Cato Farms Stream Restoration
Project No. 72
2006 Monitoring Report: Year 2 of 5

March 2007

Submitted to: NCDENR-EEP
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Ecosystem Enhancement Program

NCDENR

JORDAN JONES & GOULDING

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Jordan Jones & Goulding

EXECUTIVE SUMMARY

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Executive Summary

The following goals for the Cato Farms stream restoration project were established through the North Carolina Ecosystem Enhancement Program (NCEEP):

1. Restore the stream to a stable form,
2. Restore the riparian zone adjacent to the stream,
3. Provide a crossing for cattle at one location along the project reach, and
4. Provide fencing to prevent cattle from entering the riparian corridor (stream and adjacent overbank area).

The restoration project is located along an unnamed tributary (UT) to Clark Creek. The project consists of two reaches. Reach 1 is approximately 2,000 linear feet (upper two-thirds of the project) and included relocating and restoring the creek to establish an E-channel. Reach 2 is approximately 500 linear feet and included creating a B-channel that transitions to the convergence with Clark Creek. The riparian areas along Reach 1 were planted with native grasses and the stream bank was stabilized with geotextiles. Reach 2 was soil bioengineered (live staked) with shrubs. The entire site was fenced in to exclude cattle access to the UT.

This monitoring report is for year 2 of 5. Results from the 2006 (year 2) survey indicate that the pattern, profile and dimension of the restored channel appears to be stable. However, there are several minor areas of moderate to severe bank erosion due to lack of vegetative cover. Although some loss of stream bank vegetation has occurred in these limited areas, the overall growth of the riparian buffer is good.

The survival rate for the woody vegetation monitored for 2006 is 74%. The monitoring data indicates an average of 13 stems per plot. Using the monitoring plots size of 10m x 10m (0.025 ac), the site density is approximately 520 planted stems per acre. The success goal for planted woody vegetation is 320 stems per acre. The site has satisfied this goal for monitoring year 2.

Overall, the stream appears to be stable and has met success criteria for monitoring year 2 (2006).

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SECTION I

Project Background

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SECTION I
Project Background

The background information provided in this report is referenced from previous monitoring reports conducted by CH2MHill, Inc. and North Carolina State University.

1. Location and Setting

The Cato Farms Stream Restoration project is located at the Cato Farms Property in Mecklenburg County, North Carolina immediately south of Huntersville-Concord Road just east of Huntersville (Figure I). The stream restoration project consisted of restoring 2,500 linear feet of an UT to Clark Creek, restoring 2.9 acres of associated riparian zone, providing one cattle crossing, and fencing the riparian corridor to exclude cattle grazing.

To access the site from Charlotte, take Interstate 77 North to Exit 25 (Gilead Road) and turn right off the exit heading east. Gilead Road will turn into Huntersville-Concord Road. Take Huntersville-Concord Road from this point for approximately 2 miles. Huntersville-Concord Road will cross the UT tributary at a low point in the road. The tributary is located approximately 1,000 feet downstream from where Huntersville-Concord Road crosses the UT to Clark Creek.

2. Mitigation Structure and Objectives

The UT to Clark Creek is located within the southern outer Piedmont Physiographic Region. The UT site drains approximately 0.41 square miles to Clark Creek, within the Yadkin-Pee Dee River Basin (HUC 3040405). The UT runs through the agricultural property of William Cato and family. Prior to restoration, the site was predominantly utilized for cattle grazing. Historically, the land was cleared to provide pasture land, with access to the stream for cattle watering. The UT appears to previously have been channelized/straightened, and ditches were created to drain adjacent wetlands. These activities are thought to have inhibited stream channel stability, producing an incised, eroded stream and created adjacent, dry hydric soils.

The stream restoration project goals are:

1. Restore the stream to a stable form,
2. Restore the riparian zone adjacent to the stream,
3. Provide a crossing for cattle at one location along the project reach, and
4. Provide fencing to prevent cattle from entering the riparian corridor (stream and adjacent overbank area).

The project consists of two reaches. Reach 1 is approximately 2,000 linear feet (upper two-thirds of the project) and included relocating and restoring the creek to establish an E-channel. Reach 2 is approximately 500 linear feet and included creating a B-channel that transitions to the

convergence with Clark Creek (Table I). Reach 1 was a relocation and restoration approach (Priority 1). A sinuous, stable pattern, with a riffle-pool bedform was constructed. Cross-vanes and riffles were installed to provide bank stabilization and maintain grade control. Restoration of the lower one-third of the UT, Reach 2, consisted of in place restoration (Priority 3). Reach 2 was restored using vegetation and bank stabilization structures, such as cross-vanes and live stakes. Approximately 2.9 acres of wetlands were preserved by installing fencing to prevent cattle from accessing the stream.

Riparian areas along Reach 1 were planted with native grasses and stream banks were stabilized with geotextiles. Reach 2 was soil bioengineered (live staked) with shrubs. The entire site was fenced in to exclude cattle access to the UT to Clark Creek.

Table I
Project Mitigation Structure and Objectives

Cato Farms Stream Restoration/Project No. 72					
Segment/Reach	**Mitigation Type**	**Approach**	**Linear Feet or Acreage**	**Stationing (ft)**	**Comments**
Reach 1 UT to Clark Creek	Restoration/Relocation	P1	2,000 linear feet (approx.) Upper 2/3 of project	0+00-20+00	Channel restoration, relocation with use of grade control and bank protection structures.
Reach 2 UT to Clark Creek	Restoration in-place	P3	500 linear feet (approx.) Lower 1/3 of project	20+00-25+00	Channel restoration, in-place with use of grade control and bank protection structures.
Cato Farms	Preservation	-	2.9 acres	-	Buffer Restoration/Replanting

3. Project History and Background

The stream restoration was designed by CH2MHill, Inc. Monitoring has been conducted annually from 2005 to present. This report serves as the 2nd year of the 5 year monitoring plan for the Cato Farms Stream Restoration site. Tables II and III provides detailed project activity, history and contact information for this project. Table IV provides more in-depth watershed/site background for the UT to Clark Creek

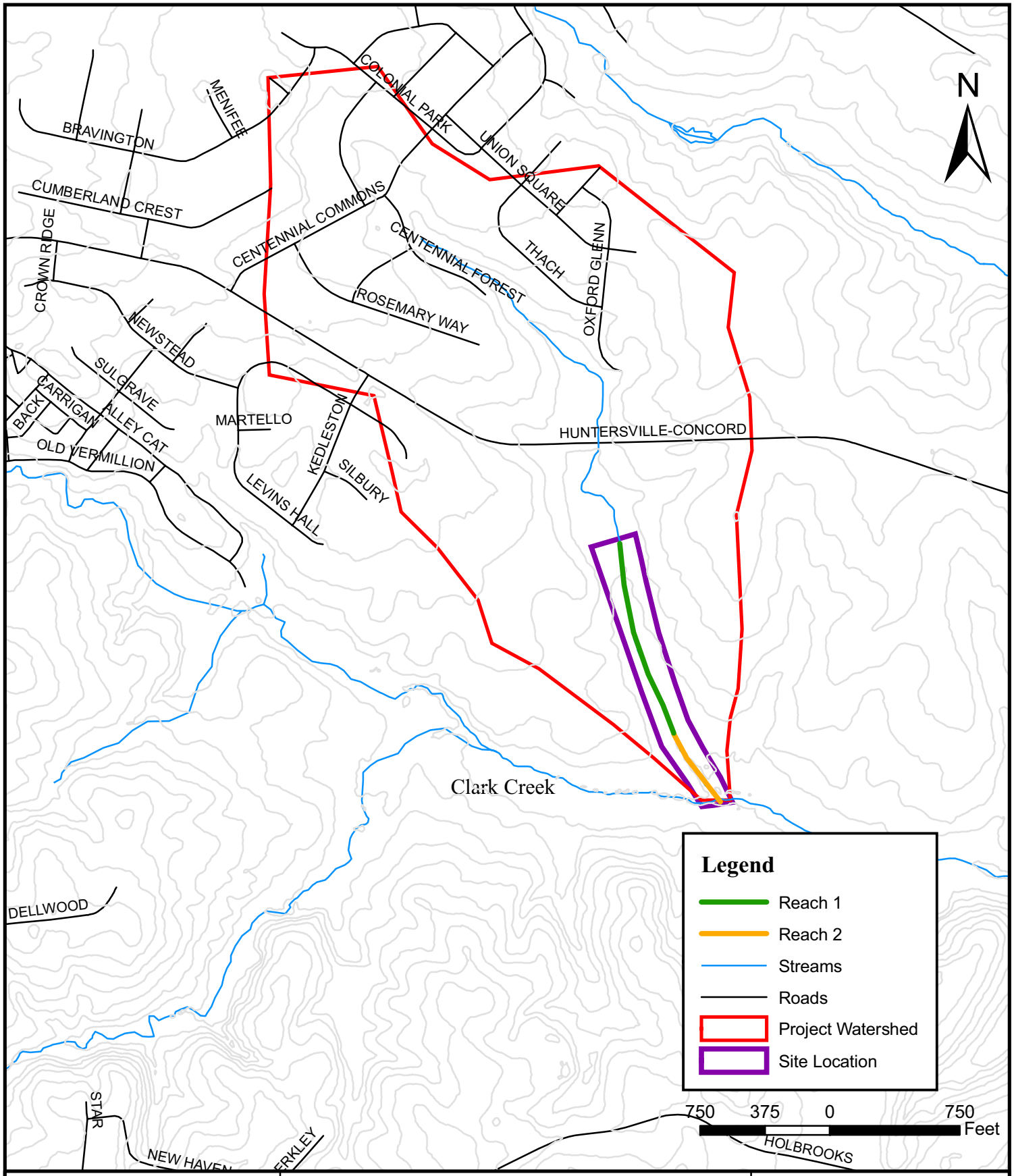


Figure I. Project Location and Watershed Map
Cato Farms Stream Restoration
Mecklenburg County, NC
Monitoring Report Year 2 of 5

Project # 72
March 2007

Table II
Project Activity and Reporting History

Cato Farms Stream Restoration/Project No. 72			
Activity or Report	**Scheduled Completion**	**Data Collection Completed**	**Actual Completion or Delivery**
Restoration Plan	unknown	unknown	July 2002
Final Design-90%	unknown	unknown	November 2002
Construction	unknown	unknown	unknown
Temporary S&E mix applied to entire project area	unknown	unknown	unknown
Permanent seed mix applied to reach	unknown	unknown	unknown
Mitigation Plan/ As-Built (Year 0 Monitoring)	unknown	unknown	Summer 2004
Year 1 Monitoring	unknown	June 2005	January 2005
Year 2 Monitoring	September 2006	September 2006	November 2006
Year 3 Monitoring	September 2007		
Year 4 Monitoring	September 2008		
Year 5 Monitoring	September 2009		

Table III
Project Contacts

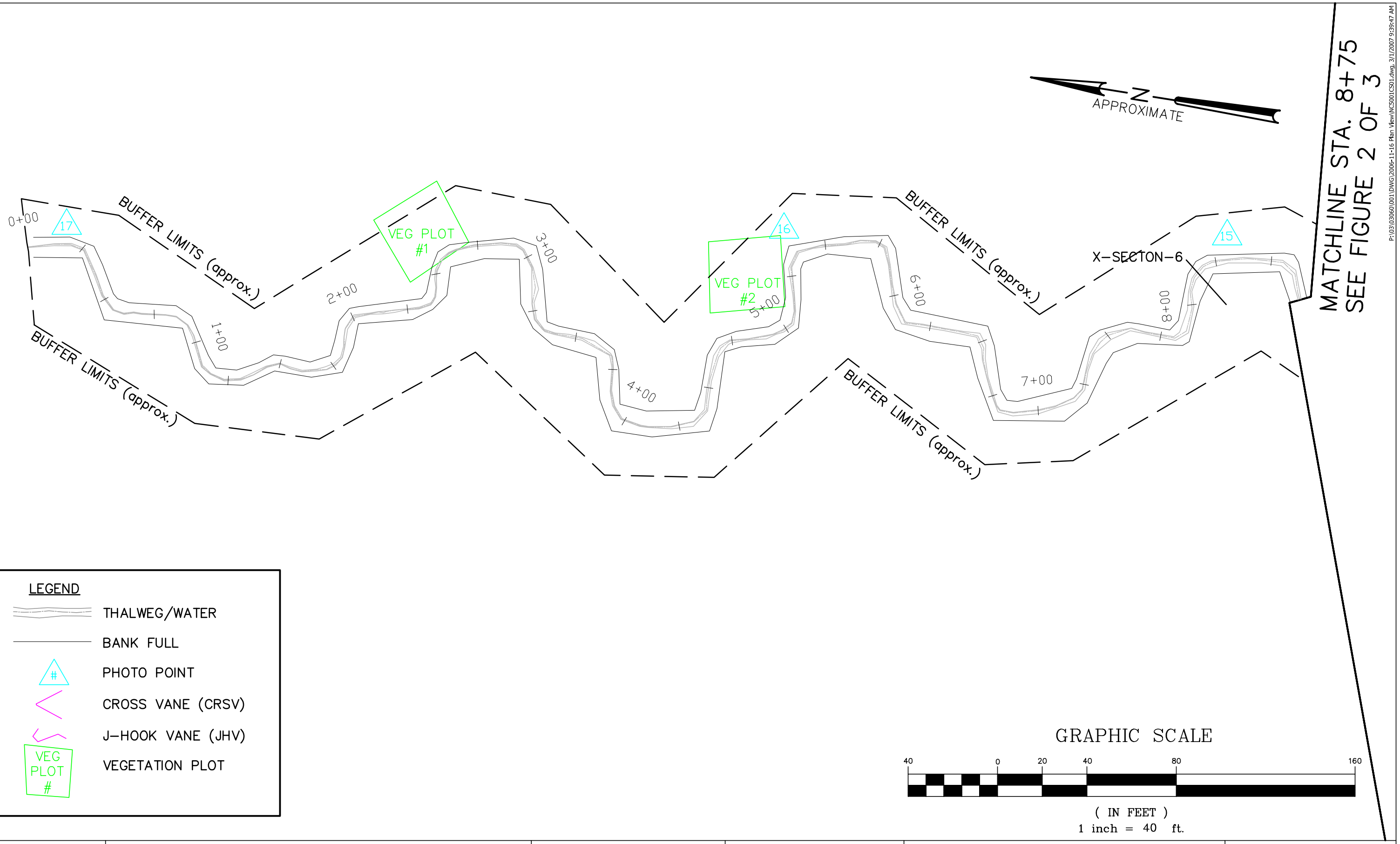
Cato Farms Stream Restoration/Project No. 72	
Designer	CH2MHill, Inc. 4824 Parkway Plaza Boulevard, Suite 200 Charlotte, NC 28217
Contractor's Name	Unknown
Planting Contractor	Unknown
Seeding Contractor	Unknown
Monitoring Performers	Jordan, Jones, and Goulding, Inc. 9101 Southern Pine Blvd., Suite 160 Charlotte, NC 28273
Stream Monitoring, POC	Dan Rice, 678-333-0457
Vegetation Monitoring, POC	Dan Rice, 678-333-0457

Table IV
Project Background

Cato Farms Stream Restoration/Project No. 72	
Project County	Mecklenburg, North Carolina
Drainage Area	0.41 sq. mi
Drainage impervious cover estimate	< 5%
Stream Order	1st
Physiographic Region	Piedmont
Ecoregion	Southern Outer Piedmont
Rosgen Classification of As-built	E (~2,000 ft) B (~500 ft)
Cowardin Classification	N/A
Dominant soil types	Monacan, Cecil, Enon, Iredell, Helena, and Wilkes
Reference site ID	Coffey Creek UT to Little Sugar Creek
USGS HUC for Project and Reference	3040105
NCDWQ Sub-basin for Project and Reference	CTB35
NCDWQ classification for Project and Reference	C
Any portion of any project segment 303d list?	No
Any portion of any project segment upstream of a 303d listed segment?	No
Reason for 303d listing or stressor?	N/A
% of project easement fenced?	100%

4. Monitoring Plan View

The monitoring plan view map (Figure II) illustrates the location of the longitudinal profile stations, cross-section stations, vegetation plots, and photo points. A total of six cross-sections were previously established within Reach 1 and 2. Approximately 2,147 linear feet of longitudinal profile was monitored. Eight previously established vegetation plots were monitored in 2006. Photographs were taken upstream and downstream at each cross-section and at existing photo points. No problems occurred that inhibited accurate data assessment.



LEGEND

- THALWEG/WATER
- BANK FULL
- # PHOTO POINT
- CROSS VANE (CRSV)
- J-HOOK VANE (JHV)
- VEG PLOT # VEGETATION PLOT

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NOTES:
1. GENERAL SITE DATA PROVIDED BY NCEEP.
2. ALL LOCATIONS ARE APPROXIMATE.

PROJECT NO. 72
MECKLENBURG COUNTY
NORTH CAROLINA
MONITORING
YEAR 2 OF 5

JORDAN JONES & GOULDING

NC ECOSYSTEM ENHANCEMENT PROGRAM
CATO FARMS STREAM RESTORATION

FIGURE II
MONITORING PLAN VIEW MAP

DATE : MARCH 2007
SCALE : 1"=40'
JOB NO.: 03060-001

FIGURE 1 OF 3

MATCHLINE STA. 8+75
SEE FIGURE 1 OF 3

MATCHLINE STA. 17+75
SEE FIGURE 3 OF 3

N
APPROXIMATE

BUFFER LIMITS (approx.)

BUFFER LIMITS (approx.)

BUFFER LIMITS (approx.)

BUFFER LIMITS (approx.)

VEG PLOT #3

VEG PLOT #4

VEG PLOT #5

9+00

10+00

11+00

12+00

13+00

14+00

15+00

16+00

17+00

X-SECTON-5

X-SECTON-4

X-SECTON-3

BRIDGE

6

7

8

9

10

11

12

13

14

LEGEND

- THALWEG/WATER
- BANK FULL
- # PHOTO POINT
- CROSS VANE (CRSV)
- J-HOOK VANE (JHV)
- VEG PLOT # VEGETATION PLOT

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NOTES:
1. GENERAL SITE DATA PROVIDED BY NCEEP.
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PROJECT NO. 72
MECKLENBURG COUNTY
NORTH CAROLINA
MONITORING
YEAR 2 OF 5

JORDAN JONES & GOULDING

NC ECOSYSTEM ENHANCEMENT PROGRAM
CATO FARMS STREAM RESTORATION

FIGURE II
MONITORING PLAN VIEW MAP

DATE : MARCH 2007
SCALE : 1" = 40'
JOB NO.: 03060-001

FIGURE 2 OF 3

NC5001CSO3.dwg
03.01.07

P:\03\03060\001\DWG\2006-11-16 Plan View\NC5001CSO3.dwg, 3/1/2007 9:39:57 AM

MATCHLINE STA. 17+75
SEE FIGURE 2 OF 3

APPROXIMATE

CRSV-8
CRSV-7
CRSV-6
CRSV-3
JHV-1

X-SECTON-2
X-SECTON-1

BUFFER LIMITS (approx.)

18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
25+11.97

END OF PROJECT

VEG PLOT #6
VEG PLOT #7
VEG PLOT #8

CRSV-5
CRSV-4
CRSV-2
CRSV-1

LEGEND

- THALWEG/WATER
- BANK FULL
- PHOTO POINT (#)
- CROSS VANE (CRSV)
- J-HOOK VANE (JHV)
- VEGETATION PLOT (VEG PLOT #)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NOTES:
1. GENERAL SITE DATA PROVIDED BY NCEEP.
2. ALL LOCATIONS ARE APPROXIMATE.

PROJECT NO. 72
MECKLENBURG COUNTY
NORTH CAROLINA
MONITORING
YEAR 2 OF 5

JORDAN JONES & GOULDING

NC ECOSYSTEM ENHANCEMENT PROGRAM
CATO FARMS STREAM RESTORATION

FIGURE II
MONITORING PLAN VIEW MAP

DATE : MARCH 2007
SCALE : 1" = 40'
JOB NO.: 03060-001

FIGURE 3 OF 3

JTHACKSTON

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SECTION II

Project Condition and Monitoring Results

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SECTION II

Project Condition and Monitoring Results

The following monitoring results are from the 2006 (year 2 of 5) survey completed in September, 2006.

A. Vegetative Assessment

Eight previously established vegetation monitoring plots were monitored within the riparian buffer of the Cato Farm project. Planted zones related to the stream restoration consist of the stream bank and the buffer area adjacent to the stream. The riparian zone begins at the top of bank and proceeds perpendicular to the stream. The planted stream bank initiates at base flow elevation and extends to the top of bank. The overall success of these two particular planted zones is good. Live stakes (*Salix nigra* and *Cornus amomum*) and herbaceous species (*Carex* spp., *Juncus* spp., and *Panicum* spp.) along the stream bank are healthy and abundant. The riparian buffer is dominated by a thick herbaceous layer with numerous shrubs and saplings throughout. Natural recruitment vegetation appears to be dominant. This is likely due to the native seed bank.

