TETRA TECH

To:	Sunoco Pipeline L.P. (SPLP)
From:	Tetra Tech
Subject:	**Wetland Cover Class Verification Technical Memorandum for the Pennsylvania Pipeline Project**
Date:	February 6, 2017

This Technical Memorandum summarizes the results of wetland Cowardin cover class field verifications completed to support the Chapter 105 Dam Safety and Waterway Management Joint Permit Application process for the Pennsylvania Pipeline Project (Project), which includes the installation of two parallel pipelines within an approximately 306.8-mile, 50-foot-wide right-of-way from Houston, Washington County, Pennsylvania to SPLP's Marcus Hook facility in Delaware County, Pennsylvania. Wetland cover class field verifications were conducted by Tetra Tech on behalf of SPLP from February 4 to 5, 2017.

1.0 INTRODUCTION

SPLP is currently in the permitting process to obtain a Chapter 105 Dam Safety and Waterway Management Joint Permit. Coordination throughout this process with the Pennsylvania Department of Environmental Protection (PADEP) resulted in a request by the agency that additional evaluation occur to further verify the Cowardin cover class of twelve wetlands. The purpose of the evaluation of these wetlands was to confirm that the Cowardin classes reported in the Joint Permit Application were correct. The list of twelve wetlands was provided by Scott Williamson, PADEP Permits Chief of the Southcentral Regional Office to Brad Schaeffer, Project Manager at Tetra Tech. The twelve wetlands identified that needed review and QAQC were:

- Wetland W33d
- Wetland A9
- Wetland A12
- Wetland A49
- Wetland B21
- Wetland I54
- Wetland I56
- Wetland K54
- Wetland K55
- Wetland L21
- Wetland M29
- Wetland Q63

2.0 METHODS

All twelve wetlands were initially, upon the request for additional field studies, checked via a desktop analysis of existing photographs, data sheets, and orthoimagery. This initial review identified nine wetlands were correct as presented in the wetland reports and various permit applications. The three remaining

wetlands would require additional on-site field verification. The nine correct wetlands and their rationale for not needing further verification is listed below:

- Wetland A9
  - Data sheet and photo analysis verified classification as both PEM and PSS cover classes.
- Wetland A12
  - Data sheet and photo analysis verified classification as PEM. No trees were rooted in the wetland, it is a narrow PEM habitat within a forested area.
- Wetland B21
  - Data sheet and photo analysis showed only 10% shrub cover, verifying the PEM cover class designation.
- Wetland I54
  - Data sheet and photo analysis verified the PEM cover class designation.
- Wetland I56
  - Data sheet and photo analysis verified classification as PEM, no woody species listed.
- Wetland K54
  - Data sheet and photo analysis verified the PEM cover class designation, 5% total tree and 10% total shrub cover.
- Wetland K55
  - Data sheet and photo analysis verified classification as PEM, no woody species listed.
- Wetland L21
  - Data sheet and photo analysis verified classification as PEM, no woody species listed.
- Wetland Q63
  - Data sheet and photo analysis verified classification as both PEM and PSS cover classes.

The three wetlands that required additional field verification to confirm. Site visits were performed to ensure complete and correct data and description of the existing environment was presented through the various permit applications. The reasoning for the field visit for each wetland is provided below:

- Wetland W33d
  - Desktop imagery and data sheet analysis indicated that the wetland may have a PFO component in conjunction with a PEM running through it due to the presence of the existing ROW. However, the original data form was likely filled out incorrectly regarding the tree cover stratum.
- Wetland A49
  - Data sheets indicated a 10% tree cover and 20% shrub cover, and aerial imagery indicates trees may be growing within wetland boundary. Photo analysis from the original delineation was inconclusive.
- Wetland M29
  - Data sheet analysis indicated some shrub coverage, and photo analysis from the original delineation effort showed potential shrub growth in some locations in the wetland.

