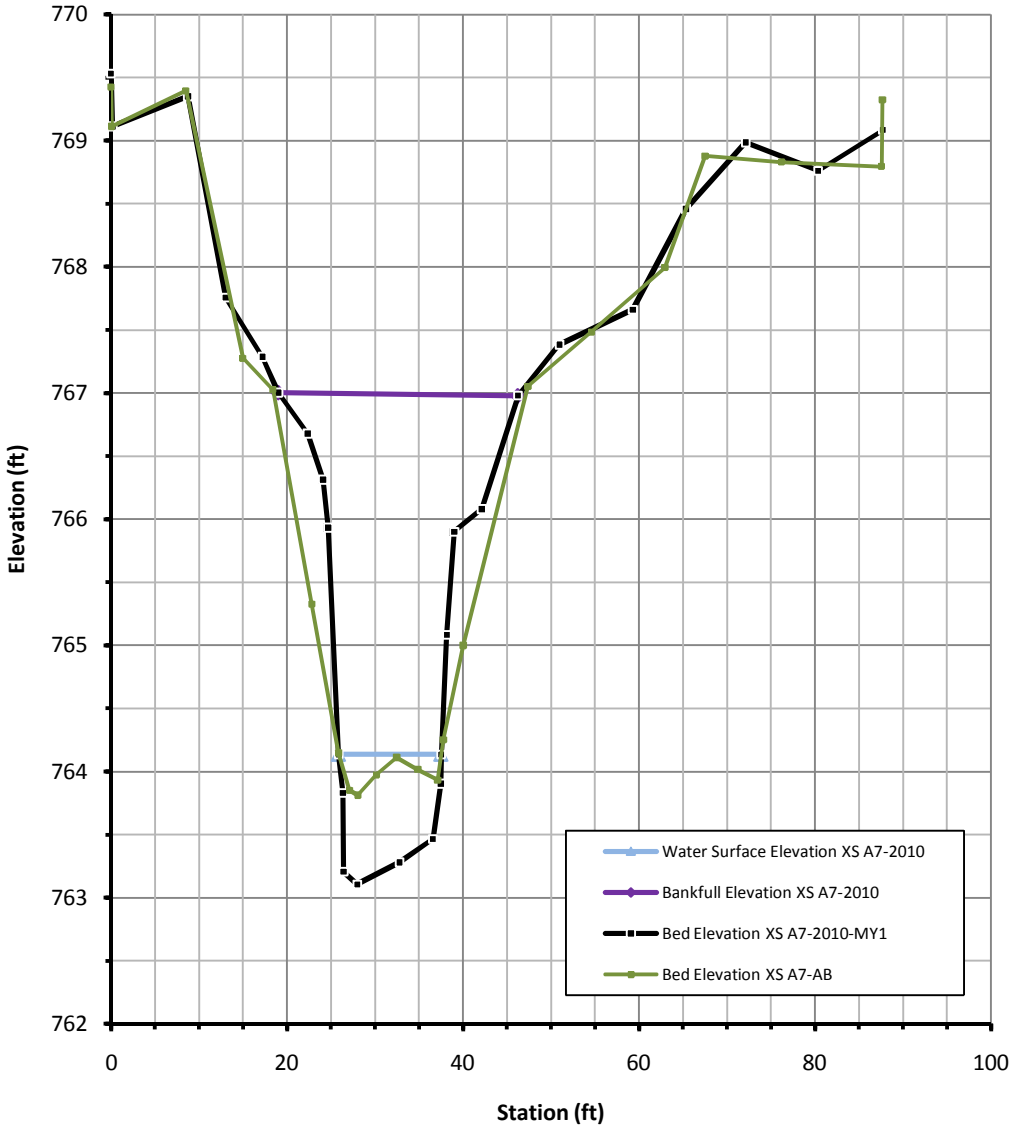
	Common Name	Type	VQB2		VQB3		VQB6		VQB7		VQC1		VQC3		VQD1		VQW1		VQW4		Current Mean		MY0 (2008)	
			P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T
Liriodendron tulipera		T									6	6									6.0	6.0	1.0	1.0
Unknown																							3.4	3.4
Unidentified																							3.4	3.4
Alnus serrulata																							1.0	1.0
Betula nigra		T			3	3													1	1	1.4	1.4	2.3	2.3
Carpinus caroliniana																							1.5	1.5
Quercus nigra																							1.0	1.0
Fraxinus pennsylvanica		T			2	2	1	1									5	5	1	1	3.3	3.3	1.2	1.2
Cephalanthus occidentalis																							3.0	3.0
Crategeou crus-gali																							1.0	1.0
Quercus michauxii																							1.0	1.0
Plantanus occidentalis		T			21	21			4	4			5	5	1	1	1	1			5.2	5.2	2.5	2.5
Acer rubrum																							1.5	1.5
Pinus echinata																							1.0	1.0
Salix nigra		L							2	2	13	13	8	8	2	2					4.5	4.5		
Ulmus americana		T									1	1	2	2			2	2	1	1	1.8	1.8		
Cornus amomum		L																			1.0	1.0	1.0	1.0
Acer negundo																							1.0	1.0
Diospyros virginiana		T															4	4			4.5	4.5		
Liquidambar styraciflua		T			1	1															2.0	2.0		
Quercus phellos		L							1	1											1.0	1.0		
Quercus shumardii		T			1	1															1.0	1.0		
Plot area (acres)			0.0247		0.0247		0.0247		0.0247		0.0247		0.0247		0.0247		0.0247		0.0247					
Species count			0	0	5	5	1	1	3	3	3	3	3	3	2	2	4	4	3	3	2.4	2.4	3.4	3.4
Stem Count			**0**	**0**	**28**	**28**	**1**	**1**	**7**	**7**	**20**	**20**	**15**	**15**	**3**	**3**	**12**	**12**	**3**	**3**	**7.9**	**7.9**	**7.8**	**7.8**
Stems per Acre			0	0	1134	1134	41	41	284	284	810	810	608	608	122	122	486	486	122	122	319.8	319.8	315.2	315.2

Type = Tree, Shrub, Livestake
P = Planted
T = Total

APPENDIX D
STREAM SURVEY DATA

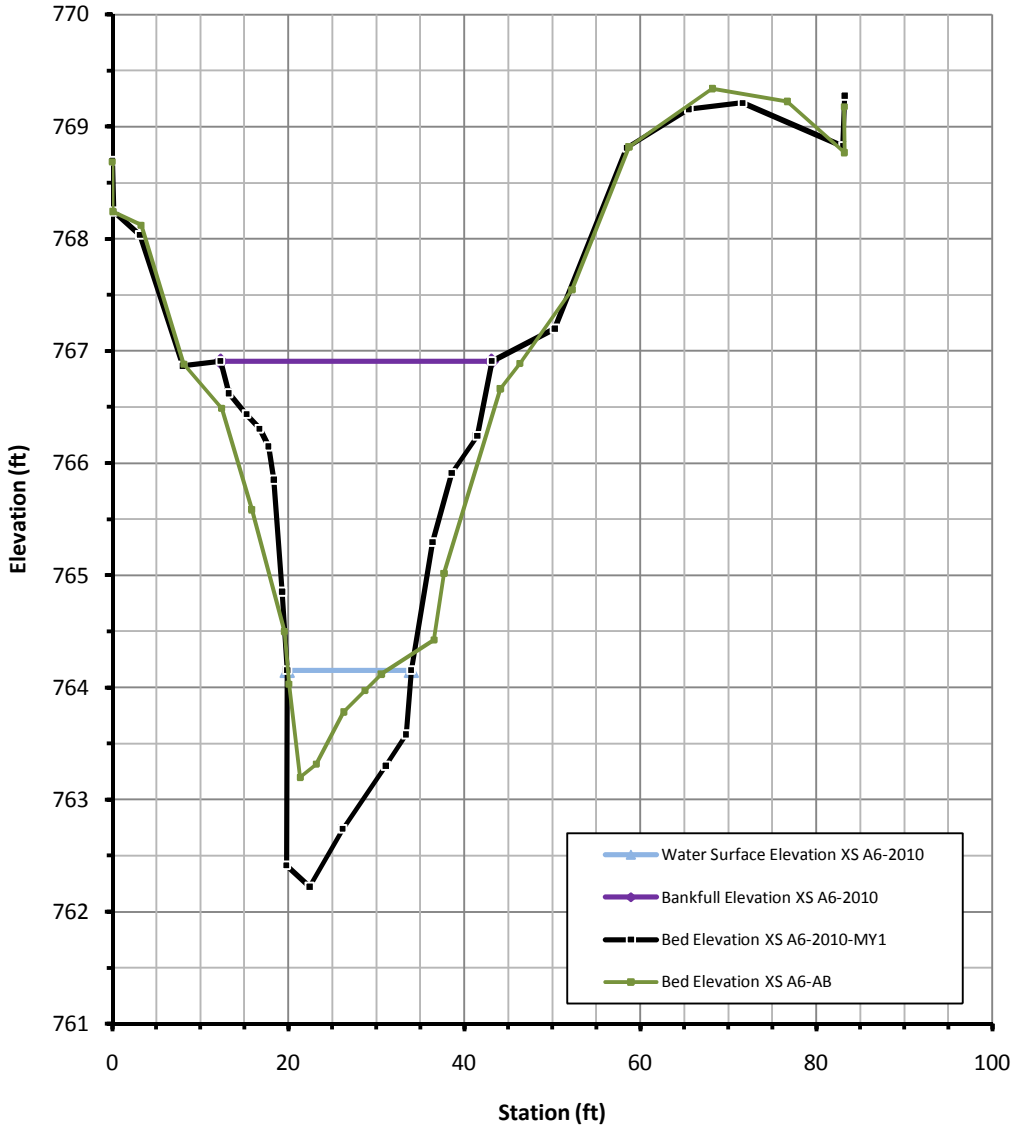

THALWEG PROFILE 2010 - UPPER A
Water Surface Slope - 0.19%
Bankfull Slope - 0.20%
Elevation (ft)
Station (ft)
XS - 7
XS - 6
XS - 5
BANKFULL
2010 WATER SURFACE
2010 BED ELEVATION
AB Bed Elevation


Thalweg - MY2010
Stream Centerline
Cross Sections
Easement
XS-A7
XS-A6
XS-A5
Feet



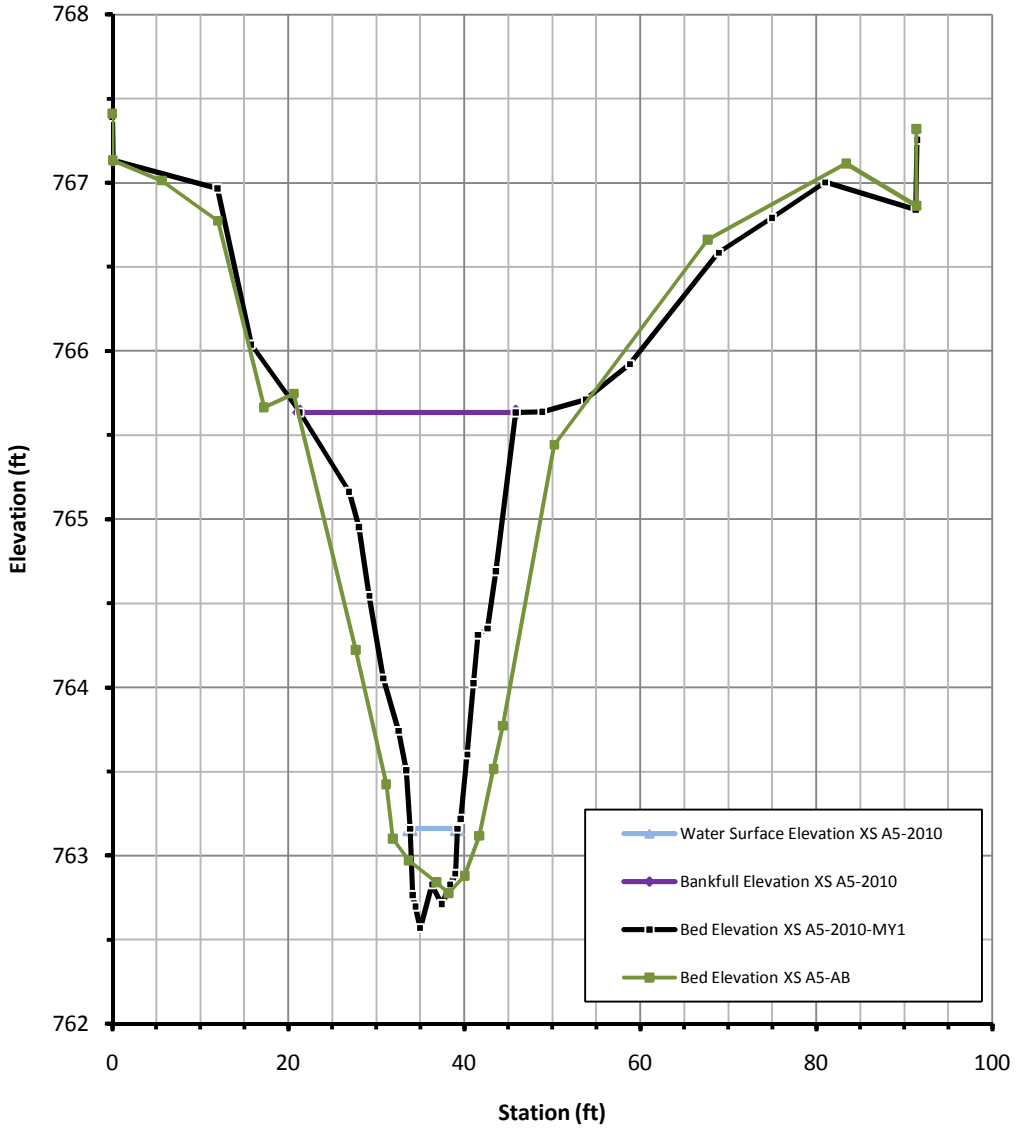
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS A7	2008	AB	RIFFLE	29.1	60.1	3.2
XS A7	2010	MY1	RIFFLE	27.2	54.8	3.9

NOTES:



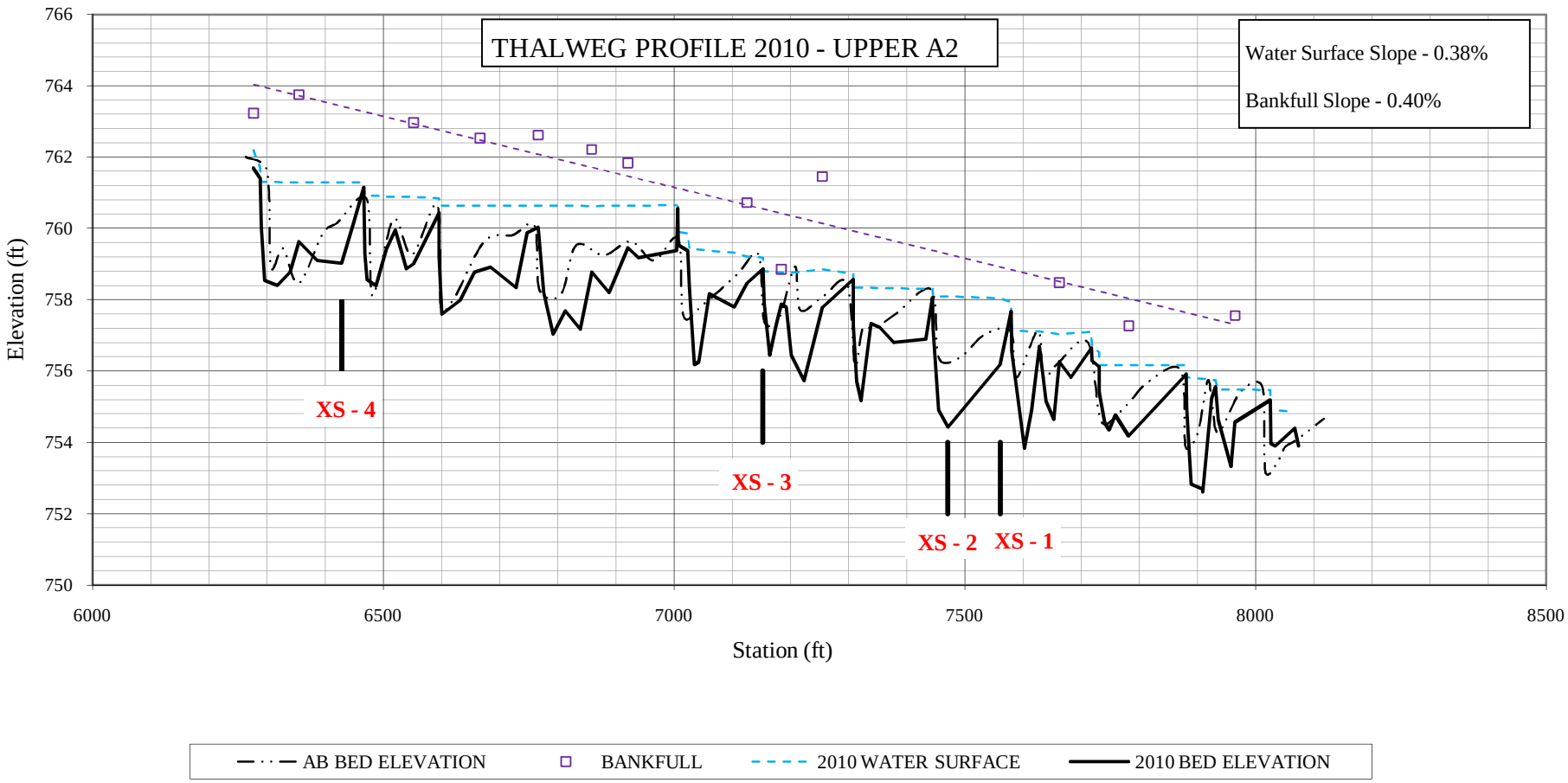
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS A6	2008	AB	POOL	38.3	71.0	3.7
XS A6	2010	MY1	POOL	34.7	75.6	4.7

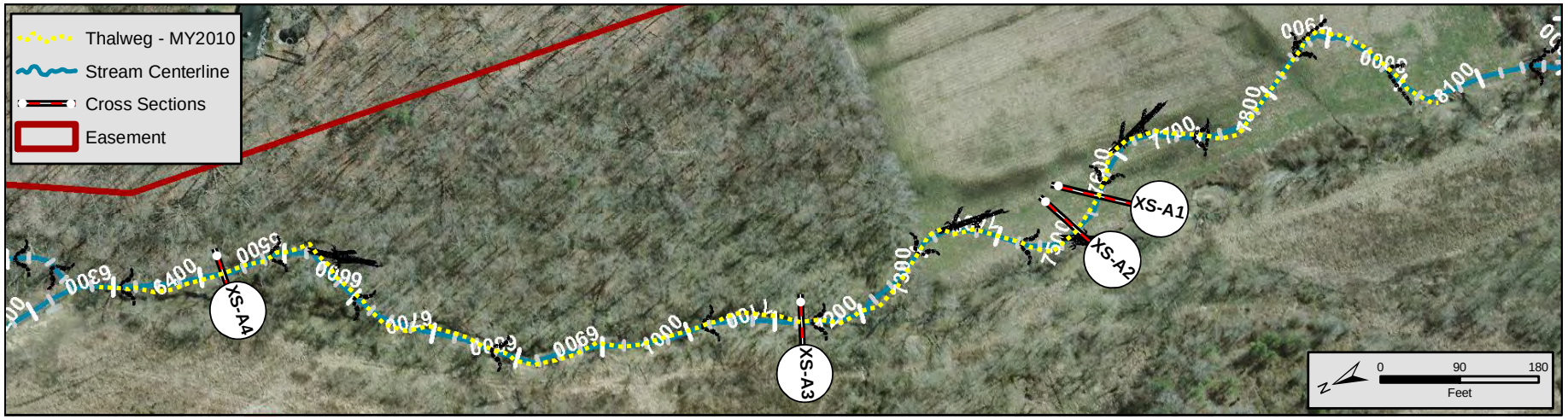
NOTES:



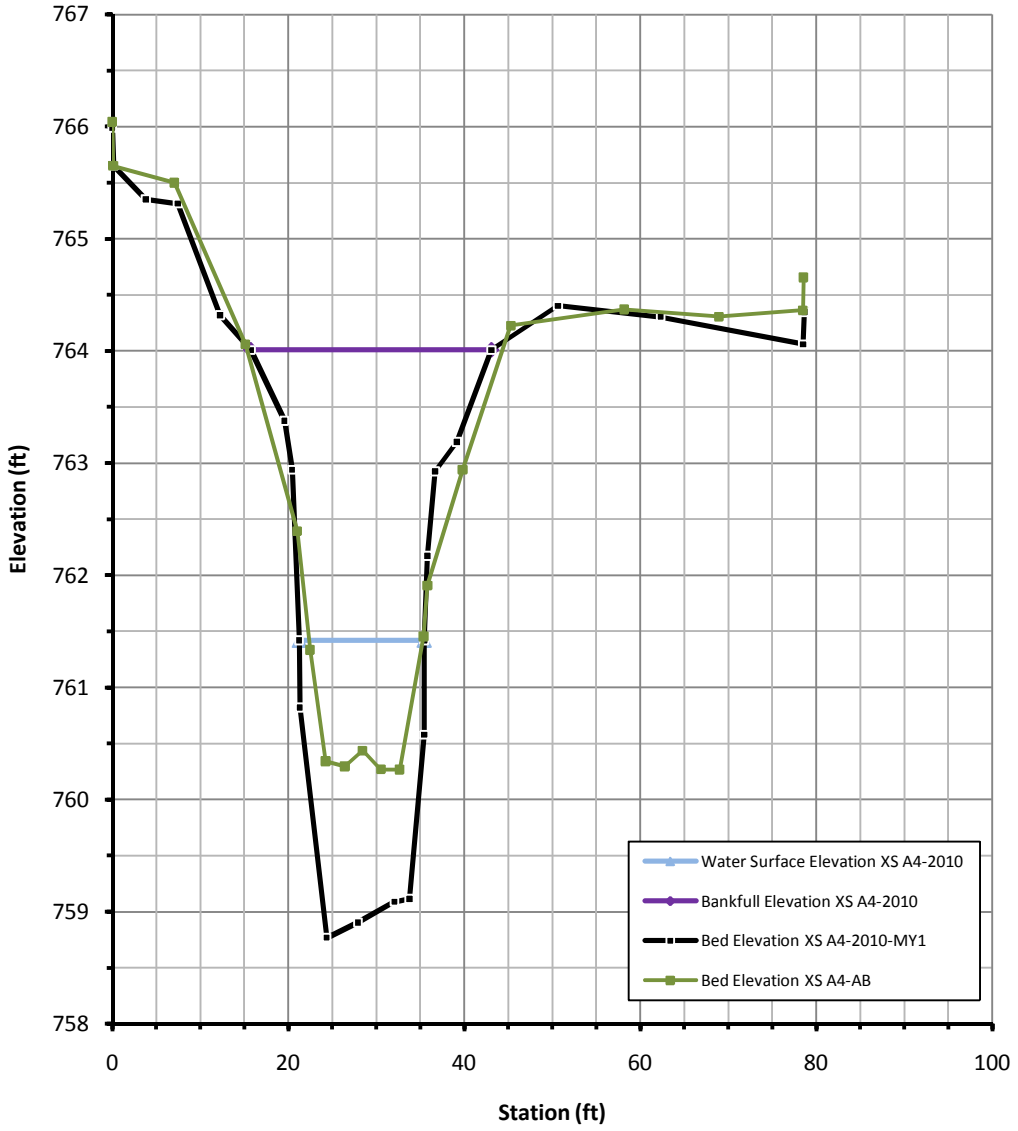
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS A5	2008	AB	RIFFLE	31.0	50.1	2.8
XS A5	2010	MY1	RIFFLE	29.9	35.5	3.1

NOTES:



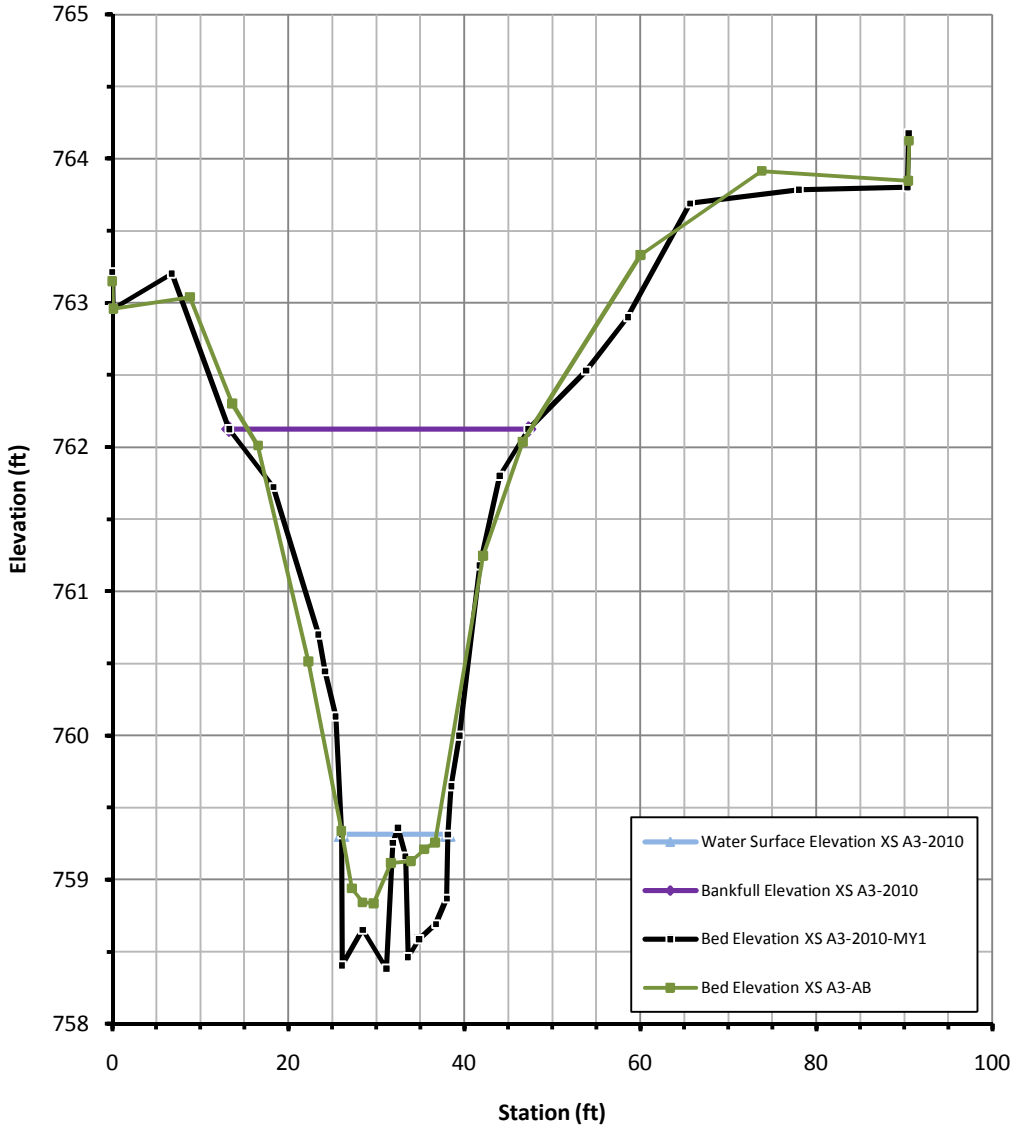


Kimley-Horn and Associates, Inc.



