

RESOURCE REPORT SEVEN - SOILS	
SUMMARY OF COMMISSION FILING INFORMATION	
Information	Found in
1. Identify, describe, and group by milepost the soils affected by the proposed pipeline and aboveground facilities. (§380.12 (l)(1))	Section 7.1.1, and Tables 7.1-1 and 7.1-2
2. For aboveground facilities that would occupy sites over five acres, determine the acreage of prime farmland soils that would be affected by construction and operation. (§380.12(i)(2))	Not Applicable
3. Describe, by milepost, potential impacts on soils. (§§380.12(i)(3) and (4))	Sections 7.2 and 7.3, and Tables 7.1-1 and 7.1-2
4. Identify proposed mitigation to minimize impact on soils, and compare with the staff's Upland Erosion Control, Revegetation, and Maintenance Plan. (§380.12(i)(5))	Section 7.4

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7.0 RESOURCE REPORT 7 - SOILS

This report describes the existing baseline soils, the activities of pipeline construction and operation that will affect soils, the impact of construction and operation on soils, and where appropriate, mitigating measures that will be included in pipeline construction and operation to minimize effects on soils.

7.1 SOIL DESCRIPTIONS

7.1.1 Pipeline Facilities

The Project involves the construction, operation and maintenance of approximately eight miles of natural gas pipeline in Clearfield County, PA. Table 7.1-1 summarizes soil limitations along the proposed pipeline and access roads. Table 7.1-2 summarizes the total pipeline distance crossed for each category of soil limitation for the Project area.

According to the USDA's 2005 digital *Soil Survey of Clearfield County*, the soils traversed by the Project include Bethesda very channery silt loam, Cedar creek extremely channery loam, Allegheny silt loam, Atkins silt loam, Cavode silt loam, Cookport channery loam, Cookport very stony loam, Dekalb channery loam, Ernest silt loam, Gilpin channery silt loam, Hazleton very stony loam, Hazleton-Clymer very stony loams, Monongahela silt loam, Philo silt loam, Rayne silt loam, Rayne channery silt loam, Rayne-Gilpin Complex, Udorthents, urban land, water, and Wharton silt loams. The soils are described as follows:

Bethesda Very Channery Silt Loam, 8 to 25 Percent Slopes (92D). Bethesda soils make up 90 percent of the map unit. This soil is well drained. The depth to a restrictive feature is zero-inch to 60 inches. The permeability within a depth of 60 inches is slow. Available water capacity to a depth of 60 inches is very low, and shrink swell potential is low. Annual flooding is none, and annual ponding is none. The minimum depth to a water table is greater than six feet. The potential runoff class is high. This soil has very low potential productivity for cultivated crops and is not a hydric soil.

Cedar creek Extremely Channery Loam, Strongly Sloping (95C). Cedar creek soils make up 85 percent of the map unit. The runoff class is low. The depth to a restrictive feature is 24 to 60 inches to bedrock (lithic). It is somewhat excessively drained. The slowest permeability within 60 inches is slow. Available water capacity is low. The shrink swell potential is low. Annual flooding is none and annual ponding is none. The top of the seasonal high water table is 24 inches. The major component is not a hydric soil.

Cedar creek Extremely Channery Loam, Moderately Steep (95D). Cedar creek soils make up 85 percent of the map unit. The runoff class is low. The depth to a restrictive feature is 24 to 60 inches to bedrock (lithic). It is somewhat excessively drained. The

slowest permeability within 60 inches is slow. Available water capacity is low. The shrink swell potential is low. Annual flooding is none and annual ponding is none. The top of the seasonal high water table is 24 inches. The major component is not a hydric soil.

Allegheny Silt Loam, Three to Eight Percent Slopes (AIB). Allegheny soils make up 95 percent of the map unit. This map unit is Prime Farmland. The runoff class is medium. It is well drained. The slowest permeability within 60 inches is moderate. Available water capacity is high and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Atkins Silt Loam (At). Atkins soils make up 90 percent of the map unit. This soil is on a flood plain. This map unit is Farmland of Statewide Importance. The runoff class is very high. It is poorly drained. The slowest permeability within 60 inches is slow. Available water capacity is moderate and shrink swell potential is low. This soil is subject to frequent flooding and is not ponded. The top of the seasonal high water table ranges from zero-inch to 12 inches. The major component is a hydric soil

Cavode Silt Loam, Eight to 15 Percent Slopes (CaC). Cavode soils make up 85 percent of the map unit. This map unit is Farmland of Statewide Importance. The runoff class is very high. The depth to a restrictive feature is 40 to 72 inches to bedrock. It is somewhat poorly drained. The slowest permeability within 60 inches is slow. Available water capacity is moderate and shrink swell potential is moderate. This soil is not subject to flooding and is not ponded. The top of the seasonal high water table ranges from six to 18 inches. The major component is not a hydric soil.

