PADEP GP–11 allows for the registration of multiple overall projects as one time through submission of a project/work site table that identifies each of the separate overall projects. For work associated with PADEP GP-11 registrations, impacts associated with each project/work site should be list separately. This can be done through a separate PASPGP-4 Project Screening Form for each project/work site, or submission of a separate document/table that identifies each separate project/work site, the proposed work and impact information, as required by this section.

		square feet	linear feet
Permanent Impacts	**to waters:**	0	0
	to wetlands:	5,113	
Temporary Impacts	**to waters:**	16,998	3,239
	to wetlands:	73,043	

SECTION B: OTHER CHAPTER 105/SECTION 10/404 AUTHORIZATIONS

YES NO

☐ ☒ 1. If known, has any work associated with the Overall Project been previously authorized by the Corps or DEP? If YES, please complete the table below. If additional space is needed, please attach the applicable information. Include the type of authorization or permit, permit or authorization number(s), date(s) of issuance, and permitted impacts (including square feet and/or linear footage), if applicable, with your application/registration form(s).Types of authorizations or permits may be abbreviated and include: Corps Nationwide Permit, Corps Individual Permit, Corps PASPGP, DEP General Permit, DEP Individual Permit (Dam and/or Encroachment) or DEP Environmental Assessment. See PASPGP-4, Part IV, C, 3 for applications which require a Corps review (Category III Activity).

EXAMPLES:

a. If application is associated with the expansion of a residential development, i.e., construction of phase II, the authorizations and impacts, if applicable, associated with construction of phase I are to be identified and listed.

b. If application is associated with a linear project, i.e., sewer line, waterline, utility line, etc., and the proposed work is an extension or additional phase being added to a previous segment, the authorizations, and impacts, if applicable, associated with construction of the previous segment(s) are to be identified and listed. For example, if a utility line is constructed from point A to point B, and a year later an extension of the line to point C is proposed, the authorizations and impacts associated with construction of point A to point B should be listed/identified. In this case, the overall project is from point A to point C, as the portion from point A to point B is needed for the section from point B to point C to function and meet the overall project purpose.

Authorization Type	Authorization Number	Date (mm/dd/yyyy)	Permitted Impacts	
			wetlands	waters

YES NO

☐ ☒ 2. Are additional Corps and/or DEP authorizations required for your proposed work to function and have independent utility? If YES, please complete the table below. If additional space is needed, please attach the applicable information.

EXAMPLES:

a. Development of a residential subdivision may require the filling of waters and/or wetlands for the construction of access roads, utility line crossings, and/or lot development. In such a case, if application is only for the utility lines, the work and impacts associated with the road crossings and lot development need to be identified. For the overall development to function, the road crossings and lot development are needed, not just utilities.

b. If widening of a road for construction of a turn lane is needed to facilitate an industrial development, applications associated for the industrial development to construct utility lines and lot development need to include the work and impacts associated with the construction of the turn lane. The construction of the turn lane is needed for the industrial develop to function; the two projects are not separate independent projects.

You created this PDF from an application that is not licensed to print to novaPDF printer (http://www.novapdf.com)

c. If the application is associated with a linear project, such as an underground electric line or waterline, and additional permits are need to for the utility lines to function, i.e., convey electricity or water from source to user, the additional work and impacts need to be identified. For the overall utility line to function, the entire line needs to be constructed; a segment that will not function does not have independent utility.

Authorization Type	Date (if known)	Anticipated Impacts	
		wetlands	waters

SECTION C: ACTIVITIES RELATED TO RESIDENTIAL, COMMERCIAL AND INSTITUTIONAL DEVELOPMENTS

The term "Subdivision", for the purposes of this form, is defined as the division or redivision of a lot, tract or parcel of land into two or more lots, tracts, parcels or other divisions of land including changes to existing lot lines.

YES NO

☐ ☒ 1. Does the Overall Project involve the construction or expansion of a residential, commercial or institutional subdivision or development? If YES, proceed to question 2. If NO, leave questions 2 and 3 blank.

☒ ☐ 2. Does greater than 0.25 acres of wetlands exist within the property boundary (not including those being directly impacted as part of this application)? If YES, provide wetland acreage: 3.10 acres. If NO, leave question 3 blank.

☒ ☐ 3. Are you proposing to protect the wetland area(s) through a deed restriction or conservation easement that follows the Corps' Model Conservation Instruments? If YES, attach a copy of the proposed deed restriction or conservation easement to this form and submit with your application/registration form. Model Conservation Instruments are available at www.nab.usace.army.mil/Wetlands%20Permits/. Failure to submit a proposed deed restriction or conservation easement with permit application/registration form requires a Category III review under PASPGP-4, Part IV, C, 24.

SECTION D: CERTIFICATION

I certify that the information provided on this form is true and correct to the best of my knowledge and information. If any of the information and/or plans is found to be in error, falsified, and/or incomplete, your Chapter 105/PASPGP-4 authorization/verification may be subject to modification, suspension, or revocation in accordance with applicable regulations.

Signature of Applicant

2/20/13
Date

WILL DONALDSON
Name Typed or Printed

You created this PDF from an application that is not licensed to print to novaPDF printer (http://www.novapdf.com)

EXHIBIT 6

MITIGATION WORK PLAN

ENLOW FORK MITIGATION BANK

WEST FINLEY TOWNSHIP

WASHINGTON COUNTY, PENNSYLVANIA

NOTES

1. **PROJECT DESCRIPTION**:
   This plan is for the construction of the Enlow Fork Mitigation Bank. The Site is located 0.2 miles east of West Finley in Washington County, Pennsylvania. The Site will include the restoration or conservation of all stream channels and wetlands onsite and the restoration or conservation of their associated riparian zones, including wetland areas. The project includes a variable width riparian protection zone throughout the site. The 44.9 +/- acre site limits will be entered into a perpetual conservation easement by the easement owner and landowners.

2. **SITE ADDRESS:**
   81 Red Barn Lane
   West Finley, Pennsylvania 15377

3. **SITE COORDINATES:**
   Latitude: N39° 59' 21.98"
   Longitude: W80° 27' 15.89"

4. **EASEMENT OWNER**:
   First Pennsylvania Resource, LLC
   380 Southpointe Blvd., Suite 405
   Canosburg, PA 15317
   ATTN: Will Donaldson
   Email: will@res.us
   Phone: (504) 493-6148

5. **PROJECT ENGINEER**:
   Timmons Group
   1001 Boulders Parkway, Suite 300
   Richmond, Virginia 23225
   ATTN: Rebecca Napier
   Email: rebecca.napier@timmons.com
   Phone: (804) 200-6437
   Fax: (804) 560-1438

6. **LANDOWNERS**:
   Linda Clovis
   81 Red Barn Lane
   West Finley, PA 15377

   West Finley Land Ventures LP
   171 Red Barn Lane
   West Finley, PA 15377

7. **SURVEY INFORMATION:**
   6" contour interval topography of the stream corridors and adjacent wetland and buffer restoration areas was performed by Timmons Group on November 26, 2012.
   Horizontal datum: NAD83 Pennsylvania State Plane, South Zone.
   Vertical datum: NAVD88.

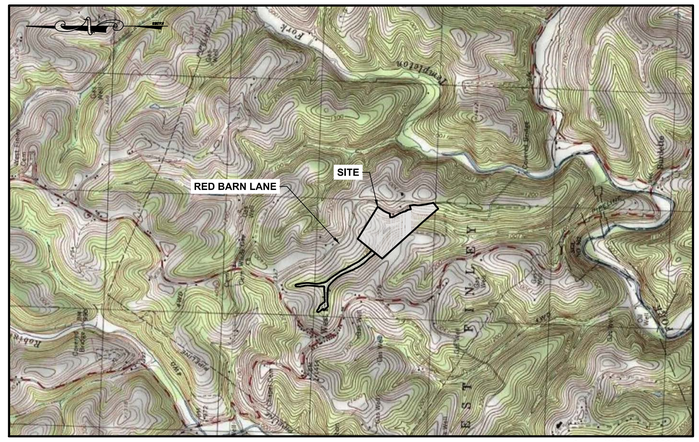
8. **WETLAND INFORMATION:**
   Wetland delineation was performed and wetland limits were GPS located with submeter accuracy by Timmons Group on November 26, 2012.

9. **SOILS INFORMATION:**
   Soil Survey information is from the U.S. Department of Agriculture, Natural Resources Conservation Service for Tioga County, Pennsylvania (pa081) downloaded on January 31, 2013, from http://soildatamart.nrcs.usda.gov/ .

10. **BOUNDARY INFORMATION:**
    Parcel boundary information from Wind Ridge USGS Quad.

11. **SITE AREA:**
    Clovis Parcel: 138.1 ± Acres
    Carpenter Parcel: 157.4 ± Acres
    Easement Total: 44.9 ± Acres
    Limits of Construction associated with Bank Construction: 4.8 ± Acres
    Limits of Grading associated with Bank Construction: 3.1 ± Acres

12. **BURIAL SITES:**
    No graves or burial markers were found on this site.



Source: Wind Ridge USGS Quad

VICINITY MAP

SCALE: 1" = 2,000'

Sheet List

Sheet Number	Sheet Title
1.00	COVER SHEET
1.01	LEGEND
2.00	HYDROLOGY AND CHANNEL DESIGN PARAMETERS
2.01	GEOMORPHOLOGIC CALCULATIONS
2.02	SOILS MAP
3.00	DESIGN ALIGNMENT SHEET INDEX
3.01	DESIGN ALIGNMENT PLAN
3.02	DESIGN ALIGNMENT PLAN
4.00	CONSTRUCTION NOTES
4.01	CONSTRUCTION DETAILS
4.02	CONSTRUCTION DETAILS
6.00	PLANTING SPECIFICATIONS AND DETAILS
6.01	PLANTING AND SEEDING SCHEDULES

FIRST PENNSYLVANIA RESOURCE, LLC

EASEMENT OWNER

ATTN: Will Donaldson
380 Southpointe Blvd., Suite 405
Canonsburg, PA 15317

FEBRUARY 2013

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
REBECCA E. NAPIER
No. PE061020

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP

REVISION DESCRIPTION

DATE

DATE: MARCH 2013
DRAWN BY: M.A./M.H.
DESIGNED BY: M.A./M.H.
CHECKED BY: M. ELANDER
SCALE: 1" = 2000'

ENLOW FORK MITIGATION BANK
WASHINGTON COUNTY - PENNSYLVANIA
COVER SHEET

JOB NO. 33362
SHEET NO. 1.00

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

Y:\80443\3362-RES_20WASX02_Carpenter\DWG\Sheet\CD-PA Plan Submittal\1.00.dwg | Plotted on 7/1/2013 10:42 AM | by Michael Aust

PROPOSED IMPROVEMENTS

- CONSERVATION AREA
- DESIGN STREAM CENTERLINE
- WETLAND REESTABLISHMENT

EXISTING CONDITIONS

- PROPERTY LINE
- COUNTY LINE
- EASEMENT
- MAJOR CONTOUR
- MINOR CONTOUR
- TREELINE
- GRAVEL ROAD
- FENCELINE
- FENCELINE (TO BE REMOVED)
- OVERHEAD POWER LINE
- WETLANDS
- STREAM CENTERLINE
- STORM PIPE

DRAINAGE & SOILS

- MAJOR DRAINAGE AREA
- MINOR DRAINAGE AREA
- SOIL GROUP BOUNDARY
- *AaB* *3-8% SLOPES* — SOIL GROUP IDENTIFIER

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
REBECCA E. NAPIER
ENGINEER
No. PE081020

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP

REVISION DESCRIPTION	DATE

DATE	*MARCH 2013*
DRAWN BY	*M.A./M.H.*
DESIGNED BY	*M.A./M.H.*
CHECKED BY	*M. ELANDER*
SCALE	*N/A*

ENLOW FORK MITIGATION BANK

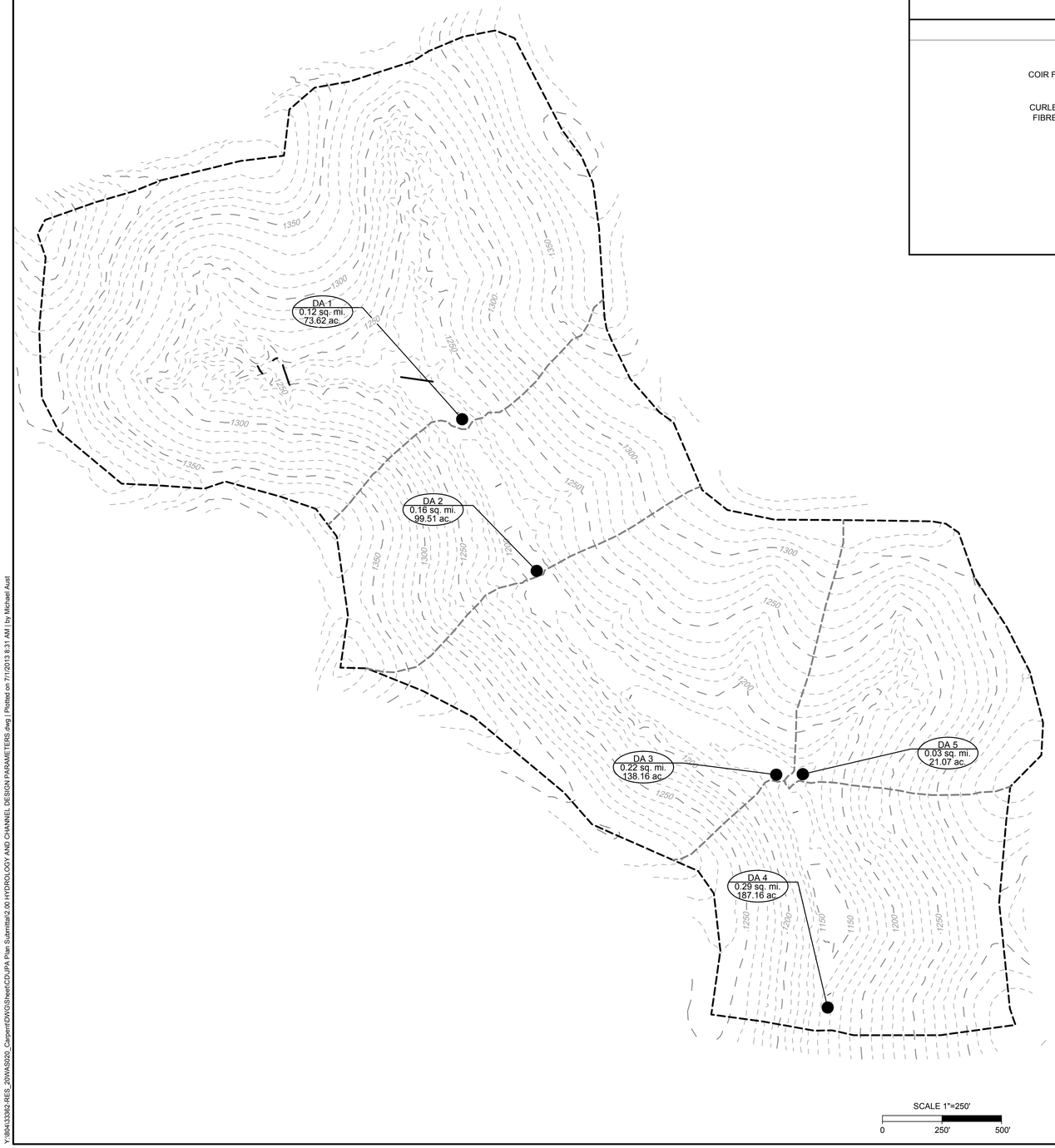
WASHINGTON COUNTY - PENNSYLVANIA

LEGEND

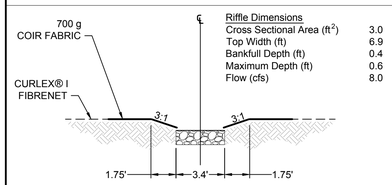
JOB NO.	*33362*
SHEET NO.	*1.01*

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

Y:\804\33362-RES_20\WAS\00_Carpenter\DWG\Sheet\CD\JPA Plan Submittal\1.01 LEGEND.dwg | Plotted on 7/1/2013 10:34 AM | by Michael Aust