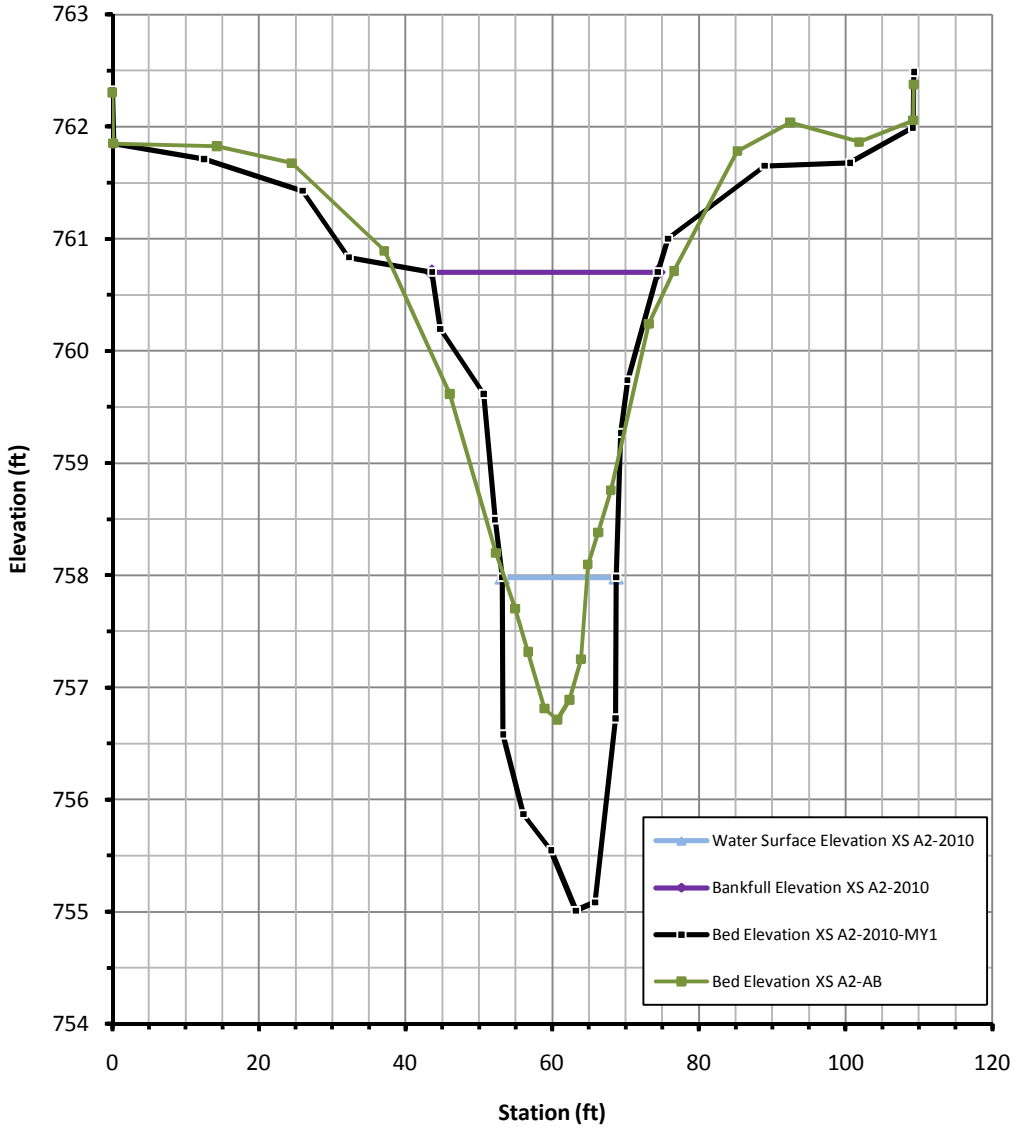
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS A4	2008	AB	RIFFLE	31.1	69.0	4.0
XS A4	2010	MY1	RIFFLE	27.5	75.9	5.2

NOTES:



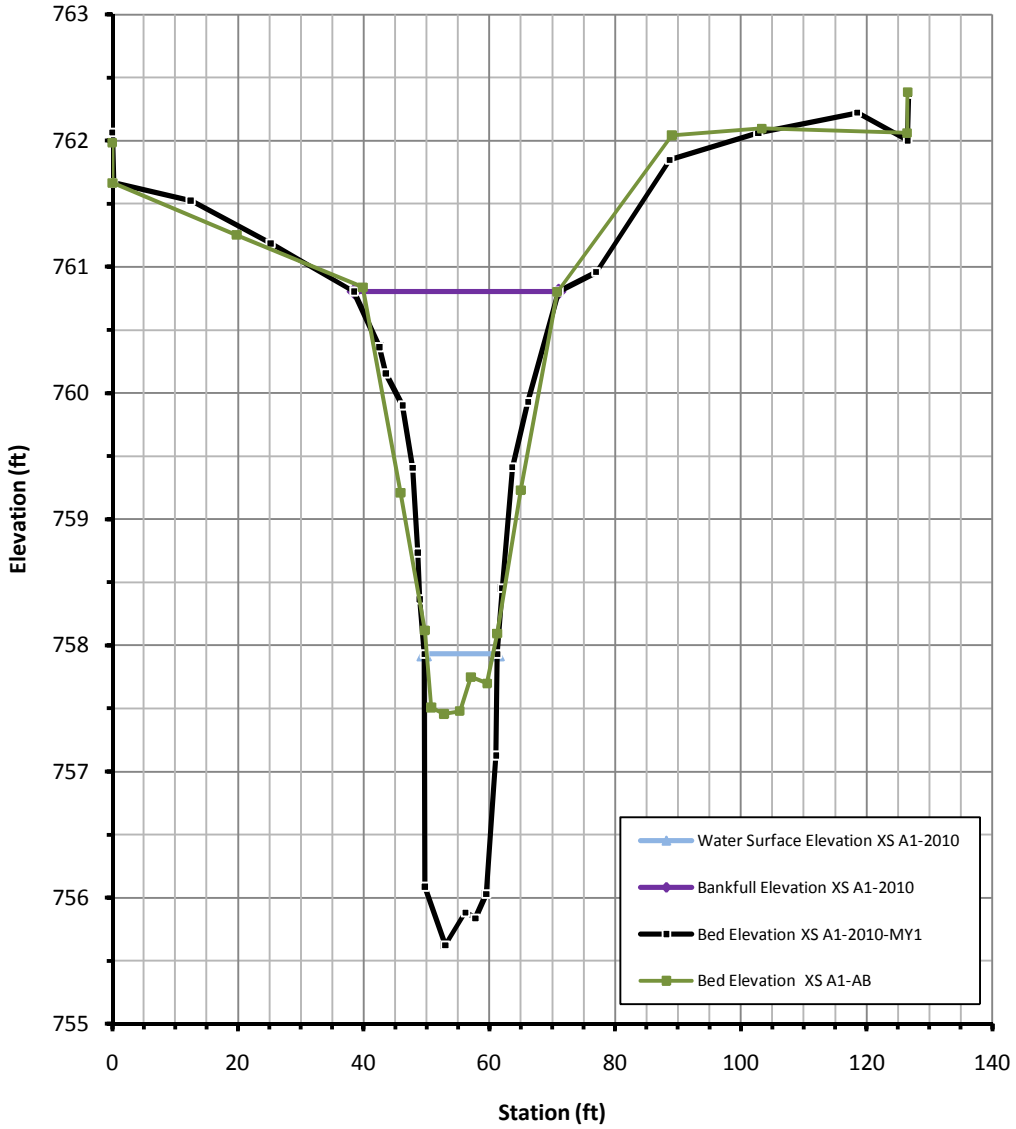
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS A3	2008	AB	RIFFLE	30.1	55.2	3.2
XS A3	2010	MY1	RIFFLE	33.4	57.4	3.6

NOTES:



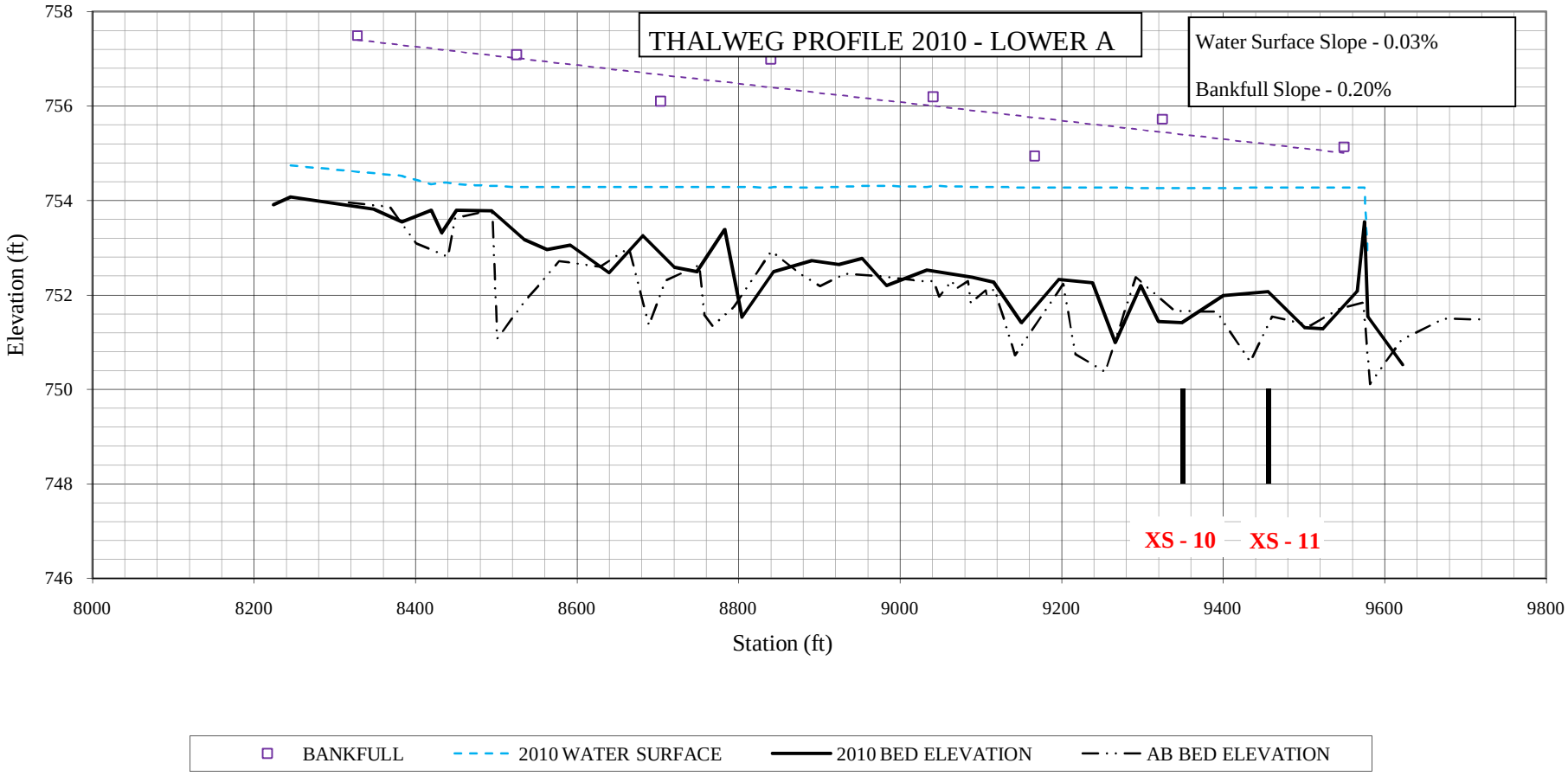
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS A2	2008	AB	POOL	40.9	79.9	4.2
XS A2	2010	MY1	POOL	30.8	92.8	5.7

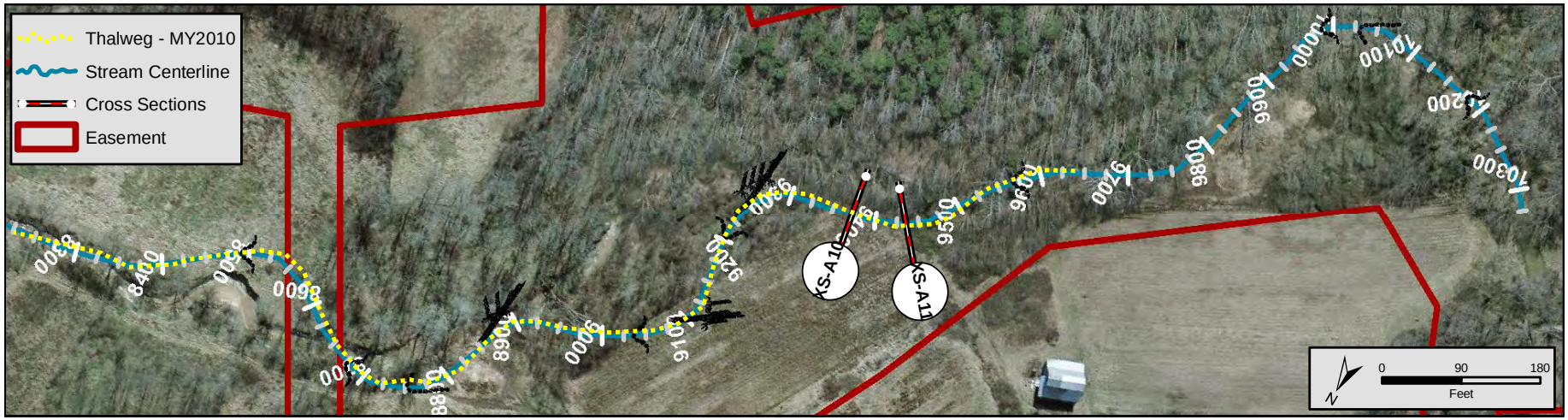
NOTES:



ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS A1	2008	AB	RIFFLE	31.1	62.5	3.4
XS A1	2010	MY1	RIFFLE	33.3	76.4	5.2

NOTES:





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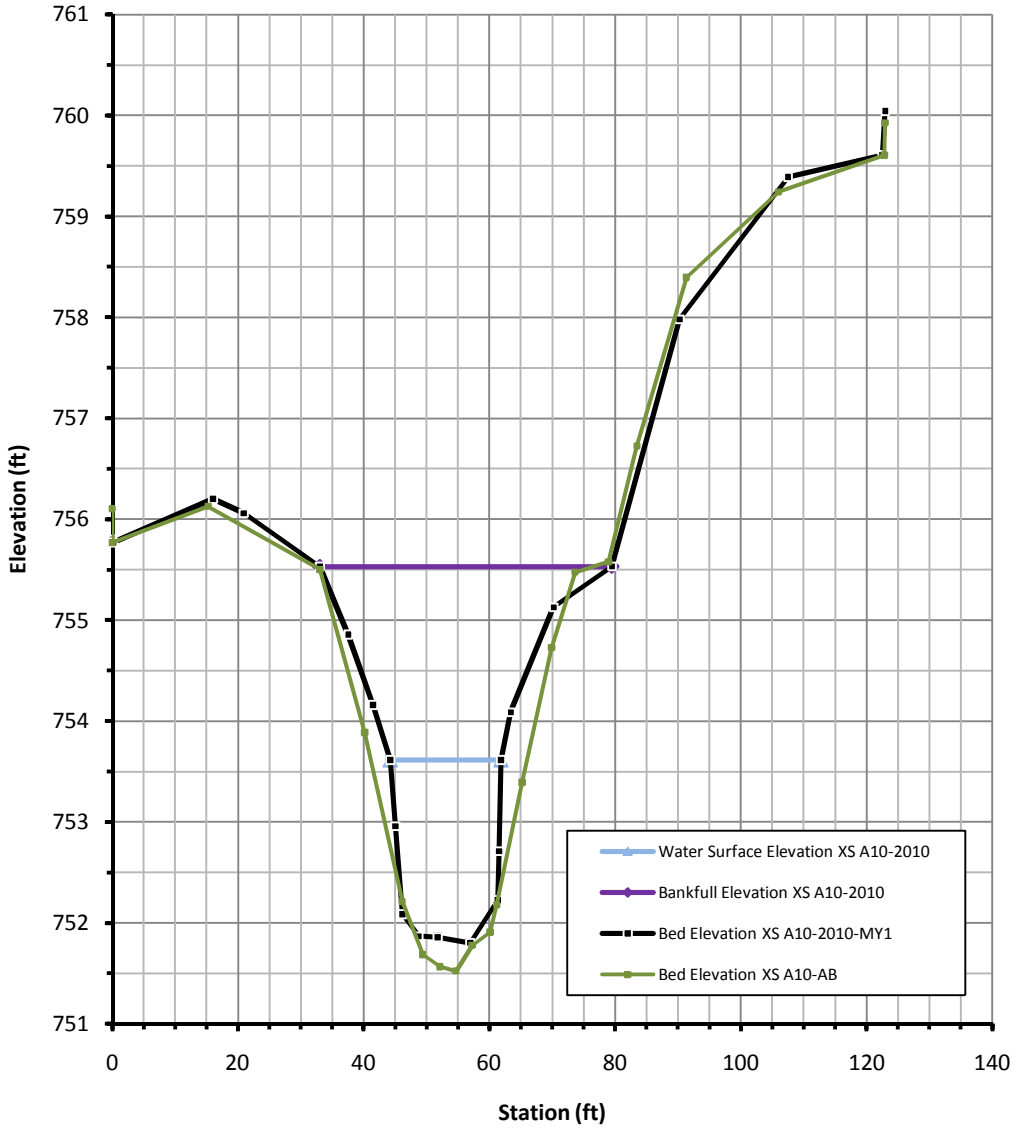
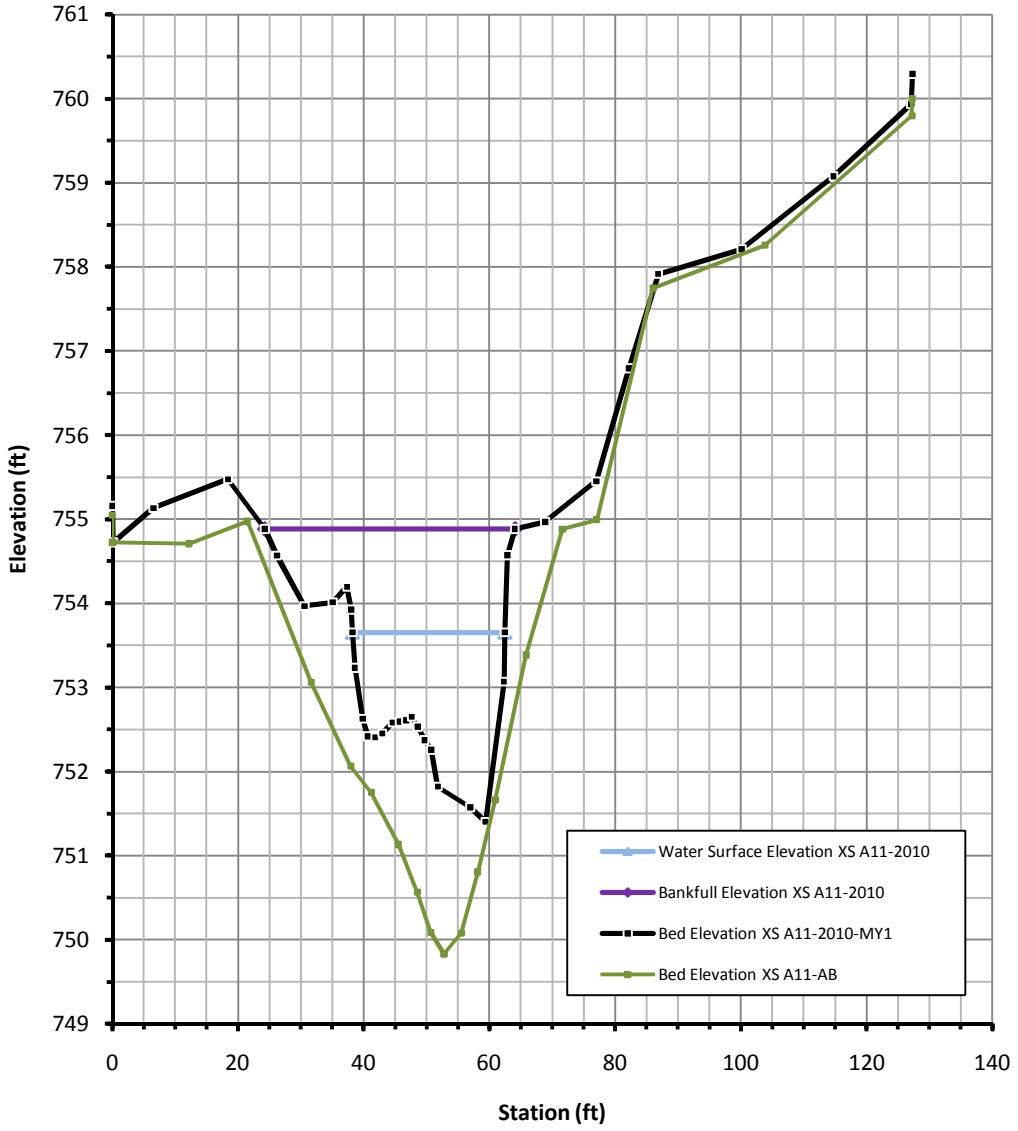


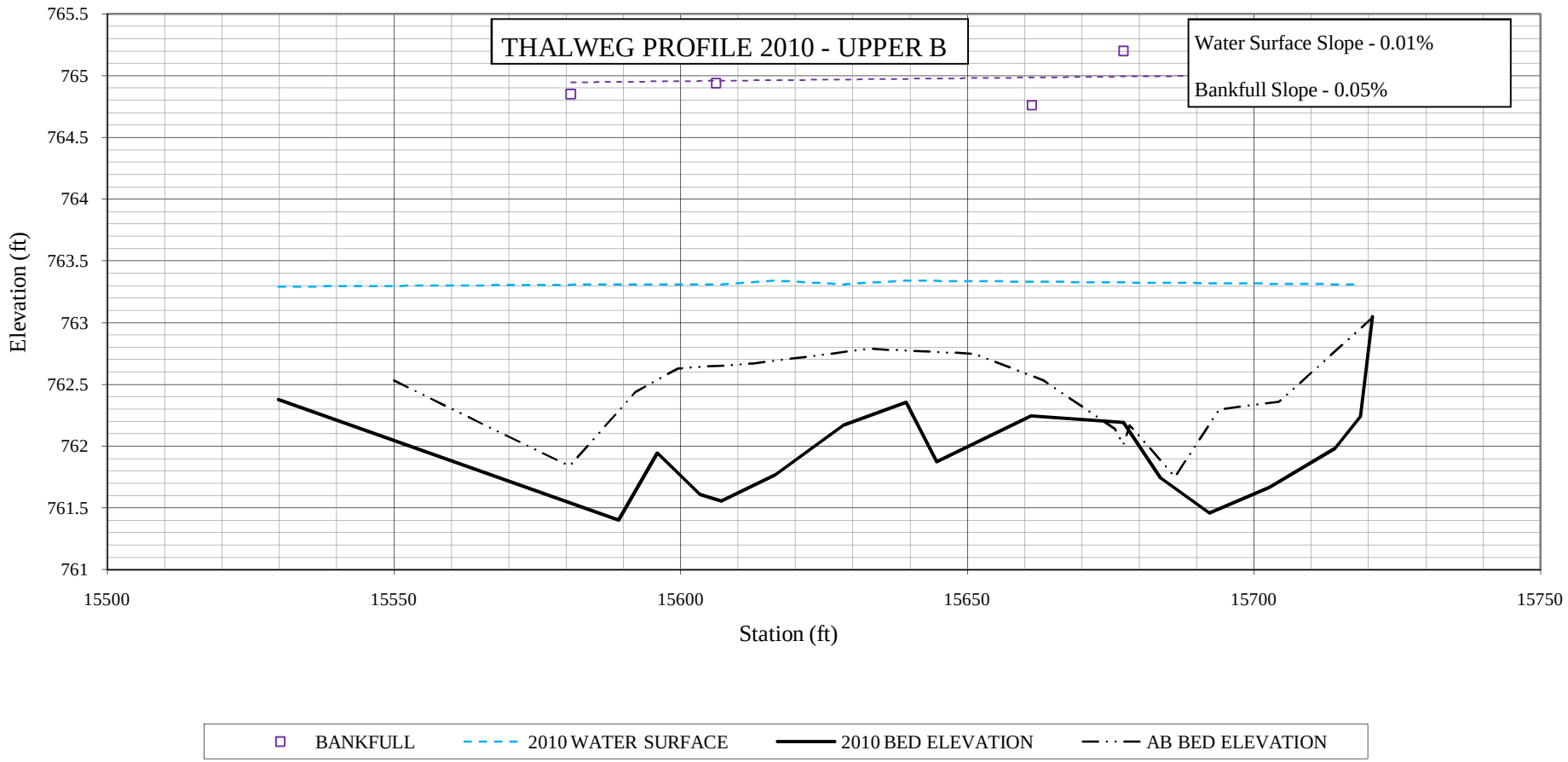
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS A10	2008	AB	RIFFLE	41.3	95.5	4.0
XS A10	2010	MY1	RIFFLE	47.1	85.4	3.8