Overall, planted and naturally recruited vegetation is doing well at the site. Some minor vegetation problems were noted. Several small barren areas were observed along the stream banks and some live stakes were planted in compacted soil, planted too high on the banks, or apparently planted too late in the season resulting in higher mortality for these areas. The majority of the live stakes throughout the project area are thriving.

The areas of compacted soil and live stake mortality could lead to an erosion problem over time depending on the extent of natural recruitment in these areas. Coir matting is still holding the majority of the banks together, but it will decompose leaving these areas potentially barren.

In the limited areas where vegetation has not established, addition of temporary and permanent seeding is recommended. On the banks with high live stake mortality, replacement of live stakes will provide long-term stability.

1. Soil Data

The Cato Farms restoration project is situated within a narrow ridge and valley within the outer Piedmont Belt of the North Carolina Piedmont Physiographic Province. Researchable data indicates that the soils within the project area are those found in alluvial landforms in this physiographic region; however, grading and filling activities during construction likely have disturbed the parent soil material.

Review of the *Soil Survey of Mecklenburg County, North Carolina* indicates that four soil series are found within or adjacent to the project limits (Figure III). These soil series consist of

Monacan, Enon, Helena, and Wilkes. Enon soils are very deep, well-drained soils on ridges and side slopes of the Piedmont uplands. The soils are formed in clayey residuum weathered from mafic or intermediate igneous and metamorphic rocks such as diorite, gabbro, gneiss, and schist of the Piedmont uplands. Slopes range from 0 to 45 percent for the Enon series. Helena soils are very deep, well-drained soils on broad ridges and toe slopes of the Piedmont uplands. The soils are formed in residuum weathered from a mixture of felsic, intermediate, or mafic igneous, or metamorphic rocks such as granite, or granite gneiss that may be cut by dykes of gabbro and diorite, or mixed with hornblende schist or hornblende gneiss. Slopes range from 0 to 15 percent for the Helena series; however, these soils are generally found on slopes that range from 0 to 10 percent. Monacan soils are very deep, well-drained to somewhat poorly drained soils found along stream corridors. These soils are formed in recent alluvium sediments of the Piedmont and Coastal Plain. Slopes are generally less than 2 percent. Wilkes soils are shallow, well-drained soils adjacent to drainageways. They are formed in residuum weathered from intermediate and mafic crystalline rocks on the Piedmont uplands. Slopes range from 0 to 25 percent for the Wilkes series. Please refer to Table V for the preliminary soil data of the soil series within the project area.

Table V
Preliminary Soil Data
Cato Farms Stream Restoration
Project No. 72

Series	Max Depth (in)	% Clay on Surface	K Factor	T Factor	OM %
Enon	60	5 - 20	0.34	4	0.0 – 3.0
Helena	64	5 - 20	0.37	3	0.0 – 2.0
Monacan	65	7 - 27	0.28	4	0.0 – 3.0
Wilkes	45	5 - 20	0.28	2	0.0 – 2.0

2. Vegetative Problem Areas

During the initial assessment survey conducted in April 2006, it was noted that some minor areas of stream bank have suffered localized loss of vegetative cover. In these areas, it is apparent that flood events likely caused the bank erosion resulting in a loss of vegetation. Furthermore, the compaction of soil and nutrient poor conditions may also be contributing to the mortality of live stakes and herbaceous cover in these limited areas. During the vegetative survey completed in May and the follow-up assessment in September, it was observed that many of the problem areas noted during the initial vegetation assessment have improved throughout the growing season. It should be noted that much of the sites herbaceous cover in the riparian area is dog-fennel (*Eupatorium capillifolium*). This species seems to be invasive on site; however, it is not listed as an invasive species for North Carolina. Control of this species may need to be done in order to allow for preferred riparian species to establish. Please refer to Table VI for the summary of the Vegetative Problem Areas on the Cato Farms restoration site.

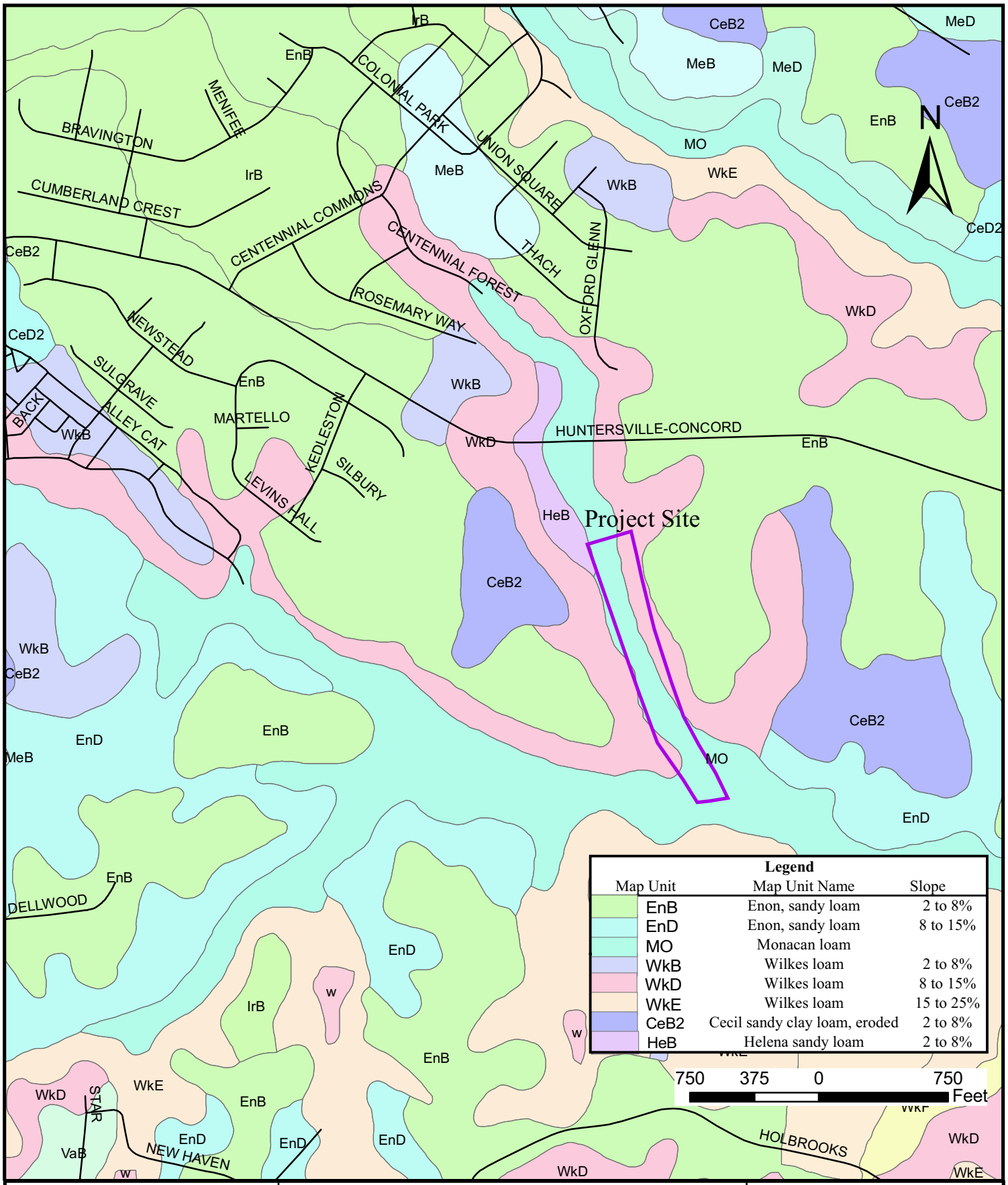

Figure III. SOILS MAP
Cato Farms Stream Restoration
Mecklenburg County, NC
Monitoring Report Year 2 of 5

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March 2007

Table VI
Vegetative Problem Areas
Cato Farm Creek Restoration Project No. 72
(Please refer to Appendix A2 for photos)

Vegetative Issue		Station Numbers	Suspected Cause	Photo ID #
Bank erosion - moderate	Reach 1	02+45 - 02+55	vegetative cover – poor soil nutrients or soil compaction	A2.1
		04+95 - 05+10	vegetative cover – poor soil nutrients or soil compaction	
		10+65 - 10+75	vegetative cover – poor soil nutrients or soil compaction	
		13+00	vegetative cover – poor soil nutrients or soil compaction	
	Reach 2	23+40 - 23+45	vegetative cover – poor soil nutrients or soil compaction	
Bank erosion - severe	Reach 1	09+25 - 09+40	vegetative cover – poor soil nutrients or soil compaction	A2.2
		16+70 - 16+90	vegetative cover – poor soil nutrients or soil compaction	
		17+50 - 17+70	vegetative cover – poor soil nutrients or soil compaction	
Vegetative cover - poor	Reach 1	04+10 - 04+30	vegetative cover – poor soil nutrients or soil compaction	A2.3
		10+20 - 10+60	vegetative cover – poor soil nutrients or soil compaction	
		14+25 - 15+10	vegetative cover – poor soil nutrients or soil compaction	
		15+75 - 15+85	vegetative cover – poor soil nutrients or soil compaction	
		16+25 - 16+50	vegetative cover – poor soil nutrients or soil compaction	
		18+25 - 18+75	vegetative cover – poor soil nutrients or soil compaction	
	Reach 2	22+00 - 22+75	vegetative cover – poor soil nutrients or soil compaction	
		21+50	vegetative cover – poor soil nutrients or soil compaction	

3. Vegetative Problem Area Plan View

Please refer to Appendix B1 for locations of vegetative problems onsite.

4. Stem Counts

JJG conducted the vegetative assessment and vegetative plot analysis in May and September, 2006. The eight previously established vegetative plots represent the riparian buffer zone and stream bank vegetation.

Trees planted within the plots monitored includes white oak (*Quercus alba*), swamp chestnut oak (*Quercus michauxii*), river birch (*Betula nigra*), American sycamore (*Platanus occidentalis*), green ash (*Fraxinus pennsylvanica*), willow species (*Salix* sp.), silky dogwood (*Cornus amomum*), box-elder (*Acer negundo*), and black gum (*Nyssa sylvatica*). In addition, natural recruitment vegetation was also monitored within these plots. Species encountered were tulip poplar (*Liriodendron tulipifera*), sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), tag alder (*Alnus serrulata*), Eastern red cedar (*Juniperus virgiana*), oak species (*Quercus* spp.), and species that were originally planted. Refer to Table VII for a summary of stem counts for planted species.

Table VII
Stem Counts for Planted Species Arranged by Plot – (2006)

Species	Vegetation Plots Monitored (2006)								Year 2 Totals	Year 1 (2005) Totals
	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8		
Shrubs										
Aronia arbutifolia	0	1	0	0	2	0	0	0	**3**	**13**
Cephalanthus occidentalis	0	0	1	2	1	0	0	0	**4**	**8**
Cornus amomum	0	0	0	2	10	0	3	17	**32**	**44**
Cornus sericea	0	0	0	3	0	0	0	0	**3**	**5**
*Salix nigra**	4	0	2	0	1	5	4	0	**16**	**16**
Sambucus canadensis	0	0	2	0	0	0	0	0	**2**	**5**
Trees										
*Acer negundo**	1	2	2	2	2	1	4	4	**18**	**18**
Carpinus caroliniana	0	0	0	0	0	0	0	0	**0**	**1**
Carya aquatica	0	0	0	0	0	0	0	0	**0**	**3**
*Fraxinus pennsylvanica**	0	1	0	0	0	1	3	0	**5**	**5**
Juglans nigra	0	0	0	0	0	0	0	0	**0**	**1**
Nyssa sylvatica	1	0	0	0	0	0	0	0	**1**	**1**
*Populus deltoides**	0	0	0	0	1	1	0	0	**2**	**2**
*Quercus alba**	0	1	0	0	0	1	1	2	**5**	**6**
*Quercus michauxii**	1	3	0	2	0	4	2	2	**14**	**14**
Total Planted Live Stems (2006)	**7**	**8**	**7**	**11**	**17**	**13**	**17**	**25**	**105**	**N/A**
Total Planted Live Stems (2005)	**13**	**14**	**10**	**15**	**18**	**18**	**28**	**26**	**N/A**	**142**
Average # of Stems (2006)	**13**									
Average # of Stems (2005)	**18**									
Percent Survival (2006)	**54%**	**64%**	**70%**	**73%**	**94%**	**72%**	**61%**	**96%**	**Avg = 74%**	
Stem Density (2006)	**520**									

*Numerous volunteer stems were observed

The survival rate for the woody vegetation monitored for 2006 is 74%. The monitoring data indicates an average of 13 stems per plot. Using the monitoring plots size of 10m x 10m (0.025 ac), the site density is approximately 520 planted stems per acre. The success goal for planted woody vegetation is 320 stems per acre. The site has satisfied this goal for monitoring year 2.

Furthermore, many natural recruitment stems were observed within all eight plots. If these volunteers were also included in the stem average and site density calculation, then the number would increase dramatically.

In conclusion, the vegetation throughout the stream and riparian restoration project meets the success criteria established for year 2. Although some loss of stream bank vegetation has occurred, the overall growth of the riparian buffer is good.

5. Vegetation Plot Photos

Please refer to Appendix A3 for photographs of the monitoring plots.

B. Stream Assessment

A total of six cross-sections were previously established within Reach 1 and 2. Approximately 2,147 linear feet of longitudinal profile was monitored. Photographs were taken upstream and downstream at each cross-section and at existing photo points. The restored stream length was walked from the beginning of the project downstream to the tributary's convergence with Clark Creek. Problem areas were noted, photographed, field mapped, and located with a GPS Unit. JJG uses the Pathfinder Pro XH, which is a single unit GPS receiver that provides real-time sub-meter accuracy. These GPS data were incorporated into base map data provided by NCEEP to produce the problem area plan views.

Stream dimension, pattern, profile and substrate were evaluated within 2,500 linear feet of the stream restoration site.

1. Problem Areas Plan View (Stream)

Please refer to Appendix B1 for the problem areas plan view map.

2. Problem Areas Table Summary

Table VIII below provides categorical feature issues by station, the suspected cause and denotes a representative photo of the condition.

Table VIII
Stream Problem Areas

Feature Issue		Station Numbers	Suspected Cause	Photo ID #
Bank erosion - moderate	Reach 1	2+45 - 2+55	Bank erosion - no cover - LB	B2.1
		10+65 - 10+75	Bank erosion - no cover - RB	
		13+00	Storm flow overflow along east side of bridge/some erosion - LB	
	Reach 2	24+40 - 24+45	Bank failure - small portion in stream - LB	
Bank erosion - severe	Reach 1	4+95 - 5+10	Bank erosion - no cover - RB	
		9+25 - 9+40	Bank failure - no cover - Both banks	B2.2
		16+70 - 16+90	Bank failure/bank erosion - no cover - Both banks	
		17+50 - 17+70	Bank erosion severe - no cover - RB	
Mid-channel bar	Reach 1	7+60	Channel slightly over widened	B2.3
Vegetative cover - poor	Reach 1	4+10 - 4+30	Dead stakes & vegetation - Both banks	B2.4 B2.5
		10+20 - 10+60	Dead fascines - LB	
		14+25 - 15+10	Bare bankfull bench & riparian area - RB	
		15+75 - 15+85	Bare upper slope/exposed - RB	
		16+25 - 16+50	Bare bankfull bench & point bar/dead stakes - RB	
		18+25 - 18+75	Dead stakes & vegetation/bare bankfull bench and point bar - Both banks	
	Reach 2	22+00 - 22+75	Dead stakes & vegetation - RB	
		22+50	Minimal soil or vegetation behind arm of structure - RB	

3. Numbered issues photo section

Please refer to Appendix B2 for problem areas plan view photos.

4. Fixed photo station photos

Please refer to Appendix B3 for photo station photos.

5. Stability Assessment

Overall, the pattern, profile and dimension of the restored channel appears to be stable. However, there are several minor areas of moderate to severe bank erosion due to lack of vegetative cover. Please refer to Appendix B1 for the location of the problem areas and Tables VIII and IX for detailed stability assessment with stationing.

A sewer line was replaced along the northeast side of the conservation easement. The landowner expressed some concerns regarding erosion and sediment control issues associated with the sewer line that may affect the stream restoration site. These problems are noted below.

- The landowner noted that a portion of silt fence used as the boundary of the sewer line project appears to be inside the conservation easement. This area is located at the very edge of the buffer. Field observations do not indicate that this is affecting the restored stream segment. The landowner noted that NCEEP is aware of this issue.

- The landowner also noted concerns about erosion under the existing silt fence in the riparian area at the downstream end of the sewer line project. This is located immediately northeast of the buffer. The erosion does not appear to affect the restored stream area, but it does affect Clark Creek.

Table IX
Categorical Stream Feature Visual Stability Assessment
Reach 1

Reach 1			
Feature	**As-Built**	**MY1 (2005)**	**MY2 (2006)**
A. Riffles	-	-	99.8%
B. Pools	-	-	100%
C. Thalweg	-	-	97.5%
D. Meanders	-	-	98.3%
E. Bed General	-	-	99.5%
F. Vanes/J Hooks, etc	-	-	N/A
G. Wads and Boulders	-	-	N/A

Table IX
Categorical Stream Feature Visual Stability Assessment
Reach 2

Reach 2			
Feature	**As-Built**	**MY1 (2005)**	**MY2 (2006)**
A. Riffles	-	-	N/A
B. Pools	-	-	90%
C. Thalweg	-	-	100%
D. Meanders	-	-	91.67%
E. Bed General	-	-	100%
F. Vanes/J Hooks, etc	-	-	100%
G. Wads and Boulders	-	-	N/A

(Cells noted with a (-), data was not provided)

Reach 1 and Reach 2 have not shown significant dimension, pattern, or profile changes since construction (Tables X and XI). Please refer to Appendix B5-7 for the longitudinal profile, cross-sections, and pebble count raw data surveys from 2006. Cross-sections 3, 4, 5 and 6, which are all pools, have moderate stream bank erosion and have shown an increase in bankfull width. However, there are no significant signs of aggradation or degradation occurring throughout either reach. All pool cross-sections have shown an increase in their d50 and d84 from 2005-2006. The channel profile is neither downcutting nor aggrading. The maximum and minimum ranges for pool to pool spacing and pool length have decreased since 2005; however, the median is approximately the same. In Reach 2 where the pools are further spaced apart, the difference may be due to the fact that the 2006 longitudinal profile measured the first 2,150 feet

of the stream and did not pick up the last 350 feet as surveyed in the 2005 monitoring year. In Reach 1, there are a number of compound pools, which may have resulted in reduced pool lengths measured in the 2006 monitoring year.

Pattern ranges from the 2005 and 2006 surveys have shown a slight difference; however, the stream is not significantly shifting. These differences in ranges may be due to a difference in methods of measurement or potential errors in surveys.

In summary, the channel appears to be stable with some minor areas of moderate to severe bank erosion due to lack of vegetative cover. Some minor bank repair work was completed after construction, but no specific information was provided.

6. Quantitative Measures Tables

Tables X and XI display morphological summary data from all monitoring years. Raw survey data can be found in Appendix B.

