

Appendix E

POST-CONSTRUCTION PLANTING PLAN

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Sunoco Logistics, L.P.

POST-CONSTRUCTION PLANTING PLAN

For Federally Owned Lands Administered by U.S. Army Corps
of Engineers at
Loyalhanna Lake,
Conemaugh River Lake,
and
Raystown Lake

Prepared For

Sunoco Logistics, L.P.
525 Fritztown Road
Sinking Spring, PA

Prepared By



Tetra Tech, Inc.
301 Ellicott Street
Buffalo, NY 14203
Ph: 716.849.9419

PENNSYLVANIA PIPELINE PROJECT POST-CONSTRUCTION PLANTING PLAN

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1.0 Introduction

As part of Sunoco Logistics, L.P.'s ("SPLP's") Pennsylvania Pipeline Project ("Project"), Sunoco has agreed to perform post-construction planting as part of impact minimization measures on federally-owned lands administered by the United States Army Corps of Engineers ("USACE") near or within Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake, in Westmoreland, Indiana, and Huntingdon counties, Pennsylvania (refer to Table 1). This planting plan ("Plan") is based on communication with Raystown Lake staff, as well as information obtained from planting plans implemented for previous projects on USACE lands.

The Project includes the construction of approximately 305 miles of up to two, 16- to 20-inch natural gas liquids ("NGL") pipelines in a shared 50-foot-wide right-of-way ("ROW"). Table 1 lists the locations where the Project traverses federally-owned lands administered by the USACE.

Table 1 - Proposed Project Crossing Locations

Property Name	District	Latitude/ Longitude Enter	Latitude/ Longitude Exit	Project Tract Number	Total ROW Crossing Type & Length (approx. miles)*
Loyalhanna Lake	Pittsburgh	40°26'11"N/ 79°27'15"W; 40°26'14"N/ 79°26'36"W	40°26'11"N/ 79°27'10"W; 40°26'16"N/ 79°26'10"W	PA-WM2-0064.0000	Open cut (0.07 mile); HDD (0.39 mile)
Parcel 1 west of Conemaugh River	Pittsburgh	40°26'29"N/ 79°20'47"W	40°26'31"N/ 79°20'32"W	PA-WM2-0095.0000	HDD (0.22 mile)
Parcel 2 west of Conemaugh River	Pittsburgh	40°26'41"N/ 79°18'19"W	40°26'42"N/ 79°18'1"W	PA-WM2-0099.0000	Open Cut (0.14 mile); HDD (0.14 mile)
Parcel 3 east of Conemaugh River	Pittsburgh	40°26'43"N/ 79°17'58"W; 40°26'50"N/ 79°17'15"W	40°26'43"N/ 79°17'52"W; 40°26'51"N/ 79°17'14"W	PA-IN-0000.0001	HDD (0.12 mile) Open Cut (0.01 mile)
Parcel 4 east of Conemaugh River	Pittsburgh	40°27'12"N/ 79°13'46"W	40°27'12"N/ 79°13'45"W	PA-IN-00018.001	Open cut (0.01 mile)
Raystown Lake	Baltimore	40°23'52"N/ 78° 8'24"W; 40°23'21"N/ 78° 6'1"W	40°23'41"N/ 78° 7'30"W; 40°21'58"N/ 78° 3'22"W	PA-HU-20.0008	Open Cut (2.88 miles); Bore (0.02 mile); HDD (1.25 miles)
Total Crossing Length					5.25 miles

* HDD – Horizontal Directional Drill

After the second of the two pipelines is installed, SPLP will plant trees in forested temporary workspace areas that were cleared for construction of the pipelines to accelerate the restoration and re-establishment of the forest ecosystems.

In addition, SPLP will use herbaceous pollinator seed mixes to create pollinator habitat, to assist USACE land managers to increase and improve pollinator habitat, in accordance with directives from President Barack Obama to agencies that manage and administer federally-owned lands. There have been declines in bee colonies and other pollinators' populations that has been attributed to the loss of breeding habitat due to land conversion, illegal logging and deforestation at overwintering sites, and extreme weather conditions. In addition, pollinator species continue to face threats from natural diseases, predators, parasites, and the growing use of insecticides in agricultural, urban, and suburban areas. Together, these stressors have contributed to a decline in pollinator species' populations and have brought into focus a need for pollinator species conservation. This Plan incorporates guidance from *The National Strategy to Promote the Health of Honey Bees and other Pollinators* (The White House 2015) and *The National Resources Conservation Service Pollinator Habitat Conservation Reserve Program Job Sheet* (NRCS 2011) and incorporates the establishment of pollinator habitat along the pipeline right-of-way (ROW).

Appendix A is an overview map which provides the location of the pipelines' ROW on the USACE-administered lands/properties. Appendix B provides the locations of the forested areas to be planted within each property. Appendix C is a site-specific planting plan for the Raystown Lake recreational areas. Appendix D provides a list of plant species (common and scientific names) that may be planted on the properties. Appendix E provides planting guidelines to ensure proper handling, storage, and planting of the nursery stock. The planting period is expected to be the spring of 2017.

2.0 Tree Planting

To facilitate the re-establishment of a forested community, all forested areas that require clearing in temporary workspace areas along the Project corridor within USACE property will be replanted with native trees and shrubs. The species composition of the replanting effort will consist of native species similar to those present prior to construction. Planting will occur in the temporary construction ROW, including both temporary work space ("TWS") and additional temporary workspace ("ATWS"). No trees will be planted in the permanent ROW as that area will be maintained as an open/herbaceous area. Appendix B provides detailed location maps of all forested areas to be planted. Appendix C provides a planting plan specific to the Raystown Lake recreational areas that specifies the location, species, and size of each planting.

2.1 Plant Requirements

A total of 8.712 acres (Conemaugh River Lake - 0.665 acre, Loyahanna Lake - 0.168 acre, and Raystown Lake - 7.879 acres) of temporarily affected forested areas will be planted with trees at a rate of 680 plants/acre, planted with 8-foot by 8-foot spacing. Tree and shrub species to be planted in non-recreation areas will consist of two-to-three-foot high whip-sized, bare root seedlings in a variety of native species obtained from a reputable local plant nursery. No cultivars or ornamental native-species will be allowed as substitutes.

Recreation areas on the Raystown property, such as the Ridge Camp area in Raystown Lake, will be planted with a mix of tree and shrub species consisting of two-to-three foot high whip-sized, bare root seedlings; five-to-six-foot high balled and burlapped (“B&B”) trees and shrubs; and, two-foot high potted shrubs. Based on the 8-foot by 8-foot spacing this recreation area will be planted with approximately 478 shrubs and 983 trees. The larger stock B&B species will constitute ten (10) percent of the overall plantings in this area. This would equate to 48 B&B shrub plantings and 99 B&B tree plantings. Of these 99 B&B tree plantings, 38 will be fruit tree species. Additionally, the larger stock plantings may be planted with a 10-foot by 10-foot spacing when necessary. Appendix C provides specific locations of the B&B plantings.

Species to be planted in the non-recreational areas will be the same or similar to those temporarily removed and are common to the region. The Raystown recreational areas will be planted with a variety of tree and shrub species, including some fruit trees. A list of tree species that could be planted along the ROW, for both the non-recreation and recreation areas, is provided in Appendix D. This list of tree and shrub species was generated based on information obtained during field surveys and from *Raystown Lake Project: Typical Restoration Requirements* (USACE 2016) provided during a meeting on 29 March 2016.

2.2 Installation / Care of Plantings and Right-of-Way

Installation of the tree plantings will be conducted manually with hand tools to the extent practicable, to avoid unnecessary impacts to restored areas as a result of planting activities. If the use of mechanized equipment is necessary, the landscape contractor will utilize small, lighter pieces of equipment such as a “side-by-side” utility terrain vehicle (“UTV”) or equivalent, in conjunction with plywood sheeting to prevent impacts to saturated wetlands. Specifically, the landscape contractor shall use sheets of plywood or equivalent material for weight distribution along travel routes within saturated wetlands to protect soils from excessive rutting, compaction, or topsoil and subsoil mixing. Additionally, the number of required trips within wetlands will be limited to the minimum number of trips necessary to accomplish the task.

To the extent possible, trees species will be mixed and randomly planted within the spacing grid to mimic natural regeneration and provide diversity in the planted areas. In rocky areas, or any area with conditions that are considered unsatisfactory for planting (*i.e.*, loose mounds of soil, rotten wood, clumps of dead vegetation, abnormal depressions), the planting grid spacing will be adapted to best suit the conditions.

A 2-foot tall or larger tree tube will be placed over the planted seedling to protect it from predation. A minimum 1-inch by 1-inch by 3-foot oak stake will be placed in the ground, parallel to the tree tube, and secured to the tube in at least two (2) locations. Each 5-6-foot B&B planting will be fenced using a 10-foot section of galvanized fencing that stands a minimum of 48 inches in height. The fencing will be secured using two (2) 60-inch metal t-posts set at 180 degrees (°) from each

other. The fencing will be secured to the t-posts with metal wire. In addition, “No Mow” zone markers will be installed at all entry and exit points and along the edge of the planted areas to prevent pipeline operations and maintenance staff from accidentally mowing the planted areas. The “No Mow” markers will consist of fiberglass flat markers between 66 and 72 inches in length, installed vertically in the ground within the pipeline ROW.

All planting activities will be performed by a qualified forester, arborist, or landscape architect using planting stock that is native to the areas, with no ornamental plantings. To ensure the greatest success rate possible, tree plantings will be properly cared for in accordance with the Tree Planting Guidelines, presented in this Plan as Appendix E, including proper storage/handling and planting. Species will be planted in areas suited for their specific growing requirement (i.e., species favoring wet areas will be planted as such). The planting contractor will also be responsible for identifying any fertilizing, watering, and other site preparations that may be required prior to planting that would further promote the success of the plantings. In addition, SPLP will require the planting contractor to be responsible for restoring all areas temporarily damaged during the planting process including, but not limited to, soil rutting, soil compaction, vegetation disturbance, damage to water bars/slope breakers, and other impacts to the ROW and access roads caused during the planting activities.

In order to further enhance plant survivability and protect plantings from vegetation competition as well as damage caused by animals, the contractor will identify and implement protective measures as necessary. These plant protective measures could include, but are not limited to, deer browse deterrents, mulch, anti-desiccants, tree tubes, over planting, and/or other solutions to help ensure survival. Irrigation of plantings or installation of tree water bags may also be necessary if weather conditions at the time of planting, or immediately after, warrant such measures. Such potential corrective actions/measures must be described in the planting contractor’s proposal/plan and be pre-approved by SPLP and USACE Operations Managers for the properties (or their designee) prior to implementation. Specific to Raystown Lake, the deer fence currently installed on Terrace Mountain will be temporarily removed in required areas during construction and re-established to the limits of disturbance following construction while keeping the remaining fence at its preconstruction locations.

3.0 Herbaceous Seed Mix Plantings

SPLP proposes to enhance the habitat for pollinator species by applying USACE-recommended seed mixes (Appendix D) along the entire length of the Project’s new (50-foot wide) permanent ROW on USACE-administered lands. Specifically, a total of 21.438 acres of permanent ROW will be seeded with the upland pollinator mix at a rate of ten pounds per acre (Ernst 2015): 2.274 acres at Conemaugh River Lake, 0.682 acre at Loyalhanna Lake, and 18.482 acres at Raystown Lake. In addition, a total of 0.658 acre of permanent ROW will be planted with a wetland seed mix at a rate of 20 pounds per acre (Ernst 2016): 0.025 acre at Loyalhanna Lake and 0.633 acre

at Raystown Lake. This effort will occur as part of the permanent seeding / restoration phase of pipeline construction.

Areas to be seeded will be prepared and stabilized in accordance with the Erosion and Sedimentation Control permit requirements, the specifications in the Project erosion and sedimentation control plans, and/or recommendations accompanying the seed mixes. Additionally, all stumps and logging debris will be removed from the planting area and it will be thoroughly disked/scarified to break up the soil and create a loosened soil seed bed to ensure seed-to-soil contact. Mowing and maintenance of the pollinator planted areas will only be conducted between October 16 and March 31 of each year when mowing is to occur.

In the event of severe weather that results in erosion of the seed mixes or soil conditions that affect the viability of the seeds (*i.e.*, prolonged saturation or drought), SPLP will require the planting contractor to be responsible for reseeded the areas with the pollinator seed mix. In addition, SPLP will require the planting contractor to be responsible for managing invasive species that could out-compete the targeted pollinator species before they become established. Supplemental irrigation of the seeds may be necessary if weather conditions at the time of planting, or immediately after, warrant such measures. All potential corrective actions/measures must be described in the planting contractor's proposal/plan and be pre-approved by SPLP and USACE Operations Managers for the properties (or their designee) prior to implementation.

4.0 Monitoring and Reporting

SPLP will monitor the tree planting areas for two (2) years post-planting to ensure that all proposed mitigation plantings have an eighty-five (85) percent tree survival rate of native species. All pollinator planting areas will be monitored for five (5) years post-planting to ensure that the seeded areas have 85% ground coverage of target and/or native species. The presence of volunteer species contributing to this 85% rate may be acceptable, but must meet the approval of the applicable USACE property Operations Manager (or designee). SPLP will require the planting contractor to be responsible for achieving these survival rates, and implementing pre-approved corrective actions/measures, such as browsing deterrents, anti-desiccants, mulch, or other pre-approved methods to meet these goals. In the event corrective actions/measures are required and implemented at the planted areas, the monitoring period may be extended until the revegetation/survival goal is met.

The monitoring reports will be submitted by December 31st of the calendar year to the Pittsburgh District and Baltimore District offices. The report will include data forms and photographs of the planted areas, monitoring results (*i.e.*, percent survival), as well as identification of any potential problems and/or corrective actions implemented that year.

5.0 References

Ernst Conservation Seeds Inc. 2016. PA Blue Ridge Province FACW Mix – ERNMX-241.

Ernst Conservation Seeds Inc. 2015. XERCES Pennsylvania Pollinator Mix – XERC00105.

Natural Resources Conservation Service (NRCS). 2011. Pollinator Habitat: Conservation Reserve Program Job Sheet CP 42.