Tetra Tech biologists revisited each of the three wetlands in question on February 4th and 5th 2017. Each wetland was visited in the field to further document dominant vegetation and boundaries of vegetative classes, and determine if there were any discrepancies in the current Cowardin class associated with each feature. Photographs were taken of the existing site conditions and new USACE wetland vegetation data sheets were completed for wetlands M29 and W33d. If applicable, new GPS points were taken to delineate among Cowardin cover class types.

3.0 RESULTS AND DISCUSSION

Wetland A49 was verified in the field as having the correct Cowardin designation of PEM. Aerial imagery indicates that there are trees growing within the wetland; however, the field visit verified that the trees and shrubs are actually outside the wetland, growing along the boundary with their associated canopy

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overhanging the PEM wetland. A map of the wetland with photo locations is presented in Appendix A. Photographs representing the existing conditions can be found in Appendix B.

Wetland W33d was also verified in the field as having the correct Cowardin designation of PEM. As with wetland A49, aerial imagery indicated trees growing within the boundaries of wetland W33d. However, field inspection verified these trees were growing outside of the wetland along the boundary.   A map of the wetland with photo locations is provided in Appendix A. Photographs representing the existing conditions can be found in Appendix B. Appendix C contains the wetland vegetation data sheet.

The field inspection of Wetland M29 led to a portion of the wetland now being classified as PSS, rather than the entirety of it being PEM as previously documented. The wetland now has PEM1, PEM2, and PSS1 portions (Appendix A). This wetland was initially examined on June 28, 2014 after recent non-SPLP logging activities in the vicinity. Since the initial site visit, the site most likely has experienced natural succession and revegetation, resulting in the presence, or increased dominance, of shrub species within the previously PEM classified portion.   A map of the wetland with photo locations is provided in Appendix A. Photographs that identify both the PEM and PSS portions of this wetland as seen during the field survey effort can be found in Appendix B. Appendix C contains the wetland vegetation data sheet. The resulting updates in impacts due to this cover class change have been carried throughout the various permit applications.

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Appendix A

Wetland Location Map
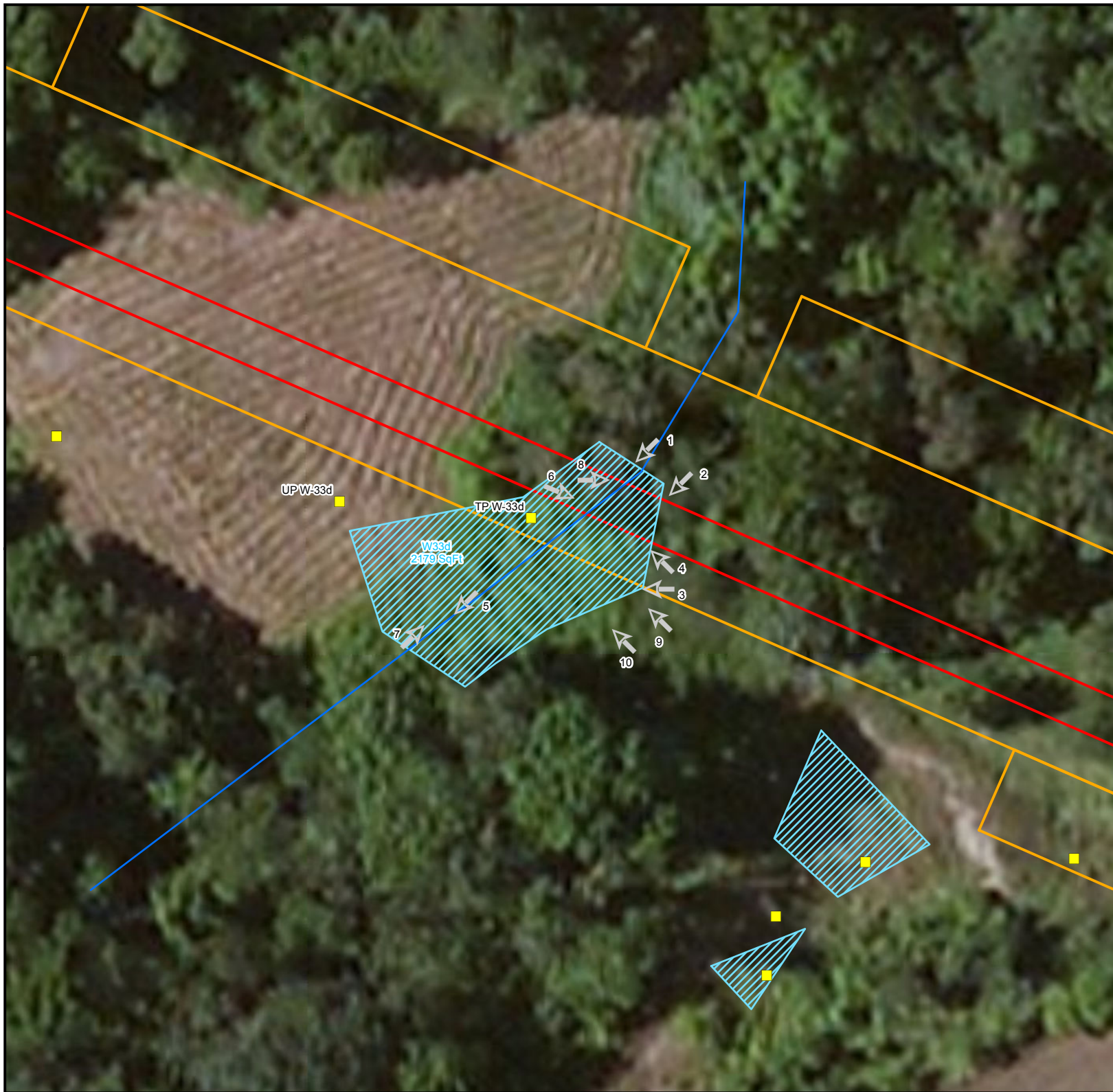
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Legend