Cookport Channery Loam, Three to Eight Percent Slopes (CoB). Cookport soils make up 90 percent of the map unit. This map unit is Prime Farmland. The runoff class is high. The depth to a restrictive feature is 40 to 72 inches to bedrock; 22 inches to a fragipan. It is moderately well drained. The slowest permeability within 60 inches is slow. Available water capacity is low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The top of the seasonal high water table ranges from 15 to 22 inches. The major component is not a hydric soil.

Cookport Channery Loam, Eight to 15 Percent Slopes (CoC). Cookport soils make up 95 percent of the map unit. This map unit is Farmland of Statewide Importance. The runoff class is high. The depth to a restrictive feature is 40 to 72 inches to bedrock; 22 inches to a fragipan. It is moderately well drained. The slowest permeability within 60 inches is slow. Available water capacity is low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The top of the seasonal high water table ranges from 15 to 22 inches. The major component is not a hydric soil.

Cookport Very Stony Loam, Eight to 25 Percent Slopes (CxD). Cookport soils make up 95 percent of the map unit. This soil is not classified as Prime or Statewide Important Farmland. The runoff class is high. The depth to a restrictive feature is 40 to

72 inches to bedrock; 22 inches to a fragipan. It is moderately well drained. The slowest permeability within 60 inches is slow. Available water capacity is low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The top of the seasonal high water table ranges from 15 to 22 inches. The major component is not a hydric soil.

Dekalb Channery Loam, Eight to 15 Percent Slopes (DeC). Dekalb soils make up 90 percent of the map unit. This map unit is Farmland of Statewide Importance. The runoff class is very low. The depth to a restrictive feature is 20 to 40 inches to bedrock. It is well drained. The slowest permeability within 60 inches is rapid. Available water capacity is very low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Ernest Silt Loam, Eight to 15 Percent Slopes (ErC). Ernest soils make up 90 percent of the map unit. This map unit is Farmland of Statewide Importance. The runoff class is medium. The depth to a restrictive feature is 24 inches to a fragipan. It is moderately well drained. The slowest permeability within 60 inches is slow. Available water capacity is moderate and shrink swell potential is moderate. This soil is not subject to flooding and is not ponded. The top of the seasonal high water table ranges from 17 to 22 inches. The major component is not a hydric soil.

Ernest Silt Loam, 15 to 25 Percent Slopes (ErD). Ernest soils make up 90 percent of the map unit. This soil is not classified as Prime or Statewide Important Farmland. The runoff class is high. The depth to a restrictive feature is 24 inches to a fragipan. It is moderately well drained. The slowest permeability within 60 inches is slow. Available water capacity is moderate and shrink swell potential is moderate. This soil is not subject to flooding and is not ponded. The top of the seasonal high water table ranges from 17 to 22 inches. The major component is not a hydric soil.