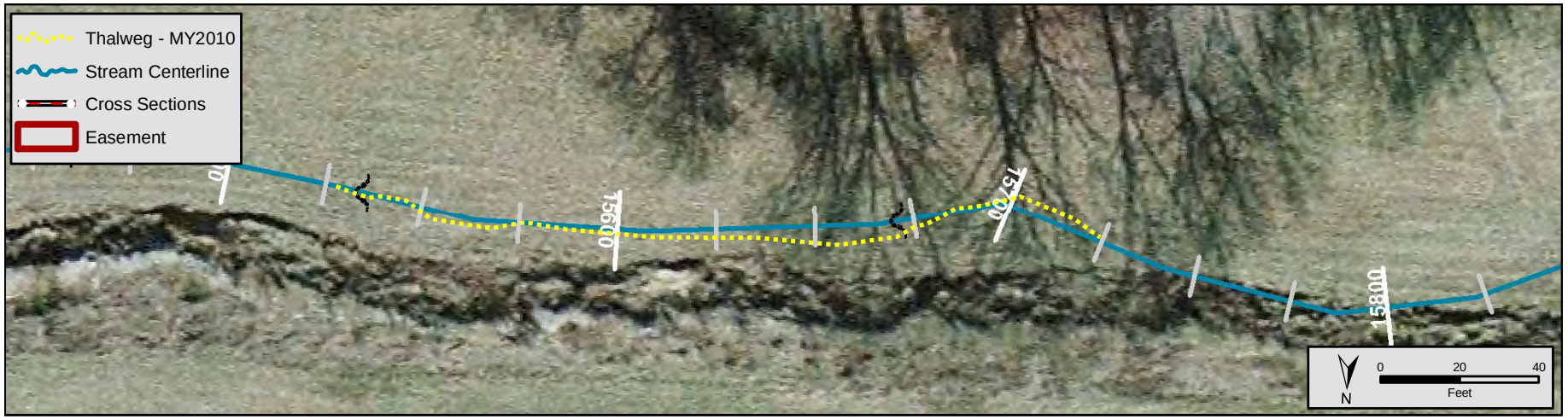
NOTES: Impacted by beaver dam on downstream end of profile.

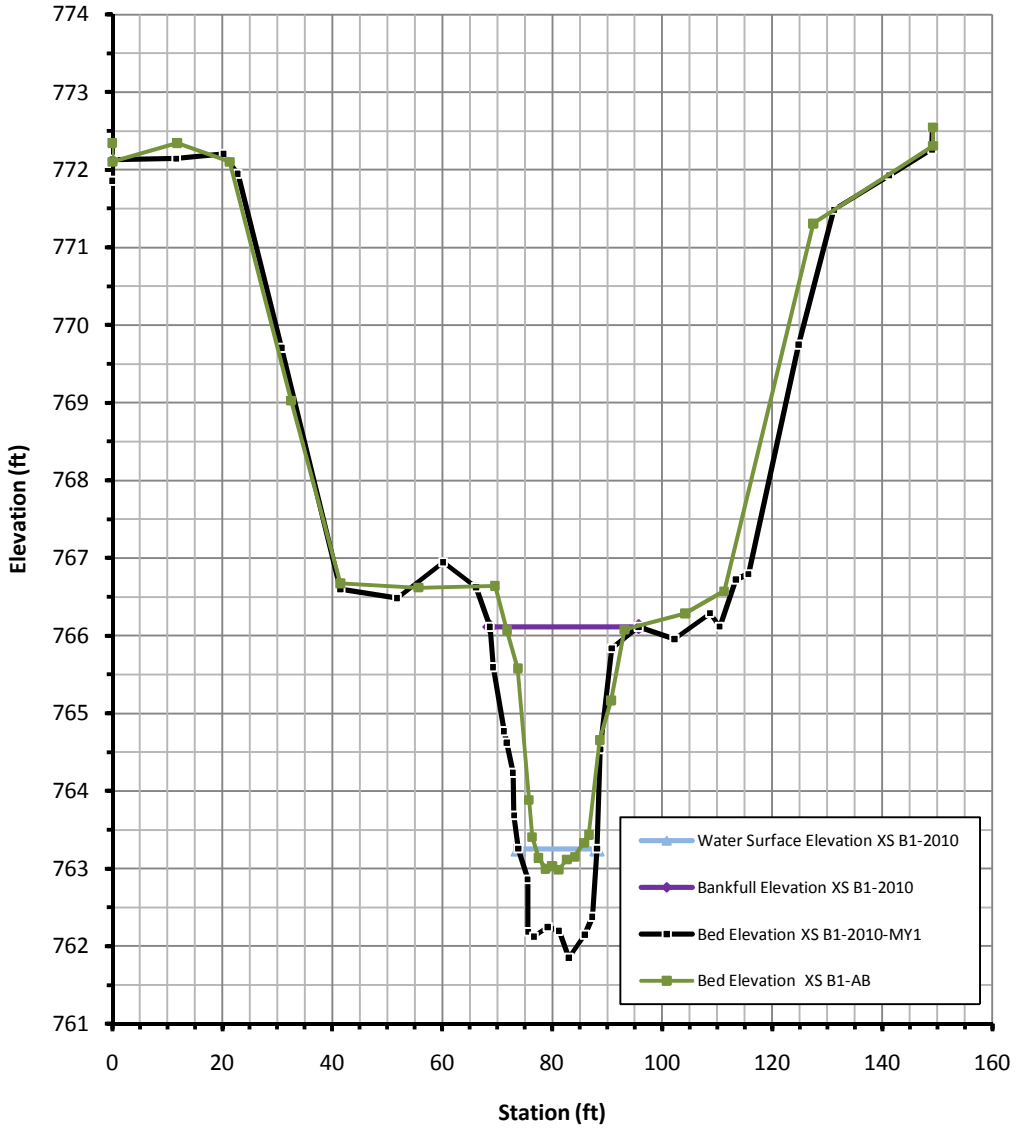


ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS A11	2008	AB	POOL	49.9	133.9	5.1
XS A11	2010	MY1	POOL	41.6	74.6	3.5

NOTES: Impacted by beaver dam on downstream end of profile. Beaver dam also appears to be preventing the transport of bed material out of the pools.

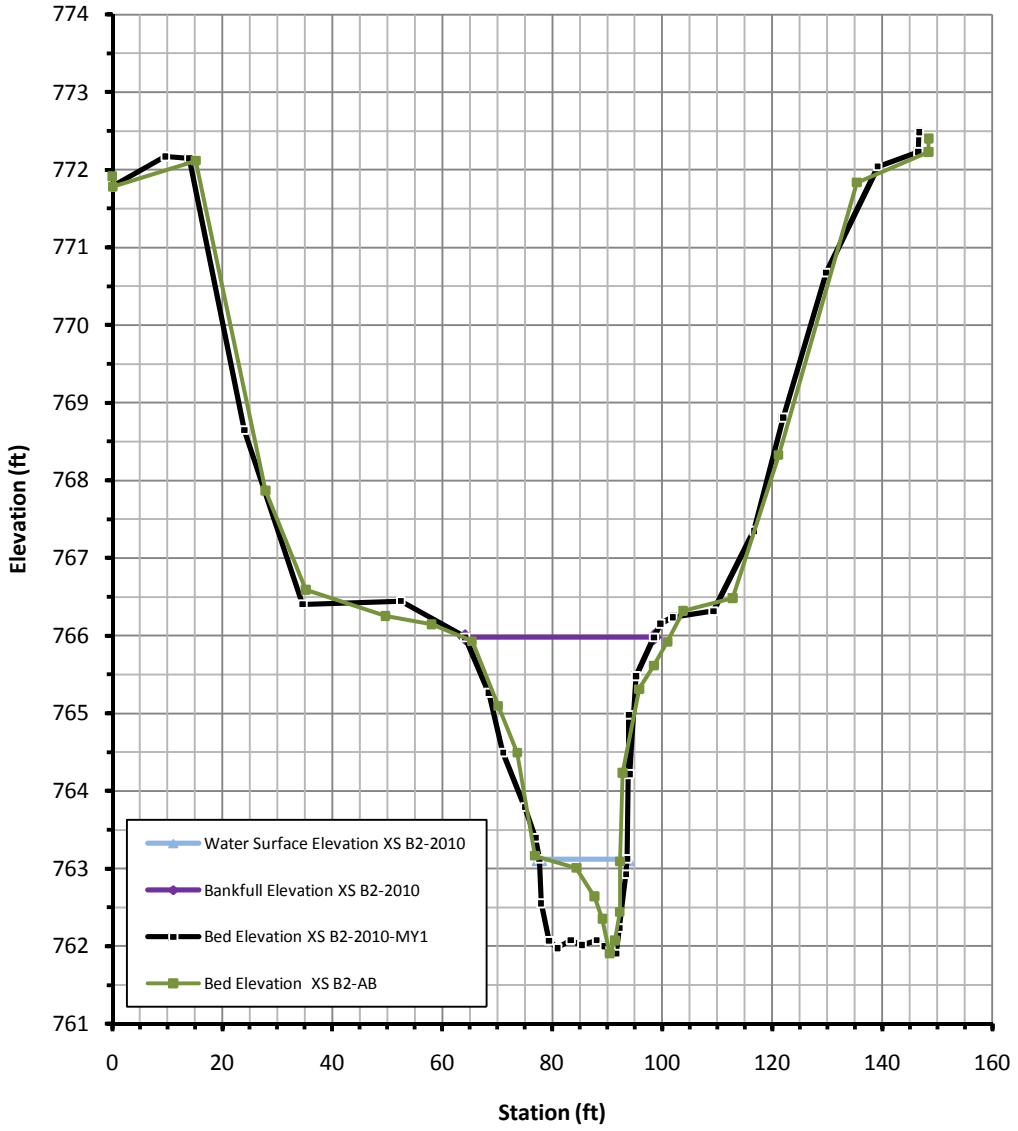

THALWEG PROFILE 2010 - UPPER B
Water Surface Slope - 0.01%
Bankfull Slope - 0.05%
Elevation (ft)
765.5
765
764.5
764
763.5
763
762.5
762
761.5
761
15500
15550
15600
15650
15700
15750
Station (ft)
BANKFULL
2010 WATER SURFACE
2010 BED ELEVATION
AB BED ELEVATION


Thalweg - MY2010
Stream Centerline
Cross Sections
Easement
15600
15700
15800
N
0
20
40
Feet



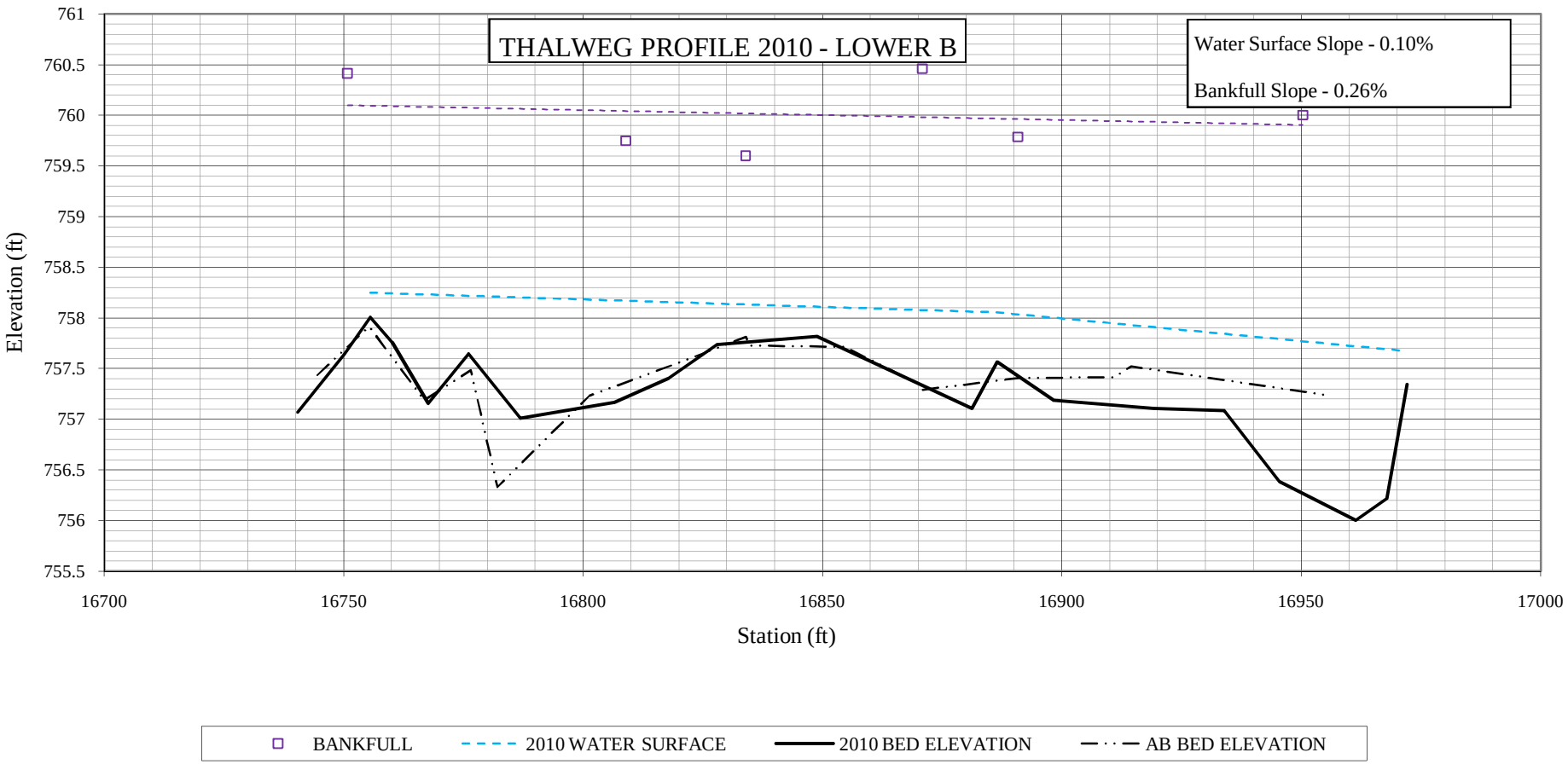
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS B1	2009	AB	RIFFLE	21.4	42.4	3.1
XS B1	2010	MY1	RIFFLE	36.4	66.6	4.3

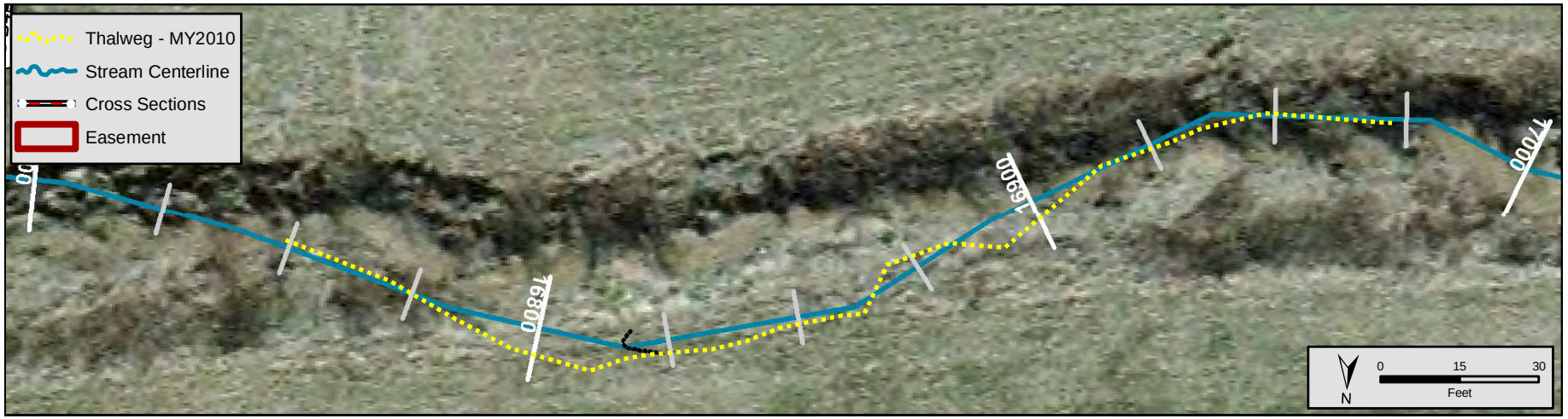
NOTES: The cross sections on reach B are not located within the longitudinal profile sections.

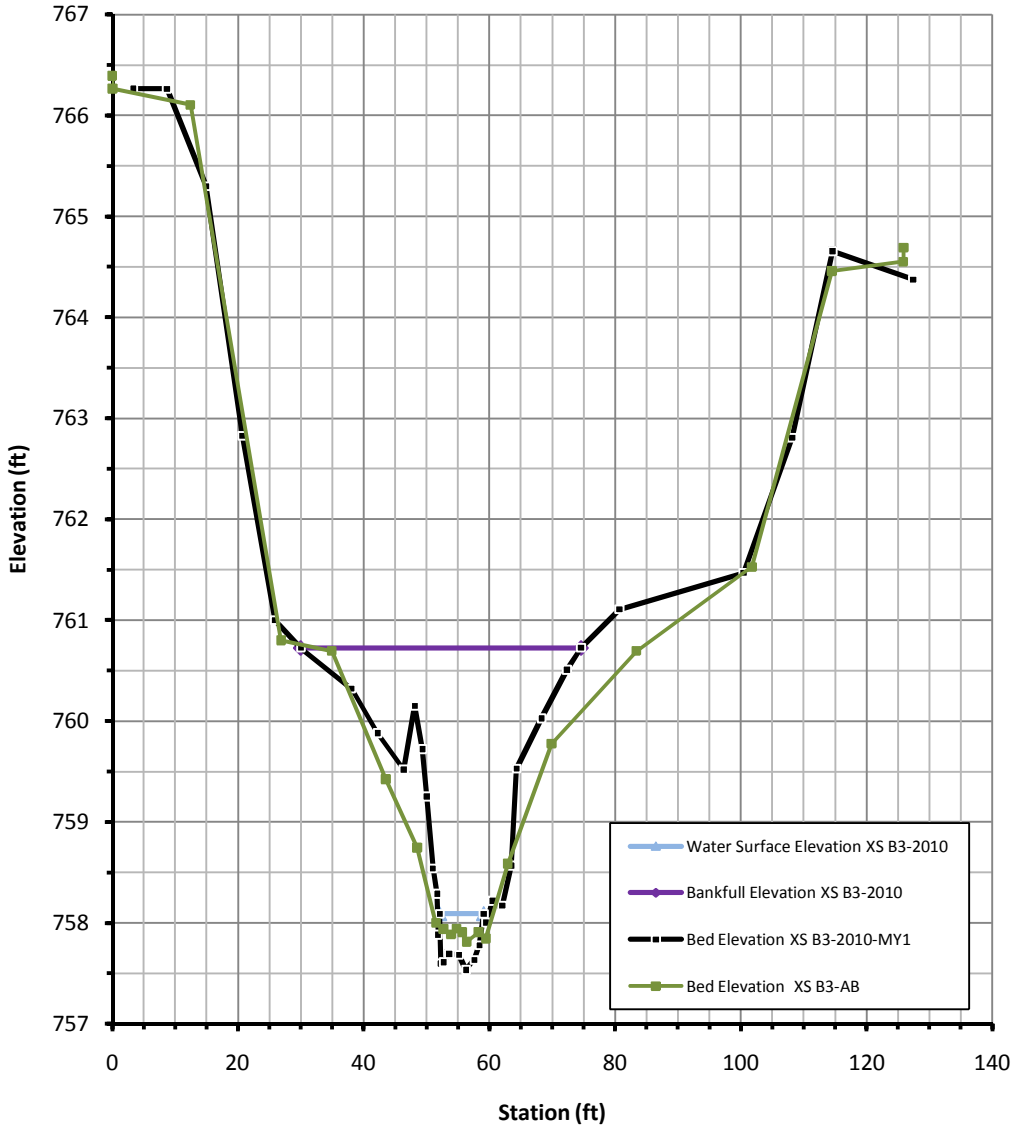


ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS B2	2009	AB	POOL	35.7	67.7	4.0
XS B2	2010	MY1	POOL	34.3	81.5	4.0

NOTES: The cross sections on reach B are not located within the longitudinal profile sections.

