

Alternative Analysis Table  
Wetland Resources  
Carbon County

Wetland ID and Crossing Number <sup>1</sup>	State Wetland Classification <sup>2</sup>	Cowardin Classification <sup>3</sup>	Milepost <sup>4</sup>	Latitude	Longitude	Primary Pipeline Crossing Method <sup>5</sup>	Secondary Pipeline Crossing Method <sup>5</sup>	Tertiary Pipeline Crossing Method <sup>5</sup>	Geology Constraints	Topography Constraints	Insufficient Workspace to Stage Trenchless	Practicality	Other (See Justification)	Implementing Trenchless Technology	Routing to Minimize	Crossing at Narrowest Location	Co-Locating	Reducing LOD	Minimizing Construction Duration	Adhering to Construction Timing Windows	Implementing BMPs	Justification
110614_JC_004_PFO - 1	Other	PFO1	24.2	41.115643	-75.678725	N/A - Workspace	-	Matted				X	X			X	X	X	X	X	X	Feature is not crossed by centerline, workspace adjusted to minimize impacts, Project is co-located with existing ROW.
110614_JC_004_PFO - 2	Other	PFO1	24.3	41.114476	-75.677936	N/A - Workspace	-	Matted				X	X			X	X	X	X	X	X	Feature is not crossed by centerline, workspace adjusted to minimize impacts, Project is co-located with existing ROW.
110614_JC_002B_PFO	Other	PFO1	24.5	41.111399	-75.675920	N/A - Workspace	-	Matted				X	X			X	X	X	X	X	X	Feature is not crossed by centerline, workspace adjusted to minimize impacts, Project is co-located with existing ROW.
102114_JC_001B_PFO	Exceptional (i, iii)	PFO1	26.4	41.086119	-75.662258	CL - Open Cut	-	Matted		X		X				X	X	X	X	X	X	Project is co-located with Buckeye Pipeline ROW, Bore would require additional workspace within the riparian buffer. Large wetland complex may challenge trenchless construction methods. Terrian issues justify open cut.
102114_JC_001A_PSS - 1	Exceptional (i, iii)	PSS1	26.7	41.081862	-75.659884	CL - Open Cut	-	Matted					X				X	X	X		X	Co-located with existing ROW. Additional workspace is needed for intake and discharge line to the kiddier compressor station.
102114_JC_001A_PSS - 3	Exceptional (i, iii)	PSS1	26.9R2	41.081509	-75.659634	CL - Open Cut	-	Matted					X				X	X	X		X	Co-located with existing ROW. Additional workspace is needed for intake and discharge line to the kiddier compressor station.
102114_JC_001_PEM - 1	Exceptional (i, iii)	PEM1	26.4	41.086005	-75.662304	N/A - Workspace	-	Matted					X				X	X	X		X	Co-located with existing ROW. Additional workspace is needed for intake and discharge line to the kiddier compressor station.
102114_JC_001_PEM - 2	Exceptional (i, iii)	PEM1	26.5	41.085284	-75.661901	CL - Open Cut	-	Matted					X				X	X	X		X	Co-located with existing ROW. Additional workspace is needed for intake and discharge line to the kiddier compressor station.
102114_JC_001_PEM - 3	Exceptional (i, iii)	PEM1	26.7	41.081699	-75.659664	N/A - Workspace	-	Matted					X				X	X	X		X	Co-located with existing ROW. Additional workspace is needed for intake and discharge line to the kiddier compressor station.
102314_JC_004_PEM	Exceptional (ii, iii)	PEM1	27R2	41.080732	-75.658596	CL - HDD	-	N/A					X	X			X				X	Crossing via I80 HDD to minimize impacts to wetland complex.
102314_JC_002_PFO - 1	Exceptional (i, iii)	PFO1	27.1R2	41.079456	-75.657718	CL - HDD	-	N/A					X	X			X				X	Crossing via I80 HDD to minimize impacts to wetland complex.
102314_JC_002_PFO - 2	Exceptional (i, iii)	PFO1	27.1R2	41.079359	-75.657651	CL - HDD	-	N/A					X	X			X				X	Crossing via I80 HDD to minimize impacts to wetland complex.
102314_JC_002_PSS	Exceptional (i, iii)	PSS3	27.1R2	41.078919	-75.657349	CL - HDD	-	N/A					X	X			X				X	Crossing via I80 HDD to minimize impacts to wetland complex.