Gilpin Channery Silt Loam, Three to Eight Percent Slopes (GIB). Gilpin soils make up 90 percent of the map unit. This map unit is Prime Farmland. The runoff class is medium. The depth to a restrictive feature is 20 to 40 inches to bedrock. It is well drained. The slowest permeability within 60 inches is moderate. Available water capacity is low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Gilpin Channery Silt Loam, Eight to 15 Percent Slopes (GIC). Gilpin soils make up 90 percent of the map unit. This map unit is Farmland of Statewide Importance. The runoff class is medium. The depth to a restrictive feature is 20 to 40 inches to bedrock. It is well drained. The slowest permeability within 60 inches is moderate. Available water capacity is low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Hazleton Very Stony Loam, Eight to 25 Percent Slopes (HbD). Hazleton soils make up 95 percent of the map unit. This soil is not classified as Prime or Statewide Important Farmland. The runoff class is low. The depth to a restrictive feature is 40 to 80 inches to bedrock. It is well drained. The slowest permeability within 60 inches is moderately rapid. Available water capacity is low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Hazleton Very Stony Loam, 25 to 80 Percent Slopes (HbF). Hazleton soils make up 95 percent of the map unit. This soil is not classified as Prime or Statewide Important Farmland. The runoff class is medium. The depth to a restrictive feature is 40 to 80 inches to bedrock. It is well drained. The slowest permeability within 60 inches is moderately rapid. Available water capacity is low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Hazleton-Clymer Very Stony Loams, Zero to Eight Percent Slopes (HdB). Hazleton soils make up 60 percent of the map unit. This soil is not classified as Prime or Statewide Important Farmland. The runoff class is very low. The depth to a restrictive feature is 40 to 80 inches to bedrock. It is well drained. The slowest permeability within 60 inches is moderately rapid. Available water capacity is low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Clymer soils make up 20 percent of the map unit. This soil is not classified as Prime or Statewide Important Farmland. The runoff class is low. The depth to a restrictive feature is 40 to 60 inches to bedrock. It is well drained. The slowest permeability within 60 inches is moderate. Available water capacity is low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Monongahela Silt Loam, Three to Eight Percent Slopes (MoB). Monongahela soils make up 90 percent of the map unit. This map unit is Farmland of Statewide Importance. The runoff class is medium. The depth to a restrictive feature is 25 inches to a fragipan. It is moderately well drained. The slowest permeability within 60 inches is slow. Available water capacity is moderate and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The top of the seasonal high water table ranges from 17 to 28 inches. The major component is not a hydric soil.

Philo Silt Loam (Ph). Philo soils make up 90 percent of the map unit. This map unit is Prime Farmland. The runoff class is low. The depth to a restrictive feature is 40 inches to bedrock. It is moderately well drained. The slowest permeability within 60 inches is moderate. Available water capacity is moderate and shrink swell potential is low. This soil is subject to occasional flooding and is not ponded. The top of the seasonal high water table ranges from 18 to 36 inches. The major component is not a hydric soil.

Rayne Silt Loam, Three to Eight Percent Slopes (RaB). Rayne soils make up 90 percent of the map unit. This map unit is Prime Farmland. The runoff class is medium. The depth to a restrictive feature is 40 to 72 inches to bedrock. It is well drained. The slowest permeability within 60 inches is moderate. Available water capacity is moderate and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Rayne Silt Loam, Eight to 15 Percent Slopes (RaC). Rayne soils make up 90 percent of the map unit. This map unit is Farmland of Statewide Importance. The runoff class is medium. The depth to a restrictive feature is 40 to 72 inches to bedrock. It is well drained. The slowest permeability within 60 inches is moderate. Available water capacity is moderate and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Rayne Channery Silt Loam, 25 to 65 Percent Slopes (RbF). Rayne soils make up 90 percent of the map unit. This soil is not classified as Prime or Statewide Important Farmland. The runoff class is high. The depth to a restrictive feature is 40 to 72 inches to bedrock. It is well drained. The slowest permeability within 60 inches is moderate. Available water capacity is moderate and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Rayne-Gilpin Complex, 15 to 25 Percent Slopes (RcD). Rayne soils make up 60 percent of the map unit. This soil is not classified as Prime or Statewide Important Farmland. The runoff class is high. The depth to a restrictive feature is 40 to 72 inches to bedrock. It is well drained. The slowest permeability within 60 inches is moderate. Available water capacity is moderate and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Gilpin soils make up 30 percent of the map unit. This soil is not classified as Prime or Statewide Important Farmland. The runoff class is high. The depth to a restrictive feature is 20 to 40 inches to bedrock. It is well drained. The slowest permeability within 60 inches is moderate. Available water capacity is low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Udorthents, Smoothed (Up). Udorthents soils make up 90 percent of the map unit. This soil is not classified as Prime or Statewide Important Farmland. The runoff class is medium. It is well drained. The slowest permeability within 60 inches is moderately rapid. Available water capacity is very low and shrink swell potential is low. This soil is not subject to flooding and is not ponded. The seasonal high water table is at a depth of more than six feet. The major component is not a hydric soil.