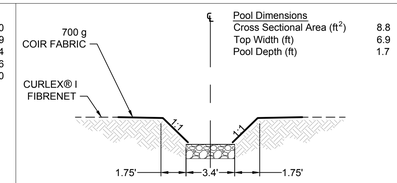
STA. 10+00 TO 36+00



Riffle Dimensions

Cross Sectional Area (ft^2)	3.0
Top Width (ft)	6.9
Bankfull Depth (ft)	0.4
Maximum Depth (ft)	0.6
Flow (cfs)	8.0

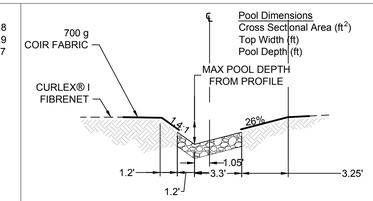
TYPICAL
RIFFLE SECTION



Pool Dimensions

Cross Sectional Area (ft^2)	8.8
Top Width (ft)	6.9
Pool Depth (ft)	1.7

TYPICAL
STRAIGHT POOL SECTION

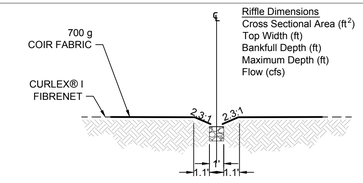


Pool Dimensions

Cross Sectional Area (ft^2)	7.6
Top Width (ft)	8.95
Pool Depth (ft)	1.7

TYPICAL
MEANDER POOL SECTION

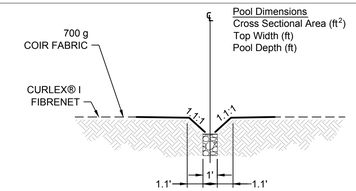
TRIBUTARY STA. 37+00 TO 37+92



Riffle Dimensions

Cross Sectional Area (ft^2)	1.0
Top Width (ft)	3.2
Bankfull Depth (ft)	0.3
Maximum Depth (ft)	0.48
Flow (cfs)	2.2

TYPICAL
RIFFLE SECTION



Pool Dimensions

Cross Sectional Area (ft^2)	2.1
Top Width (ft)	3.2
Pool Depth (ft)	1.0

TYPICAL
STRAIGHT POOL SECTION

ENLOW FORK MITIGATION BANK

DA I.D.	Existing Thalweg Station	Drainage Area (sq mi)	Cross-Sectional Area (ft^2)	Bankfull Discharge (cfs)	Bankfull Width (ft)	Bankfull Mean Depth(ft)	Mannings n
DA-1	22+00	0.12	2.15	6.63	5.55	0.43	0.045
DA-2	29+36	0.16	2.73	8.61	6.35	0.47	0.045
DA-3	43+20	0.22	3.55	11.44	7.36	0.53	0.045
DA-4	END	0.29	4.52	14.90	8.44	0.58	0.045
DA-5	LG SWALE	0.03	0.79	2.24	3.16	0.28	0.045

* From Development of Regional Curves Relating Bankfull-Channel Geometry and Discharge to Drainage Area for Streams in Pennsylvania and Selected Areas of Maryland by Jeffrey J. Chaplin.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
REBECCA E. NAPIER
ENGINEER
No. PE081020

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP

REVISION DESCRIPTION	DATE

DATE	MARCH 2013
DRAWN BY	M.A./M.H.
DESIGNED BY	M.A./M.H.
CHECKED BY	M. ELANDER
SCALE	1" = 250'

ENLOW FORK MITIGATION BANK

WASHINGTON COUNTY - PENNSYLVANIA

HYDROLOGY AND CHANNEL DESIGN PARAMETERS

JOB NO.	33362
SHEET NO.	2.00

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

Y:\98433362-RES_20WA5020_Carpenter\DWG\Sheet\CD-JPA Plan Submittal\2.00 HYDROLOGY AND CHANNEL DESIGN PARAMETERS.dwg | Plotted on 7/1/2013 8:31 AM | by Michael Aust

Design Parameters	Target Ratios		Field Collected Reference Stream	
	Min	Max	Min	Max
Stream Name	Clovis		Skymeadows Reach 1	
Stream Type	C4b		C4b	
Drainage Area, DA (sq mi)	0.16		1.11	
Riffle Mean Depth, dbkf (ft)	0.40		0.90	
Riffle Width, Wbkf (ft)	6.70		15.05	
Riffle Width-to-Depth Ratio, [Wbkf/dbkf]	15.00		16.72	
Riffle XSEC Area, Abkf (sq ft)	3.00		12.90	
Riffle Max Depth, dmbkf (ft)	0.50	0.70	1.34	0.00
Riffle Max Depth Ratio, [dmbkf/dbkf]	1.20	1.70	1.49	0.00
Pool Mean Depth, dpool (ft)	0.40	0.80	1.05	0.00
Pool Mean Depth Ratio, [dpool/dbkf]	1.10	2.10	1.17	0.00
Pool Width, Wpool (ft)	6.70	10.05	12.50	0.00
Pool Width Ratio, [Wpool/Wbkf]	1.00	1.50	0.83	0.00
Pool XSEC Area, Apool (sq ft)	3.60	6.60	13.10	0.00
Pool Area Ratio, [Apool/Abkf]	1.20	2.20	1.02	0.00
Pool Max Depth, dmpool (ft)	1.00	1.40	2.52	0.00
Pool Max Depth Ratio, [dmpool/dpool]	2.50	3.50	2.80	0.00
Low Bank Height, LBH (ft)	0.50	0.70	N/A	0.00
Low Bank Height Ratio, [LBH/dmbkf]	1.00	1.00	N/A	0.00
Width Flood Prone Area, Wfpa (ft)	20.10	67.00	33.63	0.00
Entrenchment Ratio, [Wfpa/Wbkf]	3.00	10.00	2.23	0.00
Point Bar Slope, H/V (ft/ft)	0.20	0.50	0.63	0.00
Meander Length, Lm (ft)	46.90	80.40	N/A	0.00
Meander Length Ratio, [Lm/Wbkf]	7.00	12.00	N/A	0.00
Radius of Curvature, Rc (ft)	13.40	26.80	48.50	0.00
Rc Ratio, [Rc/Wbkf]	2.00	4.00	3.22	0.00
Meander Belt Width, Wblt (ft)	23.45	56.95	N/A	0.00
MW Ratio, [Wblt/Wbkf]	3.50	8.50	N/A	0.00
Riffle Length, Lrif (ft)	12.06	28.81	12.90	57.40
Riffle Length Ratio, [Lrif/Wbkf]	1.80	4.30	0.86	3.81
Riffle Slope, Srif (ft/ft)	0.01	0.03	0.02	0.03
Riffle Slope Ratio, [Srif/Save]	0.50	1.40	0.74	1.62
Pool Length, Lpool (ft)	3.35	10.72	16.20	22.00
Pool Length Ratio, [Lpool/Wbkf]	0.50	1.60	1.08	1.46
Pool Slope, Spool (ft/ft)	0.00	0.00	0.00	0.00
Pool Slope Ratio, [Spool/Save]	0.00	0.01	0.05	0.20
Pool to Pool Spacing, p-p (ft)	26.80	46.90	43.10	104.00
Pool Spacing Ratio, [p-p/Wbkf]	4.00	7.00	2.86	6.91
Valley Length, VL (ft)	303.10		225.00	
Valley Elevation Change, VΔ (ft)	7.20		5.63	
Valley Slope, VS (ft/ft)	0.024		0.03	
Stream Length, SL (ft)	326.00		275.00	
Stream Elevation Change, SΔ (ft)	7.20		5.60	
Average Water Surface Slope, S (ft/ft)	0.02		0.02	
Sinuosity, K (ft/ft)	1.08		1.22	
Bankfull Wetted Perimeter, P (ft)	7.50		16.90	
Bankfull Hydraulic Radius, R (ft)	0.40		0.80	
Bankfull Mannings n (esitmate)	0.05		0.05	
Manning Bkf Discharge, Qbkf (cfs)	8.00		52.50	
Manning Bkf Velocity, ubkf (ft/s2)	2.67		4.07	
Bankfull Stream Power, w (lb/ft/s)	1.47		4.15	
Bankfull Shear Stress, t (lb/ft2)	0.55		1.02	
Shields - Diameter Mobilized (mm)	200.00		40.00	

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
REBECCA E. NAPIER
No. PE041020

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP

REVISION DESCRIPTION

DATE

DATE: MARCH 2013
DRAWN BY: M.A./M.H.
DESIGNED BY: M.A./M.H.
CHECKED BY: M. ELANDER
SCALE: N/A

ENLOW FORK MITIGATION BANK

WASHINGTON COUNTY - PENNSYLVANIA

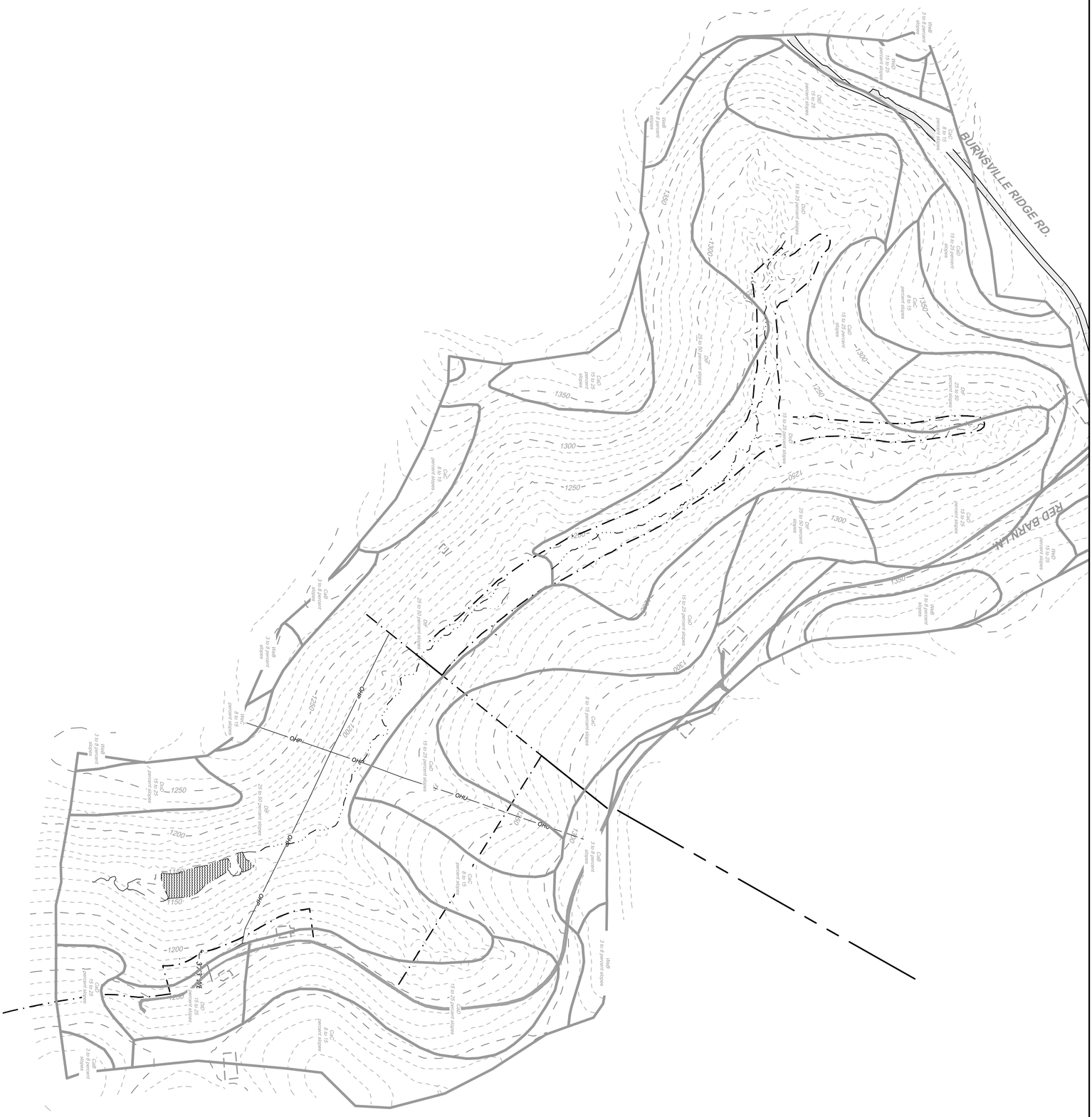
GEOMORPHOLOGIC CALCULATIONS

JOB NO. 33362

SHEET NO. 2.01

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

Y:\8043\33362-RES_20\WASI\00_Carpenter\DWG\Sheet\CD\JPA Plan Submittal\2.01 GEOMORPHOLOGIC CALCULATIONS.dwg | Plotted on 7/1/2013 8:31 AM | by Michael Audt



TIMMONS GROUP

YOUR VISION ACHIEVED THROUGH OURS.

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

REBECCA L. MAPIER
PROFESSIONAL ENGINEER
Commonwealth of Virginia

SHEET NO.	2.02
JOB NO.	33362
SCALE	1" = 250'
CHECKED BY	M. ELANDER
DESIGNED BY	M.A./M.H.
DRAWN BY	M.A./M.H.
DATE	MARCH 2013

ENLOW FORK MITIGATION BANK

WASHINGTON COUNTY - PENNSYLVANIA

SOILS MAP

DATE	REVISION DESCRIPTION

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

SCALE 1"=250'
0
250'
500'

NAD 83

TIMMONS GROUP

YOUR VISION ACHIEVED THROUGH OURS.