Alternative Analysis Table  
Wetland Resources  
Carbon County

Wetland ID and Crossing Number <sup>1</sup>	State Wetland Classification <sup>2</sup>	Cowardin Classification <sup>3</sup>	Milepost <sup>4</sup>	Latitude	Longitude	Primary Pipeline Crossing Method <sup>5</sup>	Secondary Pipeline Crossing Method <sup>5</sup>	Tertiary Pipeline Crossing Method <sup>5</sup>	Geology Constraints	Topography Constraints	Insufficient Workspace to Stage Trenchless	Practicality	Other (See Justification)	Implementing Trenchless Technology	Routing to Minimize	Crossing at Narrowest Location	Co-Locating	Reducing LOD	Minimizing Construction Duration	Adhering to Construction Timing Windows	Implementing BMPs	Justification
042415_JC_1005_PEM	Other	PEM1	29.6R2	41.051670	-75.629090	N/A	-	Matted				X	X			X	X	X	X	X	X	Bore is not feasible due to length of feature, Project is co-located with existing ROW. Workspace reduced to 75'.
050115_JC_1001_PFO	Other	PFO4	29.6R2	41.053412	-75.629399	CL - Open Cut	-	Matted				X	X			X	X	X	X	X	X	Timing to cross justifies open-cut. Project is co-located with existing ROW. Workspace reduced to 75'.
042415_JC_1003_PSS	Other	PSS3	30.4R2	41.042392	-75.627013	CL - Open Cut	-	Matted				X	X				X	X	X	X	X	Timing to cross justifies open-cut. Project is co-located with existing ROW. Workspace reduced to 75'.
042415_JC_1002_PEM	Exceptional (iii)	PEM1	31.1R2	41.031110	-75.624712	CL - Open Cut	-	Matted	X		X	X					X	X	X	X	X	Bore is not feasible because bore pits would need to be within wetland, geologic setting would not support a successful HDD, Project is co-located with existing ROW.
042415_JC_1001_PFO	Exceptional (iii)	PFO4	31R2	41.033405	-75.625141	CL - Open Cut	-	Matted	X		X	X					X	X	X	X	X	Feature is not crossed by centerline, Bore is not feasible because bore pits would need to be within wetland, geologic setting (cobble) would not support a successful HDD, Project is co-located with existing ROW.
110316_GM_1001_PFO	Exceptional (iii)	PFO4	32.6R3	41.011968	-75.616020	CL - Open Cut	-	Matted				X	X		X		X	X	X	X	X	Time to cross justifies open-cut, Project is co-located with existing ROW. Workspace reduced to 75'.
110316_GM_1001_PEM - 1	Exceptional (iii)	PEM1	32.5R2	41.011952	-75.616033	CL - Open Cut	-	Matted				X	X				X	X	X		X	Time to cross justifies open-cut, project is co-located with existing ROW. Workspace reduced to 75'.
110316_GM_1001_PEM - 2	Exceptional (iii)	PEM1	32.7R3	41.009635	-75.615419	N/A - Workspace	-	Matted				X	X				X	X	X		X	Time to cross justifies open-cut, project is co-located with existing ROW. Workspace reduced to 75'.
110316_GM_1001_PEM - 3	Exceptional (iii)	PEM1	32.8R3	41.008848	-75.615244	CL - Open Cut	-	Matted				X	X				X	X	X		X	Time to cross justifies open-cut, project is co-located with existing ROW. Workspace reduced to 75'.
042115_JC_1003_PFO	Exceptional (iii)	PFO1	33.6R3	40.996553	-75.611518	N/A - Workspace	-	Matted				X	X		X		X	X	X	X	X	Timing to cross justifies open-cut. Project is co-located with existing ROW. Existing route not conducive to trenchless crossing.
042315_JC_1002_PEM	Exceptional (i, iii)	PEM1	34.7R2	40.983453	-75.619842	N/A - Workspace	-	Matted				X	X				X	X	X		X	Time to cross justifies open-cut, wetland is part of an intermittent stream. Project is co-located with existing ROW. Workspace reduced to 75'.

Alternative Analysis Table  
Wetland Resources  
Carbon County

Wetland ID and Crossing Number <sup>1</sup>	State Wetland Classification <sup>2</sup>	Cowardin Classification <sup>3</sup>	Milepost <sup>4</sup>	Latitude	Longitude	Primary Pipeline Crossing Method <sup>5</sup>	Secondary Pipeline Crossing Method <sup>5</sup>	Tertiary Pipeline Crossing Method <sup>5</sup>	Geology Constraints	Topography Constraints	Insufficient Workspace to Stage Trenchless	Practicality	Other (See Justification)	Implementing Trenchless Technology	Routing to Minimize	Crossing at Narrowest Location	Co-Locating	Reducing LOD	Minimizing Construction Duration	Adhering to Construction Timing Windows	Implementing BMPs	Justification
042315_JC_1001_PFO - 1	Exceptional (i, iii)	PFO4	34.7R2	40.984455	-75.619152	CL - Open Cut	-	Matted				X	X				X	X	X	X	X	Time to cross and crossing length justifies open-cut, Project is co-located with existing ROW. Pit dewatering may impact feature. Workspace reduced to 75'.
042315_JC_1001_PFO - 2	Exceptional (i, iii)	PFO4	34.8R3	40.981068	-75.621210	CL - Open Cut	-	Matted				X	X				X	X	X	X	X	Time to cross and crossing length justifies open-cut, Project is co-located with existing ROW. Pit dewatering may impact feature. Workspace reduced to 75'.
042315_JC_1004_PFO	Other	PFO4	35.4	40.972313	-75.626340	CL - Open Cut	-	Matted				X	X				X	X	X	X	X	Timing to cross justifies open-cut. Existing route not conducive to trenchless crossing. Workspace reduced to 75'.
010716_GM_1001_VP	Other	PEM2	35.5	40.970058	-75.627400	N/A - Workspace	-	Matted				X	X					X	X		X	Feature is not crossed by centerline. Workspace reduced to 75'.
060117_MB_1001_PFO - 1	Exceptional (ii, iii)	PFO1	35.9	40.964352	-75.629117	CL - Open Cut	-	Matted				X	X				X	X	X	X	X	Timing to cross justifies open-cut, Project is co-located with existing ROW.
060117_MB_1001_PFO - 2	Exceptional (ii, iii)	PFO1	36	40.964075	-75.629276	CL - Open Cut	-	Matted				X	X				X	X	X	X	X	Timing to cross justifies open-cut, Project is co-located with existing ROW.
060117_MB_1001_PEM	Exceptional (ii, iii)	PEM1	36	40.963439	-75.629484	N/A - Workspace	-	Matted				X	X		X		X	X	X	X	X	Timing to cross justifies open-cut, Project is co-located with existing ROW.
060217_MB_1001_PEM	Exceptional (ii, iii)	PEM1	36.1	40.961855	-75.629758	N/A - Workspace	-	Matted				X	X		X		X	X	X		X	Feature is not crossed by the centerline, Project is co-located with existing ROW.
060217_MB_1001_PFO	Exceptional (ii, iii)	PFO1	36.1	40.962413	-75.629560	CL - Open Cut	-	Matted				X	X				X	X	X	X	X	Project is co-located with existing ROW. Workspace reduced to 75'.
050615_JC_1001_PFO - 1	Exceptional (i, ii, iii)	PFO1	36.5R3	40.955991	-75.630704	CL - Open Cut	-	Matted				X	X				X	X	X	X	X	Time to cross justifies open-cut, wetland is part of an intermittent stream. Project is co-located with existing ROW. Large wetland complex may be challenging for trenchless construction methods and pit dewatering.
050615_JC_1001_PFO - 2	Exceptional (i, ii, iii)	PFO1	36.6R3	40.955700	-75.630753	CL - Open Cut	-	Matted				X	X				X	X	X	X	X	Time to cross justifies open-cut, wetland is part of an intermittent stream. Project is co-located with existing ROW. Large wetland complex may be challenging for trenchless construction methods and pit dewatering.
061615_DB_1002_PFO	Exceptional (iii)	PFO1	37.1R3	40.947776	-75.632411	CL - Open Cut	-	Matted				X	X		X		X	X	X	X	X	Time to cross justifies open-cut. Project is co-located with existing ROW.

