

*Atlantic Sunrise Project – PA DEP Chapter 105 Joint Permit Application
Transcontinental Gas Pipe Line Company, LLC
Lancaster County*

ATTACHMENT Q -2
MITIGATION PERMITTEE RESPONSIBLE SITE SPECIFIC PLAN
(UNDER SEPARATE COVER)

Revised July 2017

10.0 Monitoring Requirements

FPR will monitor the PRM Site to demonstrate compliance with the Performance Standards detailed in Section 9: Performance Standards. Monitoring will follow the guidelines established below:

1. **Visual Description.** Visual descriptions will be provided for the entire site, and used to evaluate the upland restoration area performance standards based on a visual estimate of invasive species presence. Photos will be taken at the permanent photo location points, and at each wetland monitoring plot with each monitoring report by the collection of ground level photographs, taken facing north, south, east and west, from stations located adjacent to each vegetation plot. The same permanent photo location points will be used post-restoration as have been provided with this PRM plan to allow for pre-and post-restoration comparisons.
2. **Vegetation.** Immediately following initial planting, FPR will establish permanent monitoring stations for wetlands within the mitigation area. Stations will be marked using 8-foot PVC pipe anchored with a metal T-post at plot center and GPS coordinates will be recorded. A map depicting monitoring station locations is provided as Figure 10 (Appendix A: Figures). At each monitoring station, yearly herbaceous vegetation will be monitored in a 5-foot-by-5-foot plot; if woody vegetation is planted, it will be monitored in a 30-foot-by-30-foot plot. One monitoring plot will be stationed for each acre of proposed wetland enhancement. Permanent monitoring stations will provide data to evaluate the survival rate of planted vegetation including number, species, and survivorship. Reports will also reflect information regarding herbaceous plant species (collected in sub-plots using Daubenmire frames) the wetland plant status [scaled from obligate (OBL) to upland (UPL)] of each and the number by species of exotic/noxious species. Upland areas will be visually evaluated for invasive species presence, and invasive species area estimated and recorded in the yearly monitoring report.

Following completion of planting activities, FPR will conduct two (2) monitoring events for the first three (3) years of monitoring and one monitoring event per year for the remaining four (4). Monitoring events will occur during the spring and fall growing seasons, or between the months of April through June and September through October, respectively. Monitoring will adhere to the following schedules:

- (a) For any year in which planting was conducted, monitoring of vegetation will take place no earlier than September or at least 6 months following planting.
- (b) The monitoring of vegetation (herbaceous and woody species) will be conducted during the growing season.
- (c) If all Performance Standards (Section 9: Performance Standards) have not been met in the 7th year, then a monitoring report will be required for each consecutive year until 2 sequential annual reports indicate that all standards have been successfully satisfied.

- (d) Submittal of a final monitoring report (typically prepared the 7th growing season following completion of restoration activities, including planting) will be required.

As-Built Survey and Report

Following construction, FPR will complete an as-built planting plan to show the general locations and quantities of all vegetative material that was planted. The Permittee agrees to submit the as-built planting report to the regulating agencies within 60 days following completion of the planting for the PRM Site.

Monitoring Reports

For the first three years of monitoring, FPR will submit to the PADEP and USACE spring monitoring reports by September 30th and fall monitoring reports by December 31st. For the remaining four years or until Project close-out or sign-off, FPR will submit one monitoring report to both agencies by December 31st. Monitoring reports will include all data collected from the year's monitoring event(s), which will be used for comparison to the PRM Site's progress towards the performance standards found in Section 9: Performance Standards. If the PRM Site achieves all its performance standards prior to year 7, an early release may be requested from the USACE and PADEP. Additionally, reports should include a detailed discussion of maintenance and management activities conducted during that year, along with a proposed maintenance schedule for the following year based upon the results of the yearly monitoring. The report should also include discussion of all activities that took place at the site. At a minimum, monitoring reports also include the following:

- Photos taken from ground level at each monitoring station and from elevated positions throughout the site to document overall conditions;
- A description of the general condition of the seedlings, including the number and species of surviving seedlings in each monitoring station, and if applicable, a discussion of likely causes for mortality;
- A description of vegetative communities developing at each monitoring station;
- A description of the generalized degree and distribution of exotic/invasive species and whether they are seed bearing shrubs or seedlings;
- Identification of measures used to eradicate exotic/invasive species and document results of these efforts;
- A corrective action plan or explanation to address any Performance Standards that have not been achieved if applicable.

11.0 Long-Term Management Plan

To ensure the long-term sustainability of the restoration project, FPR will initially perform maintenance and long-term management. The Permittee anticipates that these activities will be minimal as the project is designed to be self-sustaining with limited management activities. Maintenance will be heaviest during the first 3 years of establishment, and will usually entail mechanical weed control events, along with 2 to 3 chemical control events, all targeting invasive species. Maintenance will focus on controlling any pockets of invasive species that might still be present on-site and monitoring for the establishment

of any new stands of invasive species. Control methods will be targeted to deal with the individual species as they are found and will include both mechanical and chemical control. The Agent projects that by the 4th and 5th years, the intensity of management efforts required will drop off significantly as the native plant community will be relatively well established and resilient against the establishment and encroachment of invasive species. Additionally, long-term the restored hydrology of the PRM Site will prevent much of the expansion of woody species into the wetter wetland areas. FPR will provide the long-term easement holder with a long-term maintenance and monitoring fund which can be used to ensure that there is no encroachment of any woody tree species into the core habitat areas.

After performance standards have been successfully attained, annual visual inspections will be conducted after each growing season to identify any need for invasive species control, additional signage, or boundary maintenance. Specific items required as part of a Long-Term Management Plan are listed below.

Annual Patrols

Walk-through surveys will be conducted annually to qualitatively monitor the general condition of the habitats on the site. Notes to be made may include observations of species encountered, water quality, general extent of wetlands and streams, or invasive or non-native species establishment. If there are any noted items that require maintenance, this should be recorded and submitted in a report to the Agencies.

Invasive Species Monitoring

The walk-through survey will include a qualitative assessment (e.g. visual estimate of cover) of invasive species. If there is a continuous area exceeding 1/8 of an acre containing invasive species, the Long-Term steward should note this in a report to the agencies and conduct invasive species control to remove the noted species. Follow up monitoring should be conducted the following year, with follow up maintenance if needed.

