Alternative Analysis Table
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Wetland ID and Crossing Number[1]	State Wetland Classification[2]	Cowardin Classification[3]	Milepost[4]	Latitude	Longitude	Primary Pipeline Crossing Method[5]	Secondary Pipeline Crossing Method[5]	Tertiary Pipeline Crossing Method[5]	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
040517_GM_1001_PFO	Other	PFO1	52.4R3	40.804727	-75.473003	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'.
040517_GM_1001_PEM	Other	PEM1	52.4R3	40.804673	-75.472930	N/A - Workspace	-	Matted				X	X			X	X	X	X		X	Time to cross justifies open-cut, Project is co-located with existing ROW. Workspace reduced to 75'.
040617_GM_1001_PFO	Exceptional (iii)	PFO1	52.5R3	40.804172	-75.473033	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'.
040617_GM_1001_PEM	Exceptional (iii)	PEM1	52.5R3	40.804035	-75.472952	N/A - Workspace	-	Matted				X	X			X	X	X	X		X	Time to cross justifies open-cut, Project is co-located with existing ROW. Workspace reduced to 75'.
052918_WA_004_PFO	Exceptional (ii, iii)	PFO1	52.5R3	40.803757	-75.473036	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'.
052918_WA_005_PEM	Exceptional (ii, iii)	PEM1	52.5R3	40.802981	-75.473041	CL - Open Cut	-	Matted				X	X			X	X	X	X		X	Time to cross justifies open-cut, Project is co-located with existing ROW. Workspace reduced to 75'.
052918_WA_003_PFO	Exceptional (ii, iii)	PFO1	52.5R3	40.802869	-75.473042	CL - Open Cut	-	Matted				X	X				X	X	X	X	X	Time to cross justifies open-cut, Project is co-located with existing ROW. Workspace reduced to 75'.
052918_WA_007_PUB	Exceptional (ii, iii)	PEM2	52.6R3	40.802353	-75.473375	N/A - Workspace	-	Matted				X	X				X	X	X		X	Feature is not crossed by the centerline, project is co-located with existing ROW. Workspace reduced to 75'.
052918_WA_008_PUB	Exceptional (ii, iii)	PEM2	52.6R3	40.802223	-75.473325	CL - Bore	CL - Open Cut	Matted				X	X	X		X	X	X	X		X	Minimizing impact to pond feature, co-located with an exiting ROW.
080917_WA_003_PEM	Exceptional (ii, iii)	PEM1	52.7R3	40.800823	-75.473953	CL - Open Cut	-	Matted					X			X	X	X	X	X	X	Time to cross justifies open-cut, Project is co-located with existing ROW. Workspace reduced to 70'..
080917_WA_002_PEM - 1	Exceptional (i, iii)	PEM1	52.7R3	40.800562	-75.474071	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'.
080917_WA_002_PEM - 2	Exceptional (i, iii)	PEM1	52.7R3	40.800190	-75.474300	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. Tree cutting to take place in 50 foot wide workspace. Earth disturbance activities reduced to 30' in wetland.
080917_WA_002_PEM - 3	Exceptional (i, iii)	PEM1	52.8R3	40.799863	-75.474397	N/A - Workspace		N/A				X	X				X	X	X	X	X	Feature is not crossed by the centerline. Project is co-located with existing ROW. Tree cutting to take place in 50 foot wide workspace. Earth disturbance activities reduced to 30' in wetland.
080917_WA_002_PSS	Exceptional (i, iii)	PSS1	52.8R3	40.799653	-75.474566	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 50'.
110217_WA_001_PSS	Exceptional (i, iii)	PSS1	52.8R3	40.799562	-75.474498	N/A - Workspace	-	N/A				X	X				X	X	X	X	X	Feature is not crossed by the centerline. Project is co-located with existing ROW. Tree cutting to take place in 50 foot wide workspace. Earth disturbance activities reduced to 30' in wetland.