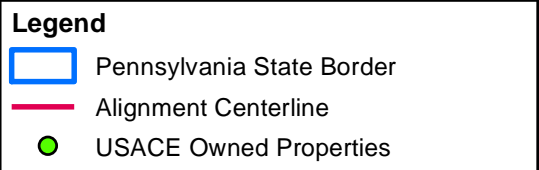
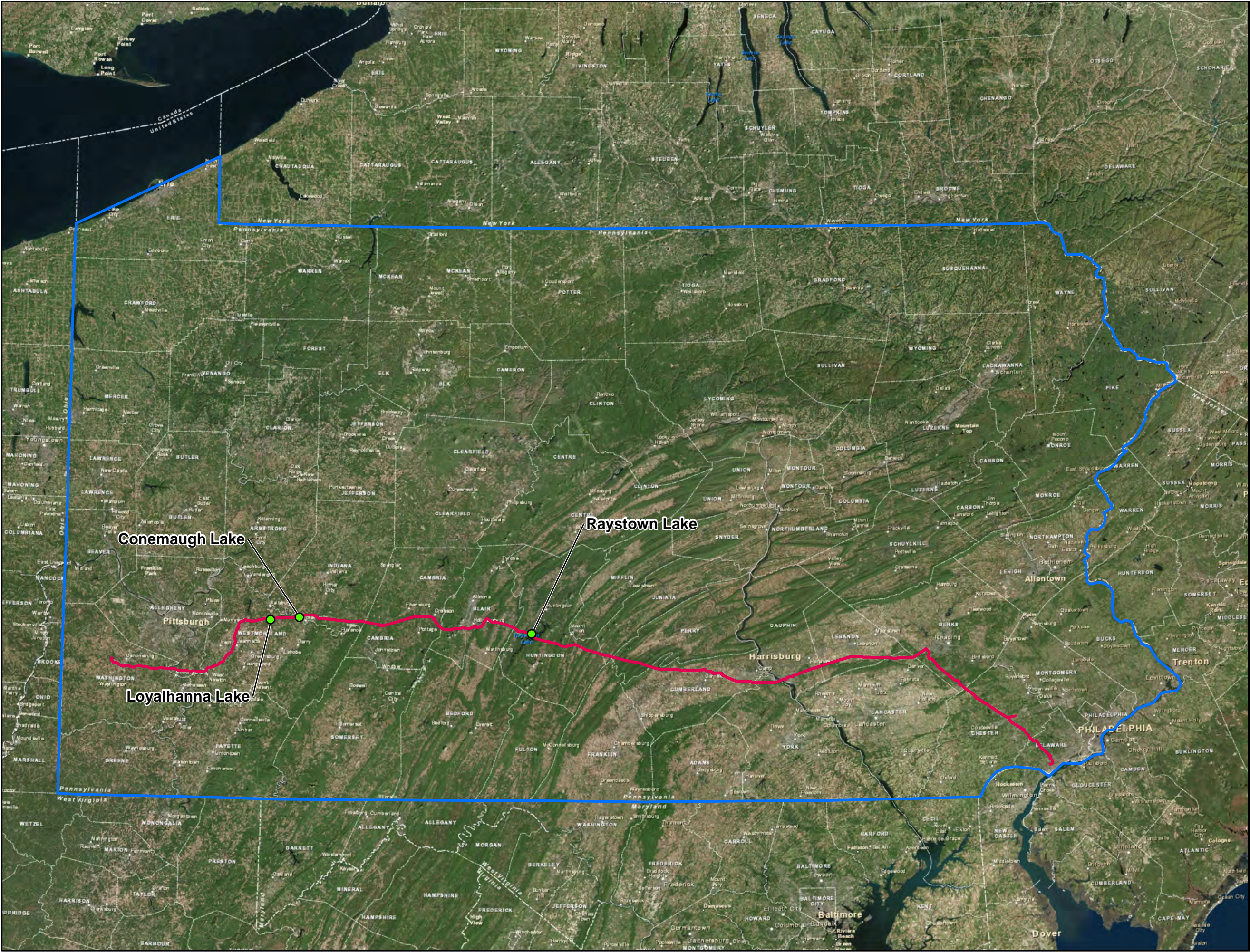
The White House. 2015. National Strategy to Promote the Health of Honey Bees and Other Pollinators. Pollinator Health Task Force. Washington, D.C.

United States Army Corps of Engineers (USACE). 2016. Raystown Lake Project: Typical Restoration Requirements. Received on 29 March 2016.

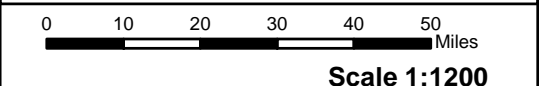
APPENDIX A

Project Overview Map

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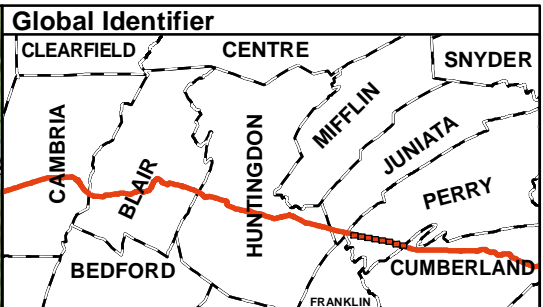
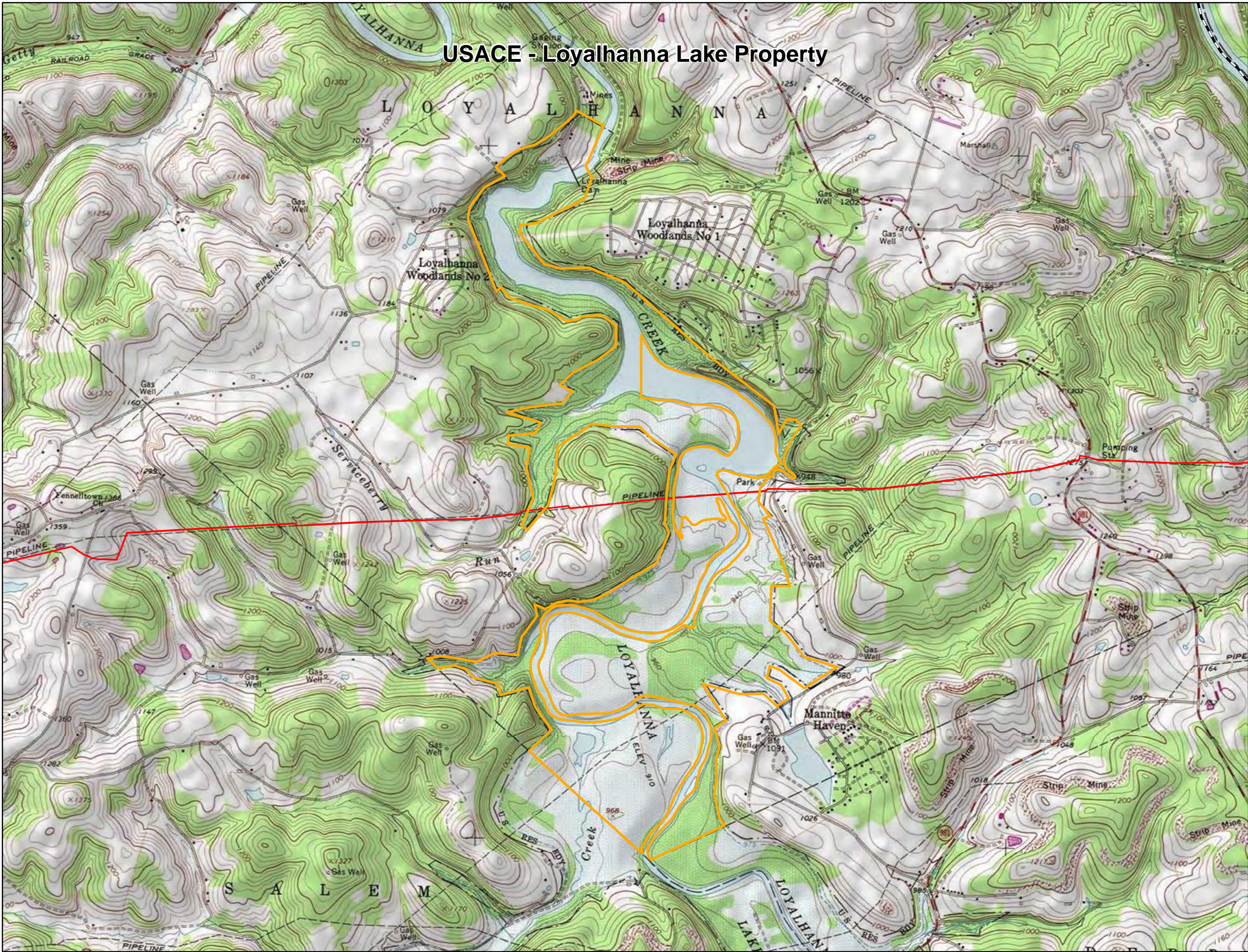
Appendix A. Pennsylvania Pipeline Project Overview



Prepared By:	Date:
	02/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles



Legend

- USACE Loyalhanna Lake Property
- County Boundary
- Proposed Pipelines

Appendix A - Project Overview USACE Loyalhanna Lake Properties

0 0.2 0.4 0.6 0.8 Miles

Scale 1:24000

Prepared By:



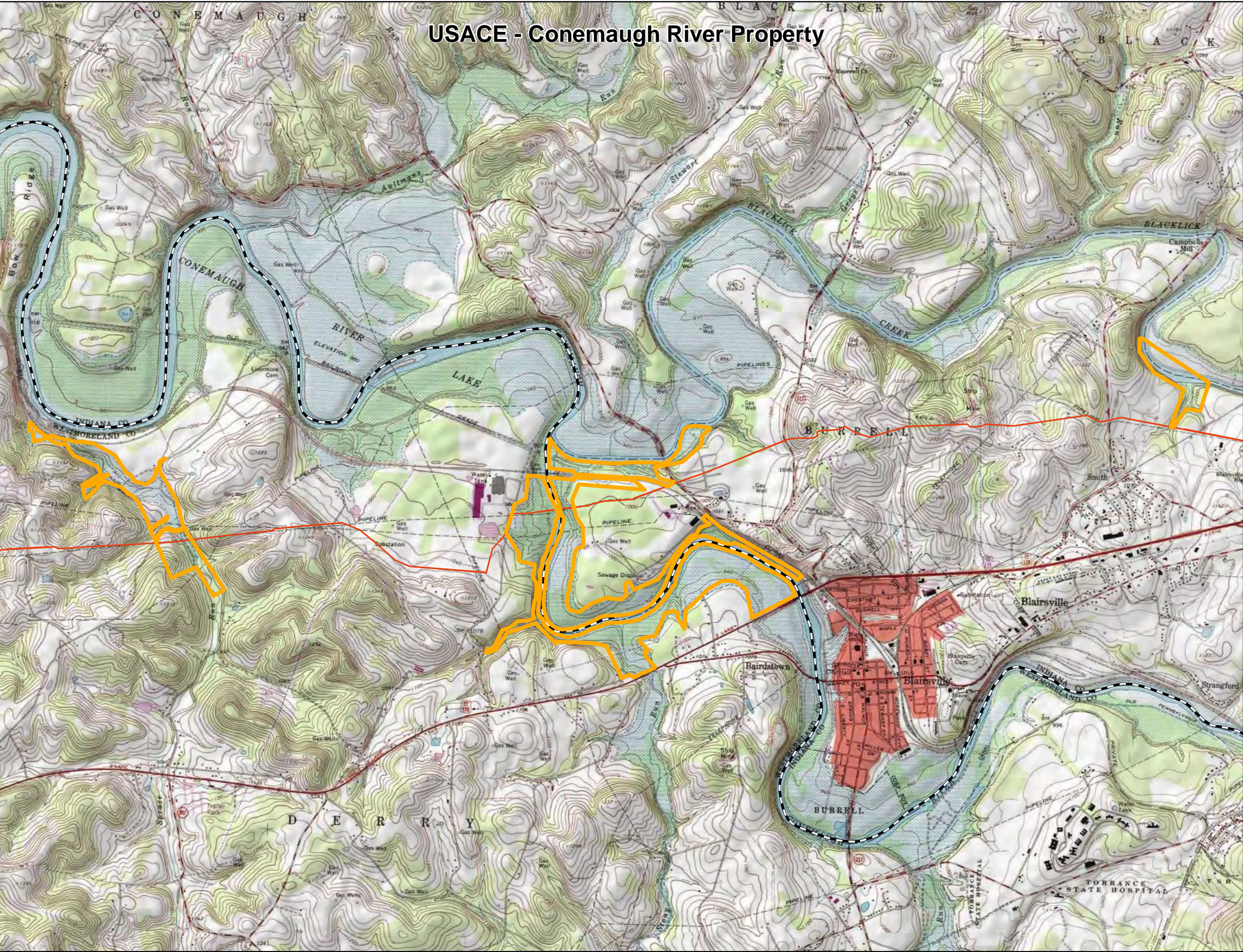
Date:

02/2016

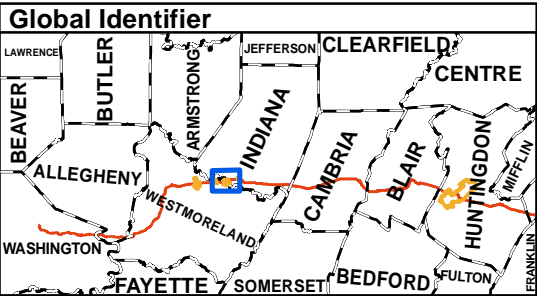
Base Map:
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles



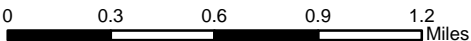


USACE - Conemaugh River Property



- Legend**
- USACE Conemaugh River Properties
 - County Boundary
 - Proposed Pipelines