↖ Photo Location

▪ Sample Location

— Stream

Wetland

▨ PEM

— Alignment Centerline

— Limit of Disturbance

Sheet Identifier
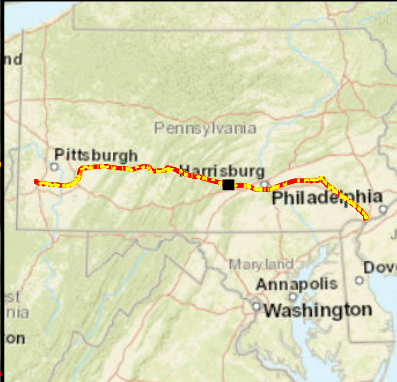
W33d
2179 SqFt

UP W-33d

TP W-33d

Feet
0   15   30

Meters
0   4.557   9.114

N

FIGURE 1
WETLAND LOCATION MAP
WETLAND 33D
PENNSYLVANIA PIPELINE PROJECT
MARINER EAST 2
SUNOCO PIPELINE L.P.
CUMBERLAND COUNTY. PA

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Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2015 ESRI and its data suppliers).

P:\GIS\SUNOCO\MARINER EAST_2\MXD\PENNPIPELINE_PA_WETLAND33D.MXD 02/06/17 SP

Legend

- ☐ Sample Location
- — Stream

Wetland

- ▨ PEM
- — Alignment Centerline
- — Limit of Disturbance

Sheet Identifier

0 25 50 Feet

0 7.62 15.24 Meters

FIGURE 1
WETLAND LOCATION MAP
WETLAND A49
PENNSYLVANIA PIPELINE PROJECT
MARINER EAST 2
SUNOCO PIPELINE L.P.
BERKS COUNTY. PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2015 ESRI and its data suppliers).