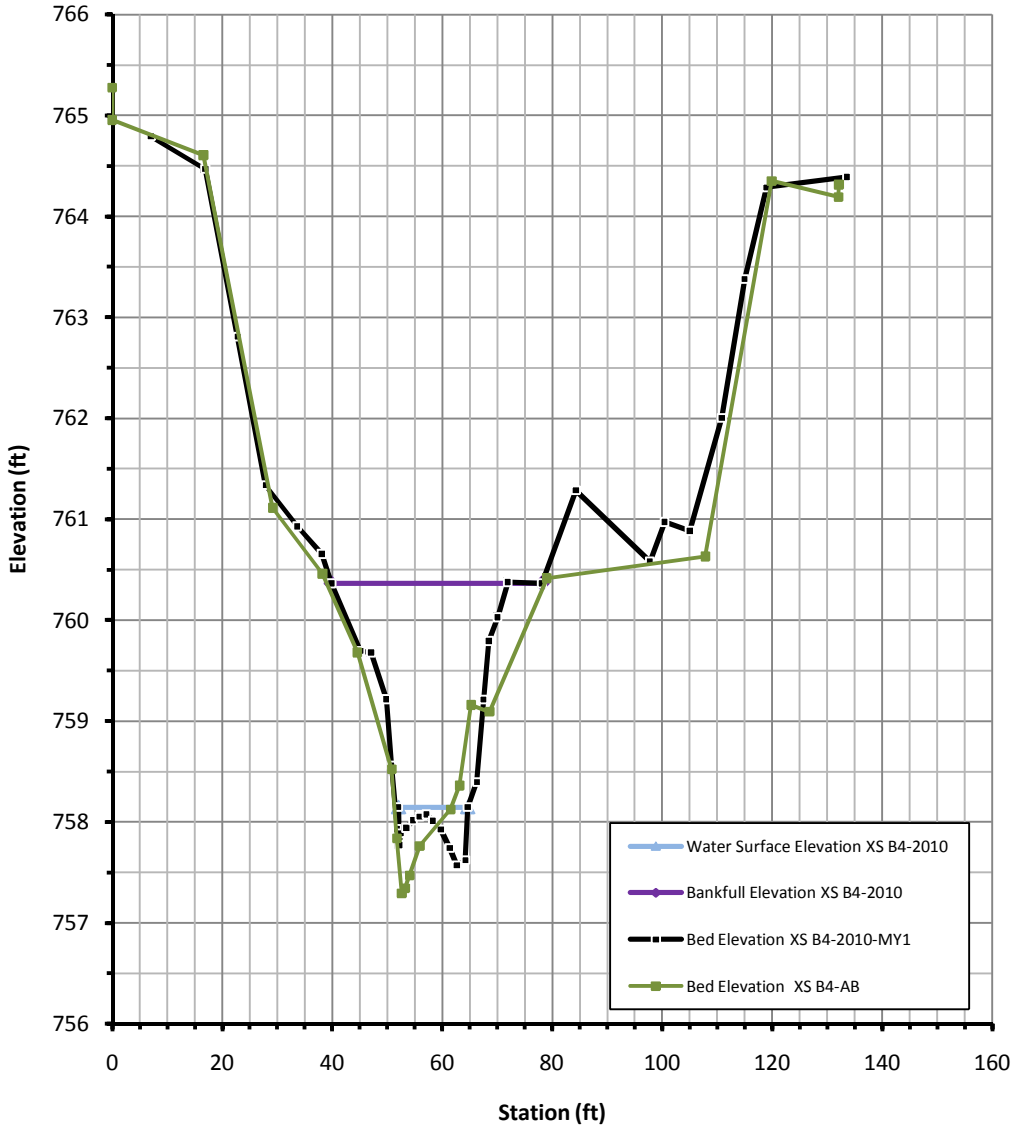

THALWEG PROFILE 2010 - LOWER B
Water Surface Slope - 0.10%
Bankfull Slope - 0.26%
Elevation (ft)
761
760.5
760
759.5
759
758.5
758
757.5
757
756.5
756
755.5
16700
16750
16800
16850
16900
16950
17000
Station (ft)
BANKFULL
2010 WATER SURFACE
2010 BED ELEVATION
AB BED ELEVATION


Thalweg - MY2010
Stream Centerline
Cross Sections
Easement
16800
16900
17000
N
0
15
30
Feet



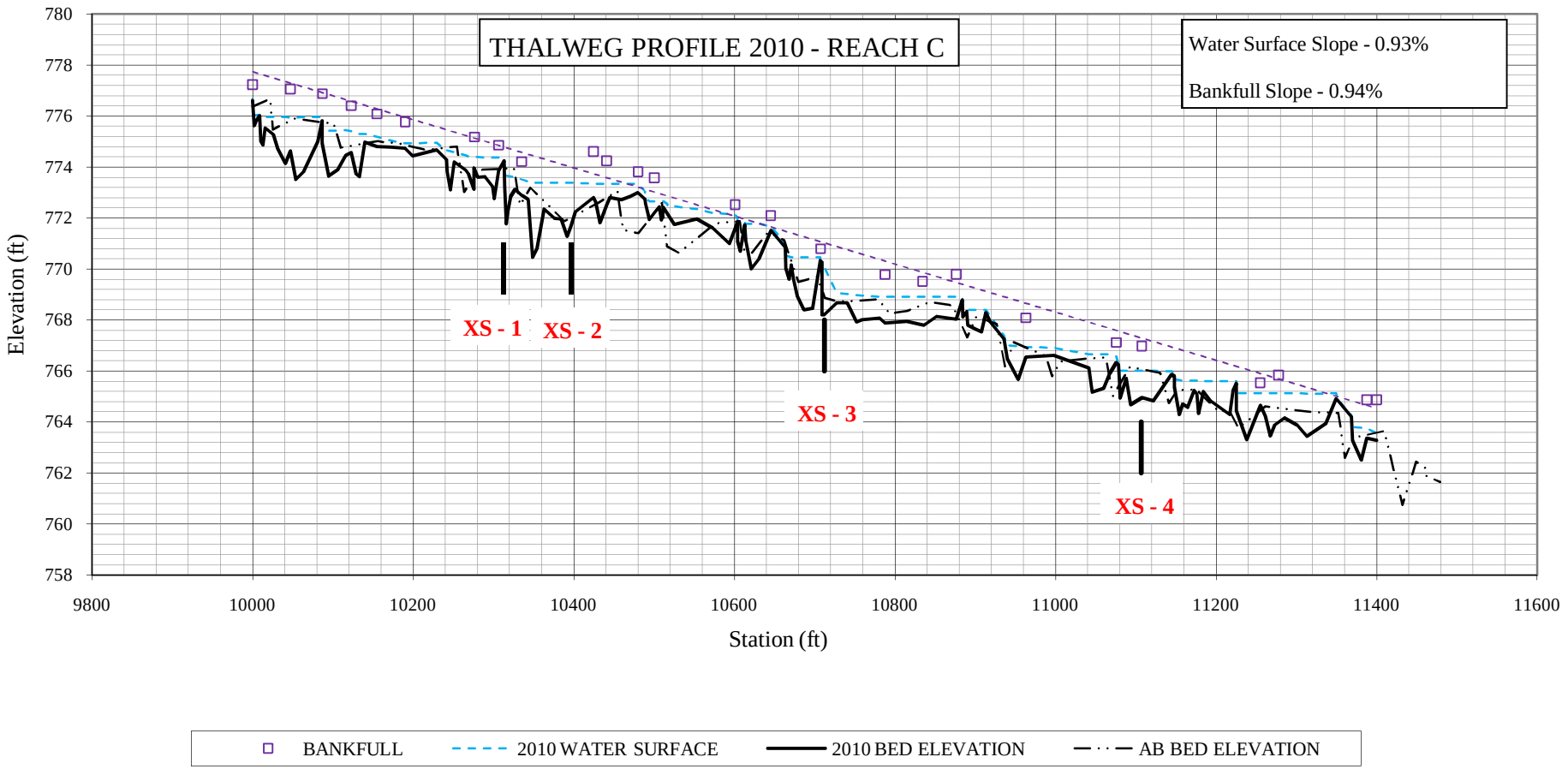
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS B3	2009	AB	RIFFLE	48.4	67.8	2.9
XS B3	2010	MY1	RIFFLE	44.4	55.3	3.2

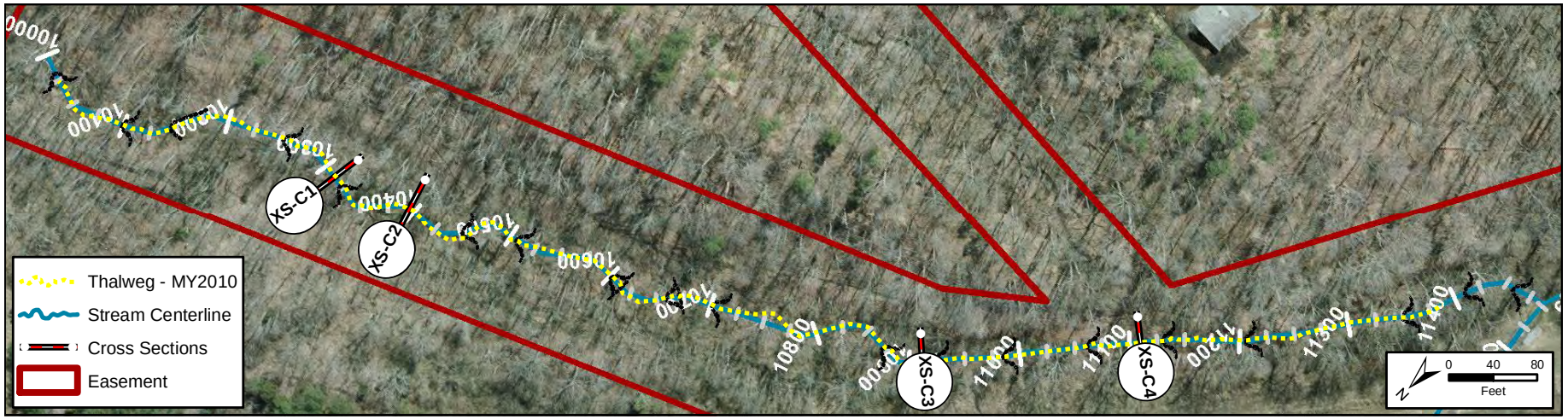
NOTES: The cross sections on reach B are not located within the longitudinal profile sections.



ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS B4	2009	AB	POOL	44.1	57.7	3.2
XS B4	2010	MY1	POOL	38.3	49.1	2.8

NOTES: The cross sections on reach B are not located within the longitudinal profile sections.





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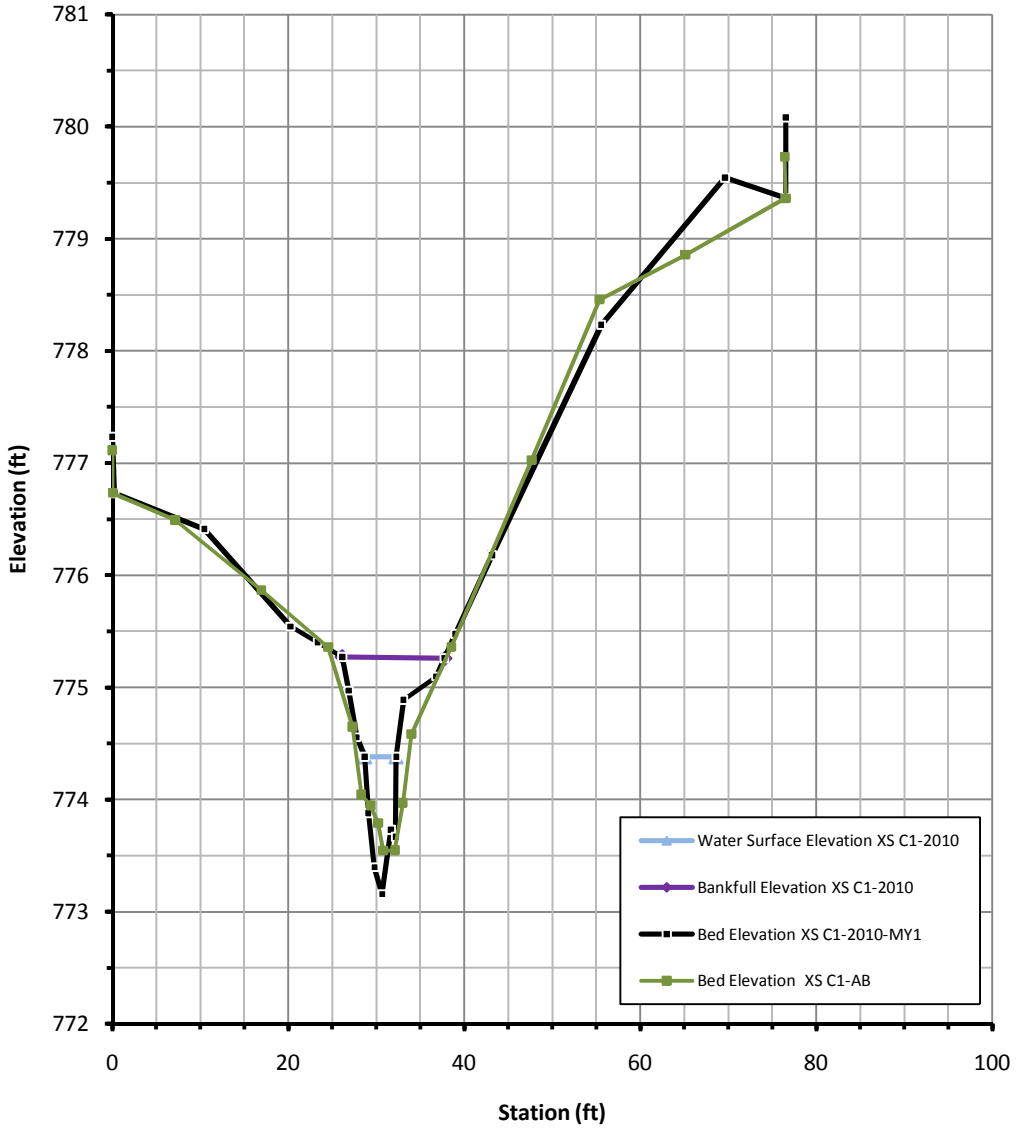
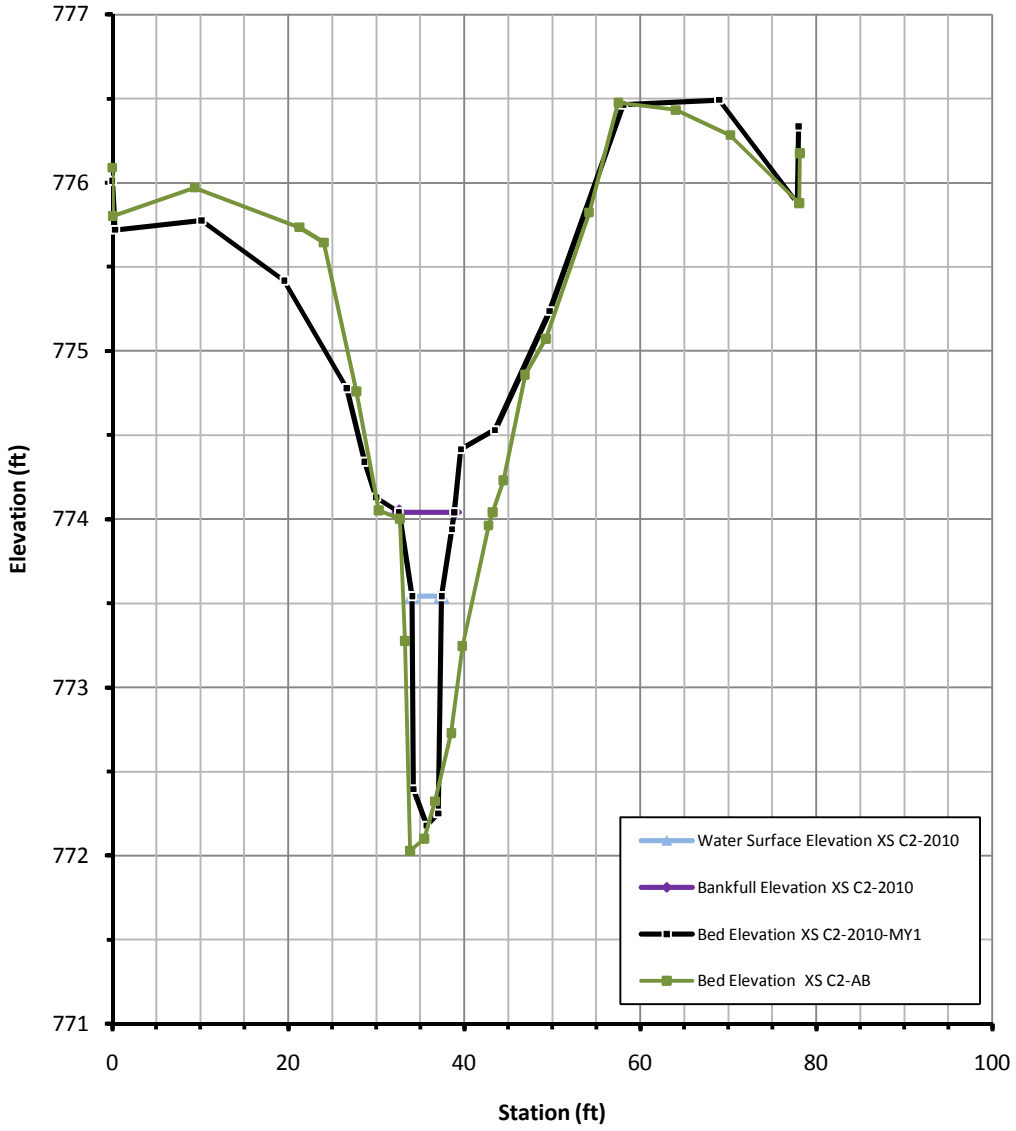


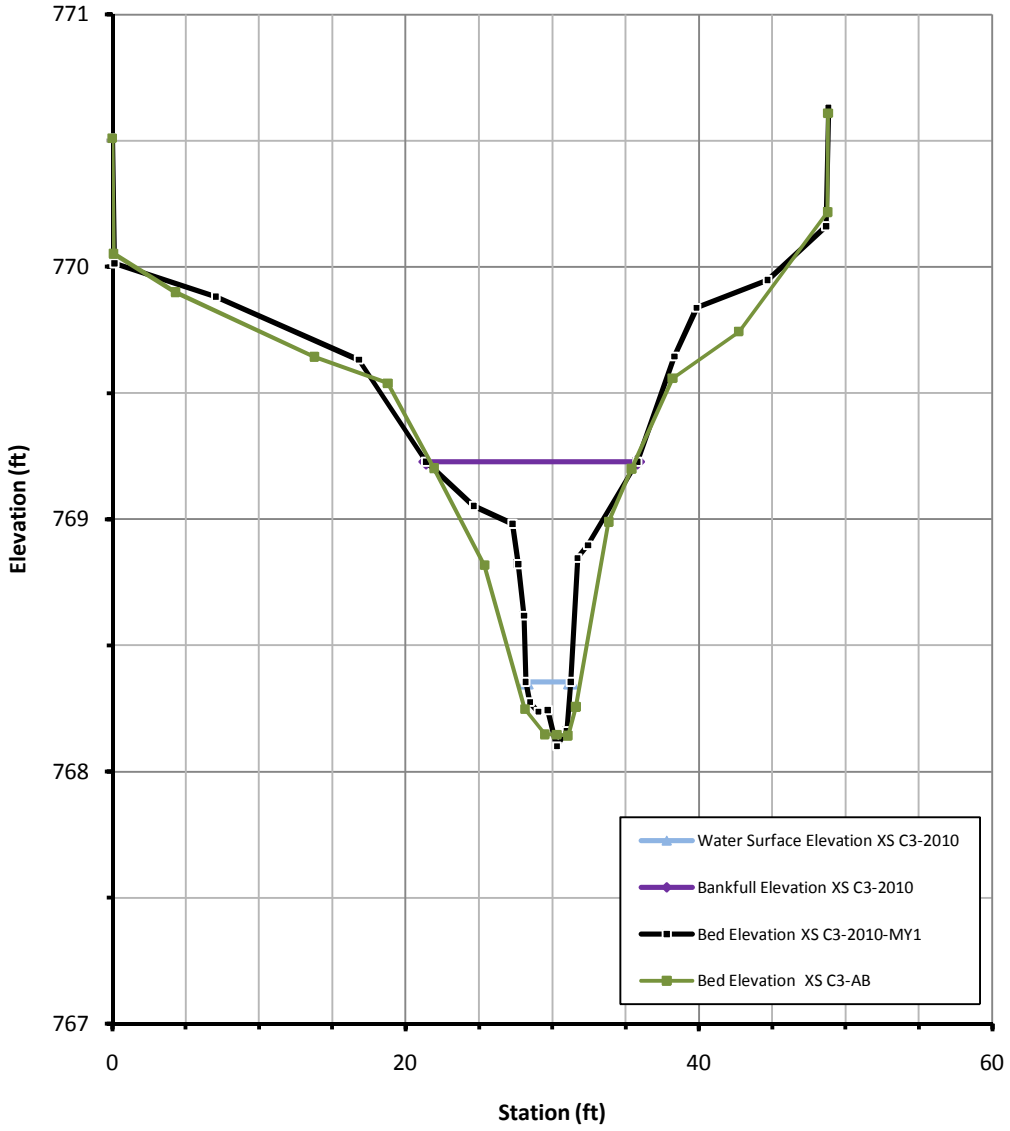
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS C1	2008	AB	RIFFLE	14.0	12.4	1.8
XS C1	2010	MY1	RIFFLE	11.7	9.1	2.1

NOTES:



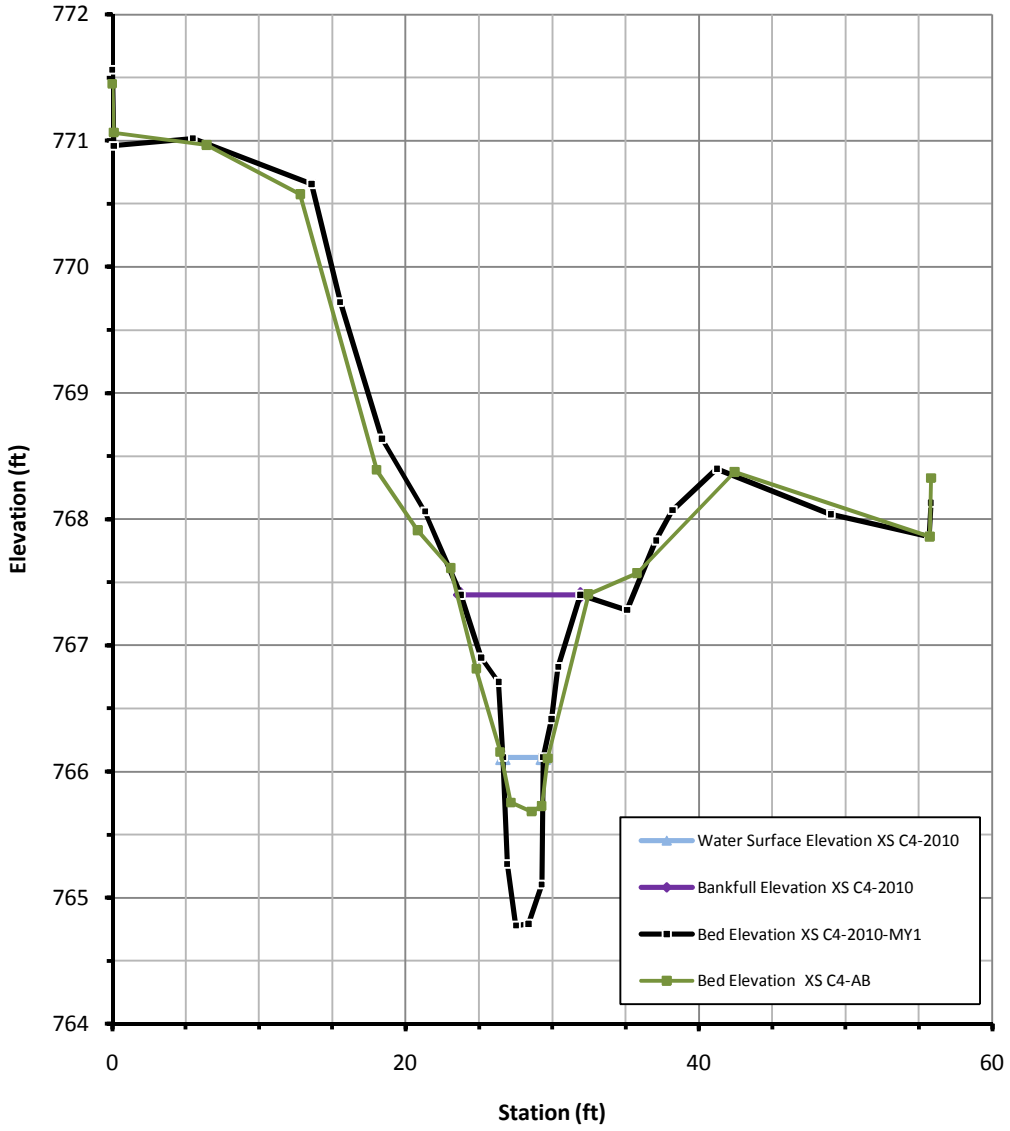
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS C2	2008	AB	POOL	12.9	12.0	2.0
XS C2	2010	MY1	POOL	5.9	6.3	1.9

NOTES:



ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS C3	2008	AB	RIFFLE	13.5	7.5	1.1
XS C3	2010	MY1	RIFFLE	14.1	5.7	1.2

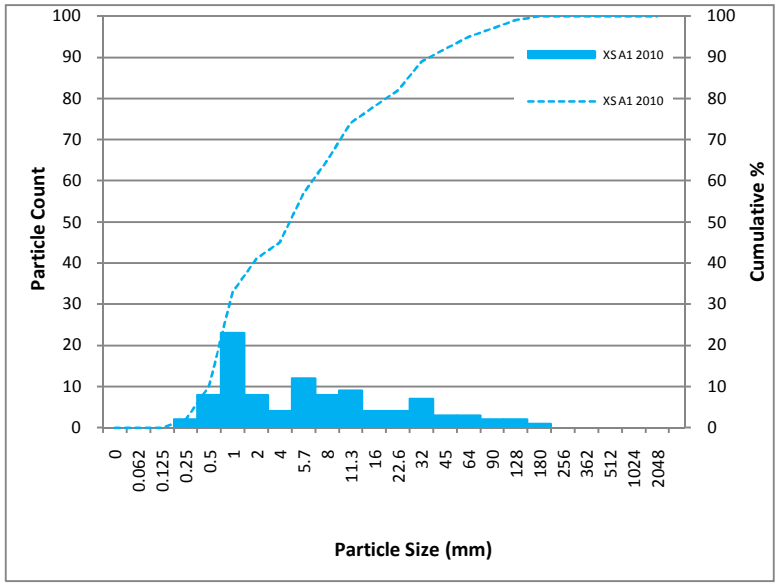
NOTES:



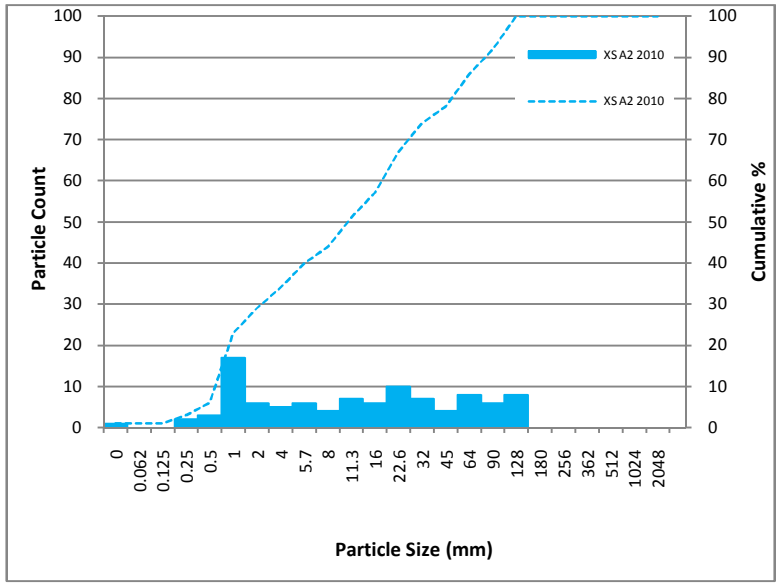
ID	YEAR	PHASE	FACET TYPE	Wbkf	Abkf	Dbkf
XS C4	2008	AB	RIFFLE	8.9	8.9	1.7
XS C4	2010	MY1	RIFFLE	11.2	9.4	2.6