Forestry Management Practices

Any practices to reduce diseased or dead vegetation will be allowed if the vegetation compromises the long-term viability of the PRM Site.

Trash and Trespass

If needed, trash should be removed and any necessary measures to prevent or repair damage from vandalism and trespass impacts should be taken.

Enforcement

The Long-term Steward will be responsible for the enforcement of the conservation easement. FPR will be the initial designated Long-term Steward charged with long-term management and maintenance responsibility once long-term success criteria as described in each site-specific PRM Report are attained. FPR may appoint a different Long-term Steward in accordance with 33 CFR 332.7(d)(1). The appointment of such an entity will be approved by the PADEP and/or USACE.

12.0 Adaptive Management Plan

An adaptive management plan including contingency, and remedial responsibilities will be implemented in the event monitoring reveals that certain performance standards have not been met. In the event of a deficiency, FPR will provide notice to the PADEP and USACE. The notice will include an explanation for the deficiency, potential remedial actions that could be undertaken, an assessment of risks, and an assessment of any adjustments that must be made to the maintenance and monitoring regime.

Ecological restoration is in its essence the practice of adaptive management. Due to the multitude of factors that affect a restoration project in a given year, the practitioner needs to be constantly assessing the site, and reacting to changing conditions as the site develops and matures. Usually, yearly variations are relatively minor and within the parameters of a given project's performance standards. These normal variations are noted through regular site visits, yearly monitoring reports, and yearly maintenance activities. Occasionally, rare instances arise which bring a project far outside of the defined range of its performance standards and more intensive remedial action is required. This adaptive management plan forecasts a few potential situations that could cause the proposed PRM Site to be well outside the range of its defined performance standards and how those instances would be addressed.

Wetland Vegetation

Wetlands within the PRM Site have been delineated in accordance with the 1987 USACE Wetlands Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont (Version 2.0) (USACE, 2012). Wetland enhancement and rehabilitation activities at the PRM Site are not anticipated to result in changes to the site which will negatively affect the site's hydrology, therefore risk of the seeding or planting failing due to hydrology is not anticipated, unless there is an unexpected and extreme drought. In that instance, any failure would be noted in the monitoring report, and replanting or reseeded done based on the results of the monitoring report.

The other risk to wetland areas is a large-scale break-out of invasive species. While the likelihood of this scenario is low as grading of the wetland areas is not part of the PRM Site implementation and the existing native vegetation will be largely undisturbed and will be enhanced by supplemental plantings and seeding (as shown in the Planting Plans provided as part of Appendix G: Design Plan), in the event that a large-scale break-out of invasive species does occur, please refer to the *Invasive Species and Native Dominance* discussion below.

Upland Shrub Establishment and Growth

To prevent mortality from deer browse, all plantings are sprayed with an all-natural anti-browse agent, which has shown to drastically reduce browse rates on other FPR projects. This will reduce the chance of large-scale damage from herbivores.

Maintenance mowing during the first 3 years will be used in the upland areas to ensure adequate shrub establishment. The maintenance mowing aids in the establishment of the

herbaceous understory in the uplands, prevents the establishment of weeds, and reduces competition for the shrubs during the first 2 to 3 years while they establish.

Invasive Species and Native Dominance

If at any point there was an intensive colonization of upland or wetland invasive species, which brought the total percent of invasive species well above the allowed performance standards, remedial action will be needed. The management technique used will be dependent on the type of invasive species colonizing the site (i.e. annual, or perennial, primary reproduction through vegetative spread or through seed). If the species are annual they can be managed via maintenance mowing and mechanical weed control methods to stop them from re-seeding into the site. After the seed bank is depleted, they drop out of the vegetative matrix. If they are perennial in nature, chemical herbicides need to be used; mechanical weed control is still used to stop further spreading through seed if they are a species that has high germination rates.

Once the invasive species control has begun, additional seeding or planting will need to be conducted to re-introduce a native plant community into the area of concern. Depending on the type of invasive species (i.e. broad leaf or monocot), replanting and reseeding strategies can be used to allow for continued chemical control of the invasive species in the area while still allowing the native species to germinate and develop.

The likelihood of this scenario is low; once established, native plant communities are quite resilient to invasion by invasive species if they are not disturbed or impacted. Invasive species issues on a restoration site tend to be most problematic during the first 2 years, because there is bare soil immediately available for germination and colonization immediately following construction, and there may be invasive species in the existing seed bank to germinate and establish. As previously stated, the primary restoration technique being used on this site is enhancement and therefore, the risk of this happening is extremely low.

If the site is not meeting its performance standards for native herbaceous cover, additional seeding will be conducted. Again, the most important factor for establishing a healthy stand of upland herbaceous species is proper maintenance during the first 2 to 3 years of establishment, specifically mowing in upland areas. This ensures enough light is reaching the developing seedlings, while also eliminating competition from annual weedy species that may be trying to colonize the site. In the wetland areas, mowing cannot be conducted, but mechanical weed control with weed whips can be used.

13.0 Financial Assurances

Performance Bond

FPR will establish a performance bond to ensure that the PRM Site construction is completed and all success criteria are met. A sample performance bond is provided in Appendix H: Performance Bond. The financial assurance mechanism will be a surety bond for each PRM Site that will cover construction, maintenance and monitoring costs associated with each PRM Site, and will take effect 60 days after approval of the

joint permit. The performance bonding entity has a rating of A+ (A.M. Best Ratings, 2010).

Upon completion of the restoration activities and approval of the as-built plans by the PADEP and USACE, the bond will be reduced by 50 percent. The remaining 50 percent will be left in place for the life the PRM Site to cover the PRM Site’s maintenance and monitoring costs. The bond will be closed once all performance standards are met, and final sign-off on the PRM Site has been provided by the USACE and PADEP. The following table presents the performance bond release schedule and target milestones.