Appendix A- Project Overview USACE Conemaugh River Properties



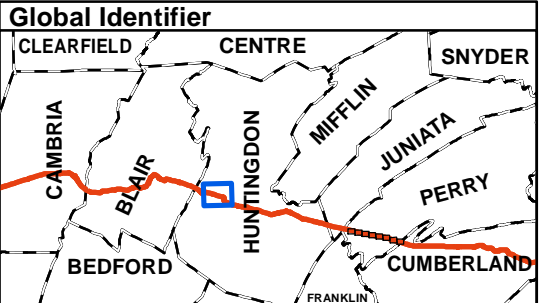
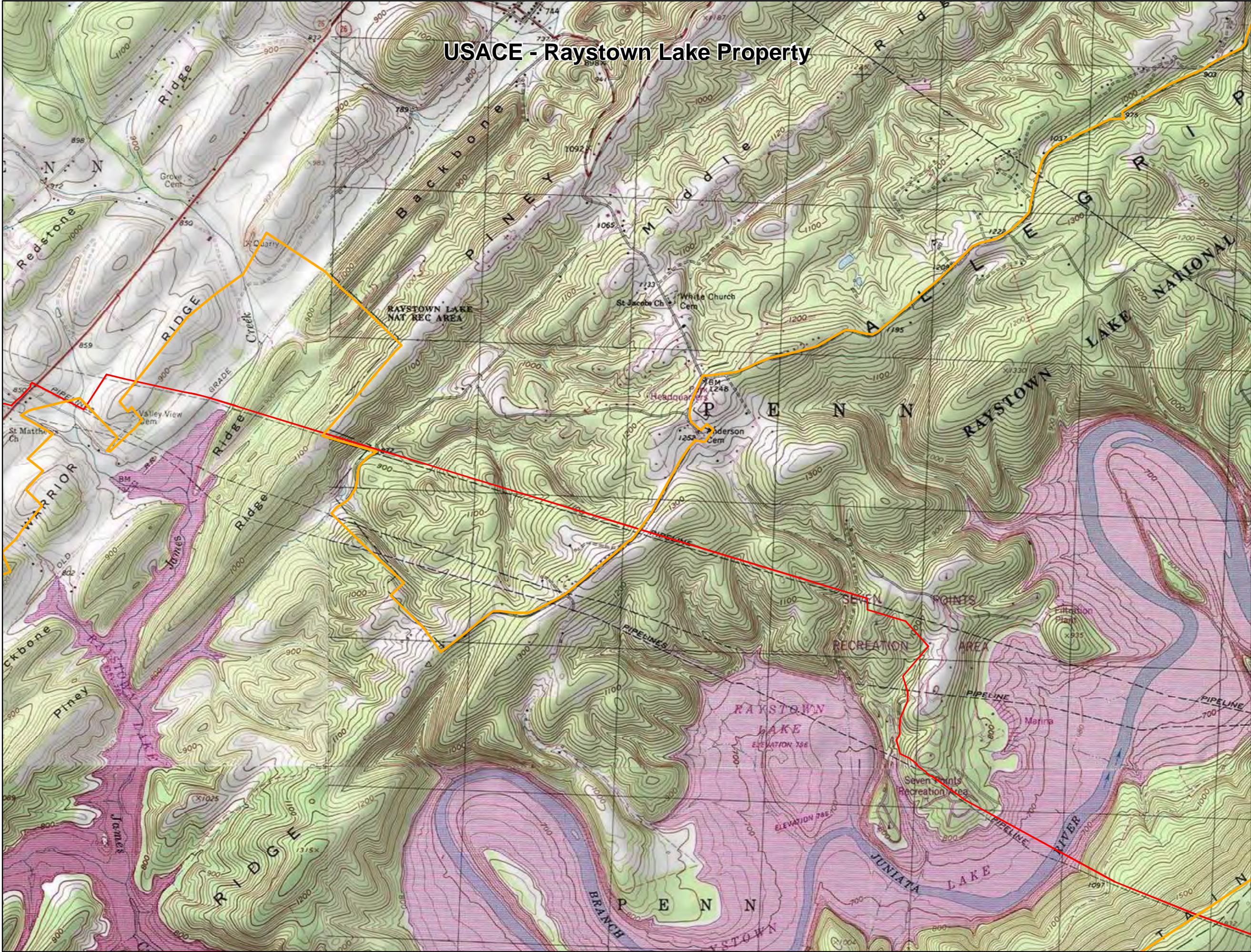
Scale 1:1200

Prepared By:	Date:
	02/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

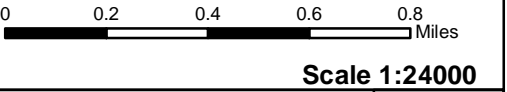




Legend

- USACE Raystown Lake
- County Boundary
- Proposed Pipelines

**Appendix A - Project Overview
USACE Raystown Lake Properties**



Prepared By:	Date:
TETRA TECH	02/2016

Base Map:
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

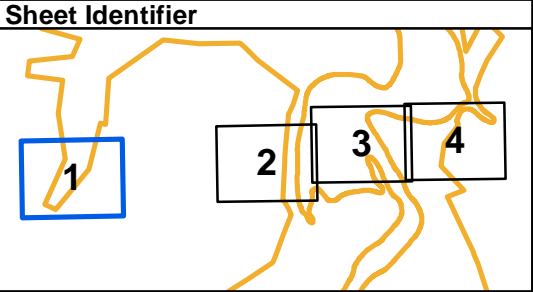
APPENDIX B

Planting Area Maps

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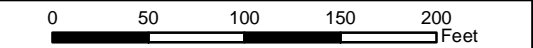
USACE - Loyalhanna Lake Property

Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0.074 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	0.581 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.146 ac
Total Acres	0.801 ac



- Legend
- HDD
 - Proposed Pipelines
 - HDD Entry/Exit
 - USACE Entry/Exit
 - USACE Property
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Asbuilt Valve
 - Temporary Construction Workspace
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - Block Valve Site Layout
 - Block Valve Permanent ROW
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Forested Area on USACE Land
 - PEM - Wetland Seed Mix Revegetation
 - Permanent Right of Way on USACE Land - Pollinator Habitat Replant
 - Temporary Right of Way Forested Area on USACE Land - Replanted Seedlings (680/acre)
 - Stream
 - Wetland
 - County Boundary
 - Sheet Boundaries

Appendix B - Loyalhanna Lake Planting Areas



Sheet 1 of 4 Scale 1:1200

Prepared By:

Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

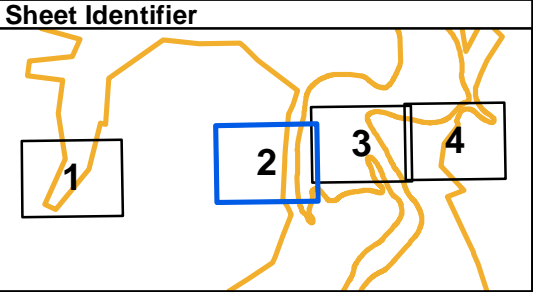
Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

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USACE - Loyalhanna Lake Property

Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0.00 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	0.00 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.00 ac
Total Acres	0.00 ac



- Legend
- HDD
 - Proposed Pipelines
 - HDD Entry/Exit
 - USACE Entry/Exit
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 - Permanent Right of Way on USACE Land - Pollinator Habitat Replant
 - Temporary Right of Way Forested Area on USACE Land - Replanted Seedlings (680/acre)
 - Stream
 - Wetland
 - County Boundary
 - Sheet Boundaries

Appendix B - Loyalhanna Lake Planting Areas



Sheet 2 of 4

Scale 1:1200

Prepared By: TETRA TECH

Date: 05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

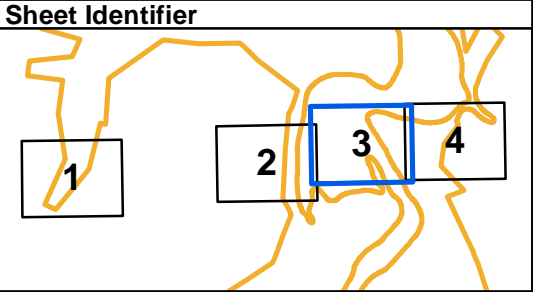
Note: See Appendix D for list of species that may be planted.

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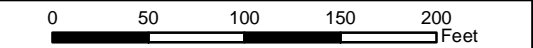
USACE - Loyalhanna Lake Property

Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0.00 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	0.00 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.00 ac
Total Acres	0.00 ac



- Legend**
- HDD
 - Proposed Pipelines
 - HDD Entry/Exit
 - USACE Entry/Exit
 - USACE Property
 - 50-foot ROW
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 - Permanent Right of Way on USACE Land - Pollinator Habitat Replant
 - Temporary Right of Way Forested Area on USACE Land - Replanted Seedlings (680/acre)
 - Stream
 - Wetland
 - County Boundary
 - Sheet Boundaries

Appendix B - Loyalhanna Lake Planting Areas



Sheet 3 of 4 Scale 1:1200

Prepared By:

Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

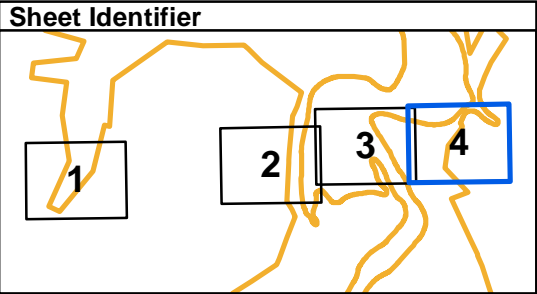
USACE Parcels:
County Assessment
GIS Shapefiles

Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

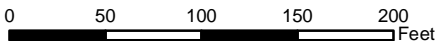
USACE - Loyalhanna Lake Property

Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0.00 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	0.101 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.022 ac
Total Acres	0.123 ac



- Legend
- HDD
 - Proposed Pipelines
 - HDD Entry/Exit
 - USACE Entry/Exit
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 - ROW - Temporary Access Road
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 - PEM - Wetland Seed Mix Revegetation
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 - Temporary Right of Way Forested Area on USACE Land - Replanted Seedlings (680/acre)
 - Stream
 - Wetland
 - County Boundary
 - Sheet Boundaries

Appendix B - Loyalhanna Lake Planting Areas



Sheet 4 of 4 Scale 1:1200

Prepared By:

Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

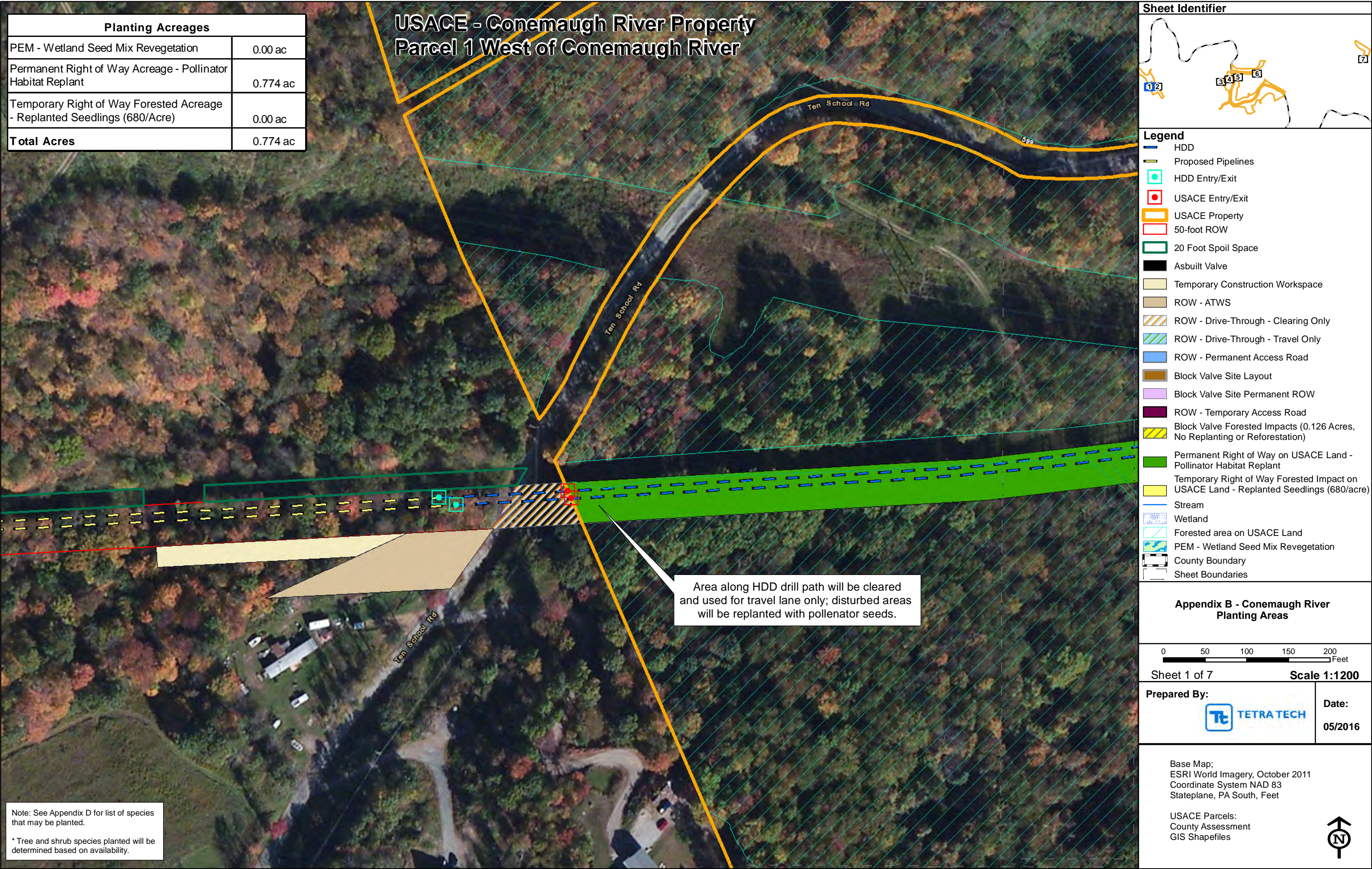
USACE Parcels:
County Assessment
GIS Shapefiles

