

Mitigation Monitoring Report

Northern Virginia Stream Restoration Bank The Glade- Reaches 1 and 1A Second Growing Season (2010)

Fairfax, Virginia
WSSI #20030, Task I3

Prepared for:

Northern Virginia Stream Restoration, L.C.
c/o Wetland Studies and Solutions, Inc.
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October 18, 2010

Prepared by:



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Northern Virginia Stream Restoration Bank, The Glade – Reaches 1 and 1A Mitigation Monitoring Report Second Growing Season WSSI #20030

Introduction

The Glade – Reaches 1 and 1A of the Northern Virginia Stream Restoration Bank are located between Steeplechase Drive and Colts Neck Road, immediately upstream of Colts Neck Road, in Fairfax County, Virginia (Exhibit 1: 38°55'49"N, 77°21'57"W). Restoration of Reaches 1 and 1A of The Glade occurred in early 2009, in accordance with the Northern Virginia Stream Restoration Bank Mitigation Banking Instrument (MBI), dated February 17, 2006 (modified April 2007, June 2009, and June 2010), the concept plan dated May 15, 2006¹, the subsequent Nationwide Permit 27 verification², and the corresponding construction plans. Periodic monitoring to evaluate the success of the stream restoration is required by the MBI. This monitoring report documents that all success criteria have been met at The Glade – Reaches 1 and 1A during the second growing season, as set forth in the MBI and associated mitigation plans.

Northern Virginia Stream Restoration Bank, The Glade – Reaches 1 and 1A includes a total of 1,995.5 linear feet of stream restoration, resulting in a total of 16,407.4 Stream Condition Units, per the As-Built Survey, dated May 2009, revised May 15, 2009.

Monitoring Success Criteria

According to the MBI (§V.E.2) the monitoring success criteria shall consist of the following:

(a) Reforested Riparian Buffer Areas

- (i) Plant density of at least 400 living woody stems (including volunteers) per acre of trees and shrubs must be achieved by the end of the first growing season following planting and maintained through the end of the monitoring period or until canopy coverage is greater than 30%.*
- (ii) Herbaceous plant coverage of at least 60% must be achieved by the end of the first growing season and at least 80% each monitoring year thereafter. Said criterion shall not be applicable if canopy coverage is greater than 30%. Canopy coverage shall be visually estimated at each plot and photodocumented to determine whether coverage has exceeded 30%. If canopy coverage exceeds 30%, herbaceous coverage shall continue to be assessed and documented each monitoring period for reporting purposes only.³*
- (iii) Woody plant coverage (from live-stakes, tublings, container grown material, and volunteers) along stream banks shall achieve a density of at least 5 l.f./stem (i.e., 1 stem per 5 l.f.) by the end of the first growing season and for each monitoring year thereafter.*

(b) Stream and Riparian System

¹ The Concept Plan was approved by the COE and DEQ on June 22 and 30, 2009, respectively.

² COE # 2009-0064, dated January 26, 2009, and DEQ Notification of No Permit Required #08-1919, dated January 26, 2009.

³ Note that the later criterion was incorporated into the MBI in Modification #3 (dated June 2010) and was not included in the 2009 Monitoring Report.

- (i) Dimension – The analysis of each permanent cross-section specified on the Stream Restoration Site Plan shall indicate that:
 - 1) The Width/Depth Ratio (defined as the width at bankfull divided by the mean riffle depth at bankfull) did not increase or decrease by an amount greater than 1.2 of the as-built cross section.
 - 2) The bankfull Cross-Sectional Area did not increase or decrease by an amount greater than 20% of the as-built cross-section.
 - 3) The Bank Height Ratio (defined as the low bank height divided by the maximum riffle depth) did not increase or decrease by an amount greater than 0.2 of the as-built cross section.
- (ii) Pattern – The analysis of the plan-view survey of field measurements shall indicate that:
 - 1) The Sinuosity of the stream (defined as the stream length along the thalweg divided by the valley length) did not increase or decrease by an amount greater than 0.2 of the as-built pattern.
 - 2) The Radius of Curvature/Width ratio did not increase or decrease by an amount greater than 0.2 of the as-built condition.
- (iii) Profile – The analysis of the longitudinal profile shall indicate that the slope of the longitudinal profile did not increase or decrease by an amount greater than 0.3% of the as-built slope.
- (iv) Structures – The analysis of each instream structure shall indicate that:
 - 1) The angle of any rock vane, j-hook, or cross vane did not increase or decrease by an amount greater than 3 degrees from the as-built angle, and remains between 20 and 30 degrees from the streambank.
 - 2) The slope of any rock vane, j-hook, or cross vane did not increase or decrease by an amount greater than 2% from the as-built slope (i.e. if the design slope was 5%, than any slope from 3% to 7% would be acceptable) and remains between 2% to 7%.

Methods

For the 2010 monitoring year, only vegetative and photographic monitoring is required to assess the success criteria. Vegetation monitoring field work was conducted on September 10, 2010 by Benjamin N. Rosner PWS, PWD, CE, CT and Alison St.Onge, CT to collect vegetation data and take photographs at the three vegetation monitoring stations. Photographs of stream stabilization structures were taken September 14, 2010. The following general supporting documentation is included at the end of this report: monitoring locations map ([Exhibit 2](#)); and representative monitoring photographs ([Exhibit 3](#)). Additional supporting data is available in separate [Appendices](#)⁴ including: monitoring photographs; percent cover data; woody plant data; and photographs of the stream stabilization structures.

In addition to the success criteria listed above, the DEQ §401 Certification also calls for the monitoring of temporary wetland impacts in years 1 and 2. For The Glade – Reaches 1 and 1A, this is to be accomplished by photographs of the temporary impact locations⁵ included in [Exhibit 4](#).

⁴ This information is included in separate Appendices due to report size limitations as set forth in COE Regulatory Guidance Letter 06-03.

⁵ Per correspondence from Mike Rolband to Bettina Rayfield (Sullivan) dated August 26, 2009 and approved by Ms. Rayfield on August 28, 2009 (see [Appendix E](#) for details).

Monitoring Program Protocol and Results

In accordance with the guidelines of §VI.B of the MBI, the 2010 monitoring program and results are as follows:

1. *With respect to the riparian buffer areas:*
 - a. *Visual description – ground level photographs shall be taken at each monitoring station, and an aerial photograph shall be taken the 3rd or 5th year following final grading.*

Photographs were taken in four standard directions (upstream, downstream, left bank, right bank) as well as overhead at the canopy coverage at each of the three permanent monitoring stations during the September 2010 monitoring field work. The representative photographs (Exhibit 3) demonstrate that herbaceous and woody vegetation is becoming established throughout The Glade – Reaches 1 and 1A reforestation areas and that aerial canopy coverage exceeds 30% in all plots. An aerial photograph of the site will be provided in year 3 or year 5. All vegetation and aerial photographs from the riparian monitoring plots are provided within Appendix A.

- b. *Vegetation – sample plots shall be randomly located over reforested riparian buffer and streamside areas at a rate of 1 plot per 750 linear feet of stream length in order to sample all habitat areas of buffer area locations adjacent to each photo location marker. Each plot shall include no less than a 100-foot x 3-foot belt transect (or equivalent area) for woody riparian plants, a 3-foot diameter for riparian herbaceous plants, and a 100-foot long line transect along stream banks (and adjacent to the belt transect) to assess the stream bank woody plants criteria. The vegetation data shall include: dominant species identification, coverage assessment, number of woody plant stems (total and #/acre), and indicator status.*

The reforested stream length is 1,995.5 linear feet, therefore 3 vegetation monitoring plots were established.

The average density of living woody stems (as measured by the number of stems per acre) is 3,533. On individual plots, the number of stems per acre ranged from 2,468 to 5,227. These results meet and exceed the success criteria [MBI §V.E.2(a)(i)] of an average of 400 living woody stems per acre in reforested areas. Species are provided within Appendix C.

The average percent cover by herbaceous vegetation was 77. The success criteria [MBI §V.E.2(a)(ii)] of 80 percent cover by the end of the second growing season was not met at plots 1 and 2; however, because the aerial canopy coverage exceeds 30% at these plots, the percent cover criteria is not applicable for this growing season at these plots. Dominant species and indicator status are provided within Appendix B.

2. *With respect to the stream system:*
 - a. *Woody plant coverage shall be quantified by species and density (1 stem per 5 l.f. along the stream edge).*

The average density of woody stems along the stream banks was 1.6 stems per 5 linear feet of stream bank. On individual plots, the number of stems per 5 l.f. ranged from 1.1 to 1.9. These results meet and exceed the success criteria [MBI §V.E.2(a)(iii)] of an average of 1 stem per 5 linear feet. Species are provided within Appendix C.

- b. Exposure of bank pins shall be quantified to provide an assessment of bank erosion.*

Monitoring of bank pins is not required in Year 2.

- c. Scour chains shall be assessed to provide data on movement of sediment.*

Monitoring of scour chains is not required in Year 2.

- d. Pebble counts and bar samples will be collected and analyzed to document changes in streambed material size.*

Pebble counts and bar samples are not required in Year 2.

- e. Each stream stabilization structure shall be surveyed, photographed and a narrative statement provided as to whether or not specific Success Criteria have been violated.*

The stream stabilization structures are not required to be surveyed in Year 2.

Structure photographs for 2010 indicate no erosion or stability issues. Photographs of all structures are included in Appendix D.

- f. One cross section per 1,000 l.f. shall be provided, with a representative mix of riffles and pools.*

Three cross sections have been provided within these Reaches. However, surveying of these cross sections is not required in Year 2.

- g. A surveyed profile of the stream shall be provided immediately following completion, and in years 1, 3, 5, and 10.*

A surveyed profile of the stream is not required in Year 2.

- h. Location of any riparian areas with excessive erosion that needs replanting or protection shall be identified.*

No riparian areas with excessive erosion or that needed replanting were identified during this monitoring year.

- i. An assessment of biological conditions (habitat) shall be provided pre-restoration and in years 1, 5, and 10.*

Biological assessment reaches are not located within Reaches 1 and 1A of the Glade, due to the non-perennial nature of the streams, thus no post-construction monitoring was conducted (and no biological monitoring is

required in Year 2 for any portion of the NVSRB). Biological Conditions Assessments for perennial stream reaches within The Glade watershed will be provided in separate monitoring reports, and three separate pre-construction reports (for years 2007, 2008, and 2009) were previously provided to the MBRT.

- j. *Within one week after any storm event that exceeds 3.2 inches in 24 hours or 2.0 inches in 2 hours, the subject stream reach shall be visually inspected for damages. Any damage noted shall be reported to the Corps in writing.*

During the 2010 growing season one storm event (September 30, 2010) meeting the criteria of §VI.B.2(j) occurred. No damages to the Reaches were observed and these findings were reported to the Corps in a report dated October 15, 2010.

Additional Reporting Criteria

In accordance with the accepted conditions of DEQ's §401 certification for the Nationwide Permit 27 issued for Reaches 1 and 1A ([Appendix E](#)), the temporary wetland impacts were photographically monitored. Photographs provided within [Exhibit 4](#) depict the condition of the two temporary wetland impacts following the restoration activities, and show that these areas have become re-vegetated.

Mitigation Credit Analysis

Only minor maintenance activities and corrective measures were undertaken in 2010. These activities included spraying the invasive species mile-a-minute (*Polygonum perfoliatum*) on September 21st and planting of additional willow (*Salix nigra*) plugs throughout Glade Reaches 1 and 1A.