Type of Financial Instrument Used	Project Phase Covered	Specific Items Covered	Amount Reduced (Percent)	Amount Available (Percent)	Explanation
Surety Bond	Construction/ Development	Construction	0%	100%	100% of funds remain in-place until construction is complete
		Approval of As-Built Design Plans	50%	50%	Upon approval of the as-built design plans, 50% of the Bond amount is reduced
	Maintenance and Monitoring	Year 1- 7 Maintenance and Monitoring	50%	0%	The remaining 50% of the Bond will cover Maintenance, Monitoring and Reporting for the remaining active phase of the PRM Site.
		Reporting			

Long-term Stewardship Funding

Prior to construction of the Project, the Permittee will deposit \$35,000 into an escrow account to cover long-term stewardship of the PRM Site. These funds are anticipated to be sufficient to cover the full cost of long-term stewardship activities for the entire PRM Site. The total sum for this escrow amount includes all expenses for long-term management and allocates funds for invasive species management contingency funds.

14.0 References

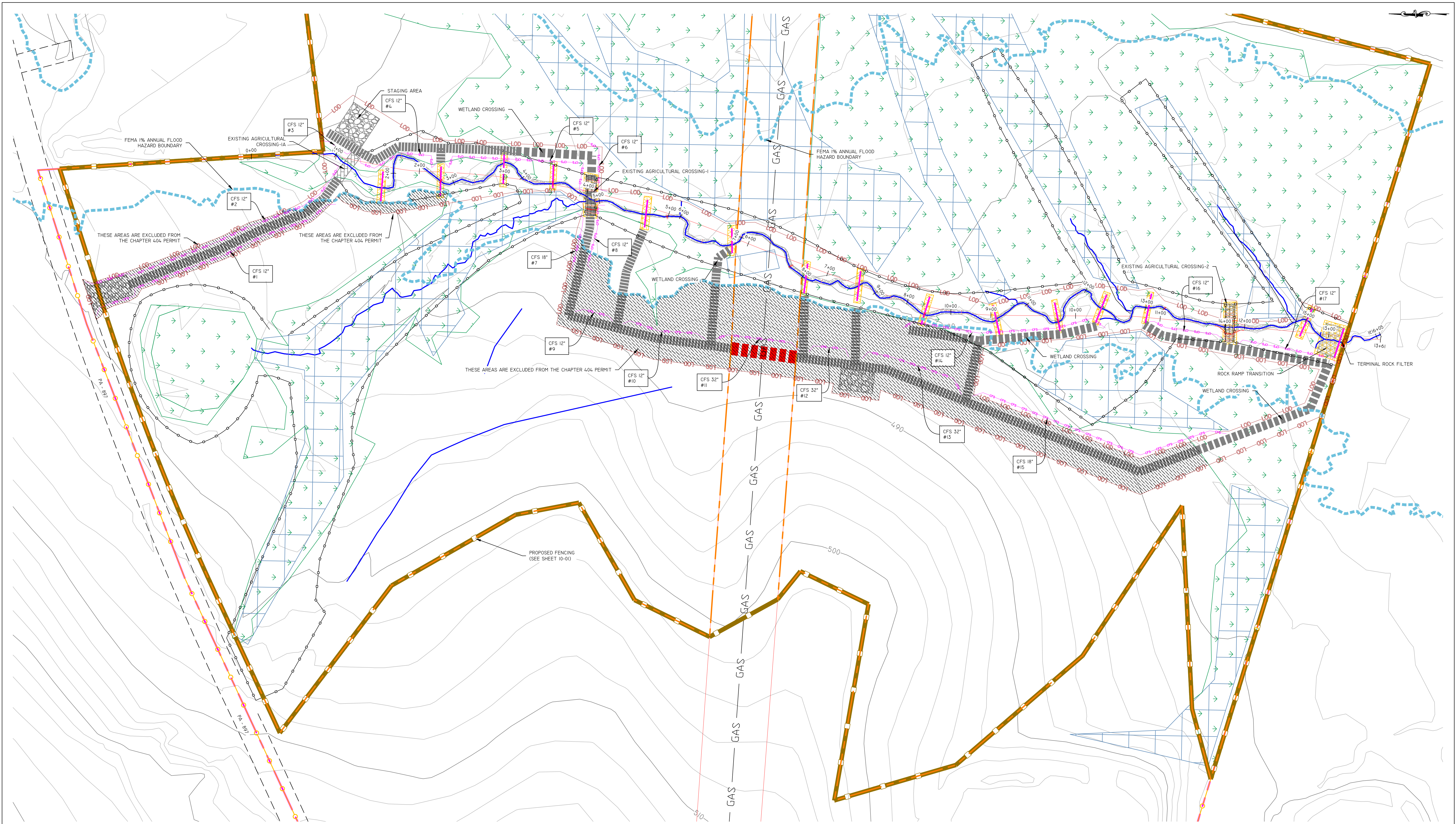
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<http://www.lancasterwatersheds.org/Cocalico%20Creek%20Watershed%20Restoration%20Report.pdf>

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. Technical Report Y-87-1. 207 p.

Federal Register (2008) Compensatory Mitigation for Losses of Aquatic Resources; Final Rule. 33 CFR Parts 325 and 332. (Volume 73, Number 70). Rules and Regulations.
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- United States Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region. (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, C. V. Noble, and J.F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- United States Department of Agriculture Natural Resources Conservation Service. Soil Survey for Lancaster County. <http://soils.usda.gov/>.
- United States Department of Agriculture Natural Resources Conservation Service. The PLANTS Database. National Plant Data Center. <http://plants.usda.gov>.
- United States Fish and Wildlife Service Region 5 – Ecological Services. Biological Opinion – Effects of the Implementation of Habitat Restoration Practices by the Natural Resources Conservation Services on the Northern Population of the Bog Turtle. 2010. https://www.fws.gov/northeast/pafo/pdf/BT_habitat_management%20BO_NRCS_091010.pdf