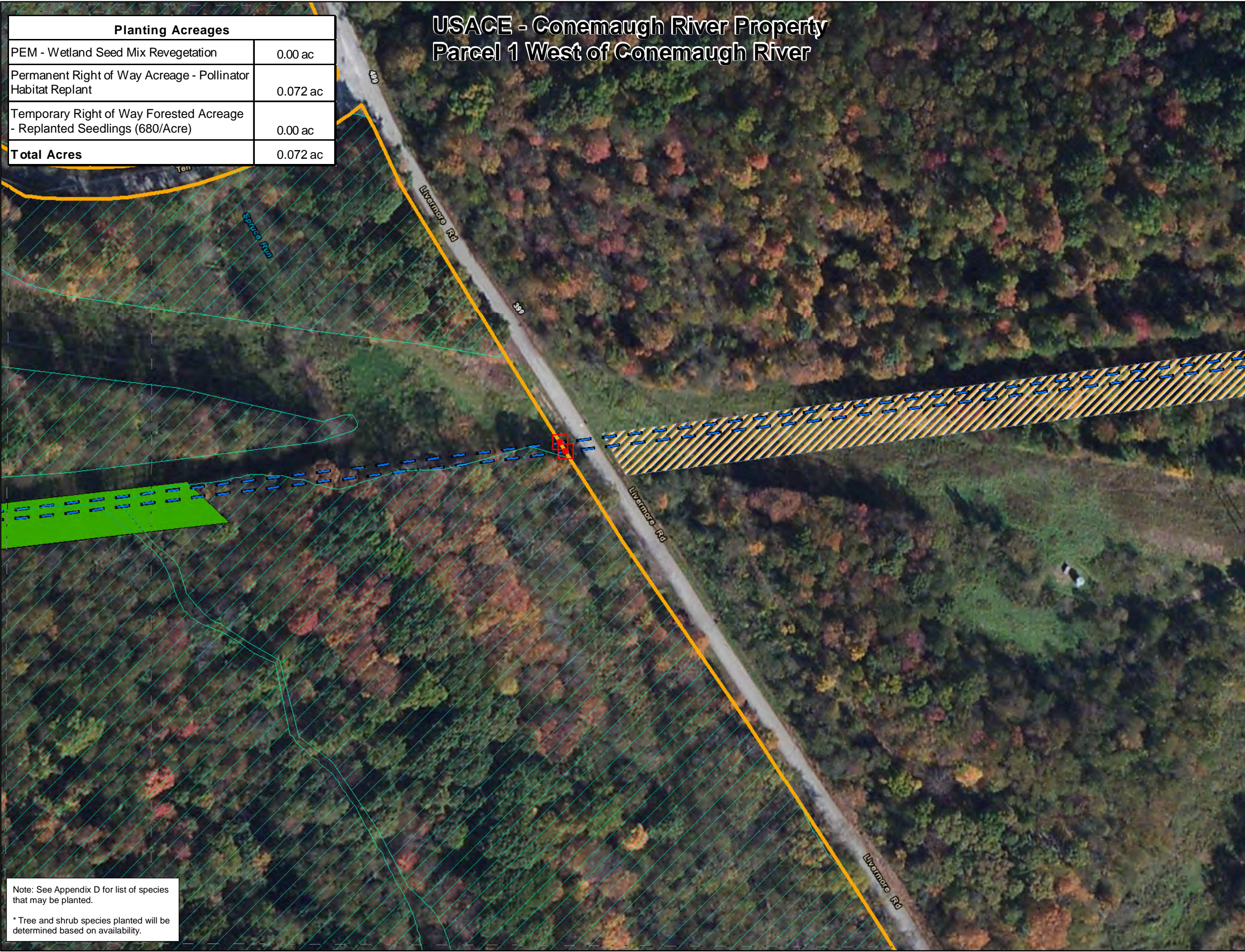


Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

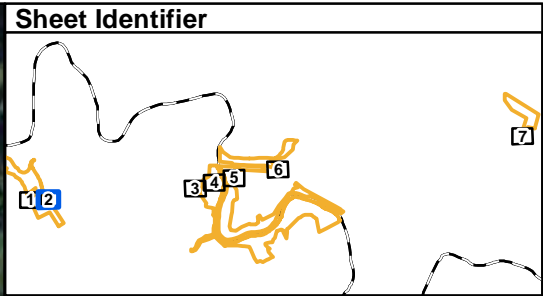
BUFP:GIS\PROJECTS\112C05056B-PPPMXD\PERMITS\USACE_LOYALHANNA\POLLINATORPLANTING.MXD 5/5/2016 LN





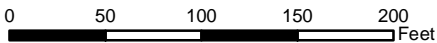
USACE - Conemaugh River Property
Parcel 1 West of Conemaugh River

Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0.00 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	0.072 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.00 ac
Total Acres	0.072 ac



- Legend
- HDD
 - Proposed Pipelines
 - HDD Entry/Exit
 - USACE Entry/Exit
 - USACE Property
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Asbuilt Valve
 - Temporary Construction Workspace
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - Block Valve Site Layout
 - Block Valve Site Permanent ROW
 - ROW - Temporary Access Road
 - Block Valve Forested Impacts (0.126 Acres, No Replanting or Reforestation)
 - Permanent Right of Way on USACE Land - Pollinator Habitat Replant
 - Temporary Right of Way Forested Impact on USACE Land - Replanted Seedlings (680/acre)
 - Stream
 - Wetland
 - Forested area on USACE Land
 - PEM - Wetland Seed Mix Revegetation
 - County Boundary
 - Sheet Boundaries

Appendix B - Conemaugh River
Planting Areas



Sheet 2 of 7 Scale 1:1200

Prepared By:


Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles



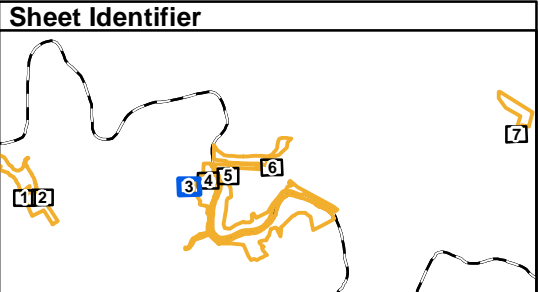
Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

BUFP:GIS\PROJECTS\112C050568-PPPMXD\PERMITS\USACE_CONEMAUGH\POL\LINATOR\PLANTING.MXD 5/5/2016 LN

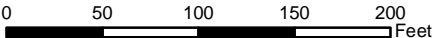
Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0.00 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	0.598 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.096 ac
Total Acres	0.694 ac

USACE - Conemaugh River Property Parcel 2 at Conemaugh River Crossing



- Legend**
 - HDD
 - Proposed Pipelines
 - HDD Entry/Exit
 - USACE Entry/Exit
 - USACE Property
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Asbuilt Valve
 - Temporary Construction Workspace
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - Block Valve Site Layout
 - Block Valve Site Permanent ROW
 - ROW - Temporary Access Road
 - Block Valve Forested Impacts (0.126 Acres, No Replanting or Reforestation)
 - Permanent Right of Way on USACE Land - Pollinator Habitat Replant
 - Temporary Right of Way Forested Impact on USACE Land - Replanted Seedlings (680/acre)
 - Stream
 - Wetland
 - Forested area on USACE Land
 - PEM - Wetland Seed Mix Revegetation
 - County Boundary
 - Sheet Boundaries

Appendix B - Conemaugh River Planting Areas



Sheet 3 of 7 **Scale 1:1200**

Prepared By:

TETRA TECH

Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

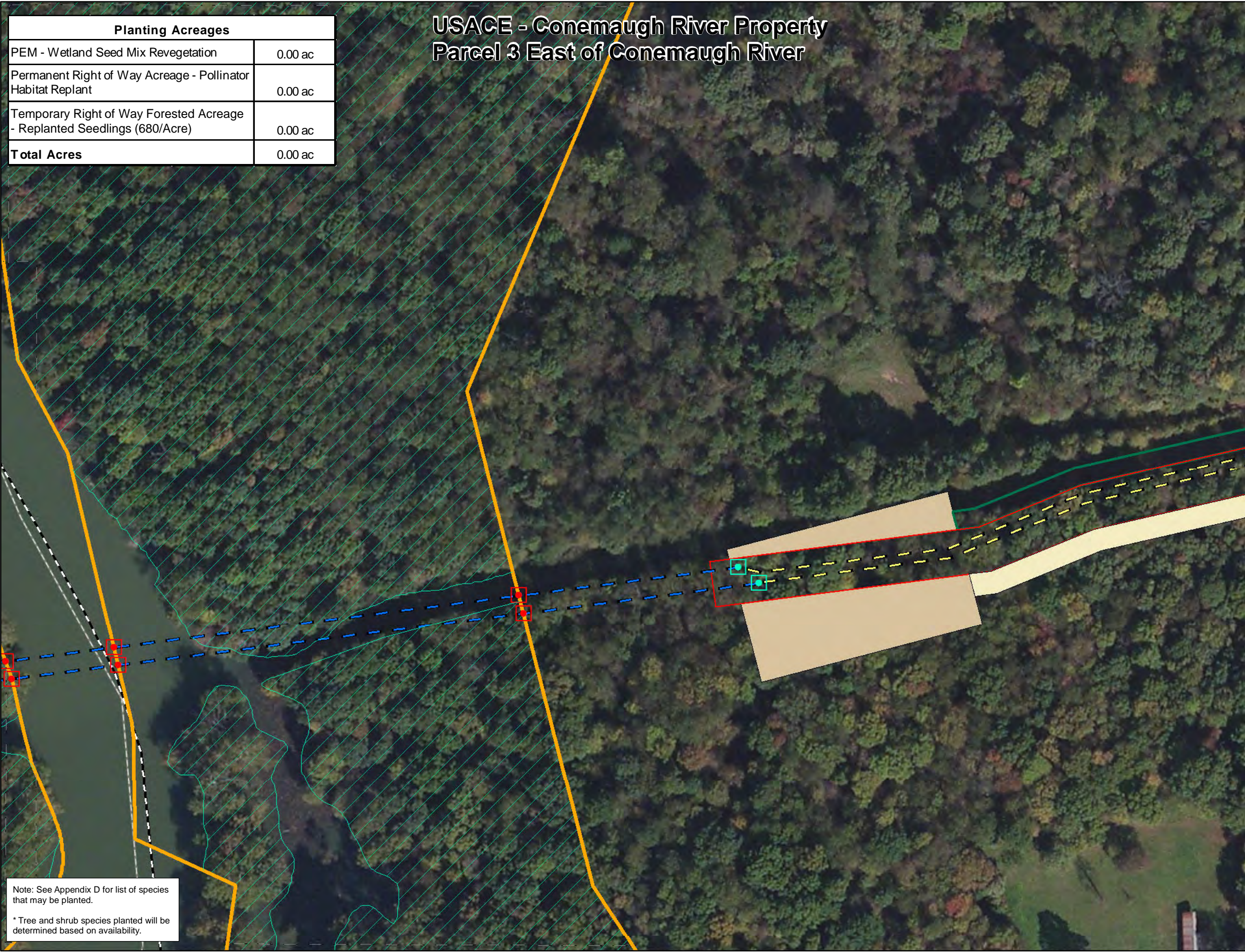


Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

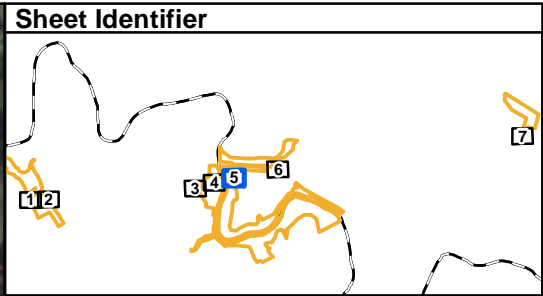
Block Valve Site Layout -
0.161 Acres Permanent Gravel





USACE - Conemaugh River Property
Parcel 3 East of Conemaugh River

Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0.00 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	0.00 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.00 ac
Total Acres	0.00 ac



- Legend
- HDD
 - Proposed Pipelines
 - HDD Entry/Exit
 - USACE Entry/Exit
 - USACE Property
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Asbuilt Valve
 - Temporary Construction Workspace
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - Block Valve Site Layout
 - Block Valve Site Permanent ROW
 - ROW - Temporary Access Road
 - Block Valve Forested Impacts (0.126 Acres, No Replanting or Reforestation)
 - Permanent Right of Way on USACE Land - Pollinator Habitat Replant
 - Temporary Right of Way Forested Impact on USACE Land - Replanted Seedlings (680/acre)
 - Stream
 - Wetland
 - Forested area on USACE Land
 - PEM - Wetland Seed Mix Revegetation
 - County Boundary
 - Sheet Boundaries