NOTES:

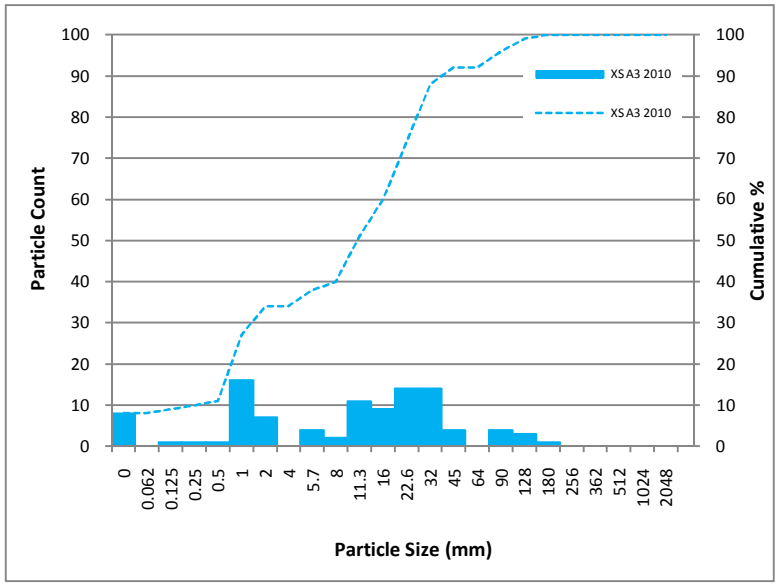
XSA1 Pebble Count



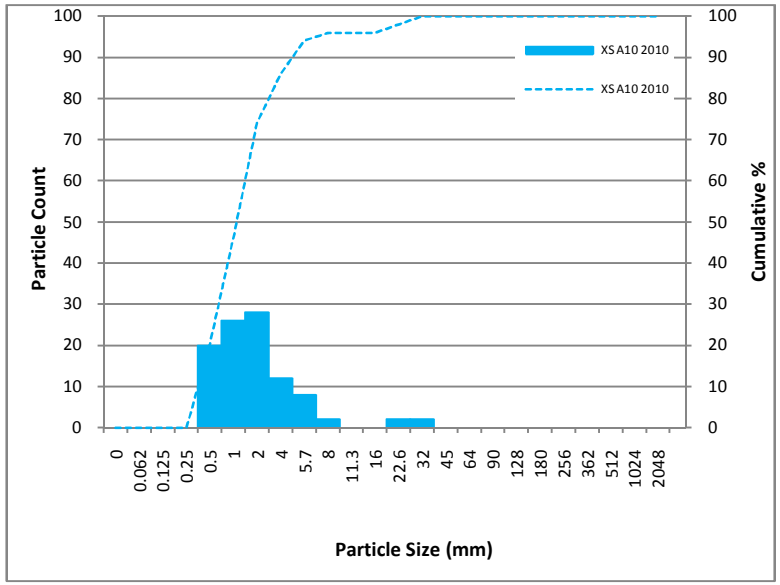
XSA2 Pebble Count



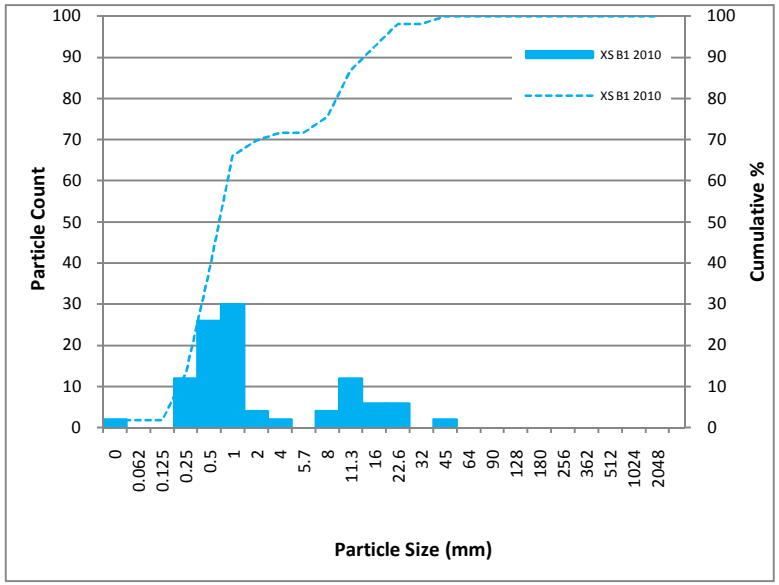
XSA3 Pebble Count



XSA10 Pebble Count



XSB1 Pebble Count



XSC3 Pebble Count

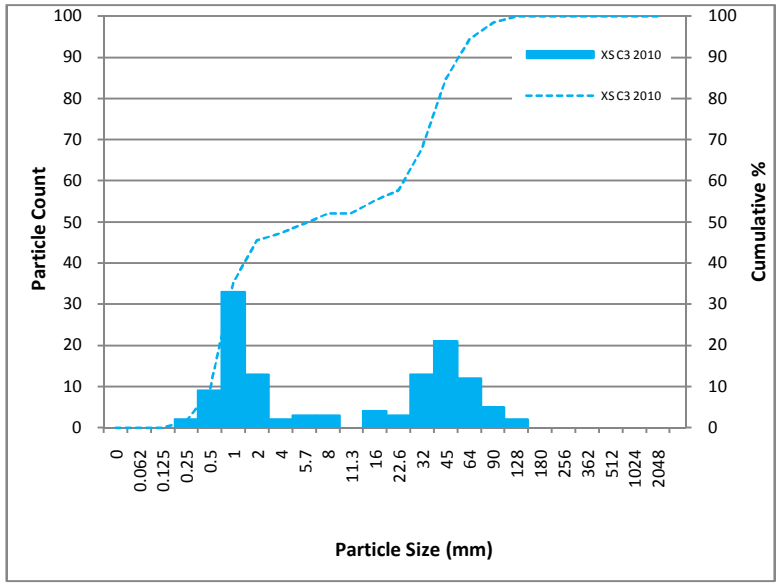
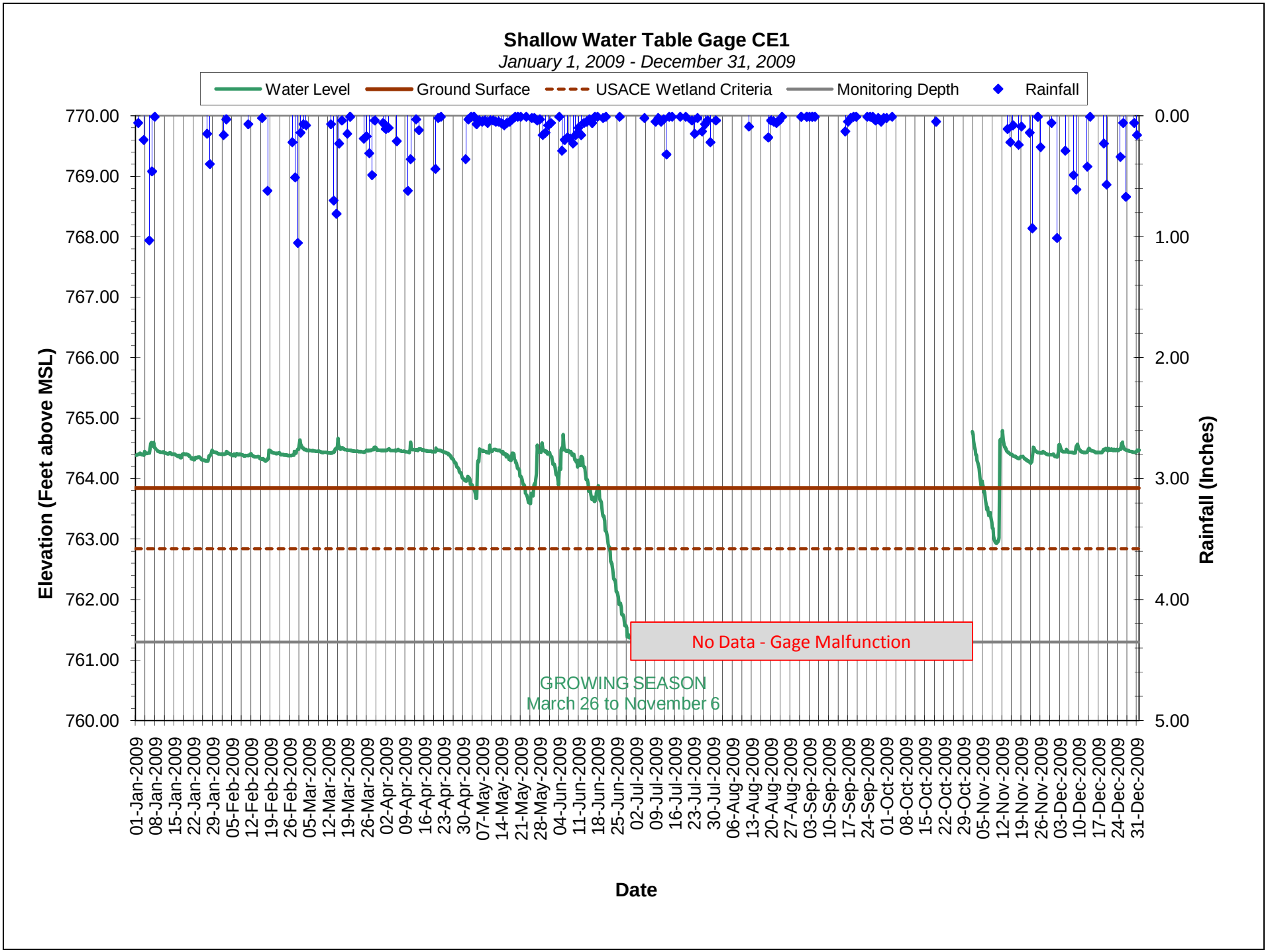


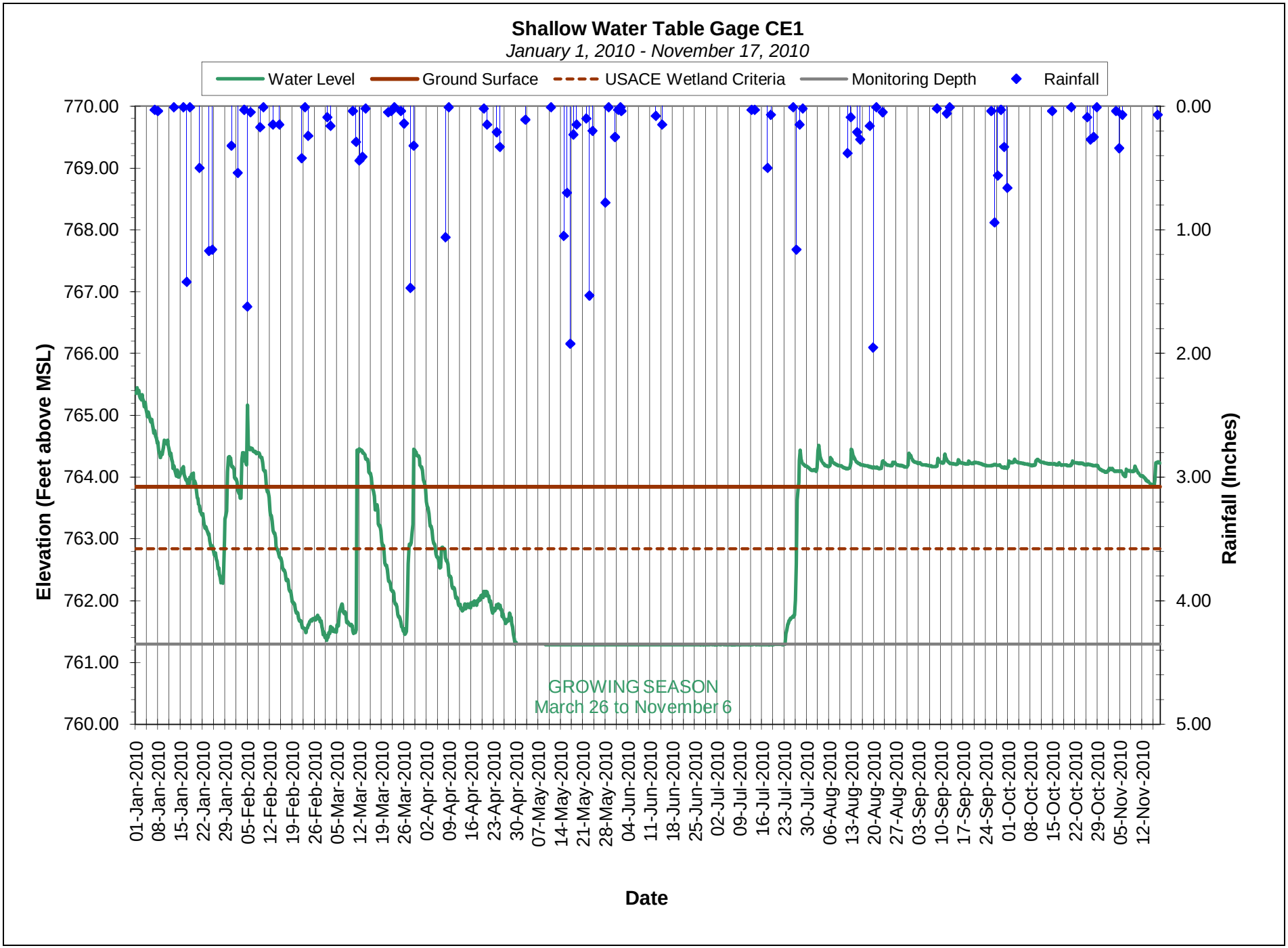
Table C1. Groundwater Well Summary Valley Fields Farm/407						
	Baseline	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**
Groundwater Well CE1						
Consecutive days within range[1]	88	103				
% of growing season[2]	38.9%	45.6%				
Criteria met[3]**?**	Y	Y				
Groundwater Well CE3						
Consecutive days within range	90	109				
% of growing season	39.8%	48.2%				
Criteria met?	Y	Y				
Groundwater Well CE4						
Consecutive days within range	12	86				
% of growing season	5.3%	38.1%				
Criteria met?	Y	Y				
Groundwater Well CE6						
Consecutive days within range	95	97				
% of growing season	42.0%	42.9%				
Criteria met?	Y	Y				

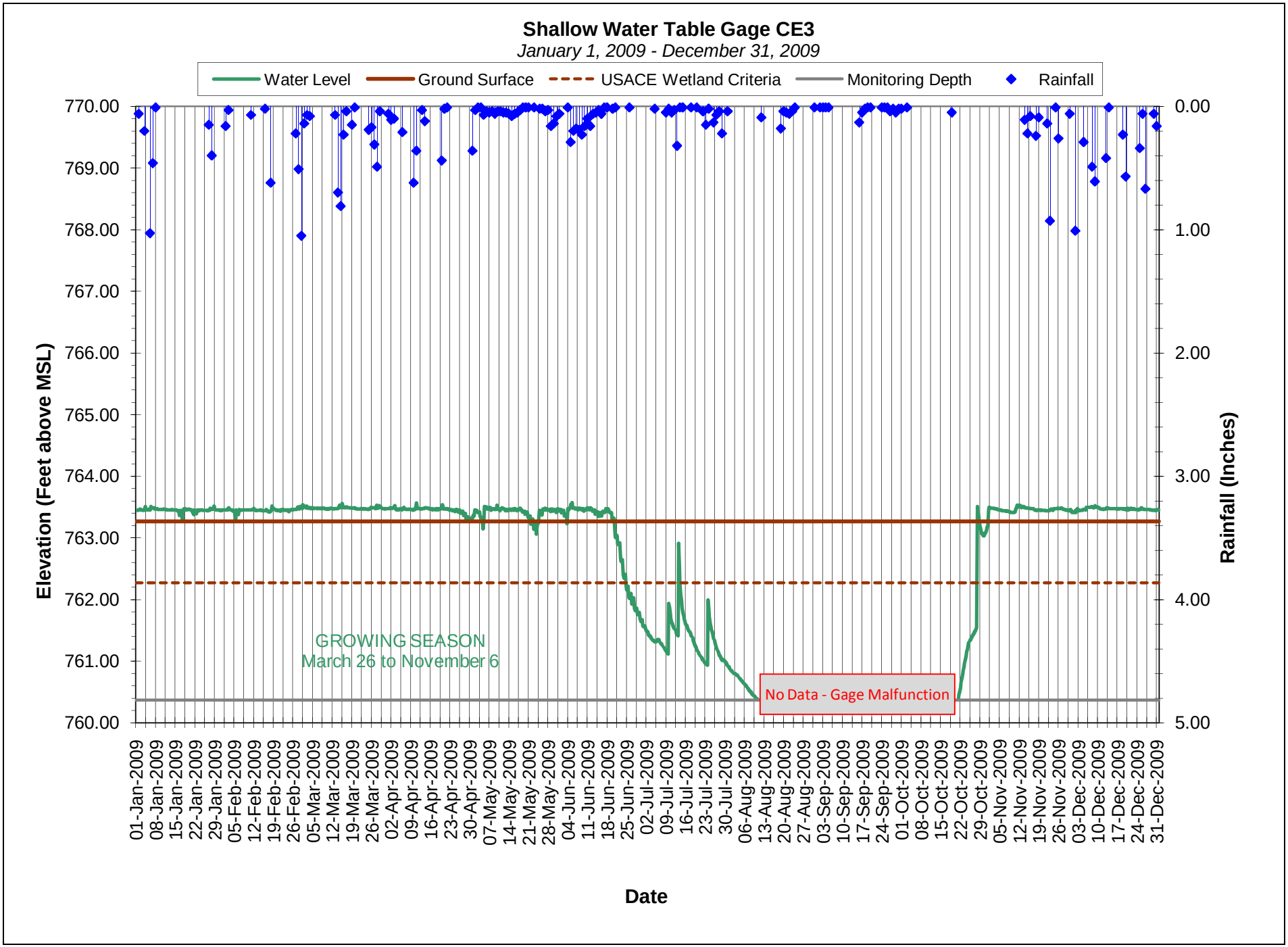
1- The Army Corps of Engineers states that the range is within 12 inches of the ground surface

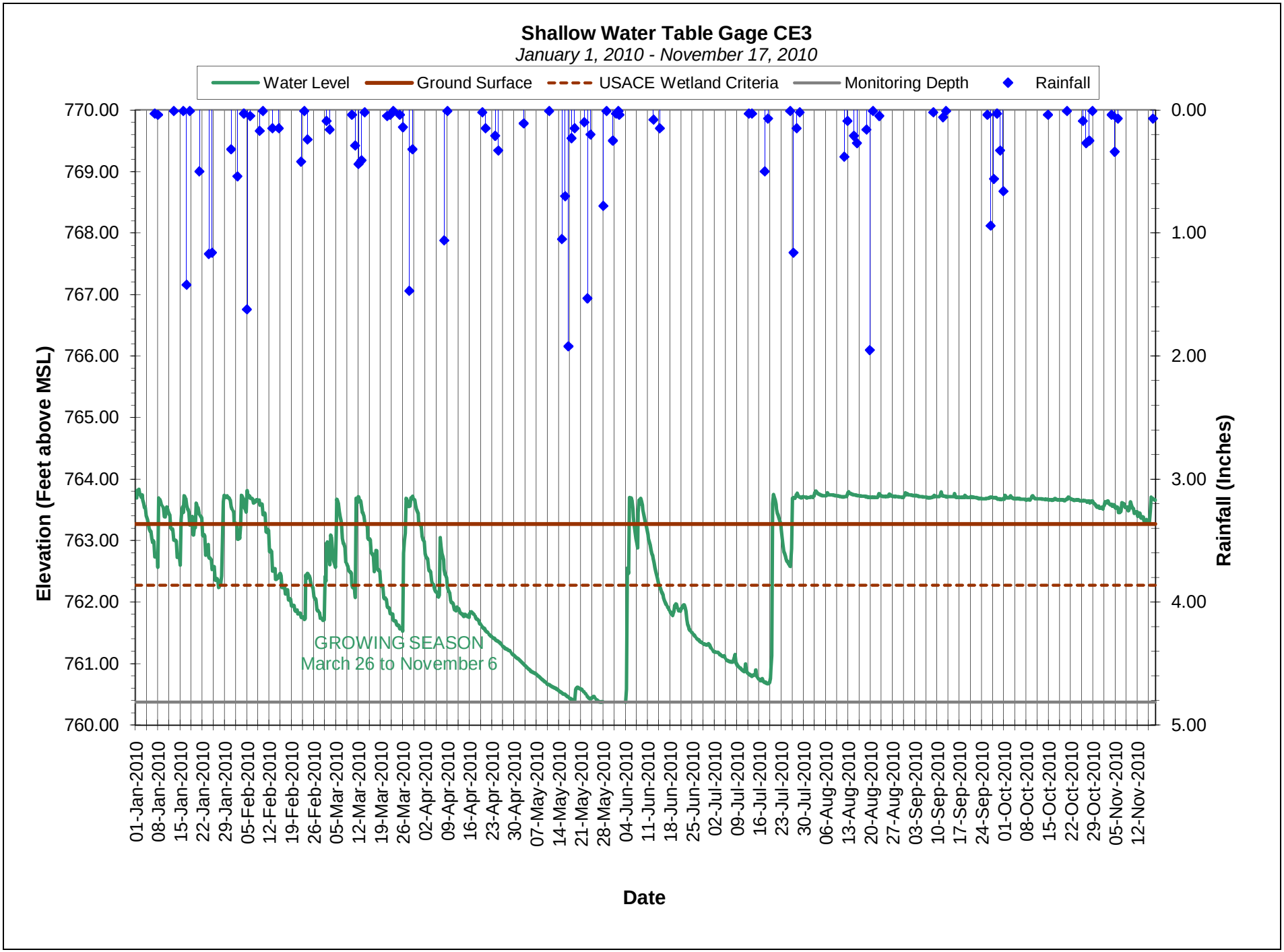
2- The growing season for the site is 226 days long.

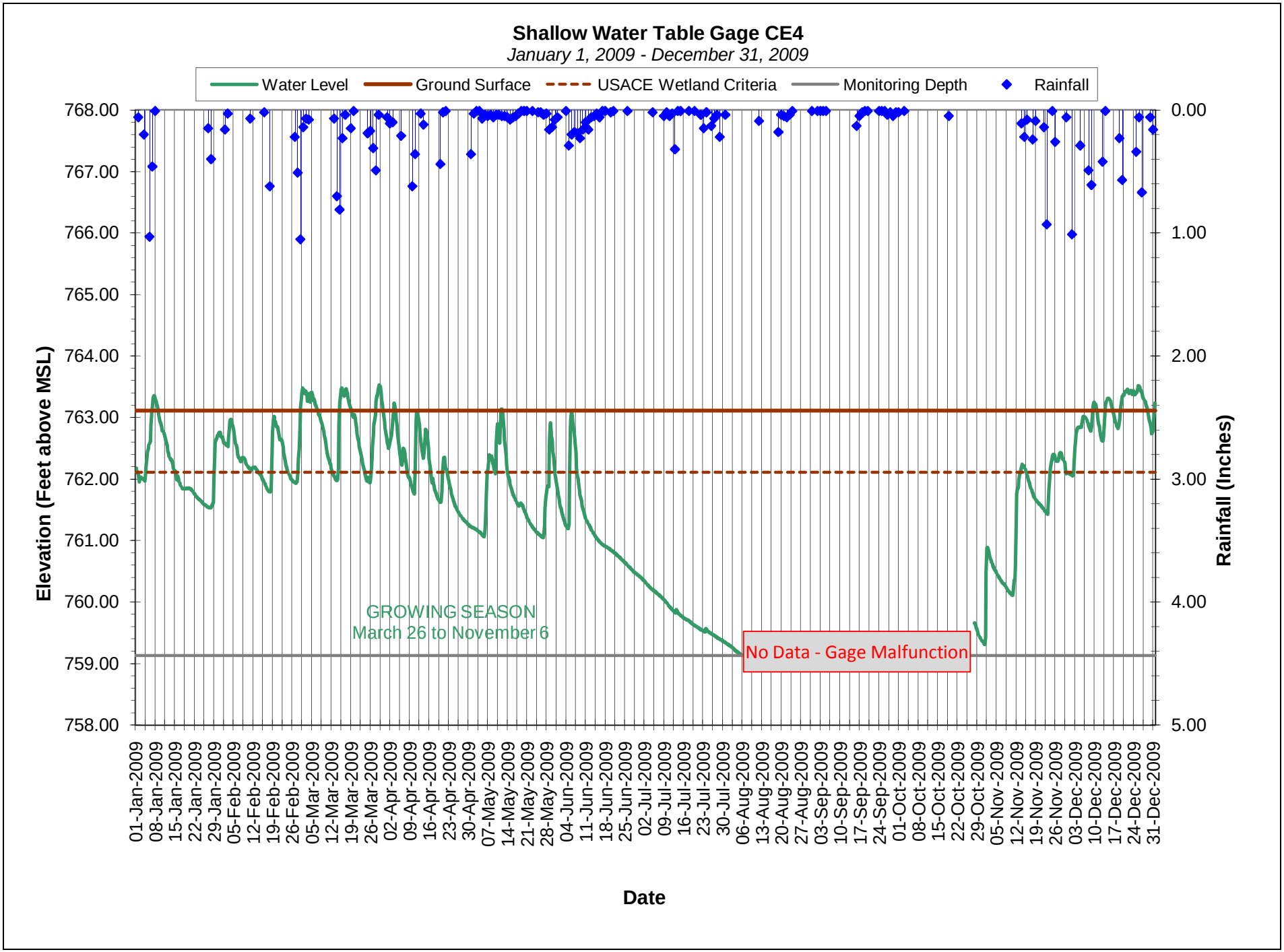
3- The Army Corps of Engineers states that the success criteria is being within range for at least 5% of the growing season consecutively.