THIS DRAWING PREPARED AT THE
CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

REGISTERED PROFESSIONAL ENGINEER REBECCA L. NAPIER No. 042040 COMMONWEALTH OF PENNSYLVANIA

SHEET NO. 3.00	JOB NO. 33362	ENLOW FORK MITIGATION BANK WASHINGTON COUNTY - PENNSYLVANIA DESIGN ALIGNMENT SHEET INDEX	SCALE 1" = 250'	CHECKED BY M. ELANDER	DESIGNED BY M.A./M.H.	DRAWN BY M.A./M.H.	DATE MARCH 2013	DATE / REVISION DESCRIPTION

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

TIMMONS GROUP

YOUR VISION ACHIEVED THROUGH OURS.

THIS DRAWING PREPARED AT THE
CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

REBECCA L. HAPPER
PROFESSIONAL ENGINEER
No. 065402
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER

ENLOW FORK MITIGATION BANK

WASHINGTON COUNTY - PENNSYLVANIA

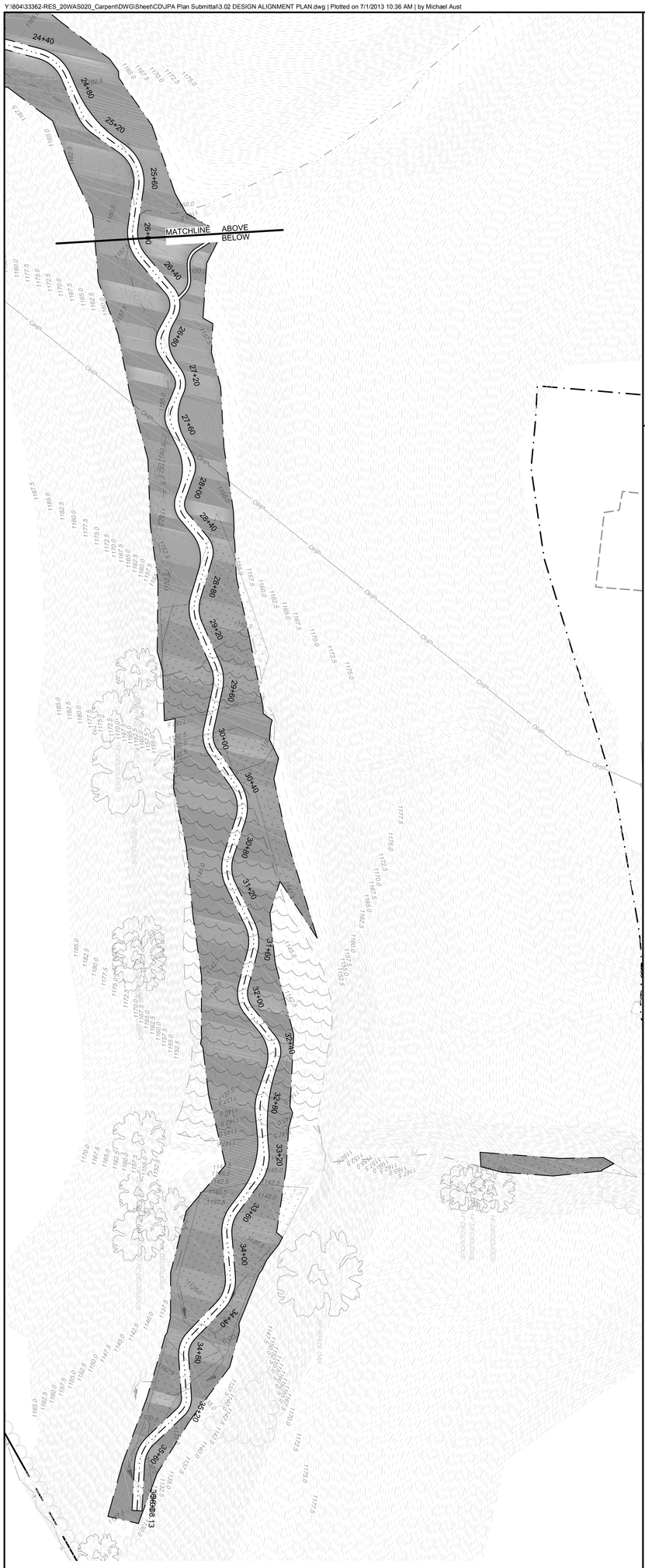
DESIGN ALIGNMENT PLAN

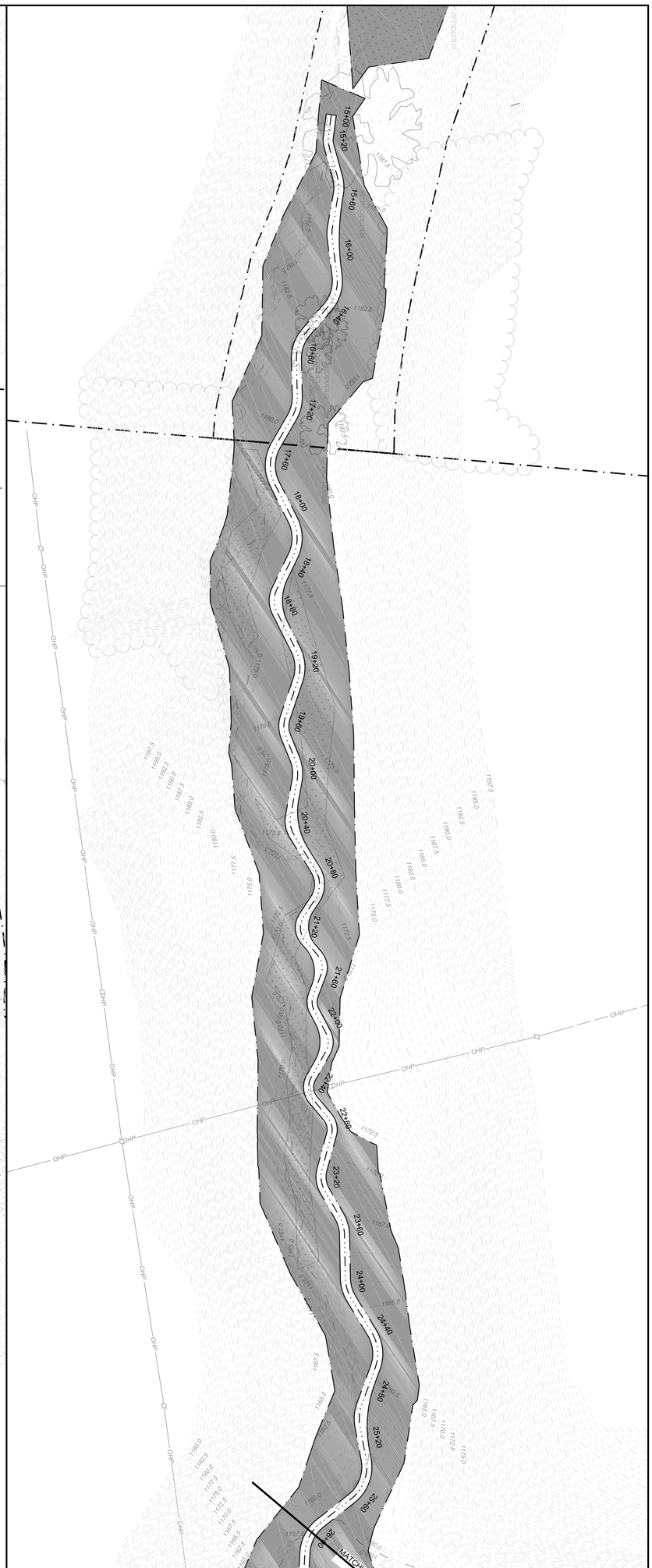
SHEET NO.	JOB NO.	SCALE	CHECKED BY	DESIGNED BY	DRAWN BY	DATE
3.01	33362	1" = 40'	M. ELANDER	M.A./M.H.	M.A./M.H.	MARCH 2013

DATE	REVISION DESCRIPTION

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

Y:\804\33362-RES_20WAS020_Carpenh\DWG\Sheet\CDJPA Plan Submittal\3.02 DESIGN ALIGNMENT PLAN.dwg | Plotted on 7/1/2013 10:36 AM | by Michael Aust





TIMMONS GROUP

YOUR VISION ACHIEVED THROUGH OURS.

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

REGISTERED PROFESSIONAL ENGINEER REBECCA L. HAPER No. 047031 COMMONWEALTH OF PENNSYLVANIA

SHEET NO.	JOB NO.		SCALE	CHECKED BY	DESIGNED BY	DRAWN BY	DATE
3.02	33362	ENLOW FORK MITIGATION BANK WASHINGTON COUNTY - PENNSYLVANIA DESIGN ALIGNMENT PLAN	1" = 40'	M. ELANDER	M.A./M.H.	M.A./M.H.	MARCH 2013

DATE	REVISION DESCRIPTION

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

CONSTRUCTION NOTES

A. Pre-Construction Preparation & Notification:

1. The Contractor shall notify the Project Engineer a minimum of one (1) week prior to commencing any land disturbing activities for verification they are in accordance with the approved permits.

2. The Contractor shall be responsible for determining the locations of all existing utilities and services within the project limits prior to commencing construction operations, and must contact "Pennsylvania One Call System" a minimum of 48 hours prior to any construction work. All utilities shall be clearly identified prior to construction. The location of existing utilities within the project area is not necessarily shown on the construction drawings and where shown is only approximately correct. The Contractor shall be responsible for any damage to existing utilities whether above grade or underground facilities.

3. The Contractor shall schedule a pre-construction meeting accommodating project stakeholders (Project Engineer, subcontractors, certified responsible land disturber, Owner's representative, and the local Plan Approving Authority) a minimum of one (1) week prior to commencing any land disturbing activities. At this time, the Contractor shall be prepared to review their Workflow Plan and proposed Construction Schedule (reference following Submittals section).

4. The Contractor shall install the initial erosion and sediment control measures and then notify the Project Engineer of the completed installation. The Project Engineer shall then provide the local inspector 48-hour notification to schedule an onsite pre-construction meeting to inspect the install of these erosion and sediment control measures, prior to issuance of the land disturbance permit.

5. Limited construction access easements are specified on the construction drawings. Alternatives or deviations shall be approved by the Project Engineer and Owner prior to commencement of construction. Contractor proposed alternatives with delineation of entrance locations and access paths shall be included in the proposed Workflow Plan.

6. Prior to the commencement of construction, non-impact wetlands shall be flagged and no disturbance shall occur within these areas.

7. Existing plant materials suitable for relocation, such as willows and other shrubs, shall be flagged or otherwise marked prior to any grading activities within the respective stream segments.

B. Submittals:

1. Contractor shall develop a Workflow Plan and Construction Schedule for submittal to the Project Engineer for review and approval a minimum of one (1) week prior to the pre-construction meeting. The proposed Workflow Plan shall describe/delineate the Contractor's proposed construction access paths, alternate temporary stockpile locations, estimated daily channel segments, and alternative means & methods. The proposed Construction Schedule shall include submittal review time, key construction and critical path tasks, phasing of work flow, weather contingency, as-built survey coordination, planting period and substantial and/or final completion goals.

2. Contractor shall provide experience qualifications to the Project Engineer identifying the key personnel to be working on the project, including their project manager and superintendent. Contractor shall also specify the minimum number of daily crew/staff and equipment to be expected onsite during construction.

3. Contractor shall be responsible to submit a copy of the material certifications to the Project Engineer for review on any construction materials used on the project site. The certification shall state that the product is manufactured in accordance with the project specifications and the approved shop drawing or detail, as applicable. Any materials ordered or work performed with said materials by the Contractor before the Project Engineer has reviewed the respective material certifications shall be at the risk of the Contractor.

4. Review time for the specified submittals shall be clearly noted in the Construction Schedule. Allow a minimum of one (1) week review time for submittal package.

C. Surveying:

1. The Owner's Surveyor will stake out the following:

   1.1. Stream Alignment: The PC and PT points along the new stream alignment shall be staked along the centerline and at 50-foot offsets, identified by corresponding centerline station. The center of each curve shall be staked and marked with the corresponding radius of curvature. The 50-foot offset stakes shall also include the distance to the "daylight" limits for both the left and right banks. Vertical control benchmarks shall be clearly marked at a minimum of 1,000-foot intervals along the proposed stream channel.

2. If during construction, the existing elevations (especially stream inverts) shown on these construction drawings are found to differ significantly from the elevations in the field, the Contractor must notify the Project Engineer immediately for an adjustment in elevations.

3. The Owner's Surveyor will schedule and perform the as-built survey following written notification, from the Contractor to the Project Engineer, stating that design grade has been achieved. This coordination shall be performed prior to disking, final seeding and planting.

4. The Contractor is expected to perform survey verification prior to providing written notification for as-built survey coordination. The Contractor shall be responsible for any costs associated with additional as-built survey resulting from project areas discovered to not be in substantial accordance with the specified design.

D. Minimizing Impacts:

1. All necessary erosion and sediment control measures shall be installed in accordance with the most current edition of the Pennsylvania Erosion and Sediment Control Handbook prior to the commencement of land disturbing activities. Alternative and/or additional measures shall be approved by the Project Engineer prior to installation.

2. Disturbance of existing mature trees shall be minimized to the greatest extent possible. Shrubs and small trees suitable for relocation shall be clearly marked prior to the pre-construction meeting and incorporated into the planning for each section of proposed stream activity. Tree protection measures shall be installed in accordance with the construction drawings to preserve trees not utilized for structures or disturbed by grading. Contractor shall only remove vegetation necessary to perform grading operations depicted on the construction drawings. Tree and root damage shall be avoided to the maximum extent practicable within the project boundary and temporary construction access areas.

3. Materials, supplies or equipment shall be stockpiled and/or stored outside of non-impact wetland limits. Contractor shall not travel across, store spoils on or otherwise impact the non-impact wetlands and flagged buffer areas. All temporary impacts to wetlands shall be re-vegetated.

4. All equipment and supplies shall be stored within the construction staging area while construction activities have ceased for the day.

5. Excess excavation material shall be disposed of in a suitable location approved by the Project Engineer and Owner. Suitable locations for spreading and/or stockpiling excess material will be discussed at the pre-construction meeting. Contractor shall obtain approval from the Project Engineer and Owner prior to permanently placing excess material. The Contractor shall be responsible for cost associated with removing and relocating any excess material placed without prior approvals. Contractor shall endeavor to separate suitable and unsuitable materials during excavation operations to allow for separate means of disposal for excess materials.

6. The Contractor shall remove all trash and debris from the site on a daily basis and dispose of offsite in accordance with all local, state and federal regulations. Any necessary permits required for such disposal shall be obtained by the Contractor at their expense.

7. The Contractor shall provide all measures and devices necessary to protect the project limits, adjacent property, employees, and the general public for the duration of the project construction.

8. Existing plant materials selected for relocation shall be excavated during grading activities in the respective wetland area or stream segment. Plant excavation shall be performed with great care in order to retain the root structure within the drip-line of the plant, and roots shall not be allowed to dry out during temporary storage and relocation.