110217_WA_005_PFO - 1	Exceptional (i, iii)	PFO1	52.9R3	40.798544	-75.474989	CL - Open Cut	-	Matted				X	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. Alignment crossing the wetland at top/narrowest location, workspace reduced to 75'.
110217_WA_005_PFO - 2	Exceptional (i, iii)	PFO1	52.9R3	40.798072	-75.475260	CL - Open Cut	-	Matted				X	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. Alignment crossing the wetland at top/narrowest location, workspace reduced to 50'.
110217_WA_005_PFO - 3	Exceptional (i, iii)	PFO1	52.9R3	40.797778	-75.475401	N/A - Workspace	-	Matted				X	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. Alignment crossing the wetland at top/narrowest location, workspace reduced to 50'.

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110217_WA_006_PEM	Exceptional (ii, iii)	PEM1	52.9R3	40.797669	-75.475216	N/A - Workspace	-	Matted				X	X			X	X	X	X	X	X	Featured is not crossed by the centerline, project is co-located with existing ROW. Alignment crossing the wetland at top/narrowest location, workspace reduced to 50'.
110217_WA_007_PEM	Exceptional (ii, iii)	PEM1	52.9R3	40.797565	-75.47511	N/A - Workspace	-	N/A				X	X			X	X	X	X	X	X	Featured is not crossed by the centerline, project is co-located with existing ROW. Alignment crossing the wetland at top/narrowest location, workspace reduced to 50'.
110217_WA_008_PEM	Other	PEM1	53.1R3	40.795645	-75.476254	CL - Bore	CL - Open Cut	Matted				X	X	X		X	X	X	X	X	X	Featured is not crossed by the centerline, project is co-located with existing ROW. Alignment crossing the wetland at top/narrowest location, workspace reduced to 50'.
080917_WA_001_PEM - 1	Exceptional (iii)	PEM1	53.2R3	40.793819	-75.476184	CL - Open Cut	-	Matted				X	X			X		X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
080917_WA_001_PEM - 2	Exceptional (iii)	PEM1	53.3R3	40.792700	-75.475975	CL - Open Cut	-	Matted				X	X			X		X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
050217_MB_1002_PEM	Exceptional (iii)	PEM1	53.3R3	40.792094	-75.476108	CL - Open Cut	-	Matted				X	X			X		X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
050217_MB_1004_PFO	Exceptional (iii)	PFO1	53.4R3	40.791397	-75.476161	N/A - Workspace	-	Matted				X	X			X		X	X	X	X	Time to cross justifies open-cut, additional workspace required for fittings.
050217_MB_1001_PEM	Exceptional (iii)	PEM1	53.4R3	40.790966	-75.475846	CL - Open Cut	-	Matted				X	X			X		X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
081815_MK_042_PEM - 1	Exceptional (iii)	PEM1	55.9	40.780070	-75.457070	CL - Bore	CL - Open Cut	Matted				X	X	X				X			X	Workspace needed for SR-946 road bore, workspace reduced to 75 feet. Matted across impact AR-054.
081815_MK_042_PEM - 2	Exceptional (iii)	PEM1	56	40.779935	-75.457027	-	-	Matted				X	X								X	Workspace needed for SR-946 road bore, workspace reduced to 75 feet. Matted across impact AR-054.
062218_WA_001_PFO	Exceptional (iii)	PFO1	56	40.779828	-75.456993	CL - Open Cut	-	Matted				X	X						X	X	X	Workspace needed for SR-946 road bore.
062218_WA_001_PEM - 1	Exceptional (iii)	PEM1	56	40.779732	-75.456763	N/A - Workspace	-	Matted				X	X						X		X	Workspace needed for road bore.
062218_WA_001_PEM - 2	Exceptional (iii)	PEM1	56	40.779378	-75.456448	N/A - Workspace	-	Matted				X	X						X		X	Workspace needed for road bore.
052218_WA_002_PEM	Exceptional (iii)	PEM1	56.6	40.772600	-75.448817	N/A - Workspace	-	Matted				X	X			X		X	X		X	Workspace needed for road bore.