Mitigation Credit Analysis

The MBI requires a summary of credits created by the bank and the permits that have been debited against these credits. A credit ledger for the entire NVSRB is provided annually to the chair of the Mitigation Bank Review Team.

Summary

This investigation indicates the successful restoration of The Glade – Reaches 1 and 1A in the second growing season. Monitoring of these reaches confirm the successful reforestation/revegetation of riparian buffers and the successful establishment of a stable stream system.

Limitations

This study is based on examination of the vegetation and geomorphology at the referenced site. Field indicators can change with variations in hydrology and other factors. Therefore, our conclusions may vary significantly from future observation by others. This report assesses the presence of vegetation and the stability of geomorphic features at the site at the time of our review and does not address conditions prior to our review or at a given time in the future.

Our review and report have been prepared in accordance with the MBI and with generally accepted guidelines for the conduct of monitoring reports for mitigation banks.

WETLAND STUDIES AND SOLUTIONS, INC.

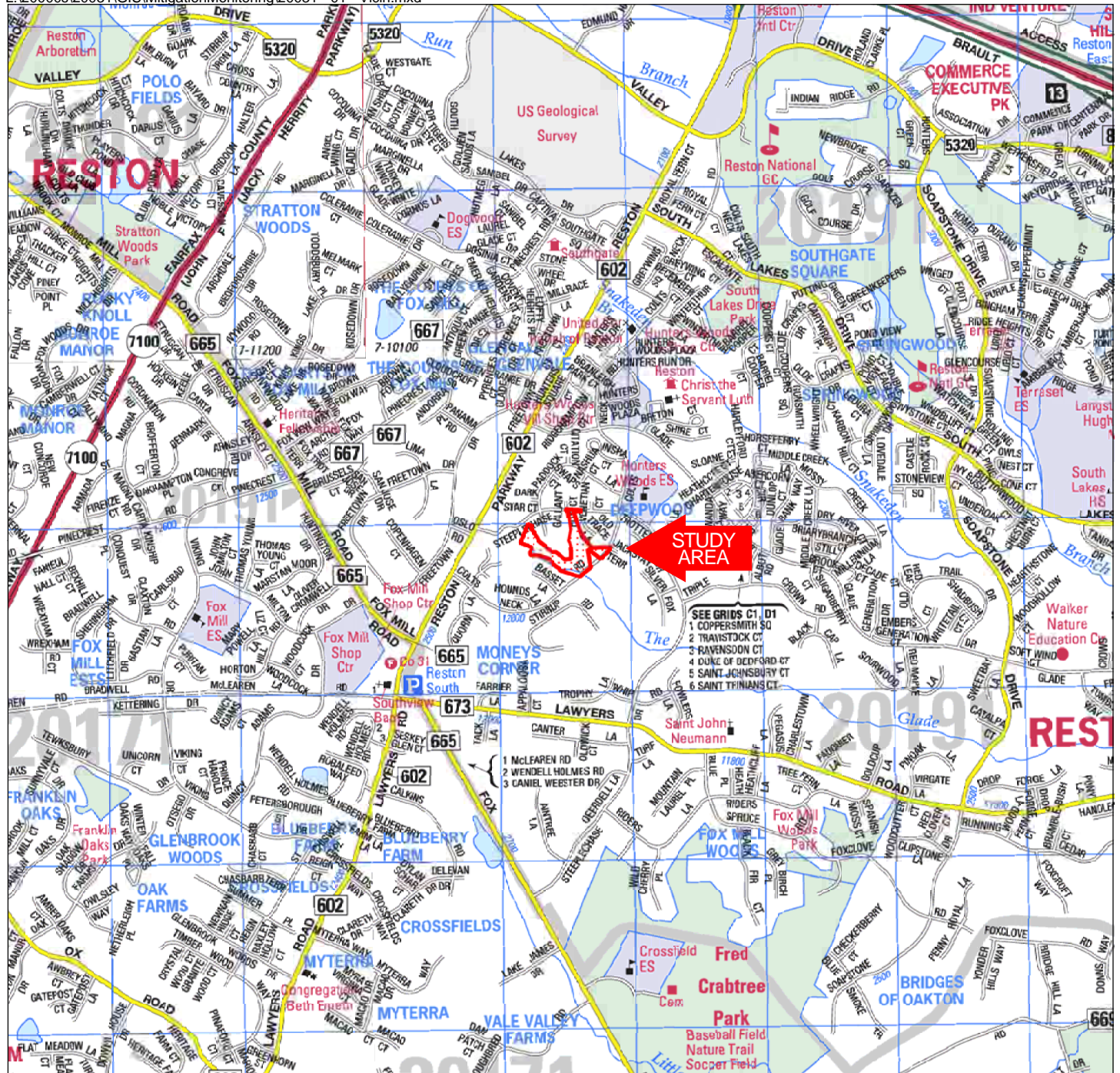


Benjamin N. Rosner, PWS, PWD, CE, CT
Associate Environmental Scientist



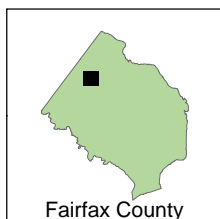
Mark Headly, PWS, PWD, LEED® AP
Executive Vice President

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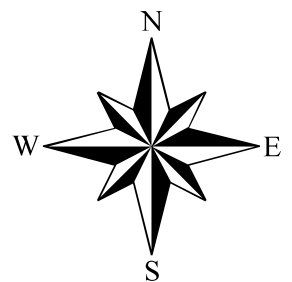


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Vicinity Map
Northern Virginia Stream Restoration Bank
The Glade - Reaches 1 & 1A
WSSI #20030
Scale: 1" = 2000'



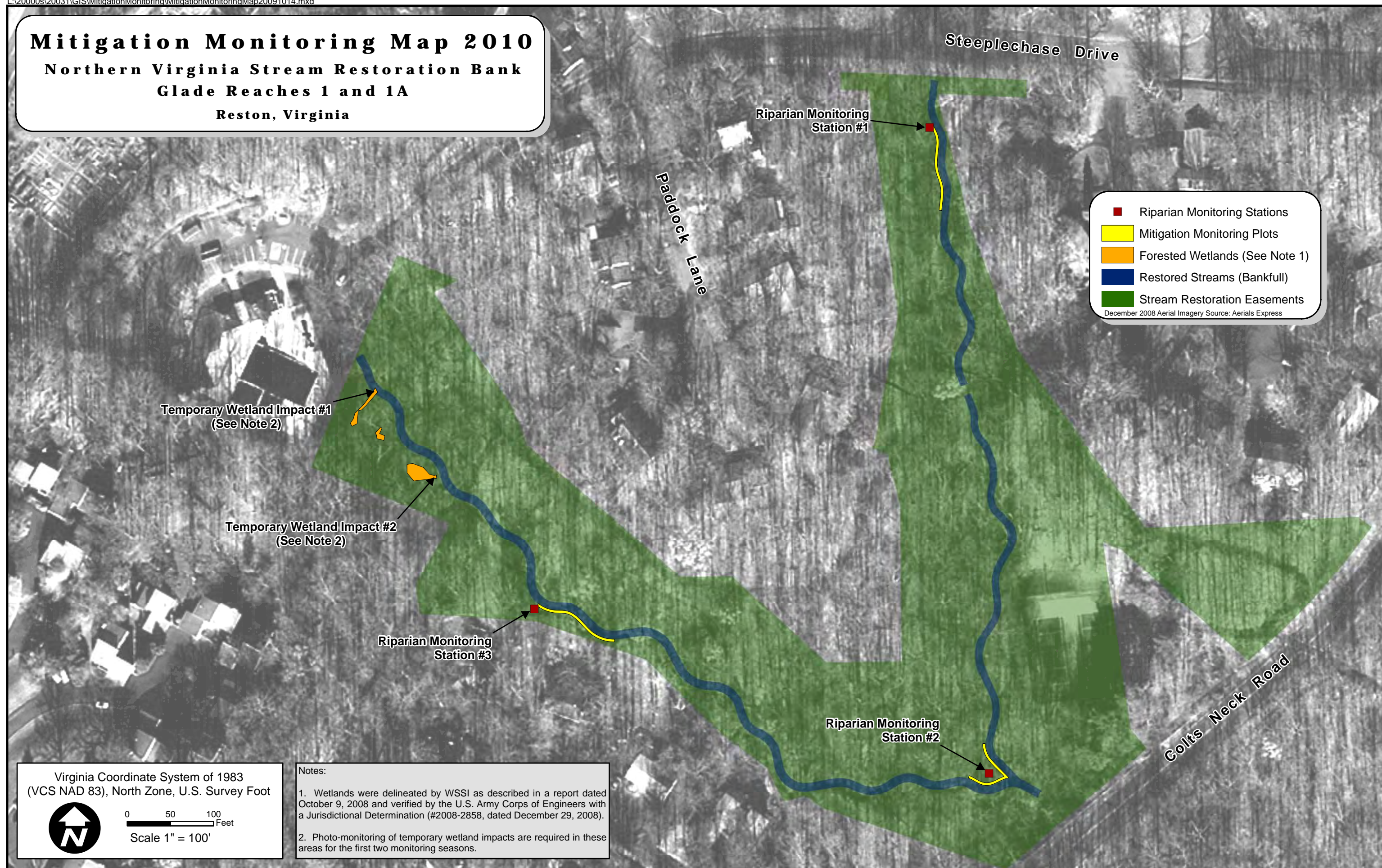
Lat: 38° 55' 49" N
Lon 77° 21' 57" W



Mitigation Monitoring Map 2010

Northern Virginia Stream Restoration Bank Glade Reaches 1 and 1A

Reston, Virginia



- Riparian Monitoring Stations
 - Mitigation Monitoring Plots
 - Forested Wetlands (See Note 1)
 - Restored Streams (Bankfull)
 - Stream Restoration Easements
- December 2008 Aerial Imagery Source: Aerials Express

Virginia Coordinate System of 1983
(VCS NAD 83), North Zone, U.S. Survey Foot



0 50 100 Feet
Scale 1" = 100'

- Notes:
1. Wetlands were delineated by WSSI as described in a report dated October 9, 2008 and verified by the U.S. Army Corps of Engineers with a Jurisdictional Determination (#2008-2858, dated December 29, 2008).
 2. Photo-monitoring of temporary wetland impacts are required in these areas for the first two monitoring seasons.

EXHIBIT 3
NORTHERN VIRGINIA STREAM RESTORATION BANK – THE GLADE REACHES 1 AND 1A
REPRESENTATIVE MONITORING PHOTOGRAPHS
SEPTEMBER 10, 2010



Station 1: Upstream



Station 2: Downstream



Station 3: Canopy coverage

EXHIBIT 4
NORTHERN VIRGINIA STREAM RESTORATION BANK – THE GLADE
REACHES 1 AND 1A
MONITORING PHOTOS OF TEMPORARY IMPACTS
SEPTEMBER 10, 2010



1. Looking west at Temporary Impact #1, in Reach 1 of The Glade. The vegetation has grown within the impact area, becoming re-vegetated with a hydrophytic plant community.



2. Looking southwest at Temporary Impact #2, in Reach 1 of The Glade. This impact area has been successfully re-vegetated with a hydrophytic plant community.

**NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE – REACHES 1 AND 1A**

MITIGATION MONITORING REPORT

SECOND GROWING SEASON (2010)

FAIRFAX COUNTY, VIRGINIA

**WSSI # 20030
TASK I3**

APPENDIX

A. MONITORING PHOTOGRAPHS

B. PERCENT COVER DATA

C. WOODY PLANT DATA

D. PHOTOS OF STREAM STABILIZATION STRUCTURES

**E. TEMPORARY WETLAND IMPACT MONITORING
CORRESPONDENCE**

1. 8/28/09 e-mail from Ms. Bettina Rayfield approving monitoring protocol for temporary impacts.
2. 8/26/09 letter from Mr. Mike Rolband requesting approval of monitoring protocol for temporary impacts.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



1. Monitoring station 1: Looking at canopy cover.



2. Monitoring station 1: Looking upstream.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



3. Monitoring station 1: Looking downstream.



4. Monitoring station 1: Looking at the left bank.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



5. Monitoring station 1: Looking at the right bank.



6. Monitoring station 2: Looking at canopy cover.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



7. Monitoring station 2: Looking upstream.



8. Monitoring station 2: Looking downstream.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



9. Monitoring station 2: Looking at the left bank.



10. Monitoring station 2: Looking at the right bank.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



11. Monitoring station 3: Looking at canopy cover.



12. Monitoring station 3: Looking upstream.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



13. Monitoring station 3: Looking downstream.



14. Monitoring station 3: Looking at the left bank.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



15. Monitoring station 3: Looking at the right bank.

Northern Virginia Stream Restoration Bank - The Glade Reaches 1 and 1A
End of 2nd Growing Season (2010)
Percent Cover Data

Plot Number	1	2	3	Avg % Cover
Overall % Cover by Vegetation	65	75	90	76.7
% Bare Ground	35	25	10	23.3
% Canopy Coverage**	85	70	55	70

Herbs (FAC or wetter)

Species	R1 IND	1	2	3	Avg % Cover
<i>Elymus virginicus</i>	FACW-	60		90	50
<i>Eulalia viminea</i> *	FAC		25		8.3
<i>Eupatorium perfoliatum</i>	FACW+			1	0.3
<i>Impatiens capensis</i> *	FACW		5		1.7
<i>Leersia virginica</i> *	FACW		30		10
<i>Polygonum hydropiper</i> *	OBL		15		5
<i>Viburnum dentatum</i>	FAC	5			1.7
% Cover Rated FAC or Wetter		65	75	91	77

Herbs (drier than FAC)

<i>Parthenocissus quinquefolia</i> *	FACU	5			1.7
% Cover Rated Drier than FAC		5			1.7

Herbs (rated NI)***

<i>Aster sp.</i> *	NI		5		1.7
<i>Scirpus sp.</i> *	NI		15		5
% Cover Rated NI			20		6.7

Total % Cover	70	95	91	96.7
% Overlap	5	20	1	8.7

*indicates volunteer species.

** If canopy coverage exceeds 30%, herbaceous percent coverage will be assessed and documented for reporting purposes only.

***Species listed as NI or NO are not used to calculate hydrophytic vegetation indicators

Species in bold indicate dominant species per the 50/20 rule.

Northern Virginia Stream Restoration Bank - The Glade Reaches 1 and 1A
End of 2nd Growing Season (2010)
Riparian Woody Stem Density Data

Stems

Trees

Species	R1 IND	1	2	3	Total Stems
<i>Betula nigra</i>	FACW			1	1
<i>Liriodendron tulipifera</i> *	FACU		3	1	4
<i>Platanus occidentalis</i>	FACW-		1		1
<i>Quercus alba</i>	FACU-	6			6
<i>Quercus prinus</i> *	UPL		1	1	2
<i>Salix nigra</i>	FACW+		2	8	10

Shrubs

Species	R1 IND	1	2	3	Total Stems
<i>Cornus amomum</i>	FACW		5	10	15
<i>Corylus americana</i>	FACU-	2	3	1	6
<i>Ilex opaca</i>	FACU+	2	2		4
<i>Lindera benzoin</i>	FACW-	1			1
<i>Sambucus canadensis</i>	FACW-		1	2	3
<i>Sassafras albidum</i> *	FACU-	2			2
<i>Viburnum dentatum</i>	FAC	4	2	12	18

	1	2	3	Avg Stems
# Stems Surviving	17	20	36	24.33
# Stems Surv/Acre	2468	2904	5227	3533

*volunteer woody species

Plots consist of a 100' x 3' belt transect

Northern Virginia Stream Restoration Bank - The Glade Reaches 1 and 1A
End of 2nd Growing Season (2010)
Streamside Woody Stem Density Data

Stems

Trees

Species	R1 IND	1	2	3	Total Stems
<i>Morus rubra</i> *	FACU	3			3
<i>Prunus serotina</i> *	FACU	1			1
<i>Salix nigra</i>	FACW+	11	32	28	71

Shrubs

Species	R1 IND	1	2	3	Total Stems
<i>Cornus amomum</i>	FACW	6	2	1	9
<i>Corylus americana</i>	FACU-	1	2	2	5
<i>Sambucus canadensis</i>	FACW-		1	5	6

	1	2	3	Avg Stems
# Stems Surviving	22	37	36	31.67
# Stems Surv/l.f.	1.1	1.85	1.8	1.58

*volunteer woody species

Sample consists of a 100' belt transect

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



1. Reach 1, Structure 1



2. Reach 1, Structure 2

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



3. Reach 1, Structure 3



4. Reach 1, Structure 4

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



5. Reach 1, Structure 5



6. Reach 1, Structure 6

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



7. Reach 1, Structure 7



8. Reach 1, Structure 8

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



9. Reach 1, Structure 9



10. Reach 1, Structure 10

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



11. Reach 1, Structure 11



12. Reach 1, Structure 12

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



13. Reach 1, Structure 13



14. Reach 1, Structure 14

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



15. Reach 1, Structure 15



16. Reach 1, Structure 16

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



17. Reach 1, Structure 17



18. Reach 1, Structure 18

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



19. Reach 1A, Structure 1



20. Reach 1A, Structure 2

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
SECOND GROWING SEASON PHOTOGRAPHS
WSSI #20030**



21. Reach 1A, Structure 3



22. Reach 1A, Structure 4

From: Rayfield,Bettina [Bettina.Rayfield@deq.virginia.gov]
Sent: Friday, August 28, 2009 11:46 AM
To: Carol Novak
Cc: ron.h.stouffer@usace.army.mil; Larry Butler; Mark Headly; Amy Tobias; Mike Rolband
Subject: RE: Correspondence from Mike Rolband
Thank you for this monitoring plan. DEQ accepts this monitoring plan as satisfying the conditions of our 401 certification of the NW27 permit.

Cheers,

Bettina

From: Carol Novak [mailto:cnovak@wetlandstudies.com]
Sent: Wednesday, August 26, 2009 5:05 PM
To: Rayfield,Bettina
Cc: ron.h.stouffer@usace.army.mil; Larry Butler; Mark Headly; Amy Tobias; Rolband,Michael
Subject: RE: Correspondence from Mike Rolband

[Attached are Sheets 7-10.](#)

<<2009-08-26_DEQ_BettinaRayfield_ProposedPFOMonitoring_GladeImpactPlanSheets7_10.pdf>>

From: Carol Novak
Sent: Wednesday, August 26, 2009 5:03 PM
To: 'Rayfield,Bettina'
Cc: 'ron.h.stouffer@usace.army.mil'; 'Larry Butler'; Mark Headly; Amy Tobias; Mike Rolband
Subject: Correspondence from Mike Rolband

Ms. Rayfield - Good Afternoon! The attached correspondence, "Monitoring Plan for Temporary Wetlands Impacts," is from Mike Rolband. Please note that Plan Sheets 1-6 referenced on page 2 of the correspondence (bullet #4) are included with the attached correspondence! Sheets 7-10 will be sent in an additional e-mail!

<< File: 2009-08-26_DEQ_BettinaRayfield_ProposedPFOMonitoring.pdf >>

Carol Novak
Executive Assistant/Communications Coordinator
Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive, Suite 100
Gainesville, VA 20155
Telephone: 703.679.5607

Fax: 703.679.5601
Email: cnovak@wetlandstudies.com
Web Site: www.wetlandstudies.com



Via E-mail: bcrayfield@deq.virginia.gov

August 26, 2009

Ms. Bettina Rayfield
Environmental Specialist
Commonwealth of Virginia
Virginia Department of
Environmental Quality
P.O. Box 1105
Richmond, VA 23218

RE: Monitoring Plan for Temporary Wetlands Impacts
The Glade – Reaches 1 and 1A (DEQ No. 08-1919) – WSSI #20031
The Glade – Reach 2 (DEQ No. 08-2055) – WSSI #20032
The Glade – Reach 3 (DEQ No. 08-1920) – WSSI #20033
The Glade – Reaches 4A and 4B (DEQ No. 09-1457) – WSSI #20034A / #20034B
Fairfax County, Virginia

Dear Ms. Rayfield:

We are writing this letter in follow up to your request for a monitoring plan for temporary wetlands impacts on the referenced permits. In order to satisfy the Virginia Department of Environmental Quality's (DEQ's) 401 certification condition to the Nationwide Permit 27s issued for these four permits to monitor the temporary wetlands impact areas for two years following completion of the restoration activity, Wetland Studies and Solutions, Inc. (WSSI) is providing this monitoring plan for the referenced projects on behalf of the Permittee, Northern Virginia Stream Restoration, L.C., for your review and approval.

The temporary wetlands impact areas adjacent to the stream will be monitored to determine whether a hydrophytic plant community is re-established following the stream restoration activities. Monitoring activities shall occur during the growing season at least once during the 1st and 2nd growing seasons following completion of the stream restoration activities (including planting) during our normal stream condition monitoring program required under the Mitigation Banking Instrument (MBI).

We anticipate that this process of stream restoration of an incised urban stream will increase wetlands resources by providing for wetland areas on the stream edge and point bars – as well as within the adjacent floodplain in areas where the stream bed is raised (and thus raising the groundwater table), resulting in a net gain of wetlands resources. In fact, the three reaches of Snakeden that are now over one year old clearly exhibit these features (as verified by Ron



Stouffer, COE, on May 27, 2009). See photographs depicting Snakeden Reach 1 and the lower and upper ends of Snakeden Reach 3 enclosed within Exhibit 1.

As we discussed on the telephone, a standard wetlands delineation data plot is a 30-foot radius circle for trees (your targeted plant type for this monitoring) which encompasses 2,827.4 square feet. Many monitoring protocols for mitigation sites use plots with a 15 foot-radius (706.86 square feet) – the smallest recommended for measuring random densities of 400 woody stems / acre (as this density equates to an average spacing of 10.4 feet on center). Thus, we agreed that using photographic monitoring of impact areas less than 700 square feet is reasonable, and that vegetative data plots for larger impacts would be appropriate.

Therefore, we propose the following monitoring plan for temporary wetlands impacts:

1. For each separate impact area less than 700 square feet, one ground level photograph shall be provided with the photo location indicated in the monitoring report.
2. For each separate impact area exceeding 700 square feet (and three per acre for impacts exceeding 1/3 acre¹), one vegetative data plot shall be characterized using the procedures in the Routine Method of the 1987 Manual² modified to use a 15-foot radius (versus 30 foot) for sizing the data plot, or in situations where this exceeds the boundary of the impacted area due to its geometry – a data plot area of at least 700 square feet shall be utilized (configured to fit within the impact area) with its size and shape described in the monitoring report. The resulting data shall be presented in a format that expresses the woody stem density as number per acre, the herbaceous in percent cover, and the percentage of dominant species FAC or wetter (excluding FAC-).
3. This monitoring shall be included in the Year 1 and Year 2 stream restoration monitoring reports for the subject stream reaches.
4. The specific locations of the impacts being monitored are depicted on the enclosed plans, titled “Northern Virginia Stream Restoration Bank, The Glade – Reaches 1, 1A, 2, 3, 4A and 4B; Temporary Wetlands Impact Locations,” 10 sheets, dated August 2009.
5. The following tables summarize the wetland impacts and respective monitoring method:

Reach Name	Impact #	Impact (SF)	Monitoring Method
Reach 1 & 1A	1	55	Ground Photo
	2	28	Ground Photo
Total		83	

¹ Not applicable in the subject stream reaches.

² Corps of Engineers Wetland Delineation Manual (1987 Manual) Technical Report 4-87-1, Part IV, Section D, Subsection 2, Paragraph 65, Step 20(c)(1).

Reach Name	Impact #	Impact (SF)	Monitoring Method
Reach 2	1	315	Ground Photo
	2	22	Ground Photo
	3A	431	Ground Photo
	3B	192	Ground Photo
	4A	49	Ground Photo
	4B	69	Ground Photo
	5	915	Vegetation Data Plot
	6A	8	Ground Photo
	6B	3	Ground Photo
	6C	114	Ground Photo
	7	972	Vegetation Data Plot
	8	2	Ground Photo
	9	370	Ground Photo
	10A	44	Ground Photo
	10B	31	Ground Photo
	10C	12	Ground Photo
	10D	271	Ground Photo
Total		3,820	

Reach Name	Impact #	Impact (SF)	Monitoring Method
Reach 3	1	115	Ground Photo
	2	25	Ground Photo
	3	215	Ground Photo
	4A	8	Ground Photo
	4B	31	Ground Photo
	5A	34	Ground Photo
	5B	35	Ground Photo
	5C	42	Ground Photo
	6A	6	Ground Photo
	6B	36	Ground Photo
	7A	186	Ground Photo
	7B	275	Ground Photo
	7C	118	Ground Photo
	8A	120	Ground Photo
	8B	344	Ground Photo
	8C	10	Ground Photo
	8D	54	Ground Photo
	9A	143	Ground Photo*
	9B	198	Ground Photo
Total		1,995	

*Since this is in a sewer easement, it will not have trees.

Reach Name	Impact #	Impact (SF)	Monitoring Method
Reach 4A	1	171	Ground Photo
	2	7	Ground Photo
	3	526	Ground Photo
	4	74	Ground Photo
Total		778	

Reach Name	Impact #	Impact (SF)	Monitoring Method
Reach 4B	1	323	Ground Photo
	2	31	Ground Photo
	3	457	Ground Photo
	4	633	Ground Photo*
	5	11	Ground Photo
	6	179	Ground Photo
	7	13	Ground Photo
	8	121	Ground Photo
Total		1,768	

*Since this is in a sewer easement, it will not have trees.

Please confirm at your convenience that this plan satisfies the DEQ's 401 certification condition requirements.

Sincerely,

WETLAND STUDIES AND SOLUTIONS, INC.



Michael S. Rolband, P.E., P.W.S., P.W.D.
President

Enclosures

cc: Ron H. Stouffer, Jr. – U.S. Army Corps of Engineers – Northern Virginia Field Office
Via E-mail: ron.h.stouffer@usace.army.mil (with enclosures)
Larry T. Butler – Reston Association – Via E mail: lbutler@reston.org (with enclosures)
Mark W. Headly, P.W.S., P.W.D. – Wetland Studies and Solutions, Inc.
Via E-mail: mheadly@wetlandstudies.com (with enclosures)
Amy E. Tobias, P.W.S. - Wetland Studies and Solutions, Inc.
Via E-mail: atobias@wetlandstudies.com (with enclosures)

STREAM RESTORATION PHOTOGRAPHS
SNAKEDEN
MAY 27, 2009



Photo 1: Snakeden - Reach 1

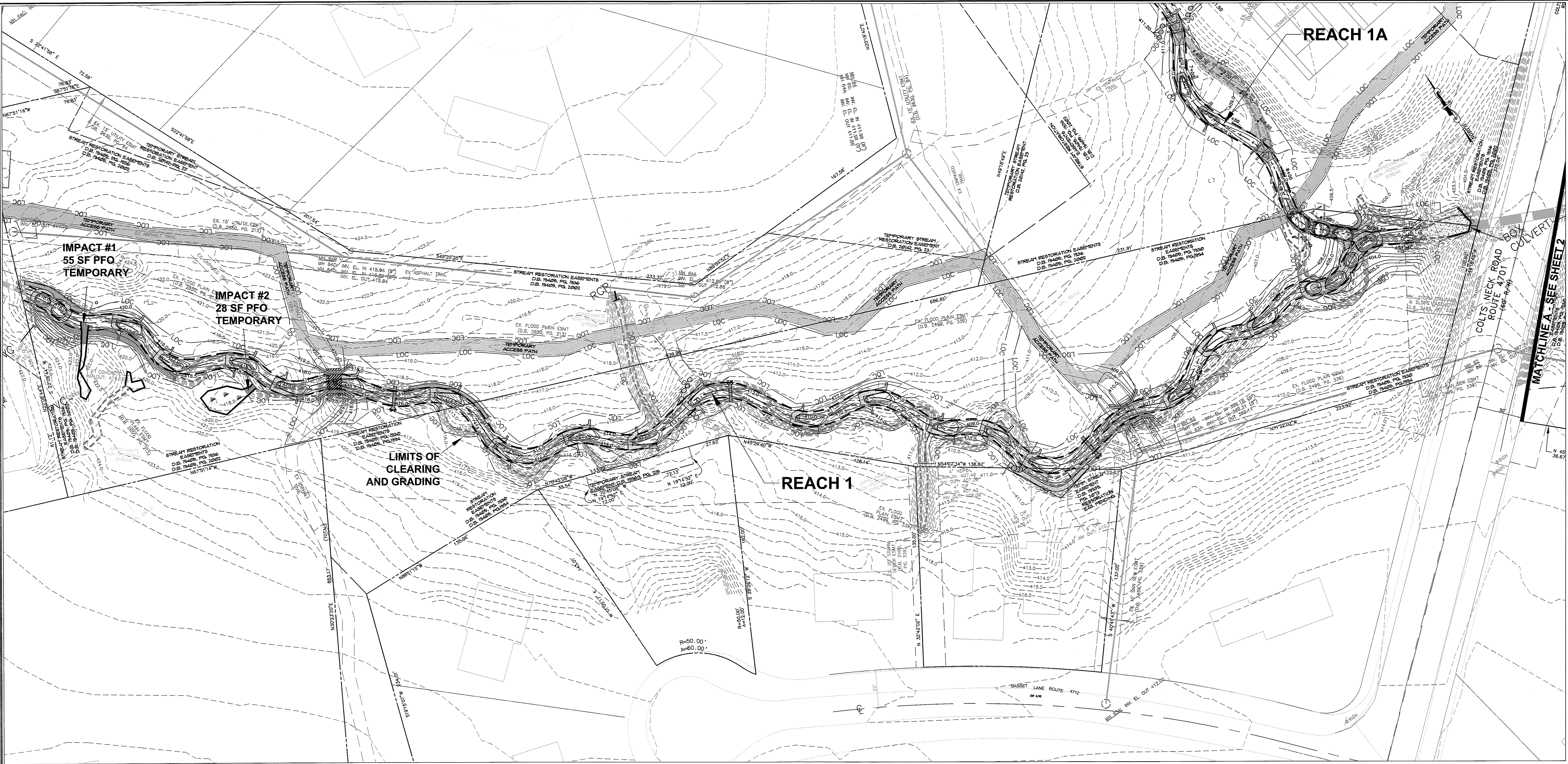


Photo 2: Snakeden – Lower End of Reach 3

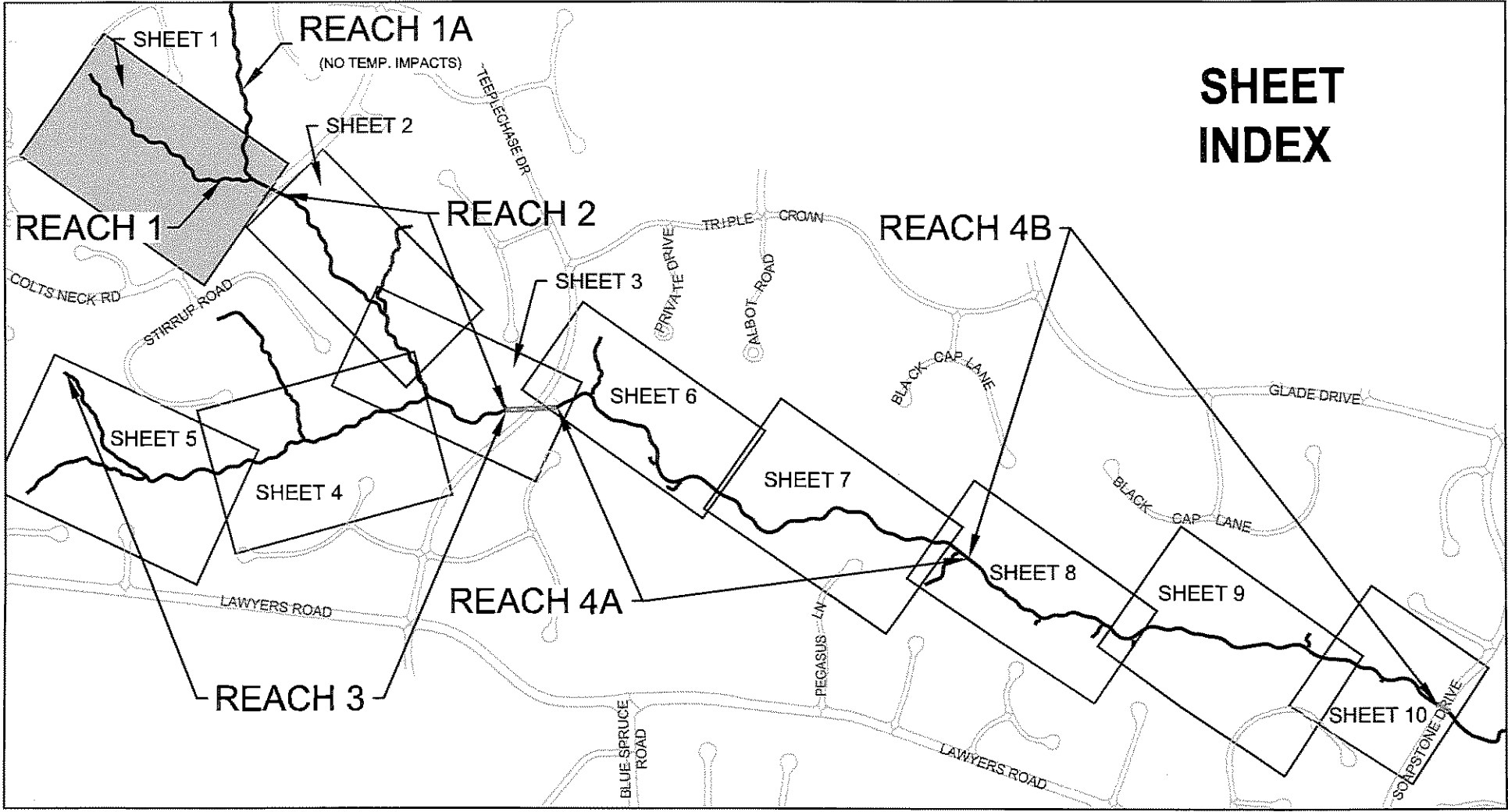
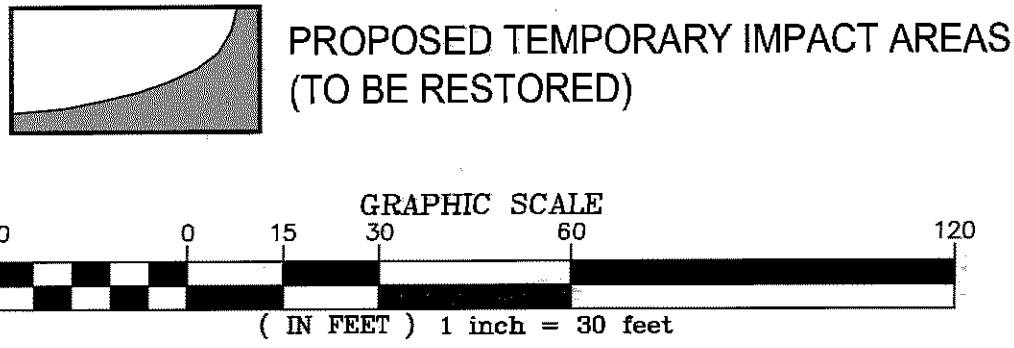
STREAM RESTORATION PHOTOGRAPHS
SNAKEDEN
MAY 27, 2009



Photo 3: Snakeden – Upper End of Reach 3



REACH NAME	IMPACT #	IMPACT (SF)
REACH 1 & 1A	1	55
	2	28
TOTAL		83



NORTHERN VIRGINIA STREAM RESTORATION BANK

THE GLADE - REACHES 1, 1A, 2, 3, 4A, & 4B

Fairfax County, Virginia

TEMPORARY WETLANDS IMPACT LOCATIONS

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Sheet #
1 of 10

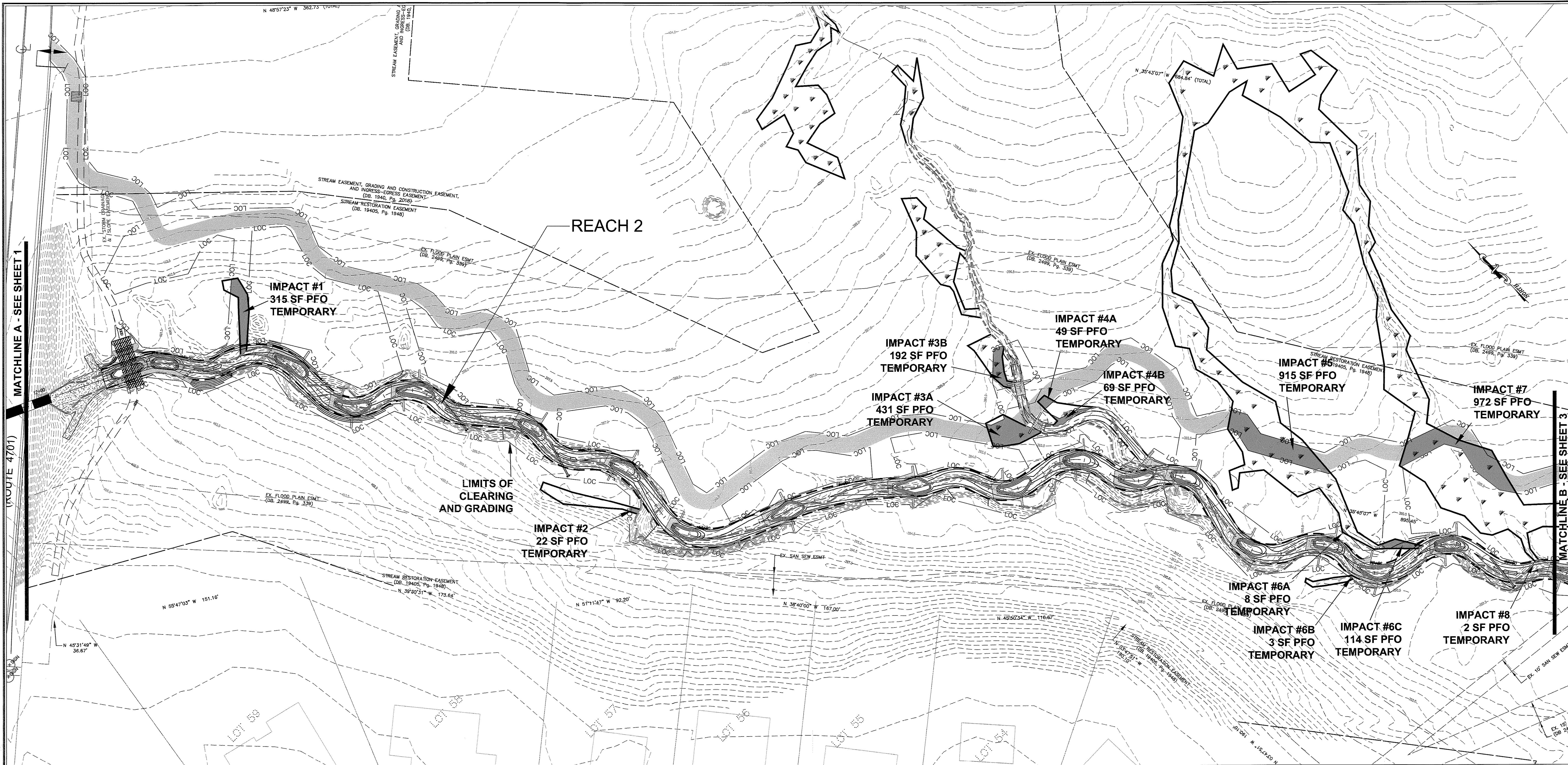
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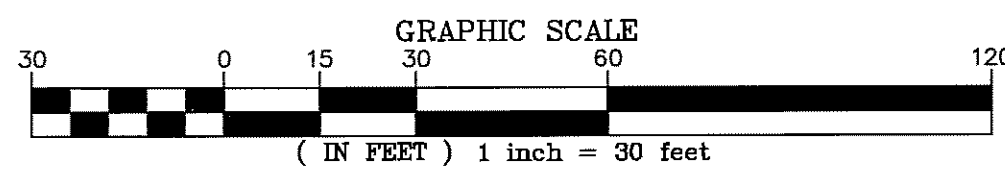
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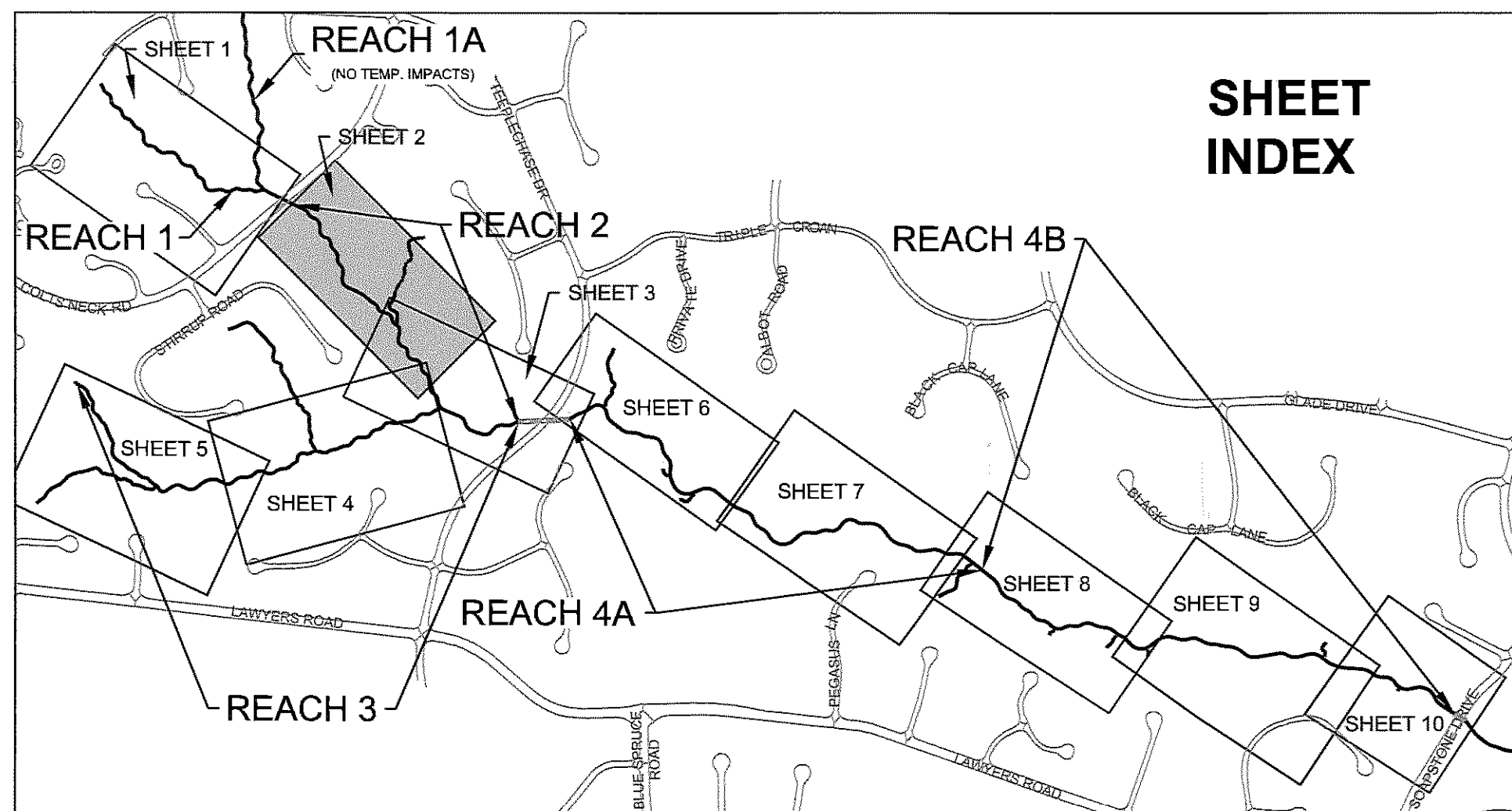
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PROPOSED TEMPORARY IMPACT AREAS
(TO BE RESTORED)



REACH NAME	IMPACT #	IMPACT (SF)
REACH 2	1	315
	2	22
	3A	431
	3B	192
	4A	49
	4B	69
	5	915
	6A	8
	6B	3
	6C	114
	7	972
	8	2
	9	370
	10A	44
	10B	31
	10C	12
	10D	271
TOTAL		3,820



NORTHERN VIRGINIA STREAM RESTORATION BANK THE GLADE - REACHES 1, 1A, 2, 3, 4A, & 4B

Fairfax County, Virginia

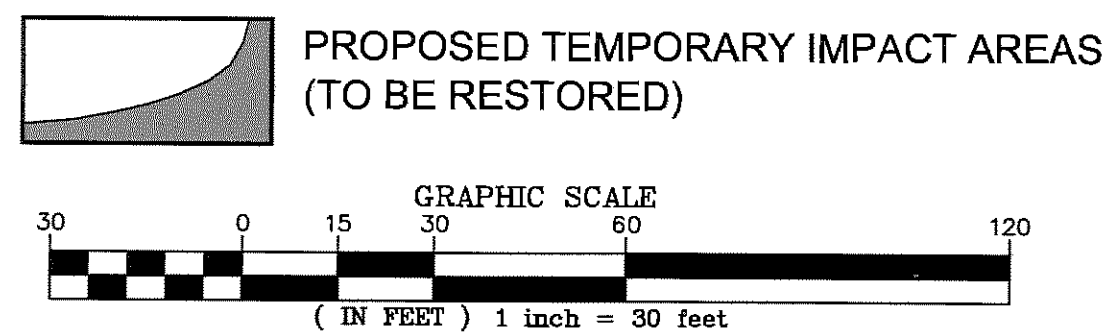
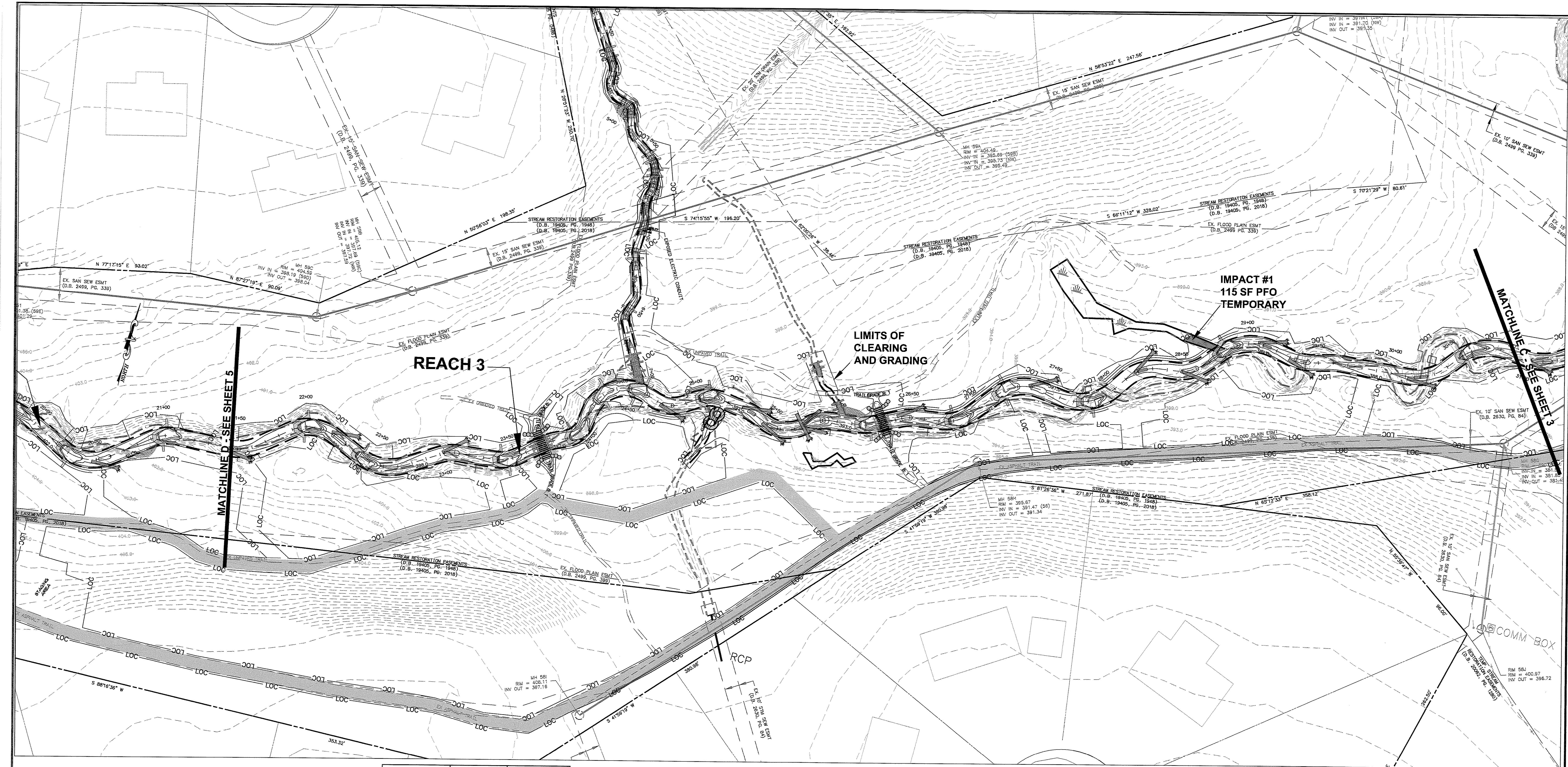
TEMPORARY WETLANDS IMPACT LOCATIONS

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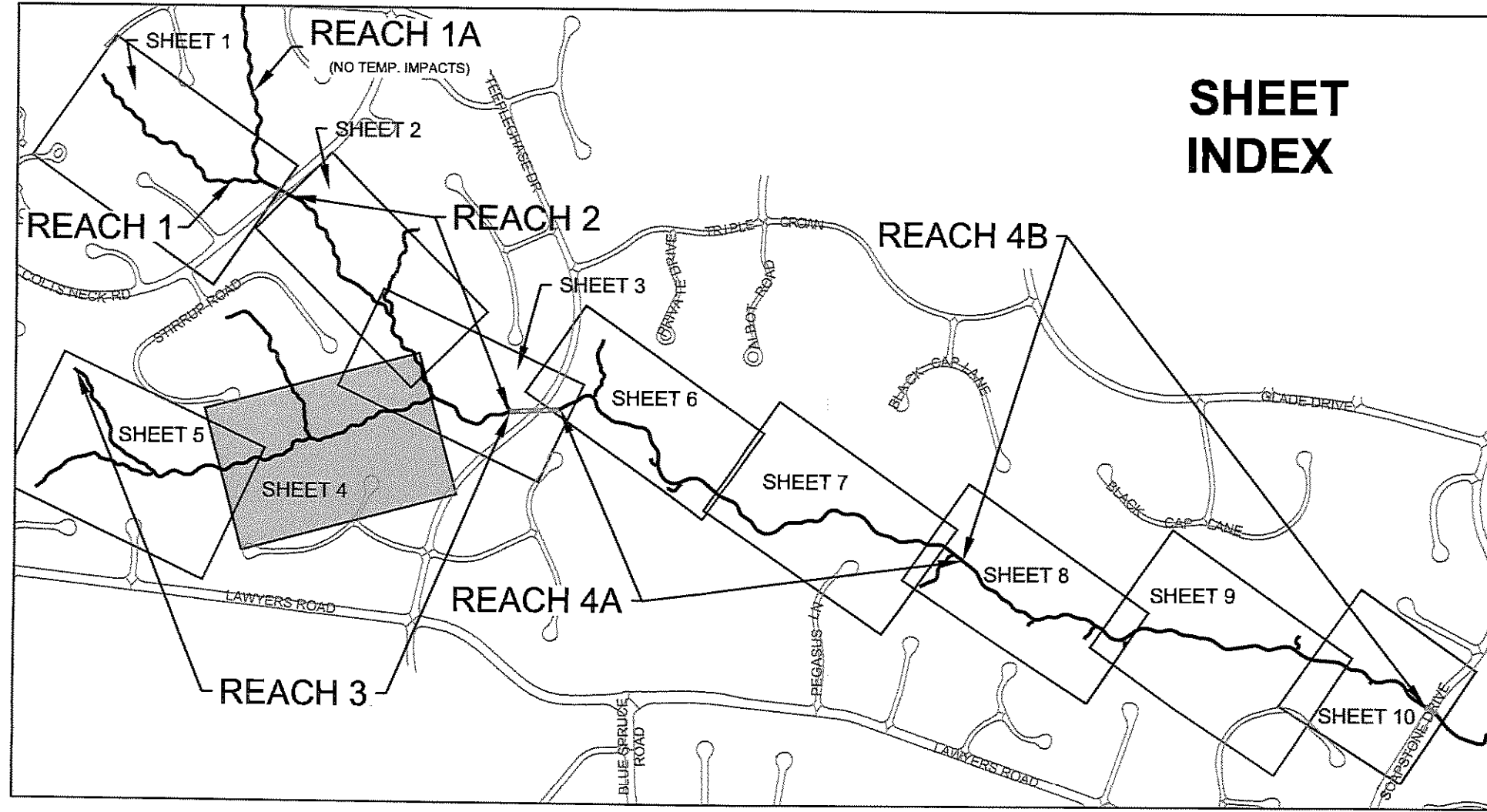
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REACH NAME	IMPACT #	IMPACT (SF)
REACH 3	1	115
	2	25
	3	215
	4A	8
	4B	31
	5A	34
	5B	35
	5C	42
	6A	6
	6B	36
	7A	186
	7B	275
	7C	118
	8A	120
	8B	344
	8C	10
	8D	54
	9A	143
	9B	198
TOTAL		1,995



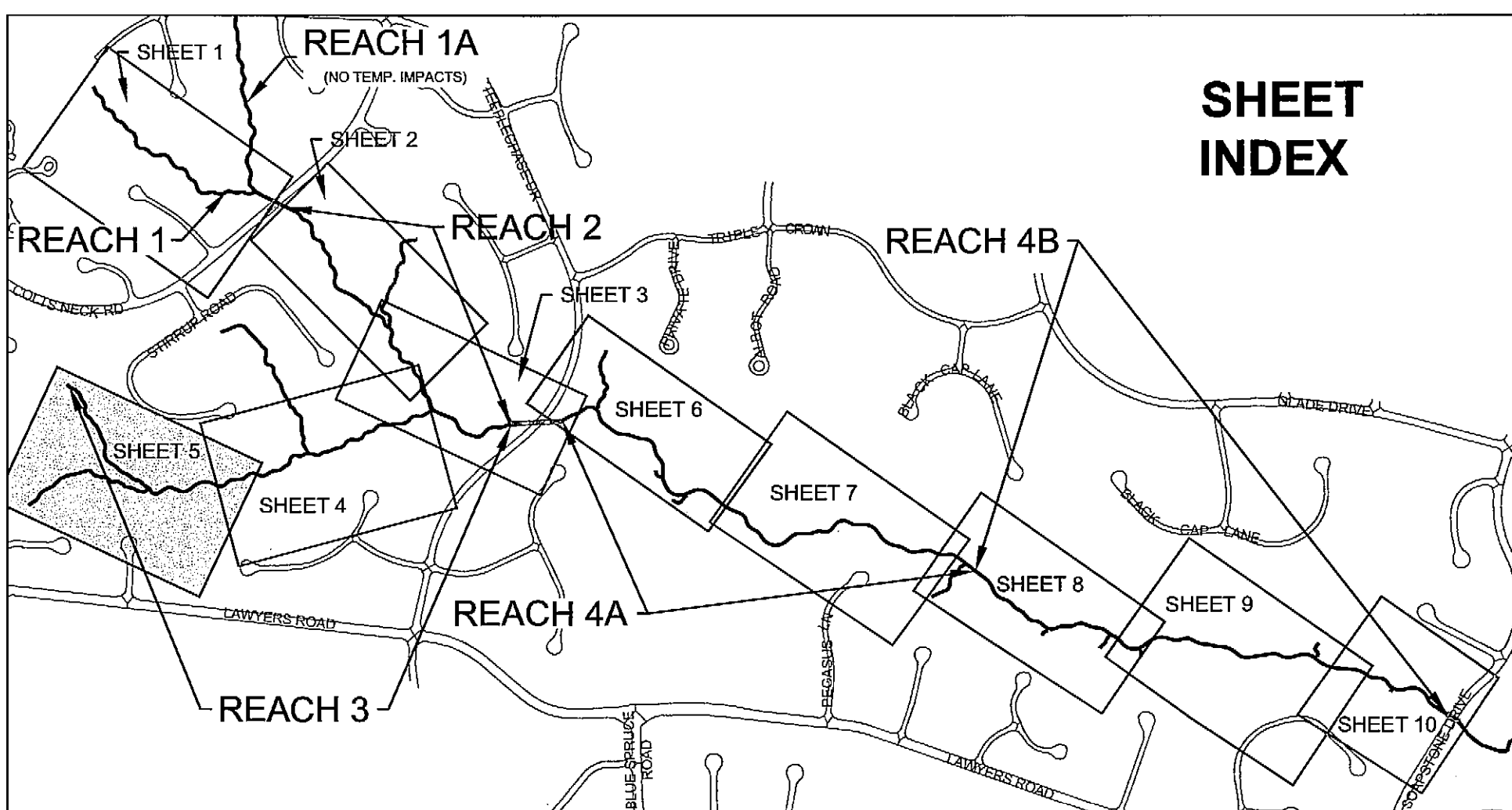
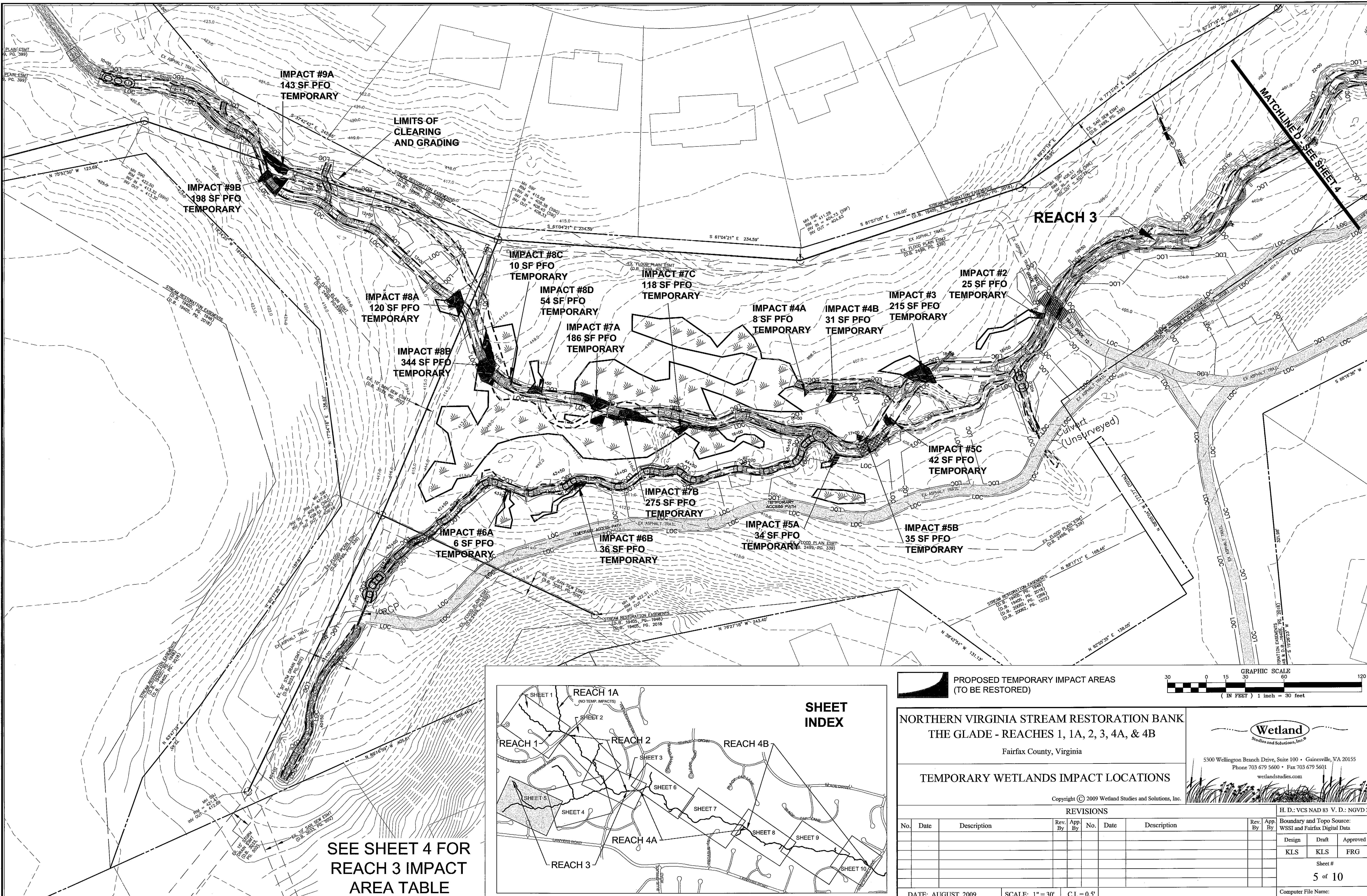
NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE - REACHES 1, 1A, 2, 3, 4A, & 4B
Fairfax County, Virginia


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**PROPOSED TEMPORARY IMPACT AREAS
(TO BE RESTORED)**

**NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE - REACHES 1, 1A, 2, 3, 4A, & 4B**

Fairfax County, Virginia

TEMPORARY WETLANDS IMPACT LOCATIONS

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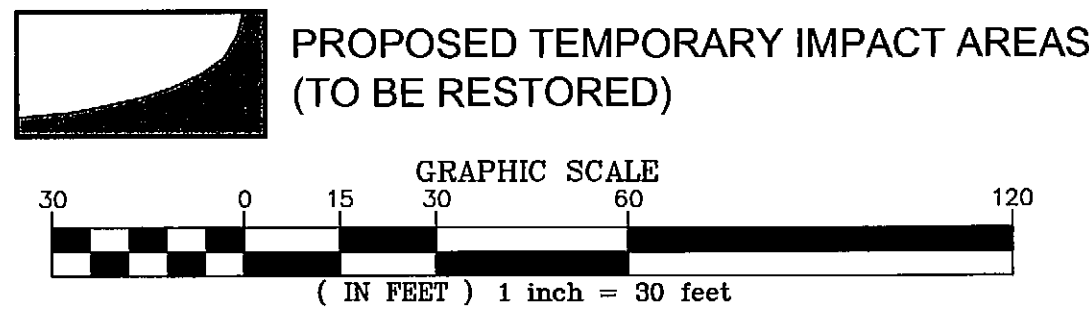
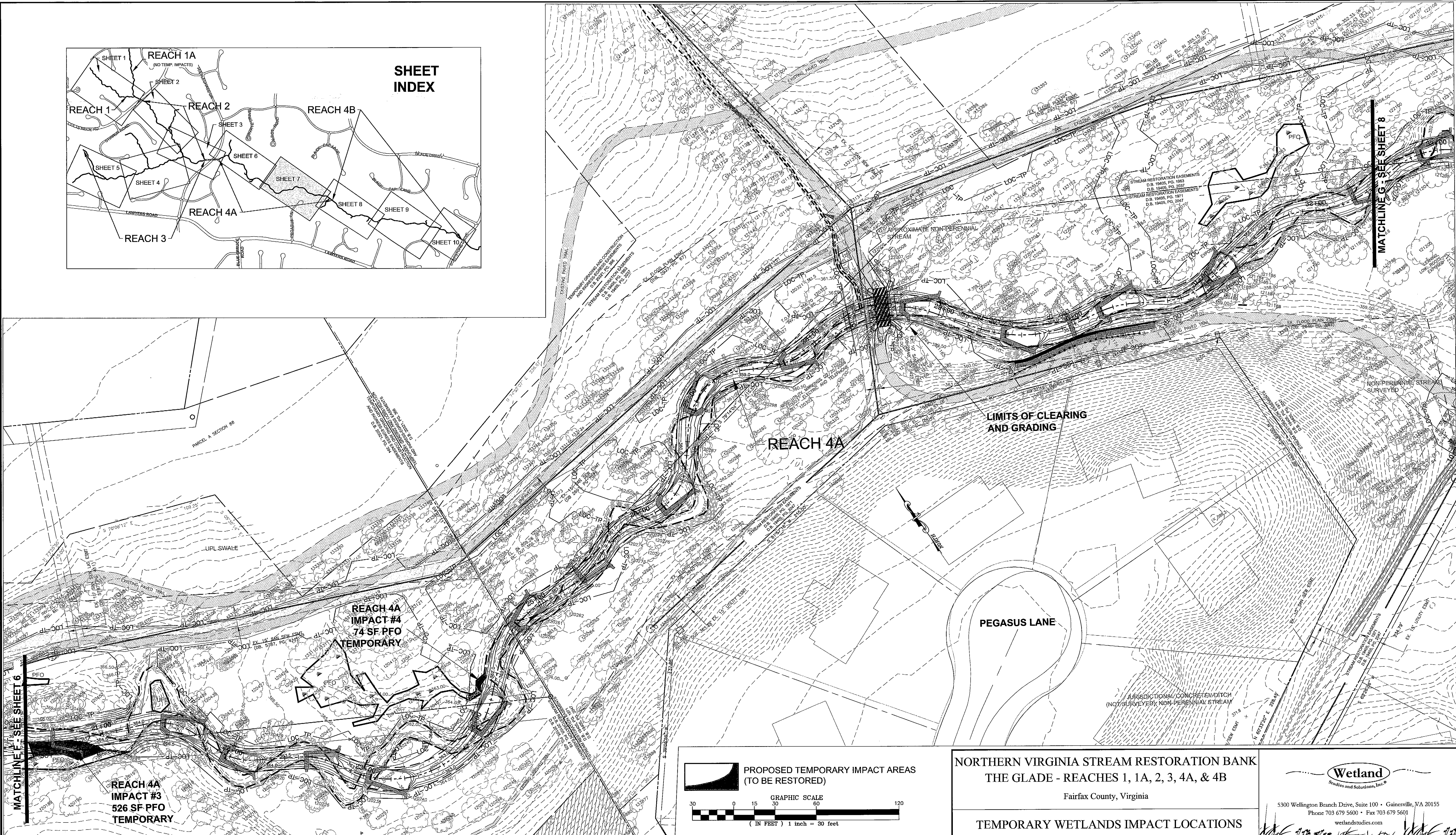
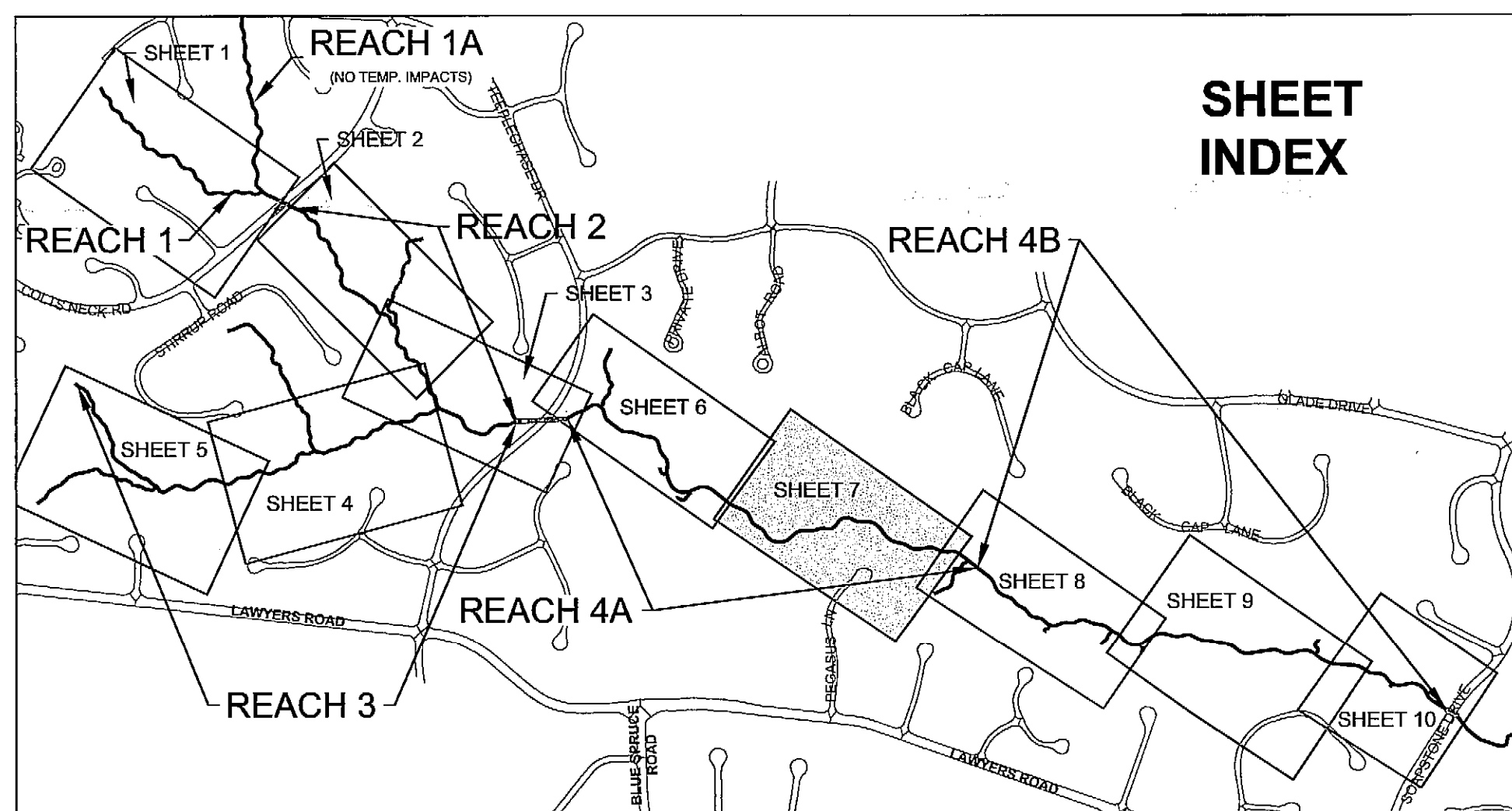
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5 of 10

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SEE SHEET 6 FOR
REACH 4A IMPACT
AREA TABLE

NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE - REACHES 1, 1A, 2, 3, 4A, & 4B
Fairfax County, Virginia

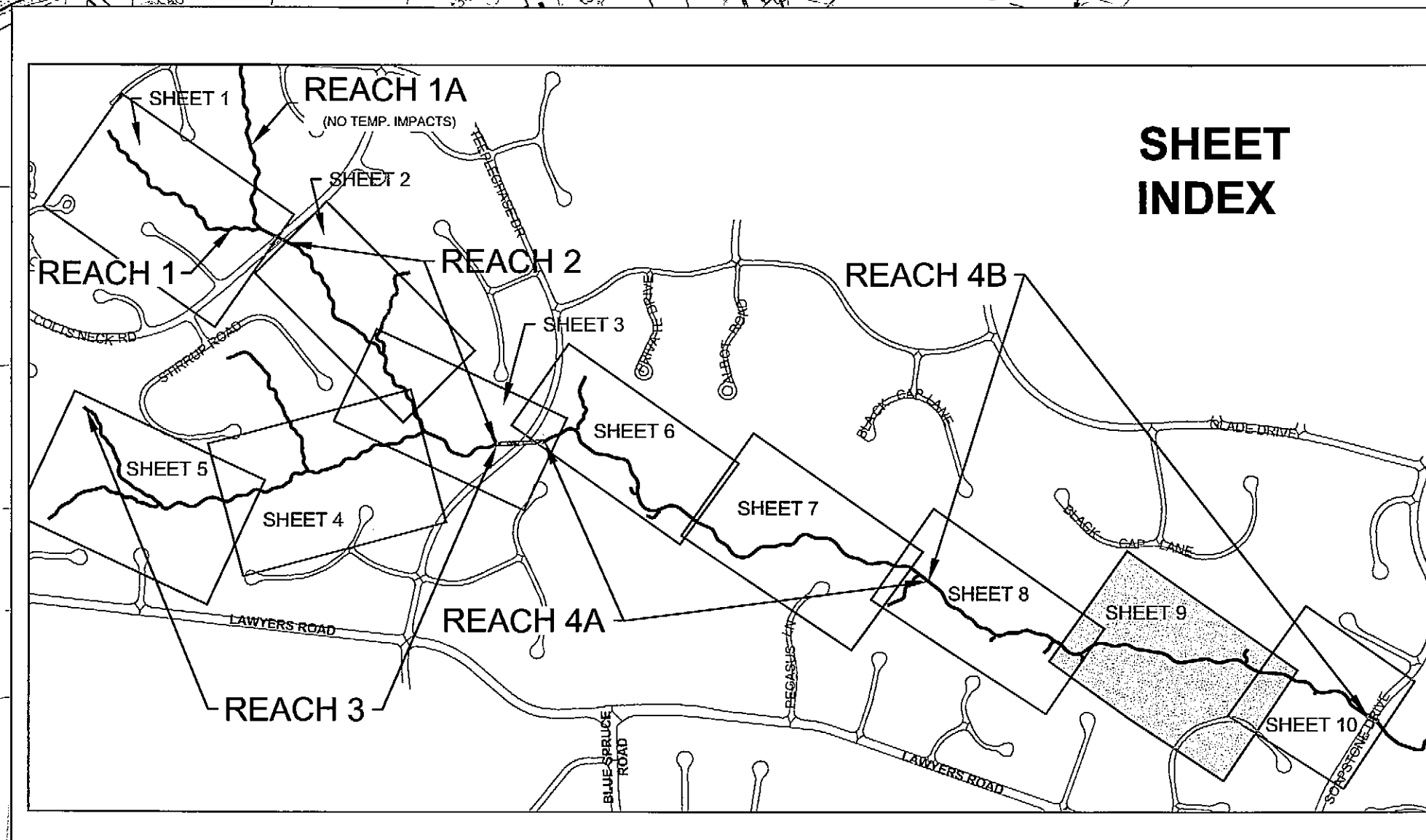
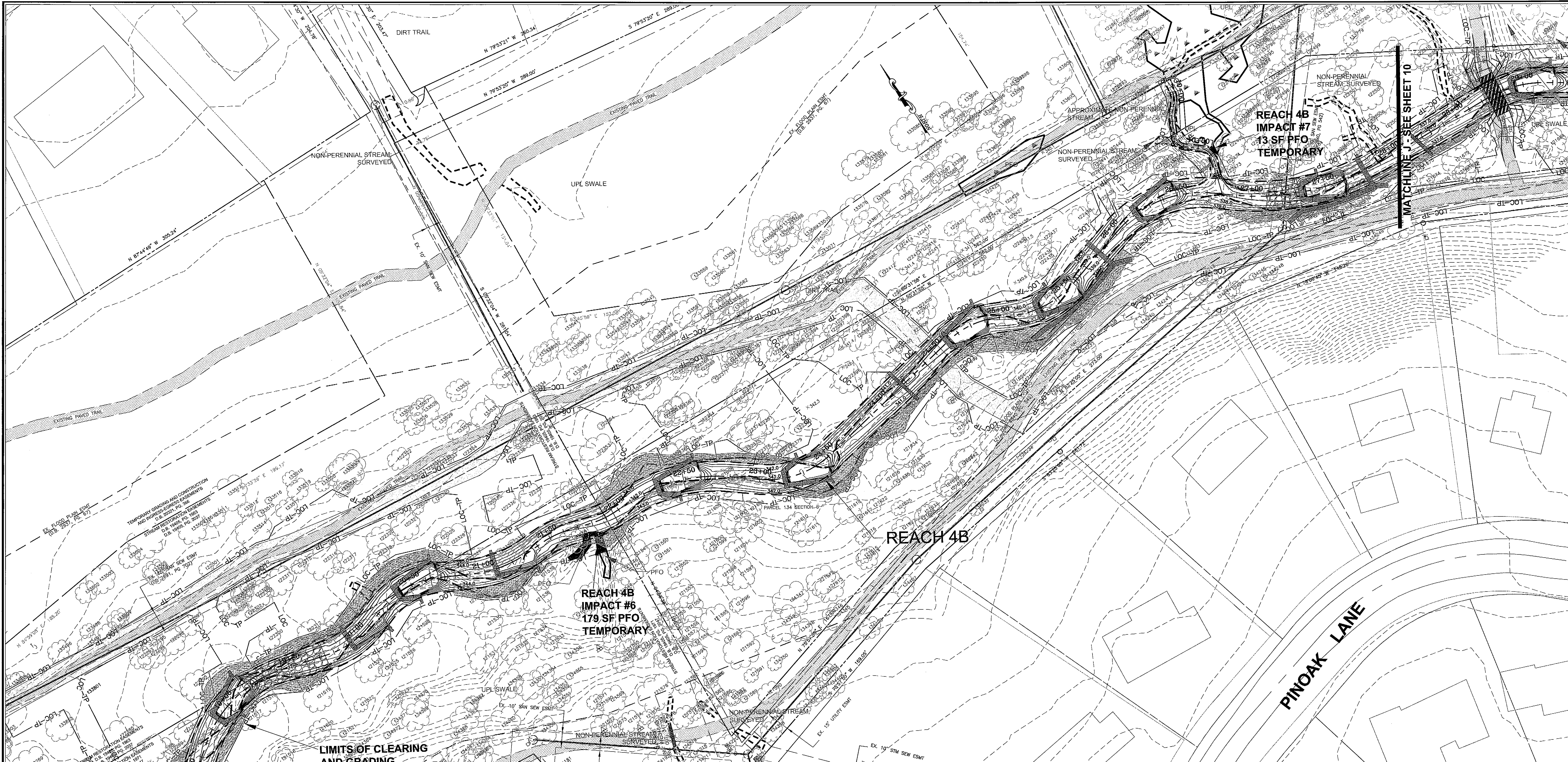
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PROPOSED TEMPORARY IMPACT AREAS (TO BE RESTORED)

GRAPHIC SCALE

30 0 15 60 120

(IN FEET) 1 inch = 30 feet

NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE - REACHES 1, 1A, 2, 3, 4A, & 4B
Fairfax County, Virginia

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