9. Strip and stockpile topsoil in designated material storage areas.

10. The contractor shall remove all trees, stumps, shrubs, brush, and other organic material within the grading limits necessary to facilitate earthwork activities. Other debris shall also be removed.

11. All additional material will be chipped and stockpiled on-site for subsequent use by the contractor for organic matter (or mulch) within the project limits.

12. All vegetation removed within the project limits that cannot be chipped or used for structures shall be hauled off-site and disposed of by the Contractor.

E. Construction Guidelines:

1. All references to "left" and "right" in the construction drawings are in reference to looking downstream.

2. Construction shall proceed from the upstream to downstream, working and completing and stabilizing one segment of the proposed channel and planting area daily. If needed, pump any base stream flow from upstream of the active work area to downstream of the active work area.

3. Contractor is responsible to monitor weather forecasts and prepare site conditions, including erosion control measures, for pending storms capable of producing significant rainfall.

4. The Contractor shall perform all rough and fine grading earthwork operations in accordance with proposed grades and technical specifications, as shown herein.

5. On benches and slopes above bankfull elevation, the Contractor shall strip, stockpile, and replace 6 inches of topsoil prior to achieving final design elevation. Each section shall be rough graded first along the specified segment, then install structures and bring proposed stream bed and banks to final grade as work proceeds downstream. Existing plant materials that have been temporarily stored for relocation shall then be brought back to these areas and replanted at the final grade.

6. Final grade of the proposed channel shall utilize the specified bed substrate material as the final layer in the proposed channel. Stones shall be placed to create a dense stable mass with a minimum of voids.

7. Coir fabric along the banks shall be installed along with installation of rock and wood structures so that fabric can be placed first with sills on top to pin fabric in place. Sills shall be embedded so that tops are at final proposed grade.

8. Each stream segment shall be brought to final grade and stabilized daily before continuing to the next segment, allowing diverted (pump around) stream flow to be redirected back into the existing channel.

9. On a daily basis, as final grade and stabilization of the banks progresses downstream, the banks and other graded surfaces shall be seeded and lined with matting as shown on the Erosion and Sediment Control Plan. The Contractor shall be responsible to maintain all denuded and disturbed areas until which time they have been stabilized with the specified vegetative cover. The County Inspector and Project Engineer shall determine when the site has been completely stabilized.

10. Specified plantings shall be installed in accordance with the attached construction drawings following final grading, matting, seeding and as-built survey coordination. Contractor shall only use ATV scale vehicles and small equipment to complete planting work to avoid track rutting and disruption of final grade.

11. Upon completion of construction and vegetative stabilization, the Contractor shall remove temporary erosion and sediment control measures in accordance with the the most current edition of the Pennsylvania Erosion and Sediment Control Handboo k. This work includes permanent seeding of any remaining access roads and disturbance to temporary material storage areas and access easements.

F. Geotechnical Notes:

1. Consulting & Testing
   - 1.1. Contractor is responsible to hire a qualified Geotechnical Engineer, licensed in Pennsylvania, for consulting on geotechnical conditions, monitor filling operations and perform compaction testing and reporting.
   - 1.2. Material compaction shall be tested per lift by the Geotechnical Engineer. The proposed compaction testing methodology and frequency shall be approved by the Project Engineer prior to commencement of construction.
   - 1.3. The Geotechnical Engineer shall maintain records of compaction testing and provide weekly reports of testing results to the Project Engineer. Reports shall be signed and sealed by a Geotechnical Engineer licensed in Pennsylvania.
   - 1.4. The Contractor shall be responsible for cost associated with any rework resulting from earthwork not performed in accordance with these geotechnical notes.

2. Soil Materials
   - 2.1. Suitable fill materials are defined as those complying with ASTM D2487 soil classification groups SW, SP, SM, SC, GW, GP, GM or GC, unless approved otherwise by the Project Engineer.
   - 2.2. Unsuitable fill materials are defined as those complying with ASTM D2487 soil classification groups CL, ML, OL, CH, MH, OH, or PT.
   - 2.3. Streambed Substrate is defined as a Contractor developed material mixture specified by the Project Engineer for channel lining in accordance with these construction drawings. The Streambed Substrate mixtures can be found on sheet 4.02.
   - 2.4. Clay Core material shall comply with ASTM D2487 soil classification groups CL, ML, CH or MH. This material shall be approved by the Geotechnical Engineer prior to placement.
   - 2.5. Topsoil material - reference the attached Erosion and Sediment Control Notes and Planting Specifications for material definition, content and placement.

3. Excavation
   - 3.1. Excavation consists of soil material removal from any location within the project limits. All excavation shall be in accordance with the construction drawings.
   - 3.2. Unauthorized excavation consists of removal of soil materials beyond specified subgrade elevations, dimensions or locations without specific direction from the Project Engineer and Owner approval.
   - 3.3. Unsuitable material shall be identified and removed, if necessary, to the limits determined by the Geotechnical Engineer and suitable replacement material shall be backfilled in accordance with the geotechnical specifications contained herein.
   - 3.4. All work shall be performed in a safe manner in accordance with 29CFR1926 OSHA standards, latest edition.
   - 3.5. Dewatering, if necessary, shall be performed in accordance with the most current edition of the Pennsylvania Erosion and Sediment Control Handbook.

4. Backfilling & Fill Placement
   - 4.1. Vegetative debris and deleterious organic matter shall be removed from the channel (fill area) prior to the placement of fill.
   - 4.2. Material used for fill shall be suitable material as previously defined, free from rocks larger than 4 inches in any dimension, debris, root mass, clods or deleterious matter. Fill shall be placed in lifts not to exceed 8 inches and each lift shall be compacted to a minimum 95% of standard proctor.
   - 4.3. The use of a bridge lift is permitted as the initial fill lift only, where the existing channel bottom consists of soil materials that are either unsuitable or exceed optimum moisture conditions. Bridge lifts shall be placed in lifts not to exceed 8 inches with a maximum depth of 2 feet and be constructed with suitable fill within 3 percentage points of optimum moisture content. Fill lifts installed above the bridge lift shall be compacted to a minimum 95% of standard proctor.
   - 4.4. Steambed Substrate Mix shall be placed in lifts as specified on sheet 4.02.
   - 4.5. Reference the most current edition of the Pennsylvania Erosion and Sediment Control Handbook and Planting Specifications for direction on topsoil stripping, stockpiling, testing, amendment and reapplication.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
REBECCA E. NAPIER

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP

REVISION DESCRIPTION	DATE

DATE	MARCH 2013
DRAWN BY	M.A./M.H.
DESIGNED BY	M.A./M.H.
CHECKED BY	M. ELANDER
SCALE	N/A

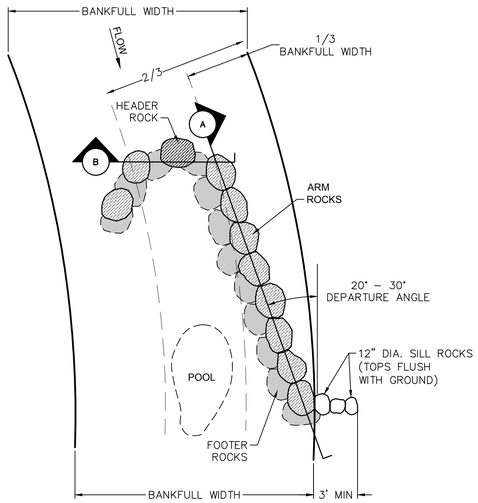
ENLOW FORK MITIGATION BANK
WASHINGTON COUNTY - PENNSYLVANIA
CONSTRUCTION NOTES

JOB NO. 33362

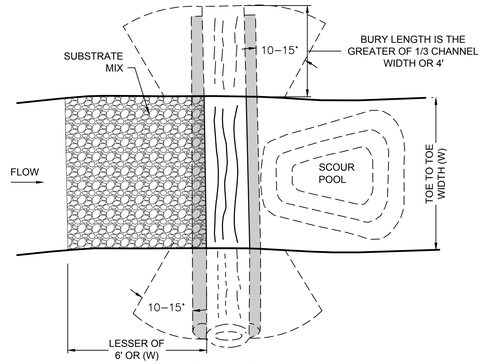
SHEET NO. 4.00

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

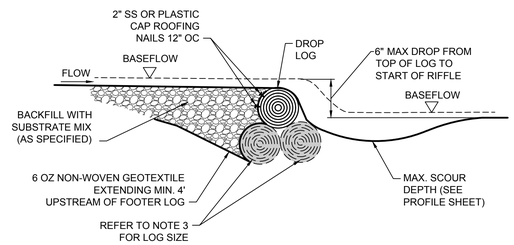
Y:\804\33362-RES_20WAS020_Carpenter\DWG\Sheet\CD\UPA Plan Submittal\4.00 CONSTRUCTION NOTES.dwg | Plotted on 7/1/2013 8:33 AM | by Michael Aust



PLAN VIEW



PLAN VIEW



SECTION VIEW

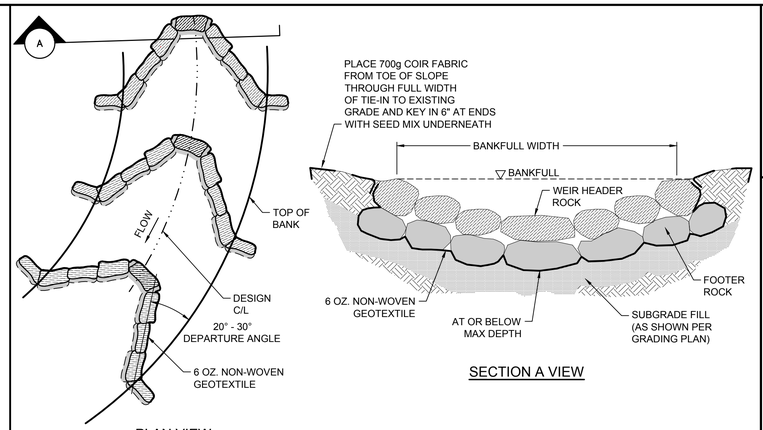
NOTES

1. LOG SILLS MAY BE ANGLED WITHIN A RANGE FROM 10-15° AS SHOWN IN PLAN VIEW .
2. ONLY REACH 2 SHALL USE 12" LOGS. ALL OTHER REACHES SHALL USE 18" LOGS.

REV. 9/26/11

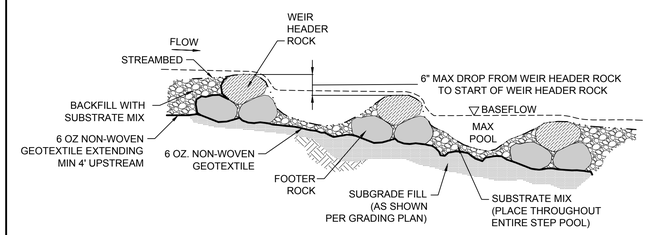
LOG SILL (TRIPLE)

NO SCALE



PLAN VIEW

SECTION A VIEW



PROFILE VIEW

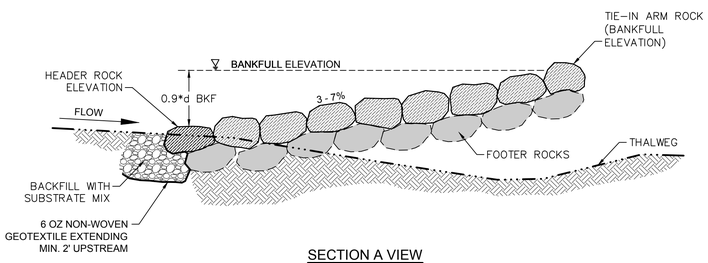
NOTES:

1. REFER TO SUITABLE ROCK SIZE DIAGRAM ON SHEET 4.02 FOR WEIR AND FOOTER ROCK DIMENSIONS.
2. REFER TO GRADING PLAN FOR STATION AND ELEVATION OF POOL AND ROCK STRUCTURES.

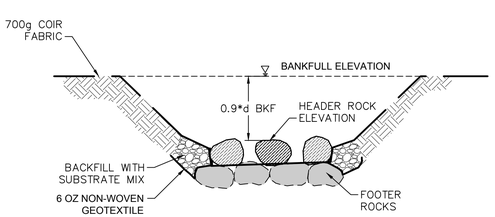
REV. 6/11/12

ROCK STEP POOL

NO SCALE



SECTION A VIEW



SECTION B VIEW

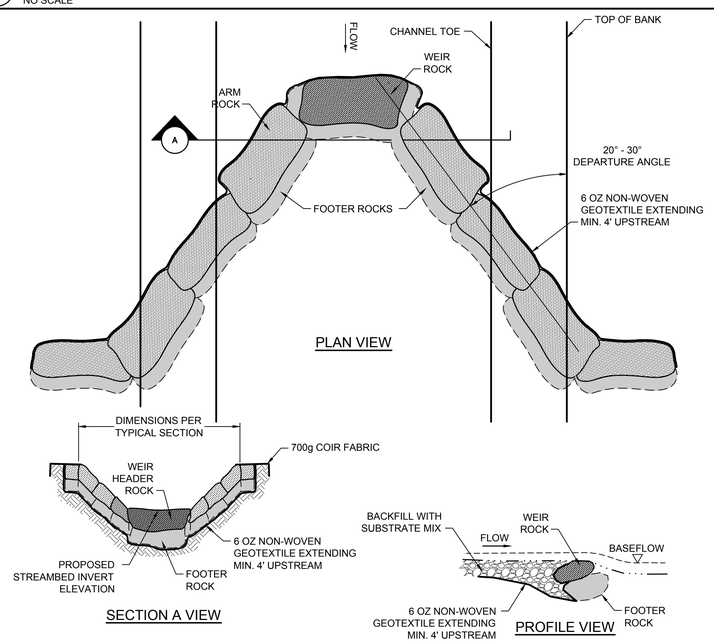
NOTES:

1. REFER TO SUITABLE ROCK SIZE DIAGRAM ON SHEET 4.02 FOR HEADER AND FOOTER ROCK DIMENSIONS.
2. THE SILL ROCKS SHALL HAVE AN INTERMEDIATE DIMENSION OF AT LEAST 12".
3. TOP OF FRONT HEADER ROCK(S) SHALL BE PLACED AT PROPOSED STREAMBED INVERT.
4. BACKFILL BETWEEN J-HOOK VANE AND BANKS WITH SUBSTRATE MIX.