Appendix B - Conemaugh River
Planting Areas



Sheet 5 of 7 Scale 1:1200

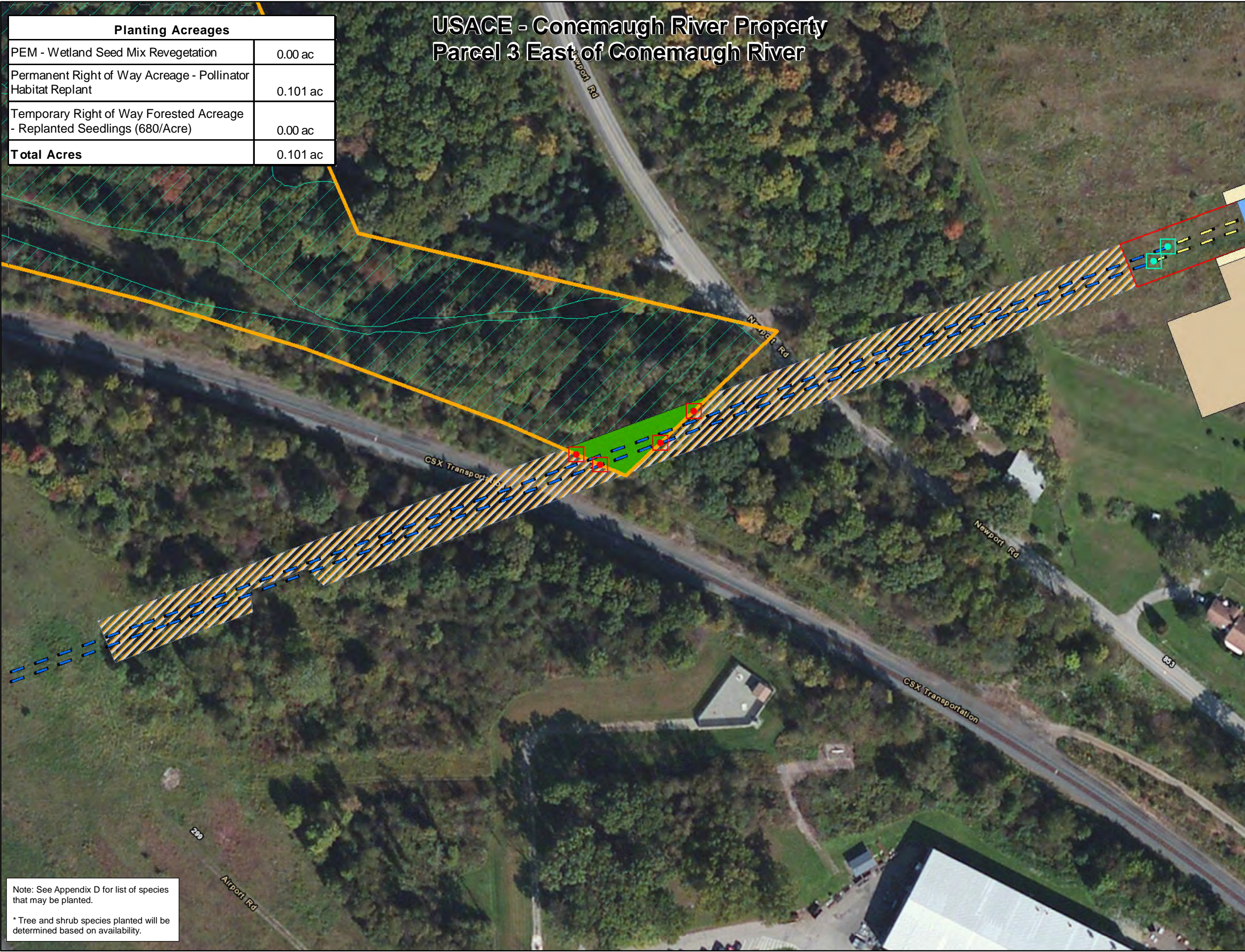
Prepared By: TETRA TECH Date: 05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

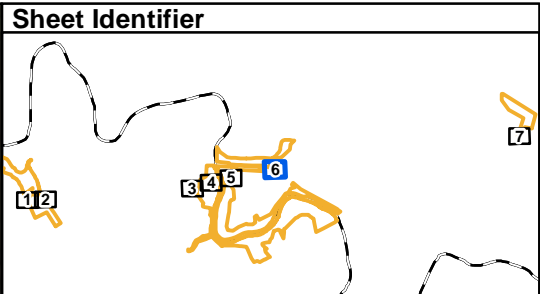
Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.



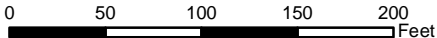
USACE - Conemaugh River Property
Parcel 3 East of Conemaugh River

Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0.00 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	0.101 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.00 ac
Total Acres	0.101 ac



- Legend**
- HDD
 - Proposed Pipelines
 - HDD Entry/Exit
 - USACE Entry/Exit
 - USACE Property
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Asbuilt Valve
 - Temporary Construction Workspace
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - Block Valve Site Layout
 - Block Valve Site Permanent ROW
 - ROW - Temporary Access Road
 - Block Valve Forested Impacts (0.126 Acres, No Replanting or Reforestation)
 - Permanent Right of Way on USACE Land - Pollinator Habitat Replant
 - Temporary Right of Way Forested Impact on USACE Land - Replanted Seedlings (680/acre)
 - Stream
 - Wetland
 - Forested area on USACE Land
 - PEM - Wetland Seed Mix Revegetation
 - County Boundary
 - Sheet Boundaries

Appendix B - Conemaugh River
Planting Areas



Sheet 6 of 7 Scale 1:1200

Prepared By:


Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles



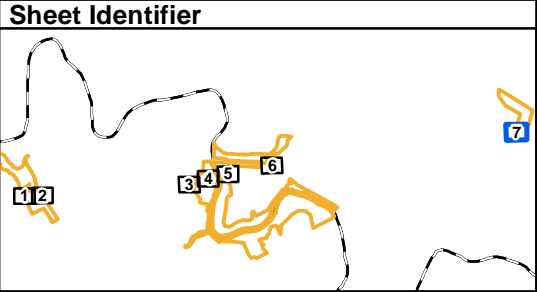
Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

BUFP:GIS\PROJECTS\112C05056B-PPPMXD\PERMITS\USACE_CONEMAUGH\POL\LINATOR\PLANTING.MXD 5/5/2016 LN

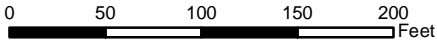
USACE - Conemaugh River Property
Parcel 4 East of Conemaugh River

Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0.00 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	0.049 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.007 ac
Total Acres	0.056 ac



- Legend
- HDD
 - Proposed Pipelines
 - HDD Entry/Exit
 - USACE Entry/Exit
 - USACE Property
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Asbuilt Valve
 - Temporary Construction Workspace
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - Block Valve Site Layout
 - Block Valve Site Permanent ROW
 - ROW - Temporary Access Road
 - Block Valve Forested Impacts (0.126 Acres, No Replanting or Reforestation)
 - Permanent Right of Way on USACE Land - Pollinator Habitat Replant
 - Temporary Right of Way Forested Impact on USACE Land - Replanted Seedlings (680/acre)
 - Stream
 - Wetland
 - Forested area on USACE Land
 - PEM - Wetland Seed Mix Revegetation
 - County Boundary
 - Sheet Boundaries

Appendix B - Conemaugh River
Planting Areas



Sheet 7 of 7 Scale 1:1200

Prepared By:


Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

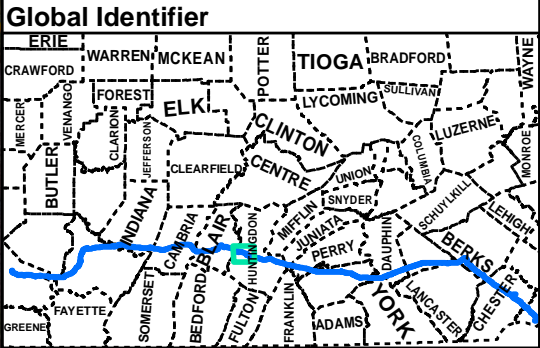
USACE Parcels:
County Assessment
GIS Shapefiles



Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

USACE - Raystown Lake Property



- Legend**
- Non-recreation Area
 - Sheet Boundaries
 - Recreation Area Sheet Boundaries (See Appendix C)
 - Proposed Pipelines
 - USACE Raystown Lake Property
 - County Boundary

Appendix B
Raystown Lake
Non-recreation Area Plantings
Sheet Key



Prepared By: TETRA TECH

Date: 05/2016

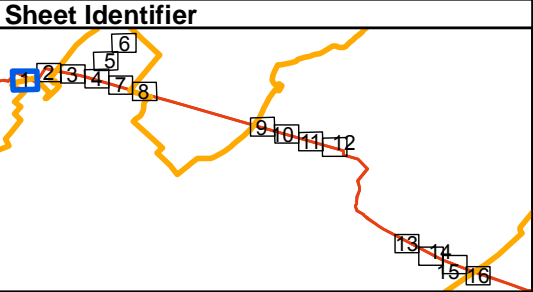
Base Map;
ESRI AtcGIS Online
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles



USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0.030 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	0.492 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0.114 ac



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- Recreation Area Entry/Exit
- Proposed Pipelines
- HDD
- PFO/PSS – Wetland Seed Mix Revegetation
- Permanent Right of Way Acreage – Pollinator Habitat Replant
- Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
- Block Valve (0.101 Acres, No Replanting or Reforestation)
- 50-foot ROW
- 20 Foot Spoil Space
- Block Valve Permanent ROW
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- ROW - Temporary Access Road
- Temporary Construction Workspace
- Forested Area on USACE Land
- PA Game Commission Leased Lands
- Wetland
- Stream
- USACE Property

Appendix B - Raystown Lake Non-recreation Area Plantings



Sheet 1 of 16 Scale 1:1200

Prepared By: TETRA TECH Date: 05/2016

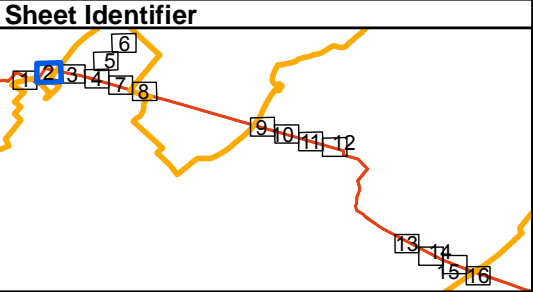
Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

Note: See Appendix D for list of species that may be planted.
* Tree and shrub species planted will be determined based on availability.

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	0.345 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0.046 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Pollinator seeding in farmed areas will occur unless otherwise instructed.

Note: See Appendix D for list of species that may be planted.
* Tree and shrub species planted will be determined based on availability.

Appendix B - Raystown Lake Non-recreation Area Plantings

0 50 100 150 200 Feet

Sheet 2 of 16 **Scale 1:1200**

Prepared By:

TETRA TECH

Date:

05/2016

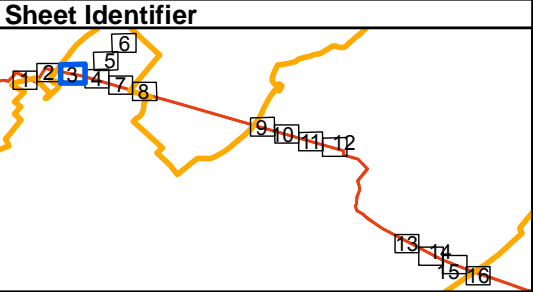
Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

BUF-P:\GIS\PROJECTS\112005958-PPP\MXD\PERMITS\USACE_RAYSTOWNLAKE\POLLINATORPLANTING.MXD 5/4/2016 LN

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	1.157 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0.246 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Pollinator seeding in farmed areas will occur unless otherwise instructed.

Appendix B - Raystown Lake Non-recreation Area Plantings



Sheet 3 of 16 Scale 1:1200

Prepared By:

Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

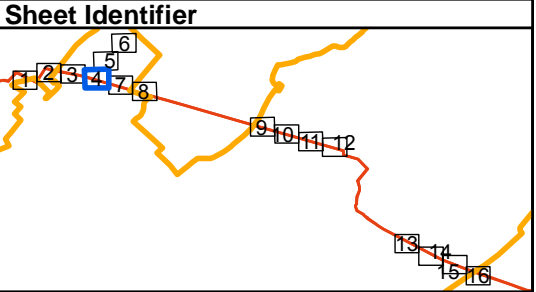
USACE Parcels:
County Assessment
GIS Shapefiles

Note: See Appendix D for list of species that may be planted.
* Tree and shrub species planted will be determined based on availability.

BUFP:\GIS\PROJECTS\112C05956-PPP\MXD\PERMITS\USACE_RAYSTOWNLAKE\POLLINATORPLANTING.MXD 5/4/2016 LN

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	0.732 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0.008 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Appendix B - Raystown Lake
Non-recreation Area
Plantings



Sheet 4 of 16 Scale 1:1200

Prepared By:

Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

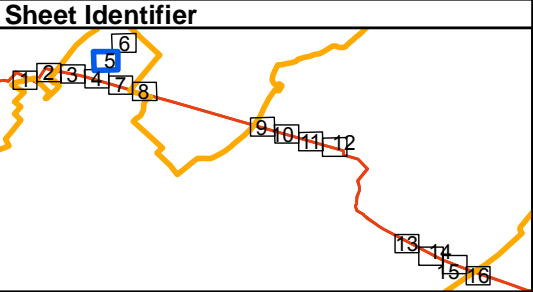
Area along HDD drill path will be cleared and used for travel lane only; disturbed areas will be replanted with pollinator seeds.

Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	0 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0.105 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Appendix B - Raystown Lake
Non-recreation Area
Plantings




Sheet 5 of 16 Scale 1:1200

Prepared By:


Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles



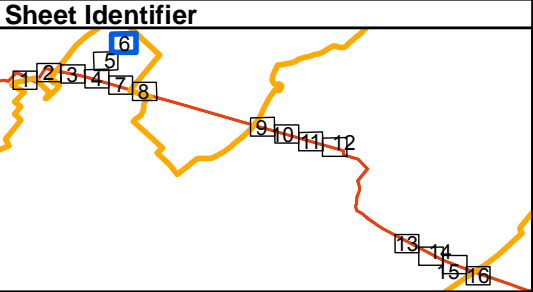
Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

BUFP-IGIS\PROJECTS\112005656-PPP\MXD\PERMITS\USACE_RAYSTOWNLAKE\POLLINATORPLANTING.MXD 5/4/2016 LN

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	0 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Appendix B - Raystown Lake Non-recreation Area Plantings



Sheet 6 of 16 Scale 1:1200

Prepared By:

Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

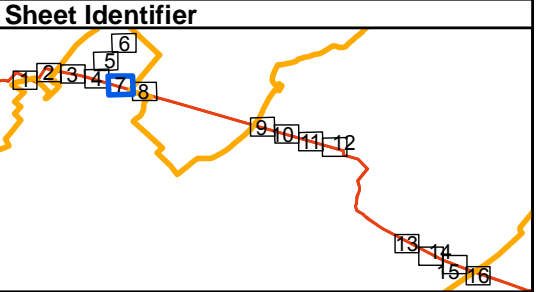
USACE Parcels:
County Assessment
GIS Shapefiles

Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	1.419 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	1.001 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Appendix B - Raystown Lake
Non-recreation Area
Plantings



Sheet 7 of 16 Scale 1:1200

Prepared By:

Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

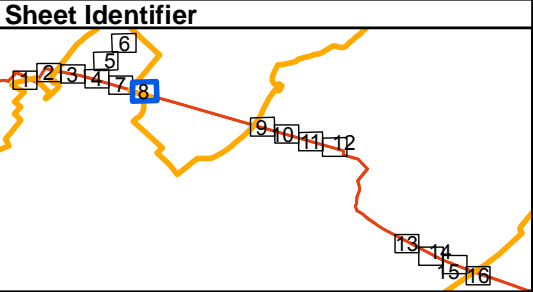
USACE Parcels:
County Assessment
GIS Shapefiles

Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	0 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0 ac



Legend

USACE Entry/Exit

HDD Entry/Exit

Recreation Area Entry/Exit

Proposed Pipelines

HDD

PFO/PSS – Wetland Seed Mix Revegetation

Permanent Right of Way Acreage – Pollinator Habitat Replant

Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)

Block Valve (0.101 Acres, No Replanting or Reforestation)

50-foot ROW

20 Foot Spoil Space

Block Valve Permanent ROW

ROW - ATWS

ROW - Drive-Through - Clearing Only

ROW - Drive-Through - Travel Only

ROW - Permanent Access Road

ROW - Temporary Access Road

Temporary Construction Workspace

Forested Area on USACE Land

PA Game Commission Leased Lands

Wetland

Stream

USACE Property

Appendix B - Raystown Lake Non-recreation Area Plantings



Sheet 8 of 16 Scale 1:1200

Prepared By:

Date:

05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

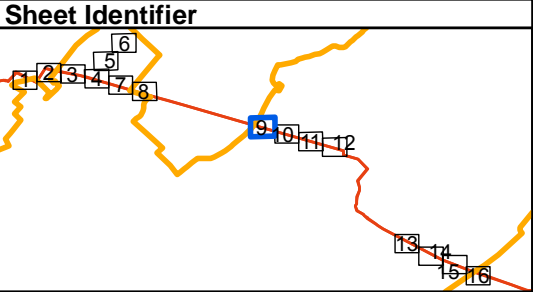
USACE Parcels:
County Assessment
GIS Shapefiles

Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	1.373 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0.619 ac



Legend

USACE Entry/Exit

HDD Entry/Exit

Recreation Area Entry/Exit

Proposed Pipelines

HDD

PFO/PSS – Wetland Seed Mix Revegetation

Permanent Right of Way Acreage – Pollinator Habitat Replant

Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)

Block Valve (0.101 Acres, No Replanting or Reforestation)

50-foot ROW

20 Foot Spoil Space

Block Valve Permanent ROW

ROW - ATWS

ROW - Drive-Through - Clearing Only

ROW - Drive-Through - Travel Only

ROW - Permanent Access Road

ROW - Temporary Access Road

Temporary Construction Workspace

Forested Area on USACE Land

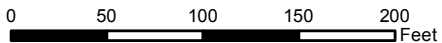
PA Game Commission Leased Lands

Wetland

Stream

USACE Property

Appendix B - Raystown Lake
Non-recreation Area
Plantings



Sheet 9 of 16 Scale 1:1200

Prepared By:

Date:

05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles



Note: See Appendix D for list of species that may be planted.

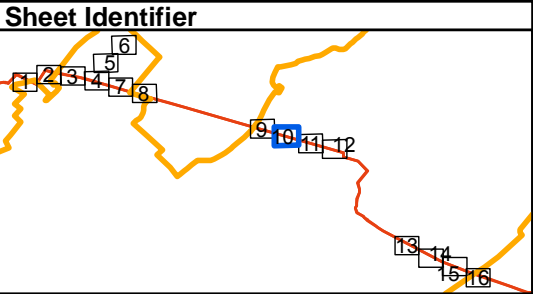
* Tree and shrub species planted will be determined based on availability.

Conventional Bore
Crossing of Upper
Corners Road

BUFP:\GIS\PROJECTS\112C05956-PPP\MXD\PERMITS\USACE_RAYSTOWNLAKE\POLLINATORPLANTING.MXD 5/4/2016 LN

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	1.607 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0.607 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Appendix B - Raystown Lake Non-recreation Area Plantings



Sheet 10 of 16 Scale 1:1200

Prepared By:




Date:

05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

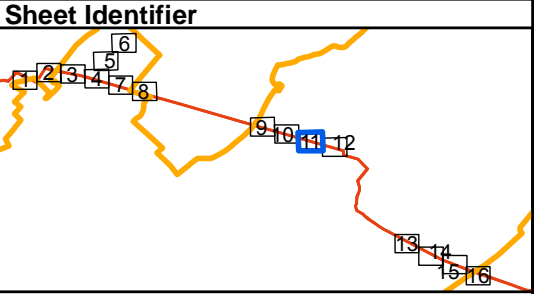


Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	1.612 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0.458 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Appendix B - Raystown Lake
Non-recreation Area
Plantings




Sheet 11 of 16 Scale 1:1200

Prepared By:


Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

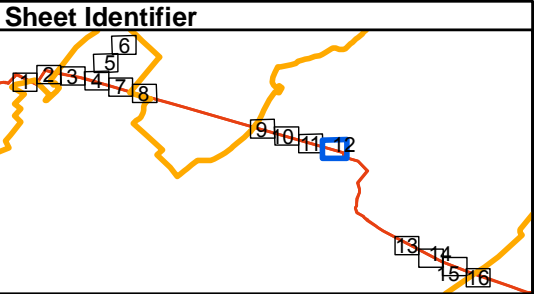


Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	1.529 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0.913 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Appendix B - Raystown Lake
Non-recreation Area
Plantings



Sheet 12 of 16 Scale 1:1200

Prepared By:

Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

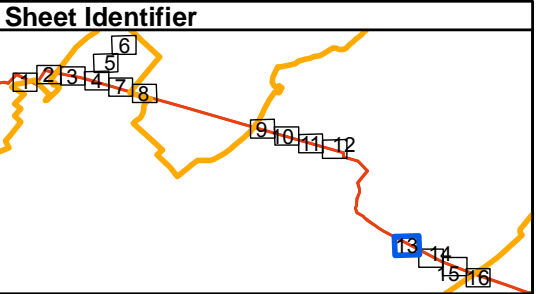
USACE Parcels:
County Assessment
GIS Shapefiles

Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	0 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Appendix B - Raystown Lake Non-recreation Area Plantings



Sheet 13 of 16 Scale 1:1200

Prepared By:


Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

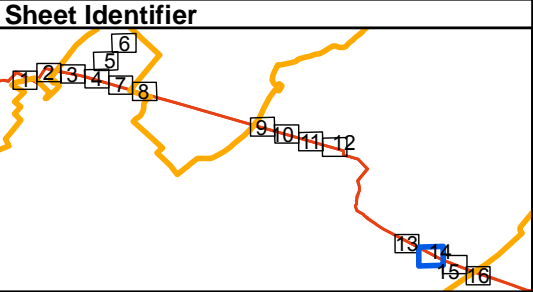


Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

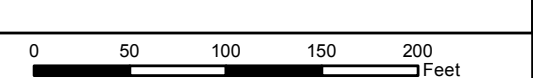
USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	0.072 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0.001 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Appendix B - Raystown Lake Non-recreation Area Plantings



Sheet 14 of 16 Scale 1:1200

Prepared By:

Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

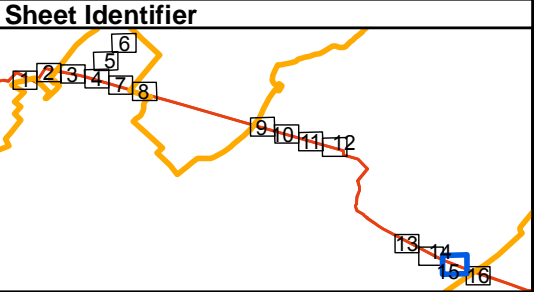
Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

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USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	1.613 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	1.345 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Appendix B - Raystown Lake
Non-recreation Area
Plantings




Sheet 15 of 16 Scale 1:1200

Prepared By:


Date:
05/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

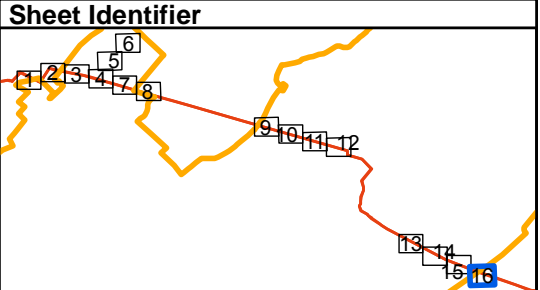


Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

USACE - Raystown Lake Property

Forest Impacts	
PFO/PSS – Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Forested Acreage – Pollinator Habitat Replant	0.558 ac
Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)	0.181 ac



- Legend**
- USACE Entry/Exit
 - HDD Entry/Exit
 - Recreation Area Entry/Exit
 - Proposed Pipelines
 - HDD
 - PFO/PSS – Wetland Seed Mix Revegetation
 - Permanent Right of Way Acreage – Pollinator Habitat Replant
 - Temporary Right of Way Forested Acreage – Replanted Seedlings (680/acre)
 - Block Valve (0.101 Acres, No Replanting or Reforestation)
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Block Valve Permanent ROW
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Temporary Construction Workspace
 - Forested Area on USACE Land
 - PA Game Commission Leased Lands
 - Wetland
 - Stream
 - USACE Property

Appendix B - Raystown Lake
Non-recreation Area
Plantings




Sheet 16 of 16 Scale 1:1200

Prepared By:


Date:
05/2016

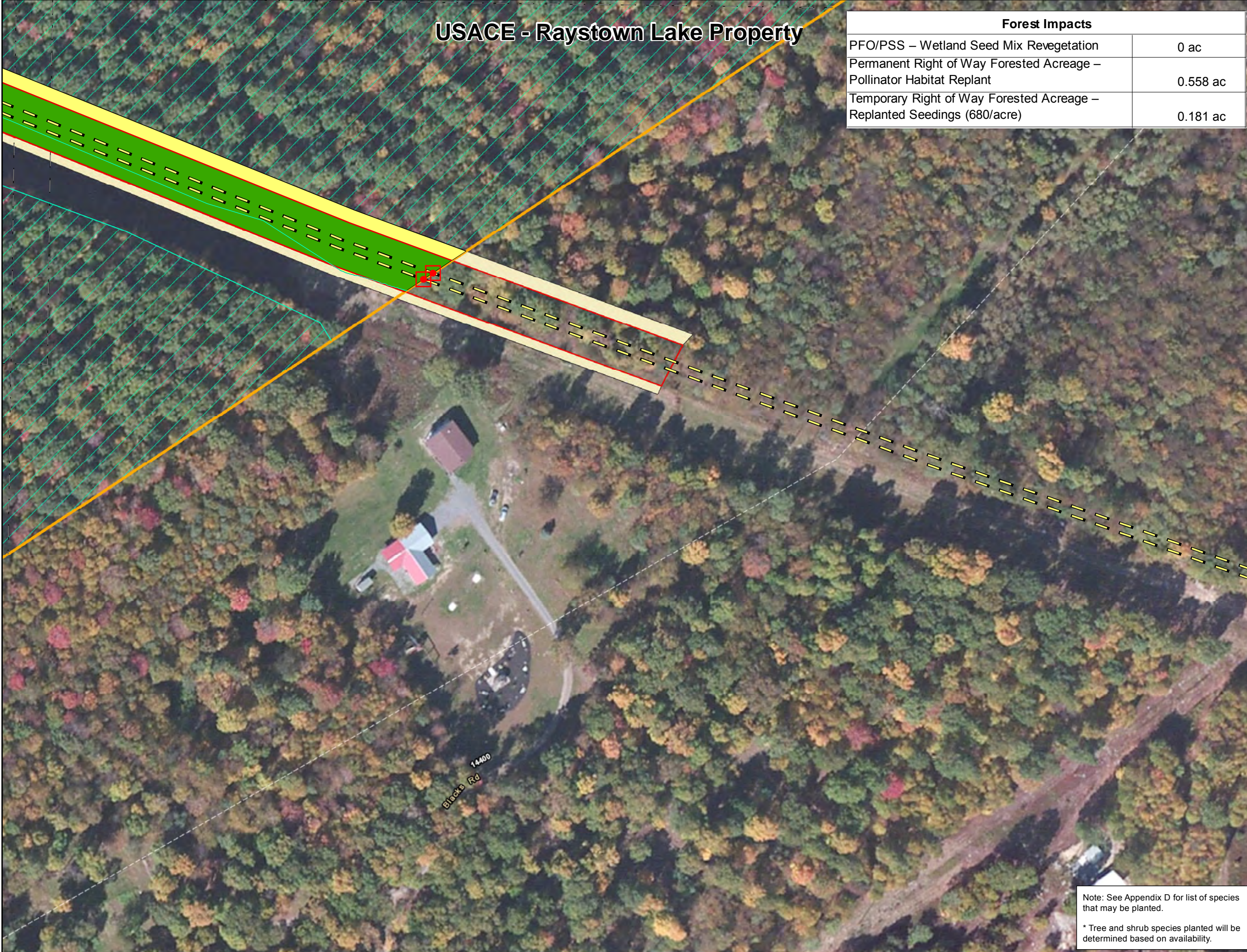
Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles



Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.