Alternative Analysis Table  
Wetland Resources  
Carbon County

Wetland ID and Crossing Number <sup>1</sup>	State Wetland Classification <sup>2</sup>	Cowardin Classification <sup>3</sup>	Milepost <sup>4</sup>	Latitude	Longitude	Primary Pipeline Crossing Method <sup>5</sup>	Secondary Pipeline Crossing Method <sup>5</sup>	Tertiary Pipeline Crossing Method <sup>5</sup>	Geology Constraints	Topography Constraints	Insufficient Workspace to Stage Trenchless	Practicality	Other (See Justification)	Implementing Trenchless Technology	Routing to Minimize	Crossing at Narrowest Location	Co-Locating	Reducing LOD	Minimizing Construction Duration	Adhering to Construction Timing Windows	Implementing BMPs	Justification
061615_DB_1001_PEM	Exceptional (iii)	PEM1	37.5	40.943342	-75.634640	N/A - Workspace	-	Matted				X	X				X	X	X		X	Feature is not crossed by the centerline.
020117_GM_1006_PFO	Exceptional (iii)	PFO1	41.2	40.903032	-75.599681	CL - Open Cut	-	Matted				X	X		X		X	X	X	X	X	Time to cross justifies open-cut. Workspace reduced to 75'.
020117_GM_1001_PUB	Other	PEM2	41.5	40.901988	-75.594120	CL - Open Cut	-	Matted				X	X		X		X	X	X		X	Time to cross justifies open-cut. Workspace reduced to 75'.
041018_WA_002_PSS	Exceptional (iii)	PSS1	44.8R2	40.874330	-75.544486	CL - Open Cut	-	Matted	X			X	X		X		X	X	X		X	Alignment crossing the wetland at top/narrowest location. Time to cross justifies open-cut. Steep slopes and terrain issues make a bore unfeasible.
052915_JC_1001_PEM	Exceptional (iii)	PEM1	45R2	40.872167	-75.541762	CL - Open Cut	-	Matted	X	X		X	X		X		X	X	X		X	Bore is not feasible due to road crossing and steep terrain. Steep side slope south of crossing (18%) limits the use of trenchless methods.
051115_JC_1001_PEM	Exceptional (iii)	PEM1	45.6	40.865673	-75.538076	CL - Open Cut	-	Matted				X	X		X		X	X	X		X	Steep slope south of the crossing (28%) present challenges to trenchless methods (HDD, Direct Pipe & Microtunnel). Steep slope also challenges auger bore method. Time to cross justifies open-cut.
090914_WA_001_PSS	Exceptional (iii)	PSS1	48.1	40.837834	-75.509004	CL - Open Cut	-	Matted	X	X		X	X				X	X	X		X	Additional workspace required for adjacent Little Gap Road bore. Incorporating wetland into road bore would necessitate extremely deep bore pits.
090914_WA_002_PSS	Exceptional (iii)	PSS1	48.1	40.837151	-75.508766	CL - Open Cut	-	Matted	X	X		X	X				X	X	X		X	Bore is not feasible due to road crossing and steep terrain, bore pits would need to be within riparian buffer.
041117_GM_1001_PFO	Exceptional (i, iii)	PFO4	49.3R3	40.824437	-75.499273	CL - Bore	-	-				X	X				X	X	X		X	Minimizing impacts to bog turtle habitat justifies trenchless crossing.
041117_GM_1001_PSS	Exceptional (i, iii)	PSS1	49.3R3	40.824278	-75.499222	CL - Bore	-	-				X	X				X	X	X		X	Minimizing impacts to bog turtle habitat justifies trenchless crossing.
072618_WA_001_PEM	Exceptional (iii)	PEM1	50.6R3	40.821738	-75.479226	CL - Open Cut	-	Matted				X	X				X	X	X		X	Time to cross justifies open-cut, Project is co-located with existing ROW. Workspace reduced to 75'.
072618_WA_002_PEM	Exceptional (iii)	PEM2	50.6R4	40.821624	-75.479458	N/A - Workspace	-	Matted				X	X				X	X	X		X	Time to cross justifies open-cut, Project is co-located with existing ROW. Workspace reduced to 75'.

Alternative Analysis Table  
Wetland Resources  
Carbon County

Wetland ID and Crossing Number <sup>1</sup>	State Wetland Classification <sup>2</sup>	Cowardin Classification <sup>3</sup>	Milepost <sup>4</sup>	Latitude	Longitude	Primary Pipeline Crossing Method <sup>5</sup>	Secondary Pipeline Crossing Method <sup>5</sup>	Tertiary Pipeline Crossing Method <sup>5</sup>	Geology Constraints	Topography Constraints	Insufficient Workspace to Stage Trenchless	Practicality	Other (See Justification)	Implementing Trenchless Technology	Routing to Minimize	Crossing at Narrowest Location	Co-Locating	Reducing LOD	Minimizing Construction Duration	Adhering to Construction Timing Windows	Implementing BMPs	Justification
---------------------------------------------	-------------------------------------------	--------------------------------------	-----------------------	----------	-----------	-----------------------------------------------	-------------------------------------------------	------------------------------------------------	---------------------	------------------------	--------------------------------------------	--------------	---------------------------	------------------------------------	---------------------	--------------------------------	-------------	--------------	----------------------------------	-----------------------------------------	-------------------	---------------

Notes:

1. In instances where a wetland is crossed by the proposed pipeline or workspace multiple times, crossing numbers (e.g. "-1", "-2") have been added to the Wetland ID.

2. Resource Value Definitions: Pennsylvania Exceptional Value Wetland as defined by PA Code §105.17 (relating to special criteria for projects affecting important wetlands). Criteria are:

(ix) Serves as habitat for fauna or flora listed as "threatened" or "endangered"

(x) Is hydrologically connected to or located within a 1/2-mile from habitat for fauna or flora listed as "threatened" or "endangered" and wetland dependent;

(xi) Located in or along the floodplain of the reach or tributaries of a wild trout stream or waters listed as exceptional value;

(xii) Located along an existing public or private drinking water supply.

3. Wetland Cover Type based on Cowardin, 1979

Key: PEM1 = palustrine emergent, persistent; PEM2 = palustrine emergent, non-persistent; PFO1 = palustrine forested, broad-leaved deciduous; PFO4 = palustrine forested, needle-leaved evergreen; PSS1 = palustrine scrub-shrub, broad-leaved deciduous; PSS3 = palustrine scrub-shrub, broad-leaved evergreen.

4. All route deviations implemented after the FERC Certificate Application are denoted with an "R" and indicate a MP equation. MPs with an "R1" indicate route deviations implemented and provided to FERC prior to the issuance of the DEIS. MPs with an "R2" indicate route deviations implemented as part of the September 2016 Route Update. MPs with an "R3" indicate route deviations implemented post-FERC Certificate issuance. All MPs without an "R" indicate that the route has not changed since the Certificate Application.

5. Crossing Type Key for Wetlands:

- CL-Bore = Pipeline centerline crosses under wetland. Construction method is bore.
- CL-HDD = Pipeline centerline crosses under wetland. Construction method is HDD.
- CL-Open Cut = Pipeline centerline impacts wetland. Construction method is open cut.
- Matted = Wetland will be matted for temporary equipment crossing.
- N/A = Not affected by pipeline construction.
- N/A-Workspace = Pipeline trench does not impact wetland.
- "-" = No alternative construction method is proposed.