REV. 9/26/11

ROCK J-HOOK

NO SCALE



PLAN VIEW

SECTION A VIEW

PROFILE VIEW

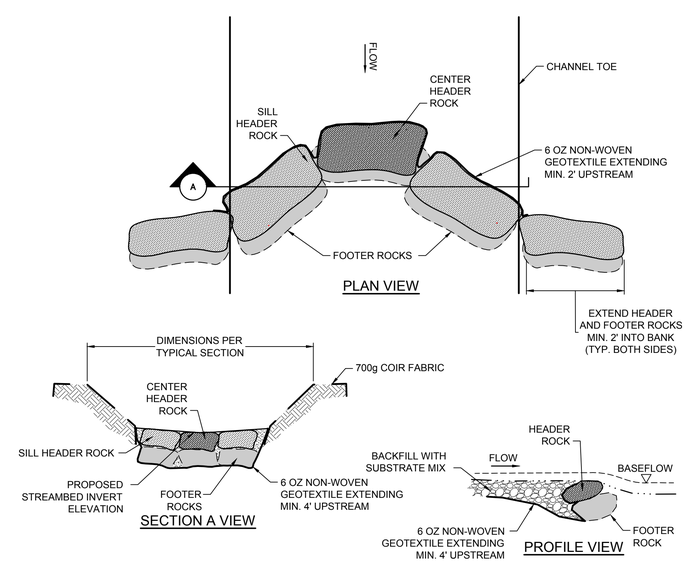
NOTES:

1. REFER TO SUITABLE ROCK SIZE DIAGRAM ON SHEET 4.02 FOR HEADER AND FOOTER ROCK DIMENSIONS.
2. THE ROCK WEIR IS TO BE CENTERED IN THE CHANNEL WITH ALL HEADER ROCKS FLUSH WITH THE PROPOSED GRADE. ALL ROCKS PLACED TIGHTLY TO EACH OTHER WITH SUBSTRATE MIX COMPACTED AROUND EACH.

REV. 6/11/12

ROCK WEIR

NO SCALE



SECTION A VIEW

PROFILE VIEW

NOTES:

1. REFER TO SUITABLE ROCK SIZE DIAGRAM ON SHEET 4.02 FOR HEADER AND FOOTER ROCK DIMENSIONS.
2. THE ROCK SILL IS TO BE CENTERED IN THE CHANNEL WITH ALL HEADER ROCKS FLUSH WITH THE PROPOSED GRADE. ALL ROCKS PLACED TIGHTLY TO EACH OTHER WITH SUBSTRATE MIX COMPACTED AROUND EACH.

REV. 9/26/11

ROCK SILL

NO SCALE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
REBECCA E. NAPIER
No. PE081020

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION	DATE

DATE	MARCH 2013
DRAWN BY	M.A./M.H.
DESIGNED BY	M.A./M.H.
CHECKED BY	M. ELANDER
SCALE	AS NOTED

TIMMONS GROUP

ENLOW FORK MITIGATION BANK

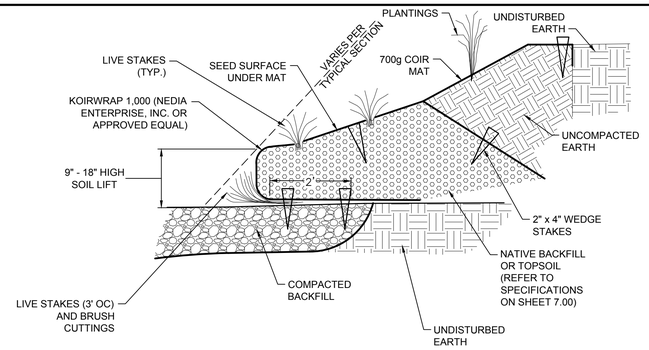
WASHINGTON COUNTY - PENNSYLVANIA

CONSTRUCTION DETAILS

JOB NO.	SHEET NO.
33362	4.01

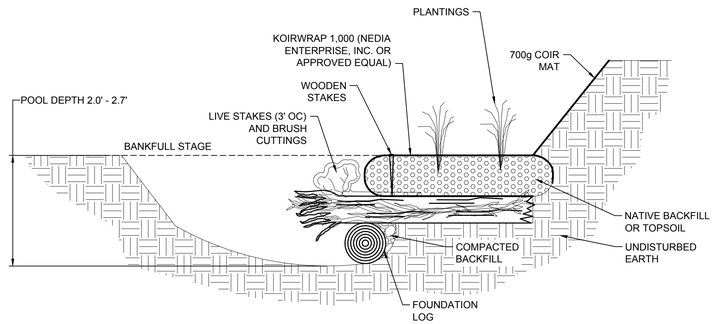
These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

Y:\80433362-RES_20WASH20_Carpenter\DWG\Sheet\CD\JPA Plan Submittal\4.01 CONSTRUCTION DETAILS.dwg | Plotted on 7/1/2013 8:33 AM | by Michael Aust



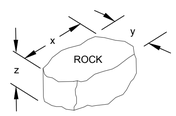
REV. 10/08/12

REINFORCED SOIL LIFTS
NO SCALE



REV. 10/08/12

TOE WOOD
NO SCALE



SUITABLE ROCKS WILL HAVE THE FOLLOWING THREE PRIMARY DIMENSIONS (±2"):

x = LONGEST DIMENSION
y = INTERMEDIATE DIMENSION (40")
z = SHORTEST DIMENSION

REV. 9/26/11

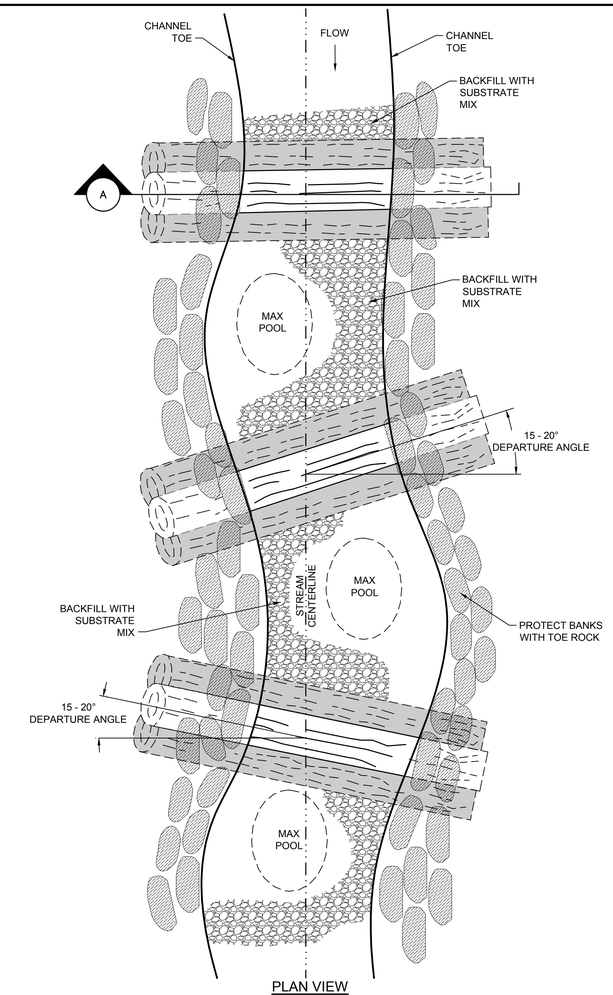
SUITABLE ROCK SIZE DIAGRAM
NO SCALE

MATERIAL	INTERMEDIATE DIMENSION	% OF MIXTURE
COBBLE	3 - 10"	85%
GRAVEL	0.5 - 3"	10%
FILL	GRANULAR	5%

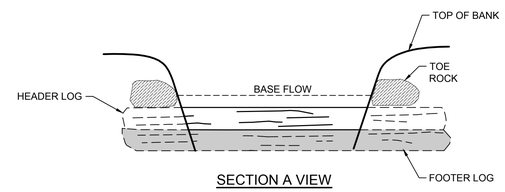
1. SUBSTRATE DEPTH SHALL BE 12".
2. THE INTERMEDIATE DIMENSION OF FLAT OR "PLATY" ROCK SHALL BE THE AVERAGE OF THE LENGTH, WIDTH AND THICKNESS.
2. ALL MATERIAL USED FOR SECTIONS OF THE STREAM CHANNEL THAT ARE RAISED ABOVE EXISTING GRADE SHALL BE REVIEWED AND APPROVED BY THE PROJECT ENGINEER PRIOR TO PLACEMENT IN THE STREAM CHANNEL.
3. COBBLE AND GRAVEL MATERIALS SHALL BE SIMILAR IN NATURE TO COMMON STREAM AND RIVERBED FORMATIONS IN THIS VICINITY.
4. FILL CONSISTS OF MATERIAL EXCAVATED AND RELOCATED FROM THE PROJECT SITE OR ASSOCIATED AREAS ON THE PROPERTY. PROPOSED FILL SOURCES SHALL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO USE.
5. MATERIALS IMPORTED TO THE SITE SHALL BE MIXED TO THE SPECIFIED PERCENTAGES WITHIN THE LIMITS OF THE STOCKPILE AND STAGING AREAS PRIOR TO FINAL PLACEMENT.

REV. 9/26/11

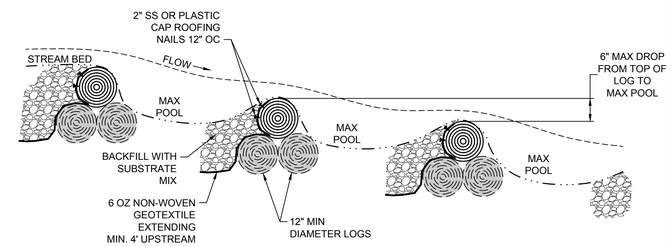
SUBSTRATE MIX SPECS
NO SCALE



PLAN VIEW



SECTION A VIEW



PROFILE VIEW

REV. 4/18/12

LOG STEP-POOL
NO SCALE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
REBECCA E. NAPIER
No. PE061020

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION

DATE

DATE: MARCH 2013
DRAWN BY: M.A./M.H.
DESIGNED BY: M.A./M.H.
CHECKED BY: M. ELANDER
SCALE: AS NOTED

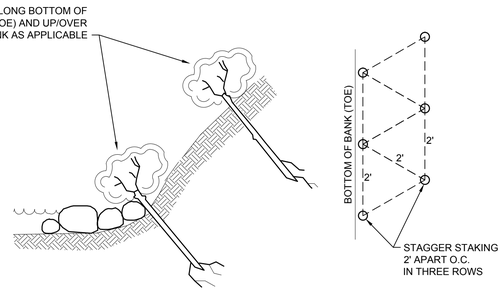
TIMMONS GROUP

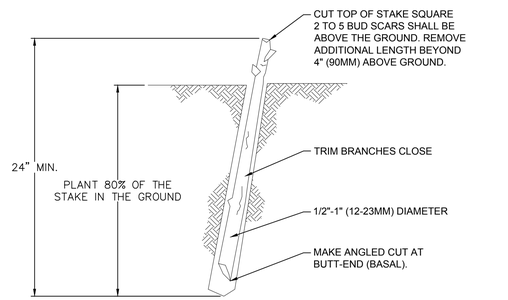
ENLOW FORK MITIGATION BANK
WASHINGTON COUNTY - PENNSYLVANIA
CONSTRUCTION DETAILS

JOB NO. 33362
SHEET NO. 4.02

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

Y:\80443\3362-RES_20WASX02_Carpenr\DWG\Sheet\CD\PA Plan Submittal\4.02 cONSTRUCTION dETAILS.dwg | Plotted on 7/1/2013 8:33 AM | by Michael Aust

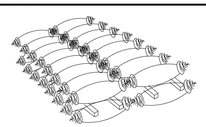




REV. 9/26/11

LIVE STAKING (DOUBLE ROW)

NO SCALE



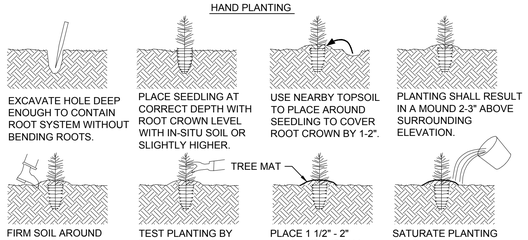
CARE OF SEEDLINGS UNTIL PLANTED

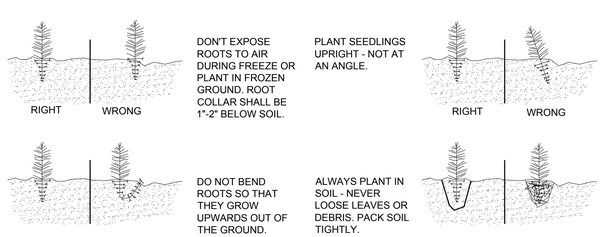
SEEDLINGS SHOULD BE PLANTED IMMEDIATELY. IF IT IS NECESSARY TO STORE MOSS-PACKED SEEDLINGS FOR MORE THAN 2 WEEKS, ONE PINT OF WATER PER PKG. SHOULD BE ADDED. IF CLAY-TREATED, DO NOT ADD WATER TO PKG. PACKAGES MUST BE SEPARATED TO PROVIDE VENTILATION TO PREVENT "HEATING". SEPARATE PACKAGES WITH WOOD STRIPS AND STORE OUT OF THE WIND IN A SHADED, COOL (NOT FREEZING) LOCATION.

CARE OF SEEDLINGS DURING PLANTING

WHEN PLANTING, ROOTS MUST BE KEPT MOIST UNTIL TREES ARE IN THE GROUND. DO NOT CARRY SEEDLINGS IN YOUR HAND EXPOSED TO THE AIR AND SUN. KEEP MOSS-PACKED SEEDLINGS IN A CONTAINER PACKED WITH WET MOSS OR FILLED WITH THICK MUDDY WATER. COVER CLAY-TREATED SEEDLINGS WITH WET BURLAP ONLY.

HAND PLANTING





REV. 9/26/11

TUBELING AND BARE-ROOT SEEDLING INSTALLATION W/ TREE MAT

NO SCALE

Y:\08A33302-RES_20WA3020_Carpenter\DWG\Sheet\CD\JPA Plan Submittal\6.00 PLANTING SPECIFICATIONS AND DETAILS.dwg | Plotted on 7/1/2013 8:33 AM | by Michael Auer

PLANTING SPECIFICATIONS

A. General:

1. Plant details are incorporated into this specification by reference.

2. Submittals
   - 2.1. Installers Qualifications: provide a list, with references, of the past three projects of similar scope.
   - 2.2. Product Data: for each type of product indicated.
   - 2.3. Plant Material Certifications: Contractor shall be required to submit the material certifications to the Project Engineer for review and approval prior to material purchase.
   - 2.4. Topsoil Analysis and Soil Amendments: Contractor shall be responsible to submit certified soil test results and soil amendment recommendations prior to commencement of construction.
   - 2.5. Contractor should schedule a minimum of one week for Project Engineer review time of the specified submittal.

3. Quality Assurance
   - 3.1. Supplier Certification: the supplier of all seeds and/or vegetation shall certify that origin of the seeds from which the plants or seeds were produced is from hardiness zone 5, from the eastern or central portions of the U.S., prior to planting.
   - 3.2. Installer Qualifications: engage an experienced installer, who has successfully completed planting projects similar in size and complexity to this project.
   - 3.3. Installer's Field Supervision: Installer to maintain an experienced full-time supervisor on the project site when planting is in progress.

4. Plant Materials
   - 4.1. Provide plant materials of quantity, size, genus, species, and variety indicated on the construction drawings.