Table X
Baseline Morphology and Hydraulic As-Built Summary:
Cato Farms Stream Restoration/Project No. 72

DIMENSION	Cross-Section #1-Riffle		Cross-Section #2-Riffle		Cross-Section #3-Pool		Cross-Section #4-Pool		Cross-Section #5-Pool		Cross-Section #6-Pool	
	2005	2006	2005	2006	2005	2006	2005	2006	2005	2006	2005	2006
Bankfull Width (ft)	6.20	5.96	10.7	12	6.7	7.7	16.2	14.4	7	11.5	6.2	8
Floodprone Width (ft)	28.10	>100	24.8	>100	-	N/A	-	N/A	-	N/A	-	N/A
Bankfull Cross-sectional Area	5.40	4.09	4.4	3.14	6.4	7.65	8.4	9.07	6	9.1	7.7	5.67
Bankfull Mean Depth	0.90	0.69	0.4	0.26	-	0.99	-	0.63	-	0.79	-	0.71
Bankfull Max Depth	1.70	1.26	0.7	0.76	1.9	2.04	1.6	1.63	2.1	2.36	1.9	1.82
Width/Depth Ratio	7.20	8.64	26.2	46.15	-	7.78	-	22.86	-	14.56	-	11.27
Entrenchment Ratio	4.50	>2.2	2.3	>2.2	-	N/A	-	N/A	-	N/A	-	N/A
Wetted Perimeter (ft)	-	6.53	-	15.71	-	9.13	-	15.26	-	13.2	-	9.69
Hydraulic Radius (ft)	-	0.63	-	0.21	-	0.84	-	0.59	-	0.69	-	0.59
Bank Height Ratio	-	1	-	1	-	1	-	1	-	1	-	1
SUBSTRATE												
D50 (mm)	0.2690	0.7100	0.0615	0.6600	Silt	0.3500	0.1046	0.4400	0.3750	0.3600	0.1452	0.3900
D84 (mm)	0.5000	1.5100	0.3068	2.0200	0.1854	1.0400	0.2250	0.8700	0.8571	0.8400	0.5550	0.9300

	Reach 1						Reach 2					
PATTERN	2005*			2006			2005*			2006		
	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	10	55	15	17	50	26	46	61	51	45.86	61.5	51.67
Radius of Curvature (ft)	10	34	18	10	26	14	42	56	51	41	56	51
Meander Wave Length (ft)	40	99	57	41	90	60	141	249	217	146	242	220
Meander Width Ratio	-	-	-	2	5	3	-	-	-	5.39	6.60	5.71
PROFILE												
Riffle Length (ft)	8	80	13	1.77	42.20	9.20	-	-	-	7.80	18.20	11.90
Riffle Slope (ft/ft)	0.0023	0.008	0.0189	0.0000	0.0621	0.0066	-	-	-	0.0051	0.0218	0.0121
Pool Length (ft)	8.00	118.00	20.00	2.40	74.20	15.30	-	-	-	18.40	37.60	21.40
Pool to Pool Spacing (ft)	15.50	215.00	33.50	8.00	99.70	33.85	-	-	-	5.3	51.9	21.8

ADDITIONAL REACH PARAMETERS	2005*	2006	
		Reach 1	Reach 2
Valley Length (ft)	3614.06	1240.00	420
Channel Length (ft)	2512	2000	512
Sinuosity	1.44	1.61	1.22
Water Surface Slope (ft/ft)	0.0071	0.0063	0.0080
Bankfull Slope (ft/ft)	0.0069	0.0060	0.0070
Rosgen Classification	E5/B5	E	B

(Cells noted with a (–), the USGS Gage Data, Regional Curve Interval, Pre-Existing Condition, Project Reference Stream, and Design Data was not provided)

Table XI
Morphology and Hydraulic Monitoring Summary:
Cato Farms Stream Restoration/Project No. 72

DIMENSION	Cross-Section #1-Riffle		Cross-Section #2-Riffle		Cross-Section #3-Pool		Cross-Section #4-Pool		Cross-Section #5-Pool		Cross-Section #6-Pool	
	2005	2006	2005	2006	2005	2006	2005	2006	2005	2006	2005	2006
Bankfull Width (ft)	6.20	5.96	10.7	12	6.7	7.7	16.2	14.4	7	11.5	6.2	8
Floodprone Width (ft)	28.10	>100	24.8	>100	-	N/A	-	N/A	-	N/A	-	N/A
Bankfull Cross-sectional Area	5.40	4.09	4.4	3.14	6.4	7.65	8.4	9.07	6	9.1	7.7	5.67
Bankfull Mean Depth	0.90	0.69	0.4	0.26	-	0.99	-	0.63	-	0.79	-	0.71
Bankfull Max Depth	1.70	1.26	0.7	0.76	1.9	2.04	1.6	1.63	2.1	2.36	1.9	1.82
Width/Depth Ratio	7.20	8.64	26.2	46.15	-	7.78	-	22.86	-	14.56	-	11.27
Entrenchment Ratio	4.50	>2.2	2.3	>2.2	-	N/A	-	N/A	-	N/A	-	N/A
Wetted Perimeter (ft)	-	6.53	-	15.71	-	9.13	-	15.26	-	13.2	-	9.69
Hydraulic Radius (ft)	-	0.63	-	0.21	-	0.84	-	0.59	-	0.69	-	0.59
Bank Height Ratio	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00
SUBSTRATE												
D50 (mm)	0.2690	0.7100	0.0615	0.6600	Silt	0.3500	0.1046	0.4400	0.3750	0.3600	0.1452	0.3900
D84 (mm)	0.5000	1.5100	0.3068	2.0200	0.1854	1.0400	0.2250	0.8700	0.8571	0.8400	0.5550	0.9300

	Reach 1						Reach 2					
PATTERN	2005*			2006			2005*			2006		
	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med
Channel Beltwidth (ft)	10	55	15	17	50	26	46	61	51	45.86	61.5	51.67
Radius of Curvature (ft)	10	34	18	10	26	14	42	56	51	41	56	51
Meander Wave Length (ft)	40	99	57	41	90	60	141	249	217	146	242	220
Meander Width Ratio	-	-	-	2	5	3	-	-	-	5.39	6.60	5.71
PROFILE												
Riffle Length (ft)	8	80	13	1.77	42.20	9.20	-	-	-	7.80	18.20	11.90
Riffle Slope (ft/ft)	0.0023	0.008	0.0189	0.0000	0.0621	0.0066	-	-	-	0.0051	0.0218	0.0121
Pool Length (ft)	8.00	118.00	20.00	2.40	74.20	15.30	-	-	-	18.40	37.60	21.40
Pool to Pool Spacing (ft)	15.50	215.00	33.50	8.00	99.70	33.85	-	-	-	5.3	51.9	21.8

ADDITIONAL REACH PARAMETERS	2005*	2006	
		Reach 1	Reach 2
Valley Length (ft)	3614.06	1240.00	420
Channel Length (ft)	2512	2000	512
Sinuosity	1.44	1.61	1.22
Water Surface Slope (ft/ft)	0.0071	0.0063	0.0080
Bankfull Slope (ft/ft)	0.0069	0.0060	0.0070
Rosgen Classification	E5/B5	E	B

*2005 Survey did not break up stream into separate types of restoration reaches for profile and additional reach parameter calculations and Reach 2 survey lengths were different between monitoring years 2005 and 2006
Cells noted with a (-), data was not provided

7. Hydrologic Criteria

The CATO Farms stream restoration project does not have a crest gauge located on site; therefore visual assessments are noted for bankfull verification. Indicators, such as wrack lines and vegetation layover were observed at the bankfull and greater elevations within the restoration site during the 2006 stream survey. A local USGS gauge, Clarke Creek, is located within the area, but this the drainage area is larger than 10 square miles and was not used per NCEEP recommendation. The visual assessment results are listed below.

Table XII
Verification of Bankfull Events

Cato Farms Stream Restoration Project/Project No. 72			
Date of Collection	**Date of Occurrence**	**Method**	**Photo # (if available)**
Summer/Fall 2006	Unknown	Visual Assessment	N/A

Jordan Jones & Goulding

SECTION III
Methodology

Jordan Jones & Goulding

SECTION III
Methodology

Methods employed for the Cato Farms Stream Restoration Project were a combination of those established in the 2005 monitoring report from North Carolina State University, stream restoration report prepared by CH2MHill, and standard NCEEP regulatory guidance and procedures documents.

Jordan Jones & Goulding

APPENDIX A

Vegetation Raw Data

1. Vegetation Survey Data Tables*
2. Vegetation Problem Area Photos
3. Problem Monitoring Plot Photos

*Raw data tables have been provided electronically.

Species	Vegetation Plots Monitored (2006)								Year 2 Totals	Year 1 Totals
	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8		
Shrubs										
AA	0	1	0	0	2	0	0	0	**3**	**13**
CO	0	0	1	2	1	0	0	0	**4**	**8**
CA (dogwood)	0	0	0	2	10	0	3	17	**32**	**44**
CS	0	0	0	3	0	0	0	0	**3**	**5**
SN	4	0	2	0	1	5	4	0	**16**	**16**
SC	0	0	2	0	0	0	0	0	**2**	**5**
Trees										
AN	1	2	2	2	2	1	4	4	**18**	**18**
CC	0	0	0	0	0	0	0	0	**0**	**1**
CA(hickory)	0	0	0	0	0	0	0	0	**0**	**3**
FP	0	1	0	0	0	1	3	0	**5**	**5**
JN	0	0	0	0	0	0	0	0	**0**	**1**
NS	1	0	0	0	0	0	0	0	**1**	**1**
PD	0	0	0	0	1	1	0	0	**2**	**2**
QA	0	1	0	0	0	1	1	2	**5**	**6**
QM	1	3	0	2	0	4	2	2	**14**	**14**
Total Planted Stems (2006)	**7**	**8**	**7**	**11**	**17**	**13**	**17**	**25**	**105**	**N/A**
Total Planted Stems (2005)	**13**	**14**	**10**	**15**	**18**	**18**	**28**	**26**	**N/A**	**142**
Average # of Stems (2006)	**13**									
Average # of Stems (2005)	**18**									
Percent Survival (2006)	**54%**	**64%**	**70%**	**73%**	**94%**	**72%**	**61%**	**96%**	**Avg = 74%**	
Stem Density (2006)	**520**									

1. Bank Erosion: Moderate – 3/30/06

2. Bank Erosion: Severe – 3/30/06

3. Poor Vegetative Cover: Soil compaction or nutrient poor soil – 3/30/06

Photos taken during the initial site assessment conducted in March 2006

Prepared For: Ecosystem Enhancement Program	Cato Farm Stream Restoration Year 2 of 5	Date: March 2007 Project No.: 72
	Appendix A2. Vegetation Problem Area Photos	Jordan Jones & Goulding Incorporated

Monitoring Plot 1 - 5/15/06

Monitoring Plot 2 – 5/15/06

Monitoring Plot 3 – 5/15/06

Monitoring Plot 4 – 5/15/06

Monitoring Plot 5 – 5/15/06

Monitoring Plot 6 – 5/15/06

Monitoring Plot 7 – 5/15/06

Monitoring Plot 8 – 5/15/06

Prepared For:

Ecosystem Enhancement Program

Cato Farms Stream Restoration
Year 2 of 5

Date: March 2007
Project No.: 72

Jordan Jones & Goulding

Appendix A3. Vegetation Monitoring Plot Photos

Jordan Jones & Goulding

APPENDIX B

Geomorphic and Stream Stability Data

1. Problem Area Plan View
2. Representative Stream Problem Area Photos
3. Stream Photo Station Photos
4. Qualitative Visual Stability Assessment
5. Cross-section Plots and Raw Data Tables*
6. Longitudinal Plots and Raw Data Tables*
7. Pebble Count Plots and Raw Data Tables*

*Raw data tables have been provided electronically.

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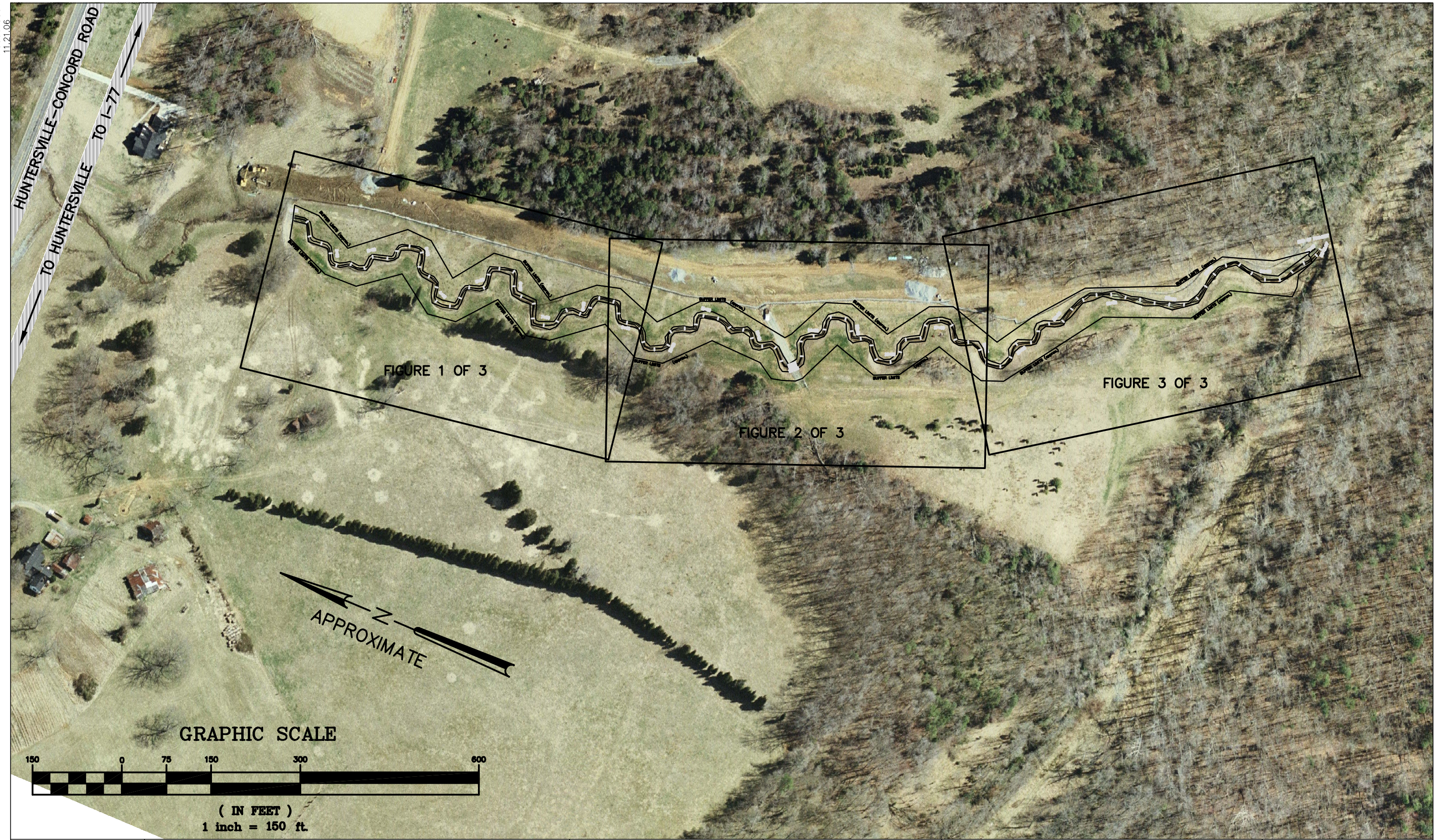
11.21.06



JTHACKSTON

Ecosystem Enhancement PROGRAM

NOTES:
1. GENERAL SITE DATA PROVIDED BY NCEEP.
2. ALL LOCATIONS ARE APPROXIMATE.

PROJECT NO. 72
MECKLENBURG COUNTY
NORTH CAROLINA
MONITORING
YEAR 2 OF 5

JORDAN JONES & GOULDING

NC ECOSYSTEM ENHANCEMENT PROGRAM
CATO FARMS STREAM RESTORATION

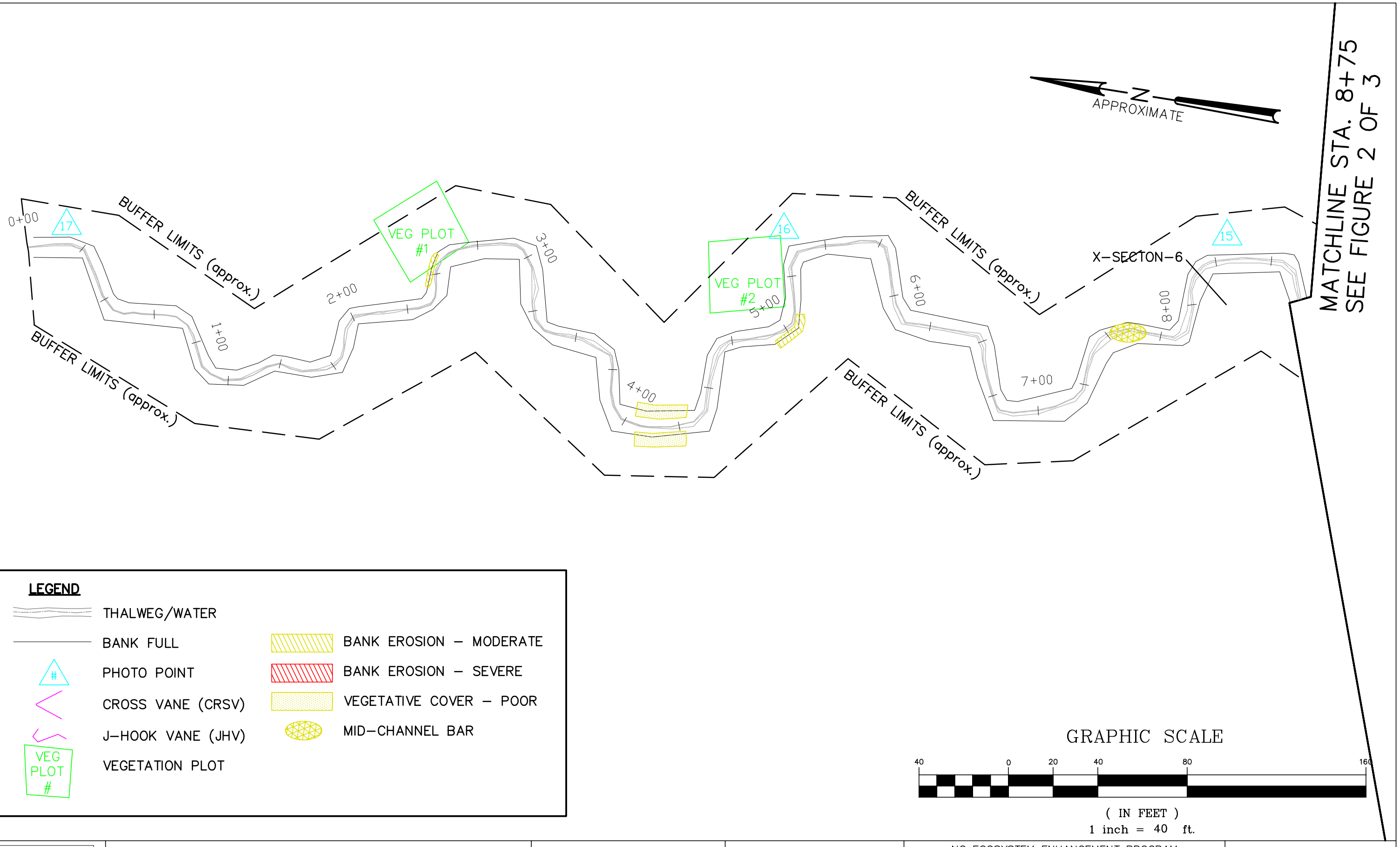
APPENDIX B1

PROBLEM AREAS PLAN VIEW

DATE : NOVEMBER 2006
SCALE : 1"=200'
JOB NO.: 03060-001

FIGURE KEY

NC5001CS01.dwg
11.21.06



LEGEND

- THALWEG/WATER
- BANK FULL
- PHOTO POINT
- CROSS VANE (CRSV)
- J-HOOK VANE (JHV)
- VEGETATION PLOT
- BANK EROSION – MODERATE
- BANK EROSION – SEVERE
- VEGETATIVE COVER – POOR
- MID-CHANNEL BAR

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

Ecosystem Enhancement PROGRAM

NOTES:
1. GENERAL SITE DATA PROVIDED BY NCEEP.
2. ALL LOCATIONS ARE APPROXIMATE.

PROJECT NO. 72
MECKLENBURG COUNTY
NORTH CAROLINA
MONITORING
YEAR 2 OF 5

JORDAN JONES & GOULDING

NC ECOSYSTEM ENHANCEMENT PROGRAM
CATO FARMS STREAM RESTORATION

APPENDIX B1

PROBLEM AREAS PLAN VIEW

DATE : NOVEMBER 2006
SCALE : 1"=40'
JOB NO.: 03060-001

FIGURE 1 OF 3

JTHACKSTON

NC5001CS02.dwg
11.21.06

MATCHLINE STA. 8+75
SEE FIGURE 1 OF 3

MATCHLINE STA. 17+75
SEE FIGURE 3 OF 3

N
APPROXIMATE

BUFFER LIMITS (approx.)

VEG PLOT #3

VEG PLOT #4

VEG PLOT #5

X-SECTON-5

X-SECTON-4

X-SECTON-3

BRIDGE

9+00

10+00

11+00

12+00

13+00

14+00

15+00

16+00

17+00

6

7

8

9

10

11

12

13

14

LEGEND

- THALWEG/WATER
- BANK FULL
- PHOTO POINT (#)
- CROSS VANE (CRSV)
- J-HOOK VANE (JHV)
- VEGETATION PLOT (VEG PLOT #)
- BANK EROSION – MODERATE
- BANK EROSION – SEVERE
- VEGETATIVE COVER – POOR
- MID-CHANNEL BAR

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NOTES:
1. GENERAL SITE DATA PROVIDED BY NCEEP.
2. ALL LOCATIONS ARE APPROXIMATE.

PROJECT NO. 72
MECKLENBURG COUNTY
NORTH CAROLINA
MONITORING
YEAR 2 OF 5

JORDAN JONES & GOULDING

NC ECOSYSTEM ENHANCEMENT PROGRAM
CATO FARMS STREAM RESTORATION

APPENDIX B1
PROBLEM AREAS PLAN VIEW

DATE : NOVEMBER 2006
SCALE : 1" = 40'
JOB NO.: 03060-001

FIGURE 2 OF 3

JTHACKSTON

NC5001CS03.dwg
11.21.06

MATCHLINE STA. 17+75
SEE FIGURE 2 OF 3

APPROXIMATE N

CRSV-8
CRSV-7
CRSV-6
CRSV-3
JHV-1

X-SECTON-2
X-SECTON-1

BUFFER LIMITS (approx.)