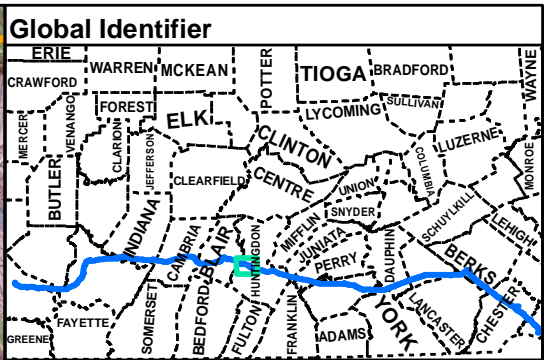
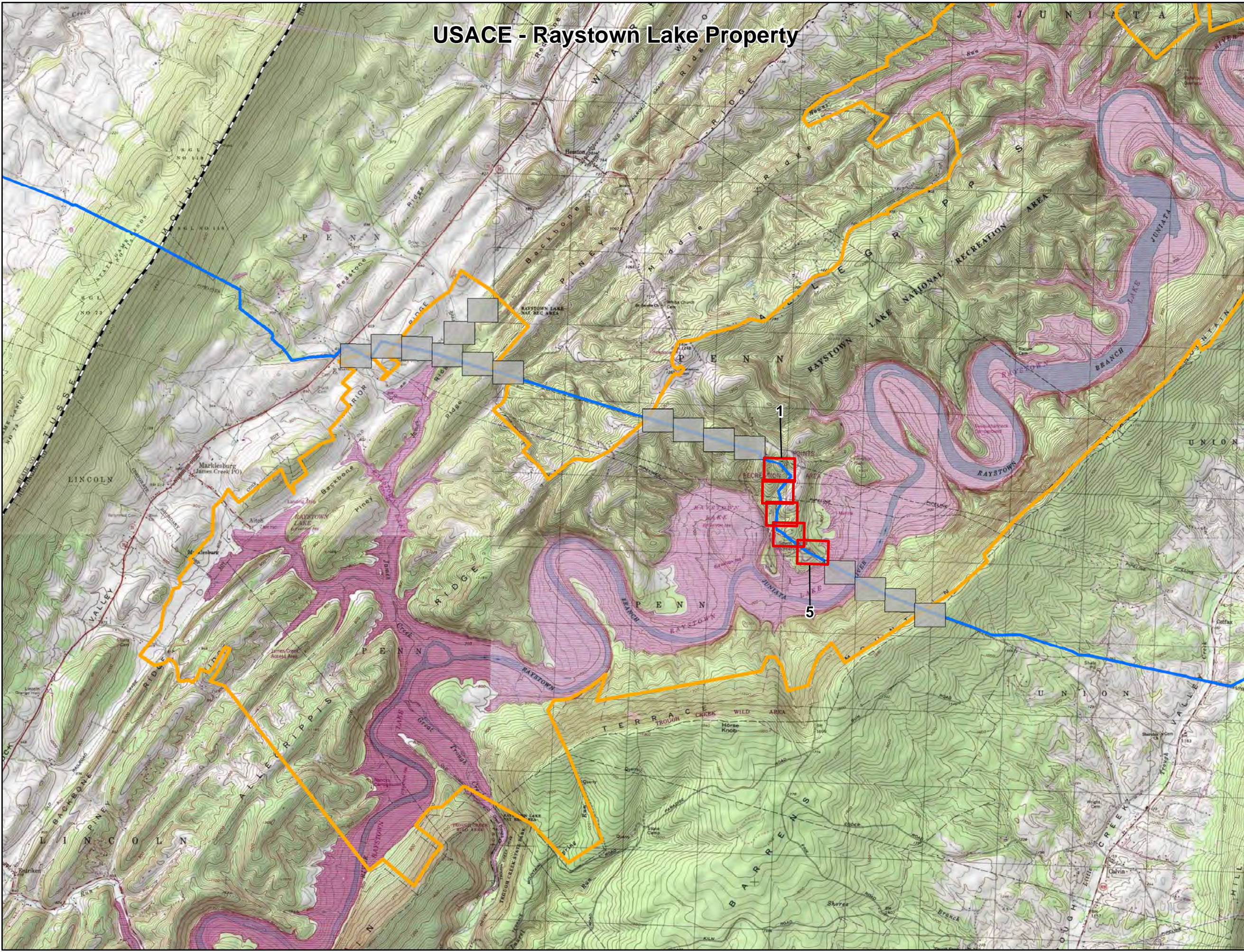


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APPENDIX C

Planting Plan for Raystown Recreational Areas

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- Legend**
- Nonrecreation Area Sheet Boundaries (See Appendix B)
 - Recreation Area Sheet Boundaries
 - Proposed Pipelines
 - USACE Raystown Lake Property
 - County Boundary

Appendix C
Raystown Lake Recreation Area Planting
Sheet Key

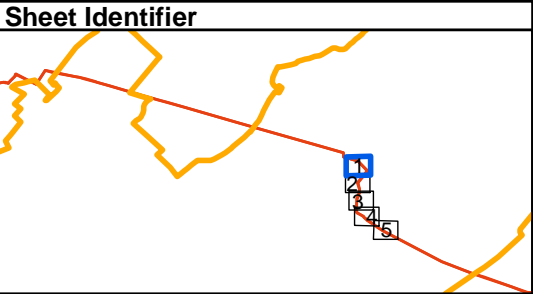


Prepared By:	Date:
 TETRA TECH	05/2016

Base Map: USGS Topographic maps from Esri ArcGIS Online.	
USACE Parcels: County Assessment GIS Shapefiles	

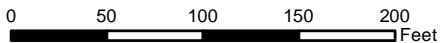
USACE - Raystown Lake Property

Note: See Appendix D for list of species that may be planted.
* Tree and shrub species planted will be determined based on availability.



- Legend**
- Shrub Species - 2' Potted
 - Shrub Species - 5'-6' Balled and Burlapped
 - Tree Species - Seedling
 - Tree Species - 5'-6' Balled and Burlapped
 - HDD Entry/Exit
 - USACE Entry/Exit
 - Recreation Area Entry/Exit
 - HDD
 - Proposed Pipelines
 - Permanent Right of Way Acreage - Pollinator Planting
 - Block Valve Forested Impacts (0.101 Acres, No Replanting or Reforestation)
 - PEM - Wetland Seed Mix Revegetation
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Temporary Construction Workspace
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - Block Valve Permanent ROW
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Stream
 - Wetland
 - Forested Area on USACE Land
 - USACE Property
 - County Boundary
 - Sheet Boundary

Appendix C
Planting Plan for Raystown Lake
Recreational Areas



Sheet 1 of 5 Scale 1:1200

Prepared By:  **TETRA TECH** Date: **07/2016**

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

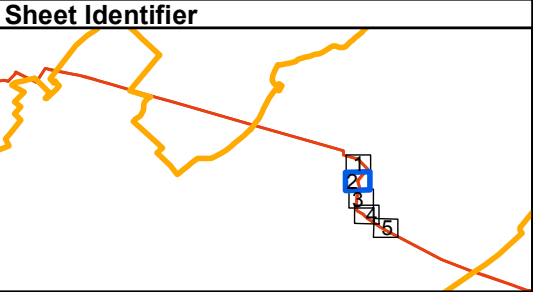


Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0.152 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	1.558 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.723 ac

USACE - Raystown Lake Property

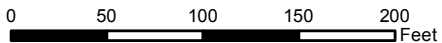
Note: See Appendix D for list of species that may be planted.

* Tree and shrub species planted will be determined based on availability.



- Legend
- Shrub Species - 2' Potted
 - Shrub Species - 5'-6' Balled and Burlapped
 - Tree Species - Seedling
 - Tree Species - 5'-6' Balled and Burlapped
 - HDD Entry/Exit
 - USACE Entry/Exit
 - Recreation Area Entry/Exit
 - HDD
 - Proposed Pipelines
 - Permanent Right of Way Acreage - Pollinator Planting
 - Block Valve Forested Impacts (0.101 Acres, No Replanting or Reforestation)
 - PEM - Wetland Seed Mix Revegetation
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Temporary Construction Workspace
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - Block Valve Permanent ROW
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Stream
 - Wetland
 - Forested Area on USACE Land
 - USACE Property
 - County Boundary
 - Sheet Boundary

Appendix C
Planting Plan for Raystown Lake
Recreational Areas



Sheet 2 of 5 Scale 1:1200

Prepared By:  TETRA TECH Date: 07/2016

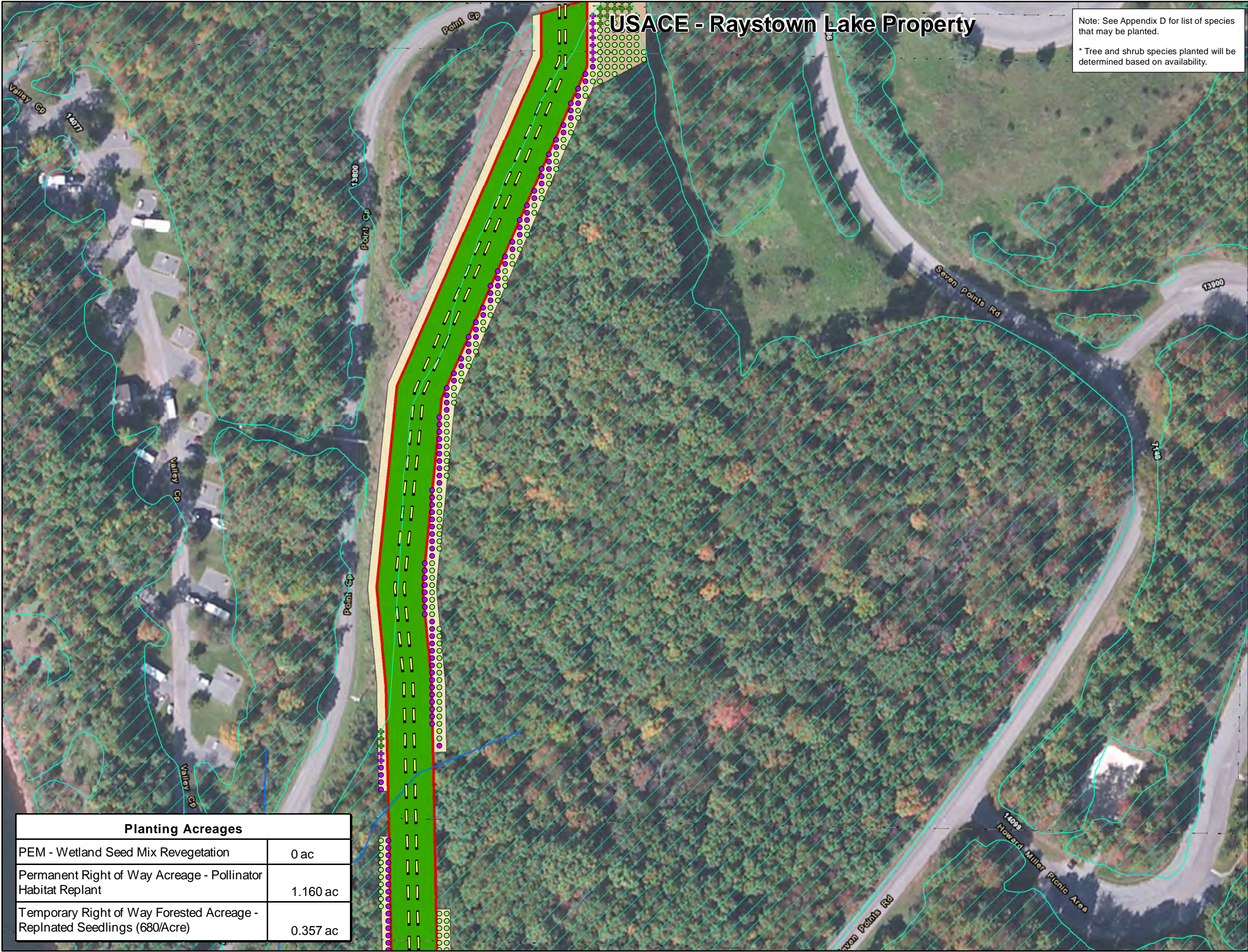
Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles



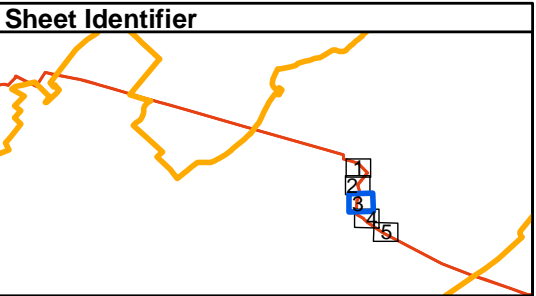
Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0.451 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	0.795 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.501 ac

Conventional Bore
Crossing of Point Camp
Road



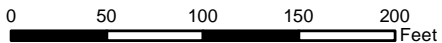
USACE - Raystown Lake Property

Note: See Appendix D for list of species that may be planted.
* Tree and shrub species planted will be determined based on availability.



- Legend**
- Shrub Species - 2' Potted
 - Shrub Species - 5'-6' Balled and Burlapped
 - Tree Species - Seedling
 - Tree Species - 5'-6' Balled and Burlapped
 - HDD Entry/Exit
 - USACE Entry/Exit
 - Recreation Area Entry/Exit
 - HDD
 - Proposed Pipelines
 - Permanent Right of Way Acreage - Pollinator Planting
 - Block Valve Forested Impacts (0.101 Acres, No Replanting or Reforestation)
 - PEM - Wetland Seed Mix Revegetation
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Temporary Construction Workspace
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - Block Valve Permanent ROW
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Stream
 - Wetland
 - Forested Area on USACE Land
 - USACE Property
 - County Boundary
 - Sheet Boundary

Appendix C Planting Plan for Raystown Lake Recreational Areas



Sheet 3 of 5 Scale 1:1200

Prepared By:  **TETRA TECH** Date: **07/2016**

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

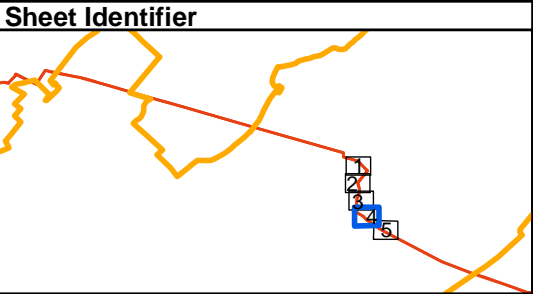
USACE Parcels:
County Assessment
GIS Shapefiles



Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	1.160 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.357 ac

USACE - Raystown Lake Property

Note: See Appendix D for list of species that may be planted.
* Tree and shrub species planted will be determined based on availability.