5. All plant materials and work shall comply with recommendations and requirements of ANSI z60.1 2004 American Standard for Nursery Stock. All seed must meet applicable state and federal regulations and must include labeling indicating supplier, formulation, germination rates and seed date.

6. Do not make substitutions unless approved by the Project Engineer. If specified landscape material is not obtainable, submit proof of non-availability to Project Engineer, together with proposal for use of equivalent material.

7. Project Engineer may inspect plant materials either at place of growth or on site during planting activities, for compliance with requirements for genus, species, variety, size, and quality. Additionally, Project Engineer retains the right to further inspect plant material. Material found to be unacceptable will be rejected and the contractor will be required to supply replacement material within a reasonable time frame (i.e., 1 week). Rejected material shall be immediately removed from project site. Unacceptable material is defined as the following:
   - 7.1. Plants with bent trunks or multiple leaders, unless characteristic for the species;
   - 7.2. Plants with diseased trunks, stems, or leaves;
   - 7.3. Plants with pest-infested trunks, stems, or leaves;
   - 7.4. Plants of insufficient size;
   - 7.5. Plants of wrong species/sub-species; and
   - 7.6. Plants having root girdling in the container.

8. Delivery, Storage and Handling
   - 8.1. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during delivery. Do not drop plants during delivery.
   - 8.2. Deliver plant materials after preparations for planting have been completed and plant immediately. If planting is delayed more than 6 hours after delivery, set plant materials in shade, protect from weather and mechanical damage, and keep roots moist and free from frost. Prevent plug, tubelings and bareroot material from drying.
   - 8.3. Do not remove container-grown stock from containers until planting time.
   - 8.4. Balled and burlapped material shall be dug so as to retain as many fibrous roots as practicable and shall come from soil which will form a firm ball. The soil in the ball shall be the original and undisturbed soil in which the plant has been grown. The plant shall be dug, wrapped, transported and handled in such a manner that the soil ball will not be loosened to cause stripping of the small and fine feeding roots or cause the soil to drop away from such roots.
   - 8.5. Balled and burlapped material shall be freshly dug. If trees are stored, untie and set vertically.
   - 8.6. Handle planting stock by root ball.
   - 8.7. Prevent live staking material from drying out and store according to supplier's recommendations.

9. Project Conditions
   - 9.1. Examine the sub-grade and topsoil, verify the elevations, and observe the conditions under which work is to be performed. All soil amendments and conditioning shall be completed prior to seeding and plant material installation. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.
   - 9.2. Call Pennsylvania One Call System at 1-800-242-1776, 48 hours prior to any excavation. Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate as required.

10. Planting and Seeding Restrictions
    - 10.1. Plants shall be planted during unfrozen soil conditions September 15th - April 15th. Plant installation outside of this time period shall not occur unless approved by the Project Engineer and may require additions to the scope of work, such as watering regimes, and additional plant quantities.
    - 10.2. Seeding shall be completed during March - May or September - November. Grading operations needing stabilization outside of this time period shall be seeded with an alternative warm season or cool season grass mix that is approved by the Project Engineer until such time as the specified seeding can occur.
    - 10.3. These limits may not be modified unless approved by the Project Engineer, in advance, with the risk of survival borne solely by the contractor.

11. Warranty
    - 11.1. Warranty period is for one (1) year after date of Final Acceptance and covers defects including death and unsatisfactory growth, except for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond Contractor's control.
    - 11.2. Contractor shall guarantee a minimum survival rate for the warranty period of 85% for balled and burlapped, container grown, and tubelings, and 75% for bare root and live stakes.
    - 11.3. If survival rates are less than the above warranty rates, then contractor shall replace the quantity of defective or dead plants up to the original construction drawing specified plant quality. Warranty plantings shall occur within the next planting window (September 15th - April 15th, excluding frozen soil conditions) following the end of the applicable warranty period.
    - 11.4. It shall be the Contractor's responsibility during the warranty period to provide written notice of any maintenance practice to the Owner, which in their opinion will affect the guarantee if not remedied promptly. The Project Engineer will render an opinion of any conflict if necessary.

12. Maintenance
    - 12.1. The Contractor is responsible for maintaining all plant material until Final Acceptance. The Owner is responsible for maintaining all plant material throughout the warranty period according to the Project Engineer approved Maintenance Schedule.

B. Products/Materials:

1. Plant Materials
   - 1.1. General: The contractor is to provide nursery-grown plant materials complying with ANSI z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
   - 1.2. Transplants: Transplants may include live stakes, shrubs, small trees, grass plugs, and live mats. When available, the source and location of suitable materials for transplanting will be identified by the Project Engineer. The plant materials to be transplanted will be marked and identified for the Contractor prior to construction.

2. Live Stakes
   - 2.1. Commercially supplied or field harvested live stakes shall be at least one year old, and shall be harvested and transported when plants are dormant.
   - 2.2. The size of stakes shall range from ½ inch to 1 inch in caliper and average 24 inches in length with a minimum planted length of 18 inches. Side branches shall be removed with the remaining bark intact. The bottom (basal) end shall be cleanly cut at a 45 degree or sharper angle and the top end should be cut square (flat), protruding no more than 4 inches.

3. Branch Cutting
   - 3.1. Commercially supplied or field harvested branch cuttings shall be approximately ½ inch in diameter and shall not exceed 2 inches in diameter. Cuttings shall be 3 to 6 feet in length.
   - 3.2. Live branch cuttings shall consist of a mix of at least two of the approved plants species as specified on the Planting Schedule.

4. Seed: Seed should be clean and dry. Do not use seed that has become moist during delivery or storage.

5. Water: Free of substances harmful to plant growth.

6. Tree Mats: Ecodepot Treemat™ or Project Engineer approved equal. Tree mat must be composed of 100% biodegradable, machine-compressed coir fiber with 100% biodegradable rubber coating on one side. Tree mat must have a center opening, a radial slit, and must be a minimum of ½ inch thick. Manufacturer's recommended sizing:

   12" Treemat - tubelings and bareroot trees/shrubs
   16" Treemat - 1 gallon containerized trees/shrubs
   24" Treemat - 3 gallon containerized trees/shrubs
   30" Treemat - 5 gallon containerized trees/shrubs and 1 inch caliper trees
   36" Treemat - 2 inch caliper trees

7. Tree Shelters: Ecodepot Biobark™ tree shelter or Project Engineer approved equal. Tree shelter must be composed of 100% biodegradable materials and should be made of hardwood slats woven together with natural roping. The tree shelter must be at least 36 inches tall with at least 3 longer, hardy stakes for insertion into the ground to provide support.

8. Topsoil
   - 8.1. Reuse of surface soil stockpiled on-site: Contractor is responsible to submit soil test results, certifying suitability of stockpiled surface soil for topsoil use, to the Project Engineer for approval.
   - 8.2. If stockpiled surface soil is determined to be suitable for reuse as topsoil, then contractor shall clean soil to remove roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth prior to use as topsoil. Contractor may use sifted stone material as substrate material for the proposed stream as long as it meets the requirements and specifications of substrate material listed on sheet 4.03.
   - 8.3. Imported Topsoil: If on-site soil is determined to be unsuitable then contractor shall supplement with imported or manufactured topsoil from off-site sources with certified topsoil. Obtain topsoil displaced from naturally well-drained sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from bogs or marshes. If agricultural land is the source of topsoil the material cannot include manure.
     OR
   - 8.4. Amended Surface Soil: If on-site soil is determined to be unsuitable then contractor shall amend existing in-place surface soil to produce topsoil. Contractor is responsible to submit certified surface soil test results and recommended amendments to the Project Engineer for approval prior to purchasing amendments. Contractor shall clean surface soil to remove roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth prior to mixing in approved amendments.

9. Organic Soil Amendments
   - 9.1. Organic backfill shall be added as a soil amendment and shall consist of composted yard waste, or other approved recycled organic materials. Prior to delivery, the Contractor shall submit to the Project Engineer for approval a sample of the organic backfill that will be used by the Contractor.
   - 9.2. Organic backfill shall be aged not less than one year and must be free of viable weed seed. The Project Engineer reserves the right at any time to test and reject compost material that fails to meet these specifications. Composted waste products shall exclude sewer sludge or bio-solids, plastics or metals.

10. Straw Mulch: Cereal grain straw shall be harvested from dry stalks, properly stored, and clean of weed seeds. Straw shall come in baled form to be spread by hand or machine-blown.

11. Herbicide Spray Application: Existing areas with substantial coverage of undesirable grass species shall be sprayed with glyphosate (Roundup® or approved equal), surfactant, and ammonium sulfate mix at a rate of 1 quart glyphosate per acre, 7 ounces of surfactant, and 17 pounds per 100 gallons of water of ammonium sulfate. Cool season grass eradication requires one application in the fall and one in the spring. Grass should be allowed to grow 6 inches, either after mowing or from spring growth, to weaken the plant and provide maximum surface area for application.

12. Tree Tags: Tree Tags shall be 5 inch x ½ inch wrap-around tags constructed of fade resistant plastic. Tag color shall be proposed with product submittal to Project Engineer. Recommend Enviroflex® Wrap-Around Tag distributed by Western Tag & Label, or equivalent.

C. Execution:

Install plant materials in accordance with the specifications and details of the construction drawings following the addition of soil amendments, seeding, and installation of applicable erosion control fabric.

1. Container Grown Material
   - 1.1. Planting of container grown material shall occur in accordance with locations and/or patterns specific to the construction drawings.
   - 1.2. Planting holes shall be twice the diameter and 1 foot deeper than the container in which they are grown. Scarify planting hole bottom a minimum of 6 inches and mix ½ cubic foot of organic blend with hole backfill prior to setting plant. Do not remove plant material from container until immediately before installation. Examine the roots to see if they are pot bound. Carefully separate any pot bound or cramped roots and spread them out when placing the plant within the hole so that the roots can grow without further constriction of the root ball.
   - 1.3. Set plant materials plumb and centered within hole, ensuring that the top of the root ball is elevated 2 to 3 inches above the surrounding soil elevations. Backfill around root ball with suitable native soil, maintaining plumb, and gently tamping backfill layers to eliminate voids. Water in backfill layers to the point of soil saturation.
   - 1.4. Following the backfilling, add existing soil to bring the final grade in the planting hole to the surrounding soil surface. Rake the unused existing soil outside the planting house, taking care not to mound the soil or to significantly alter the existing grades.
   - 1.5. Install tree mat around plant and secure with 8 inch sod staples in accordance with manufacturer's recommendations. If approved by the Project Engineer as an alternate, the Contractor may apply 2 to 3 inch average thickness of approved organic mulch layer, in lieu of installing Treemats across the entire planting hole extending a minimum of 9 inches radially. Do not place mulch within 3 inches of plant trunk or stem.
   - 1.6. Install approved tree tag in accordance with manufacturer's recommendations.

2. Bareroot and Tubeling Material
   - 2.1. Planting of tubeling and bare root material shall occur in a random pattern across the site and in accordance with the schedule and details provided.
   - 2.2. It should be anticipated that the soil may be compacted more than optimal for planting and it shall be the contractor's responsibility to disk and rake soil to assure optimal planting condition.
   - 2.3. Bareroot material shall be treated with root dip according to the manufacturers recommendation prior to planting. Materials shall be planted immediately or otherwise stored per the manufacturer's recommendations.
   - 2.4. Install 12" tree mat around plant and secure with 8 inch sod staples in accordance with manufacturer's recommendations. If approved by the Project Engineer as an alternate, the Contractor may apply 2 to 3 inch average thickness of approved organic mulch layer, in lieu of installing Treemats across the entire planting hole extending a minimum of 9 inches radially. Do not place mulch within 3 inches of plant trunk or stem.
   - 2.5. Install approved tree tag in accordance with manufacturer's recommendations.

3. Live Stake Material
   - 3.1. Live stake material shall be soaked with growth hormone 48 hours prior to installation and shall be kept moist according to manufacturers recommendations. Do not allow the live stakes to dry out prior to installation.
   - 3.2. Material shall be planted according to the detail provided on sheet 7.01. The use of a punch/planting bar, auger, rebar, or water-jet may be used to predrill hole if necessary. Tamp soil around stake following install.
   - 3.3. Install approved tree tag in accordance with manufacturer's recommendations.

4. Seeding
   - 4.1. Seeding in areas graded or otherwise denuded shall occur in accordance with the current version of the Pennsylvania Department of Environmental Protection Erosion and Sediment Pollution Control Program Manual. Seed shall be applied prior to installation of any erosion control fabric. Areas applied with herbicide in the spring may be seeded 7 days after application.
   - 4.2. Sow seed with a spreader or a hydroseed machine with manufacturer recommended binding agent. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
   - 4.3. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
   - 4.4. Sow seed prior to installation of erosion control fabric where applicable.
   - 4.5. Rake seed lightly into the top ¼ to ½ inch of topsoil, roll lightly, and water with a fine spray.
   - 4.6. Protect seeded areas against erosion by spreading straw mulch immediately following completion of seeding operations if other erosion control measures are not otherwise specified. Spread uniformly at a rate of 2 tons per acre (90 lb. per 1,000 S.F.) to form a continuous blanket over seeded areas. Spread by hand, blower, or other suitable equipment. Anchor straw mulch by crimping into topsoil by suitable mechanical equipment.

5. Transplants
   - 5.1. Live Mat Transplanting
   - 5.2. Unless otherwise directed by the Project Engineer, the Contractor shall stage transplanting of live mats such that they can be immediately re-planted on the prepared surface. Double handling of the mats shall be avoided when possible.
   - 5.3. The surface that will receive the mats shall be graded and loose. Mats will not be placed over compacted or currently vegetated soils without cultivating the surface.
   - 5.4. The Contractor shall use suitable equipment so as to obtain a thick mat of vegetation with the root mass intact. Mats shall be a minimum of one foot (1') thick, and three foot (3') by four foot (4') size.
   - 5.5. After placement on the prepared slope, the Contractor shall tamp the mat to ensure it is in full and stable contact with the underlying soil surface. Handwork with sharp shovels may be needed to trim mats such that the joints between mats are tight, with minimal exposed soil.

6. Grass, Shrub, and Tree Transplanting
   - 6.1. Unless otherwise directed by the Project Engineer, the Contractor shall stage transplanting of grass/shrubs/trees such that materials can be immediately re-planted. Double handling of the shrubs/trees shall be avoided when possible.
   - 6.2. The Contractor shall use suitable equipment to harvest the grass/shrubs/trees with an adequate root-mass for the plants survival. Grasses shall be harvested using a hand trowl and transported in vessels capable of maintaining moisture and adequate soil around the roots.
   - 6.3. The Contractor shall avoid excessive damage to the materials during the harvesting and planting process. Large shrubs shall be bundled and tied prior to digging to reduce damage to the bark. Tree limbs may be trimmed as is reasonable to avoid damage from the equipment.
   - 6.4. Transplanted shrubs/trees shall be re-planted such that the plants are set into the ground at the same depth they were growing at the harvest location. The shrubs/trees shall be placed in a hole of an adequate size and shall be backfilled and tamped to remove voids in the soil. Water may be used to wash fill material around the root mass.
   - 6.5. Larger trees may require staking. When specified by the Project Engineer, trees shall be staked on two sides with wooden stakes, heavy wire and protective collars shall be used where the wire makes contact with the tree bark.