VEG PLOT #6
VEG PLOT #7
VEG PLOT #8

18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
25+11.97

END OF PROJECT

CRSV-5
CRSV-4
CRSV-2
CRSV-1

LEGEND

- THALWEG/WATER
- BANK FULL
- PHOTO POINT
- CROSS VANE (CRSV)
- J-HOOK VANE (JHV)
- VEGETATION PLOT
- BANK EROSION – MODERATE
- BANK EROSION – SEVERE
- VEGETATIVE COVER – POOR
- MID-CHANNEL BAR

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

Ecosystem Enhancement PROGRAM

NOTES:
1. GENERAL SITE DATA PROVIDED BY NCEEP.
2. ALL LOCATIONS ARE APPROXIMATE.

PROJECT NO. 72
MECKLENBURG COUNTY
NORTH CAROLINA
MONITORING
YEAR 2 OF 5

JORDAN JONES & GOULDING

NC ECOSYSTEM ENHANCEMENT PROGRAM
CATO FARMS STREAM RESTORATION

APPENDIX B1
PROBLEM AREAS PLAN VIEW

DATE : NOVEMBER 2006
SCALE : 1" = 40'
JOB NO.: 03060-001

FIGURE 3 OF 3

JTHACKSTON

1. Bank Erosion: Moderate– 3/30/06

2. Bank Erosion: Severe– 3/30/06

3. Mid Channel Bar– 3/30/06

4. Vegetative Cover Poor– 3/30/06

5. Vegetative Cover Poor– 3/30/06

Photo Point 1: Upstream-5/15/06

Photo Point 1: Downstream-5/15/06

Photo Point 2: Upstream-5/15/06

Photo Point 2: Downstream-5/15/06

Photo Point 3: Upstream-5/15/06

Photo Point 3: Downstream-5/15/06

Photo Point 4: Upstream-5/15/06

Photo Point 4: Downstream-5/15/06

Photo Point 5: Upstream-5/15/06

Photo Point 5: Downstream-5/15/06

Photo Point 6: Upstream-5/15/06

Photo Point 6: Downstream-5/15/06

Photo Point 7: Upstream-5/15/06

Photo Point 7: Downstream-5/15/06

Photo Point 8: Upstream-5/15/06

Photo Point 8: Downstream-5/15/06

Photo Point 9: Upstream-5/15/06

Photo Point 9: Downstream-5/15/06

Photo Point 10: Upstream-5/15/06

Photo Point 10: Downstream-5/15/06

Prepared For: Ecosystem Enhancement Program	Cato Farms Stream Restoration Year 2 of 5	Date: March 2007 Project No.: 72
	Appendix B3. Stream Photo Station Photos	Jordan Jones & Goulding

Photo Point 11: Upstream-5/15/06

Photo Point 11: Downstream-5/15/06

Photo Point 12: Upstream-5/15/06

Photo Point 12: Downstream-5/15/06

Photo Point 13: Upstream-5/15/06

Photo Point 13: Downstream-5/15/06

Photo Point 14: Upstream-5/15/06

Photo Point 14: Downstream-5/15/06

Photo Point 15: Upstream-5/15/06

Photo Point 15: Downstream-5/15/06

Photo Point 16: Upstream-5/15/06

Photo Point 16: Downstream-5/15/06

Photo Point 17: Upstream-5/15/06

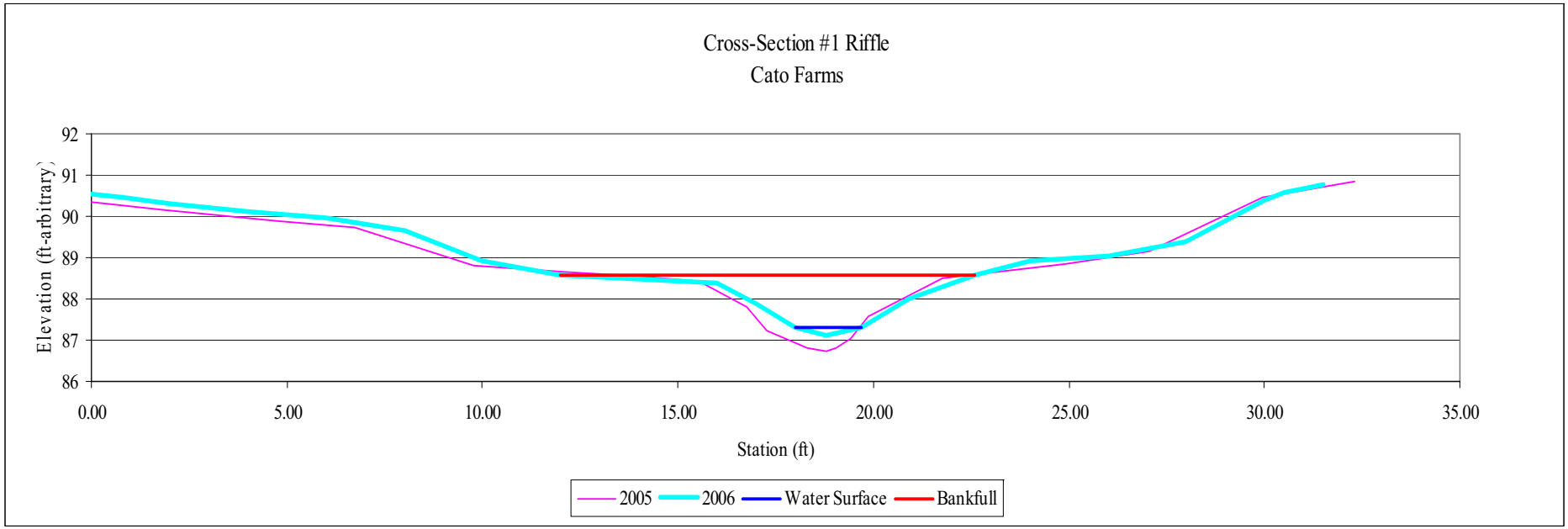
Photo Point 17: Downstream-5/15/06

Photo Point 18-5/15/06

Reach 1 (2000 linear feet)						
Feature Category		(# Stable) Number Performing as Intended	Total Number assessed per 2006 survey	Total Number/feet in unstable state	% Perform in Stable Condition	Feature Perform Mean or Total
A. Riffles	1. Present?	58	58	0	100%	**99.8%**
	2. Armor Stable?	58		0	100%	
	3. Facet grade appears stable?	58		0	100%	
	4. Minimal evidence of embedding/fining?	57		1/16 ft	99%	
	5. Length appropriate?	N/A		N/A	N/A	
B. Pools	1. Present?	48	48	0	100%	**100.0%**
	2. Sufficiently deep?	48		0	100%	
	3. Length Appropriate?	N/A		N/A	N/A	
C. Thalweg	1. Upstream of meander bend centering?	40	47	7/103 ft	95%	**97.5%**
	2. Downstream of meander centering?	47		0	100%	
D. Meanders	1. Outer bend in state of limited/controlled erosion?	40	47	7/103 ft	95%	**98.3%**
	2. Of those eroding, # w/concomitant point bar formation?	47		0	100%	
	3. Apparent Rc within spec?	N/A		N/A	N/A	
	4. Sufficient floodplain access and relief?	47		0	100%	
E. Bed General	1. General channel bed aggradation areas (bar formation)?	N/A		1/16 ft	99%	**99.5%**
	2. Channel bed degradation - areas of increasing down-cutting or head cutting?			0	100%	
F. Vanes	1. Free of back or arm scour?	N/A				
	2. Height appropriate?					
	3. Angle and geometry appear appropriate?					
	4. Free of piping or other structural failures?					
G. Wads/Boulders	1. Free of scour?	N/A				
	2. Footing stable?					
H. Bank Protection	1. Actively eroding, wasting, or slumping bank	N/A	N/A	90/2000 ft	96%	**96%**

Reach 2 (500 linear feet)						
Feature Category		(# Stable) Number Performing as Intended	Total Number assessed per 2006 survey	Total Number/feet in unstable state	% Perform in Stable Condition	Feature Perform Mean or Total
A. Riffles	1. Present?	N/A				
	2. Armor Stable?					
	3. Facet grade appears stable?					
	4. Minimal evidence of embedding/fining?					
	5. Length appropriate?					
B. Pools	1. Present?	5	5*	0	100%	**90%**
	2. Sufficiently deep?	4		1	80%	
	3. Length Appropriate?	N/A		N/A	N/A	
C. Thalweg	1. Upstream of meander bend centering?	4	4	0	100%	**100%**
	2. Downstream of meander centering?	4		0	100%	
D. Meanders	1. Outer bend in state of limited/controlled erosion?	3	4	1/5 ft	75%	**91.67%**
	2. Of those eroding, # w/concomitant point bar formation?	4		0	100%	
	3. Apparent Rc within spec?	N/A		N/A	-	
	4. Sufficient floodplain access and relief?	4		4	100%	
E. Bed General	1. General channel bed aggradation areas (bar formation)?	N/A		0	100%	**100%**
	2. Channel bed degradation - areas of increasing down-cutting or head cutting?			0	100%	
F. Vanes	1. Free of back or arm scour?	11	11	11	100%	**100%**
	2. Height appropriate?	N/A	N/A	N/A	N/A	
	3. Angle and geometry appear appropriate?	N/A	N/A	N/A	N/A	
	4. Free of piping or other structural failures?	11	11	11	100%	
G. Wads/Boulders	1. Free of scour?	N/A				
	2. Footing stable?					
H. Bank Protection	1. Actively eroding, wasting, or slumping bank	N/A	N/A	5/500 ft	99%	**99%**

Stream Name: Cato Farms								
Cross-Section: 1								
Feature: Riffle								
2004			2005			2006		
As Built						Sep-06		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
No As-Built Provided			0.00	90.36	(XSPIN)	0.00	90.53	
			1.87	90.17	(XS)	0.80	90.47	LHUB
			4.81	89.90	(XS)	2.00	90.30	
			6.73	89.74	(XS)	4.00	90.13	
			9.79	88.80	(XS)	6.00	89.97	
			12.11	88.66	(XS)	8.00	89.66	Top of Bench Slope
			14.15	88.54	(XS)	10.00	88.94	Toe of Bench
			15.54	88.42	B	12.00	88.59	LBKF
			16.74	87.79	(XS)	16.00	88.38	
			17.28	87.24	(XS)	17.00	87.88	
			18.31	86.79	(XS)	18.00	87.29	LEW
			18.78	86.72	(XS)	18.80	87.11	TW
			19.05	86.82	(XS)	19.70	87.29	REW
			19.43	87.04	(XS)	20.90	87.99	
			19.88	87.57	(XS)	22.60	88.59	RBKF
			21.78	88.51	(XS)	24.00	88.91	
			24.90	88.85	(XS)	26.00	89.02	R Bench End
			27.04	89.17	(XS)	28.00	89.38	R Toe of Slope
			29.97	90.48	(XS)	30.00	90.38	
			32.29	90.84	(XSPIN)	30.50	90.58	
						31.50	90.78	R HUB

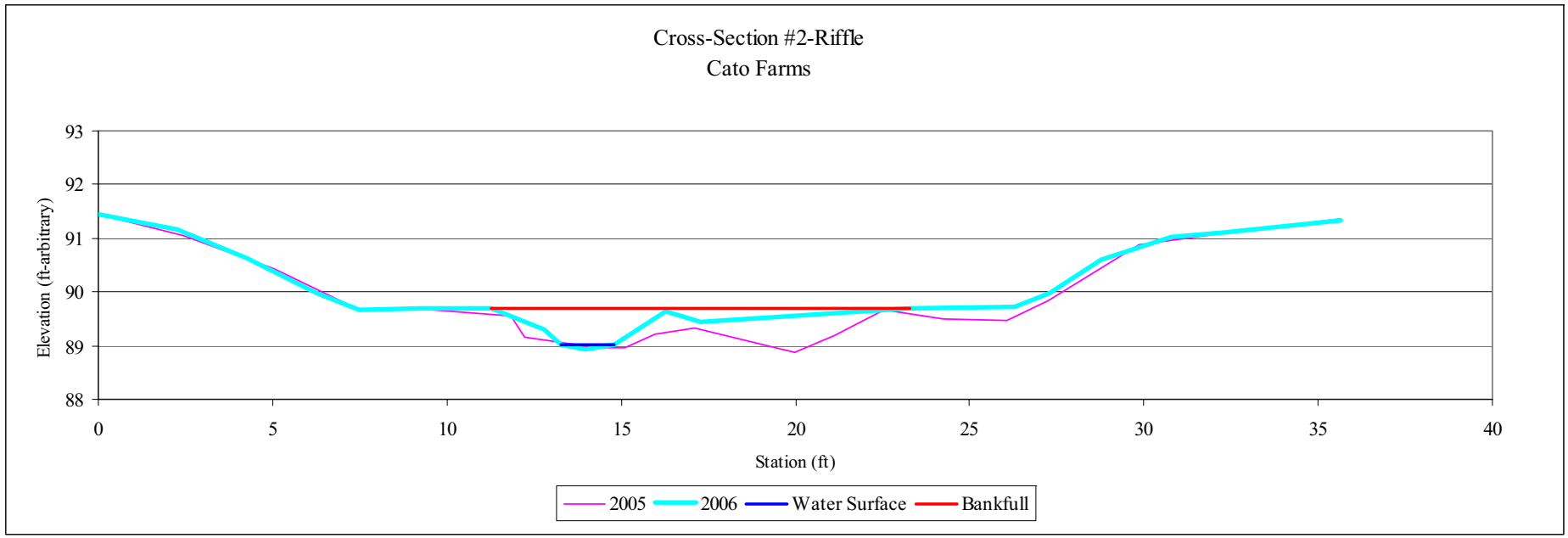


2006 Summary Data	
Bankfull Cross-Sectional Area	4.09
Bankfull Width	10.60
Bankfull Mean Depth	0.69
Bankfull Max Depth	1.48
Width/Depth Ratio	8.64
Entrenchment Ratio	>2.2

Cross-Section 1 Pool: Upstream-5/15/06

Cross-Section 1 Pool: Downstream-5/15/06

Stream Name: Cato Farms								
Cross-Section: 2								
Feature: Riffle								
2004			2005			2006		
As Built						Sep-06		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
No As-Built Provided			0.00	91.44	(XSPIN)	-0.87	91.70	
			2.45	91.04	(XS)	0.00	91.44	LHUB
			5.05	90.42	(XS)	2.28	91.15	
			7.48	89.68	(XS)	4.28	90.62	
			9.58	89.68	(XS)	6.28	89.98	
			11.85	89.55	(XS)	7.48	89.68	Start Left Bench
			12.24	89.17	(XS)	9.28	89.69	
			14.32	88.97	(XS)	11.28	89.69	LBKF
			15.12	88.97	(XS)	12.78	89.29	
			15.98	89.22	(XS)	13.28	89.03	LEW
			17.12	89.34	(XS)	13.98	88.92	TW
			19.99	88.87	(XS)	14.78	89.03	REW
			21.13	89.18	(XS)	16.28	89.65	
			22.56	89.67	(XS)	17.28	89.44	R Bench
			24.23	89.49	(XS)	21.28	89.60	
			26.06	89.48	(XS)	23.28	89.69	RBKF
			27.25	89.85	(XS)	26.28	89.71	
			29.85	90.87	(XS)	27.28	89.97	
			33.10	91.15	(XS)	28.78	90.60	
			35.63	91.35	(XSPIN)	30.78	91.01	
						32.28	91.11	
						35.63	91.32	R HUB

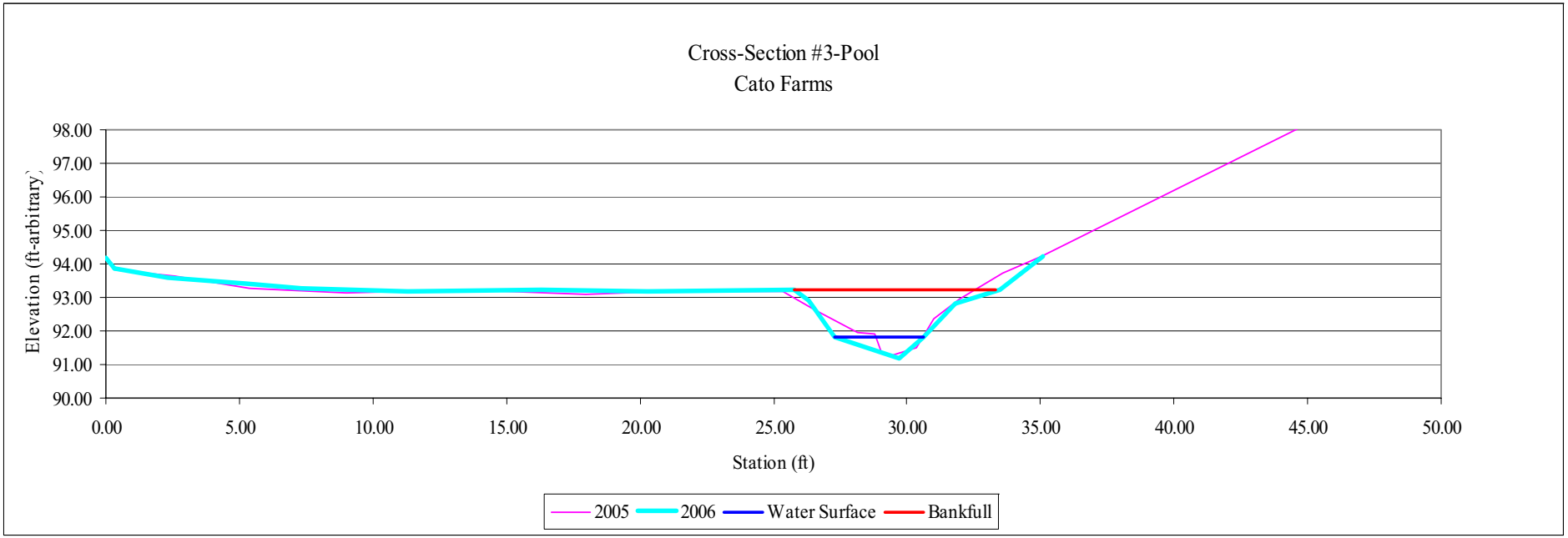


2006 Summary Data	
Bankfull Cross-Sectional Area	3.14
Bankfull Width	12.00
Bankfull Mean Depth	0.26
Bankfull Max Depth	0.77
Width/Depth Ratio	46.15
Entrenchment Ratio	>2.2

Cross-Section 2 Pool: Upstream-5/15/06

Cross-Section 2 Pool: Downstream-5/15/06

Stream Name: Cato Farms								
Cross-Section: 3								
Feature: Pool								
2004			2005			2006		
As Built						Sep-06		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
No As-Built Provided			0.35	93.84	(XSPIN)	0.00	94.18	
			2.57	93.64	XS	0.30	93.88	LHUB
			5.38	93.29	(XS)	2.30	93.58	
			8.97	93.13	(XS)	5.30	93.42	
			9.05	93.13	(XS)	7.30	93.26	Start Left Bench
			13.45	93.22	(XS)	11.30	93.16	
			17.98	93.08	(XS)	16.30	93.21	
			20.90	93.19	(XS)	20.30	93.19	
			25.33	93.16	(XS)	25.80	93.22	LBKF/End Left Bench
			26.54	92.64	(XS)	26.30	92.91	
			28.16	91.97	(XS)	27.30	91.83	LEW
			28.79	91.91	(XS)	29.70	91.18	TW
			29.04	91.30	(XS)	30.60	91.83	REW
			29.45	91.26	(XS)	31.80	92.81	
			30.36	91.52	(XS)	33.50	93.22	RBKF
			30.98	92.36	(XS)	35.10	94.22	RHUB
			31.98	92.96	(XS)			
			33.61	93.73	(XS)			
			35.02	94.25	(XSPIN)			
			44.78	98.08	(TOB)			



2006 Summary Data	
Bankfull Cross-Sectional Area	7.65
Bankfull Width	7.70
Bankfull Mean Depth	0.99
Bankfull Max Depth	2.04
Width/Depth Ratio	7.78
Entrenchment Ratio	N/A

Cross-Section 3 Pool: Upstream-5/15/06

Cross-Section 3 Pool: Downstream-5/15/06

Prepared For:

Ecosystem Enhancement Program

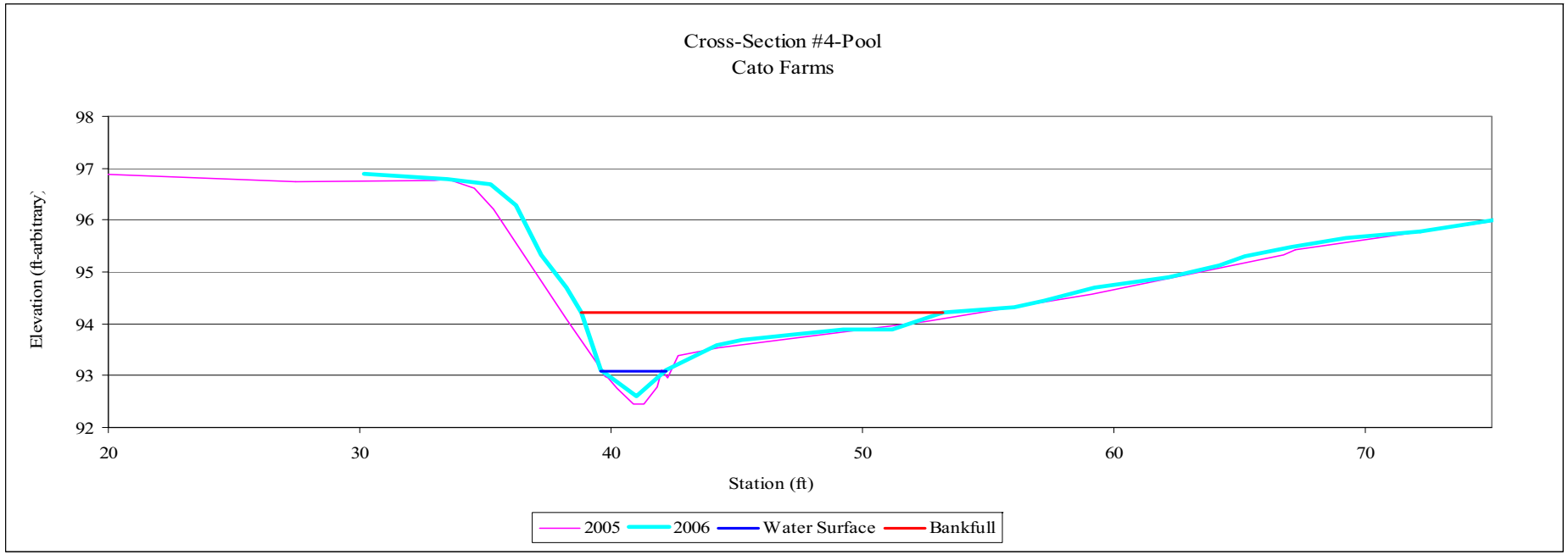
Cato Farms Stream Restoration
Year 2 of 5

Date: March 2007
Project No.: 72

Appendix B5. Cross-Section Plots and Raw Data Tables

Jordan Jones & Goulding Incorporated

Stream Name: Cato Farms								
Cross-Section: 4								
Feature: Pool								
2004			2005			2006		
As Built						Sep-06		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
No As-Built Provided			0.65	96.67	(X4)	30.19	96.9	
			11.49	97.05	(X4)	33.49	96.78	LHUB
			27.45	96.75	(X4)	35.19	96.7	
			32.96	96.77	(X4)	36.19	96.29	
			33.49	96.78	(X4LP)	37.19	95.34	
			34.53	96.61	(X4)	38.19	94.71	
			35.33	96.21	(X4)	38.79	94.23	LBKF
			38.23	94.1	B	39.59	93.1	LEW
			39.37	93.25	(X4)	40.99	92.6	TW
			39.77	92.98	(X4)	42.19	93.1	REW
			39.88	92.95	(X4)	44.19	93.6	
			40.2	92.76	(X4)	45.19	93.69	
			40.9	92.46	(X4)	47.19	93.8	
			41.27	92.45	(X4)	49.19	93.89	
			41.85	92.79	(X4)	51.19	93.9	
			42.01	93.1	(X4)	53.19	94.23	RBKF
			42.23	92.97	(X4)	55.99	94.32	R Bench End
			42.68	93.38	(X4)	57.19	94.45	
			44.27	93.54	(X4)	59.19	94.69	
			47.12	93.72	(X4)	62.19	94.91	
			52.45	94.03	(X4)	64.19	95.12	
			59.11	94.58	(X4)	65.19	95.3	
			66.72	95.32	(X4RPIN)	66.99	95.48	RHUB
			67.18	95.42	(X4)	69.19	95.66	
			80.53	96.36	(X4)	72.19	95.79	
			94.52	96.99	(X4)	75.19	96.01	
			116.45	97.8	(X4)	77.19	96.23	
			30.81	99.22	(X4LPOSTTOP)	80.19	96.47	
			66.88	97.67	(X4RPOSTTOP)	82.19	96.72	



2006 Summary Data	
Bankfull Cross-Sectional Area	9.07
Bankfull Width	14.40
Bankfull Mean Depth	0.63
Bankfull Max Depth	1.63
Width/Depth Ratio	22.86
Entrenchment Ratio	N/A

Cross-Section 4 Pool: Upstream-5/15/06

Cross-Section 4 Pool: Downstream-5/15/06

Prepared For:

Ecosystem Enhancement Program

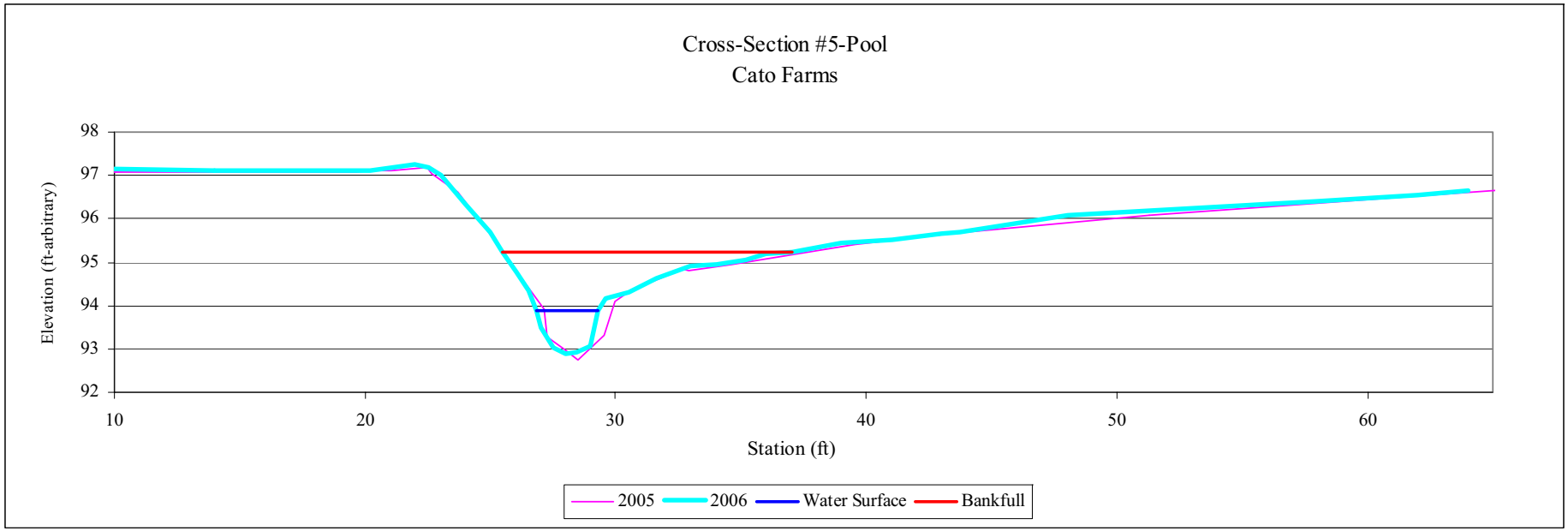
Cato Farms Stream Restoration
Year 2 of 5

Date: March 2007
Project No.: 72

Appendix B5. Cross-Section Plots and Raw Data Tables

Jordan Jones & Goulding Incorporated

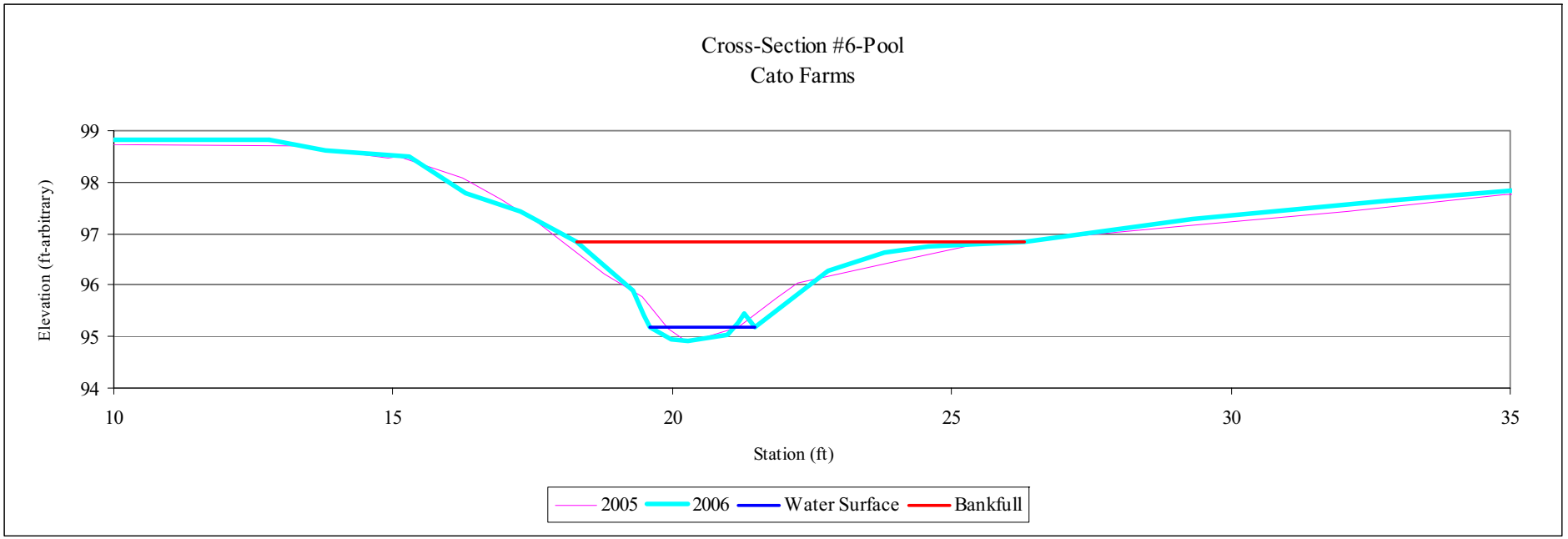
Stream Name: Cato Farms								
Cross-Section: 5								
Feature: Pool								
2004			2005			2006		
As Built						Sep-06		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
No As-Built Provided			0.00	97.00	(XSPIN)	10.01	97.16	
			9.30	97.08	(XS)	14.01	97.11	
			19.62	97.07	(XS)	18.01	97.11	
			20.21	97.11	(XSLP)	20.21	97.10	LHUB
			21.08	97.13	(XS)	22.01	97.26	
			22.48	97.20	(XS)	22.51	97.18	LTB
			22.65	97.05	(B)	23.01	97.00	
			23.72	96.63	(XS)	24.01	96.34	
			25.30	95.42	(XS)	25.01	95.71	
			26.00	94.85	(XS)	25.51	95.24	LBKF/TOB
			27.13	93.92	(XS)	26.01	94.78	
			27.26	93.28	(XS)	26.51	94.34	
			27.93	93.00	(XS)	26.81	93.88	LEW
			28.51	92.73	(XS)	27.01	93.48	
			29.57	93.32	(XS)	27.51	93.03	
			29.99	94.08	(XS)	28.01	92.88	TW
			30.58	94.36	(XS)	28.41	92.92	
			32.67	94.83	(XS)	29.01	93.07	
			32.95	94.80	(B)	29.31	93.88	REW
			34.62	94.95	(XS)	29.61	94.17	
			39.57	95.42	(XS)	30.51	94.31	
			43.37	95.65	(XS)	31.61	94.64	
			44.01	95.70	(XSRP)	33.01	94.92	
			51.27	96.07	(XS)	34.01	94.96	
			68.43	96.79	(XS)	35.21	95.04	
			84.47	97.77	(XS)	36.01	95.18	
						37.01	95.24	RBKF/RTOB
						39.01	95.44	
						41.01	95.53	
						43.01	95.66	
						43.71	95.71	RHUB
						48.01	96.07	
						58.01	96.42	
						62.01	96.56	
						64.01	96.65	



2006 Summary Data	
Bankfull Cross-Sectional Area	9.1
Bankfull Width	11.5
Bankfull Mean Depth	0.8
Bankfull Max Depth	2.4
Width/Depth Ratio	14.6
Entrenchment Ratio	N/A

XS 5 Pool: Downstream-5/15/06

Stream Name: Cato Farms								
Cross-Section: 6								
Feature: Pool								
2004			2005			2006		
As Built						Sep-06		
Station	Elevation	Notes	Station	Elevation	Notes	Station	Elevation	Notes
No As-Built Provided			0.00	99.06	(X6)	6.79	98.89	
			3.20	98.91	(X6)	9.79	98.81	
			6.69	98.84	(X6)	12.79	98.83	
			9.62	98.73	(X6)	13.79	98.63	LHUB
			13.29	98.70	(X6RPING)	15.29	98.51	
			14.92	98.46	(B)	16.29	97.80	LTOB
			15.11	98.49	(X6)	17.29	97.42	
			16.25	98.08	(X6)	18.29	96.85	BKF
			16.93	97.68	(X6)	19.29	95.88	
			17.57	97.22	(X6)	19.49	95.41	
			18.77	96.22	(X6)	19.59	95.17	LEW
			19.47	95.78	(X6)	19.99	94.94	
			19.92	95.16	(X6)	20.29	94.92	
			20.29	94.88	(X6)	20.99	95.03	TW
			21.17	95.18	(X6)	21.19	95.26	
			21.87	95.74	(X6)	21.29	95.44	
			22.25	96.03	(X6)	21.49	95.17	REW
			23.84	96.42	(X6)	22.79	96.29	
			25.51	96.81	(B)	23.79	96.64	
			26.10	96.83	(X6)	24.59	96.75	
			29.04	97.15	(X6)	26.29	96.85	RBKF/RTOB
			32.07	97.43	(X6)	29.29	97.28	
			34.90	97.77	(X6)	32.79	97.65	
			39.02	97.94	(X6)	36.79	98.00	
			40.40	97.95	(X6RPIN)	38.79	98.00	
			40.41	98.04	(X6)	40.99	97.95	RHUB
			43.75	98.12	(X6)	43.79	98.25	
			51.63	98.05	(X6)	48.09	98.35	
			62.54	98.59	(X6)	51.49	98.58	
			69.23	98.68	(X6)			
			76.80	98.94	(X6)			



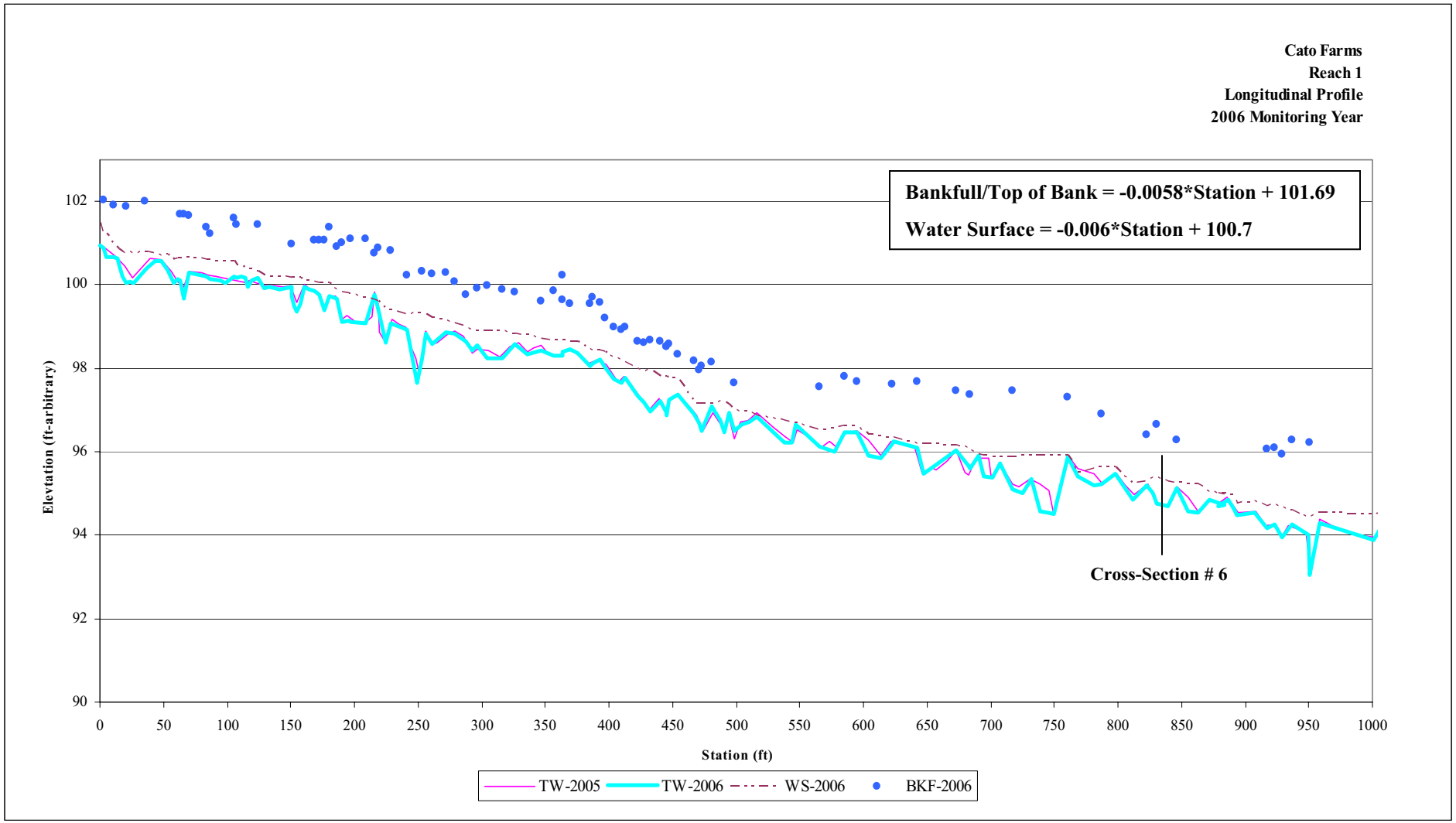
2006 Summary Data	
Bankfull Cross-Sectional Area	5.7
Bankfull Width	8.0
Bankfull Mean Depth	0.7
Bankfull Max Depth	1.8
Width/Depth Ratio	11.3
Entrenchment Ratio	N/A