APPENDIX G
DESIGN PLAN



REVISIONS

NO.	DESCRIPTION	DATE	BY
1	ADDRESS TOL COMMENTS FROM LCCD	02/08/2017	RD
2	ADDRESS COMMENTS	07/25/2017	NH

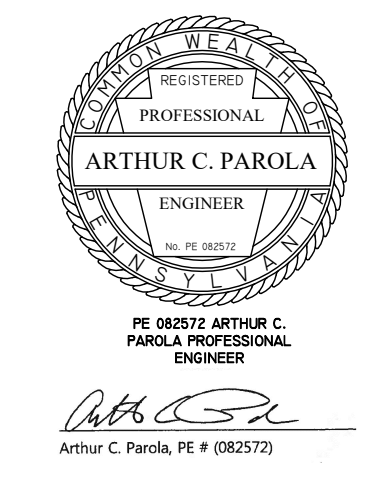
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PROPERTY BOUNDARY	---	ESS BOUNDARY	---
EASEMENT BOUNDARY	---	FEMA FLOOD HAZARD	---
GAS LINE ROW	---	LIMIT OF DISTURBANCE	---
ROAD	---	COMPOST FILTER SOCK	---
EXISTING WETLAND BOUNDARY	---	BLANKETING	---
EXISTING BOG TURTLE HABITAT	---	CONSTRUCTION ENTRANCE/STAGING AREAS	---
STREAM	---	ROCK CONTROL	---
EXISTING MAJOR CONTOUR	---	AGRICULTURAL CROSSING	---
EXISTING MINOR CONTOUR	---	CROSS VALLEY LOG STRUCTURE	---
PROPOSED MAJOR CONTOUR	---	CONSTRUCTION ACCESS	---
PROPOSED MINOR CONTOUR	---	WETLAND CROSSING	---
EXISTING FENCING	---	TERMINAL ROCK FILTER	---
PROPOSED FENCING	---		

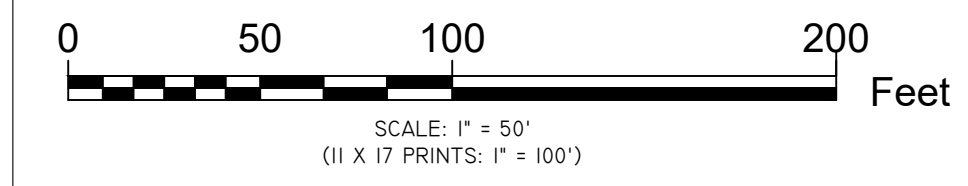
NOTES

- THE DARKENED HATCHED AREAS ARE EXCLUDED FROM THE CHAPTER 404 PERMIT. DETAILS FOR AREAS OUTSIDE OF THE PERMIT AREA ARE SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN FOR CONSTRUCTION ACCESSES AT HIBRED FARMS.
- ALL ESS BMPs ARE LISTED IN EAS NOTES AND DETAILS.
- ALL CHANNEL FILL PLACEMENT WILL USE EXTENDED REACH EQUIPMENT TO MINIMIZE DISTURBANCES NEAR STREAM.
- EXISTING FENCE POSTS WILL REMAIN FOR HABITAT, HOWEVER, ALL EXISTING FENCE WIRING WILL BE REMOVED. NEW FENCING ALONG THE ENTIRE CONSERVATION EASEMENT BOUNDARY WILL BE INSTALLED (SEE SHEET 10-00).
- ALL DISTURBED AREAS WILL BE RESTORED TO PRE-EXISTING CONDITIONS ONCE CONSTRUCTION IS COMPLETED.
- AVOIDANCE OF DISTURBANCE TO ANY AND ALL BOG TURTLE HABITAT IS REQUIRED.
- AREA OF CONSTRUCTION:
 - LOD = 3.15 ACRES
 - CHANNEL FILL = 0.17 ACRES
 - STAGING AREAS = 0.03 ACRES
- EXISTING AGRICULTURE CROSSINGS WILL BE REPLACED WITH A NEW CROSSING (SEE SHEET 04-01)
- CONSTRUCTION MUST BE COMPLETED DURING BOG TURTLE HIBERNATION PERIOD - OCTOBER THRU APRIL.