101717_AB_1001_PEM	Exceptional (iii)	PEM1	56.6	40.772464	-75.448984	N/A - Workspace	-	Matted				X	X			X		X	X		X	Minor impact to permanent easement adjacent to road bore. No clearing will occur on wetland.
050417_GM_1003_PEM	Exceptional (iii)	PEM1	56.7	40.772166	-75.448663	CL - Open Cut	-	Matted				X	X					X	X		X	Time to cross justifies open-cut.
050417_GM_1002_PEM	Exceptional (iii)	PEM1	56.7	40.771851	-75.448423	CL - Open Cut	-	Matted				X	X			X		X	X		X	Time to cross justifies open-cut.
052218_WA_003_PEM	Exceptional (iii)	PEM1	58.5	40.755192	-75.423015	CL - Open Cut	-	Matted		X								X	X		X	Steep slopes north and south of crossing (+15%) present challenges. Pit dewatering may be impact feature. Workspace reduced to 75'.
090414_DB_008_PEM	Exceptional (iii)	PEM1	59.2	40.747440	-75.413599	CL - Open Cut	-	Matted		X			X					X	X		X	Time to cross justifies open-cut. Limited workspace due to a residence makes a bore unfeasible.
090314_DB_004_PEM	Exceptional (iii)	PEM1	60.6	40.735842	-75.392664	CL - Open Cut	-	Matted				X	X					X	X		X	Alignment crossing the wetland at top/narrowest location. Time to cross justifies open-cut.
041119_DHB_001_PEM	Exceptional (iii)	PEM1	62.8R3	40.725897	-75.356757	CL - Open Cut	-	Matted				X	X						X		X	Workspace needed for railroad bore.
042815_JC_1003_PEM	Other	PEM1	64.3R2	40.716599	-75.334140	N/A - Workspace	-	Matted				X	X					X	X		X	Workspace needed for crossing of Rte. 946.
092614_GO_002_PFO - 1	Exceptional (iii)	PFO1	72.1	40.628363	-75.272114	CL - Open Cut	-	Matted				X	X			X		X	X	X	X	Alignment crossing the wetland at top/narrowest location. Time to cross justifies open-cut.
092614_GO_002_PFO - 2	Exceptional (iii)	PFO1	72.2	40.627954	-75.271200	CL - Open Cut	-	Matted				X	X			X		X	X	X	X	Alignment crossing the wetland at top/narrowest location. Time to cross justifies open-cut.
040318_WA_0001_PSS	Exceptional (iii)	PSS1	72.4	40.626049	-75.268331	CL - Open Cut	-	Matted				X	X					X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
040318_WA_0001_PEM	Exceptional (iii)	PEM1	72.4	40.625953	-75.268157	CL - Open Cut	-	Matted				X	X					X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.

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051415_JC_1001_PEM	Exceptional (iii)	PEM1	72.6	40.624589	-75.265354	CL - Open Cut	-	Matted				X	X			X		X	X		X	Limited workspace east of the wetland complex due to multiple residential units challenges the use of trenchless methods (HDD, Direct Pipe and Microtunnel). Alignment was shifted north to minimize impacts.
012116_GM_1001_PFO	Exceptional (iii)	PFO1	72.6	40.623792	-75.264075	CL - Open Cut	-	Matted				X	X			X			X	X	X	Time to cross justifies open-cut, workspace reduced to 75'.
031918_WA_001_PSS	Exceptional (iii, iv)	PSS1	72.4	40.625520	-75.267367	CL - Open Cut	-	Matted				X	X					X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
042815_JC_1001_PFO - 1	Exceptional (iii)	PFO1	72.7	40.622618	-75.262733	N/A - Workspace	-	Matted				X	X					X	X	X	X	Bore is not feasible due to length of feature, pit dewatering may impact feature. Workspace reduced to 75'.