7. Ball and Burlap Material
   - 7.1. Planting of ball and burlap material shall occur in accordance with locations and/or patterns specific to the construction drawings.
   - 7.2. Planting holes shall be triple the diameter. Do not remove plant material from container until immediately before installation.
   - 7.3. If field grown, cut away all balling ropes. Remove burlap or wire basket from top ⅓ of ball. Prune suckers.
   - 7.4. Set plant materials on unexcavated or tampered soil, plumb, and centered within hole, ensuring that the top of the root ball is elevated 2 to 3 inches above the surrounding soil elevations. Remove burlap around root ball and allow roots to extend into pit Backfill around root ball with suitable native soil, maintaining plumb, and gently tamping backfill layers to eliminate voids. Water in backfill layers to the point of soil saturation.
   - 7.5. Following the backfilling, add existing soil to bring the final grade in the planting hole to the surrounding soil surface. Rake the unused existing soil outside the planting house, taking care not to mound the soil or to significantly alter the existing grades.
   - 7.6. Install tree mat around plant and secure with 8 inch sod staples in accordance with manufacturer's recommendations. If approved by the Project Engineer as an alternate, the Contractor may apply 2 to 3 inch average thickness of organic mulch layer, in lieu of installing tree mats across the entire planting hole. Do not place mulch within 3 inches of plant trunk or stem.
   - 7.7. Install Tree Shelter around plant in accordance with manufacturer's recommendations.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
REBECCA E. NAPIER
ENGINEER
No. PE061020

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION

DATE: MARCH 2013
DRAWN BY: M.A./M.H.
DESIGNED BY: M.A./M.H.
CHECKED BY: M. ELANDER
SCALE: AS NOTED

TIMMONS GROUP

ENLOW FORK MITIGATION BANK
WASHINGTON COUNTY - PENNSYLVANIA
PLANTING SPECIFICATIONS AND DETAILS

JOB NO. 33362
SHEET NO. 6.00

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

ENLOW FORK MITIGATION BANK - SEEDING SCHEDULE

	BOTANICAL NAME	COMMON NAME	INDICATOR STATUS	MIX DENSITY	SEEDING RATE (lbs/acre)
RIPARIAN BUFFER MIX (ERNMX-178)	*Panicum clandestinum*	Deer Tongue, 'Tioga'	OBL	15%	
	Schizachyrium scoparium	Little Bluestem	FACU	15%	
	Carex vulpinoidea	Fox Sedge	OBL	10%	
	Elymus riparius	Riverbank Wild Rye	FACW	8%	
	Elymus virginicus	Virginia Wild Rye	FACW	8%	
	Cornus stolonifera	Redosier Dogwood	FACW	6%	
	Chamaecrista fasciculata	Partridge Pea	FACW	6%	
	Andropogon gerardii	Big Bluestem, 'Niagara'	FAC	5%	
	Panicum virgatum	Switchgrass, 'Shelter'	FAC	4%	
	Verbena hastata	Blue Vervain	FACW	3%	
	Heliopsis helianthoides	Ox Eye Sunflower	NI	3%	
	Eupatorium perfoliatum	Boneset	FACW	2%	
	Juncus effusus	Soft Rush	FACW	2%	
	Baptisia australis	Blue False Indigo	NI	2%	
	Agrostis perennans	Autumn Bentgrass	FACU	2%	
	Viburnum dentatum	Arrowwood	FAC	2%	
	Rudbeckia hirta	Black Eyed Susan	FACU	2%	
	Vernonia gigantea	Giant Ironweed	FAC	2%	
	Eupatorium fistulosum	Joe Pye Weed	FACW	1%	
	Lobelia siphilitica	Great Blue Lobelia	FACW	1%	
	Monarda fistulosa	Wild Bergamot	UPL	1%	
	TOTAL QUANTITY			**100%**	**20**

	BOTANICAL NAME	COMMON NAME	INDICATOR STATUS	MIX DENSITY	SEEDING RATE (lbs/acre)
NATIVE STEEP SLOPE MIX WITH ANNUAL RYEGRASS (ERNMX-181)	*Sorghastrum nutans*	Indiangrass	UPL	22%	
	Lolium multiflorum	Annual Ryegrass	NI	20%	
	Schizachyrium scoparium	Little Bluestem	FACU	17%	
	Elymus riparius	Riverbank Wildrye	FACU	15%	
	Elymus virginicus	Virginia Wildrye	FACW	5%	
	Agrostis scabra	Ticklegrass	FAC	4%	
	Tridens flavus	Purpletop	FACU	4%	
	Agrostis perennans	Autumn Bentgrass	FACU	4%	
	Echinacea purpurea	Purple Coneflower	NI	3%	
	Chamaecrista fasciculata	Partridge Pea	FACU	2%	
	Coreopsis lanceolata	Lanceleaf Coreopsis	FACU	1%	
	Liatris spicata	Marsh Blazing Star	FAC	1%	
	Monarda fistulosa	Wild Bergamot	UPL	1%	
	Penstemon digitalis	Tall White Beardtongue	FAC	1%	
	TOTAL QUANTITY			**100%**	**60**

STARTUP MIX	BOTANICAL NAME	COMMON NAME	INDICATOR STATUS	MIX DENSITY	SEEDING RATE (lbs/acre)
	Lolium multiflorum	Annual Ryegrass	NI	**100%**	**30**

SEEDING SCHEDULE NOTES:

1. Annual Ryegrass shall be substituted with German Foxtail Millet (*Setaria italica*) if grading activities are scheduled to conclude between May 1 and August 31.
2. The above referenced seed mixes are available from Ernst Conservation Seeds, Meadville, PA (800) 873-3321.
3. Quantities are based on estimated areas of grading activity. Additional seeding shall conform to the materials and rate of this schedule.
4. Seeding quantities are for convenience only and shall be verified by the Planting Contractor based on the specified density (pounds/acre) prior to bidding.
5. Substitutions shall only be made with the approval of the Project Engineer.

ENLOW FORK MITIGATION BANK - PLANTING SCHEDULE

ZONE	SPECIES: BOTANICAL NAME	SPECIES: COMMON NAME	SPECIES: INDICATOR STATUS	MATURE HEIGHT (FT)	SHADE TOLERANCE	WILDLIFE VALUE	PLANT SPACING (FEET O.C.)	PLANTS PER ACRE
RIPARIAN WETLAND FOREST	*Spiraea latifolia*	Meadowsweet	FACW	3-6	intermediate	food source-fruit and twigs	6-10'	55
	Vaccinium corymbosum	Highbush blueberry	FACW	6-12	tolerant	food source-fruit	6-10'	55
	Acer rubrum	Red maple	FAC	75-100	tolerant	food source-fruits and young shoots	6-10'	55
	Betula alleghaniensis	Yellow birch	FAC	60-100	intermediate	food source-seeds, young twigs and shoots and catkins	6-10'	55
	B. nigra	River birch	FACW	40-70	intolerant	food source-seeds, buds, young twigs and foliage	6-10'	55
	Carpinus caroliniana	American hornbeam	FAC	35-50	very tolerant	food source-catkins, buds, seeds, leaves and twigs	6-10'	55
	Q. palustris	Pin oak	FACW	50-75	intolerant	food source-acorns and twigs	6-10'	55
	Cornus amomum	Silky dogwood	FACW	6-12	intolerant	food source-fruits	6-10'	55
	C. sericea	Red-osier dogwood	FACW	6-12	intermediate	food source-fruits, buds, and twigs	6-10'	55
	Salix discolor	Pussy willow	FACW	20-35	very intolerant	high value as food source	6-10'	55

ZONE	SPECIES: BOTANICAL NAME	SPECIES: COMMON NAME	SPECIES: INDICATOR STATUS	MATURE HEIGHT (FT)	SHADE TOLERANCE	WILDLIFE VALUE	PLANT SPACING (FEET O.C.)	PLANTS PER ACRE
UPLAND FOREST	*Acer rubrum*	Red maple	FAC	75-100	tolerant	food source-fruits and young shoots	6-10'	70
	A. saccharum	Sugar maple	FACU	75-100	very tolerant	food source-seeds and twigs	6-10'	70
	Betula alleghaniensis	Yellow birch	FAC	60-100	intermediate	food source-seeds, young twigs and shoots and catkins	6-10'	70
	Carpinus caroliniana	American hornbeam	FAC	35-50	very tolerant	food source-catkins, buds, seeds, leaves and twigs	6-10'	70
	Fagus grandifolia	American beech	FACU	75-100	very tolerant	food source-nuts	6-10'	70
	Prunus serotina	Wild black cherry	FACU	50-75	intolerant	high value food source-fruits, twigs, and nectar	6-10'	70
	Tsuga canadensis	Canadian hemlock	FACU	75-100	very tolerant	food source-seeds, twigs, needles, and bark; used for cover	6-10'	70

ZONE	SPECIES: BOTANICAL NAME	SPECIES: COMMON NAME	SPECIES: INDICATOR STATUS	MATURE HEIGHT (FT)	SHADE TOLERANCE	WILDLIFE VALUE	PLANT SPACING (FEET O.C.)
STREAM BANK	*Salix discolor*	Pussy Willow	FACW	20-40	intolerant	food source-seeds, leaves and twigs	2
	Cornus sericea (stolonifera)	Redosier Dogwood	FACW	5-13	intolerant	food source-seeds and fruits	2
	Cornus amomum	Silky Dogwood	FACW	6-12	intolerant	food source-fruits	2

PLANTING SCHEDULE NOTES:

1. Quantities are based on estimated areas of planting, including areas of disturbance. Additional plantings shall conform to the materials and rate of this schedule.
2. Planting quantities are for convenience only and shall be verified by the Planting Contractor based on the specified density (plants/acre) prior to bidding.
3. Substitutions shall only be made with the approval of the Project Engineer.
4. Seeding shall occur prior to planting.
5. Tubelings shall be planted at a density of at least 550 stems/acre. Refer to warranty requirements on Sheet 6.00.
6. Live stakes quantities are cumulative for entire length of stream (both sides of banks).

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
REBECCA E. NAPIER
No. PE061002

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP

REVISION DESCRIPTION

DATE

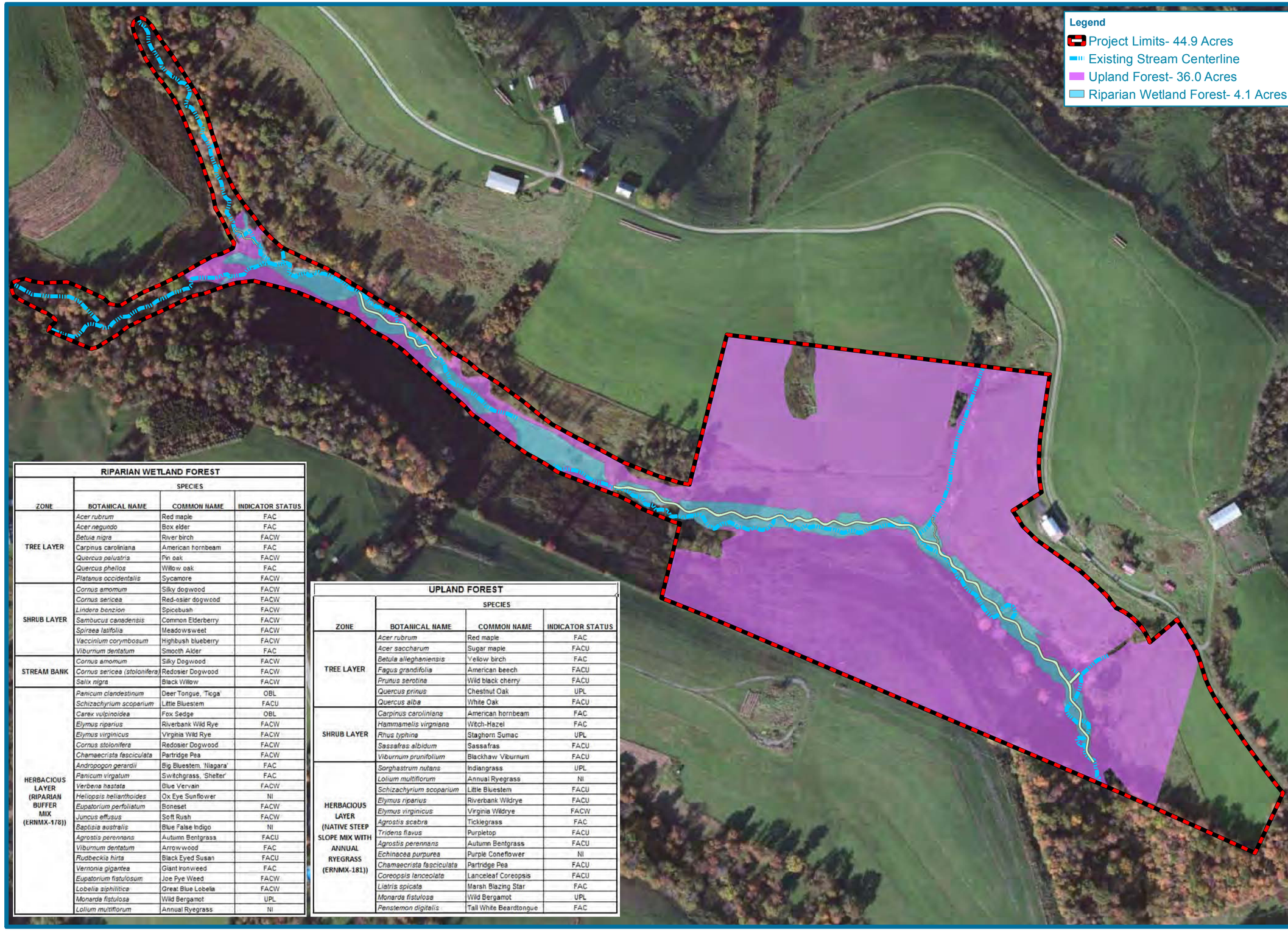
DATE: MARCH 2013
DRAWN BY: M.A./M.H.
DESIGNED BY: M.A./M.H.
CHECKED BY: M. ELANDER
SCALE: N/A