Cross-Section 6 Pool: Upstream-5/15/06

Cross-Section 6 Pool: Downstream-5/15/06

2006														
Station	TW-2006	WS-2006	BKF-2006	Notes	Station	TW-2006	WS-2006	BKF-2006	Notes	Station	TW-2006	WS-2006	BKF-2006	Notes
0.20	100.95	101.51		riffle	172.50	99.78	100.06	101.06	pool	447.00	97.26	97.76	98.57	glide
2.87	100.88	101.24	102.04		176.50	99.39	100.05	101.08	max pool	454.10	97.38	97.76	98.33	riffle
4.87	100.66	101.22		pool	180.50	99.74	100.06	101.38	riffle	467.00	96.89	97.18	98.18	run
6.87	100.68	101.16			186.00	99.68	99.88	100.91	pool	471.10	96.70	97.16	97.97	pool
11.00	100.66	100.96	101.91	riffle	190.00	99.12	99.84	101.01		473.00	96.50	97.14	98.06	max pool
13.87	100.63	100.89		pool	196.50	99.13	99.80			481.00	97.08	97.16	98.14	riffle
14.87	100.51	100.84			197.00	99.11	99.80	101.11		488.00	96.74	97.23		pool
17.87	100.20	100.80			208.60	99.07	99.70	101.10	max pool	490.20	96.46	97.20		max pool
20.87	100.03	100.75	101.87	max pool	215.50	99.76	99.65	100.77	riffle	494.60	96.95	97.13		riffle
23.87	100.07	100.79			219.20	99.43	99.60	100.88	pool	499.00	96.51	97.00	97.66	pool/max p
26.87	100.03	100.77			224.70	98.63	99.42		max pool	504.00	96.67	96.98		
35.87	100.37	100.80	102.02		228.90	99.09	99.39	100.83	riffle	510.70	96.73	96.97		glide
37.87	100.43	100.79			241.40	98.93	99.30	100.24	pool	516.00	96.85	96.88		riffle
42.87	100.58	100.75		glide	249.00	97.65	99.32		max pool	537.51	96.22	96.75		pool
47.87	100.56	100.71		riffle	253.00	98.23	99.32	100.34	glide	544.00	96.21	96.72		max pool
52.87	100.37	100.73		pool	256.20	98.82	99.30		riffle	547.00	96.64	96.70		riffle
57.87	100.05	100.61		max pool	261.00	98.57	99.20	100.25	run	566.00	96.14	96.54	97.57	pool
61.10	100.14	100.64		riffle	272.40	98.86	99.15	100.30	run comple:	576.89	96.00	96.57		max pool
62.87	100.10	100.64	101.70	pool	279.00	98.84	99.09	100.08	riffle	585.00	96.48	96.61	97.80	riffle
65.87	99.68	100.68	101.69	max pool	288.00	98.66	99.00	99.78	pool	595.00	96.48	96.61	97.67	riffle heavy
69.87	100.30	100.68	101.66	riffle	293.00	98.42	98.90		max pool	604.00	95.90	96.40		pool
83.84	100.20	100.62	101.39	run	297.00	98.56	98.90	99.91	riffle	613.70	95.86	96.38		max pool
86.84	100.13	100.59	101.23	run	304.00	98.24	98.90	99.98		622.70	96.18	96.32	97.61	glide
94.84	100.11	100.57		pool	316.30	98.23	98.89	99.88	max pool	623.60	96.24	96.34		run
98.84	100.03	100.56		max pool	326.00	98.58	98.84	99.82	pool	642.20	96.09	96.19	97.68	pool
105.84	100.19	100.56	101.60	riffle	336.00	98.35	98.79		max pool	647.10	95.48	96.18		max pool
107.84	100.17	100.49	101.44	run	347.00	98.44	98.70	99.60	riffle	673.10	96.03	96.17	97.46	riffle
110.84	100.19	100.49			357.00	98.30	98.69	99.87	pool	683.00	95.65	96.10		pool
113.84	100.16	100.40		pool	364.00	98.31	98.69	99.65		683.50	95.60	96.04	97.37	max pool
115.84	99.94	100.40		max pool	364.00	98.39	98.68	100.24	glide	690.30	95.90	95.95		riffle
118.84	100.12	100.40		glide	369.00	98.47	98.65	99.55	riffle	695.00	95.42	95.90		run
123.84	100.17	100.31	101.45	riffle	375.00	98.36	98.65		pool	701.80	95.39	95.86		pool
128.84	99.92	100.22		run	385.00	98.07	98.45	99.54	max pool	707.00	95.72	95.88		pool
132.84	99.94	100.20			387.00	98.12	98.44	99.69	glide	717.50	95.10	95.88	97.45	
137.84	99.91	100.21			393.00	98.20	98.42	99.59	riffle	725.00	95.00	95.90		max pool
140.84	99.90	100.20			397.00	98.03	98.40	99.22	run	732.20	95.34	95.90		riffle
145.84	99.93	100.20			404.00	97.74	98.26	98.98	pool	739.00	94.58	95.90		run
150.34	99.95	100.18	100.97	pool	410.00	97.64	98.20	98.93	max pool	745.00	94.55	95.90		pool
150.91	99.75	100.18			413.00	97.77	98.15	99.00	riffle	750.00	94.52	95.92		max pool
152.91	99.48	100.18			422.50	97.34	98.00	98.66	run	761.00	95.87	95.92	97.32	riffle heavy
154.91	99.37	100.19		max pool	428.00	97.17	97.92	98.60	pool	768.00	95.40	95.50		run
157.41	99.55	100.18			432.30	96.96	97.96	98.68	max pool	781.00	95.20	95.60		pool
161.00	99.96	100.12		riffle	440.30	97.22	97.82	98.66	glide	787.00	95.21	95.64	96.91	max pool
164.50	99.89	100.10			445.00	96.92	97.80	98.51	max pool	798.00	95.46	95.64		riffle
168.50	99.86	100.08	101.06		445.10	96.87	97.82	98.53						

2006																			
Station	TW-2006	WS-2006	BKF-2006	Notes	Station	TW-2006	WS-2006	BKF-2006	Notes	Station	TW-2006	WS-2006	BKF-2006	Notes	Station	TW-2006	WS-2006	BKF-2006	Notes
812.00	94.86	95.22		pool	1213.00	92.57	93.67		max pool	1600.00	91.08	91.46	92.82	pool	1909.50	88.62	89.04	90.43	pool
823.00	95.20	95.30	96.42	riffle	1217.70	93.31	93.61		glide	1619.70	90.32	91.19		max pool	1934.60	87.56	88.89		max pool
827.20	95.00	95.39		pool	1227.70	93.64	93.71	94.90	riffle	1625.00	90.97	91.20		riffle	1936.00	87.74	88.92		
831.00	94.75	95.37	96.67		1234.00	92.55	93.70		pool	1632.70	90.95	91.20	92.86	pool	1940.30	87.91	88.94	90.55	
839.00	94.69	95.29		max pool	1239.20	92.50	93.64		max pool	1640.00	90.65	91.16		max pool	1942.30	88.12	88.98		glide
846.00	95.13	95.26	96.29	riffle	1242.00	93.18	93.66		pool compl	1642.00	90.62	91.16			1945.40	88.16	88.94		
855.00	94.57	95.21		pool	1247.30	92.44	93.60	94.81	max pool	1643.00	90.65	91.14			1950.90	86.98	88.94	90.29	
863.00	94.53	95.21		max pool	1255.90	93.27	93.60	94.83	riffle heavy	1648.90	90.87	91.11		riffle	1958.20	87.76	88.94		
871.70	94.86	95.04		riffle heavy	1271.30	93.22	93.52	94.76	run	1656.10	89.88	90.91		max pool	1958.30	88.02	88.95		
884.00	94.72	95.00		pool	1288.10	93.09	93.39	94.88	pool	1663.70	90.54	90.95		glide	1965.50	88.28	88.98	90.31	riffle
878.90	94.71	95.03		max pool	1298.90	92.70	93.40		max pool	1666.60	90.76	90.93	92.13	riffle	1975.00	88.29	88.96		run
886.40	94.86	95.00		run	1311.80	93.36	93.45	94.43	riffle	1673.30	90.65	90.78		run	1980.00	88.18	88.96		riffle, invert
890.50	94.67	94.97		pool	1323.00	92.65	93.40		run	1676.60	90.40	90.78			1980.00	87.48	88.98		max pool
894.00	94.48	94.76		max pool	1329.00	92.37	93.15		pool	1676.10	89.35	90.69	92.26	pool	2009.00	88.55	89.02		invert?
907.70	94.54	94.83		pool compl	1340.00	92.36	93.11		max pool	1682.20	88.89	90.49			2014.00	88.06	89.01		max pool
917.30	94.18	94.70	96.06	max pool	1342.00	93.01	93.13		riffle	1682.30	88.79	90.51	92.35	max pool	2019.30	89.05	89.07		riffle
923.50	94.25	94.72	96.09	pool	1352.70	92.91	93.02	93.98	pool	1689.00	89.95	90.52			2031.70	88.88	88.92		pool
929.30	93.95	94.68	95.95	max pool	1359.20	92.22	92.85		max pool	1696.00	90.29	90.58	92.32	pool	2035.90	88.50	88.95		max pool
937.10	94.26	94.60	96.28	riffle	1363.10	92.75	92.84	94.14	riffle	1705.00	89.74	90.46		max pool	2040.70	88.82	88.91	89.85	invert
949.60	94.00	94.41		pool	1372.20	92.41	92.69		run	1716.00	90.40	90.55		pool	2041.20	88.09	88.99		max pool
950.60	93.04	94.45	96.22	max pool	1377.00	92.40	92.68	94.12	pool	1728.00	89.63	90.35		max pool	2044.50	88.28	88.90		glide?
958.80	94.29	94.54		riffle	1385.80	91.61	92.70		max pool	1732.00	89.73	90.42		glide	2051.60	88.42	88.70		pool
1001.00	93.88	94.51		max pool	1393.00	91.66	92.71			1733.20	90.35	90.42	91.97	riffle	2056.40	86.98	88.69		pool
1012.00	94.44	94.55	95.91	riffle	1396.60	91.89	92.75			1752.60	89.56	90.13	91.49	pool	2061.00	87.57	88.37	89.46	
1017.20	94.36	94.55	95.95	run	1403.00	92.74	92.75	94.00	riffle	1755.80	88.31	90.08		max pool	2071.00	87.64	88.40		
1037.00	93.61	94.32	95.57	pool	1408.00	91.89	92.60		run	1765.40	89.88	90.09		riffle	2076.00	87.77	88.33		
1044.00	93.03	94.23		max pool	1416.70	91.90	92.32		pool	1776.50	89.90	90.08	91.05	pool	2078.30	88.16	88.31		invert, riffle
1049.70	94.25	94.41	95.59	riffle	1423.10	91.15	92.46		max pool	1792.40	88.87	90.08		max pool	2083.10	88.02	88.24	89.37	pool
1066.00	93.10	94.20		pool	1430.30	92.18	92.39	93.65	riffle	1800.30	89.93	90.10		riffle	2085.00	87.42	88.20		
1070.00	93.02	94.06		max pool	1449.70	91.79	92.15		pool	1813.70	89.80	89.97	90.93	pool	2093.10	87.04	88.25		max pool
1073.14	93.91	94.09	95.50	pool compl	1454.70	91.10	92.15		max pool	1818.00	89.30	89.70			2093.00	87.81	88.25		glide
1091.00	93.39	93.98			1463.40	91.80	92.14	93.40	pool	1822.60	88.77	89.73			2096.70	88.14	88.24	89.10	riffle-invert
1122.00	93.56	94.01	95.22	riffle	1474.20	90.34	92.14		max pool	1824.70	88.58	89.69		max pool	2102.60	86.35	88.09		
1132.00	93.04	93.96		run	1474.90	91.57	92.12		glide	1829.00	89.66	89.67	91.00	riffle	2114.90	87.01	88.10		max pool
1141.00	93.05	94.03		pool	1477.70	91.84	92.17	93.42	riffle	1835.50	88.86	89.50		pool	2117.30	87.36	88.06		riffle-invert
1145.00	92.00	94.00		max pool	1503.60	90.93	92.20		pool compl	1842.00	88.21	89.51		max pool	2119.70	88.10	88.16		
1150.00	93.15	93.91	94.86	glide	1518.00	90.57	92.23		max pool	1846.30	89.24	89.51		riffle	2129.20	87.62	87.80	88.87	pool
1154.00	93.77	93.91		riffle	1533.30	92.00	92.18	93.22	riffle	1855.60	88.62	89.21		run	2128.70	86.71	87.81		max pool
1169.90	93.46	93.87		pool	1547.00	91.76	92.02	93.60	run	1862.10	88.49	89.29	90.76	pool	2139.20	87.62	87.68		riffle-invert
1177.60	92.97	93.80	94.85	max pool	1554.00	91.61	91.88		run	1863.50	88.19	89.26		max pool	2147.00	87.51	87.64		
1184.00	93.30	93.76		pool	1579.00	91.24	91.58	93.35	pool	1871.30	89.02	89.24		riffle					
1190.00	92.62	93.67	94.76	max pool	1582.80	90.90	91.50	93.35		1891.30	87.85	89.06		max pool					
1201.00	92.78	93.73			1583.90	90.57	91.49		max pool	1895.80	88.33	89.06		pool					
1207.00	93.58	93.60	94.88	pool	1592.00	91.11	91.44	93.17	riffle	1905.90	88.12	89.06	90.80	max pool					



Prepared For:

Ecosystem Enhancement Program

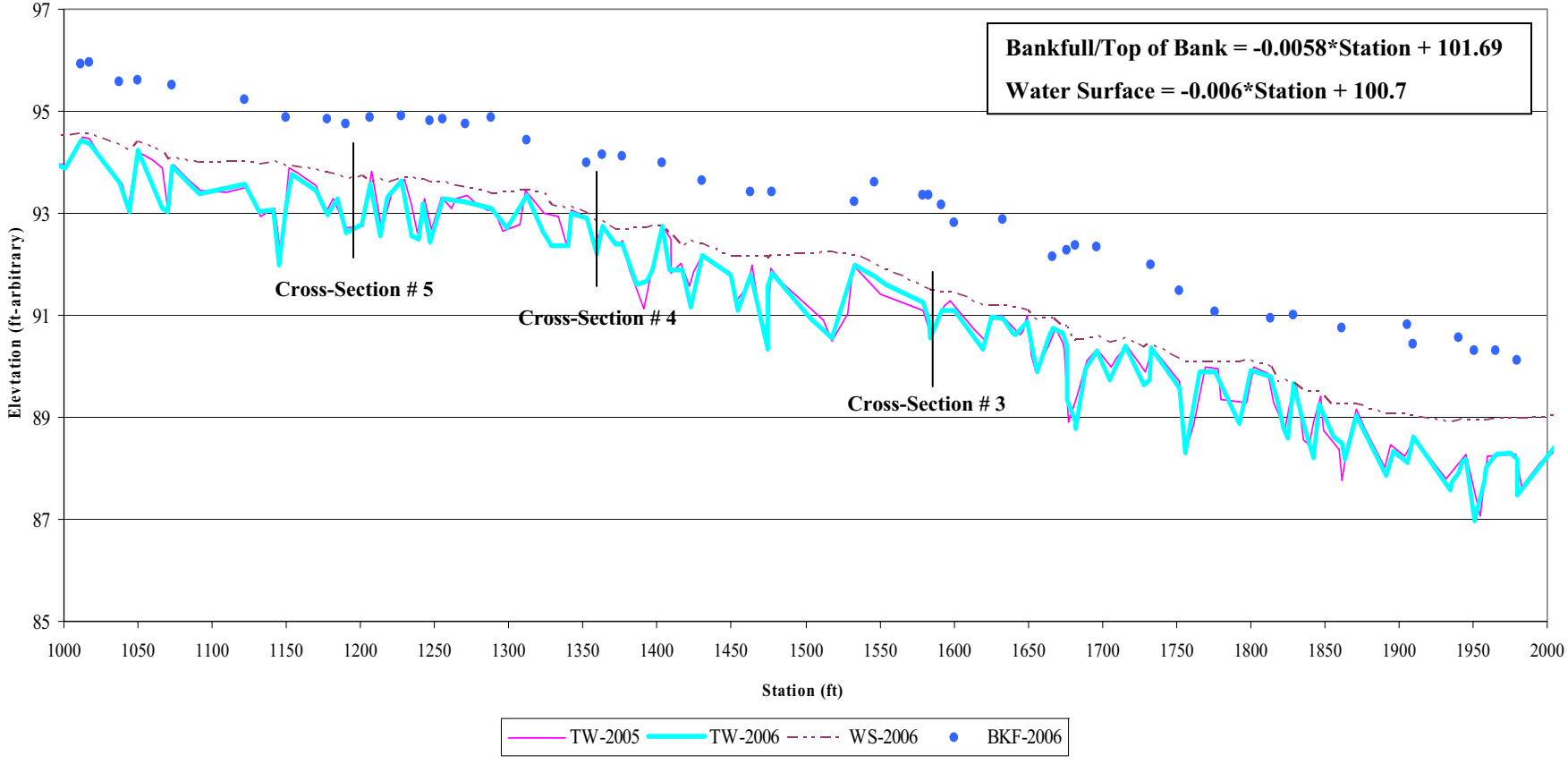
Cato Farms Stream Restoration
Year 2 of 5

Appendix B6. Longitudinal Plots and Raw Data Tables

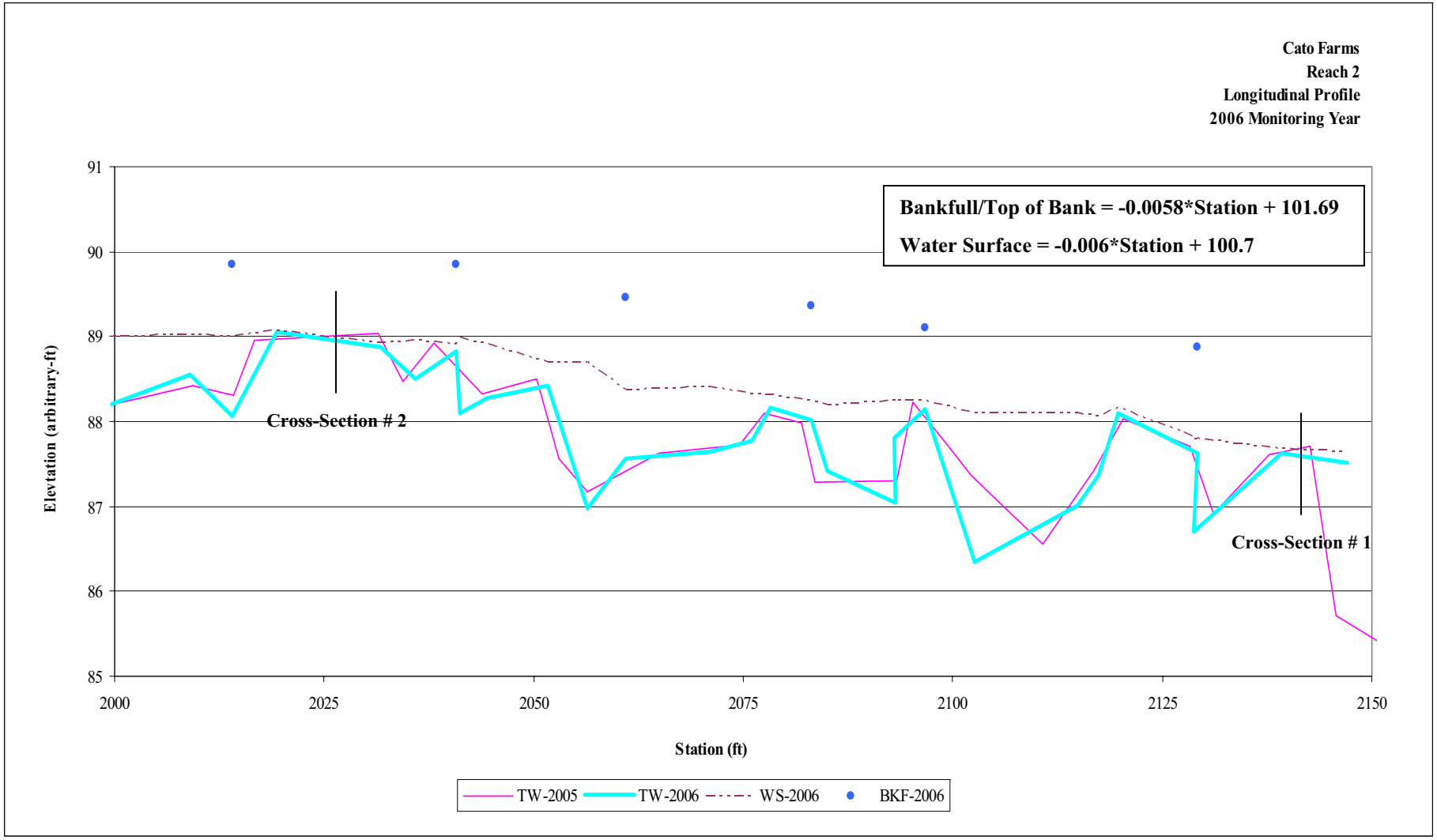
Date: March 2007
Project No.: 72

Jordan Jones & Goulding

Cato Farms
Reach 1 cont.
Longitudinal Profile
2006 Monitoring Year



Prepared For: Ecosystem Enhancement Program	Cato Farms Stream Restoration Year 2 of 5	Date: March 2007 Project No.: 72
	Appendix B6. Longitudinal Plots and Raw Data Tables	Jordan Jones & Goulding



Prepared For:

Ecosystem Enhancement Program

Cato Farms Stream Restoration
Year 2 of 5

Date: March 2007
Project No.: 72

Jordan Jones & Goulding

Appendix B6. Longitudinal Plots and Raw Data Tables

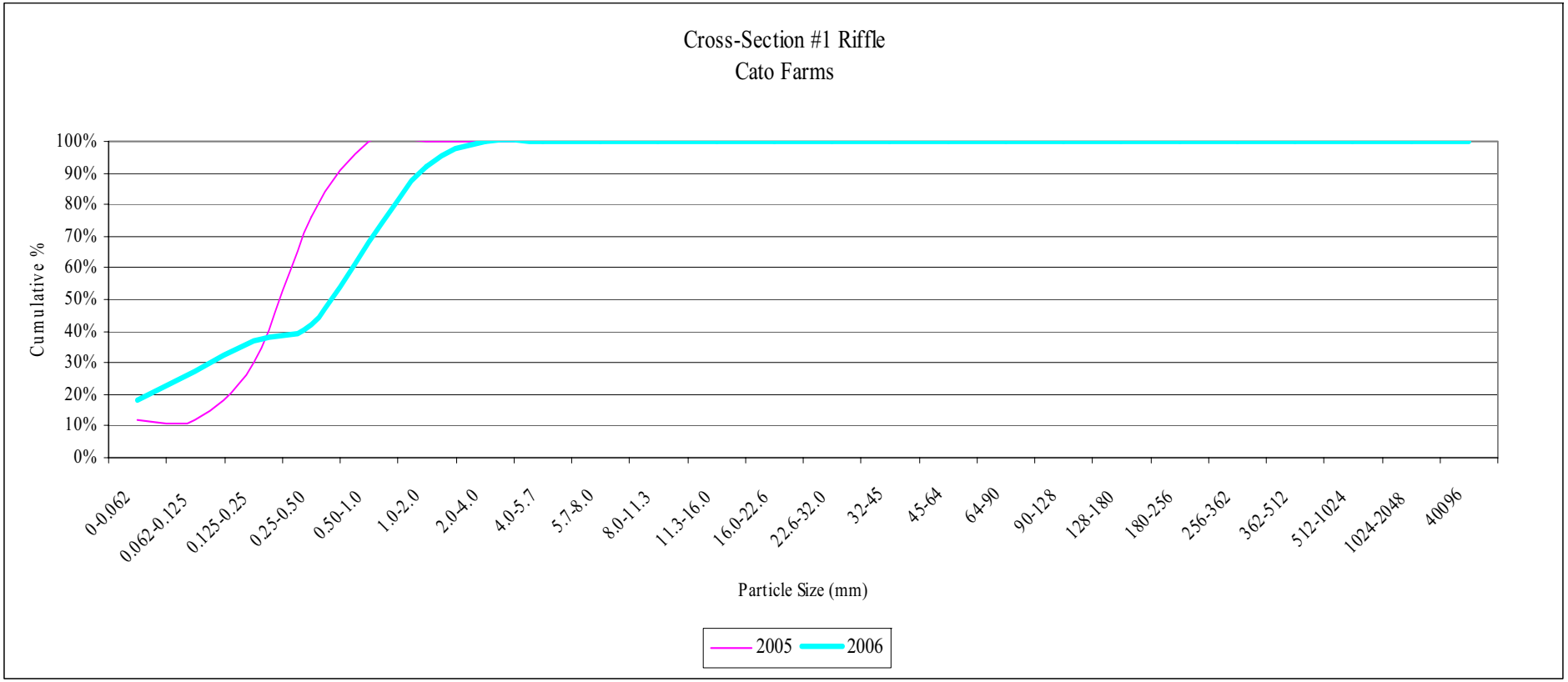
Project Name: UT to Clarke Creek														
Reach 1														
Riffle Slope														
Riffle Station (ft)	Length (ft)	Water Elevation (ft)	Change	Slope (ft/ft)	Riffle Station (ft)	Length (ft)	Water Elevation (ft)	Change	Slope (ft/ft)	Riffle Station (ft)	Length (ft)	Water Elevation (ft)	Change	Slope (ft/ft)
0.20		101.51			481.00		97.16			1829.00		89.50		
4.87	4.67	101.22	0.29	6.21%	488.00	7.00	97.23	0.00	0.00%	1835.50	6.50	89.51	0.00	0.00%
11.00		100.96			494.60		97.13			1846.30		89.21		
13.87	2.87	100.89	0.07	2.44%	499.00	4.40	97.00	0.13	2.95%	1855.60	9.30	89.24	0.00	0.00%
47.87		100.71			516.00		96.88			1871.30		89.06		
52.87	5.00	100.73	0.00	0.00%	537.51	21.51	96.75	0.13	0.60%	1891.30	20.00	88.98	0.08	0.40%
61.10		100.64			547.00		96.70			1965.50		88.96		
62.87	1.77	100.64	0.00	0.00%	566.00	19.00	96.54	0.17	0.87%	1975.00	9.50	88.95	0.01	0.11%
69.87		100.68			585.00		96.61			1227.70		93.71		
83.84	13.97	100.62	0.06	0.43%	604.00	19.00	96.40	0.21	1.12%	1234.00	6.30	93.70	0.01	0.16%
105.84		100.56			673.10		96.17			1255.90		93.60		
107.84	2.00	100.49	0.07	3.50%	683.00	9.90	96.10	0.07	0.71%	1271.30	15.40	93.45	0.15	0.96%
123.84		100.31			690.30		95.95			1311.80		93.40		
128.84	5.00	100.22	0.09	1.80%	695.00	4.70	95.90	0.05	1.06%	1323.00	11.20	93.13	0.27	2.41%
161.00		100.12			732.20		95.90			1342.00		93.02		
172.50	11.50	100.06	0.06	0.52%	739.00	6.80	95.90	0.00	0.00%	1352.70	10.70	92.84	0.17	1.64%
180.50		100.06			761.00		95.92			1363.10		92.69		
186.00	5.50	99.88	0.18	3.27%	768.00	7.00	95.50	0.42	6.00%	1372.20	9.10	92.75	0.00	0.00%
215.50		99.65			798.00		95.64			1403.00		92.60		
219.20	3.70	99.60	0.05	1.35%	812.00	14.00	95.22	0.42	3.00%	1408.00	5.00	92.39	0.21	4.20%
228.90		99.39			823.00		95.30			1430.30		92.15		
241.40	12.50	99.30	0.09	0.72%	827.20	4.20	95.39	0.00	0.00%	1449.70	19.40	92.17	0.00	0.00%
256.20		99.30			846.00		95.26			1477.70		92.20		
261.00	4.80	99.20	0.10	2.08%	855.00	9.00	95.21	0.05	0.56%	1503.60	25.90	92.18	0.02	0.08%
279.00		99.09			871.70		95.04			1533.30		92.02		
288.00	9.00	99.00	0.09	1.00%	884.00	12.30	95.00	0.04	0.33%	1547.00	13.70	91.44	0.58	4.23%
297.00		98.90			937.10		94.60			1592.00		91.46		
304.00	7.00	98.89	0.01	0.14%	949.60	12.50	94.41	0.19	1.52%	1600.00	8.00	91.20	0.26	3.25%
347.00		98.70			958.80		94.54			1625.00		91.20		
357.00	10.00	98.69	0.01	0.10%	1001.00	42.20	94.51	0.03	0.07%	1632.70	7.70	91.11	0.09	1.17%
369.00		98.65			1012.00		94.55			1648.90		90.91		
375.00	6.00	98.65	0.00	0.00%	1017.20	5.20	94.55	0.00	0.00%	1656.10	7.20	90.93	0.00	0.00%
393.00		98.42			1049.70		94.41			1666.60		90.78		
397.00	4.00	98.40	0.02	0.50%	1066.00	16.30	94.20	0.21	1.29%	1673.30	6.70	90.42	0.36	5.37%
413.00		98.15			1122.00		94.01			1733.20		90.13		
422.50	9.50	98.00	0.15	1.58%	1132.00	10.00	93.96	0.05	0.50%	1752.60	19.40	90.09	0.04	0.21%
454.10		97.76			1154.00		93.91			1765.40		90.08		
467.00	12.90	97.18	0.58	4.50%	1169.90	15.90	93.87	0.04	0.25%	1776.50	11.10	90.10	0.00	0.00%
										1800.30		89.97		
										1813.70	13.40	89.67	0.30	2.24%

Project Name: UT to Clarke Creek																	
Reach 1 and 2																	
* Reach 2 Begins at station 20+00																	
Station (ft)	Pool Length (ft)	Pool Spacing (ft)	Station (ft)	Pool Length (ft)	Pool Spacing (ft)	Station (ft)	Pool Length (ft)	Pool Spacing (ft)	Station (ft)	Pool Length (ft)	Pool Spacing (ft)	Station (ft)	Pool Length (ft)	Pool Spacing (ft)	Station (ft)	Pool Length (ft)	Pool Spacing (ft)
4.87			304			683			1070		26	1579			2019.3		
11	6.13		336		43	683.5		36.4	1122	56		1583.9		65.9	2031.7		
13.87			347	43		690.3	7.3		1132			1592	13		2035.9		21.9
20.87			357			701.8			1141			1600			2040.7	21.4	
47.87	34		364		28	725		41.5	1145		75	1619.7		35.8	2041.2		5.3
52.87			369	12		732.2	30.4		1154	13		1625	25		2078.3	37.6	
57.87		37	375			745			1169.9			1632.7			2093.1		51.9
61.1	8.23		385		21	750		25	1213		68	1640		20.3	2096.7	18.4	
62.87			393	18		761	16		1217.7			1648.9	16.2		2114.9		21.8
65.87		8	404			781			1227.7	57.8		1656.1		16.1	2117.3	20.6	
69.87	7		410		25	787		37	1234			1676.1			2128.7		13.8
94.84			413	9		798	17		1247.3		34.3	1682.3			2139.2	21.9	
98.84		32.97	428			812			1255.9	21.9		1733.2	57.1		2147		18.3
105.84	11		445		35	823	11		1288.1			1752.6					
113.84			454.1	26.1		827.2			1298.9		51.6	1755.8		99.7			
115.84		17	471.1			839		52	1311.8	23.7		1765.4	12.8				
123.84	10		473		28	846	18.8		1329			1776.5					
150.34			481	9.9		855			1340		41.1	1792.4		36.6			
154.91		39.07	488			863		24	1342	13		1800.3	23.8				
161	10.66		490.2		17.2	871.7	16.7		1352.7			1813.7					
172.5			494.6	6.6		884			1359.2		19.2	1824.7		32.3			
176.5		21.59	499		8.8	878.9		15.9	1363.1	10.4		1829	15.3				
180.5	8		516	17		886.4	2.4		1377			1835.5					
186			537.51			890.5			1385.8		26.6	1842		17.3			
208.6		32.1	544		45	894			1403	26		1846.3	10.8				
215.5	29.5		547	9.49		923.5			1408			1862.1					
219.2			566			929.3		50.4	1416.7			1863.5		21.5			
224.7		16.1	576.89		32.89	937.1	46.6		1423.1		37.3	1871.3	9.2				
228.9	9.7		585	19		949.6			1430.3	13.6		1891.3					
241.4			604			950.6		21.3	1449.7			1934.6		71.1			
249		24.3	613.7		36.81	958.8	9.2		1474.2		51.1	1965.5	74.2				
256.2	14.8		623.6	19.6		1037			1477.7	28		1980					
288			642.2			1044		93.4	1503.6			1980		45.4			
293		44	647.1		33.4	1049.7	12.7		1518		43.8	2009	29				
297	9		673.1	30.9		1066			1533.3	29.7		2014		34			

Project Name: UT to Clarke Creek					
Reach 1					
Pattern Measurements					
Meander Wavelength (Lm)		Radius of Curvature (Rc)		Channel Beltwidth (Wblt)	
58.8	44.1	16.0	18.0	33.00	26.26
49.2	54.8	16.0	12.0	22.00	26.02
41.3	70.1	13.0	14.0	23.67	21.39
68.1	67.1	15.0	13.0	50.00	27.28
71.1	54.1	26.0	12.0	23.00	16.66
51.4	70.7	20.0	25.0	43.00	24.55
53.2	75.4	10.0	10.0	28.00	18.82
80.4	69.2	25.0	10.0	44.00	22.32
53.7	53.8	12.0	22.0	33.00	21.56
72.8	74.6	13.0	21.0	27.26	20.70
60.6	52.1	23.0	17.0	40.00	39.90
50.7	76.8	11.0	24.0	23.36	26.46
53.1	71.4	10.0	12.5	42.10	45.94
51.7	76.9	22.0	17	27.00	25.94
72.4	59.8	13.0	22.1	32.00	26.14
90.3	48.4	13.0	13.0	23.00	45.00
		22	15.0	21.10	21.30
		10	16.0	21.80	48.00
		15.0	15.0	19.00	26.00
		22.0	13.7	47.00	20.00
		14.5	13.65		
		13.0	10.0		
		22.0	10.0		
		13.7	13.7		

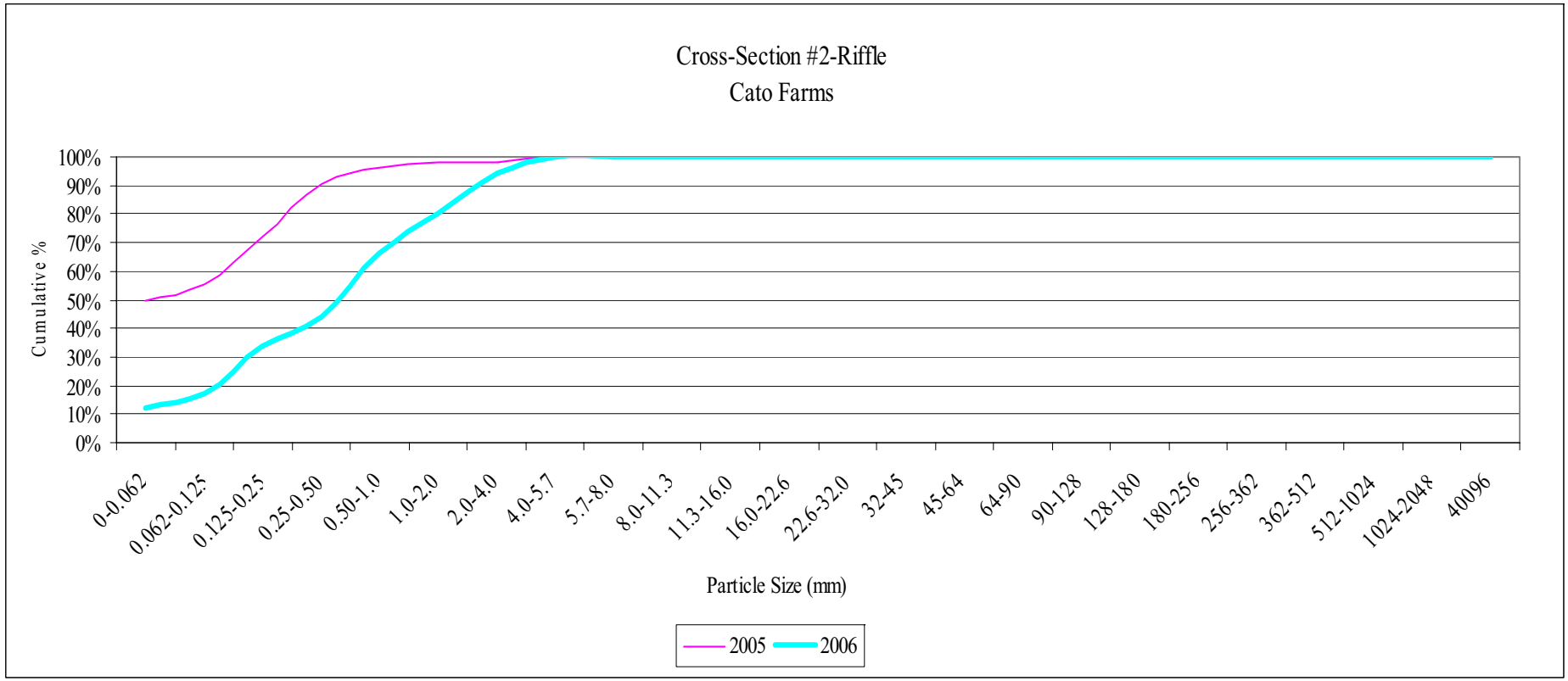
Project Name: UT to Clarke Creek		
Reach 2		
Pattern Measurements		
Meander Wavelength (Lm)	Radius of Curvature (Rc)	Channel Beltwidth (Wblt)
238	52	61.5
220	41	53.17
146	50	50.17
	56	45.86

Stream Name: Cato Farms								
Cross-Section: 1								
Feature: Riffle								
			2005			2006		
Description	Material	Size (mm)	Total #	Item %	Cum %	Total #	Item %	Cum %
Silt/Clay	silt/clay	0-0.062	6	12%	12%	18	18%	18%
Sand	very fine sand	0.062-0.125	0	0%	12%	9	9%	27%
	fine sand	0.125-0.25	9	18%	30%	10	10%	37%
	medium sand	0.25-0.50	23	46%	76%	5	5%	42%
	coarse sand	0.50-1.0	12	24%	100%	26	26%	68%
	very coarse sand	1.0-2.0	0	0%	100%	24	24%	92%
Gravel	very fine gravel	2.0-4.0	0	0%	100%	8	8%	100%
	fine gravel	4.0-5.7	0	0%	100%		0%	100%
	fine gravel	5.7-8.0	0	0%	100%		0%	100%
	medium gravel	8.0-11.3	0	0%	100%		0%	100%
	medium gravel	11.3-16.0	0	0%	100%		0%	100%
	course gravel	16.0-22.6	0	0%	100%		0%	100%
	course gravel	22.6-32.0	0	0%	100%		0%	100%
	very coarse gravel	32-45	0	0%	100%		0%	100%
	very coarse gravel	45-64	0	0%	100%		0%	100%
Cobble	small cobble	64-90	0	0%	100%		0%	100%
	medium cobble	90-128	0	0%	100%		0%	100%
	large cobble	128-180	0	0%	100%		0%	100%
	very large cobble	180-256	0	0%	100%		0%	100%
Boulder	small boulder	256-362	0	0%	100%		0%	100%
	small boulder	362-512	0	0%	100%		0%	100%
	medium boulder	512-1024	0	0%	100%		0%	100%
	large boulder	1024-2048	0	0%	100%		0%	100%
Bedrock	bedrock	40096	0	0%	100%		0%	100%
TOTAL/%of whole count			50	100%	100%	100	100%	100%



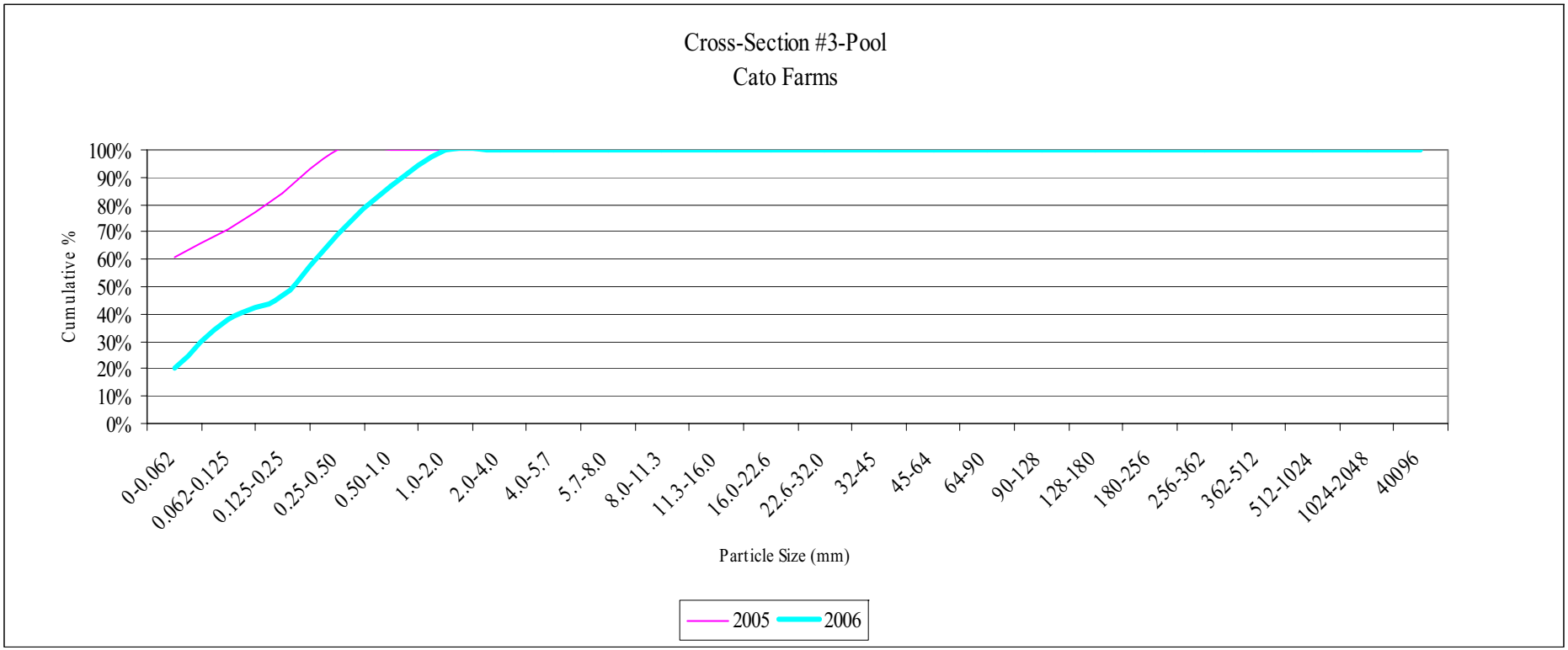
	d16	d35	d50	d84	d95
2005	0.11	0.21	0.27	0.50	0.67
2006	0.05	0.23	0.71	1.51	1.89

Stream Name: Cato Farms								
Cross-Section: 2								
Feature: Riffle								
			2005			2006		
Description	Material	Size (mm)	Total #	Item %	Cum %	Total #	Item %	Cum %
Silt/Clay	silt/clay	0-0.062	27	50%	50%	12	12%	12%
Sand	very fine sand	0.062-0.125	3	6%	56%	5	5%	17%
	fine sand	0.125-0.25	9	17%	72%	17	17%	34%
	medium sand	0.25-0.50	10	19%	91%	10	10%	44%
	coarse sand	0.50-1.0	3	6%	96%	22	22%	66%
	very coarse sand	1.0-2.0	1	2%	98%	14	14%	80%
Gravel	very fine gravel	2.0-4.0	0	0%	98%	14	14%	94%
	fine gravel	4.0-5.7	1	2%	100%	6	6%	100%
	fine gravel	5.7-8.0	0	0%	100%		0%	100%
	medium gravel	8.0-11.3	0	0%	100%		0%	100%
	medium gravel	11.3-16.0	0	0%	100%		0%	100%
	course gravel	16.0-22.6	0	0%	100%		0%	100%
	course gravel	22.6-32.0	0	0%	100%		0%	100%
	very coarse gravel	32-45	0	0%	100%		0%	100%
	very coarse gravel	45-64	0	0%	100%		0%	100%
Cobble	small cobble	64-90	0	0%	100%		0%	100%
	medium cobble	90-128	0	0%	100%		0%	100%
	large cobble	128-180	0	0%	100%		0%	100%
	very large cobble	180-256	0	0%	100%		0%	100%
Boulder	small boulder	256-362	0	0%	100%		0%	100%
	small boulder	362-512	0	0%	100%		0%	100%
	medium boulder	512-1024	0	0%	100%		0%	100%
	large boulder	1024-2048	0	0%	100%		0%	100%
Bedrock	bedrock	40096	0	0%	100%		0%	100%
TOTAL/%of whole count			54	100%	100%	100	100%	100%



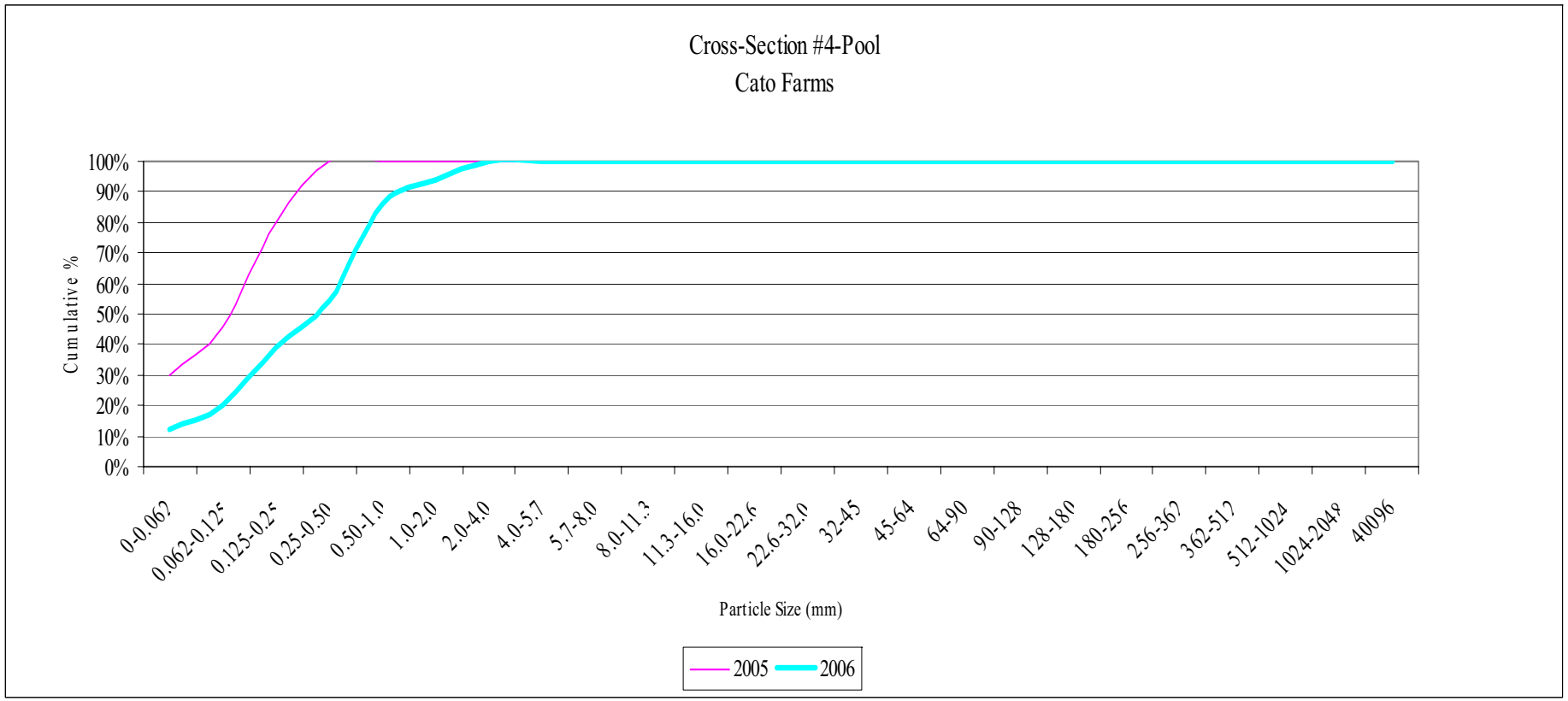
	d16	d35	d50	d84	d95
2005	0.00	0.00	0.06	0.31	0.66
2006	0.14	0.33	0.66	2.02	3.52

Stream Name: Cato Farms								
Cross-Section: 3								
Feature: Pool								
			2005			2006		
Description	Material	Size (mm)	Total #	Item %	Cum %	Total #	Item %	Cum %
Silt/Clay	silt/clay	0-0.062	31	61%	61%	20	20%	20%
Sand	very fine sand	0.062-0.125	5	10%	71%	18	18%	38%
	fine sand	0.125-0.25	7	14%	84%	9	9%	47%
	medium sand	0.25-0.50	8	16%	100%	22	22%	69%
	coarse sand	0.50-1.0	0	0%	100%	18	18%	87%
	very coarse sand	1.0-2.0	0	0%	100%	13	13%	100%
Gravel	very fine gravel	2.0-4.0	0	0%	100%		0%	100%
	fine gravel	4.0-5.7	0	0%	100%		0%	100%
	fine gravel	5.7-8.0	0	0%	100%		0%	100%
	medium gravel	8.0-11.3	0	0%	100%		0%	100%
	medium gravel	11.3-16.0	0	0%	100%		0%	100%
	course gravel	16.0-22.6	0	0%	100%		0%	100%
	course gravel	22.6-32.0	0	0%	100%		0%	100%
	very coarse gravel	32-45	0	0%	100%		0%	100%
	very coarse gravel	45-64	0	0%	100%		0%	100%
Cobble	small cobble	64-90	0	0%	100%		0%	100%
	medium cobble	90-128	0	0%	100%		0%	100%
	large cobble	128-180	0	0%	100%		0%	100%
	very large cobble	180-256	0	0%	100%		0%	100%
Boulder	small boulder	256-362	0	0%	100%		0%	100%
	small boulder	362-512	0	0%	100%		0%	100%
	medium boulder	512-1024	0	0%	100%		0%	100%
	large boulder	1024-2048	0	0%	100%		0%	100%
Bedrock	bedrock	40096	0	0%	100%		0%	100%
TOTAL/%of whole count			51	100%	100%	100	100%	100%



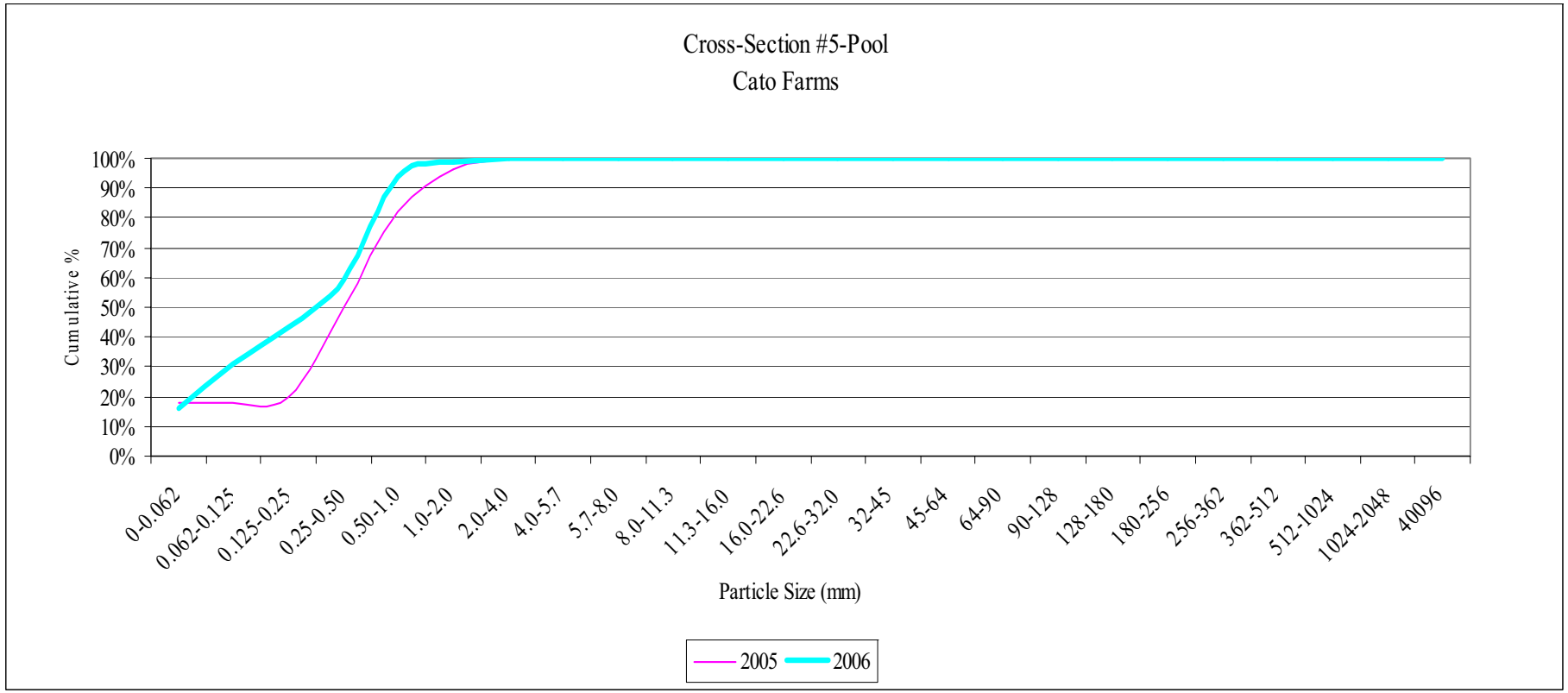
	d16	d35	d50	d84	d95
2005	0.00	0.00	0.00	0.19	0.32
2006	0.05	0.12	0.35	1.04	1.70

Stream Name: Cato Farms								
Cross-Section: 4								
Feature: Pool								
			2005			2006		
Description	Material	Size (mm)	Total #	Item %	Cum %	Total #	Item %	Cum %
Silt/Clay	silt/clay	0-0.062	15	30%	30%	12	12%	12%
Sand	very fine sand	0.062-0.125	8	16%	46%	8	8%	20%
	fine sand	0.125-0.25	17	34%	80%	19	19%	39%
	medium sand	0.25-0.50	10	20%	100%	15	15%	54%
	coarse sand	0.50-1.0	0	0%	100%	32	32%	86%
	very coarse sand	1.0-2.0	0	0%	100%	8	8%	94%
Gravel	very fine gravel	2.0-4.0	0	0%	100%	6	6%	100%
	fine gravel	4.0-5.7	0	0%	100%	0	0%	100%
	fine gravel	5.7-8.0	0	0%	100%	0	0%	100%
	medium gravel	8.0-11.3	0	0%	100%	0	0%	100%
	medium gravel	11.3-16.0	0	0%	100%	0	0%	100%
	course gravel	16.0-22.6	0	0%	100%	0	0%	100%
	course gravel	22.6-32.0	0	0%	100%	0	0%	100%
	very coarse gravel	32-45	0	0%	100%		0%	100%
	very coarse gravel	45-64	0	0%	100%		0%	100%
Cobble	small cobble	64-90	0	0%	100%		0%	100%
	medium cobble	90-128	0	0%	100%		0%	100%
	large cobble	128-180	0	0%	100%		0%	100%
	very large cobble	180-256	0	0%	100%		0%	100%
Boulder	small boulder	256-362	0	0%	100%		0%	100%
	small boulder	362-512	0	0%	100%		0%	100%
	medium boulder	512-1024	0	0%	100%		0%	100%
	large boulder	1024-2048	0	0%	100%		0%	100%
Bedrock	bedrock	40096	0	0%	100%		0%	100%
TOTAL/%of whole count			50	100%	100%	100	100%	100%



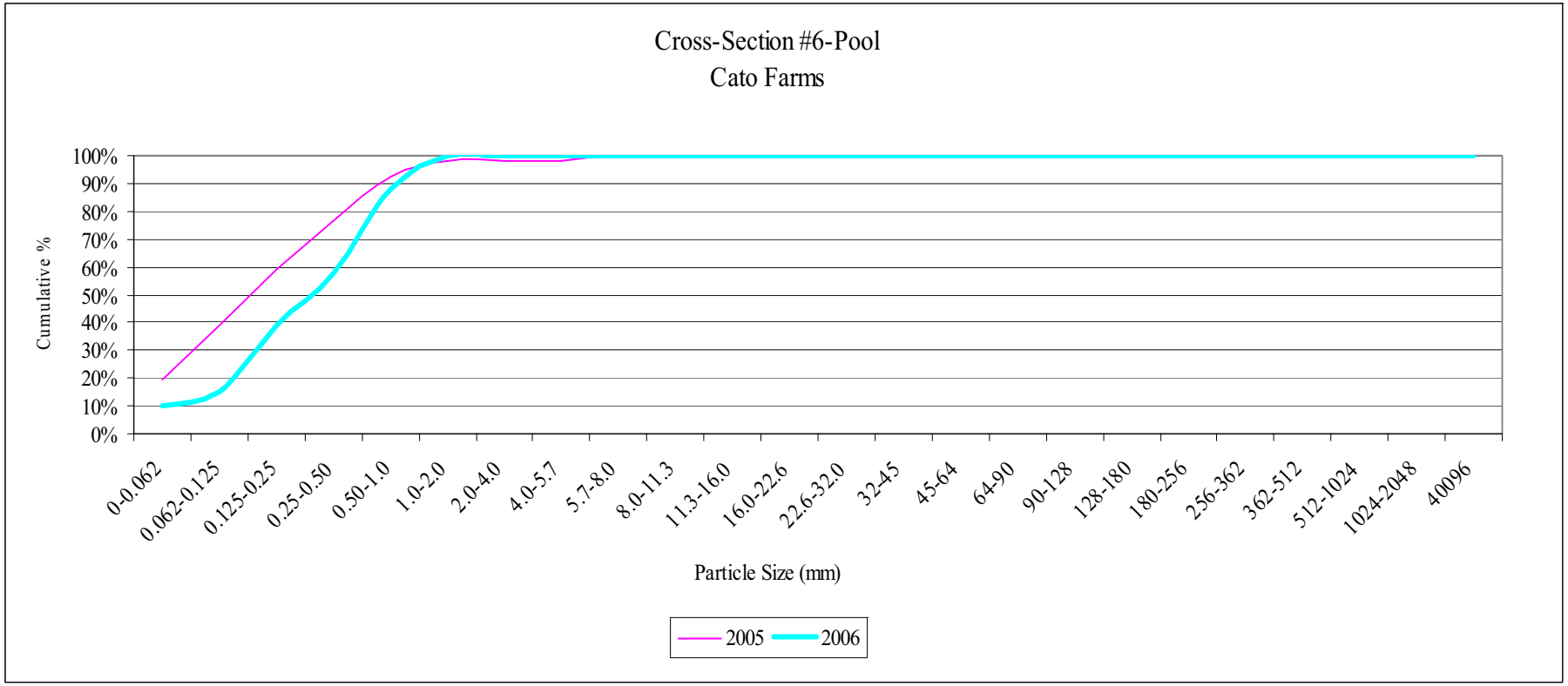
	d16	d35	d50	d84	d95
2005	0.00	0.07	0.10	0.23	0.33
2006	0.12	0.23	0.44	0.87	1.00

Stream Name: Cato Farms											
Cross-Section: 5											
Feature: Pool											
			As Built-2004			2005			2006		
Description	Material	Size (mm)	Total #	Item %	Cum %	Total #	Item %	Cum %	Total #	Item %	Cum %
Silt/Clay	silt/clay	0-0.062	9	15%	15%	9	18%	18%	16	16%	16%
Sand	very fine sand	0.062-0.125	9	15%	30%	0	0%	18%	15	15%	31%
	fine sand	0.125-0.25	12	20%	50%	1	2%	20%	12	12%	43%
	medium sand	0.25-0.50	2	3%	53%	15	30%	50%	16	16%	59%
	coarse sand	0.50-1.0	4	7%	60%	16	32%	82%	35	35%	94%
	very coarse sand	1.0-2.0	0	0%	60%	7	14%	96%	5	5%	99%
Gravel	very fine gravel	2.0-4.0	3	5%	65%	2	4%	100%	1	1%	100%
	fine gravel	4.0-5.7	1	2%	67%	0	0%	100%	0	0%	100%
	fine gravel	5.7-8.0	3	5%	72%	0	0%	100%	0	0%	100%
	medium gravel	8.0-11.3	2	3%	75%	0	0%	100%	0	0%	100%
	medium gravel	11.3-16.0	3	5%	80%	0	0%	100%	0	0%	100%
	course gravel	16.0-22.6	6	10%	90%	0	0%	100%	0	0%	100%
	course gravel	22.6-32.0	1	2%	92%	0	0%	100%	0	0%	100%
	very coarse gravel	32-45	4	7%	98%	0	0%	100%	0	0%	100%
	very coarse gravel	45-64	1	2%	100%	0	0%	100%	0	0%	100%
Cobble	small cobble	64-90	0	0%	100%	0	0%	100%	0	0%	100%
	medium cobble	90-128	0	0%	100%	0	0%	100%	0	0%	100%
	large cobble	128-180	0	0%	100%	0	0%	100%	0	0%	100%
	very large cobble	180-256	0	0%	100%	0	0%	100%	0	0%	100%
Boulder	small boulder	256-362	0	0%	100%	0	0%	100%		0%	100%
	small boulder	362-512	0	0%	100%	0	0%	100%		0%	100%
	medium boulder	512-1024	0	0%	100%	0	0%	100%		0%	100%
	large boulder	1024-2048	0	0%	100%	0	0%	100%		0%	100%
Bedrock	bedrock	40096	0	0%	100%	0	0%	100%		0%	100%
TOTAL/%of whole count			60	100%	100%	50	100%	100%	100	100%	100%



	d16	d35	d50	d84	d95
2005	0.00	0.28	0.38	0.86	1.45
2006	0.06	0.17	0.36	0.84	1.2

Stream Name: Cato Farms								
Cross-Section: 6								
Feature: Pool								
			2005			2006		
Description	Material	Size (mm)	Total #	Item %	Cum %	Total #	Item %	Cum %
Silt/Clay	silt/clay	0-0.062	10	20%	20%	10	10%	10%
Sand	very fine sand	0.062-0.125	10	20%	39%	5	5%	15%
	fine sand	0.125-0.25	10	20%	59%	24	24%	39%
	medium sand	0.25-0.50	9	18%	76%	19	19%	58%
	coarse sand	0.50-1.0	8	16%	92%	30	30%	88%
	very coarse sand	1.0-2.0	3	6%	98%	12	12%	100%
Gravel	very fine gravel	2.0-4.0	0	0%	98%	0	0%	100%
	fine gravel	4.0-5.7	0	0%	98%	0	0%	100%
	fine gravel	5.7-8.0	1	2%	100%	0	0%	100%
	medium gravel	8.0-11.3	0	0%	100%	0	0%	100%
	medium gravel	11.3-16.0	0	0%	100%	0	0%	100%
	course gravel	16.0-22.6	0	0%	100%	0	0%	100%
	course gravel	22.6-32.0	0	0%	100%	0	0%	100%
	very coarse gravel	32-45	0	0%	100%	0	0%	100%
	very coarse gravel	45-64	0	0%	100%	0	0%	100%
Cobble	small cobble	64-90	0	0%	100%		0%	100%
	medium cobble	90-128	0	0%	100%		0%	100%
	large cobble	128-180	0	0%	100%		0%	100%
	very large cobble	180-256	0	0%	100%		0%	100%
Boulder	small boulder	256-362	0	0%	100%		0%	100%
	small boulder	362-512	0	0%	100%		0%	100%
	medium boulder	512-1024	0	0%	100%		0%	100%
	large boulder	1024-2048	0	0%	100%		0%	100%
Bedrock	bedrock	40096	0	0%	100%		0%	100%
TOTAL/%of whole count			51	100%	100%	100	100%	100%



	d16	d35	d50	d84	d95
2005	0	0.09	0.15	0.56	1.11
2006	0.13	0.23	0.39	0.93	1.58