042815_JC_1001_PFO - 2	Exceptional (iii)	PFO1	72.8	40.622451	-75.262386	CL - Open Cut	-	Matted				X	X					X	X	X	X	Bore is not feasible due to length of feature, pit dewatering may impact feature. Workspace reduced to 75'.
031716_NJ_002_PSS - 1	Exceptional (iii)	PSS1	73.1	40.619167	-75.257074	CL - Open Cut	-	Matted				X	X			X		X	X		X	Alignment crossing the wetland at top/narrowest location. Time to cross justifies open-cut.
031716_NJ_002_PSS - 2	Exceptional (iii)	PSS1	73.2	40.619071	-75.256842	N/A - Workspace	-	Matted				X	X			X		X	X		X	Alignment crossing the wetland at top/narrowest location. Time to cross justifies open-cut.
031716_NJ_002_PEM	Exceptional (iii)	PEM1	73.1	40.619270	-75.258091	CL - Open Cut	-	Matted				X	X			X		X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
042117_GM_1001_PFO	Exceptional (iii)	PFO1	73.6R2	40.619980	-75.249102	CL - Open Cut	-	Matted				X	X			X		X	X	X	X	Time to cross justifies open-cut, workspace reduced to 75'.
042418_WA_008_PFO	Exceptional (iii)	PFO1	73.6R2	40.619978	-75.247963	CL - Open Cut	-	Matted				X	X					X	X	X	X	Time to cross justifies open-cut, workspace reduced to 75'.
042418_WA_006_PFO	Exceptional (iii)	PFO1	73.7R2	40.619977	-75.246403	CL - Open Cut	-	Matted				X	X					X	X	X	X	Time to cross justifies open-cut, workspace reduced to 75'.
042518_WA_001_PSS	Other	PSS1	74.3	40.612324	-75.237754	CL - Open Cut	-	Matted				X	X			X		X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
072319_MU_1003_PEM	Other	PEM1	74.7	40.608359	-75.232975	CL - Open Cut	-	Matted				X	X			X			X		X	Alignment crossing the wetland at narrowest location. Time to cross justifies open-cut. Workspace required for adjacent stream crossing.
062415_BT_1002_PEM	Exceptional (iii)	PEM1	74.9	40.606897	-75.229069	CL - Open Cut	-	Matted				X	X			X		X	X		X	Alignment crossing the wetland at bottom/narrowest location. Time to cross justifies open-cut.
122016_LZ_1002_PEM	Other	PEM1	75.1	40.606204	-75.226886	CL - Open Cut	-	Matted				X	X			X		X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
042418_WA_001_PSS - 1	Other	PSS1	75.1	40.606006	-75.226772	CL - Open Cut	-	Matted				X	X					X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
042418_WA_001_PSS - 2	Other	PSS1	75.1	40.605429	-75.226542	CL - Open Cut	-	Matted				X	X					X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
042418_WA_001_PEM	Other	PEM1	75.1	40.605750	-75.226739	N/A - Workspace	-	Matted				X	X			X		X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
042418_WA_002_PSS	Exceptional (iii)	PSS1	75.1	40.605258	-75.226338	CL - Open Cut	-	Matted				X	X			X		X	X		X	Alignment crossing the wetland at narrowest location, time to cross justifies open cut. Workspace reduced to 75'.
042418_WA_002_PEM	Exceptional (iii)	PEM1	75.1	40.605222	-75.226416	N/A - Workspace	-	Matted				X	X			X		X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
042418_WA_003_PEM	Other	PEM1	75.2	40.604343	-75.225807	CL - Open Cut	-	Matted				X	X					X	X		X	Time to cross justifies open-cut, workspace reduced to 75'.
111314_JC_003_PFO	Exceptional (iii)	PFO1	75.7	40.601555	-75.218791	N/A - Workspace	-	Matted				X	X			X		X	X	X	X	Alignment crossing the wetland at top/narrowest location. Time to cross justifies open-cut.

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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.