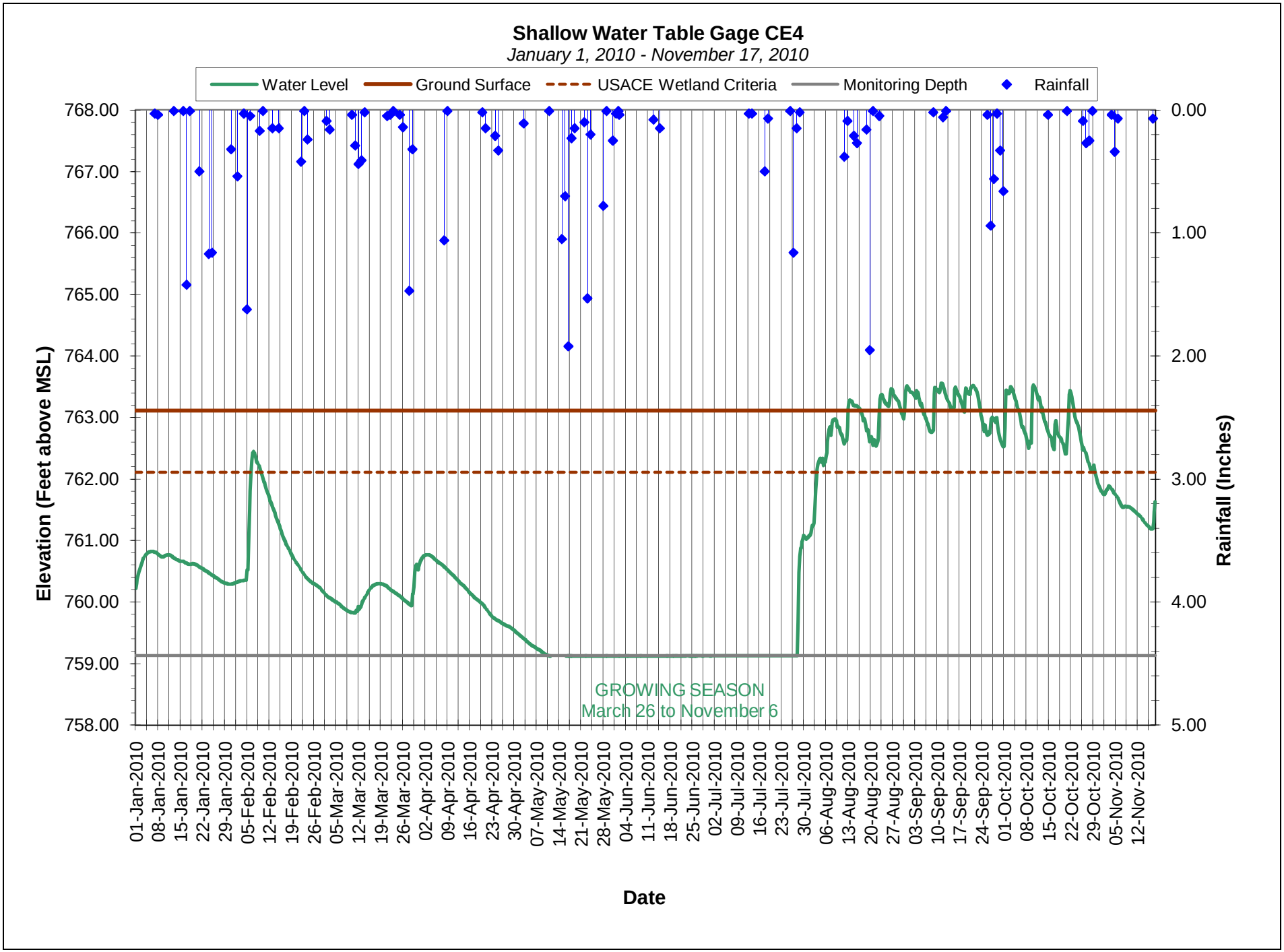

Shallow Water Table Gage CE1
January 1, 2009 - December 31, 2009
Water Level
Ground Surface
USACE Wetland Criteria
Monitoring Depth
Rainfall
Elevation (Feet above MSL)
Rainfall (Inches)
770.00
769.00
768.00
767.00
766.00
765.00
764.00
763.00
762.00
761.00
760.00
0.00
1.00
2.00
3.00
4.00
5.00
No Data - Gage Malfunction
GROWING SEASON
March 26 to November 6
01-Jan-2009
08-Jan-2009
15-Jan-2009
22-Jan-2009
29-Jan-2009
05-Feb-2009
12-Feb-2009
19-Feb-2009
26-Feb-2009
05-Mar-2009
12-Mar-2009
19-Mar-2009
26-Mar-2009
02-Apr-2009
09-Apr-2009
16-Apr-2009
23-Apr-2009
30-Apr-2009
07-May-2009
14-May-2009
21-May-2009
28-May-2009
04-Jun-2009
11-Jun-2009
18-Jun-2009
25-Jun-2009
02-Jul-2009
09-Jul-2009
16-Jul-2009
23-Jul-2009
30-Jul-2009
06-Aug-2009
13-Aug-2009
20-Aug-2009
27-Aug-2009
03-Sep-2009
10-Sep-2009
17-Sep-2009
24-Sep-2009
01-Oct-2009
08-Oct-2009
15-Oct-2009
22-Oct-2009
29-Oct-2009
05-Nov-2009
12-Nov-2009
19-Nov-2009
26-Nov-2009
03-Dec-2009
10-Dec-2009
17-Dec-2009
24-Dec-2009
31-Dec-2009
Date

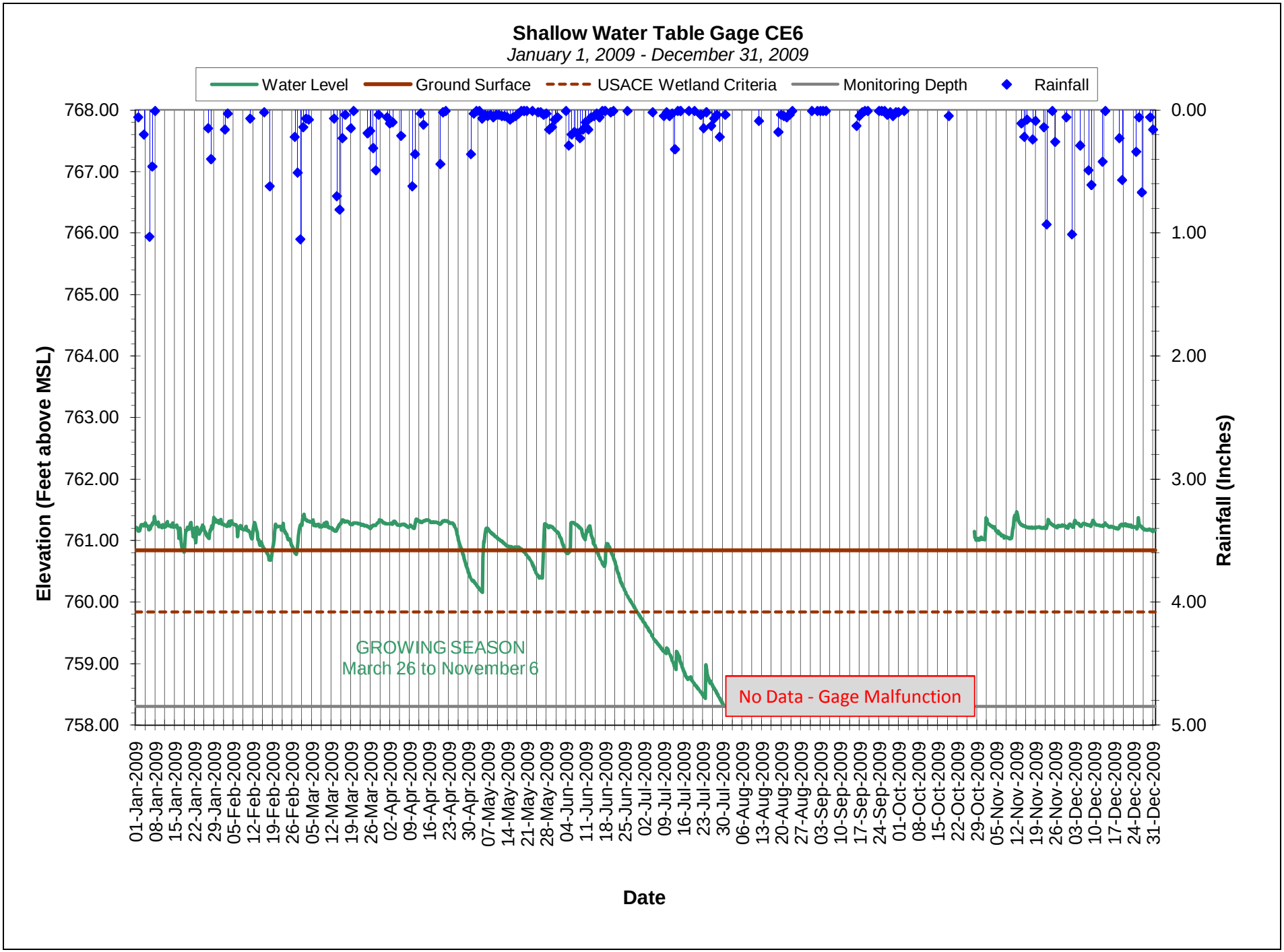

Shallow Water Table Gage CE1
January 1, 2010 - November 17, 2010
Water Level
Ground Surface
USACE Wetland Criteria
Monitoring Depth
Rainfall
Elevation (Feet above MSL)
Rainfall (Inches)
770.00
769.00
768.00
767.00
766.00
765.00
764.00
763.00
762.00
761.00
760.00
0.00
1.00
2.00
3.00
4.00
5.00
GROWING SEASON
March 26 to November 6
01-Jan-2010
08-Jan-2010
15-Jan-2010
22-Jan-2010
29-Jan-2010
05-Feb-2010
12-Feb-2010
19-Feb-2010
26-Feb-2010
05-Mar-2010
12-Mar-2010
19-Mar-2010
26-Mar-2010
02-Apr-2010
09-Apr-2010
16-Apr-2010
23-Apr-2010
30-Apr-2010
07-May-2010
14-May-2010
21-May-2010
28-May-2010
04-Jun-2010
11-Jun-2010
18-Jun-2010
25-Jun-2010
02-Jul-2010
09-Jul-2010
16-Jul-2010
23-Jul-2010
30-Jul-2010
06-Aug-2010
13-Aug-2010
20-Aug-2010
27-Aug-2010
03-Sep-2010
10-Sep-2010
17-Sep-2010
24-Sep-2010
01-Oct-2010
08-Oct-2010
15-Oct-2010
22-Oct-2010
29-Oct-2010
05-Nov-2010
12-Nov-2010
Date


Shallow Water Table Gage CE3
January 1, 2009 - December 31, 2009
Water Level
Ground Surface
USACE Wetland Criteria
Monitoring Depth
Rainfall
Elevation (Feet above MSL)
Rainfall (Inches)
770.00
769.00
768.00
767.00
766.00
765.00
764.00
763.00
762.00
761.00
760.00
0.00
1.00
2.00
3.00
4.00
5.00
GROWING SEASON
March 26 to November 6
No Data - Gage Malfunction
01-Jan-2009
08-Jan-2009
15-Jan-2009
22-Jan-2009
29-Jan-2009
05-Feb-2009
12-Feb-2009
19-Feb-2009
26-Feb-2009
05-Mar-2009
12-Mar-2009
19-Mar-2009
26-Mar-2009
02-Apr-2009
09-Apr-2009
16-Apr-2009
23-Apr-2009
30-Apr-2009
07-May-2009
14-May-2009
21-May-2009
28-May-2009
04-Jun-2009
11-Jun-2009
18-Jun-2009
25-Jun-2009
02-Jul-2009
09-Jul-2009
16-Jul-2009
23-Jul-2009
30-Jul-2009
06-Aug-2009
13-Aug-2009
20-Aug-2009
27-Aug-2009
03-Sep-2009
10-Sep-2009
17-Sep-2009
24-Sep-2009
01-Oct-2009
08-Oct-2009
15-Oct-2009
22-Oct-2009
29-Oct-2009
05-Nov-2009
12-Nov-2009
19-Nov-2009
26-Nov-2009
03-Dec-2009
10-Dec-2009
17-Dec-2009
24-Dec-2009
31-Dec-2009
Date


Shallow Water Table Gage CE3
January 1, 2010 - November 17, 2010
Water Level
Ground Surface
USACE Wetland Criteria
Monitoring Depth
Rainfall
Elevation (Feet above MSL)
Rainfall (Inches)
770.00
769.00
768.00
767.00
766.00
765.00
764.00
763.00
762.00
761.00
760.00
0.00
1.00
2.00
3.00
4.00
5.00
GROWING SEASON
March 26 to November 6
01-Jan-2010
08-Jan-2010
15-Jan-2010
22-Jan-2010
29-Jan-2010
05-Feb-2010
12-Feb-2010
19-Feb-2010
26-Feb-2010
05-Mar-2010
12-Mar-2010
19-Mar-2010
26-Mar-2010
02-Apr-2010
09-Apr-2010
16-Apr-2010
23-Apr-2010
30-Apr-2010
07-May-2010
14-May-2010
21-May-2010
28-May-2010
04-Jun-2010
11-Jun-2010
18-Jun-2010
25-Jun-2010
02-Jul-2010
09-Jul-2010
16-Jul-2010
23-Jul-2010
30-Jul-2010
06-Aug-2010
13-Aug-2010
20-Aug-2010
27-Aug-2010
03-Sep-2010
10-Sep-2010
17-Sep-2010
24-Sep-2010
01-Oct-2010
08-Oct-2010
15-Oct-2010
22-Oct-2010
29-Oct-2010
05-Nov-2010
12-Nov-2010
Date


Shallow Water Table Gage CE4
January 1, 2009 - December 31, 2009
Water Level
Ground Surface
USACE Wetland Criteria
Monitoring Depth
Rainfall
Elevation (Feet above MSL)
Rainfall (Inches)
768.00
767.00
766.00
765.00
764.00
763.00
762.00
761.00
760.00
759.00
758.00
0.00
1.00
2.00
3.00
4.00
5.00
GROWING SEASON
March 26 to November 6
No Data - Gage Malfunction
01-Jan-2009
08-Jan-2009
15-Jan-2009
22-Jan-2009
29-Jan-2009
05-Feb-2009
12-Feb-2009
19-Feb-2009
26-Feb-2009
05-Mar-2009
12-Mar-2009
19-Mar-2009
26-Mar-2009
02-Apr-2009
09-Apr-2009
16-Apr-2009
23-Apr-2009
30-Apr-2009
07-May-2009
14-May-2009
21-May-2009
28-May-2009
04-Jun-2009
11-Jun-2009
18-Jun-2009
25-Jun-2009
02-Jul-2009
09-Jul-2009
16-Jul-2009
23-Jul-2009
30-Jul-2009
06-Aug-2009
13-Aug-2009
20-Aug-2009
27-Aug-2009
03-Sep-2009
10-Sep-2009
17-Sep-2009
24-Sep-2009
01-Oct-2009
08-Oct-2009
15-Oct-2009
22-Oct-2009
29-Oct-2009
05-Nov-2009
12-Nov-2009
19-Nov-2009
26-Nov-2009
03-Dec-2009
10-Dec-2009
17-Dec-2009
24-Dec-2009
31-Dec-2009
Date


Shallow Water Table Gage CE4
January 1, 2010 - November 17, 2010
Water Level
Ground Surface
USACE Wetland Criteria
Monitoring Depth
Rainfall
Elevation (Feet above MSL)
Rainfall (Inches)
768.00
767.00
766.00
765.00
764.00
763.00
762.00
761.00
760.00
759.00
758.00
0.00
1.00
2.00
3.00
4.00
5.00
GROWING SEASON
March 26 to November 6
01-Jan-2010
08-Jan-2010
15-Jan-2010
22-Jan-2010
29-Jan-2010
05-Feb-2010
12-Feb-2010
19-Feb-2010
26-Feb-2010
05-Mar-2010
12-Mar-2010
19-Mar-2010
26-Mar-2010
02-Apr-2010
09-Apr-2010
16-Apr-2010
23-Apr-2010
30-Apr-2010
07-May-2010
14-May-2010
21-May-2010
28-May-2010
04-Jun-2010
11-Jun-2010
18-Jun-2010
25-Jun-2010
02-Jul-2010
09-Jul-2010
16-Jul-2010
23-Jul-2010
30-Jul-2010
06-Aug-2010
13-Aug-2010
20-Aug-2010
27-Aug-2010
03-Sep-2010
10-Sep-2010
17-Sep-2010
24-Sep-2010
01-Oct-2010
08-Oct-2010
15-Oct-2010
22-Oct-2010
29-Oct-2010
05-Nov-2010
12-Nov-2010
Date


Shallow Water Table Gage CE6
January 1, 2009 - December 31, 2009
Water Level
Ground Surface
USACE Wetland Criteria
Monitoring Depth
Rainfall
Elevation (Feet above MSL)
Rainfall (Inches)
768.00
767.00
766.00
765.00
764.00
763.00
762.00
761.00
760.00
759.00
758.00
0.00
1.00
2.00
3.00
4.00
5.00
GROWING SEASON
March 26 to November 6
No Data - Gage Malfunction
01-Jan-2009
08-Jan-2009
15-Jan-2009
22-Jan-2009
29-Jan-2009
05-Feb-2009
12-Feb-2009
19-Feb-2009
26-Feb-2009
05-Mar-2009
12-Mar-2009
19-Mar-2009
26-Mar-2009
02-Apr-2009
09-Apr-2009
16-Apr-2009
23-Apr-2009
30-Apr-2009
07-May-2009
14-May-2009
21-May-2009
28-May-2009
04-Jun-2009
11-Jun-2009
18-Jun-2009
25-Jun-2009
02-Jul-2009
09-Jul-2009
16-Jul-2009
23-Jul-2009
30-Jul-2009
06-Aug-2009
13-Aug-2009
20-Aug-2009
27-Aug-2009
03-Sep-2009
10-Sep-2009
17-Sep-2009
24-Sep-2009
01-Oct-2009
08-Oct-2009
15-Oct-2009
22-Oct-2009
29-Oct-2009
05-Nov-2009
12-Nov-2009
19-Nov-2009
26-Nov-2009
03-Dec-2009
10-Dec-2009
17-Dec-2009
24-Dec-2009
31-Dec-2009
Date

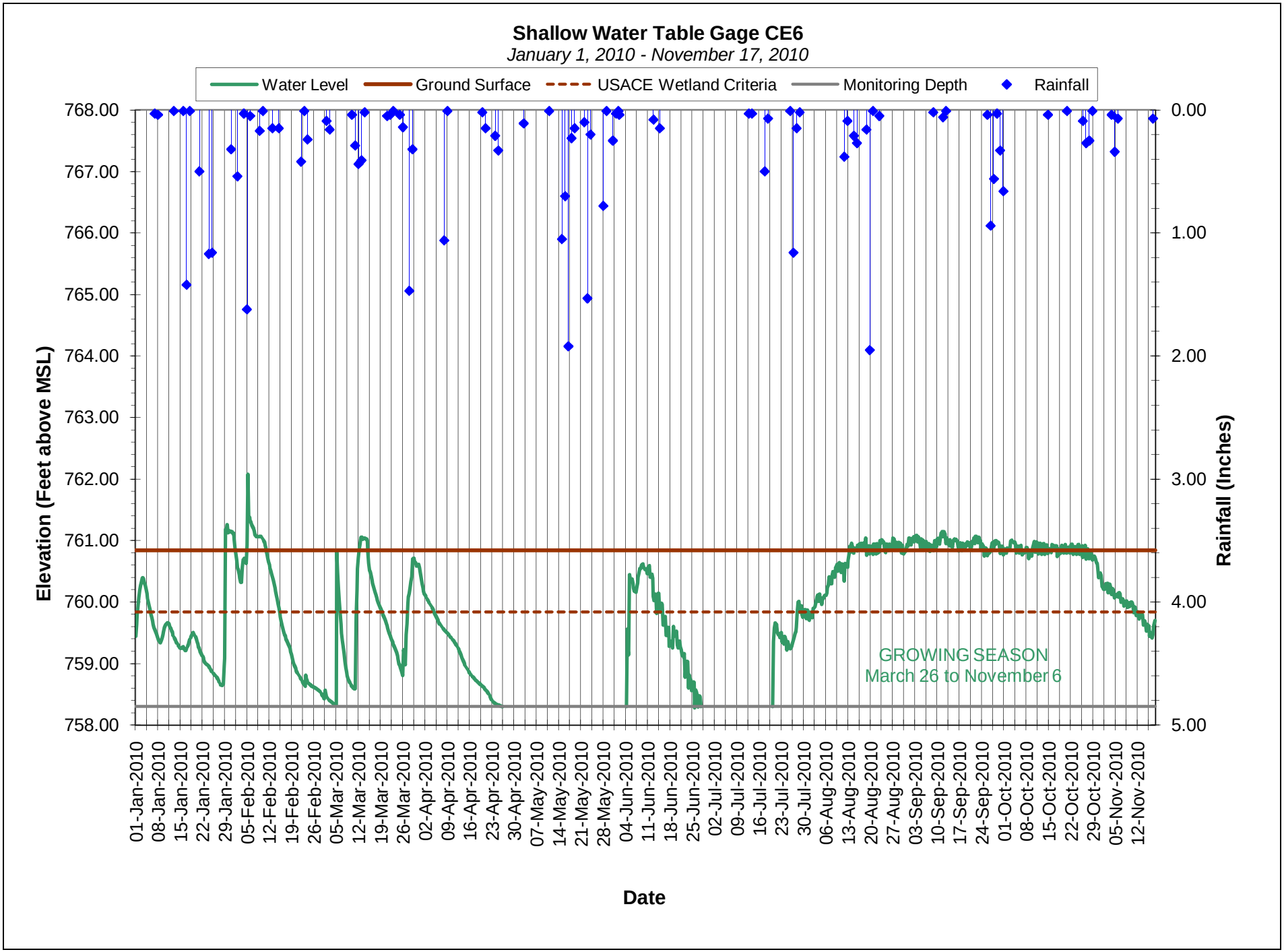

Shallow Water Table Gage CE6
January 1, 2010 - November 17, 2010
Water Level
Ground Surface
USACE Wetland Criteria
Monitoring Depth
Rainfall
Elevation (Feet above MSL)
Rainfall (Inches)
768.00
767.00
766.00
765.00
764.00
763.00
762.00
761.00
760.00
759.00
758.00
0.00
1.00
2.00
3.00
4.00
5.00
GROWING SEASON
March 26 to November 6
01-Jan-2010
08-Jan-2010
15-Jan-2010
22-Jan-2010
29-Jan-2010
05-Feb-2010
12-Feb-2010
19-Feb-2010
26-Feb-2010
05-Mar-2010
12-Mar-2010
19-Mar-2010
26-Mar-2010
02-Apr-2010
09-Apr-2010
16-Apr-2010
23-Apr-2010
30-Apr-2010
07-May-2010
14-May-2010
21-May-2010
28-May-2010
04-Jun-2010
11-Jun-2010
18-Jun-2010
25-Jun-2010
02-Jul-2010
09-Jul-2010
16-Jul-2010
23-Jul-2010
30-Jul-2010
06-Aug-2010
13-Aug-2010
20-Aug-2010
27-Aug-2010
03-Sep-2010
10-Sep-2010
17-Sep-2010
24-Sep-2010
01-Oct-2010
08-Oct-2010
15-Oct-2010
22-Oct-2010
29-Oct-2010
05-Nov-2010
12-Nov-2010
Date

Table 10a.1 Baseline Stream Data Summary
Valley Fields Farm/407 - Upper A: 800 feet

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)		20.5	22.66	21.58			18.2			1	5.7	10.1	9.4	15.2		3		30		29.1	30.05		31		2
Floodprone Width (ft)							20.8			1	23.3	53.03	49.9	85.9		3		66		90	90.7		91.4		2
Bankfull Mean Depth (ft)		2.221	2.454	2.337			1.7			1	0.5	0.9	1	1.2		3		1.9		1.6	1.85		2.1		2
[1]Bankfull Max Depth (ft)							1.9			1	1.2	1.533	1.5	1.9		3		2.9		2.8	3		3.2		2
Bankfull Cross Sectional Area (ft^2)		52.26	57.76	55.01			30.9			1	2.7	10.2	8.9	19		3		57.5		50.1	55.1		60.1		2
Width/Depth Ratio							10.7			1	9.4	11.17	11.4	12.7		3		15.8		14.2	16.65		19.1		2
Entrenchment Ratio							1.1			1	1.5	6.467	8.8	9.1		3		2.2		3	3		3		2
[1]Bank Height Ratio							**2.8**			**1**	**1.1**	**1.333**	**1.4**	**1.5**		**3**		**1**		**1**	**1**		**1**		**2**
Profile																									
Riffle Length (ft)																				56.5	88.5		120.4		1
Riffle Slope (ft/ft)					0.003	0.003		0.003		2	0.006	0.034	0.017	0.096	0.036	6	0.003	0.003	0.006	0.003	0.003		0.003		1
Pool Length (ft)																				38.5	74.1		98.5		3
Pool Max depth (ft)					2.6	2.6		2.6		1	0.9	1.9	1.4	3.9	1.13	6	2.5	3.8	4.8	3.72	4.21		5.1		3
Pool Spacing (ft)					30	42		77		2	15.3	31.7	31.6	52.4	13.8	6	120	120	150	155.7	248.2		340.6		2
Pattern																									
Channel Beltwidth (ft)					36		59	79		3	43.2	79.2	84.3	105.1	26.1	4	201	229	256	22.1	118.1	126	197.2	71.91	4
Radius of Curvature (ft)					17		72	248		3	16.4	29.5	22	51	14.7	5	60	90	120	10.1	45.7	49.2	79.8	28.53	5
Rc:Bankfull width (ft/ft)					**0.934**		**3.956**	**13.63**		**3**	**1.7**	**4.1**	**3.7**	**6.8**	**1.7**	**6**	**2**	**3**	**4**	**0.3**	**1.5**		**2.6**	1.114	**6**
Meander Wavelength (ft)					76		143	196		3	44.7	141.3	114	320.6	106.5	6	240	300	360	117	302.2	292..4	613.9	251.1	6
Meander Width Ratio					4.176		7.857	10.77		3	7.6	10.9	11.2	15.5	3.1	5	8	10	12	4.0	10.1		19.8	7.964	5
Transport parameters																									
Reach Shear Stress (competency) lb/ft^2					0.31824												0.560976			0.386724					
Max part size (mm) mobilized at bankfull					23.64698193												42.68793974			28.97191657					
Stream Power (transport capacity) W/m^2					45.2088												46.71576			50.48316					
Additional Reach Parameters																									
Rosgen Classification					G5c/F5						B4/E5/C4						B5c/C5			C5					
Bankfull Velocity (fps)		4.172	4.611	4.392	6.9												4.2			4.382940109					
Bankfull Discharge (cfs)		229.5	253.7	241.6	213.1																				
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)					1.1						1.1-1.3						1.2								
Water Surface Slope (Channel) (ft/ft)					0.003						0.0080-0.0215						0.0028			0.0029					
BF slope (ft/ft)					**0.003**						**0.0082-0.0522**						**0.0031**			**0.0024**					
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

Shaded cells indicate that these will typically not be filled in.