Wetland A49
13511 SqFt

UP W-A49

TP W-A49

S-A73

S-A72

Legend

⇥	Photo Location
🟨	Sample Location
◉	Standing Dead

Wetland

▨	PEM
▨	PSS
—	Alignment Centerline
—	Limit of Disturbance

Sheet Identifier

Wetland M29PSS
5641 sqft

TP W-M29 PSS

Wetland M29PEM2
7,499 sqft

TP W-M29 PEM2

Wetland M29PEM1
6756 sqft

TP W-M29 PEM1

UP W-M29

Feet
0   25   50

Meters
0   7.62   15.24

N
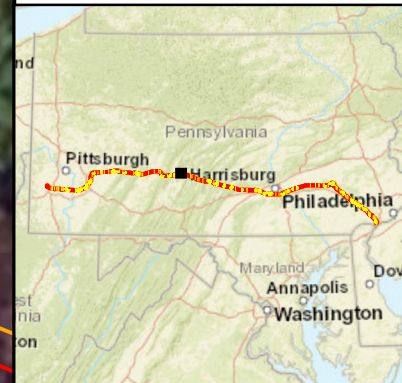
FIGURE 1
WETLAND LOCATION MAP
WETLAND M29
PENNSYLVANIA PIPELINE PROJECT
MARINER EAST 2
SUNOCO PIPELINE L.P.
BLAIR COUNTY. PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2015 ESRI and its data suppliers).

PATH: C:\GIS\SUNOCO\MARINER_EAST\PHASEII\WETLANDS\2017_02_04_WETLANDGPS\PENNPIPELINE_PA_WETLAND_M29.MXD 02/05/17 SP

Appendix B

Photographic Log

TETRA TECH

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
                          Wetland Cover Class Field Verification

Photographer: P. Gaskins
Date: 2/04/2017
Photo No.:   1
Direction: SW

Comments: (Photo 1) View from Vinemont Rd - wetland A49 in background, note drainage ditch CLV43 in foreground.

Photographer: P. Gaskins
Date: 2/04/2017
Photo No.:   2
Direction: SW

Comments: (Photo 2) View along ROW towards wetland A49.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
Wetland Cover Class Field Verification

Photographer: P. Gaskins
Date: 2/04/2017
Photo No.: 3
Direction: W

Comments: (Photo 3) Wetland A49 – PEM

Photographer: P. Gaskins
Date: 2/04/2017
Photo No.: 4
Direction: SW

Comments: (Photo 4) Wetland A49 – view along ROW.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
              Wetland Cover Class Field Verification

Photographer: P. Gaskins
Date: 2/04/2017
Photo No.: 5
Direction: NE

Comments: (Photo 5) Wetland A49 – view along ROW towards Vinemont Rd.

Photographer: P. Gaskins
Date: 2/04/2017
Photo No.: 6
Direction: S

Comments: (Photo 6) Wetland A49.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
                     Wetland Cover Class Field Verification

Photographer: P. Gaskins
Date: 2/04/2017
Photo No.:   7
Direction: NE

Comments: (Photo 7) Wetland A49.

Photographer: P. Gaskins
Date: 2/04/2017
Photo No.:   8
Direction: E

Comments: (Photo 8) Wetland A49.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
                      Wetland Cover Class Field Verification

Photographer: P. Gaskins
Date: 2/04/2017
Photo No.: 9
Direction: N

Comments: (Photo 9) Wetland A49.

Photographer: P. Gaskins
Date: 2/04/2017
Photo No.: 10
Direction: NE

Comments: (Photo 10) Wetland A49.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
                              Wetland Cover Class Field Verification

Photographer: P. Gaskins
Date: 2/04/2017
Photo No.:   11
Direction: W

Comments: (Photo 11) Wetland A49.

Photographer: K.McCluskey
Date: 2/04/2017
Photo No.:   12
Direction: W

Comments: PEM1 portion of wetland M29 from Photo Location 1.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
Wetland Cover Class Field Verification

Photographer: K.McCluskey
Date: 2/04/2017
Photo No.: 13
Direction: E

Comments: PEM1 portion of wetland M29 from Photo Location 2.

Photographer: K.McCluskey
Date: 2/04/2017
Photo No.: 14
Direction: W

Comments: PSS portion of wetland M29 from Photo Location 3.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
                        Wetland Cover Class Field Verification

Photographer: K.McCluskey
Date: 2/04/2017
Photo No.:   15
Direction: W

Comments: PSS portion of wetland M29 from Photo Location 4.