Wharton Silt Loam, Three to Eight Percent Slopes (WhB). Wharton soils make up 90 percent of the map unit. This map unit is Prime Farmland. The runoff class is high. The depth to a restrictive feature is 40 to 72 inches to bedrock. It is moderately well drained. The slowest permeability within 60 inches is slow. Available water capacity is high and shrink swell potential is moderate. This soil is not subject to flooding and is not ponded. The top of the seasonal high water table ranges from 18 to 36 inches. The major component is not a hydric soil.

Wharton Silt Loam, 8 to 15 Percent Slopes (WhC). Wharton soils make up 90 percent of the map unit. This map unit is Farmland of Statewide Importance. The runoff class is high. The depth to a restrictive feature is 40 to 72 inches to bedrock. It is moderately well drained. The slowest permeability within 60 inches is slow. Available water capacity is high and shrink swell potential is moderate. This soil is not subject to flooding and is not ponded. The top of the seasonal high water table ranges from 18 to 36 inches. The major component is not a hydric soil.

Wharton Silt Loam, 15 to 25 Percent Slopes (WhD). Wharton soils make up 90 percent of the map unit. This soil is not classified as Prime or Statewide Important Farmland. The runoff class is very high. The depth to a restrictive feature is 40 to 72 inches to bedrock. It is moderately well drained. The slowest permeability within 60 inches is slow. Available water capacity is high and shrink swell potential is moderate. This soil is not subject to flooding and is not ponded. The top of the seasonal high water table ranges from 18 to 36 inches. The major component is not a hydric soil.

7.1.2 Aboveground Facilities

No new aboveground facilities greater than five acres in size are proposed for the Project.

7.2 CONSTRUCTION AND OPERATION IMPACTS

Typical impacts to soils that may occur during pipeline construction include mixing of layers within the soil profile, compaction, rutting, erosion and alteration of drainage characteristics through mixing. Due to clearing, erosion and sedimentation control measures, trenching, backfilling, and restoration and cleanup procedures that will be employed (refer to Section 1.3 of Resource Report 1), impacts are anticipated to be minimal.

T. W. Phillips will utilize existing private roads to access the Project areas during construction activities, and one new access road, AR-2, will be constructed. The existing roads include private drives, farm roads, Jeep trails, logging roads, and other private roads. T. W. Phillips will maintain these areas in a safe, passable condition during construction activities. Maintenance activities may include gravel installation, replacement of existing culverts and tree trimming. Following construction activities, any improvements conducted on these roads will be left in place unless specified

otherwise by the landowner. Access roads identified to date are listed in Table 8.1.1-5, and can be found on the CAS (Appendix 1-A).

Soils that will be affected by construction are classified as highly erodible due to steep slopes. Soils classified as highly erodible are listed in Table 7.1-1. (Note: The criteria used to determine whether the soil was listed as highly erodible was a “severe” potential erosion hazard for road/trail.) Erosion control measures, as outlined in Section 3.1.3, will be implemented at construction locations where necessary. Specialized construction procedures, as outlined in Section 3.1.13 of Resource Report 1, will be employed on steep terrain to minimize impacts to these areas.

Project construction is not anticipated to have permanent impacts to aboveground drainage patterns since all areas, where possible, will be restored to pre-construction contours as outlined in Section 3.1.12 of Resource Report 1.

7.3 CROPLAND AND RESIDENTIAL IMPACTS

Active croplands will revert to agricultural use after completion of the proposed Project. Prior to trenching, the topsoil from these areas will be segregated from the trench spoil. This segregated soil will be returned to the ditch following backfilling of the trench spoil, ensuring preservation of topsoil along the ditch.

In residential areas, topsoil replacement (i.e., importation of topsoil) may be used as an alternative to topsoil segregation. In wetland areas, T. W. Phillips will segregate the top 12 inches of soil excavated from the trench to limit wetland impacts. Timber mats will be utilized to prevent mixing of soils during construction in wetland areas.

Prior to blasting any area, the density and size of existing rock fragments in residential and agricultural areas will be estimated. During restoration activities, the areas where blasting was required will be surveyed for size and density of resulting rock fragments.

To the extent practical, rock fragments at a density and size inconsistent with the existing surrounding undisturbed area will be removed.