1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile. 2 = For projects with a proximal USGS gauge in-line with the project reach (added bankfull verification - rare).

3. Utilizing survey data produce an estimate of the bankfull floodplain area in acres, which should be the area from the top of bank to the toe of the terrace riser/slope.

4 = Proportion of reach exhibiting banks that are eroding based on the visual survey for comparison to monitoring data; 5. Of value/needed only if the n exceeds 3

Table 10a.2 Baseline Stream Data Summary
Valley Fields Farm/407 - Upper A2: 1,850 feet

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)		20.5	22.66	21.58	14.6	16.55		18.5		2	5.7	10.1	9.4	15.2		3		30		30.1	30.8		31.1		3
Floodprone Width (ft)					23.7	75.25		126.8		2	23.3	53.03	49.9	85.9		3		66		78.6	98.6		126.6		3
Bankfull Mean Depth (ft)		2.221	2.454	2.337	2.7	2.75		2.8		2	0.5	0.9	1	1.2		3		1.9		1.8	2		2.2		3
[1]Bankfull Max Depth (ft)					3.4	3.45		3.5		2	1.2	1.533	1.5	1.9		3		2.9		3.2	3.5		4		3
Bankfull Cross Sectional Area (ft^2)		52.26	57.76	55.01	40.4	45		49.6		2	2.7	10.2	8.9	19		3		57.5		55.2	62.2		69		3
Width/Depth Ratio					5.2	6.05		6.9		2	9.4	11.17	11.4	12.7		3		15.8		14	15.3		16.4		3
Entrenchment Ratio					1.6	4.25		6.9		2	1.5	6.467	8.8	9.1		3		2.2		2.5	3.2		4.1		3
[1]Bank Height Ratio					**1.5**	**1.8**		**2.1**		**2**	**1.1**	**1.333**	**1.4**	**1.5**		**3**		**1**		**1**	**1**		**1**		**3**
Profile																									
Riffle Length (ft)																				33.3	52		86.3		3
Riffle Slope (ft/ft)					0.003	0.003	0.004	0.003	8E-04	4	0.006	0.034	0.017	0.096	0.036	6	0.003	0.003	0.006	0.002	0.009		0.014		5
Pool Length (ft)																				60.8	110.4		238.6		3
Pool Max depth (ft)					2.5	2.8	2.6	3.2		3	0.9	1.9	1.4	3.9	1.13	6	2.5	3.8	4.8	4.15	5.03		5.94		11
Pool Spacing (ft)					30	42	53.7	77		3	15.3	31.7	31.6	52.4	13.8	6	120	120	150	142.7	238		300.6		5
Pattern																									
Channel Beltwidth (ft)					36	60	59.2	79	16	6	43.2	79.2	84.3	105.1	26.1	4	201	229	256	22.1	118.1	126	197.2	71.91	
Radius of Curvature (ft)					14	87.4	58.5	248	87.4	6	16.4	29.5	22	51	14.7	5	60	90	120	10.1	45.7	49.2	79.8	28.53	
Rc:Bankfull width (ft/ft)					**0.846**	**5.3**	**3.7**	**17**	**6**	**6**	**1.7**	**4.1**	**3.7**	**6.8**	**1.7**	**6**	**2**	**3**	**4**	**0.3**	**1.5**		**2.6**	1.115	
Meander Wavelength (ft)					58	139.8	58.5	228	65.9	6	44.7	141.3	114	320.6	106.5	6	240	300	360	117	302.2	292..4	613.9	251.1	
Meander Width Ratio					2.5	3.6	3.6	5.4	1.1	6	7.6	10.9	11.2	15.5	3.1	5	8	10	12	3.9	9.8		19.7	8.01	
Transport parameters																									
Reach Shear Stress (competency) lb/ft^2					0.5148												0.560976			1.07328					
Max part size (mm) mobilized at bankfull					39.03306101												42.68793974			83.92826353					
Stream Power (transport capacity) W/m^2					45.2088												46.71576			129.59856					
Additional Reach Parameters																									
Rosgen Classification					G5/Incised E5						B4/E5/C4						B5c/C5			C5					
Bankfull Velocity (fps)		4.172	4.611	4.392	4.9-5.7												4.2			3.882636656					
Bankfull Discharge (cfs)		229.5	253.7	241.6	241.1																				
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)					1.0-1.1						1.1-1.3						1.2								
Water Surface Slope (Channel) (ft/ft)					0.0025-0.0040						0.0080-0.0215						0.0028			0.0036					
BF slope (ft/ft)					**0.0030-0.0035**						**0.0082-0.0522**						**0.0031**			**0.0036**					
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

Shaded cells indicate that these will typically not be filled in.

1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile. 2 = For projects with a proximal USGS gauge in-line with the project reach (added bankfull verification - rare).

3. Utilizing survey data produce an estimate of the bankfull floodplain area in acres, which should be the area from the top of bank to the toe of the terrace riser/slope.

4 = Proportion of reach exhibiting banks that are eroding based on the visual survey for comparison to monitoring data; 5. Of value/needed only if the n exceeds 3

Table 10a.3 Baseline Stream Data Summary
Valley Fields Farm/407 - Lower A: 1,400 feet

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)		25.26	27.92	26.59			45.1			1	5.7	10.1	9.4	15.2		3		30		30.1	30.8		31.1		3
Floodprone Width (ft)							63.3			1	23.3	53.03	49.9	85.9		3		66		78.6	98.6		126.6		3
Bankfull Mean Depth (ft)		2.594	2.867	2.73			2			1	0.5	0.9	1	1.2		3		1.9		1.8	2		2.2		3
[1]Bankfull Max Depth (ft)							3.5			1	1.2	1.533	1.5	1.9		3		2.9		3.2	3.5		4		3
Bankfull Cross Sectional Area (ft^2)		72.7	80.35	76.52			91.3			1	2.7	10.2	8.9	19		3		57.5		55.2	62.2		69		3
Width/Depth Ratio							22.6			1	9.4	11.17	11.4	12.7		3		15.8		14	15.3		16.4		3
Entrenchment Ratio							1.4			1	1.5	6.467	8.8	9.1		3		2.2		2.5	3.2		4.1		3
[1]Bank Height Ratio							**1.7**			**1**	**1.1**	**1.333**	**1.4**	**1.5**		**3**		**1**		**1**	**1**		**1**		**3**
Profile																									
Riffle Length (ft)																				36.8	44.4		51.6		3
Riffle Slope (ft/ft)					0.008	0.009		0.01		2	0.006	0.034	0.017	0.096	0.036	6	0.003	0.003	0.006	0.002	0.009		0.014		5
Pool Length (ft)																				89.6	119.8		152.8		3
Pool Max depth (ft)					4	4.6		5.3		2	0.9	1.9	1.4	3.9	1.13	6	2.5	3.8	4.8	4.15	5.03		5.94		11
Pool Spacing (ft)					53	104		156		2	15.3	31.7	31.6	52.4	13.8	6	120	120	150	142.7	238		300.6		5
Pattern																									
Channel Beltwidth (ft)					36	60	59.2	79	16	6	43.2	79.2	84.3	105.1	26.1	4	201	229	256	22.1	118.1	126	197.2	71.91	
Radius of Curvature (ft)					14	87.4	58.5	248	87.4	6	16.4	29.5	22	51	14.7	5	60	90	120	10.1	45.7	49.2	79.8	28.53	
Rc:Bankfull width (ft/ft)					**2**	**5.3**	**3.7**	**17**	**6**	**6**	**1.7**	**4.1**	**3.7**	**6.8**	**1.7**	**6**	**2**	**3**	**4**	**0.3**	**1.5**		**2.6**	1.115	
Meander Wavelength (ft)					58	139.8	58.5	228	65.9	6	44.7	141.3	114	320.6	106.5	6	240	300	360	117	302.2	292..4	613.9	251.1	
Meander Width Ratio					2.5	3.6	3.6	5.4	1.1	6	7.6	10.9	11.2	15.5	3.1	5	8	10	12	3.9	9.8		19.7	8.01	
Transport parameters																									
Reach Shear Stress (competency) lb/ft^2							1.11072										0.560976				1.07328				
Max part size (mm) mobilized at bankfull							86.98116865										42.68793974				83.92826353				
Stream Power (transport capacity) W/m^2							134.11944										46.71576				129.59856				
Additional Reach Parameters																									
Rosgen Classification							G5/Incised E5						B4/E5/C4				B5c/C5				C5				
Bankfull Velocity (fps)		4.254	4.702	4.478			4.9-5.7										4.2				3.882636656				
Bankfull Discharge (cfs)		325.5	359.8	342.7			241.1																		
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)							1.0-1.1						1.1-1.3				1.2								
Water Surface Slope (Channel) (ft/ft)							0.0025-0.0040						0.0080-0.0215				0.0028				0.0015				
BF slope (ft/ft)							**0.0030-0.0035**						**0.0082-0.0522**				**0.0031**				**0.002**				
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

Shaded cells indicate that these will typically not be filled in.

1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile. 2 = For projects with a proximal USGS gauge in-line with the project reach (added bankfull verification - rare).

3. Utilizing survey data produce an estimate of the bankfull floodplain area in acres, which should be the area from the top of bank to the toe of the terrace riser/slope.

4 = Proportion of reach exhibiting banks that are eroding based on the visual survey for comparison to monitoring data; 5. Of value/needed only if the n exceeds 3

Table 10a.4 Baseline Stream Data Summary
Valley Fields Farm/407 - Upper B: 200 feet

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)		15.54	17.18	16.36	14.3	15.4		16.4		2	5.7	10.1	9.4	15.2		3		27.5				21.4			1
Floodprone Width (ft)					20	20.8		21.6		2	23.3	53.03	49.9	85.9		3		60.5				88.1			1
Bankfull Mean Depth (ft)		1.807	1.997	1.902	1.9	2.1		2.2		2	0.5	0.9	1	1.2		3		1.6				2			1
[1]Bankfull Max Depth (ft)					2.5	2.7		2.8		2	1.2	1.533	1.5	1.9		3		2.3				3.1			1
Bankfull Cross Sectional Area (ft^2)		33.72	37.27	35.49	27.1	31.7		36.2		2	2.7	10.2	8.9	19		3		43.1				42.4			1
Width/Depth Ratio					7.3	7.4		7.5		2	9.4	11.17	11.4	12.7		3		17.5				10.8			1
Entrenchment Ratio					1.3	1.4		1.4		2	1.5	6.467	8.8	9.1		3		2.2				4.1			1
[1]Bank Height Ratio					**2.6**	**2.8**		**3**		**2**	**1.1**	**1.333**	**1.4**	**1.5**		**3**		**1**				**1**			**1**
Profile																									
Riffle Length (ft)																						18.4			1
Riffle Slope (ft/ft)					0.005	0.013		0.018		2	0.006	0.034	0.017	0.096	0.036	6		0.004				5E-04			1
Pool Length (ft)																				41.1	41.6		42.2		2
Pool Max depth (ft)					2.8	3		3.2		2	0.9	1.9	1.4	3.9	1.13	6	2	3.2	3.9	3.23	3.24		3.24		2
Pool Spacing (ft)					31	42		61		2	15.3	31.7	31.6	52.4	13.8	6	110	110	138			107.5			1
Pattern																									
Channel Beltwidth (ft)					29	50	46	75		3	43.2	79.2	84.3	105.1	26.1	4	101	109	120	108.7	170.8	164.6	261..6	34.2	4
Radius of Curvature (ft)					15	105.7	76	226		3	16.4	29.5	22	51	14.7	5	55	83	110	23.8	55.4	50.5	110.1	36.2	5
Rc:Bankfull width (ft/ft)					**1**	**6.867**	**4.9**	**14.7**		**3**	**1.7**	**4.1**	**3.7**	**6.8**	**1.7**	**6**	**2**	**3.018**	**4**			**2.4**			**6**
Meander Wavelength (ft)					108	358.7	296	672		3	44.7	141.3	114	320.6	106.5	6	220	275	330	148.2	327.6	266.7	621	201.1	6
Meander Width Ratio					7	23.27	19.2	43.6		3	7.6	10.9	11.2	15.5	3.1	5	8	10	12			12.5			5
Transport parameters																									
Reach Shear Stress (competency) lb/ft^2					1.716624												0.559728			0.067392					
Max part size (mm) mobilized at bankfull					136.9105109												42.58898812			4.691537038					
Stream Power (transport capacity) W/m^2					197.41176												58.77144			8.137584					
Additional Reach Parameters																									
Rosgen Classification					G5/Incised E5						B4/E5/C4						B5c/C5			E5					
Bankfull Velocity (fps)		4.066	4.494	4.28	4.5-5.6												4.2			3.837264151					
Bankfull Discharge (cfs)		144.3	159.5	151.9	162.7																				
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)					1.1						1.1-1.3						1.1								
Water Surface Slope (Channel) (ft/ft)					0.0046						0.0080-0.0215						0.0039			Flat					
BF slope (ft/ft)					**0.0131**						**0.0082-0.0522**						**0.0047**			**0.0047**					
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

Shaded cells indicate that these will typically not be filled in.

1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile. 2 = For projects with a proximal USGS gauge in-line with the project reach (added bankfull verification - rare).

3. Utilizing survey data produce an estimate of the bankfull floodplain area in acres, which should be the area from the top of bank to the toe of the terrace riser/slope.

4 = Proportion of reach exhibiting banks that are eroding based on the visual survey for comparison to monitoring data; 5. Of value/needed only if the n exceeds 3

Table 10a.5 Baseline Stream Data Summary
Valley Fields Farm/407 - Lower B: 230 feet

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)		16.16	17.86	17.01	14.3	15.4		16.4		2	5.7	10.1	9.4	15.2		3		27.5				48.4			1
Floodprone Width (ft)					20	20.8		21.6		2	23.3	53.03	49.9	85.9		3		60.5				91.3			1
Bankfull Mean Depth (ft)		1.86	2.056	1.958	1.9	2.1		2.2		2	0.5	0.9	1	1.2		3		1.6				1.4			1
[1]Bankfull Max Depth (ft)					2.5	2.7		2.8		2	1.2	1.533	1.5	1.9		3		2.3				2.9			1
Bankfull Cross Sectional Area (ft^2)		35.87	39.64	37.76	27.1	31.7		36.2		2	2.7	10.2	8.9	19		3		43.1				67.8			1
Width/Depth Ratio					7.3	7.4		7.5		2	9.4	11.17	11.4	12.7		3		17.5				34.5			1
Entrenchment Ratio					1.3	1.4		1.4		2	1.5	6.467	8.8	9.1		3		2.2				1.9			1
[1]Bank Height Ratio					**2.6**	**2.8**		**3**		**2**	**1.1**	**1.333**	**1.4**	**1.5**		**3**		**1**				**1**			**1**
Profile																									
Riffle Length (ft)																				14	25.5		40.2		2
Riffle Slope (ft/ft)					0.005	0.013		0.018		2	0.006	0.034	0.017	0.096	0.036	6		0.004		0.003	0.007		0.009		2
Pool Length (ft)																				19.1	20.3		21.5		2
Pool Max depth (ft)					2.8	3		3.2		2	0.9	1.9	1.4	3.9	1.13	6	2	3.2	3.9			4.1			1
Pool Spacing (ft)					31	42		61		2	15.3	31.7	31.6	52.4	13.8	6	110	110	138			88.9			1
Pattern																									
Channel Beltwidth (ft)					29	50	46	75		3	43.2	79.2	84.3	105.1	26.1	4	97	106	122	108.7	170.8	164.6	261..6	34.2044	4
Radius of Curvature (ft)					15	105.7	76	226		3	16.4	29.5	22	51	14.7	5	57	85	114	23.8	55.4	50.5	110.1	36.2024	5
Rc:Bankfull width (ft/ft)					**1**	**6.867**	**4.9**	**14.7**		**3**	**1.7**	**4.1**	**3.7**	**6.8**	**1.7**	**6**	**2.073**	**3.091**	**4.145**			**1.0**			**6**
Meander Wavelength (ft)					108	358.7	296	672		3	44.7	141.3	114	320.6	106.5	6	227	284	341	148.2	327.6	266.7	621	201.057	6
Meander Width Ratio					7	23.27	19.2	43.6		3	7.6	10.9	11.2	15.5	3.1	5	8.255	10.33	12.4			5.5			5
Transport parameters																									
Reach Shear Stress (competency) lb/ft^2					1.716624												0.559728			0.5826912					
Max part size (mm) mobilized at bankfull					136.9105109												42.58898812			44.41116115					
Stream Power (transport capacity) W/m^2					197.41176												58.77144			100.514232					
Additional Reach Parameters																									
Rosgen Classification					G5/Incised E5						B4/E5/C4						B5c/C5			B5					
Bankfull Velocity (fps)		4.081	4.51	4.296	4.5-5.6												4.2			2.399705015					
Bankfull Discharge (cfs)		154.1	170.3	162.2	162.7																				
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)					1.1						1.1-1.3						1.1								
Water Surface Slope (Channel) (ft/ft)					0.0046						0.0080-0.0215						0.0039			0.0035					
BF slope (ft/ft)					**0.0131**						**0.0082-0.0522**						**0.0047**			**0.0047**					
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

Shaded cells indicate that these will typically not be filled in.

1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile. 2 = For projects with a proximal USGS gauge in-line with the project reach (added bankfull verification - rare).

3. Utilizing survey data produce an estimate of the bankfull floodplain area in acres, which should be the area from the top of bank to the toe of the terrace riser/slope.

4 = Proportion of reach exhibiting banks that are eroding based on the visual survey for comparison to monitoring data; 5. Of value/needed only if the n exceeds 3

Table 10a.6 Baseline Stream Data Summary
Valley Fields Farm/407 - Reach C: 1,400 feet

Parameter	Gauge[2]	Regional Curve			Pre-Existing Condition						Reference Reach(es) Data						Design			Monitoring Baseline					
Dimension and Substrate - Riffle Only		LL	UL	Eq.	Min	Mean	Med	Max	SD[5]	n	Min	Mean	Med	Max	SD[5]	n	Min	Med	Max	Min	Mean	Med	Max	SD[5]	n
Bankfull Width (ft)		5.137	5.677	5.407			7			1	5.7	10.1	9.4	15.2		3		11.5		8.9	12.13	13.5	14		3
Floodprone Width (ft)							14.1			1	23.3	53.03	49.9	85.9		3		25.3		39.6	45.6	48.5	48.7		3
Bankfull Mean Depth (ft)		0.793	0.876	0.834			0.6			1	0.5	0.9	1	1.2		3		0.7		0.6	0.833	0.9	1		3
[1]Bankfull Max Depth (ft)							0.9			1	1.2	1.533	1.5	1.9		3		1.2		1.1	1.533	1.7	1.8		3
Bankfull Cross Sectional Area (ft^2)		5.855	6.472	6.163			3.3			1	2.7	10.2	8.9	19		3		7.8		7.5	9.6	8.9	12.4		3
Width/Depth Ratio							11.7			1	9.4	11.17	11.4	12.7		3		17.2		8.9	16.27	15.9	24		3
Entrenchment Ratio							2			1	1.5	6.467	8.8	9.1		3		2.2		3.5	3.833	3.6	4.4		3
[1]Bank Height Ratio							**1**			**1**	**1.1**	**1.333**	**1.4**	**1.5**		**3**		**1**		**1**	**1**	**1**	**1**		**3**
Profile																									
Riffle Length (ft)																				21.7	41.6	36.7	90.8	23.5	7
Riffle Slope (ft/ft)											0.006	0.034	0.017	0.096	0.036	6		0.009		0.002	0.007	0.008	0.01	0.004	7
Pool Length (ft)																				25.8	50.2	56.4	66.7	16.7	6
Pool Max depth (ft)											0.9	1.9	1.4	3.9	1.13	6	0.9	1.5	1.7	2.18	2.52	2.58	2.78	0.25	7
Pool Spacing (ft)											15.3	31.7	31.6	52.4	13.8	6	45	69	92	46	92.5	91.9	152.2	37.9	9
Pattern																									
Channel Beltwidth (ft)											43.2	79.2	84.3	105.1	26.1	4	33	46	58	84.1	97.4	96.4	112	11.42	4
Radius of Curvature (ft)											16.4	29.5	22	51	14.7	5	23	35	46	20.8	32.5	30.7	59.4	16.52	5
Rc:Bankfull width (ft/ft)											**1.7**	**4.1**	**3.7**	**6.8**	**1.7**	**6**	**2**	**3.043**	**4**	**2.3**	**2.7**	**2.3**	**4.2**	0.924	**6**
Meander Wavelength (ft)											44.7	141.3	114	320.6	106.5	6	92	115	138	72.5	187.8	131.2	595.1	237	6
Meander Width Ratio											7.6	10.9	11.2	15.5	3.1	5	8	10	12	8.1	15.5	9.7	42.5	16.01	5
Transport parameters																									
Reach Shear Stress (competency) lb/ft^2																	0.643968			0.370656					
Max part size (mm) mobilized at bankfull																	49.28807318			27.71871363					
Stream Power (transport capacity) W/m^2																	129.59856			123.57072					
Additional Reach Parameters																									
Rosgen Classification							Incised B5						B4/E5/C4				C5/E5			E5					
Bankfull Velocity (fps)		3.668	4.054	3.861			6.5										3.1			18.28089888					
Bankfull Discharge (cfs)		22.61	24.99	23.8			21.6																		
Valley length (ft)																									
Channel Thalweg length (ft)																									
Sinuosity (ft)													1.1-1.3				1.1								
Water Surface Slope (Channel) (ft/ft)													0.0080-0.0215				0.0066			0.0099					
BF slope (ft/ft)													**0.0082-0.0522**				**0.0086**			**0.0095**					
[3]Bankfull Floodplain Area (acres)																									
[4]% of Reach with Eroding Banks																									
Channel Stability or Habitat Metric																									
Biological or Other																									

Shaded cells indicate that these will typically not be filled in.

1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile. 2 = For projects with a proximal USGS gauge in-line with the project reach (added bankfull verification - rare).

3. Utilizing survey data produce an estimate of the bankfull floodplain area in acres, which should be the area from the top of bank to the toe of the terrace riser/slope.