Photographer: K.McCluskey
Date: 2/04/2017
Photo No.:   16
Direction: SW

Comments: PEM2/PSS boundary of wetland M29 from Photo Location 5.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
Wetland Cover Class Field Verification

Photographer: K.McCluskey
Date: 2/04/2017
Photo No.: 17
Direction: E

Comments: PEM2 portion of wetland M29 from Photo Location 6.

Photographer: K.McCluskey
Date: 2/04/2017
Photo No.: 18
Direction: NE

Comments: PSS portion of wetland M29 from Photo Location 7.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
Wetland Cover Class Field Verification

Photographer: K.McCluskey
Date: 2/04/2017
Photo No.:   19
Direction: W

Comments: PEM2 portion of wetland M29 from Photo Location 8.

Photographer: K.McCluskey
Date: 2/04/2017
Photo No.:   20
Direction: SE

Comments: PSS portion of wetland M29 from Photo Location 9.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
           Wetland Cover Class Field Verification

Photographer: K.McCluskey
Date: 2/04/2017
Photo No.:   21
Direction: SW

Comments: PEM2 portion of wetland M29 from Photo Location 10, note standing dead trees.

Photographer: C. Vileno
Date: 2/5/2017
Photo No.:   22
Direction: SW

Comments: Wetland W33d – Photo Location 1.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
Wetland Cover Class Field Verification

Photographer: C. Vileno
Date: 2/5/2017
Photo No.: 23
Direction: SW

Comments: Wetlands W33d – Photo Location 2.

Photographer: C. Vileno
Date: 2/5/2017
Photo No.: 24
Direction: W

Comments: Wetland W33d – Photo Location 3.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
Wetland Cover Class Field Verification

Photographer: C. Vileno
Date: 2/5/2017
Photo No.: 25
Direction: NW

Comments: Wetland W33d – Photo Location 4.

Photographer: C. Vileno
Date: 2/5/2017
Photo No.: 26
Direction: SW

Comments: Wetland W33d – Photo Location 5.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
Wetland Cover Class Field Verification

Photographer: C. Vileno
Date: 2/5/2017
Photo No.: 27
Direction: E

Comments: Wetland W33d – Photo Location 6.

Photographer: C. Vileno
Date: 2/5/2017
Photo No.: 28
Direction: NE

Comments: Wetland W33d – Photo Location 7.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
                      Wetland Cover Class Field Verification

Photographer: C. Vileno
Date: 2/5/2017
Photo No.:   29
Direction: E

Comments: Wetland W33d – Photo Location 8.

Photographer: C. Vileno
Date: 2/5/2017
Photo No.:   30
Direction: W

Comments: Wetland W33d – Photo Location 9.

PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project
Wetland Cover Class Field Verification

Photographer: C. Vileno
Date: 2/5/2017
Photo No.: 31
Direction: WNW

Comments: Wetland W33d – Photo Location 10.

Appendix C

Wetland Data Forms

TETRA TECH

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W-33D

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0 20% of total cover: 0			

Sapling/Shrub Stratum (Plot size: 15')			
1. Fraxinus pennsylvanica	5	✔	FACW
2. Salix nigra	5	✔	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	10 = Total Cover		
50% of total cover: 5 20% of total cover: 2			

Herb Stratum (Plot size: 5')			
1. Microstegium vimineum	60	✔	FAC
2. Dichanthelium clandestinum	15	✔	FAC
3. Rosa multiflora	15	✔	FACU
4. Solidago spp.	10		ND
5. Carex sp.	10		ND
6. Arctium minus	5		FACU
7. Packera aurea	5		FACW
8. Epilobium coloratum	5		FACW
9.			
10.			
11.			
	125 = Total Cover		
50% of total cover: 62.5 20% of total cover: 25			

Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0 20% of total cover: 0			

Dominance Test worksheet:

Number of Dominant Species
That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant
Species Across All Strata: 5 (B)

Percent of Dominant Species
That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

VEGETATION (Four Strata) – Use scientific names of plants.

Tree Stratum (Plot size: 30')

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			

0 = Total Cover

50% of total cover: 0   20% of total cover: 0

Sapling/Shrub Stratum (Plot size: 15')

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

0 = Total Cover

50% of total cover: 0   20% of total cover: 0

Herb Stratum (Plot size: 5')

	Absolute % Cover	Dominant Species?	Indicator Status
1. Microstegium vimineum	35	✓	FAC
2. Dichanthelium clandestinum	20	✓	FAC
3. Scirpus atrovirens	15		OBL
4. Scirpus cyperinus	15		FACW
5. Onoclea sensibilis	8		FACW
6. Juncus effusus	8		FACW
7. Equisetum arvense	5		FAC
8. Carex frankii	5		OBL
9.			
10.			
11.			

111 = Total Cover

50% of total cover: 55.5   20% of total cover: 22.2

Woody Vine Stratum (Plot size: 15')

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			

0 = Total Cover

50% of total cover: 0   20% of total cover: 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?   Yes ✓   No ___

Remarks: (Include photo numbers here or on a separate sheet.)

VEGETATION (Four Strata) – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus alba	5	✓	FACU
2. *See Remarks			
3.			
4.			
5.			
6.			
7.			
	5 = Total Cover		

50% of total cover: 2.5   20% of total cover: 1

Sapling/Shrub Stratum (Plot size: 15')			
1. Quercus alba	5	✓	FACU
2. Acer pensylvanicum	5	✓	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	10 = Total Cover		

50% of total cover: 5   20% of total cover: 2

Herb Stratum (Plot size: 5')			
1. Scirpus cyperinus	30	✓	FACW
2. Microstegium vimineum	20	✓	FAC
3. Dichanthelium clandestinum	15	✓	FAC
4. Onoclea sensibilis	15	✓	FACW
5. Juncus effusus	10		FACW
6. Carex frankii	10		OBL
7. Typha latifolia	5		OBL
8. Mimulus ringens	5		OBL
9.			
10.			
11.			
	110 = Total Cover		

50% of total cover: 55   20% of total cover: 22

Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0   20% of total cover: 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?   Yes ✓   No ____

Remarks: (Include photo numbers here or on a separate sheet.)

*Almost all of the trees that occur within this PEM portion of W-M29 are standing dead. There were only 2 large live trees within the PEM2 portion of W-M29. There were two shrub-sized striped maples, but these occur on the edge of the PEM/ PSS habitat boundary line.

VEGETATION (Four Strata) – Use scientific names of plants.

Tree Stratum (Plot size: 30')

	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer platanoides	5	✓	UPL
2. Quercus alba	5	✓	FACU
3.			
4.			
5.			
6.			
7.			
	10 = Total Cover		

50% of total cover: 5   20% of total cover: 2

Sapling/Shrub Stratum (Plot size: 15')

	Absolute % Cover	Dominant Species?	Indicator Status
1. Berberis thunbergii	20	✓	FACU
2. Acer pensylvanicum	10	✓	FACU
3. Lindera benzoin	10	✓	FAC
4.			
5.			
6.			
7.			
8.			
9.			
	40 = Total Cover		

50% of total cover: 20   20% of total cover: 8

Herb Stratum (Plot size: 5')

	Absolute % Cover	Dominant Species?	Indicator Status
1. Microstegium vimineum	20	✓	FAC
2. Dichanthelium clandestinum	20	✓	FAC
3. Scirpus cyperinus	20	✓	FACW
4. Onoclea sensibilis	20	✓	FACW
5. Juncus effusus	10		FACW
6. Juncus tenuis	5		FAC
7. Typha latifolia	5		OBL
8. Carex frankii	5		OBL
9.			
10.			
11.			
	105 = Total Cover		

50% of total cover: 52.5   20% of total cover: 21

Woody Vine Stratum (Plot size: 15')

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0   20% of total cover: 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 55% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	_____	x 3 =	_____
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?   Yes ✓   No ____

Remarks: (Include photo numbers here or on a separate sheet.)