Upon completion of construction activities, the ROW will be returned as much as is practicable to its pre-construction contours. Disturbed areas will be seeded with the seed mixture included in T. W. Phillips’ E&SCP, or as per landowner request. T. W. Phillips’ E&SCP will be submitted to the Clearfield County Conservation District (CCCD) for review and approval. Active drainage tiles, culverts, and other items impacted during construction will be repaired or replaced to pre construction condition.

7.4 MITIGATION

Clearing, trenching, stringing, installation and backfilling are the major construction operations that will impact the area soils. The steep slope soils along the pipeline make erosion control a necessary priority. Erosion and sedimentation controls will be installed along the pipeline corridor to ensure, to the maximum extent practicable, that no significant erosion of native soils or sedimentation occur. Stricter erosion controls will be employed in soils with severe erosion potential. The Project's E&SCP implements specifications contained within the Commission's Plans and Procedures, with the exception of any Commission-approved variances, and will be approved by the CCCD. Erosion control measures, trenching operations, and mitigation plans for this Project are outlined in Resource Report 1.

Should drainage tiles be encountered, the procedure outlined in Resource Report 1 will be utilized. T. W. Phillips will consult with the CCCD to establish their recommendations of the best seed mixtures for the area and soil conditions. The results of the consultation will be incorporated into the Project E&SCP.

7.5 REFERENCES

Federal Energy Regulatory Commission. 2003. *Upland Erosion Control, Revegetation, and Maintenance Plan*. January 17, 2003.

Federal Energy Regulatory Commission. 2003. *Wetland and Waterbody Construction and Mitigation Procedures*. January 17, 2003.

United States Department of Agriculture, Natural Resources Conservation Service's Soil Data Mart. *Soil Survey Geographic Database (SSURGO) for Clearfield County, Pennsylvania*. <http://soildatamart.nrcs.usda.gov>. Tabular data version, January 30, 2008.

Table 7.1-1

SOIL ASSOCIATIONS AND MILEPOST LOCATIONS OF MAJOR SOIL LIMITATIONS FOR THE PROJECT

Soil Series Symbol	Soil Series Description	Milepost		Soil Limitations ¹					Prime Farmland ⁵
		Start	End	Erosion Hazard ²	Compaction Potential ³	Depth to Rock (inches)	Revegetation Potential ⁴		
ROW Crossings									
92D	Bethesda Very Channery Silt Loam, 8 to 25 Percent Slopes	2.55 3.29 5.46	2.77 3.37 5.55	Severe	Very Limited	65+	Poorly Suited	Not Farmland	
95D	Cedar creek Extremely Channery Loam, Moderately Steep	3.24 3.61	3.29 3.68	Severe	Very Limited	70+	Unsuited	Not Farmland	
A1B	Allegheny Silt Loam, 3 to 8 Percent Slopes	6.83	6.90	Moderate	Somewhat Limited	72+	Moderately Suited	PF	
At	Atkins Silt Loam	2.92	2.98	Slight	Very Limited	64+	Well Suited	FSI	
CaC	Cavode Silt Loam, 8 to 15 Percent Slopes	3.06	3.11	Severe	Very Limited	57 to 61	Moderately Suited	FSI	
CoB	Cookport Channery Loam, 3 to 8 Percent Slopes	0.34 1.32 1.36 1.43 1.56 1.71	0.48 1.32 1.43 1.56 1.71	Severe	Very Limited	46 to 50	Moderately Suited	PF	
CoC	Cookport Channery Loam, 8 to 15 Percent Slopes	0.74 1.32 1.43 1.56 1.71	0.82 1.36 1.56 1.76	Severe	Very Limited	46 to 50	Moderately Suited	FSI	
CxD	Cookport Very Stony Loam, 8 to 25 Percent Slopes	0.48	0.55	Severe	Very Limited	58 to 65	Poorly Suited	Not Farmland	
ErC	Ernest Silt Loam, 8 to 25 Percent Slopes	2.98 3.97 5.45 5.55	3.06 4.18 5.46 5.68	Severe	Very Limited	63+	Moderately Suited	FSI	
ErD	Ernest Silt Loam, 15 to 25 Percent Slopes	5.18	5.36	Severe	Very Limited	74+	Moderately Suited	Not Farmland	
G1B	Gilpin Channery Silt Loam, 3 to 8 Percent Slopes	1.10 3.77	1.28 3.78	Moderate	Very Limited	30 to 35	Moderately Suited	PF	
G1C	Gilpin Channery Silt Loam, 8 to 15 Percent Slopes	2.36 2.81 3.60 3.78 5.89 6.32 7.23	2.55 2.86 3.61 3.95 6.13 6.51 7.24	Severe	Very Limited	30 to 35	Moderately Suited	FSI	
HbD	Hazleton Very Stony Loam, 8 to 25 Percent Slopes	0.25 0.50 0.55	0.34 0.13 0.72	Moderate	Very Limited	55 to 59	Poorly Suited	Not Farmland	
HbF	Hazleton Very Stony Loam, 25 to 80 Percent Slopes	0.82	1.10	Severe	Very Limited	55 to 59	Unsuited	Not Farmland	