SEAL



SCALE



RESOURCE ENVIRONMENTAL SOLUTIONS

33 TERMINAL WAY, SUITE 431
PITTSBURGH PA 15219
Telephone: (412) 995-2005 Email: conor@res.us

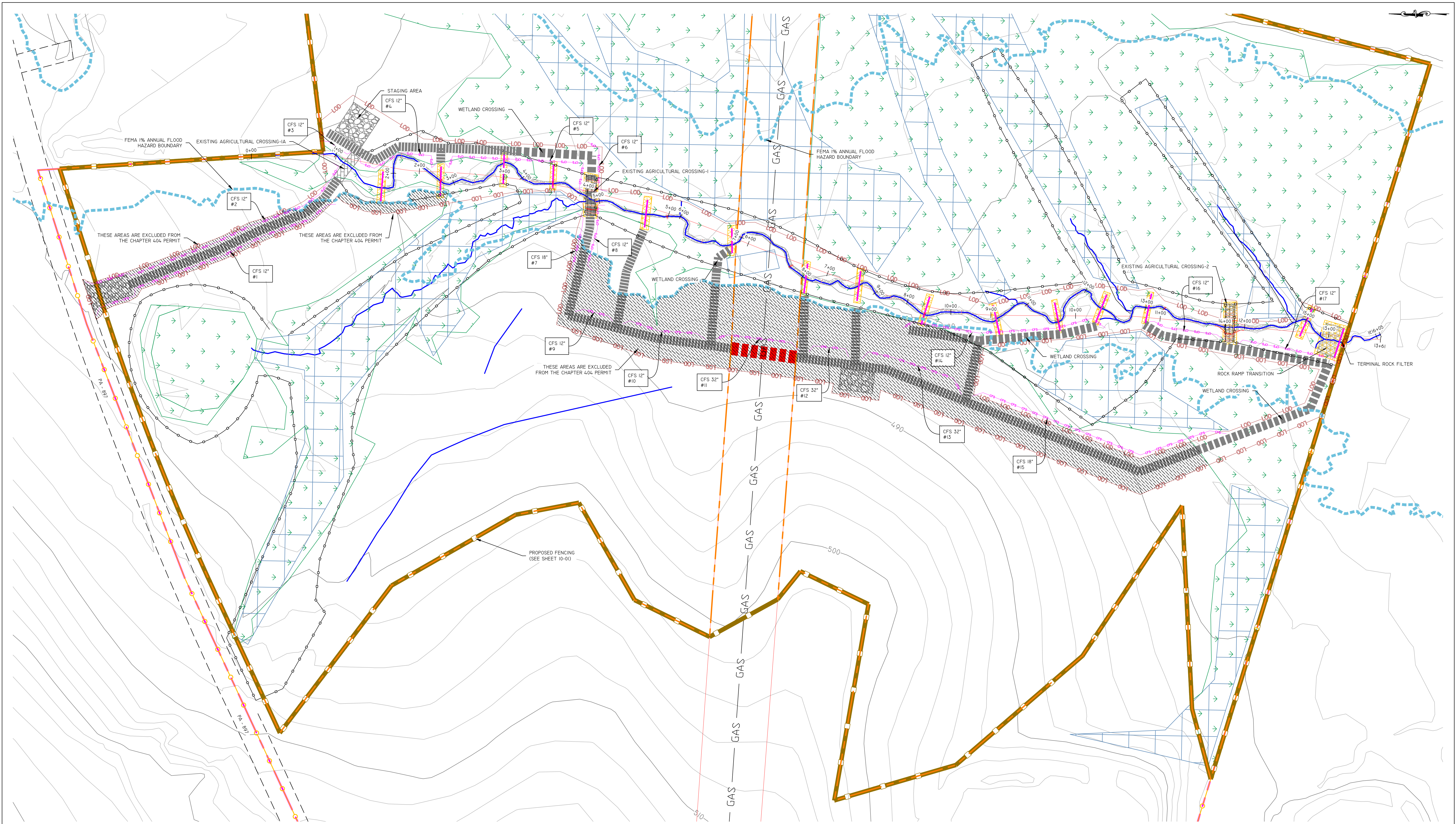


**EROSION AND SEDIMENT CONTROL PLANS
HIBRED FARMS CONSTRUCTION ACCESSES**

EROSION & SEDIMENT CONTROL PLAN

DRAWN BY:	NH	PENNSYLVANIA
CHECKED BY:	RD	LANCASTER COUNTY WEST COCALO TOWNSHIP
APPROVED BY:	CG	SHEET:
DATE:	JULY 25, 2017	FILE NO:

03 - 01 0088



REVISIONS

NO.	DESCRIPTION	DATE	BY
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2	ADDRESS COMMENTS	07/25/2017	NH

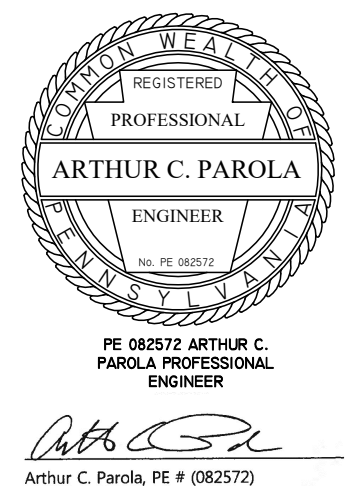
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PROPERTY BOUNDARY	--- (dashed line)	EBS BOUNDARY	--- (dashed line)
EASEMENT BOUNDARY	--- (dashed line)	FEMA FLOOD HAZARD	--- (dashed line)
GAS LINE ROW	--- (dashed line)	LIMIT OF DISTURBANCE	--- (dashed line)
ROAD	--- (dashed line)	COMPOST FILTER SOCK	--- (dashed line)
EXISTING WETLAND BOUNDARY	--- (dashed line)	BLANKETING	--- (dashed line)
EXISTING WETLAND HABITAT	--- (dashed line)	CONSTRUCTION ENTRANCE/STAGING AREAS	--- (dashed line)
STREAM	--- (dashed line)	ROCK CONTROL	--- (dashed line)
EXISTING MAJOR CONTOUR	--- (dashed line)	AGRICULTURAL CROSSING	--- (dashed line)
EXISTING MINOR CONTOUR	--- (dashed line)	CROSS VALLEY LOG STRUCTURE	--- (dashed line)
PROPOSED MAJOR CONTOUR	--- (dashed line)	CONSTRUCTION ACCESS	--- (dashed line)
PROPOSED MINOR CONTOUR	--- (dashed line)	WETLAND CROSSING	--- (dashed line)
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PROPOSED FENCING	--- (dashed line)		

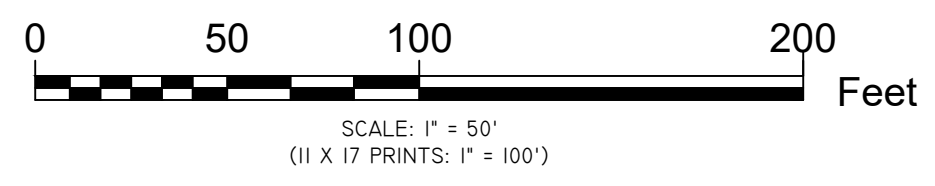
NOTES

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2. ALL EBS BMPs ARE LISTED IN EAS NOTES AND DETAILS.
3. ALL CHANNEL FILL PLACEMENT WILL USE EXTENDED REACH EQUIPMENT TO MINIMIZE DISTURBANCES NEAR STREAM.
4. EXISTING FENCE POSTS WILL REMAIN FOR HABITAT, HOWEVER, ALL EXISTING FENCE WIRING WILL BE REMOVED. NEW FENCING ALONG THE ENTIRE CONSERVATION EASEMENT BOUNDARY WILL BE INSTALLED (SEE SHEET 10-00).
5. ALL DISTURBED AREAS WILL BE RESTORED TO PRE-EXISTING CONDITIONS ONCE CONSTRUCTION IS COMPLETED.
6. AVOIDANCE OF DISTURBANCE TO ANY AND ALL BOG TURTLE HABITAT IS REQUIRED.
7. AREA OF CONSTRUCTION:
 - 7.1. LOD = 3.15 ACRES
 - 7.2. CHANNEL FILL = 0.17 ACRES
 - 7.3. STAGING AREAS = 0.03 ACRES
8. EXISTING AGRICULTURE CROSSINGS WILL BE REPLACED WITH A NEW CROSSING (SEE SHEET 04-01)
9. CONSTRUCTION MUST BE COMPLETED DURING BOG TURTLE HIBERNATION PERIOD - OCTOBER THRU APRIL.