4 = Proportion of reach exhibiting banks that are eroding based on the visual survey for comparison to monitoring data; 5. Of value/needed only if the n exceeds 3

Table 10b. Baseline Stream Data Summary (Substrate, Bed, Bank, and Hydrologic Containment Parameter Distributions)
Valley Fields Farm/407

	Parameter	Pre-Existing Condition							Reference Reach(es) Data							Design							As-built/Baseline						
Upper A (800 feet)	[1]Ri% / Ru% / P% / G% / S%	10	20	30	40	0										30	10	40	20	0			30	10	40	20	0		
	[1]SC% / Sa% / G% / C% / B% / Be%	16	1.18	69.41	29.41	0	0		2.85	31.7	59.76	4.06	0.82	0.81															
	[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)	0.6	0.93	1.35	6.49	9.96			0.43	2.25	12.08	39.69	71.35																
	[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10	800	0	0	0	0						X	X										0	0	0	300	500		
	[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0	0	0	200	600				X														800	0	0	0			
	Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
Upper A2 (1,850 feet)	[1]Ri% / Ru% / P% / G% / S%	10	10	20	60	0										30	10	40	20	0			30	10	40	20	0		
	[1]SC% / Sa% / G% / C% / B% / Be%	14	60	26	0	0	0		2.85	31.7	59.76	4.06	0.82	0.81															
	[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)	0.09	0.65	1.25	6.16	11.3			0.43	2.25	12.08	39.69	71.35																
	[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10	1500	350	0	0	0						X	X										0	0	0	0	1850		
	[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0	0	0	1000	850				X														1850	0	0	0			
	Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
Lower A (1,400 feet)	[1]Ri% / Ru% / P% / G% / S%	5	10	5	80	0										30	10	40	20	0			30	10	40	20	0		
	[1]SC% / Sa% / G% / C% / B% / Be%	8.33	33.3	58.3	0	0	0		2.85	31.7	59.76	4.06	0.82	0.81															
	[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)	0.19	1.5	2.62	8.88	11.3			0.43	2.25	12.08	39.69	71.35																
	[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10	100	900	400	0	0						X	X										0	0	1400	0	0		
	[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0	0	0	1200	200				X														1400	0	0	0			
	Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
Reach B (430 feet)	[1]Ri% / Ru% / P% / G% / S%	10	10	30	50	0										30	10	40	20	0			30	10	40	20	0		
	[1]SC% / Sa% / G% / C% / B% / Be%	0	19	81	0	0	0		2.85	31.7	59.76	4.06	0.82	0.81															
	[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)	1.81	4	7.01	22.23	29.83			0.43	2.25	12.08	39.69	71.35																
	[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10	430	0	0	0	0						X	X										0	0	430	0	0		
	[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0	0	0	0	430				X														430	0	0	0			
	Parameter	**Pre-Existing Condition**							**Reference Reach(es) Data**							**Design**							**As-built/Baseline**						
Reach C (1,400 feet)	[1]Ri% / Ru% / P% / G% / S%															30	10	40	20	0			30	10	40	20	0		
	[1]SC% / Sa% / G% / C% / B% / Be%	18.63	34.31	47.06	0	0	0		2.85	31.7	59.76	4.06	0.82	0.81															
	[1]d16 / d35 / d50 / d84 / d95 / di^{p} / di^{sp} (mm)	0.05	1.17	1.86	5.67	7.49			0.43	2.25	12.08	39.69	71.35																
	[2]Entrenchment Class <1.5 / 1.5-1.99 / 2.0-4.9 / 5.0-9.9 / >10	600	800	0	0	0						X	X										0	0	1000	400	0		
	[3]Incision Class <1.2 / 1.2-1.49 / 1.5-1.99 / >2.0	1000	400	0	0				X														1400	0	0	0			

Shaded cells indicate that these will typically not be filled in.

1 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave

2 = Entrenchment Class - Assign/bin the reach footage into the classes indicated and provide the percentage of the total reach footage in each class in the table. This will result from the measured cross-sections as well as visual estimates

3 = Assign/bin the reach footage into the classes indicated and provide the percentage of the total reach footage in each class in the table. This will result from the measured cross-sections as well as the longitudinal profile

Footnotes 2,3 - These classes are loosley built around the Rosgen classification and hazard ranking breaks, but were adjusted slightly to make for easier assignment to somewhat coarser bins based on visual estimates in the field such that measurement of every segment for ER would not be necessary.

The intent here is to provide the reader/consumer of design and monitoring information with a good general sense of the extent of hydrologic containment in the pre-existing and the rehabilitated states as well as comparisons to the reference distributions.

ER and BHR have been addressed in prior submissions as a subsample (cross-sections as part of the design survey), however, these subsamples have often focused entirely on facilitating design without providing a thorough pre-construtions distribution of these parameters, leaving the reader/consumer with a sample that is weighted heavily on the stable sections of the reach. This means that the distributions for these parameters should include data from both the cross-section surveys and the longitudinal profile and in the case of ER, visual estimates. For example, the typical longitudinal profile permits sampling of the BHR at riffles beyond those subject to cross-sections and therefore can be readily integrated and provide a more complete sample distribution for these parameters, thereby providing the distribution/coverage necessary to provide meaningful comparisons.

Table 11a. Monitoring Data - Dimensional Morphology Summary (Dimensional Parameters – Cross Sections)
Valley Fields Farm/407

	Cross Section A1 (Riffle)							Cross Section A2 (Riffle)							Cross Section A3 (Riffle)							Cross Section A4 (Pool)							Cross Section A5 (Riffle)						
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+
Record elevation (datum) used	760.8	760.8						760.7	760.7						762	762						764	764						765.7	765.7					
Bankfull Width (ft)	31.1	33.3						38.22	30.83						30.09	33.35						31.1	27.47						31	29.89					
Floodprone Width (ft)	126.6	126.7						109.3	109.3						90.6	90.5						78.6	78.6						91.4	94.48					
Bankfull Mean Depth (ft)	2	2.3						1.9	3.01						1.83	1.7						2.2	2.76						1.62	1.19					
Bankfull Max Depth (ft)	3.36	5.21						4	5.69						3.18	3.6						3.95	5.19						2.81	3.11					
Bankfull Cross Sectional Area (ft^2)	62.5	76.4						72.79	92.79						55.15	57.37						69.02	75.91						50.1	35.54					
Bankfull Width/Depth Ratio	15.5	14.6						20.12	10.24						16.44	19.39						13.99	9.95						19.1	25.12					
Bankfull Entrenchment Ratio	4.1	3.8						2.86	3.55						3.01	2.71						2.53	2.86						2.95	3.06					
Bankfull Bank Height Ratio	1	1						1	1						1	1						1	1						1	1					
Cross Sectional Area between end pins (ft^2)	147	156						154	176						149	154						165	184						133	114					
d50 (mm)		6.7							15.3							15.6																			

	Cross Section A6 (Riffle)							Cross Section A7 (Pool)							Cross Section A10 (Riffle)							Cross Section A11 (Riffle)													
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+							
Record elevation (datum) used	766.9	766.9						767	767						755.5	755.5						754.9	754.9												
Bankfull Width (ft)	38.3	34.7						29.14	27.23						41.3	47.08						72.24	41.56												
Floodprone Width (ft)	83.2	83.3						87.7	87.72						115.9	109.3						127.3	102.7												
Bankfull Mean Depth (ft)	1.86	2.17						2.06	2.01						2.31	2.32						1.9	1.8												
Bankfull Max Depth (ft)	3.69	4.73						3.23	3.88						3.97	3.81						5.1	3.5												
Bankfull Cross Sectional Area (ft^2)	70.96	75.55						60.11	54.77						95.45	85.37						137.4	74.6												
Bankfull Width/Depth Ratio	20.56	16.01						14.15	13.55						17.88	26.01						38.02	23.09												
Bankfull Entrenchment Ratio	2.2	2.4						3.01	3.22						2.81	2.32						1.76	2.47												
Bankfull Bank Height Ratio	1	1						1	1						1	1						1	1												
Cross Sectional Area between end pins (ft^2)	166	172						168	162						448	440						596	539												
d50 (mm)																																			

	Cross Section B1 (Riffle)							Cross Section B2 (Riffle)							Cross Section B3 (Riffle)							Cross Section B4 (Pool)													
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+							
Record elevation (datum) used	766.1	766.1						765.9	765.9						760.7	760.7						760.4	760.4												
Bankfull Width (ft)	21.37	36.36						35.69	34.32						48.36	44.41						44.09	38.32												
Floodprone Width (ft)	88.06	98.67						106.1	106.7						91.27	93.68						97.18	93.09												
Bankfull Mean Depth (ft)	1.98	1.83						1.9	2.38						1.4	1.24						1.31	1.28												
Bankfull Max Depth (ft)	3.09	4.26						4.02	4.04						2.88	3.17						3.15	2.82												
Bankfull Cross Sectional Area (ft^2)	42.37	66.57						67.66	81.54						67.8	55.25						57.71	49.14												
Bankfull Width/Depth Ratio	10.79	19.87						18.78	14.42						34.54	35.81						33.66	29.94												
Bankfull Entrenchment Ratio	4.12	2.71						2.97	3.1						1.89	2.11						2.2	2.43												
Bankfull Bank Height Ratio	1	1						1	1						1	1						1	1												
Cross Sectional Area between end pins (ft^2)	586	619						690	718						582	571						479	431												
d50 (mm)		1.43																																	

	Cross Section C1 (Riffle)							Cross Section C2 (Pool)							Cross Section C3 (Riffle)							Cross Section C4 (Riffle)													
Based on fixed baseline bankfull elevation[1]	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+	Base	MY1	MY2	MY3	MY4	MY5	MY+							
Record elevation (datum) used	775.3	775.3						774	774						769.2	769.2						767.4	767.4												
Bankfull Width (ft)	14.02	11.65						12.9	5.87						13.45	14.1						8.92	11.19												
Floodprone Width (ft)	48.47	50.41						59.21	54.47						48.7	48.72						39.55	40.8												
Bankfull Mean Depth (ft)	0.88	0.78						0.9	1.07						0.56	0.41						1	0.84												
Bankfull Max Depth (ft)	1.81	2.11						2.02	1.86						1.06	1.15						1.72	2.6												
Bankfull Cross Sectional Area (ft^2)	12.38	9.12						12.04	6.28						7.51	5.74						8.88	9.36												
Bankfull Width/Depth Ratio	15.93	14.94						13.86	5.49						24.02	34.39						8.92	13.3												
Bankfull Entrenchment Ratio	3.46	4.33						4.59	9.28						3.6	3.46						4.43	3.65												
Bankfull Bank Height Ratio	1	1						1	1.1						1	1						1	1												
Cross Sectional Area between end pins (ft^2)	199	199						53	52						39	33						142	133												
d50 (mm)																8.55																			

1 = Widths and depths for monitoring resurvey will be based on the baseline bankfull datum regardless of dimensional/depositional development. Input the elevation used as the datum, which should be consistent and based on the baseline datum established. If the performer has inherited the project and cannot acquire the datum used for prior years this must be discussed with EEP. If this cannot be resolved in time for a given years report submission a footnote in this should be included that states: "It is uncertain if the monitoring datum has been consistent over the monitoring history, which may influence calculated values. Additional data from a prior performer is being acquired to provide confirmation. Values will be recalculated in a future submission based on a consistent datum if determined to be necessary."

Exhibit Table 11b.1 Monitoring Data - Stream Reach Data Summary
Valley Fields Farm/407 - Upper A: 800 feet

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	29.1	30.05		31		2	33.32	33.34		33.35		2																								
Floodprone Width (ft)	90	90.7		91.4		2	90.49	108.6		126.7		2																								
Bankfull Mean Depth (ft)	1.6	1.85		2.1		2	1.72	2.005		2.29		2																								
[1]Bankfull Max Depth (ft)	2.8	3		3.2		2	3.62	4.415		5.21		2																								
Bankfull Cross Sectional Area (ft[2])	50.1	55.1		60.1		2	57.37	66.87		76.36		2																								
Width/Depth Ratio	14.2	16.65		19.1		2	14.55	16.97		19.39		2																								
Entrenchment Ratio	3	3		3		2	2.71	3.255		3.8		2																								
[1]Bank Height Ratio	**1**	**1**		**1**		**2**	**1**	**1**		**1**		**2**																								
Profile																																				
Riffle Length (ft)	56.5	88.5		120.4		1	21.7	63.7		105.7		2																								
Riffle Slope (ft/ft)	0.003	0.003		0.003		1	0.003	0.004		0.004		2																								
Pool Length (ft)	38.5	74.1		98.5		3	36.94	72.02		95.94		2																								
Pool Max depth (ft)	3.72	4.21		5.1		3	3.29	3.97		4.52		3																								
Pool Spacing (ft)	155.7	248.2		340.6		2	80.2	102.9		134		3																								
Pattern																																				
Channel Beltwidth (ft)	22.1	118.1	126	197.2	71.91	4																														
Radius of Curvature (ft)	10.1	45.7	49.2	79.8	28.53	5																														
Rc:Bankfull width (ft/ft)	**0.3**	**1.5**		**2.6**	1.114	**6**																														
Meander Wavelength (ft)	117	302.2	292..4	613.9	251.1	6																														
Meander Width Ratio	4.0	10.1		19.8	7.964	5																														
Additional Reach Parameters																																				
Rosgen Classification	C5						C5																													
Channel Thalweg length (ft)																																				
Sinuosity (ft)	1.1						1.1																													
Water Surface Slope (Channel) (ft/ft)	0.0029						0.0025																													
BF slope (ft/ft)	**0.0024**						**0.002**																													
[3]Ri% / Ru% / P% / G% / S%							**30**	**10**	**40**	**20**	**0**																									
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table
3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave
4. = Of value/needed only if the n exceeds 3

Exhibit Table 11b.2 Monitoring Data - Stream Reach Data Summary
Valley Fields Farm/407 - Upper A2: 1,850 feet

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	30.1	30.8	31.1	31.1		3	27.23	28.56	28.56	29.89		2																								
Floodprone Width (ft)	78.6	98.6	90.6	126.6		3	87.72	89.6	89.6	91.48		2																								
Bankfull Mean Depth (ft)	1.8	2	2	2.2		3	1.19	1.6	1.6	2.01		2																								
[1]Bankfull Max Depth (ft)	3.2	3.5	3.4	4		3	3.11	3.495	3.495	3.88		2																								
Bankfull Cross Sectional Area (ft^2)	55.2	62.2	62.5	69		3	35.54	45.16	45.16	54.77		2																								
Width/Depth Ratio	14	15.3	15.5	16.4		3	13.55	19.34	19.34	25.12		2																								
Entrenchment Ratio	2.5	3.2	3	4.1		3	3.06	3.14	3.14	3.22		2																								
[1]Bank Height Ratio	**1**	**1**	**1**	**1**		**3**	**1**	**1**	**1**	**1**		**2**																								
Profile																																				
Riffle Length (ft)	33.3	52		86.3		3	18.8	35.8		52.8		3																								
Riffle Slope (ft/ft)	0.002	0.009		0.014		5	0.002	0.004		0.005		5																								
Pool Length (ft)	60.8	110.4		238.6		3	77.4	141.2		405.4		3																								
Pool Max depth (ft)	4.15	5.03		5.94		11	4.56	4.92		5.43		11																								
Pool Spacing (ft)	142.7	238		300.6		5	50.7	142.4		244.4		5																								
Pattern																																				
Channel Beltwidth (ft)	22.1	118.1	126	197.2	71.91	4																														
Radius of Curvature (ft)	10.1	45.7	49.2	79.8	28.53	5																														
Rc:Bankfull width (ft/ft)	**0.3**	**1.5**		**2.6**	1.115	**6**																														
Meander Wavelength (ft)	117	302.2	292..4	613.9	251.1	6																														
Meander Width Ratio	3.9	9.8		19.7	8.01	5																														
Additional Reach Parameters																																				
Rosgen Classification	C5						C5																													
Channel Thalweg length (ft)																																				
Sinuosity (ft)	1.18						1.18																													
Water Surface Slope (Channel) (ft/ft)	0.0036						0.004																													
BF slope (ft/ft)	**0.0036**						**0.004**																													
[3]Ri% / Ru% / P% / G% / S%							**30**	**10**	**40**	**20**	**0**																									
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table
3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave
4. = Of value/needed only if the n exceeds 3

Exhibit Table 11b.3 Monitoring Data - Stream Reach Data Summary
Valley Fields Farm/447 - Lower A: 1,400 feet

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	30.1	30.8	31.1	31.1		3			47.08			1																								
Floodprone Width (ft)	78.6	98.6	90.6	126.6		3			109.3			1																								
Bankfull Mean Depth (ft)	1.8	2	2	2.2		3			1.81			1																								
[1]Bankfull Max Depth (ft)	3.2	3.5	3.4	4		3			3.81			1																								
Bankfull Cross Sectional Area (ft[2])	55.2	62.2	62.5	69		3			85.37			1																								
Width/Depth Ratio	14	15.3	15.5	16.4		3			26.01			1																								
Entrenchment Ratio	2.5	3.2	3	4.1		3			2.32			1																								
[1]Bank Height Ratio	**1**	**1**	**1**	**1**		**3**			**1**			**1**																								
Profile																																				
Riffle Length (ft)	36.8	44.4		51.6		3	water																													
Riffle Slope (ft/ft)	0.002	0.009		0.014		5																														
Pool Length (ft)	89.6	119.8		152.8		3																														
Pool Max depth (ft)	4.15	5.03		5.94		11																														
Pool Spacing (ft)	142.7	238		300.6		5																														
Pattern																																				
Channel Beltwidth (ft)	22.1	118.1	126	197.2	71.91	4																														
Radius of Curvature (ft)	10.1	45.7	49.2	79.8	28.53	5																														
Rc:Bankfull width (ft/ft)	**0.3**	**1.5**		**2.6**	1.115	**6**																														
Meander Wavelength (ft)	117	302.2	292..4	613.9	251.1	6																														
Meander Width Ratio	3.9	9.8		19.7	8.01	5																														
Additional Reach Parameters																																				
Rosgen Classification	C5						C5																													
Channel Thalweg length (ft)																																				
Sinuosity (ft)	1.14						1.14																													
Water Surface Slope (Channel) (ft/ft)	0.0015						0.0004																													
BF slope (ft/ft)	**0.002**						**0.002**																													
[3]Ri% / Ru% / P% / G% / S%							**0**	**0**	**100**	**0**	**0**																									
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table
3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave
4. = Of value/needed only if the n exceeds 3

Exhibit Table 11b.4 Monitoring Data - Stream Reach Data Summary
Valley Fields Farm/407 - Upper B: 200 feet

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)			21.4			1			36.36			1																								
Floodprone Width (ft)			88.1			1			98.67			1																								
Bankfull Mean Depth (ft)			2			1			1.83			1																								
[1]Bankfull Max Depth (ft)			3.1			1			4.26			1																								
Bankfull Cross Sectional Area (ft^2)			42.4			1			66.57			1																								
Width/Depth Ratio			10.8			1			19.87			1																								
Entrenchment Ratio			4.1			1			2.71			1																								
[1]Bank Height Ratio			**1**			**1**			**1**			**1**																								
Profile																																				
Riffle Length (ft)			18.4			1																														
Riffle Slope (ft/ft)			5E-04			1																														
Pool Length (ft)	41.1	41.6		42.2		2			79.3			1																								
Pool Max depth (ft)	3.23	3.24		3.24		2			3.3																											
Pool Spacing (ft)			107.5			1																														
Pattern																																				
Channel Beltwidth (ft)	108.7	170.8	164.6	261..6	34.2	4																														
Radius of Curvature (ft)	23.8	55.4	50.5	110.1	36.2	5																														
Rc:Bankfull width (ft/ft)			**2.4**			**6**																														
Meander Wavelength (ft)	148.2	327.6	266.7	621	201.1	6																														
Meander Width Ratio			12.5			5																														

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Additional Reach Parameters																																				
Rosgen Classification			E5						C5																												
Channel Thalweg length (ft)																																				
Sinuosity (ft)			1.13						1.13																											
Water Surface Slope (Channel) (ft/ft)			Flat						0.00004																											
BF slope (ft/ft)			**0.0047**						**0.0047**																											
[3]Ri% / Ru% / P% / G% / S%							**0**	**0**	**100**	**0**	**0**																									
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table
3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave
4. = Of value/needed only if the n exceeds 3

Exhibit Table 11b.5 Monitoring Data - Stream Reach Data Summary
Valley Fields Farm/407 -Lower B: 230 feet

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)			48.4			1			44.41			1																								
Floodprone Width (ft)			91.3			1			93.68			1																								
Bankfull Mean Depth (ft)			1.4			1			1.24			1																								
[1]Bankfull Max Depth (ft)			2.9			1			3.17			1																								
Bankfull Cross Sectional Area (ft[2])			67.8			1			55.25			1																								
Width/Depth Ratio			34.5			1			35.81			1																								
Entrenchment Ratio			1.9			1			2.11			1																								
[1]Bank Height Ratio			**1**			**1**			**1**			**1**																								
Profile																																				
Riffle Length (ft)	14	25.5		40.2		2			23			1																								
Riffle Slope (ft/ft)	0.003	0.007		0.009		2			0.005			1																								
Pool Length (ft)	19.1	20.3		21.5		2	40.2	47.1		54.1		2																								
Pool Max depth (ft)			4.1			1	3.9	4.2		4.4		2																								
Pool Spacing (ft)			88.9			1	82.4	87.8		93.1		2																								
Pattern																																				
Channel Beltwidth (ft)	108.7	170.8	164.6	261..6	34.2	4																														
Radius of Curvature (ft)	23.8	55.4	50.5	110.1	36.2	5																														
Rc:Bankfull width (ft/ft)			**1.0**			**6**																														
Meander Wavelength (ft)	148.2	327.6	266.7	621	201.1	6																														
Meander Width Ratio			5.5			5																														
Additional Reach Parameters																																				
Rosgen Classification			B5						B5																												
Channel Thalweg length (ft)																																				
Sinuosity (ft)			1.17						1.17																												
Water Surface Slope (Channel) (ft/ft)			0.0035						0.0027																												
BF slope (ft/ft)			**0.0047**						**0.0047**																												
[3]Ri% / Ru% / P% / G% / S%							**30**	**10**	**40**	**20**	**0**																									
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
[2]% of Reach with Eroding Banks																																				
Channel Stability or Habitat Metric																																				
Biological or Other																																				

Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

Shaded cells indicate that these will typically not be filled in.
1 = The distributions for these parameters can include information from both the cross-section surveys and the longitudinal profile.
2 = Proportion of reach exhibiting banks that are eroding based on the visual survey from visual assessment table
3 = Riffle, Run, Pool, Glide, Step; Silt/Clay, Sand, Gravel, Cobble, Boulder, Bedrock; dip = max pave, disp = max subpave
4. = Of value/needed only if the n exceeds 3

Exhibit Table 11b.6 Monitoring Data - Stream Reach Data Summary
Valley Fields Farm/407 - Reach C: 1,400 feet

Parameter	Baseline						MY-1						MY-2						MY- 3						MY- 4						MY- 5					
Dimension and Substrate - Riffle only	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n	Min	Mean	Med	Max	SD[4]	n
Bankfull Width (ft)	8.9	12.13	13.5	14		3	11.19	12.31	11.65	14.1	1.564	3																								
Floodprone Width (ft)	39.6	45.6	48.5	48.7		3	40.83	46.65	48.72	50.41	5.113	3																								
Bankfull Mean Depth (ft)	0.6	0.833	0.9	1		3	0.41	0.677	0.78	0.84	0.233	3																								
[1]Bankfull Max Depth (ft)	1.1	1.533	1.7	1.8		3	1.15	1.953	2.11	2.6	0.738	3																								
Bankfull Cross Sectional Area (ft[2])	7.5	9.6	8.9	12.4		3	5.74	8.073	9.12	9.36	2.024	3																								
Width/Depth Ratio	8.9	16.27	15.9	24		3	13.32	20.88	14.94	34.39	11.73	3																								
Entrenchment Ratio	3.5	3.833	3.6	4.4		3	3.46	3.813	3.65	4.33	0.457	3																								
[1]Bank Height Ratio	**1**	**1**	**1**	**1**		**3**	**1**	**1**	**1**	**1**	**0**	**3**																								
Profile																																				
Riffle Length (ft)	21.7	41.6	36.7	90.8	23.5	7	18.8	31.3		50.39		3																								
Riffle Slope (ft/ft)	0.002	0.007	0.008	0.01	0.004	7	0.006	0.009		0.012		3																								
Pool Length (ft)	25.8	50.2	56.4	66.7	16.7	6	9.4	74.9		166.3		3																								
Pool Max depth (ft)	2.18	2.52	2.58	2.78	0.25	7	2.5	2.8		3.1		3																								
Pool Spacing (ft)	46	92.5	91.9	152.2	37.9	9	22.8	88.5		195.7		3																								
Pattern																																				
Channel Beltwidth (ft)	84.1	97.4	96.4	112	11.42	4																														
Radius of Curvature (ft)	20.8	32.5	30.7	59.4	16.52	5																														
Rc:Bankfull width (ft/ft)	**2.3**	**2.7**	**2.3**	**4.2**	0.924	**6**																														
Meander Wavelength (ft)	72.5	187.8	131.2	595.1	237	6																														
Meander Width Ratio	8.1	15.5	9.7	42.5	16.01	5																														
Additional Reach Parameters																																				
Rosgen Classification							C5																													
Channel Thalweg length (ft)																																				
Sinuosity (ft)			1.09						1.09																											
Water Surface Slope (Channel) (ft/ft)			0.0099						0.0086																											
BF slope (ft/ft)			**0.0095**						**0.0094**																											
[3]Ri% / Ru% / P% / G% / S%							**30**	**10**	**40**	**20**	**0**																									
[3]SC% / Sa% / G% / C% / B% / Be%																																				
[3]d16 / d35 / d50 / d84 / d95 /																																				
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Pattern data will not typically be collected unless visual data, dimensional data or profile data indicate significant shifts from baseline

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APPENDIX E
HYDROLOGIC DATA

Table 12. Verification of Bankfull Events			
Valley Fields Farm/407			
Date of Data Collection	Date of Occurrence	Method	Photo # (if available)
7/8/2010	N/A	Rackline observed in floodplain	SP1
11/4/2010	N/A	Rackline observed at bankfull	PB05