Table 7.1-1 (Continued)

Soil Series Symbol	Soil Series Description	Milepost		Soil Limitations ¹					Prime Farmland ⁵
		Start	End	Erosion Hazard ²	Compaction Potential ³	Depth to Rock (inches)	Revegetation Potential ⁴		
ROW Crossings (continued)									
HdB	Hazleton-Clymer Very Stony Loams, 0 to 8 Percent Slopes	0.00 0.13	0.50 0.25	Slight	Somewhat Limited	49 to 53	Moderately Suited	Not Farmland	
MoB	Monongahela Silt Loam, 3 to 8 Percent Slopes	6.13 6.90	6.32 7.23	Moderate	Very Limited	63+	Moderately Suited	FSI	
Ph	Philo Silt Loam	5.36 6.57	5.45 6.77	Slight	Very Limited	65+	Well Suited	PF	
RaB	Rayne Silt Loam, 3 to 8 Percent Slopes	1.90 3.37	2.02 3.60	Moderate	Somewhat Limited	60 to 64	Moderately Suited	PF	
RaC	Rayne Silt Loam, 8 to 15 Percent Slopes	2.25	2.36	Severe	Somewhat Limited	60 to 64	Moderately Suited	FSI	
RbF	Rayne Channery Silt Loam, 25 to 65 Percent Slopes	2.86 4.18 4.39 4.86 5.13 5.68 6.80	2.92 4.34 4.43 5.13 5.89 6.83	Severe	Very Limited	60 to 64	Unsuited	Not Farmland	
RcD	Rayne-Gilpin Complex, 15 to 25 Percent Slopes	0.72 1.76 2.02 2.77 3.11 3.18 4.34 4.43 6.51	0.74 1.90 2.25 2.81 3.14 3.24 4.39 4.86 6.57	Severe	Very Limited	28 to 34	Poorly Suited	Not Farmland	
Up	Udorthents, Smoothed	5.13	5.18	Severe	Very Limited	60+	Unsuited	Not Farmland	
Ur	Urban Land	7.24	7.94	NA	NA	NA	NA	Not Farmland	
W	Water	6.77	6.80	NA	NA	NA	NA	Not Farmland	
WhB	Wharton Silt Loam, 3 to 8 Percent Slopes	3.68	3.77	Moderate	Very Limited	56 to 60	Moderately Suited	PF	
WhC	Wharton Silt Loam, 8 to 15 Percent Slopes	3.14	3.18	Severe	Very Limited	56 to 60	Moderately Suited	FSI	
WhD	Wharton Silt Loam, 15 to 25 Percent Slopes	3.95	3.97	Severe	Very Limited	56 to 60	Poorly Suited	Not Farmland	
EWS and Access Roads									
92D	Bethesda Very Channery Silt Loam, 8 to 25 Percent Slopes	N/A	N/A	Severe	Very Limited	65+	Poorly Suited	Not Farmland	
95C	Cedar creek Extremely Channery Loam, Strongly Sloping	N/A	N/A	Slight	Very Limited	70+	Unsuited	Not Farmland	
95D	Cedar creek Extremely Channery Loam, Moderately Steep	N/A	N/A	Severe	Very Limited	70+	Unsuited	Not Farmland	
A1B	Allegheny Silt Loam, 3 to 8 Percent Slopes	N/A	N/A	Moderate	Somewhat Limited	72+	Moderately Suited	PF	
CoB	Cookport Channery Loam, 3 to 8 Percent Slopes	N/A	N/A	Moderate	Very Limited	46 to 50	Moderately Suited	PF	
DeC	Dekalb Channery Loam, 8 to 15 Percent Slopes	N/A	N/A	Moderate	Very Limited	36 to 40	Moderately Suited	FSI	