SEAL



SCALE



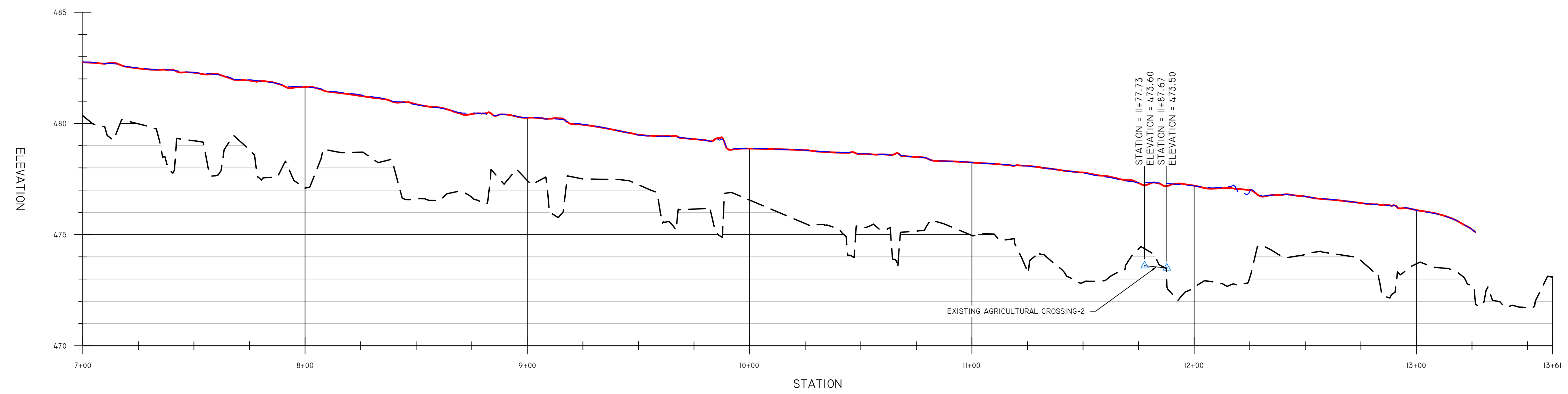
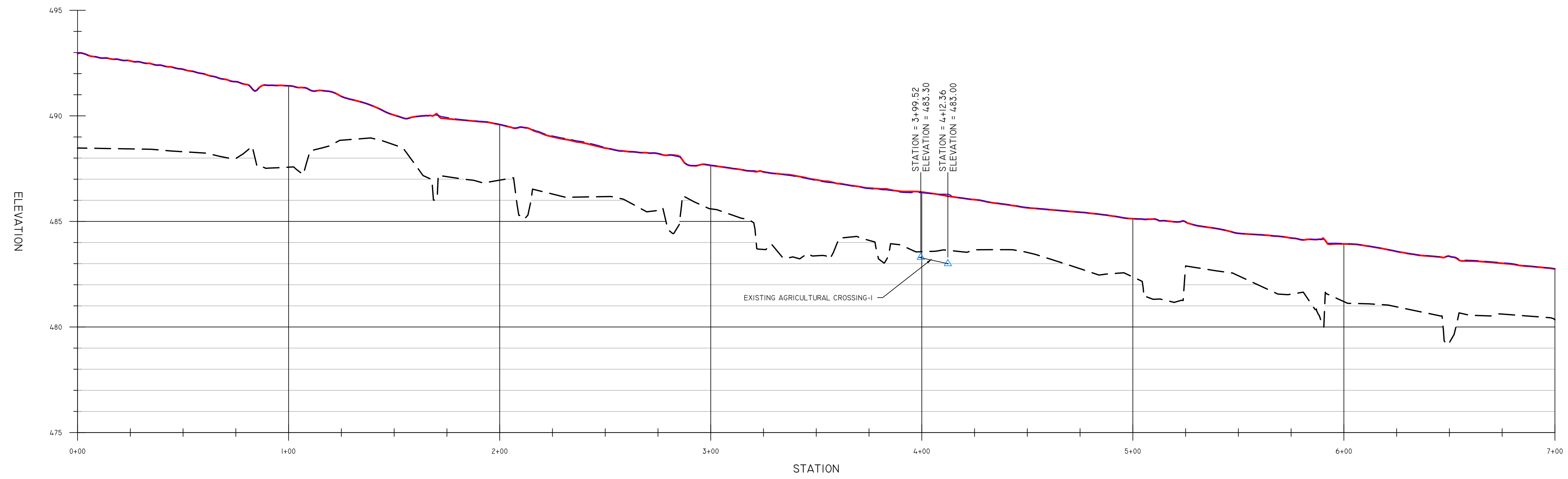
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33 TERMINAL WAY, SUITE 431
PITTSBURGH PA 15219
Telephone: (412) 995-2005
www.res.us
Email: conor@res.us



**EROSION AND SEDIMENT CONTROL PLANS
HIBRED FARMS RESTORATION AREA**

EROSION & SEDIMENT CONTROL PLAN			
DRAWN BY:	NH	PENNSYLVANIA	
CHECKED BY:	RD	LANCASTER COUNTY	WEST COCALO TOWNSHIP
APPROVED BY:	CG	SHEET:	FILE NO:
DATE:	JULY 25, 2017	03 - 01	0088



REVISIONS

NO.	DESCRIPTION	DATE	BY
1	COMMENT ADDRESS	07/25/2017	NH

LEGEND

- EXISTING GROUND PROFILE
- EXISTING 100 YEAR WATER SURFACE
- PROPOSED 100 YEAR WATER SURFACE
- GRADE LOGS

NOTES

SEAL



SCALE

PROFILE VIEW SCALE:
HORIZONTAL: 1+00 = 100'
VERTICAL: 5' INTERVALS

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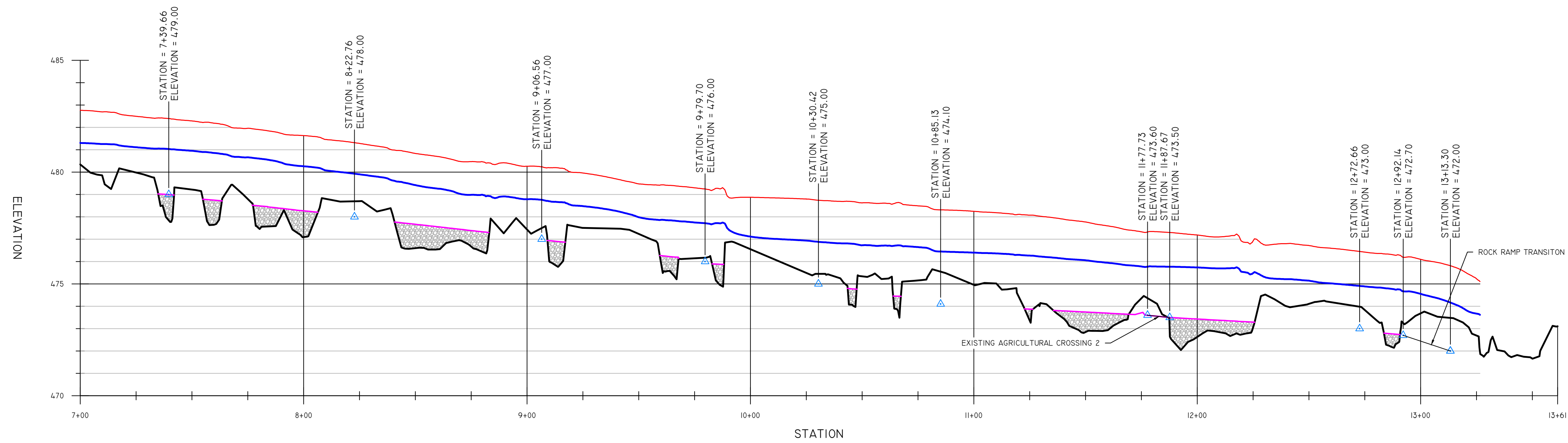
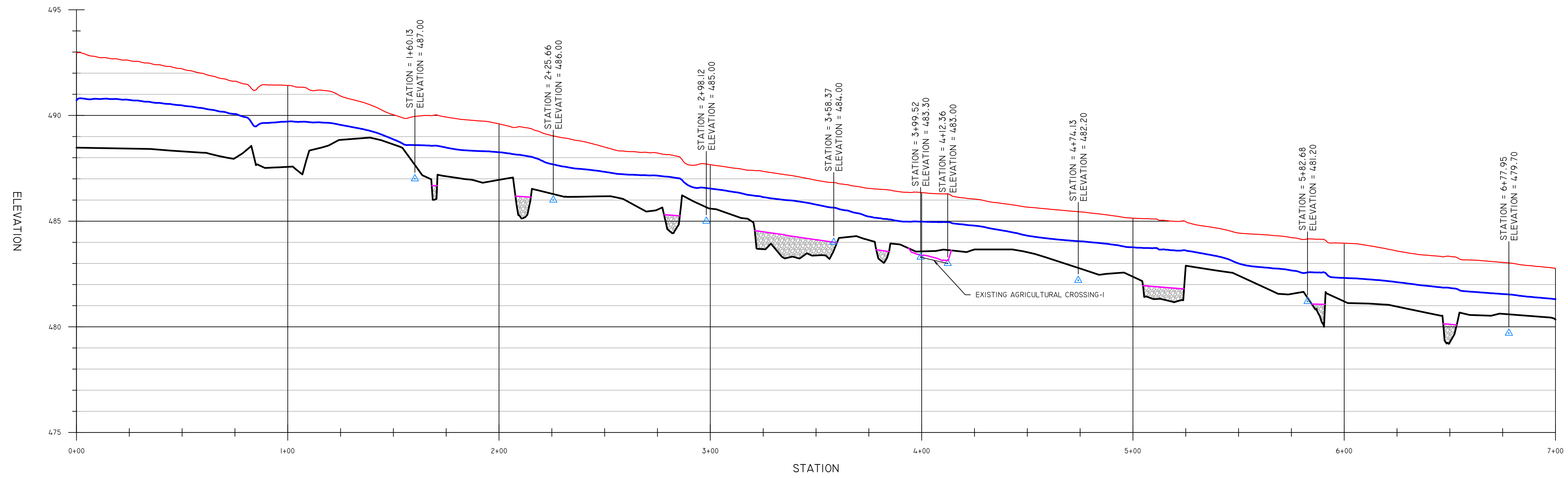
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PITTSBURGH PA 15219
Telephone: (412) 995-2005 Email: conor@res.us



**EROSION AND SEDIMENT CONTROL PLANS
HIBRED FARMS RESTORATION AREA**

BASELINE PROFILE

DRAWN BY:	NH	PENNSYLVANIA	
CHECKED BY:	RD	LANCASTER COUNTY	WEST COCALICO TOWNSHIP
APPROVED BY:	CG	SHEET:	FILE NO:
DATE:	JULY 25, 2017	05 - 01	0088



REVISIONS

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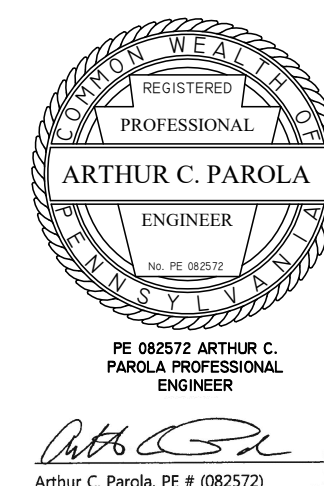
LEGEND

- EXISTING GROUND PROFILE
- PROPOSED CHANNEL PROFILE
- PROPOSED 2 YEAR WATER SURFACE
- PROPOSED 100 YEAR WATER SURFACE
- GRADE LOGS
- CHANNEL ROCK FILL

NOTES

- ALL CHANNEL ROCK FILL MUST BE R3 SIZED MATERIAL, EXCEPT IN AGRICULTURAL CROSSINGS.
- ALL CHANNEL ROCK FILL IN AGRICULTURAL CROSSINGS MUST BE R6 SIZED MATERIAL.