- Legend
- Shrub Species - 2' Potted
 - Shrub Species - 5'-6' Balled and Burlapped
 - Tree Species - Seedling
 - Tree Species - 5'-6' Balled and Burlapped
 - HDD Entry/Exit
 - USACE Entry/Exit
 - Recreation Area Entry/Exit
 - HDD
 - Proposed Pipelines
 - Permanent Right of Way Acreage - Pollinator Planting
 - Block Valve Forested Impacts (0.101 Acres, No Replanting or Reforestation)
 - PEM - Wetland Seed Mix Revegetation
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Temporary Construction Workspace
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - Block Valve Permanent ROW
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Stream
 - Wetland
 - Forested Area on USACE Land
 - USACE Property
 - County Boundary
 - Sheet Boundary


Block Valve Site Layout - 0.124 Acre Permanent Gravel

Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	2.070 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.619 ac

Appendix C
Planting Plan for Raystown Lake
Recreational Areas


0 50 100 150 200 Feet

Sheet 4 of 5 Scale 1:1200

Prepared By:  TETRA TECH Date: 07/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

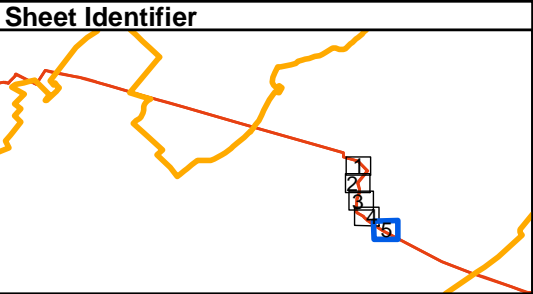
USACE Parcels:
County Assessment
GIS Shapefiles



BUFP-IGIS\PROJECTS\112005956-PPP\MXD\PERMITS\USACE_RAYSTOWN LAKE RECREATION AREA PLANTING.MXD 7/6/2016 LN

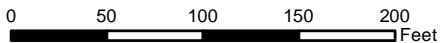
USACE - Raystown Lake Property

Note: See Appendix D for list of species that may be planted.
* Tree and shrub species planted will be determined based on availability.



- Legend
- Shrub Species - 2' Potted
 - Shrub Species - 5'-6' Balled and Burlapped
 - Tree Species - Seedling
 - Tree Species - 5'-6' Balled and Burlapped
 - HDD Entry/Exit
 - USACE Entry/Exit
 - Recreation Area Entry/Exit
 - HDD
 - Proposed Pipelines
 - Permanent Right of Way Acreage - Pollinator Planting
 - Block Valve Forested Impacts (0.101 Acres, No Replanting or Reforestation)
 - PEM - Wetland Seed Mix Revegetation
 - 50-foot ROW
 - 20 Foot Spoil Space
 - Temporary Construction Workspace
 - ROW - ATWS
 - ROW - Drive-Through - Clearing Only
 - ROW - Drive-Through - Travel Only
 - Block Valve Permanent ROW
 - ROW - Permanent Access Road
 - ROW - Temporary Access Road
 - Stream
 - Wetland
 - Forested Area on USACE Land
 - USACE Property
 - County Boundary
 - Sheet Boundary

Appendix C
Planting Plan for Raystown Lake
Recreational Areas



Sheet 5 of 5 Scale 1:1200

Prepared By:  Date: 07/2016

Base Map;
ESRI World Imagery, October 2011
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles



Planting Acreages	
PEM - Wetland Seed Mix Revegetation	0 ac
Permanent Right of Way Acreage - Pollinator Habitat Replant	0 ac
Temporary Right of Way Forested Acreage - Replanted Seedlings (680/Acre)	0.036 ac

APPENDIX D

List of Plant Species That May Be Planted

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Table 1. Accepted Seedling Species and Typical Planting Specifications for Non-Recreation Areas

Construction Corridor	Vegetation Planting Type	Species	
0-10 feet	Shrub Species	<i>Cercis canadensis</i>	Redbud
		<i>Cornus florida</i>	Flowering Dogwood
		<i>Celtis occidentalis</i>	Hackberry
		<i>Amelanchier</i>	Shadbush
		<i>Hamamelis virginiana</i>	Witch-hazel
		<i>Viburnum acerifolium</i>	Viburnum
		<i>Cephalanthus occidentalis</i>	Buttonbush
		<i>Cornus amomum</i>	Silky Dogwood
		<i>Itea virginica</i>	Virginia Sweetspire
10-25 feet	Tree Species	<i>Acer saccharum</i>	Sugar Maple
		<i>Carya cordiformis</i>	Bitternut Hickory
		<i>Carya glabra</i>	Pignut Hickory
		<i>Carya laciniosa</i>	Shellbark Hickory
		<i>Carya ovate</i>	Shagbark Hickory
		<i>Carya tomentosa</i>	Mockernut Hickory
		<i>Platanus occidentalis</i>	Sycamore
		<i>Quercus alba</i>	White Oak
		<i>Quercus coccinea</i>	Scarlet Oak
		<i>Quercus prinus</i>	Chestnut Oak
		<i>Quercus rubra</i>	Northern Red Oak
		<i>Quercus velutina</i>	Black Oak
		<i>Sassafras albidum</i>	Sassafras
		<i>Ulmus Americana</i>	American Elm
		<i>Ulmus rubra</i>	Slippery Elm

Table 2. Accepted Tree/Seedling Species and Typical Planting Specifications for Recreation Areas

Vegetation Planting Type	Size	Species	
Shrub Species	5'-6' balled and bur lapped and 2' potted	<i>Cercis canadensis</i>	Redbud
		<i>Cornus florida</i>	Flowering Dogwood
		<i>Celtis occidentalis</i>	Hackberry
		<i>Amelanchier</i>	Shadbush
		<i>Hamamelis virginiana</i>	Witch-hazel
		<i>Viburnum acerifolium</i>	Viburnum
		<i>Cephalanthus occidentalis</i>	Buttonbush
		<i>Cornus amomum</i>	Silky Dogwood
		<i>Itea virginica</i>	Virginia Sweetspire
Fruit Tree Species	5'-6' balled and bur lapped	<i>Malus glaucescens</i>	American crabapple
		<i>Crataegus spp.</i>	Hawthorn
		<i>Diospyros virginiana</i>	Persimmon
		<i>Morus spp.*</i>	Mulberry
		<i>Malus spp.</i>	Apple
		<i>Pyrus spp.</i>	Pear
Tree Species	5'-6' balled and bur lapped and seedling	<i>Acer saccharum</i>	Sugar Maple
		<i>Carya cordiformis</i>	Bitternut Hickory
		<i>Carya glabra</i>	Pignut Hickory
		<i>Carya laciniosa</i>	Shellbark Hickory
		<i>Carya ovate</i>	Shagbark Hickory
		<i>Carya tomentosa</i>	Mockernut Hickory
		<i>Platanus occidentalis</i>	Sycamore
		<i>Quercus alba</i>	White Oak
		<i>Quercus coccinea</i>	Scarlet Oak
		<i>Quercus prinus</i>	Chestnut Oak
		<i>Quercus rubra</i>	Northern Red Oak
		<i>Quercus velutina</i>	Black Oak
		<i>Sassafras albidum</i>	Sassafras
		<i>Ulmus Americana</i>	American Elm
		<i>Ulmus rubra</i>	Slippery Elm

**Morus spp* will not include *Morus alba* as it is on the Pennsylvania DCNR watch list for having the potential to become invasive.

**Table 3. Upland Pollinator Seed Mix – XERCES Pennsylvania Pollinator Mix
(XERC00105 – Ernst Conservation Seeds)**

Scientific Name	Common Name	Percentage of Mix
<i>Echinacea purpurea</i>	Purple Coneflower	22.22%
<i>Schizachyrium scoparium</i>	Little Bluestem	14.32%
<i>Andropogon gerardii</i>	Big Bluestem	11.26%
<i>Sorghastrum nutans</i>	Indiangrass	8.95%
<i>Silphium perfoliatum</i>	Cup Plant	8.53%
<i>Penstemon digitalis</i>	Tall White Beardtongue	7.47%
<i>Chamaecrista fasciculata</i>	Partridge Pea	4.84%
<i>Monarda fistulosa</i>	Wild Bergamot	3.37%
<i>Tradescantia ohimensis</i>	Ohio Spiderwort	3.26%
<i>Monarda punctata</i>	Spotted Beebalm	2.95%
<i>Liatris spicata</i>	Marsh (Dense) Blazing Star (Spiked Gayfeather)	2.84%
<i>Asclepias syriaca</i>	Common Milkweed	2.63%
<i>Baptisia australis</i>	Blue False Indigo	2.63%
<i>Penstemon laevigatus</i>	Appalachian Beardtongue	1.89%
<i>Aster novae-angliae</i>	New England Aster	1.05%
<i>Rudbeckia hirta</i>	Blackeyed Susan	1.05%
<i>Pycnanthemum tenuifolium</i>	Slender Mountainmint	0.74%
TOTAL		100.00%

Table 4. Wet Meadow and Wetland Site Seed Mix – PA Blue Ridge Province FACW Mix (ERNMX – 241 Ernst Conservation Seeds)

Scientific Name	Common Name	Percentage of Mix
<i>Carex vulpinoidea</i>	Fox Sedge	25%
<i>Elymus virginicus</i>	Virginia Wild Rye	20%
<i>Carex lurida</i>	Lurid Sedge	10%
<i>Carex lupulina</i>	Hop Sedge	5%
<i>Panicum rigidulum</i>	Redtop Panicgrass	4%
<i>Carex squarrosa</i>	Squarrose Sedge	3%
<i>Asclepias incarnate</i>	Swamp Milkweed	3%
<i>Juncus effusus</i>	Soft Rush	3%
<i>Verbena hastate</i>	Blue Vervain	3%
<i>Eupatorium perfoliatum</i>	Boneset	2%
<i>Glyceria canadensis</i>	Rattlesnake Grass	2%
<i>Onoclea sensibilis</i>	Sensitive Fern	2%
<i>Heliopsis helianthoides</i>	Oxeye Sunflower	2%
<i>Pycnanthemum tenuifolium</i>	Slender Mountainmint	1%
<i>Eupatorium fistulosum</i>	Joe Pye Weed	1%
<i>Cinna arundinacea</i>	Wood Reedgrass	1%
<i>Polygonum pensylvanicum</i>	Pennsylvania Smartgrass	1%
<i>Carex folliculate</i>	Northern Long Sedge	1%
<i>Aster umbellatus</i>	Flat Topped White Aster	1%
<i>Carex intumescens</i>	Bladder Sedge	1%
<i>Lilium superbum</i>	Turk's Cap Lily	1%
<i>Scirpus polyphyllus</i>	Many Leaved Bulrush	1%
<i>Lobelia siphilitica</i>	Great Blue Lobelia	1%
<i>Vernonia noveboracensis</i>	New York Ironweed	1%
<i>Sisyrinchium angustifolium</i>	Narrowleaf Blue Eyed Grass	1%
<i>Aster novae-angliae</i>	New England Aster	1%
<i>Aster prenanthoides</i>	Zigzag Aster	1%
<i>Aster puniceus</i>	Purplestem Aster	1%
<i>Mimulus ringens</i>	Square Stemmed Monkeyflower	1%
TOTAL		100.00%

APPENDIX E

Planting Guidelines

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Typical Planting Specifications for Non-Recreation Areas

- Planting operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture or other unsatisfactory conditions exist, work shall be stopped until favorable conditions exist.
- Seedlings shall be planted from March 1 – April 30 or from October 1 – November 20.
- Seedlings shall be set plumb and held in position until sufficient soil has been firmly placed around the roots.
- At least two inches of mineral soil should cover the first lateral root. Seedlings shall be planted by placing the root collar at the soil line or no more than ½ inch deep.
- Each seedling should be set firmly in the ground so that it passes the tug test. Soil around the roots should be packed so that there are no air pockets around or adjacent to the roots.
- The roots of each seedling must be so placed that they assume a near natural position. The roots must not be twisted (corkscrew).
- Seedlings shall be planted with a tool capable of opening a vertical hole deep enough to allow proper placement of the roots. Each seedling should stand erect, perpendicular to the horizontal plane not perpendicular to the slope of the ground.
- Spots which are considered unsatisfactory for planting are loose mounds of soil, rotted wood, clumps of dead vegetation, abnormal depressions or spots in which free water appears in the planting hole.
- A 2' tree tube shall be placed over the planted seed/seedling to protect it from predation. A minimum 1"x1"x3' oak stake shall be placed in the ground, parallel to the tree tube, and secured to the tube in at least two (2) locations. All plantings shall be properly labeled with the species using a permanent marker, tree tag, or other method approved by the USACE.

Typical Planting Specifications for Recreation Areas

5'-6' Shrub, Fruit, and Tree Planting Typical Specifications

- Each 5'-6' tree shall be fenced using a 10' section of galvanized fencing that stands a minimum of 48" in height. The fencing shall be secured using two (2) 60" metal t-posts that are set 180° from each other. The fencing shall be secured to the t-posts using metal wire.
- Trees shall be planted from March 1 – April 30 or from October 1 – November 20.

- Trees shall be set plumb and held in position until sufficient soil has been firmly placed around the roots or ball. At least two inches of mineral soil should cover the first lateral root.
- Trees shall be planted by placing the root collar at the soil line or no more than ½ inch deep.
- Each tree should be set firmly in the ground so that it totally resists movement. Soil around the roots should be packed so that there are no air pockets around or adjacent to the roots.
- The roots of each planted tree must be so placed that they assume a near natural position. The roots must not be twisted (corkscrew).
- Trees shall be planted with a tool capable of opening a vertical hole deep enough to allow deep placement of the roots. Each planted tree should stand erect, perpendicular to the horizontal plane not perpendicular to the slope of the ground.
- Spots which are considered unsatisfactory for planting are loose mounds of soil, rotted wood, clumps of dead vegetation, abnormal depressions or spots in which free water appears in the planting hole.

Typical Seedling Planting Specifications

- Follow guidelines established under Non-Recreation Areas Typical Seedling Planting Specifications.

Typical Pollinator Planting Standards

- The area shall be seeded at a minimum rate of ten (10) lbs./acre using the Xerces Society's Pennsylvania Pollinator Conservation Seed Mix. This seed mix is available through Ernst Conservation Seeds.
- All stumps and logging debris shall be removed from the planting area.
- The planting area shall be thoroughly disk/scarified to break up the sod, kill existing vegetation and create a loosened soil seed bed to ensure seed-to-soil contact.