Table 7.1-1 (Continued)

Soil Series Symbol	Soil Series Description	Milepost		Soil Limitations ¹					Prime Farmland ⁵
		Start	End	Erosion Hazard ²	Compaction Potential ³	Depth to Rock (inches)	Revegetation Potential ⁴		
EWS and Access Roads (continued)									
ErD	Ernest Silt Loam, 15 to 25 Percent Slopes	N/A	N/A	Severe	Very Limited	74+	Moderately Suited	Not Farmland	
GIB	Gilpin Channery Silt Loam, 3 to 8 Percent Slopes	N/A	N/A	Moderate	Very Limited	30 to 35	Moderately Suited	PF	
GIC	Gilpin Channery Silt Loam, 8 to 15 Percent Slopes	N/A	N/A	Severe	Very Limited	30 to 35	Moderately Suited	FSI	
HdB	Hazleton-Clymer Very Stony Loams, 0 to 8 Percent Slopes	N/A	N/A	Slight	Somewhat Limited	49 to 53	Moderately Suited	Not Farmland	
MoB	Monongahela Silt Loam, 3 to 8 Percent Slopes	N/A	N/A	Moderate	Very Limited	63+	Moderately Suited	FSI	
Ph	Philo Silt Loam	N/A	N/A	Slight	Very Limited	65+	Well Suited	PF	
RaB	Rayne Silt Loam, 3 to 8 Percent Slopes	N/A	N/A	Moderate	Somewhat Limited	60 to 64	Moderately Suited	PF	
RaC	Rayne Silt Loam, 8 to 15 Percent Slopes	N/A	N/A	Severe	Somewhat Limited	60 to 64	Moderately Suited	FSI	
RbF	Rayne Channery Silt Loam, 25 to 65 Percent Slopes	N/A	N/A	Severe	Very Limited	60 to 64	Unsuited	Not Farmland	
RcD	Rayne-Gilpin Complex, 15 to 25 Percent Slopes	N/A	N/A	Severe	Very Limited	28 to 34	Poorly Suited	Not Farmland	
Up	Udorthents, Smoothed	N/A	N/A	Severe	Very Limited	60+	Unsuited	Not Farmland	
Ur	Urban Land	N/A	N/A	NA	NA	NA	NA	Not Farmland	
WhB	Wharton Silt Loam, 3 to 8 Percent Slopes	N/A	N/A	Moderate	Very Limited	56 to 60	Moderately Suited	PF	
WhC	Wharton Silt Loam, 8 to 15 Percent Slopes	N/A	N/A	Severe	Very Limited	58 to 60	Moderately Suited	FSI	

Notes:

- 1 Soil limitations are underlined.
- 2 Based on limitations for potential erosion hazard (road/trail).
- 3 Based on shallow excavations rating class and limiting features.
- 4 Based on limitation for mechanical planting suitability.
- 5 Soils considered: PF - Prime Farmland; or FSI - Farmland of Statewide Importance,

Table 7.1-2

**TOTAL PIPELINE DISTANCE CROSSED FOR EACH
 CATEGORY OF SOIL LIMITATION FOR THE PROJECT**

Soil Limitation Category	Distance (in miles)
Erosion Hazard	
Slight	0.464
Moderate	1.720
Severe	4.835
Not Applicable	0.899
Compaction Potential	
Somewhat Limited	0.584
Very Limited	6.435
Not Applicable	0.899
Depth to Rock (inches)	
28 to 34	1.012
30 to 35	1.099
46 to 50	0.678
49 to 53	0.125
55 to 59	0.661
56 to 60	0.145
57 to 61	0.044
58 to 65	0.061
60 to 64	1.132
60 Plus	0.054
63 Plus	0.939
64 Plus	0.057
65 Plus	0.666
70 Plus	0.104
72 Plus	0.075
74 Plus	0.167
Not Applicable	0.899
Revegetation Potential	
Unsuited	1.188
Poorly Suited	1.851
Moderately Suited	3.641
Well Suited	0.339
Not Applicable	0.899