SEAL



SCALE

PROFILE VIEW SCALE:
HORIZONTAL: 1"=100'
VERTICAL: 5" INTERVALS

RESOURCE ENVIRONMENTAL SOLUTIONS

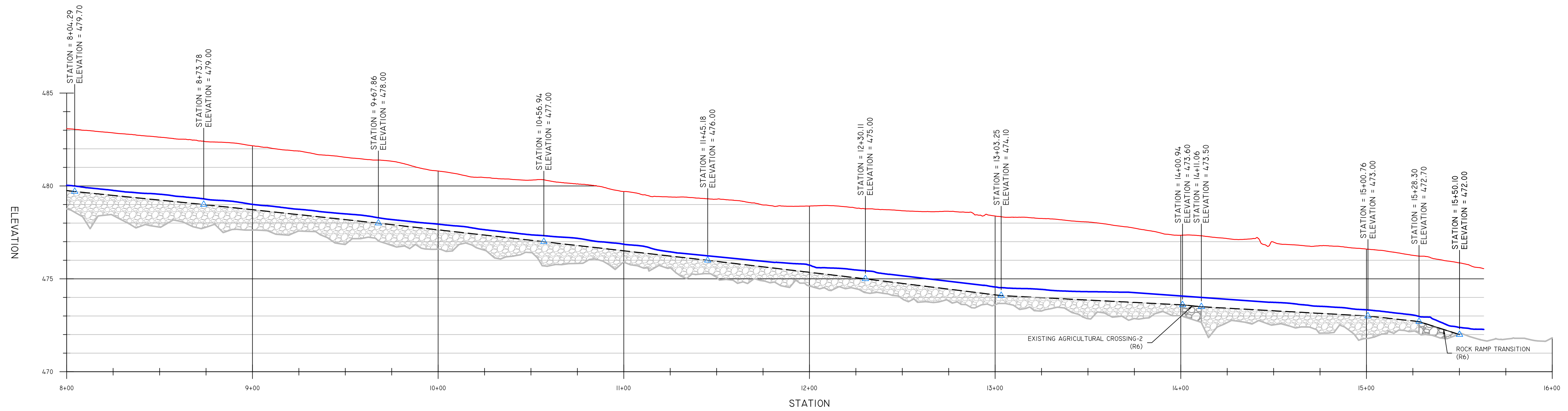
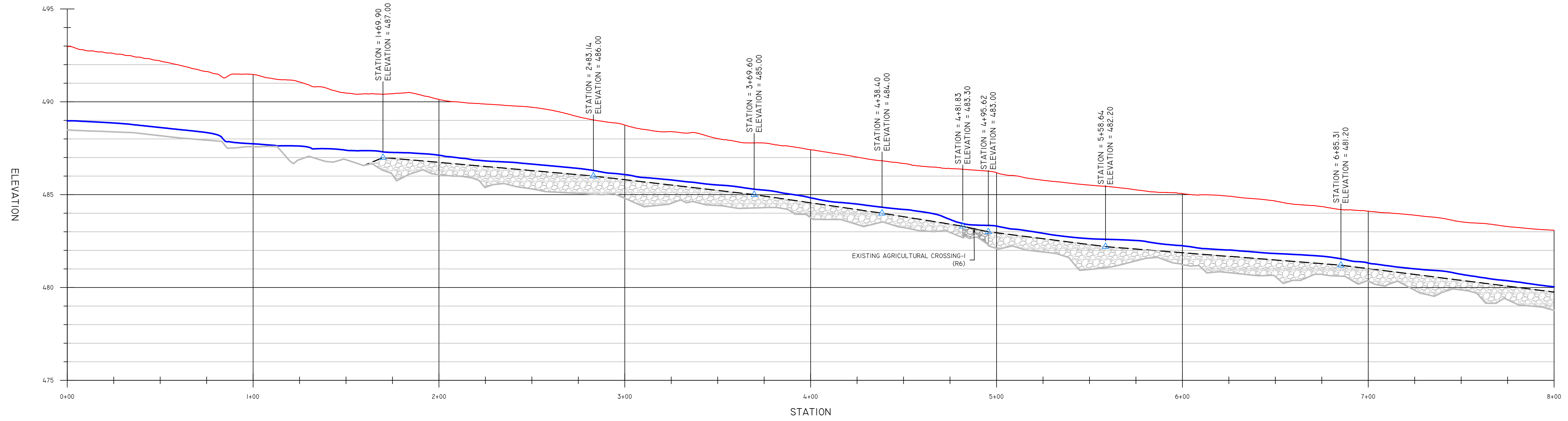
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**EROSION AND SEDIMENT CONTROL PLANS
HIBRED FARMS RESTORATION AREA**

PROPOSED BASELINE PROFILE

DRAWN BY:	NH	PENNSYLVANIA	
CHECKED BY:	RD	LANCASTER COUNTY	WEST COCALICO TOWNSHIP
APPROVED BY:	CG	SHEET:	FILE NO:
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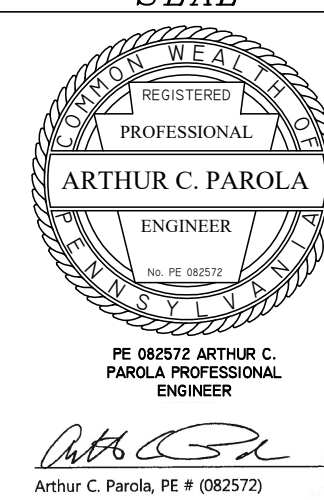
LEGEND

- PROPOSED CHANNEL PROFILE
- PROPOSED LOW FLOW WATER SURFACE
- PROPOSED 100 YEAR WATER SURFACE
- GRADE LOGS
- EXISTING CHANNEL PROFILE
- CHANNEL ROCK FILL

NOTES

- ALL CHANNEL ROCK FILL IS TO BE R3 SIZED MATERIAL EXCEPT AT AGRICULTURAL CROSSINGS.
- ALL CHANNEL ROCK FILL IN AGRICULTURAL CROSSINGS IS TO BE R6 SIZED MATERIAL.

SEAL



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VERTICAL: 5' INTERVALS

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EROSION AND SEDIMENT CONTROL PLANS HIBRED FARMS RESTORATION AREA			
PROPOSED THALWEG PROFILE			
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