ENLOW FORK MITIGATION BANK
WASHINGTON COUNTY - PENNSYLVANIA
PLANTING AND SEEDING SCHEDULES

JOB NO. 33362
SHEET NO. 6.01

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

Y:\80433362-RES_2WVA5020_Carpenit\DWG\Sheet\CD\JPA Plan Submittal\6.01 PLANTING AND SEEDING SCHEDULES.dwg | Plotted on 7/1/2013 10:51 AM | by Michael Aust



res
Resource Environmental Solutions

0 150 300
Feet

0 0.05 0.1
Miles

ENLOW FORK MITIGATION BANK

PLANTING MAP

WASHINGTON COUNTY, PENNSYLVANIA

J/N: 33362
Date: 06/24/13
Revised: 00/00/00

RIPARIAN WETLAND FOREST

ZONE	SPECIES		
	BOTANICAL NAME	COMMON NAME	INDICATOR STATUS
TREE LAYER	*Acer rubrum*	Red maple	FAC
	Acer negundo	Box elder	FAC
	Betula nigra	River birch	FACW
	Carpinus caroliniana	American hornbeam	FAC
	Quercus palustris	Pin oak	FACW
	Quercus phellos	Willow oak	FAC
	Platanus occidentalis	Sycamore	FACW
SHRUB LAYER	*Cornus amomum*	Silky dogwood	FACW
	Cornus sericea	Red-osier dogwood	FACW
	Lindera benzion	Spicebush	FACW
	Sambucus canadensis	Common Elderberry	FACW
	Spiraea latifolia	Meadowsweet	FACW
	Vaccinium corymbosum	Highbush blueberry	FACW
	Viburnum dentatum	Smooth Alder	FAC
STREAM BANK	*Cornus amomum*	Silky Dogwood	FACW
	Cornus sericea (stolonifera)	Redosier Dogwood	FACW
	Salix nigra	Black Willow	FACW
HERBACIOUS LAYER (RIPARIAN BUFFER MIX (ERNMX-178))	*Panicum clandestinum*	Deer Tongue, 'Tioga'	OBL
	Schizachyrium scoparium	Little Bluestem	FACU
	Carex vulpinoidea	Fox Sedge	OBL
	Elymus riparius	Riverbank Wild Rye	FACW
	Elymus virginicus	Virginia Wild Rye	FACW
	Cornus stolonifera	Redosier Dogwood	FACW
	Chamaecrista fasciculata	Partridge Pea	FACW
	Andropogon gerardii	Big Bluestem, 'Niagara'	FAC
	Panicum virgatum	Switchgrass, 'Shelter'	FAC
	Verbena hastata	Blue Vervain	FACW
	Heliopsis helianthoides	Ox Eye Sunflower	NI
	Eupatorium perfoliatum	Boneset	FACW
	Juncus effusus	Soft Rush	FACW
	Baptisia australis	Blue False Indigo	NI
	Agrostis perennans	Autumn Bentgrass	FACU
	Viburnum dentatum	Arrowwood	FAC
	Rudbeckia hirta	Black Eyed Susan	FACU
	Vernonia gigantea	Giant Ironweed	FAC
	Eupatorium fistulosum	Joe Pye Weed	FACW
	Lobelia siphilitica	Great Blue Lobelia	FACW
	Monarda fistulosa	Wild Bergamot	UPL
	Lolium multiflorum	Annual Ryegrass	NI

UPLAND FOREST

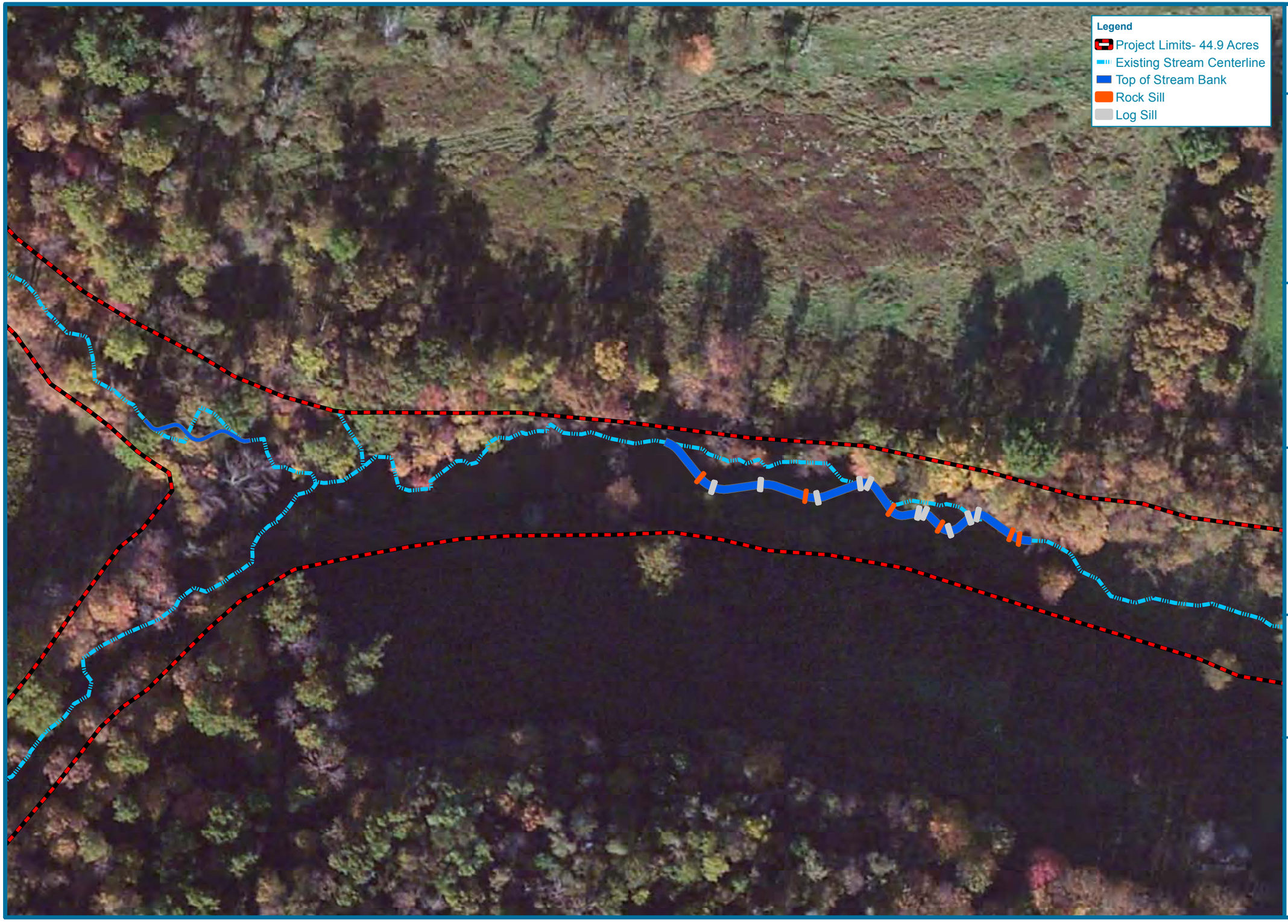
ZONE	SPECIES		
	BOTANICAL NAME	COMMON NAME	INDICATOR STATUS
TREE LAYER	*Acer rubrum*	Red maple	FAC
	Acer saccharum	Sugar maple	FACU
	Betula alleghaniensis	Yellow birch	FAC
	Fagus grandifolia	American beech	FACU
	Prunus serotina	Wild black cherry	FACU
	Quercus prinus	Chestnut Oak	UPL
	Quercus alba	White Oak	FACU
SHRUB LAYER	*Carpinus caroliniana*	American hornbeam	FAC
	Hammamelis virgniana	Witch-Hazel	FAC
	Rhus typhina	Staghorn Sumac	UPL
	Sassafras albidum	Sassafras	FACU
	Viburnum prunifolium	Blackhaw Viburnum	FACU
HERBACIOUS LAYER (NATIVE STEEP SLOPE MIX WITH ANNUAL RYEGRASS (ERNMX-181))	*Sorghastrum nutans*	Indiangrass	UPL
	Lolium multiflorum	Annual Ryegrass	NI
	Schizachyrium scoparium	Little Bluestem	FACU
	Elymus riparius	Riverbank Wildrye	FACU
	Elymus virginicus	Virginia Wildrye	FACW
	Agrostis scabra	Ticklegrass	FAC
	Tridens flavus	Purpletop	FACU
	Agrostis perennans	Autumn Bentgrass	FACU
	Echinacea purpurea	Purple Coneflower	NI
	Chamaecrista fasciculata	Partridge Pea	FACU
	Coreopsis lanceolate	Lanceleaf Coreopsis	FACU
	Liatris spicata	Marsh Blazing Star	FAC
	Monarda fistulosa	Wild Bergamot	UPL
	Penstemon digitalis	Tall White Beardtongue	FAC

REFERENCE

1.) Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

2.) All areas are approximate.

Document Path: Y:\804\33362-RES_20WAS020_Carpenti\GIS\RES- Enlow Fork MB Planting Plan.mxd



res
Resource Environmental Solutions

0 40 80
Feet

0 0.01 0.02
Miles

ENLOW FORK MITIGATION BANK

INSTREAM STRUCTURE LOCATION MAP 1 OF 2

WASHINGTON COUNTY, PENNSYLVANIA

J/N: 33362
Date: 06/24/13
Revised: 00/00/00

REFERENCE

1.) Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

2.) All areas are approximate.

Document Path: Y:\804\33362-RES_20WAS020_Carpent\GIS\RES- Enlow Fork MB Instream Structure Location Map 1of2.mxd

res
Resource Environmental Solutions

0 40 80
Feet

0 0.01 0.02
Miles

ENLOW FORK MITIGATION BANK

INSTREAM STRUCTURE LOCATION MAP 2 OF 2

WASHINGTON COUNTY, PENNSYLVANIA

J/N: 33362
Date: 06/24/13
Revised: 00/00/00

REFERENCE

1.) Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

2.) All areas are approximate.

Document Path: Y:\804\33362-RES_20WAS020_Carpent\GIS\RES- Enlow Fork MB Instream Structure Location Map 2of2.mxd

EXHIBIT 7

BANK LEDGER

Bank Ledger

	Date	Permitee	Permit Number (PADEP)	Permit Number (USACE)	Subbasin	Project Credits Utilized	Released Credits Remaining	Credits Released	Expected Future Credits Released	Permit impacts (Credits)	Released Credits Remaining
Functional Ratio Method											
Perennial Stream					20	0	0	0	4,878.2	0	0
Intermittent Stream					20	0	0	0	258.0	0	0
Forested Wetland					20	0	0	0	4.22	0	0

EXHIBIT 8

REVISED SITE PROTECTION INSTRUMENT

EXHIBIT 8A

REVISED SITE PROTECTION INSTRUMENT

FOR LANDOWNER "A"

DECLARATION OF RESTRICTIVE COVENANT FOR CONSERVATION

This DECLARATION OF RESTRICTIVE COVENANTS FOR CONSERVATION relates to an ecological enhancement and restoration project (hereinafter, this "Declaration") is made and entered into as of _____ __, 2013 by West Finley Land Ventures LP with a business address at 171 Red Barn Ln, Cambridge Springs, PA 15377 ("Grantor").

RECITALS

WHEREAS, Grantor owns in fee simple certain real estate located in Crawford County liber and folio reference _____consisting of 163 acres, more or less, as described more specifically in Exhibit A hereto (the "Property"); and

WHEREAS, the Grantor has agreed to make a 37.893 acre portion of the Property, delineated in Exhibit A attached hereto, where certain aquatic resources exist or may be created and/or enhanced (the "Conservation Area"), subject to this Declaration whose legal description is attached hereto as Exhibit A; and

WHEREAS, First Pennsylvania Resource ("FPR") entered into the Pennsylvania Statewide Umbrella Mitigation Banking Instrument (the "PSUMBI") between: FPR (the "Sponsor") and the Interagency Review Team (the "IRT") which consists of [the U.S. UArmy Corps of Engineers ("USACE" or "Corps") Baltimore, Philadelphia, and Pittsburgh Districts, the U.S. Environmental Protection Agency ("EPA"), the U.S. Fish and Wildlife Service ("USFWS"), the U.S.D.A. Natural Resources Conservation Service ("NRCS"), the NOAA-National Marine Fisheries Service "NMFS"), the Pennsylvania Department of Environmental Protection ("PADEP"), the Pennsylvania Game Commission ("PGC"), the Pennsylvania Historical commission ("PHMC"), and the Pennsylvania Fish and Boat Commission ("PFBC"); and

WHEREAS, the Grantor agrees to the creation of the Conservation Area described herein and intends that the Conservation Area shall be preserved and maintained in perpetuity in an enhanced and/or natural condition, which condition will include functioning wetlands; and

WHEREAS, the Grantor(s) desire(s) to comply with the conditions of the PSUMBI by imposing this Site Protection Instrument on a Conservation Area within the Property; and

WHEREAS, under Federal and State law, the Corps has issued Permit No. _____ and the PADEP has issued Permit No._____ (collectively, the "Permits") for impacts to waters of the United States and/or the Commonwealth of Pennsylvania expected to result from the creation of the self-sustaining natural aquatic system located on the Conservation Area; and

WHEREAS, the Grantor agrees and acknowledges that this Declaration, including the rights authorized to Grantor herein, shall be assignable and transferrable to Grantor's subsequent heirs, successors, and assigns.

NOW, THEREFORE, for good and valuable consideration and in consideration of the mutually held interests in enhancement and preservation of the environment, as well as the terms, conditions, and restrictions contained herein, and pursuant to the laws of the Commonwealth of Pennsylvania, Grantor does agree to the following terms and conditions:

A. PURPOSE

The purpose of this Declaration is:

(1) To preserve, protect, and enhance the native flora, fauna, soils, water table, aquifer, drainage patterns, wetland resources and other related environmental functions and values of the Conservation Area;

(2) To maintain the natural view shed of the Conservation Area in its native, enhanced, scenic and open condition;

(3) To assure that the Conservation Area, including its air space, streams and other aquatic resources on or beneath the Conservation Area, and including, but not limited to, subsurface aquifers, springs, and the water table, will be maintained in perpetuity in its natural condition, as that may be enhanced, as provided herein; and

(4) To prevent any use of the Conservation Area that threatens to or will impair, interfere with, or otherwise negatively affect its natural resource functions and values.

Grantor intends and agrees that this Declaration will confine the use of the Conservation Area to such activities as are consistent with the purposes set forth herein.

B. ACCESS

In order to achieve the purposes of this Declaration, the following rights are created in accordance with Pennsylvania law [for government entities, use PA Statutes, Title 32, §§ 5051-5059.]:

(1) The Grantor shall have the right and acknowledges the right of the Sponsor, the Corps, the PADEP and other government agencies to enter upon the Property to inspect the Conservation Area at reasonable times to monitor compliance with this Declaration. Except in cases of a threat of a physical or public safety emergency, such entry shall, when practicable, be upon reasonable prior notice to Grantor or its successors and assigns, and such entry shall not unreasonably interfere with the Grantor's or its successors' and assigns' use and quiet enjoyment of the Property.

(2) The Grantor shall each have the right to enter upon the Property to access the Conservation Area at reasonable times, upon prior notice to the property owner; and upon notice and written approval by the USACE may take appropriate environmental or conservation management measures within the Conservation Area consistent with the terms and purposes of this Declaration, including, but not limited to: