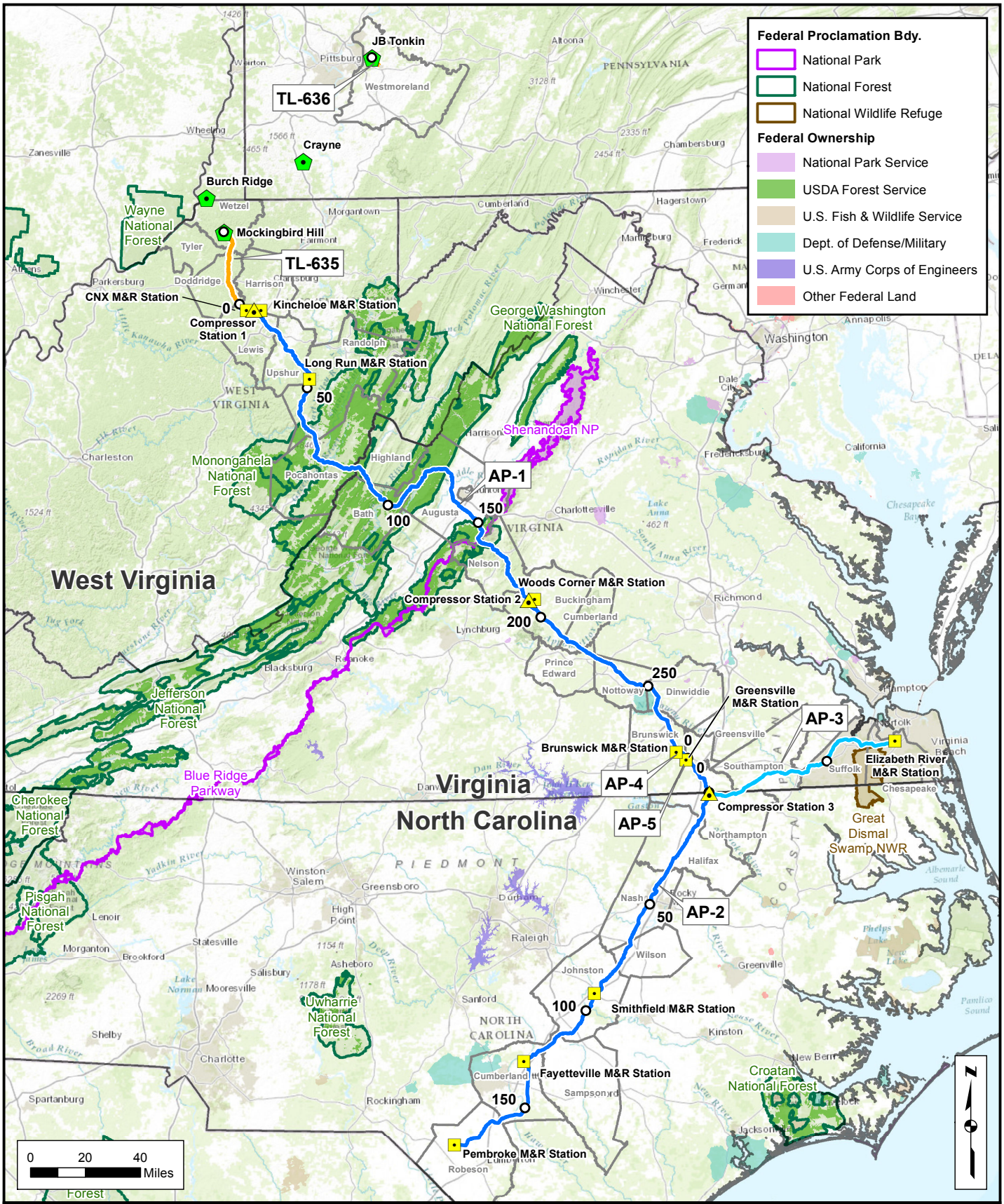
APPENDIX A

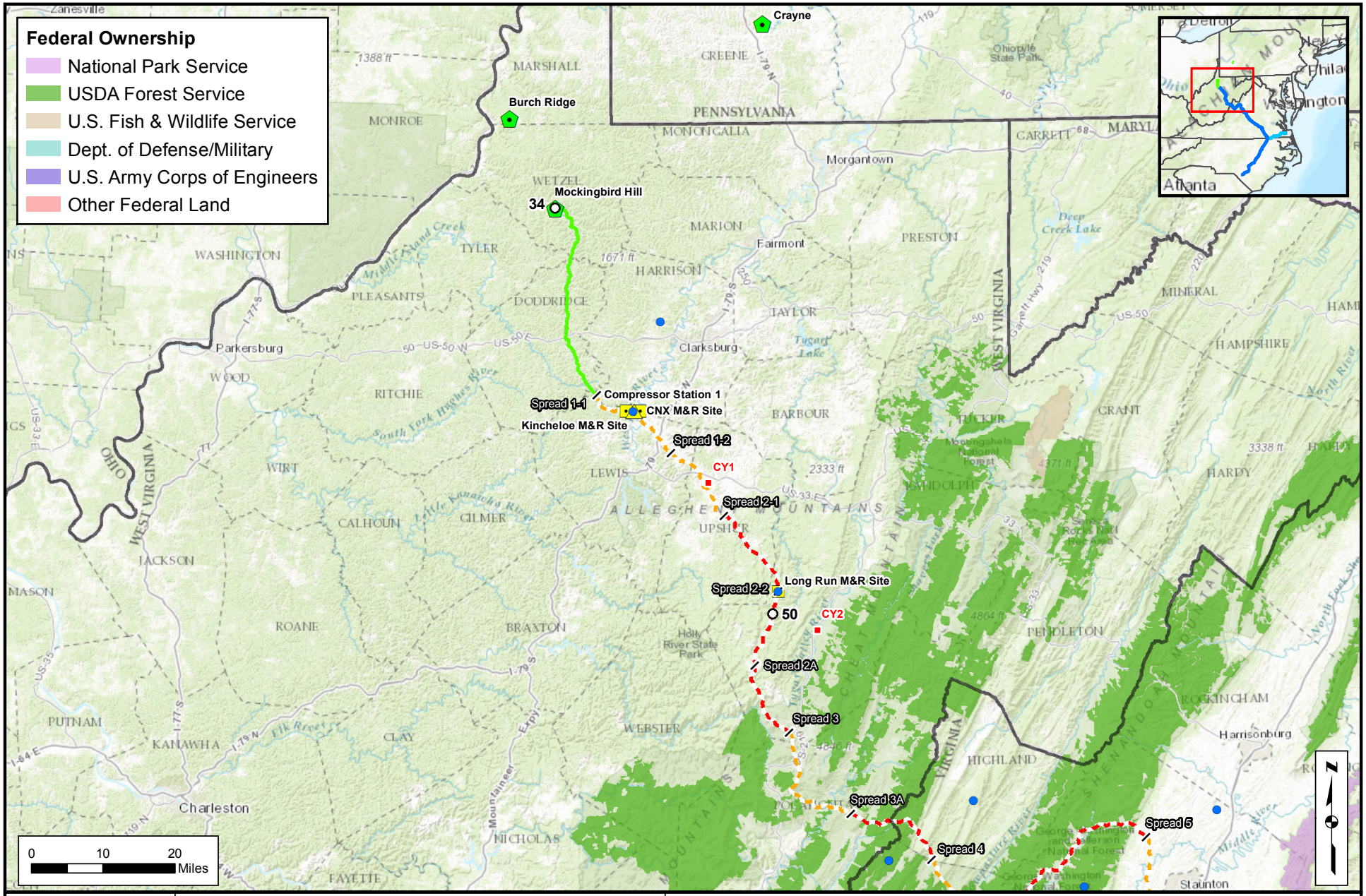
Figures

FIGURE 1 PROJECT OVERVIEW MAP



FILE: M:\Clients\D-F\DOM\SRPP_ArcGIS\Resource_Reports\RREP_01\Figures_DRS_ACP_RR01_Overview_with_sph.mxd, REVISED: 07/13/2016, SCALE: 1:3,100,000 DRAWN BY: McGregor

FIGURE 2 PROPOSED WEST VIRGINIA PIPELINE ROUTE MAP



Atlantic Coast Pipeline and Supply Header Project
Figure 2
Proposed West Virginia Pipeline Route Map

FILE: M:\Clients\D-F\DOM\SRPP_ArcGIS\SWPPP\Figures_WV_SWPPP_ACP_Spread_Cons_Date_WV_NForests.mxd, REVISED: 02/23/2017, SCALE: 1:1,200,000 DRAWN BY: PWD

FIGURE 3 IMPAIRED WATERS MAP

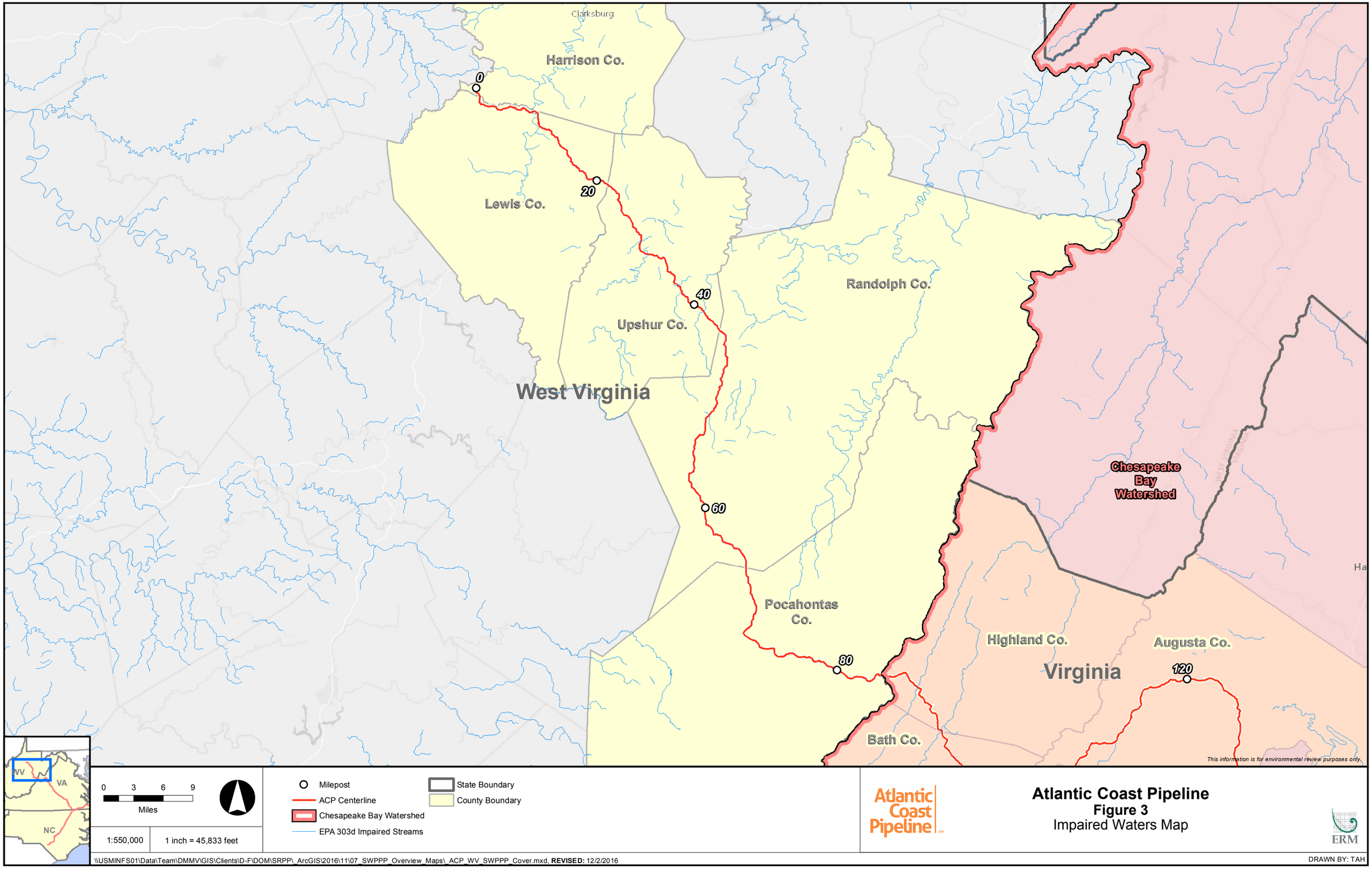


FIGURE 4 HAZARD IDENTIFICATION AND ASSESSMENT

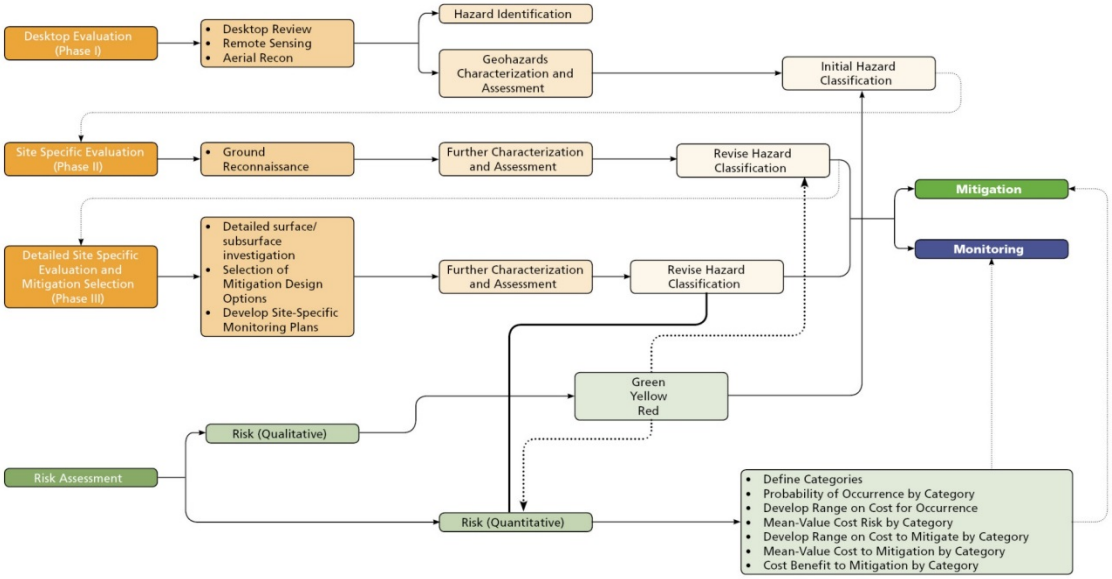


FIGURE 5 HAZARD MITIGATION

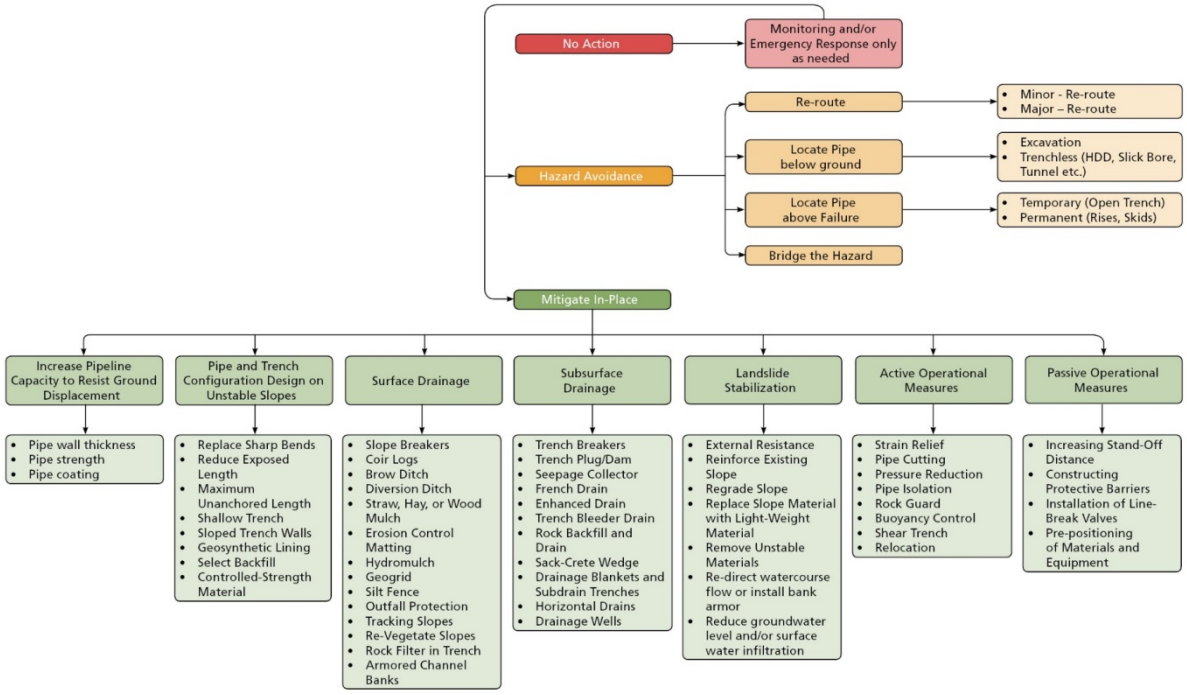
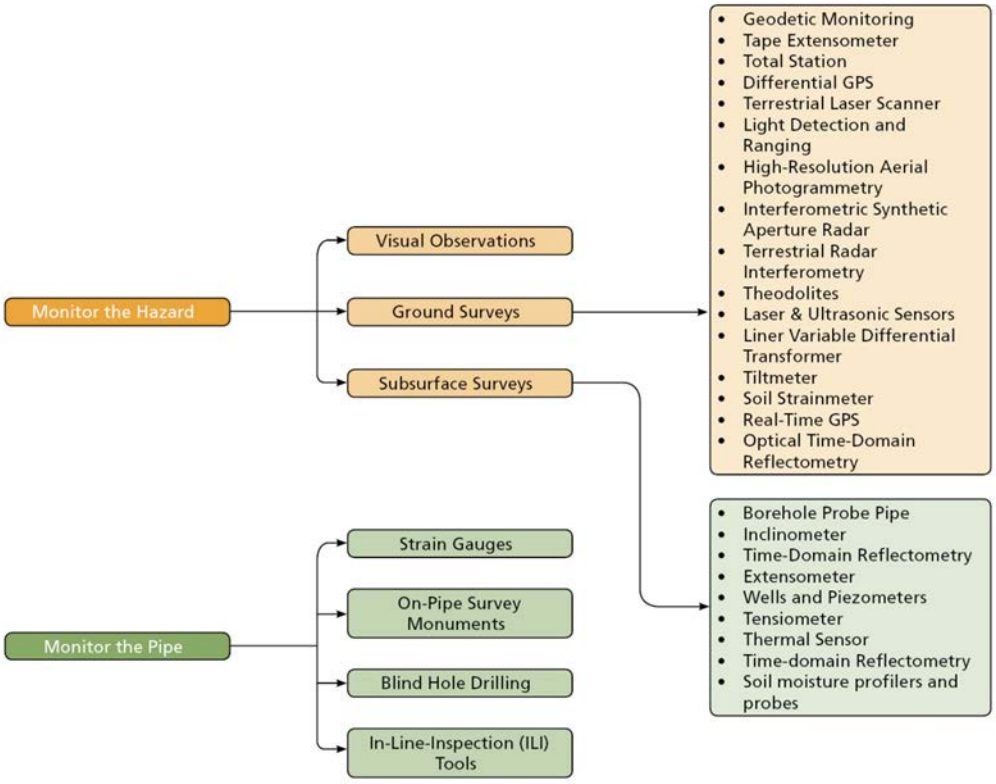


FIGURE 6 HAZARD MONITORING



APPENDIX B

FERC Regulation Table

Regulation Document	Regulation	Description	More Stringent Regulation	More Stringent Reason	Reference in Plan	Where Regulation Applies		
						Steep Slopes	National Forest	Non-specific Area
FERC Upland Erosion Control, Revegetation, and Maintenance Plan								
FERC Plan	II.A.1: Environmental Inspection	At least one Environmental Inspector is required for each construction spread during construction and restoration (as defined by section V). The number and experience of Environmental Inspectors assigned to each construction spread shall be appropriate for the length of the construction spread and the number/significance of resources affected.	Most Stringent	NA	Section 18.1			x
FERC Plan	II.A.2: Environmental Inspection	Environmental Inspectors shall have peer status with all other activity inspectors.	Most Stringent	NA	Section 18.1			x
FERC Plan	II.A.3: Environmental Inspection	Environmental Inspectors shall have the authority to stop activities that violate the environmental conditions of the FERC's Orders, stipulations of other environmental permits or approvals, or landowner easement agreements; and to order appropriate corrective action.	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.1: Responsibilities of Environmental Inspectors	Inspecting construction activities for compliance with the requirements of this Plan, the Procedures, the environmental conditions of the FERC's Orders, the mitigation measures proposed by the project sponsor (as approved and/or modified by the Order), other environmental permits and approvals, and environmental requirements in landowner easement agreements.	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.2: Responsibilities of Environmental Inspectors	Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.3: Responsibilities of Environmental Inspectors	Verifying that the limits of authorized construction work areas and locations of access roads are visibly marked before clearing, and maintained throughout construction;	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.4: Responsibilities of Environmental Inspectors	Verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area;	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.5: Responsibilities of Environmental Inspectors	Identifying erosion/sediment control and soil stabilization needs in all areas	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.6: Responsibilities of Environmental Inspectors	Ensuring that the design of slope breakers will not cause erosion or direct water into sensitive environmental resource areas, including cultural resource sites, wetlands, waterbodies, and sensitive species habitats;	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.7: Responsibilities of Environmental Inspectors	Verifying that dewatering activities are properly monitored and do not result in the deposition of sand, silt, and/or sediment into sensitive environmental resource areas, including wetlands, waterbodies, cultural resource sites, and sensitive species habitats; stopping dewatering activities if such deposition is occurring and ensuring the design of the discharge is changed to prevent reoccurrence; and verifying that dewatering structures are removed after completion of dewatering activities;	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.8: Responsibilities of Environmental Inspectors	Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and determine the need for corrective action	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.9: Responsibilities of Environmental Inspectors	Advising the Chief Construction Inspector when environmental conditions (such as wet weather or frozen soils) make it advisable to restrict or delay construction activities to avoid topsoil mixing or excessive compaction;	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.10: Responsibilities of Environmental Inspectors	Ensuring restoration of contours and topsoil;	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.11: Responsibilities of Environmental Inspectors	Verifying that the soils imported for agricultural or residential use are certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner;	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.12: Responsibilities of Environmental Inspectors	Ensuring that erosion control devices are properly installed to prevent sediment flow into sensitive environmental resource areas (e.g., wetlands, waterbodies, cultural resource sites, and sensitive species habitats) and onto roads, and determining the need for additional erosion control devices;	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.13: Responsibilities of Environmental Inspectors	Inspecting and ensuring the maintenance of temporary erosion control measures at least: a. on a daily basis in areas of active construction or equipment operation; b. on a weekly basis in areas with no construction or equipment operation; and c. within 24 hours of each 0.5 inch of rainfall;	Most Stringent	NA	Section 18.1			x

Regulation Document	Regulation	Description	More Stringent Regulation	More Stringent Reason	Reference in Plan	Where Regulation Applies		
						Steep Slopes	National Forest	Non-specific Area
FERC Plan	II.B.14: Responsibilities of Environmental Inspectors	Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification, or as soon as conditions allow if compliance with this time frame would result in greater environmental impacts;	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.15: Responsibilities of Environmental Inspectors	Keeping records of compliance with the environmental conditions of the FERC's Orders, and the mitigation measures proposed by the project sponsor in the application submitted to the FERC, and other federal or state environmental permits during active construction and restoration;	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.16: Responsibilities of Environmental Inspectors	Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase; and	Most Stringent	NA	Section 18.1			x
FERC Plan	II.B.17: Responsibilities of Environmental Inspectors	Verifying that locations for any disposal of excess construction materials for beneficial reuse comply with section III.E.	Most Stringent	NA	Section 18.1			x
FERC Plan	III.A.1: Construction Work Areas	Identify all construction work areas (e.g., construction right-of-way, extra work space areas, pipe storage and contractor yards, borrow and disposal areas, access roads) that would be needed for safe construction. The project sponsor must ensure that appropriate cultural resources and biological surveys are conducted, as determined necessary by the appropriate federal and state agencies.	Most Stringent	NA	Sections 9.4.1, 9.4.2, 9.6, 11.0, & 18.1 Construction Alignment Sheets			x
FERC Plan	III.A.2: Construction Work Areas	Project sponsors are encouraged to consider expanding any required cultural resources and endangered species surveys in anticipation of the need for activities outside of authorized work areas.	Most Stringent	NA	Sections 9.4.1, 9.4.2, 9.6, 11.0, & 18.1 Construction Alignment Sheets			x
FERC Plan	III.A.3: Construction Work Areas	Plan construction sequencing to limit the amount and duration of open trench sections, as necessary, to prevent excessive erosion or sediment flow into sensitive environmental resource areas.	Most Stringent	NA	Section 13.2 Construction Alignment Sheets			x
FERC Plan	III.B.1: Drain Tile and Irrigation Systems	Attempt to locate existing drain tiles and irrigation systems.	Most Stringent	NA	Sections 9.4.10, 13.1.1, 13.1.4, 18.1 Construction Alignment Sheets			x
FERC Plan	III.B.2: Drain Tile and Irrigation Systems	Contact landowners and local soil conservation authorities to determine the locations of future drain tiles that are likely to be installed within 3 years of the authorized construction.	Most Stringent	NA	Section 9.4.10 Construction Alignment Sheets			x
FERC Plan	III.B.3: Drain Tile and Irrigation Systems	Develop procedures for constructing through drain-tiled areas, maintaining irrigation systems during construction, and repairing drain tiles and irrigation systems after construction.	Most Stringent	NA	Section 9.4.10 Construction Alignment Sheets			x
FERC Plan	III.B.4: Drain Tile and Irrigation Systems	Engage qualified drain tile specialists, as needed to conduct or monitor repairs to drain tile systems affected by construction. Use drain tile specialists from the project area, if available.	Most Stringent	NA	Section 9.4.10 Construction Alignment Sheets			x
FERC Plan	III.C: Grazing Deferment	Develop grazing deferment plans with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.	Most Stringent	NA	Section 9.4.10			x
FERC Plan	III.D: Road Crossings and Access Points	Plan for safe and accessible conditions at all roadway crossings and access points during construction and restoration.	FERC Plan IV.E	Additional specific requirements in FERC Plan IV.E	Section 9.6			x
FERC Plan	III.E: Disposal Planning	Determine methods and locations for the regular collection, containment, and disposal of excess construction materials and debris (e.g., timber, slash, mats, garbage, drill cuttings and fluids, excess rock) throughout the construction process. Disposal of materials for beneficial reuse must not result in adverse environmental impact and is subject to compliance with all applicable survey, landowner or land management agency approval, and permit requirements.	GP G.4.e.2.C.i	Must dispose waste in accordance with W. VA Code and the Solid Waste Management Rule	Section 18.4.1			x
FERC Plan	III.F.1: Agency Coordination	Obtain written recommendations from the local soil conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.	Most Stringent	NA	Section 9.4.10 Appendix P Restoration and Rehabilitation Plan			x
FERC Plan	III.F.2: Agency Coordination	Develop specific procedures in coordination with the appropriate agencies to prevent the introduction or spread of invasive species, noxious weeds, and soil pests resulting from construction and restoration activities.	Most Stringent	NA	Sections 13.3.2, 15.1, & 18.1 Appendix P Restoration and Rehabilitation Plan			x
FERC Plan	III.F.3: Agency Coordination	Develop specific procedures in coordination with the appropriate agencies and landowners, as necessary, to allow for livestock and wildlife movement and protection during construction.	Most Stringent	NA	Sections 9.4.10 & 13.1			x

Regulation Document	Regulation	Description	More Stringent Regulation	More Stringent Reason	Reference in Plan	Where Regulation Applies		
						Steep Slopes	National Forest	Non-specific Area
FERC Plan	III.F.4: Agency Coordination	Develop specific blasting procedures in coordination with the appropriate agencies that address pre- and post-blast inspections; advanced public notification; and mitigation measures for building foundations, groundwater wells, and springs. Use appropriate methods (e.g., blasting mats) to prevent damage to nearby structures and to prevent debris from entering sensitive environmental resource areas.	Most Stringent	NA	Section 15.11 Appendix S - Blasting Plan			x
FERC Plan	III.G: Spill Prevention and Response Procedures	The project sponsor shall develop project-specific Spill Prevention and Response Procedures, as specified in section IV of the staff's Procedures. A copy must be filed with the Secretary of the FERC (Secretary) prior to construction and made available in the field on each construction spread. The filing requirement does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.	FERC Plan IV:A.2	More specific material handling procedures and requirement to also include a GPP	Section 19.0			x
FERC Plan	III.H: Residential Construction	For all properties with residences located within 50 feet of construction work areas, project sponsors shall: avoid removal of mature trees and landscaping within the construction work area unless necessary for safe operation of construction equipment, or as specified in landowner agreements; fence the edge of the construction work area for a distance of 100 feet on either side of the residence; and restore all lawn areas and landscaping immediately following clean up operations, or as specified in landowner agreements. If seasonal or other weather conditions prevent compliance with these time frames, maintain and monitor temporary erosion controls (sediment barriers and mulch) until conditions allow completion of restoration.	Most Stringent	NA	Section 9.4.8			x
FERC Plan	III.I: Winter Construction Plans	If construction is planned to occur during winter weather conditions, project sponsors shall develop and file a project-specific winter construction plan with the FERC application. This filing requirement does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations. The plan shall address: 1. winter construction procedures (e.g., snow handling and removal, access road construction and maintenance, soil handling under saturated or frozen conditions, topsoil stripping); 2. stabilization and monitoring procedures if ground conditions will delay restoration until the following spring (e.g., mulching and erosion controls, inspection and reporting, stormwater control during spring thaw conditions); and 3. final restoration procedures (e.g., subsidence and compaction repair, topsoil replacement, seeding).	Most Stringent	NA	Section 9.4.9			x
FERC Plan	IV.A.1: Approved Areas of Disturbance	Project-related ground disturbance shall be limited to the construction right-of-way, extra work space areas, pipe storage yards, borrow and disposal areas, access roads, and other areas approved in the FERC's Orders. Any project-related ground disturbing activities outside these areas will require prior Director approval. This requirement does not apply to activities needed to comply with the Plan and Procedures (i.e., slope breakers, energy-dissipating devices, dewatering structures, drain tile system repairs) or minor field realignments and workspace shifts per landowner needs and requirements that do not affect other landowners or sensitive environmental resource areas. All construction or restoration activities outside of authorized areas are subject to all applicable survey and permit requirements, and landowner easement agreements.	Most Stringent	NA	Sections 11.0 & 13.0			x
FERC Plan	IV.A.2: Approved Areas of Disturbance	The construction right-of-way width for a project shall not exceed 75 feet or that described in the FERC application unless otherwise modified by a FERC Order. However, in limited, non-wetland areas, this construction right-of-way width may be expanded by up to 25 feet without Director approval to accommodate full construction right-of-way topsoil segregation and to ensure safe construction where topographic conditions (e.g., side-slopes) or soil limitations require it. Twenty-five feet of extra construction right-of-way width may also be used in limited, non-wetland or non-forested areas for truck turn-arounds where no reasonable alternative access exists. Project use of these additional limited areas is subject to landowner or land management agency approval and compliance with all applicable survey and permit requirements. When additional areas are used, each one shall be identified and the need explained in the weekly or biweekly construction reports to the FERC, if required. The following material shall be included in the reports: a. the location of each additional area by station number and reference to previously filed alignment sheets, or updated alignment sheets showing the additional areas; b. identification of the filing at FERC containing evidence that the additional areas were previously surveyed; and c. a statement that landowner approval has been obtained and is available in project files.	Most Stringent	NA	Section 11.0 Construction Alignment Sheets			x
FERC Plan	IV.B.1: Topsoil Segregation	Unless the landowner or land management agency specifically approves otherwise, prevent the mixing of topsoil with subsoil by stripping topsoil from either the full work area or from the trench and subsoil storage area (ditch plus spoil side method) in: a. cultivated or rotated croplands, and managed pastures; b. residential areas; c. hayfields; and d. other areas at the landowner's or land managing agency's request.	Most Stringent	NA	Section 13.3.3			x
FERC Plan	IV.B.2: Topsoil Segregation	In residential areas, importation of topsoil is an acceptable alternative to topsoil segregation.	Most Stringent	NA	Section 13.3.3			x
FERC Plan	IV.B.3: Topsoil Segregation	Where topsoil segregation is required, the project sponsor must: a. segregate at least 12 inches of topsoil in deep soils (more than 12 inches of topsoil); and b. make every effort to segregate the entire topsoil layer in soils with less than 12 inches of topsoil.	Most Stringent	NA	Section 13.3.3			x
FERC Plan	IV.B.4: Topsoil Segregation	Maintain separation of salvaged topsoil and subsoil throughout all construction activities.	Most Stringent	NA	Section 13.3.3			x
FERC Plan	IV.B.5: Topsoil Segregation	Segregated topsoil may not be used for padding the pipe, constructing temporary slope breakers or trench plugs, improving or maintaining roads, or as a fill material.	Most Stringent	NA	Section 13.3.3			x
FERC Plan	IV.B.6: Topsoil Segregation	Stabilize topsoil piles and minimize loss due to wind and water erosion with use of sediment barriers, mulch, temporary seeding, tackifiers, or functional equivalents, where necessary.	Most Stringent	NA	Section 13.3.3			x
FERC Plan	IV.C: Drain Tiles	1. Mark locations of drain tiles damaged during construction. 2. Probe all drainage tile systems within the area of disturbance to check for damage. 3. Repair damaged drain tiles to their original or better condition. Do not use filter-covered drain tiles unless the local soil conservation authorities and the landowner agree. Use qualified specialists for testing and repairs. 4. For new pipelines in areas where drain tiles exist or are planned, ensure that the depth of cover over the pipeline is sufficient to avoid interference with drain tile systems. For adjacent pipeline loops in agricultural areas, install the new pipeline with at least the same depth of cover as the existing pipeline(s).	Most Stringent	NA	Sections 9.4.10, 13.1.1, & 13.1.4 Construction Alignment Sheets			x
FERC Plan	IV.D: Irrigation	Maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties.	Most Stringent	NA	Section 9.4.10 Construction Alignment Sheets			x

Regulation Document	Regulation	Description	More Stringent Regulation	More Stringent Reason	Reference in Plan	Where Regulation Applies		
						Steep Slopes	National Forest	Non-specific Area
FERC Plan	IV.E: Road Crossings and Access Points	1. Maintain safe and accessible conditions at all road crossings and access points during construction. 2. If crushed stone access pads are used in residential or agricultural areas, place the stone on synthetic fabric to facilitate removal. 3. Minimize the use of tracked equipment on public roadways. Remove any soil or gravel spilled or tracked onto roadways daily or more frequent as necessary to maintain safe road conditions. Repair any damages to roadway surfaces, shoulders, and bar ditches.	Most Stringent	NA	Section 13.1.2 & 15.2			x
FERC Plan	IV.F: Temporary Erosion Control	Install temporary erosion controls immediately after initial disturbance of the soil. Temporary erosion controls must be properly maintained throughout construction (on a daily basis) and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration is complete.	Most Stringent	N/A	Section 13.4.1			x
FERC Plan	IV.F.1: Temporary Erosion Control	1. Temporary Slope Breakers a. Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way. Temporary slope breakers may be constructed of materials such as soil, silt fence, staked hay or straw bales, or sand bags. b. Install temporary slope breakers on all disturbed areas, as necessary to avoid excessive erosion. Temporary slope breakers must be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbody, wetland, and road crossings at the following spacing (closer spacing shall be used if necessary) Slope (%) Spacing (feet) 5-15 300 >15-30 200 >30 100 c. Direct the outfall of each temporary slope breaker to a stable, well vegetated area or construct an energy-dissipating device at the end of the slope breaker and off the construction right-of-way. d. Position the outfall of each temporary slope breaker to prevent sediment discharge into wetlands, waterbodies, or other sensitive environmental resource areas.	WV BMP 3.18 Right-of-Way Diversion	WV BMP Manual used for temporary and permanent slope breaker Slope (%) Spacing (feet) < 5 300 10 175 15 125 20 100 >25 75	Section 13.4.1.4			x
FERC Plan	IV.F.2: Temporary Erosion Control	Temporary Trench Plugs: Temporary trench plugs are intended to segment a continuous open trench prior to backfill. a. Temporary trench plugs may consist of unexcavated portions of the trench, compacted subsoil, sandbags, or some functional equivalent. b. Position temporary trench plugs, as necessary, to reduce trenchline erosion and minimize the volume and velocity of trench water flow at the base of slopes.	Most Stringent	N/A	Section 13.4.2.1			x
FERC Plan	IV.F.3: Temporary Erosion Control	Sediment Barriers: Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments beyond approved workspaces or into sensitive resources. a. Sediment barriers may be constructed of materials such as silt fence, staked hay or straw bales, compacted earth (e.g., driveable berms across travelways), sand bags, or other appropriate materials. b. At a minimum, install and maintain temporary sediment barriers across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody, wetland, or road crossing until revegetation is successful as defined in this Plan. Leave adequate room between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition. c. Where wetlands or waterbodies are adjacent to and downslope of construction work areas, install sediment barriers along the edge of these areas, as necessary to prevent sediment flow into the wetland or waterbody.	Most Stringent	N/A	Section 13.4.1.1			x
FERC Plan	IV.F.4: Temporary Erosion Control	Mulch: a. Apply mulch on all slopes (except in cultivated cropland) concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Spread mulch uniformly over the area to cover at least 75 percent of the ground surface at a rate of 2 tons/acre of straw or its equivalent, unless the local soil conservation authority, landowner, or land managing agency approves otherwise in writing. b. Mulch can consist of weed-free straw or hay, wood fiber hydromulch, erosion control fabric, or some functional equivalent. c. Mulch all disturbed upland areas (except cultivated cropland) before seeding if: (1) final grading and installation of permanent erosion control measures will not be completed in an area within 20 days after the trench in that area is backfilled (10 days in residential areas), as required in section V.A.1; or (2) construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions. d. If mulching before seeding, increase mulch application on all slopes within 100 feet of waterbodies and wetlands to a rate of 3 tons/acre of straw or equivalent. e. If wood chips are used as mulch, do not use more than 1 ton/acre and add the equivalent of 11 lbs/acre available nitrogen (at least 50 percent of which is slow release). f. Ensure that mulch is adequately anchored to minimize loss due to wind and water. g. When anchoring with liquid mulch binders, use rates recommended by the manufacturer. Do not use liquid mulch binders within 100 feet of wetlands or waterbodies, except where the product is certified environmentally non-toxic by the appropriate state or federal agency or independent standards-setting organization. h. Do not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat, unless the product is specifically designed to minimize harm to wildlife. Anchor erosion control fabric with staples or other appropriate devices.	Most Stringent	N/A	Section 13.3.4 Appendix P - Restoration and Rehabilitation Plan			x
FERC Plan	V.A.1: Restoration Cleanup	Commence cleanup operations immediately following backfill operations. Complete final grading, topsoil replacement, and installation of permanent erosion control structures within 20 days after backfilling the trench (10 days in residential areas). If seasonal or other weather conditions prevent compliance with these time frames, maintain temporary erosion controls (i.e., temporary slope breakers, sediment barriers, and mulch) until conditions allow completion of cleanup. If construction or restoration unexpectedly continues into the winter season when conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring, file with the Secretary for the review and written approval of the Director, a winter construction plan (as specified in section III.I). This filing requirement does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.	Most Stringent	N/A	Section 13.2			x
FERC Plan	V.A.2: Restoration Cleanup	A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion control structures are installed as specified in section IV.F. and inspected and maintained as specified in sections II.B.12 through 14. When access is no longer required the travel lane must be removed and the right-of-way restored.	Most Stringent	N/A	Section 13.2			x
FERC Plan	V.A.3: Restoration Cleanup	Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench shall be considered construction debris, unless approved for use as mulch or for some other use on the construction work areas by the landowner or land managing agency.	Most Stringent	N/A	Section 15.11			x
FERC Plan	V.A.4: Restoration Cleanup	Remove excess rock from at least the top 12 inches of soil in all cultivated or rotated cropland, managed pastures, hayfields, and residential areas, as well as other areas at the landowner's request. The size, density, and distribution of rock on the construction work area shall be similar to adjacent areas not disturbed by construction. The landowner or land management agency may approve other provisions in writing.	Most Stringent	N/A	Section 13.2			x

Regulation Document	Regulation	Description	More Stringent Regulation	More Stringent Reason	Reference in Plan	Where Regulation Applies		
						Steep Slopes	National Forest	Non-specific Area
FERC Plan	V.A.5: Restoration Cleanup	Grade the construction right-of-way to restore pre-construction contours and leave the soil in the proper condition for planting.	Most Stringent	N/A	Section 13.2			x
FERC Plan	V.A.6: Restoration Cleanup	Remove construction debris from all construction work areas unless the landowner or land managing agency approves leaving materials onsite for beneficial reuse, stabilization, or habitat restoration.	Most Stringent	N/A	Section 13.2			x
FERC Plan	V.A.7: Restoration Cleanup	Remove temporary sediment barriers when replaced by permanent erosion control measures or when revegetation is successful.	Most Stringent	N/A	Section 13.4.1.1			x
FERC Plan	V.B.1: Permanent Erosion Control Devices	1. Trench Breakers a. Trench breakers are intended to slow the flow of subsurface water along the trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam. Do not use topsoil in trench breakers. b. An engineer or similarly qualified professional shall determine the need for and spacing of trench breakers. Otherwise, trench breakers shall be installed at the same spacing as and upslope of permanent slope breakers. c. In agricultural fields and residential areas where slope breakers are not typically required, install trench breakers at the same spacing as if permanent slope breakers were required. d. At a minimum, install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland. Install trench breakers at wetland boundaries, as specified in the Procedures. Do not install trench breakers within a wetland.	Most Stringent	N/A	Section 13.4.2.1			x
FERC Plan	V.B.2: Permanent Erosion Control Devices	Permanent Slope Breakers a. Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction right-of-way, and prevent sediment deposition into sensitive resources. Permanent slope breakers may be constructed of materials such as soil, stone, or some functional equivalent. b. Construct and maintain permanent slope breakers in all areas, except cultivated areas and lawns, unless requested by the landowner, using spacing recommendations obtained from the local soil conservation authority or land managing agency. In the absence of written recommendations, use the following spacing unless closer spacing is necessary to avoid excessive erosion on the construction right-of-way: Slope (%) Spacing (feet) 5 - 15 300 >15 - 30 200 >30 100 c. Construct slope breakers to divert surface flow to a stable area without causing water to pool or erode behind the breaker. In the absence of a stable area, construct appropriate energy-dissipating devices at the end of the breaker. d. Slope breakers may extend slightly (about 4 feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction right-of-way, they are subject to compliance with all applicable survey requirements.	WV BMP 3.18 Right-of-Way Diversion	WV BMP Manual used for temporary and permanent slope breaker Slope (%) Spacing (feet) < 5 300 10 175 15 125 20 100 >25 75	Sections 13.4.2.3			x
FERC Plan	V.C.1: Soil Compaction Mitigation	Test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Conduct tests on the same soil type under similar moisture conditions in undisturbed areas to approximate preconstruction conditions. Use penetrometers or other appropriate devices to conduct tests.	Most Stringent	N/A	Section 13.4.2.8			x
FERC Plan	V.C.2: Soil Compaction Mitigation	Plow severely compacted agricultural areas with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil. If subsequent construction and cleanup activities result in further compaction, conduct additional tilling.	Most Stringent	N/A	Section 13.4.2.8			x
FERC Plan	V.C.3: Soil Compaction Mitigation	Perform appropriate soil compaction mitigation in severely compacted residential areas.	Most Stringent	N/A	Section 13.4.2.8			x
FERC Plan	V.D.1: Revegetation	General: a. The project sponsor is responsible for ensuring successful revegetation of soils disturbed by project-related activities, except as noted in section V.D.1.b. b. Restore all turf, ornamental shrubs, and specialized landscaping in accordance with the landowner's request, or compensate the landowner. Restoration work must be performed by personnel familiar with local horticultural and turf establishment practices.	Most Stringent	N/A	Section 13.3.6 Appendix P - Restoration and Rehabilitation Plan			x
FERC Plan	V.D.2: Revegetation	Soil Additives: Fertilize and add soil pH modifiers in accordance with written recommendations obtained from the local soil conservation authority, land management agencies, or landowner. Incorporate recommended soil pH modifier and fertilizer into the top 2 inches of soil as soon as practicable after application.	FERC Plan VI.C.	While fertilizing is allowed by V.D.2., section VI.C. prohibits the use of fertilizers in wetlands unless required in writing by a state or federal agency.	Sections 13.3.7 & 13.3.8 Appendix P - Restoration and Rehabilitation Plan			x

Regulation Document	Regulation	Description	More Stringent Regulation	More Stringent Reason	Reference in Plan	Where Regulation Applies		
						Steep Slopes	National Forest	Non-specific Area
FERC Plan	V.D.3: Revegetation	Seeding Requirements: a. Prepare a seedbed in disturbed areas to a depth of 3 to 4 inches using appropriate equipment to provide a firm seedbed. When hydroseeding, scarify the seedbed to facilitate lodging and germination of seed. b. Seed disturbed areas in accordance with written recommendations for seed mixes, rates, and dates obtained from the local soil conservation authority or the request of the landowner or land management agency. Seeding is not required in cultivated croplands unless requested by the landowner. c. Perform seeding of permanent vegetation within the recommended seeding dates. If seeding cannot be done within those dates, use appropriate temporary erosion control measures discussed in section IV.F and perform seeding of permanent vegetation at the beginning of the next recommended seeding season. Dormant seeding or temporary seeding of annual species may also be used, if necessary, to establish cover, as approved by the Environmental Inspector. Lawns may be seeded on a schedule established with the landowner. d. In the absence of written recommendations from the local soil conservation authorities, seed all disturbed soils within 6 working days of final grading, weather and soil conditions permitting, subject to the specifications in section V.D.3.a through V.D.3.c. e. Base seeding rates on Pure Live Seed. Use seed within 12 months of seed testing. f. Treat legume seed with an inoculant specific to the species using the manufacturer's recommended rate of inoculant appropriate for the seeding method (broadcast, drill, or hydro). g. In the absence of written recommendations from the local soil conservation authorities, landowner, or land managing agency to the contrary, a seed drill equipped with a cultipacker is preferred for seed application. Broadcast or hydroseeding can be used in lieu of drilling at double the recommended seeding rates. Where seed is broadcast, firm the seedbed with a cultipacker or roller after seeding. In rocky soils or where site conditions may limit the effectiveness of this equipment, other alternatives may be appropriate (e.g., use of a chain drag) to lightly cover seed after application, as approved by the Environmental Inspector.	Most Stringent	N/A	Section 13.3.5 Appendix P - Restoration and Rehabilitation Plan			x
FERC Plan	VI. Off-Road Vehicle Control	To each owner or manager of forested lands, offer to install and maintain measures to control unauthorized vehicle access to the right-of-way. These measures may include: A. signs; B. fences with locking gates; C. slash and timber barriers, pipe barriers, or a line of boulders across the right-of-way; and D. conifers or other appropriate trees or shrubs across the right-of-way.	Most Stringent	N/A	Section 15.3			x
FERC Plan	VII.A.1: Post-Construction Activities and Reporting	MONITORING AND MAINTENANCE: Conduct follow-up inspections of all disturbed areas, as necessary, to determine the success of revegetation and address landowner concerns. At a minimum, conduct inspections after the first and second growing seasons.	Most Stringent	N/A	Section 18.1 Appendix P - Restoration and Rehabilitation Plan			x
FERC Plan	VII.A.2: Post-Construction Activities and Reporting	Revegetation in non-agricultural areas shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. In agricultural areas, revegetation shall be considered successful when upon visual survey, crop growth and vigor are similar to adjacent undisturbed portions of the same field, unless the easement agreement specifies otherwise. Continue revegetation efforts until revegetation is successful.	GP G.4.e.2.A.i.c for all areas and MNF LRMP SW05 for areas located in the MNF	The GP specifies that at least 70% of the disturbed areas in West Virginia must be germinated adequately within 30 days of seed planting. For disturbed areas in the MNF, 85% of the area must be planted.	Appendix P - Restoration and Rehabilitation Plan		x	
FERC Plan	VII.A.3: Post-Construction Activities and Reporting	Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in agricultural areas until restoration is successful.	Most Stringent	N/A	Section 9.4.10			x
FERC Plan	VII.A.4: Post-Construction Activities and Reporting	Restoration shall be considered successful if the right-of-way surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless otherwise approved by the landowner or land managing agency per section V.A.6), revegetation is successful, and proper drainage has been restored.	Most Stringent	N/A	Section 13.3.8 Appendix P - Restoration and Rehabilitation Plan			x
FERC Plan	VII.A.5: Post-Construction Activities and Reporting	Routine vegetation mowing or clearing over the full width of the permanent right-of-way in uplands shall not be done more frequently than every 3 years. However, to facilitate periodic corrosion/leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In no case shall routine vegetation mowing or clearing occur during the migratory bird nesting season between April 15 and August 1 of any year unless specifically approved in writing by the responsible land management agency or the U.S. Fish and Wildlife Service.	FERC Plan VI.D	Routine mowing and clearing is not allowed over the full width of the permanent ROW in wetlands	Section 14.1.5 Appendix P - Restoration and Rehabilitation Plan			x
FERC Plan	VII.A.6: Post-Construction Activities and Reporting	Efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, shall continue throughout the life of the project. Maintain signs, gates, and permanent access roads as necessary.	Most Stringent	N/A	Section 15.3			x
FERC Plan	VII.B.1: Reporting	1. The project sponsor shall maintain records that identify by milepost: a. method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used; b. acreage treated; c. dates of backfilling and seeding; d. names of landowners requesting special seeding treatment and a description of the follow-up actions; e. the location of any subsurface drainage repairs or improvements made during restoration; and f. any problem areas and how they were addressed.	Most Stringent	N/A	Appendix P - Restoration and Rehabilitation Plan			x
FERC Plan	VII.B.2: Reporting	The project sponsor shall file with the Secretary quarterly activity reports documenting the results of follow-up inspections required by section VII.A.1; any problem areas, including those identified by the landowner; and corrective actions taken for at least 2 years following construction. The requirement to file quarterly activity reports with the Secretary does not apply to projects constructed under the automatic authorization, prior notice, or advanced notice provisions in the FERC's regulations.	Most Stringent	N/A	Appendix P - Restoration and Rehabilitation Plan			x
FERC Wetland and Waterbody Construction and Mitigation Procedures								
FERC Procedures	III.A: Environmental Inspectors	At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required for each construction spread. The number and experience of Environmental Inspectors assigned to each construction spread shall be appropriate for the length of the construction spread and the number/significance of resources affected.	Most Stringent	NA	Section 18.1			x
FERC Procedures	III.B: Environmental Inspectors	The Environmental Inspector's responsibilities are outlined in the Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).	Most Stringent	NA	N/A			x

Regulation Document	Regulation	Description	More Stringent Regulation	More Stringent Reason	Reference in Plan	Where Regulation Applies		
						Steep Slopes	National Forest	Non-specific Area
FERC Procedures	IV:A.1: Preconstruction Planning	The project sponsor shall develop project-specific Spill Prevention and Response Procedures that meet applicable requirements of state and federal agencies. A copy must be filed with the Secretary prior to construction and made available in the field on each construction spread. This filing requirement does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations. It shall be the responsibility of the project sponsor and its contractors to structure their operations in a manner that reduces the risk of spills or the accidental exposure of fuels or hazardous materials to waterbodies or wetlands. The project sponsor and its contractors must, at a minimum, ensure that: a. all employees handling fuels and other hazardous materials are properly trained; b. all equipment is in good operating order and inspected on a regular basis; c. fuel trucks transporting fuel to on-site equipment travel only on approved access roads; d. all equipment is parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland boundary. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill; e. hazardous materials, including chemicals, fuels, and lubricating oils, are not stored within 100 feet of a wetland, waterbody, or designated municipal watershed area, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas; f. concrete coating activities are not performed within 100 feet of a wetland or waterbody boundary, unless the location is an existing industrial site designated for such use. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill; g. pumps operating within 100 feet of a waterbody or wetland boundary utilize appropriate secondary containment systems to prevent spills; and h. bulk storage of hazardous materials, including chemicals, fuels, and lubricating oils have appropriate secondary containment systems to prevent spills.	Most Stringent	NA	Section 19.0			x
FERC Procedures	IV.A.2: Preconstruction Planning	The project sponsor and its contractors must structure their operations in a manner that provides for the prompt and effective cleanup of spills of fuel and other hazardous materials. At a minimum, the project sponsor and its contractors must: a. ensure that each construction crew (including cleanup crews) has on hand sufficient supplies of absorbent and barrier materials to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills and unanticipated discoveries of contamination; b. ensure that each construction crew has on hand sufficient tools and material to stop leaks; c. know the contact names and telephone numbers for all local, state, and federal agencies (including, if necessary, the U. S. Coast Guard and the National Response Center) that must be notified of a spill; and d. follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.	FERC Plan IV:A.1	More specific material handling procedures and requirement to also include a GPP	Section 19.0			x
FERC Procedures	IV.B: Agency Coordination	The project sponsor must coordinate with the appropriate local, state, and federal agencies as outlined in these Procedures and in the FERC's Orders.	Most Stringent	NA	Sections 10.0, 11.0, & 19.0			x
FERC Procedures	V.A: Waterbody Crossings	NOTIFICATION PROCEDURES AND PERMITS: 1. Apply to the U.S. Army Corps of Engineers (COE), or its delegated agency, for the appropriate wetland and waterbody crossing permits. 2. Provide written notification to authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in the waterbody, or as otherwise specified by that authority. 3. Apply for state-issued waterbody crossing permits and obtain individual or generic section 401 water quality certification or waiver. 4. Notify appropriate federal and state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in applicable permits.	Most Stringent	N/A	Section 10.1			x
FERC Procedures	V.B.1:Installation	Time Window for Construction: Unless expressly permitted or further restricted by the appropriate federal or state agency in writing on a site-specific basis, instream work, except that required to install or remove equipment bridges, must occur during the following time windows: a. coldwater fisheries - June 1 through September 30; and b. coolwater and warmwater fisheries - June 1 through November 30.	Most Stringent	NA	Section 14.1.1			x
FERC Procedures	V.B.2:Installation	Extra Work Areas a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. b. The project sponsor shall file with the Secretary for review and written approval by the Director, site-specific justification for each extra work area with a less than 50-foot setback from the water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. The justification must specify the conditions that will not permit a 50-foot setback and measures to ensure the waterbody is adequately protected. c. Limit the size of extra work areas to the minimum needed to construct the waterbody crossing.	Most Stringent	NA	Sections 13.2 & 14.1			x
FERC Procedures	V.B.3:Installation	General Crossing Procedures a. Comply with the COE, or its delegated agency, permit terms and conditions. b. Construct crossings as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit. c. Where pipelines parallel a waterbody, maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way, except where maintaining this offset will result in greater environmental impact. d. Where waterbodies meander or have multiple channels, route the pipeline to minimize the number of waterbody crossings. e. Maintain adequate waterbody flow rates to protect aquatic life, and prevent the interruption of existing downstream uses. f. Waterbody buffers (e.g., extra work area setbacks, refueling restrictions) must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete. g. Crossing of waterbodies when they are dry or frozen and not flowing may proceed using standard upland construction techniques in accordance with the Plan, provided that the Environmental Inspector verifies that water is unlikely to flow between initial disturbance and final stabilization of the feature. In the event of perceptible flow, the project sponsor must comply with all applicable Procedure requirements for "waterbodies" as defined in section I.B.1.	Most Stringent	NA	Sections 13.2, 14.0, 14.1, & 14.3			x
FERC Procedures	V.B.4:Installation	Spoil Pile Placement and Control a. All spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least 10 feet from the water's edge or in additional extra work areas as described in section V.B.2. b. Use sediment barriers to prevent the flow of spoil or silt-laden water into any waterbody.	Most Stringent	NA	Section 14.1			x

Regulation Document	Regulation	Description	More Stringent Regulation	More Stringent Reason	Reference in Plan	Where Regulation Applies		
						Steep Slopes	National Forest	Non-specific Area
FERC Procedures	V.B.5:Installation	Equipment Bridges a. Only clearing equipment and equipment necessary for installation of equipment bridges may cross waterbodies prior to bridge installation. Limit the number of such crossings of each waterbody to one per piece of clearing equipment. b. Construct and maintain equipment bridges to allow unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include: (1) equipment pads and culvert(s); (2) equipment pads or railroad car bridges without culverts; (3) clean rock fill and culvert(s); and (4) flexi-float or portable bridges. Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Do not use soil to construct or stabilize equipment bridges. c. Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place. Align culverts to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts. d. Design and maintain equipment bridges to prevent soil from entering the waterbody. e. Remove temporary equipment bridges as soon as practicable after permanent seeding. f. If there will be more than 1 month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the right-of-way is available, remove temporary equipment bridges as soon as practicable after final cleanup. g. Obtain any necessary approval from the COE, or the appropriate state agency for permanent bridges.	Most Stringent	NA	Section 14.1.2			x
FERC Procedures	V.B.6:Installation	a. Dry-Ditch Crossing Methods a. Unless approved otherwise by the appropriate federal or state agency, install the pipeline using one of the dry-ditch methods outlined below for crossings of waterbodies up to 30 feet wide (at the water's edge at the time of construction) that are state-designated as either coldwater or significant coolwater or warmwater fisheries, or federally-designated as critical habitat. b. Dam and Pump (1) The dam-and-pump method may be used without prior approval for crossings of waterbodies where pumps can adequately transfer streamflow volumes around the work area, and there are no concerns about sensitive species passage. (2) Implementation of the dam-and-pump crossing method must meet the following performance criteria: (i) use sufficient pumps, including on-site backup pumps, to maintain downstream flows; (ii) construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner); (iii) screen pump intakes to minimize entrainment of fish; (iv) prevent streambed scour at pump discharge; and (v) continuously monitor the dam and pumps to ensure proper operation throughout the waterbody crossing. c. Flume Crossing: The flume crossing method requires implementation of the following steps: (1) install flume pipe after blasting (if necessary), but before any trenching; (2) use sand bag or sand bag and plastic sheeting diversion structure or equivalent to develop an effective seal and to divert stream flow through the flume pipe (some modifications to the stream bottom may be required to achieve an effective seal); (3) properly align flume pipe(s) to prevent bank erosion and streambed scour; (4) do not remove flume pipe during trenching, pipelaying, or backfilling activities, or initial streambed restoration efforts; and (5) remove all flume pipes and dams that are not also part of the equipment bridge as soon as final cleanup of the stream bed and bank is complete. d. Horizontal Directional Drill For each waterbody or wetland that would be crossed using the HDD method, file with the Secretary for the review and written approval by the Director, a plan that includes: (1) site-specific construction diagrams that show the location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction; (2) justification that disturbed areas are limited to the minimum needed to construct the crossing; (3) identification of any aboveground disturbance or clearing between the HDD entry and exit workspaces during construction; (4) a description of how an inadvertent release of drilling mud would be contained and cleaned up; and (5) a contingency plan for crossing the waterbody or wetland in the event the HDD is unsuccessful and how the abandoned drill hole would be sealed, if necessary. The requirement to file HDD plans does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.	Most Stringent	NA	Sections 13.1, 14.1.3.3, 14.1.3.4, 14.1.3.5, & 15.4			x
FERC Procedures	V.B.7:Installation	Crossings of Minor Waterbodies Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions: a. except for blasting and other rock breaking measures, complete instream construction activities (including trenching, pipe installation, backfill, and restoration of the streambed contours) within 24 hours. Streambanks and unconsolidated streambeds may require additional restoration after this period; b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and c. equipment bridges are not required at minor waterbodies that do not have a state-designated fishery classification or protected status (e.g., agricultural or intermittent drainage ditches). However, if an equipment bridge is used it must be constructed as described in section V.B.5.	Most Stringent	NA	Sections 13.1 & 14.1.4.1			x
FERC Procedures	V.B.8:Installation	Crossings of Intermediate Waterbodies Where a dry-ditch crossing is not required, intermediate waterbodies may be crossed using the open-cut crossing method, with the following restrictions: a. complete instream construction activities (not including blasting and other rock breaking measures) within 48 hours, unless site-specific conditions make completion within 48 hours infeasible; b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and c. all other construction equipment must cross on an equipment bridge as specified in section V.B.5.	Most Stringent	NA	Sections 13.1 & 14.1.4.2			x
FERC Procedures	V.B.9:Installation	Crossings of Major Waterbodies Before construction, the project sponsor shall file with the Secretary for the review and written approval by the Director a detailed, site-specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each major waterbody crossing (the scaled drawings are not required for any offshore portions of pipeline projects). This plan must be developed in consultation with the appropriate state and federal agencies and shall include extra work areas, spoil storage areas, sediment control structures, etc., as well as mitigation for navigational issues. The requirement to file major waterbody crossing plans does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations. The Environmental Inspector may adjust the final placement of the erosion and sediment control structures in the field to maximize effectiveness.	Most Stringent	NA	Sections 13.1 & 14.1.4.3			x

Regulation Document	Regulation	Description	More Stringent Regulation	More Stringent Reason	Reference in Plan	Where Regulation Applies		
						Steep Slopes	National Forest	Non-specific Area
FERC Procedures	V.B.10:Installation	Temporary Erosion and Sediment Control Install sediment barriers (as defined in section IV.F.3.a of the Plan) immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan; however, the following specific measures must be implemented at stream crossings: a. install sediment barriers across the entire construction right-of-way at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. Removable sediment barriers (or driveable berms) must be installed across the travel lane. These removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent; b. where waterbodies are adjacent to the construction right-of-way and the right-of-way slopes toward the waterbody, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil within the construction right-of-way and prevent sediment flow into the waterbody; and c. use temporary trench plugs at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.	Most Stringent	NA	Sections 13.1, 13.3, & 13.4			x
FERC Procedures	V.B.11:Installation	Trench Dewatering Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in silt-laden water flowing into any waterbody. Remove the dewatering structures as soon as practicable after the completion of dewatering activities.	GP G.4.e.2.A.ii.i	The GP G.4.e.2.A.ii.i has additional requirements for how and where to dewater. The requirement also requires a procedure to be implemented	Sections 13.1 & 13.4.1.5			x
FERC Procedures	V.C: Restoration	1. Use clean gravel or native cobbles for the upper 1 foot of trench backfill in all waterbodies that contain coldwater fisheries. 2. For open-cut crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing instream construction activities. For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel. 3. Return all waterbody banks to preconstruction contours or to a stable angle of repose as approved by the Environmental Inspector. 4. Install erosion control fabric or a functional equivalent on waterbody banks at the time of final bank recontouring. Do not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat unless the product is specifically designed to minimize harm to wildlife. Anchor erosion control fabric with staples or other appropriate devices. 5. Application of riprap for bank stabilization must comply with COE, or its delegated agency, permit terms and conditions. 6. Unless otherwise specified by state permit, limit the use of riprap to areas where flow conditions preclude effective vegetative stabilization techniques such as seeding and erosion control fabric. 7. Revegetate disturbed riparian areas with native species of conservation grasses, legumes, and woody species, similar in density to adjacent undisturbed lands. 8. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent that are less than 50 feet from the waterbody, or as needed to prevent sediment transport into the waterbody. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody. 9. Sections V.C.3 through V.C.7 above also apply to those perennial or intermittent streams not flowing at the time of construction.	Most Stringent	N/A	Sections 13.1, 13.4.2.3, 13.4.2.4, & 13.4.2.6			x
FERC Procedures	V.D: Post-Construction Maintenance	1. Limit routine vegetation mowing or clearing adjacent to waterbodies to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees that are located within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating may be cut and removed from the permanent right-of-way. Do not conduct any routine vegetation mowing or clearing in riparian areas that are between HDD entry and exit points. 2. Do not use herbicides or pesticides in or within 100 feet of a waterbody except as allowed by the appropriate land management or state agency. 3. Time of year restrictions specified in section VII.A.5 of the Plan (April 15 – August 1 of any year) apply to routine mowing and clearing of riparian areas.	Most Stringent	N/A	Section 14.0			x
FERC Procedures	VI.A.1: General	The project sponsor shall conduct a wetland delineation using the current federal methodology and file a wetland delineation report with the Secretary before construction. The requirement to file a wetland delineation report does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations. This report shall identify: a. by milepost all wetlands that would be affected; b. the National Wetlands Inventory (NWI) classification for each wetland; c. the crossing length of each wetland in feet; and d. the area of permanent and temporary disturbance that would occur in each wetland by NWI classification type. The requirements outlined in this section do not apply to wetlands in actively cultivated or rotated cropland. Standard upland protective measures, including workspace and topsoiling requirements, apply to these agricultural wetlands.	Most Stringent	N/A	Sections 9.4.7 & 14.2			x
FERC Procedures	VI.A.2: General	Route the pipeline to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided or crossed by following an existing right-of-way, route the new pipeline in a manner that minimizes disturbance to wetlands. Where looping an existing pipeline, overlap the existing pipeline right-of-way with the new construction right-of-way. In addition, locate the loop line no more than 25 feet away from the existing pipeline unless site-specific constraints would adversely affect the stability of the existing pipeline.	MNF LRMP MG33	Pipelines are not allowed in wetlands in the MNF	Sections 9.4.7 & 14.2		x	
FERC Procedures	VI.A.3: General	Limit the width of the construction right-of-way to 75 feet or less. Prior written approval of the Director is required where topographic conditions or soil limitations require that the construction right-of-way width within the boundaries of a federally delineated wetland be expanded beyond 75 feet. Early in the planning process the project sponsor is encouraged to identify site-specific areas where excessively wide trenches could occur and/or where spoil piles could be difficult to maintain because existing soils lack adequate unconfined compressive strength.	Most Stringent	N/A	Sections 9.4.7 & 14.2			x
FERC Procedures	VI.A.4: General	Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.	Most Stringent	N/A	Sections 9.4.7 & 14.2			x
FERC Procedures	VI.A.5: General	Implement the measures of sections V and VI in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all measures of sections V and VI cannot be met, the project sponsor must file with the Secretary a site-specific crossing plan for review and written approval by the Director before construction. This crossing plan shall address at a minimum: a. spoil control; b. equipment bridges; c. restoration of waterbody banks and wetland hydrology; d. timing of the waterbody crossing; e. method of crossing; and f. size and location of all extra work areas.	Most Stringent	N/A	Sections 9.4.7 & 14.2			x

Regulation Document	Regulation	Description	More Stringent Regulation	More Stringent Reason	Reference in Plan	Where Regulation Applies		
						Steep Slopes	National Forest	Non-specific Area
FERC Procedures	VI.A.6: General	Do not locate aboveground facilities in any wetland, except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations.	Most Stringent	N/A	Sections 9.4.7 & 14.2			x
FERC Procedures	VI.B.1: Installation	Extra Work Areas and Access Roads a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from wetland boundaries, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. b. The project sponsor shall file with the Secretary for review and written approval by the Director, site-specific justification for each extra work area with a less than 50-foot setback from wetland boundaries, except where adjacent upland consists of cultivated or rotated cropland or other disturbed land. The justification must specify the site-specific conditions that will not permit a 50-foot setback and measures to ensure the wetland is adequately protected. c. The construction right-of-way may be used for access when the wetland soil is firm enough to avoid rutting or the construction right-of-way has been appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats). In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing shall use access roads located in upland areas. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way. d. The only access roads, other than the construction right-of-way, that can be used in wetlands are those existing roads that can be used with no modifications or improvements, other than routine repair, and no impact on the wetland.	Most Stringent	N/A	Sections 9.4.7 & 14.2			x
FERC Procedures	VI.B.2: Installation	Crossing Procedures a. Comply with COE, or its delegated agency, permit terms and conditions. b. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe. c. Use "push-pull" or "float" techniques to place the pipe in the trench where water and other site conditions allow. d. Minimize the length of time that topsoil is segregated and the trench is open. Do not trench the wetland until the pipeline is assembled and ready for lowering in. e. Limit construction equipment operating in wetland areas to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way. f. Cut vegetation just above ground level, leaving existing root systems in place, and remove it from the wetland for disposal. The project sponsor can burn woody debris in wetlands, if approved by the COE and in accordance with state and local regulations, ensuring that all remaining woody debris is removed for disposal. g. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the construction right-of-way in wetlands unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require grading or the removal of tree stumps from under the working side of the construction right-of-way. h. Segregate the top 1 foot of topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are saturated. Immediately after backfilling is complete, restore the segregated topsoil to its original location. i. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to support equipment on the construction right-of-way. j. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment, or operate normal equipment on timber riprap, prefabricated equipment mats, or terra mats. k. Remove all project-related material used to support equipment on the construction right-of-way upon completion of construction.	Most Stringent	N/A	Section 14.2			x
FERC Procedures	VI.B.3: Installation	Temporary Sediment Control Install sediment barriers (as defined in section IV.F.3.a of the Plan) immediately after initial disturbance of the wetland or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench). Except as noted below in section VI.B.3.c, maintain sediment barriers until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan. a. Install sediment barriers across the entire construction right-of-way immediately upslope of the wetland boundary at all wetland crossings where necessary to prevent sediment flow into the wetland. b. Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetland, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil within the construction right-of-way and prevent sediment flow into the wetland. c. Install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way through wetlands. Remove these sediment barriers during right-of-way cleanup.	Most Stringent	N/A	Sections 13.1, 13.3, & 13.4, 14.2			x
FERC Procedures	VI.B.4: Installation	Trench Dewatering Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in silt-laden water flowing into any wetland. Remove the dewatering structures as soon as practicable after the completion of dewatering activities.	GP G.4.e.2.A.ii.i	Requirements for how and where to dewater and required to have procedure in place	Sections 13.1 & 13.4.1.5			x
FERC Procedures	VI.C: Restoration	1. Where the pipeline trench may drain a wetland, construct trench breakers at the wetland boundaries and/or seal the trench bottom as necessary to maintain the original wetland hydrology. 2. Restore pre-construction wetland contours to maintain the original wetland hydrology. 3. For each wetland crossed, install a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from the wetland, or as needed to prevent sediment transport into the wetland. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the wetland. 4. Do not use fertilizer, lime, or mulch unless required in writing by the appropriate federal or state agency. 5. Consult with the appropriate federal or state agencies to develop a project-specific wetland restoration plan. The restoration plan shall include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of invasive species and noxious weeds (e.g., purple loosestrife and phragmites), and monitoring the success of the revegetation and weed control efforts. Provide this plan to the FERC staff upon request. 6. Until a project-specific wetland restoration plan is developed and/or implemented, temporarily revegetate the construction right-of-way with annual ryegrass at a rate of 40 pounds/acre (unless standing water is present). 7. Ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species. 8. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after revegetation and stabilization of adjacent upland areas are judged to be successful as specified in section VII.A.4 of the Plan.	Most Stringent	N/A	Sections 13.1 & 13.4.2.1			x

Regulation Document	Regulation	Description	More Stringent Regulation	More Stringent Reason	Reference in Plan	Where Regulation Applies		
						Steep Slopes	National Forest	Non-specific Area
FERC Procedures	VI.D: Post-Construction Maintenance And Reporting	1. Do not conduct routine vegetation mowing or clearing over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees within 15 feet of the pipeline with roots that could compromise the integrity of pipeline coating may be selectively cut and removed from the permanent right-of-way. Do not conduct any routine vegetation mowing or clearing in wetlands that are between HDD entry and exit points. 2. Do not use herbicides or pesticides in or within 100 feet of a wetland, except as allowed by the appropriate federal or state agency. 3. Time of year restrictions specified in section VII.A.5 of the Plan (April 15 – August 1 of any year) apply to routine mowing and clearing of wetland areas. 4. Monitor and record the success of wetland revegetation annually until wetland revegetation is successful. 5. Wetland revegetation shall be considered successful if all of the following criteria are satisfied: a. the affected wetland satisfies the current federal definition for a wetland (i.e., soils, hydrology, and vegetation); b. vegetation is at least 80 percent of either the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent wetland areas that were not disturbed by construction; c. if natural rather than active revegetation was used, the plant species composition is consistent with early successional wetland plant communities in the affected ecoregion; and d. invasive species and noxious weeds are absent, unless they are abundant in adjacent areas that were not disturbed by construction. 6. Within 3 years after construction, file a report with the Secretary identifying the status of the wetland revegetation efforts and documenting success as defined in section VI.D.5, above. The requirement to file wetland restoration reports with the Secretary does not apply to projects constructed under the automatic authorization, prior notice, or advance notice provisions in the FERC's regulations. For any wetland where revegetation is not successful at the end of 3 years after construction, develop and implement (in consultation with a professional wetland ecologist) a remedial revegetation plan to actively revegetate wetlands. Continue revegetation efforts and file a report annually documenting progress in these wetlands until wetland revegetation is successful.	Most Stringent	N/A	Sections 13.3.8, 14.1.6, & 14.2 Appendix P - Restoration and Rehabilitation Plan			x
FERC Procedures	VII.A: Notification Procedures and Permits	1. Apply for state-issued water withdrawal permits, as required. 2. Apply for National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required. 3. Notify appropriate state agencies of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.	Most Stringent	N/A	NA Separate NPDES Permit not included in SWPPP			x
FERC Procedures	VII.B: General	1. Perform 100 percent radiographic inspection of all pipeline section welds or hydrotest the pipeline sections, before installation under waterbodies or wetlands. 2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetland, address secondary containment and refueling of these pumps in the project's Spill Prevention and Response Procedures. 3. The project sponsor shall file with the Secretary before construction a list identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location. This filing requirement does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.	Most Stringent	N/A	NA Separate NPDES Permit not included in SWPPP			x
FERC Procedures	VII.C: Intake Source and Rate	1. Screen the intake hose to minimize the potential for entrainment of fish. 2. Do not use state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate federal, state, and/or local permitting agencies grant written permission. 3. Maintain adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users. 4. Locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable.	Most Stringent	N/A	NA Separate NPDES Permit not included in SWPPP			x
FERC Procedures	VII.D: Discharge Location, Method, and Rate	1. Regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow. 2. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate federal, state, and local permitting agencies grant written permission.	Most Stringent	N/A	NA Separate NPDES Permit not included in SWPPP			x

APPENDIX C

Groundwater Protection Plan (GPP)

GROUNDWATER PROTECTION PLAN FOR CONSTRUCTION SITES

PROJECT/SITE INFORMATION
Project/Site Name: Atlantic Coast Pipeline Project
County (s): Harrison, Lewis, Upshur, Randolph, and Pocahontas Counties

*For additional information refer to the Project Description Section of the Stormwater Pollution Prevention Plan.

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personal properly gather and evaluate the information submitted. Based on my inquire of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature

3/2/17
Date

Leslie Hartz
Printed Name

Vice President, Pipeline Construction
Title

If authorization is no longer accurate because of a different individual or position has responsibility for the overall operation of the project, a new authorization must be submitted to the Director prior to, or together with any reports, information, or applications to be signed by an authorized representative.

47 CSR 58.4.11.a

INVENTORY WORKSHEET FOR POTENTIAL CONTAMINANTS	
Potential Contaminant	**Potential to Contaminate Soil or Ground Water**
Loading/Unloading Operations	Truck loading and unloading operations involve bulk liquid transfer to and from above ground storage tanks. There is a risk potential for release of fluids kept in bulk storage areas during unloading and loading activities. Liquid product delivery and waste pickups also include 55-gallon drums and smaller containers.
Aboveground Storage Tanks	Fuel tanks will be stored at the equipment staging areas. There is a risk of release of regulated liquids to the ground at above ground storage tank location due to overfilling tanks, improper hose connections and tank failure due to tank deterioration or overpressure.
Portable Containers	Equipment in the field will be fueled from tanks carried to the work area. Used oil and other materials used for vehicle maintenance are produced during construction activities. There is a risk of release of liquids to the ground at the transfer location areas due to overfilling drums, containers or equipment, improper hose connections, handling incidents and container or drum failure due to deterioration. Small quantities of liquid fuel, solvents, and lubricants (i.e. motor oils, hydraulic fluids, paints, coatings and primers) may be stored at staging areas and in the field. From time to time, materials are stored at various other locations to facilitate construction activities and there may also be minor qualities of other liquid waste and materials stored onsite pending off-site management. Portable tanks are occasionally used at construction location to collect fluids generated by construction activities.
Pipeline Fluids	The presence of pipeline fluids during pipeline abandonment and removal may result in the release of pipeline fluid during removal of the pipe. Leakage of liquid from pipelines during the initial cutting activity process poses a potential for release. No pipeline fluids will be present during the construction phase of the Project.
Concrete Coating	Concrete coating activities are required on some construction projects and involved the use on concrete materials to coat pipeline for weighted stream crossings. There is a potential risk for release of concrete or concrete wash water during coating activities.
Equipment Washing	Construction equipment washing operations are utilized during construction project to minimize the transfer of materials from separate field locations and roadways. There is potential for the release of wash water during washing operations.

INVENTORY WORKSHEET FOR POTENTIAL CONTAMINANTS

Potential Contaminant	Potential to Contaminate Soil or Ground Water
Horizontal Direction Drilling Fluids	Horizontal directional drilling (HDD) is utilized to install pipeline crossings on construction projects as a trenchless method to install pipelines with minimal disturbance to the surface or stream and wetlands. There is a risk associated with drilling fluids (also referred to as drilling mud) inadvertently escaping to the ground surface known as a "frac out". The drilling mud consists of water and a viscosifier, naturally occurring bentonite clay (sodium montmorillonite), a non-hazardous waste as defined by the USEPA. Drilling fluids are stored in steel tanks and processed through a solids control system. HDD is not an anticipated waterbody crossing method in the ACP West Virginia section; however, there is a proposed HDD under the I-79 interstate in upland areas in Harrison County, West Virginia.
Waste Storage Areas	Areas used for storage or disposal of raw materials, products, or wastes may have the ability to release contaminants into the groundwater. An example of this would be storage piles of excavated soil material that are contaminated with natural gas liquids. This material is a waste that poses potential for contaminating groundwater.
Construction Equipment	Construction equipment often contain potential sources of contamination such as petroleum fuel, oil, and hydraulic fluid. The operation of this equipment may result in the failure of parts or systems that could result in the release of contaminants.

Storage locations and quantities of the potential contaminants will vary due to the nature of the work at the construction site.

47 CSR 58.4.11.b

PROCEDURES DESIGNED TO PROTECT GROUND WATER AT CONSTRUCTION SITES	
Potential Contaminant	**Procedures to Prevent Contamination of Ground Water**
Loading/Unloading Operations	All truck loading/unloading operations are to be continually manned until the operation is complete. The drivers of trucks that haul into or out of each facility are required to have the proper training and must be Department of Transportation (DOT) licensed. These drivers follow proper loading and unloading procedures to assist in the prevention of spills. The drivers of tank trucks will be responsible for spill prevention and the provision of secondary containment during tank truck unloading. Procedures for loading and unloading tank trucks will meet the minimum requirements established by applicable law and associated regulations. Drivers will observe and control the fueling operations at all times to prevent overfilling. Contractors will be responsible for training drivers of tank trucks to comply with these provisions. Additionally, all major truck loading/unloading operations are equipped with secondary containment systems further reducing the risk of release. Lastly, facilities with loading/unloading operations either have spill-response equipment on site, on the vehicles or at nearby warehouse facilities. Operations will utilize the equipment and their contingency procedures, allowing rapid response to any release. Prior to departure of a tank truck, all outlets of the vehicle will be closely examined by the driver for leakage and tightened, adjusted, or replaced, as necessary, to prevent liquid leakage while in transit. Contractors will be responsible for training drivers of tank trucks to comply with these provisions. For general spill cleanup, a spill kit is located on each piece of equipment and additional absorbent material on site. This spill kit contains adsorbent material, pads, and tools for the cleanup of spills. Dominion Transmission, Inc. (DTI) maintains contracts with several emergency spill response companies in the event of a large spill including Ryan Environmental Services and Weavertown Environmental Group.
Aboveground Storage Tanks	Releases from tanks would most likely be due to overfilling. All tanks that are manually filled are checked as to available capacity through the use of a tank gauge or sticking. Releases from tanks may also take place as the result of accidental or unauthorized opening of a drain valve. To release such events, only authorized personnel are allowed access to the storage tanks and drain valves are kept capped and secured (e.g. locked) except when in use. Some project locations are fenced and may have security lighting to prevent access to equipment or have security onsite during off hours. Lastly, releases from tanks could also take place due to failure of the tank itself due to corrosion. All tanks covered by this Plan undergo routine visual inspections. Should any aspect of this inspection indicate a potential problem, a

PROCEDURES DESIGNED TO PROTECT GROUND WATER AT CONSTRUCTION SITES

Potential Contaminant	Procedures to Prevent Contamination of Ground Water
	licensed Professional Engineer (PE) or by an individual certified to perform tank inspections by the American Petroleum Institute or the Steel Tank Institute will inspect the tank and determine if a formal tank integrity test is required for the tank. All tanks are visually inspected briefly during walk-around reviews of the construction site and whenever containers are refilled. In addition, the tanks are examined more closely at least quarterly. If conditions are observed that require further inspections and/or testing of any of the tanks, GES will be contacted and the appropriate personnel will respond to the issue and/or observed condition. Contractors will construct secondary containment structures (e.g., temporary liners and seamless impermeable berms) around aboveground, single wall, storage containers so that liquids will be contained and collected in specified areas isolated from waterbodies in the event of a leak or spill. Double wall containers will not require secondary containment. Storage containers will not be placed in areas subject to periodic flooding and washout.
Portable Containers	Hazardous materials, including chemicals, fuels, and lubricating oils, will be stored only at designated staging areas and in appropriate service vehicles. The storage areas will be located at least 100 feet away from wetlands, waterbodies, and springs; at least 200 feet away from private water supply wells; at least 300 feet away from karst features; and at least 400 feet away from municipal water supply wells unless a larger buffer is required by regulatory agencies. All motor fuel, lube oil, chemicals, and other polluting substances will be tightly sealed and clearly labeled during transportation and storage. Secondary containment will be provided for all storage areas for fuel, solvents, and lubricants. Spill kits containing absorbent materials approved for petroleum products will be kept at all storage areas. A Safety Data Sheet (SDS) for each hazardous material will be available on site. Onsite personnel would respond immediately using absorbent materials to any spill. Some released material may enter the underlying soil and be addressed by a remediation contractor.
Pipeline Fluids	No pipeline fluids will be present during the construction phase of the Project.
Concrete Coating	Concrete coating activities will be limited to pipeyard areas and right-of-way upland areas at least 100 feet away from waterbodies, wetlands, and springs. Cleanup materials will be readily available and quick response can be made in the event of a spill to the ground. Semi-solid concrete will be removed from the ground and properly disposed of. Concrete wash water will be contained in secondary containment structures. Concrete coating activities and washout activities will not be performed within 100 feet of wetlands, waterbodies, or springs, or within 300 feet of karst features unless the location is an existing industrial site designated for such use..

PROCEDURES DESIGNED TO PROTECT GROUND WATER AT CONSTRUCTION SITES

Potential Contaminant	Procedures to Prevent Contamination of Ground Water
Equipment Washing	Equipment will not be washed in any waterbody or wetland, nor will runoff resulting from washing operations be permitted to directly enter any waterbody or wetland. Erosion and sediment controls will be implemented, as appropriate, to prevent runoff resulting from construction equipment washing operations (if applicable) to directly enter a karst feature by locating these operations outside of karst buffer areas.
Horizontal Direction Drilling Fluids	Horizontal directional drilling (HDD) is utilized to install pipeline crossings on construction projects as a trenchless method to install pipelines with minimal disturbance to the surface or stream and wetlands. There is a risk associated with drilling fluids (also referred to as drilling mud) inadvertently escaping to the ground surface known as a “frac out”. The drilling mud consists of water and a viscosifier, naturally occurring bentonite clay (sodium montmorillonite), a non-hazardous waste as defined by the USEPA. Drilling fluids are stored in steel tanks and processed through a solids control system.
Waste Storage Areas	New areas used for storage or disposal of raw materials, products or wastes shall be designed, constructed, and operated to prevent release of contaminants to the groundwater, using liner systems if necessary.
Construction Equipment	All construction equipment vehicles are visually inspected briefly prior to equipment start-up and prior to entering a waterbody buffer area or crossing any waterbody or equipment bridge. Steps will be taken to repair leaks or remove the equipment from service, when necessary. Contractors will conduct routine equipment maintenance, such as oil changes, in staging areas and will dispose of waste oil in an appropriate manner (e.g., the Contractors will collect the waste oil in labeled, sealed containers and transport the waste oil to a recycling facility). Overnight parking of equipment, as well as refueling and servicing of construction equipment, will be restricted to upland areas at least 100 feet away from waterbodies, wetlands, and springs; at least 200 feet from private water-supply wells; at least 300 feet from karst features; and at least 400 feet from municipal water-supply wells. Where this is not practicable, and where the EI finds in advance no reasonable alternative, the equipment will be fueled by designated personnel with specific training in refueling, spill containment, and cleanup, under the supervision of an EI. Prior to refueling, appropriate steps will be taken (including deployment of secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill.

*To minimize the risk of potential release, storage of fertilizers, batteries, part cleaners or other short term use materials and products will be stored at off site location until required on the construction site. Large quantities of short term use materials will not be stored on-site.

47 CSR 58.4.11.c

DESIGN PROCEDURES FOR NEW EQUIPMENT/OPERATION	
Equipment/Operation	**Design Practice**
Tank Compatibility	All aboveground storage tanks will be compatible with the products stored by the tanks they protect. The auxiliary tanks will be placed within secondary containment which provides for a containment volume equal to a minimum of 110 percent of the volume of the auxiliary tanks.
Tank Secondary Containment	Tank drain valves on each of the tanks are kept secure when not in use to prevent any unauthorized personnel from operating the valves. None of the secondary containment units are drained directly into a storm drain or open watercourse. Before any accumulated precipitation is drained, the water is visually examined to confirm that a sheen, floating layer, or other visible contamination is not present. Qualified personnel will perform all dike draining activities. A dike-draining record form is used to record all containment unit-draining events.
Tank Fail-Safe	Most tanks are manually filled under constant supervision and are equipped with either a sight glass or fast response gauge to protect against spills due to overfilling. Tanks that are manually filled and not equipped with such devices are gauged using a stick to determine capacity prior to filling.

*Any planned installation of new equipment or changes in procedures will be reviewed as to potential impact on groundwater prior to installation/implementation. Upon completion of this review and assessment of risks, all appropriate measures will be taken to minimize the risk of release from such installations/operations changes.

47 CSR 58.4.11.d

OTHER REGULARTORY PROGRAMS RELEVANT TO GROUND WATER PROTECTION	
Permit Number/Rule Citation	**Permit/Plan**
Spill Prevention Control and Countermeasures – 40CFR112	The objective of spill prevention and control planning is to prevent or minimize the risk of release of oil and oil products and possible exposure of personnel and contamination of the environment. DTI and the Contractor will implement an SPCC plan for each construction site that requires one in accordance with 40 CFR 112. The SPCC Plan incorporates an inventory of potential discharge sites for petroleum products and hazardous materials, and a strategy to contain and remedy such discharges if they occur. The SPCC Plan, if required, will be maintained on site.
National Pollutant Discharge Elimination System (NPDES)	The Project will complete a SWPPP and a project control to comply with general requirements of the West Virginia General Construction Stormwater Associated with Oil and Gas Related Construction Activities, permit no. WV0116815, issued by the West Virginia Department of Environmental Protection (WVDEP) Division of Water and Waste Management (DWWM) as part of the NPDES permit program.
Transportation of Natural and Other Gas by Pipeline – 40CFR192	These regulations require that each operator of a pipeline facility comply with at least the minimum safety standards and specifications to ensure public safety. DTI ensures that all facilities and equipment including pipe, valves, pressure vessels, and other pressure containing equipment are designed, operated, and maintained to prevent leaks and failures according to these regulations. DTI also conforms to the employee training and certification requirements covered under these regulations.
Resource Conservation and Recovery Act – 40CFR262	Any generator who treats, stores, or disposes of hazardous wastes on-site must comply with regulations developed under RCRA. The majority of DTI's construction projects are not subject to these regulations as a generator of hazardous waste. Where applicable, DTI complies with generator requirements through proper accumulation, labeling, and tracking of hazardous waste shipments. It also insures that transportation, treatment, storage, and disposal of their hazardous waste are conducted only by companies with EPA identification numbers and authority to manage the waste.
Comprehensive Environmental Response, Compensation and Liability Act	CERCLA regulations provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health of the environment. The law authorizes two kinds of response actions: • Short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response. • Long-term remedial response actions, that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately

	life threatening. DTI's monitoring program, structural controls, and management practices minimize potential releases of hazardous substances.
Standard for Universal Waste Management – 40CFR273	These regulations govern the handling and disposal of universal wastes that include fluorescent light tubes, sodium vapor lamps, batteries, pesticides, and thermostats. Wastes under this category are managed separately from other wastes generated at the sites. DTI complies with this regulation through implementation of a universal waste management program to ensure proper handling and disposal of wastes identified under this regulation.
Standard for the Management of Used Oil – 40CFR279	These regulations govern the handling, storage, and disposal of used oil. Generators of used oil are subject to handling and storage requirements that include proper storage containers, maintaining tanks in good condition, proper labeling of tanks and fill pipes, and periodic inspections. Generators of used oil must also verify that transporters of off-site shipments of used oil have obtained EPA ID numbers. DTI facilities that generate or otherwise handle used oil are subject to these requirements.
West Virginia Code 22-30 – The Above Storage Tank Act	The West Virginia AST Act requires that all ASTs be registered and identified on a tier based system. The Act requires submittal of spill response plans and tank inspection and monitoring programs. The ACT includes design, construction, and maintenance criterion as well as registration, signage, leak detection, overflow/spill monitoring and response, secondary containment, public notification requirements included by the Above Storage Tank Act. The Project facilities will register all applicable AST tanks with the West Virginia Department of Environmental Protection and meet all design, monitoring, inspection, and notification requirements as well as any other requirement outlined in the Act.

47 CSR 58.4.11.e

INFORMATION REASONABLY AVAILABLE REGARDING EXISTING GROUNDWATER QUALITY	
Topic	**Information or Location**
Closest surface water body	Multiple streams present in work area
Distance to closest surface water body	Multiple stream crossings
Depth to groundwater	Surface to greater than 80 inches
Known groundwater monitoring wells within 2000 feet	None known
Known public or private drinking water wells within 150 feet	Within workspace; Milepost (MP) 2.2, 9.4, and 39.5
Closest Well Head Protection Area	• Elk Springs Resort Well – Crossed by access road at MP 60.1 for 0.1 mile • Pocahontas County High School Well – Crossed by access road at MP 78.1 for 0.4 mile • Seneca State Forest Picnic Shelter Well – Crossed by access road at MP 78.1 for 0.4 mile
Closest Source Water Protection Area	• Buckhannon Water Board at MP 28.3; • West Virginia-American Water Webster Springs at MP 60.6 • Huttonsville Medium Security Prison at MP 65.2
Soil Type	See Section 9.2.2 in SWPPP
Type of underlying geologic formations	Sedimentary, sandstone, shale, limestone, and carbonate
Septic tank percolation tests by county health dept.	None known
Sampling results from monitoring wells, drinking wells, springs, or seeps	None known
Prior spills, remediation efforts, and known Contamination	No contaminated sites, landfills, and leaking underground storage tanks (LUSTs) were identified within one mile of the Project.

47 CSR 58.4.11.f

No wastes will be used for deicing, ice control, structural fills, road based, or other uses unless provided for in existing regulations.

47 CSR 58.4.11.g

All employees will be trained on their responsibility to ensure groundwater protection. Current job procedures provide direction on how to prevent groundwater contamination through proper work practices.

Personnel, who handle, sample or come in direct contact with oils or materials that have the potential to contaminate groundwater, undergo basic training where pollution prevention is stressed. Release prevention procedures and control equipment maintenance are thoroughly explained during either annual training sessions or monthly safety meetings. Other items discussed during training sessions include:

- Preventative measures, including spill prevention and response and preventative maintenance.
- Pollution control laws and regulations.
- Features and operations of the facility that are designed to minimize discharges, particularly spill prevention procedures.
- Good housekeeping practices.
- Waste identification and management procedures.
- Proper handling of raw materials (including proper storage, transportation and disposal of unused materials).

Training records on current employees are maintained within DTI's Learning Management System (LMS) database for DTI personnel and maintained by the Contractor for construction personnel.

47 CSR 58.4.11.g

Every quarter during the life of the construction activity, covered by this Plan, the site will be inspected to ensure that all elements and equipment of the site's groundwater protection program are in place and properly functioning. The Quarterly Inspection Form is attached as Appendix A.

Deficiencies discovered during the visual inspections or from the results of analytical testing will be immediately reported to the Project Supervisor. The Supervisor will determine what corrective actions will be taken to mitigate adverse impacts to the environment.

Records of Quarterly GPP inspections are documented by the Project Supervisor or Contractor and provided to the Project Supervisor. Historical reports will be maintained at a reasonable accessible location to show that the Quarterly GPP inspections were performed, who performed the inspection, and detail the results of the inspection.

Ground Water Protection Inspection Checklist

Location: _____ **Completed By:**_____

Compliance Date:_____ **Complete Date:**_____

Instructions: Required to be completed every quarter. All negative answers ('Yes') require an explanation.

Item #	Question	Answer Yes/No
1.	Since the last inspection, have material handling practices changed in any way? **Explain:**	☐ ☐
2.	Since the last inspection, has there been any new on-site construction? **Explain:**	☐ ☐
3.	Since the last inspection, has there been any tank additions, removals or upgrades? **Explain:**	☐ ☐
4.	Since the last inspection, is the site covered under any new environmental regulatory permits? **Explain:**	☐ ☐
5.	Since the last inspection, have any new operations been implemented? **Explain:**	☐ ☐
6.	Since the last inspection, have there been any spills, leaks or releases? **Explain:**	☐ ☐
7.	Is there any indication that spills, leaks or discharges are imminent? **Explain:**	☐ ☐
8.	Are there any new potential ground water contaminants stored at the site that are not already identified in the plan? **Explain:**	☐ ☐
9.	Is there any indication of any on-site ground water contamination as a result of site or company operations? **Explain:**	☐ ☐

APPENDIX D

SWPPP Revision Form

Appendix D

SWPPP Revision Form

Status	Date	Section Number	Page Number	Revision Description	Person Making Revision
SWPPP/GPP Issuance:	January 2017				
Revisions:					
Next Revision Due:					

APPENDIX E

Waterbodies Crossed and Crossings Table

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	0.0	shaa001	UNT to Tanner Fork	Perennial			M&R Workspace	UNT to B1		April 1 to June 30
West Virginia	AP-1	0.0	shaa002	Tanner Fork	Perennial			Not Crossed by Centerline	B1		April 1 to June 30
West Virginia	AP-1	0.0	shaa001	UNT to Tanner Fork	Perennial		3	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	0.4	shab101	Tanner Fork	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	0.5	shaa003	UNT to Tanner Fork	Intermittent		4	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	1.1	slea001	Kincheloe Creek	Perennial		13	1) Dam and Pump 2) Flume	B1, HQS		April 1 to June 30
West Virginia	AP-1	1.1	slea001	Kincheloe Creek	Perennial	15		Perm AR	B1, HQS		April 1 to June 30
West Virginia	AP-1	1.1	slea001	Kincheloe Creek	Perennial			Perm AR	B1, HQS		April 1 to June 30
West Virginia	AP-1	1.5	slea002	Sand Fork	Perennial		12	1) Dam and Pump 2) Flume	B1, HQS		April 1 to June 30
West Virginia	AP-1	2.4	slea003	UNT to Kincheloe Creek	Intermittent	23	21	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	2.4	slea003	UNT to Kincheloe Creek	Intermittent			Temp AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	2.4	slea003	UNT to Kincheloe Creek	Intermittent			Temp AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	2.4	slea003	UNT to Kincheloe Creek	Intermittent	17		Temp AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	2.4	sleb117	Kincheloe Creek	Perennial	7		Temp AR	B1, HQS		April 1 to June 30
West Virginia	AP-1	2.4	sleb117	Kincheloe Creek	Perennial	17		Perm AR	B1, HQS		April 1 to June 30
West Virginia	AP-1	3.0	sleb118	UNT to Hog Camp Run	Perennial			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	3.0	sleb118	UNT to Hog Camp Run	Perennial			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	3.0	sleb118	UNT to Hog Camp Run	Perennial			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	3.0	sleb118	UNT to Hog Camp Run	Perennial			Perm AR	UNT to B1		April 1 to June 30

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	3.8	slea084	Hog Camp Run	Perennial	11		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	4.0	sleb001	UNT to Hog Camp Run	Intermittent		5	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	4.0	sleb002	Hog Camp Run	Perennial		41	1) Flume 2) Dam and Pump	B1		April 1 to June 30
West Virginia	AP-1	5.0	sleb004	Elk Lick	Intermittent		4	Dam and Pump	B1		April 1 to June 30
West Virginia	AP-1	5.0	sleb119	UNT to Elk Lick	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	5.0	sleb119	UNT to Elk Lick	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	5.0	sleb004	Elk Lick	Intermittent			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	5.0	sleb004	Elk Lick	Intermittent			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	5.7	sleb005	Turkeypen Creek	Perennial		8	1) Dam and Pump 2) Flume	B1		April 1 to June 30
West Virginia	AP-1	5.7	sleb006	UNT to Turkeypen Creek	Intermittent			Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	5.7	sleb006	UNT to Turkeypen Creek	Intermittent			Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	7.2	sleb105e	UNT to Hollick Run	Ephemeral			Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	7.5	oleb100	Unnamed Pond	Pond	Pond		Pond	NA		NA
West Virginia	AP-1	7.6	sleb008	UNT to Hollick Run	Intermittent			Compressor Station - Temporary Impact	UNT to B1		April 1 to June 30
West Virginia	AP-1	7.7	sleb104i	UNT to Hollick Run	Intermittent			Compressor Station - Temporary Impact	UNT to B1		April 1 to June 30
West Virginia	AP-1	7.7	sleb104	UNT to Hollick Run	Intermittent			Compressor Station - Temporary Impact	UNT to B1		April 1 to June 30
West Virginia	AP-1	7.7	slea004	Hollick Run	Perennial	9		Compressor Station - Temporary Impact	B1		April 1 to June 30
West Virginia	AP-1	7.7	slea004	Hollick Run	Perennial			Compressor Station - Temporary Impact	B1		April 1 to June 30
West Virginia	AP-1	7.7	slea004	Hollick Run	Perennial			Compressor Station - Temporary Impact	B1		April 1 to June 30
West Virginia	AP-1	7.8	sleb104	UNT to Hollick Run	Intermittent			Compressor Station - Temporary Impact	UNT to B1		April 1 to June 30
West Virginia	AP-1	7.8	slea004	Hollick Run	Perennial			Compressor Station - Temporary Impact	B1		April 1 to June 30

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	7.8	slea004	Hollick Run	Perennial			Compressor Station - Temporary Impact	B1		April 1 to June 30
West Virginia	AP-1	7.8	slea004	Hollick Run	Perennial			Compressor Station - Temporary Impact	B1		April 1 to June 30
West Virginia	AP-1	7.8	slea004	Hollick Run	Perennial			Compressor Station - Temporary Impact	B1		April 1 to June 30
West Virginia	AP-1	8.2	sleb009	West Fork River	Perennial		92	Cofferdam	A, B1, HQS	Potential for ESA-listed species	April 1 to June 30
West Virginia	AP-1	9.4	slea008	Broad Run	Perennial		11	1) Dam and Pump 2) Flume	B1		April 1 to June 30
West Virginia	AP-1	9.9	sleb121	UNT to Broad Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	10.2	sleb120	Broad Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	10.2	sleb120	Broad Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	10.2	sleb120	Broad Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	10.2	slea009	UNT to Broad Run	Intermittent		4	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	10.9	sleb120i	Broad Run	Intermittent			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	11.8	slea012	UNT to Hackers Creek	Intermittent		4	Dam and Pump	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	11.8	slea013	UNT to Hackers Creek	Intermittent			Not Crossed by Centerline	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	12.4	sleb013	UNT to West Run	Intermittent			Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	12.5	sleb013	UNT to West Run	Intermittent			Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	12.5	sleb012	UNT to West Run	Perennial		2	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	12.6	sleb011	West Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	12.6	sleb011	West Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	12.6	sleb011	West Run	Perennial		14	1) Flume 2) Dam and Pump	B1		April 1 to June 30
West Virginia	AP-1	13.6	slec001	UNT to Lifes Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	13.6	slec001	UNT to Lifes Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	13.7	nhd_wv_n_003	UNT to Lifes Run	Intermittent		12	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	13.7	slec002	UNT to Lifes Run	Intermittent			Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	13.7	slec002	UNT to Lifes Run	Intermittent		4	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	13.7	nhd_wv_n_002	UNT to Lifes Run	Intermittent			Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	13.8	sleh001	UNT to Lifes Run	Intermittent			Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	14.2	olec002	Unnamed Pond	Pond		Pond	Pond	NA		NA
West Virginia	AP-1	14.3	slec005	Lifes Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	14.3	slec005	Lifes Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	14.3	sleh002	Lifes Run	Perennial		20	1) Flume 2) Dam and Pump	B1		April 1 to June 30
West Virginia	AP-1	14.4	slec003	UNT to Lifes Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	14.4	slec003	UNT to Lifes Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	14.5	sleh009	UNT to Lifes Run	Perennial		4	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	14.8	slea081	UNT to Hackers Creek	Intermittent			Temp AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	14.8	slea081	UNT to Hackers Creek	Intermittent			Temp AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	14.8	sleh008	UNT to Hackers Creek	Intermittent		14	Dam and Pump	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	14.8	slea082	UNT to Hackers Creek	Intermittent	5		Perm AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	14.9	sleh008	UNT to Hackers Creek	Intermittent			Temp AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	14.9	sleh008	UNT to Hackers Creek	Intermittent			Temp AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.0	sleb110	UNT to Hackers Creek	Ephemeral		3	1) Dam and Pump 2) Flume	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.0	sleb109	UNT to Hackers Creek	Intermittent		5	Dam and Pump	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.3	slea079	UNT to Hackers Creek	Intermittent	3		Perm AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.4	olea075	Unnamed Pond	Pond		Pond	Pond	NA		NA

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	15.5	slea075	UNT to Hackers Creek	Intermittent			Perm AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.5	slea075	UNT to Hackers Creek	Intermittent			Perm AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.5	slea076	UNT to Hackers Creek	Intermittent			Perm AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.5	slea075	UNT to Hackers Creek	Intermittent	14		Perm AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.5	sleb111	UNT to Hackers Creek	Perennial		13	Dam and Pump	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.6	slea080	Hackers Creek	Perennial	30		Perm AR	A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.8	slea077	UNT to Hackers Creek	Ephemeral			Perm AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.9	slea078	UNT to Hackers Creek	Ephemeral			Perm AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	15.9	slea078	UNT to Hackers Creek	Ephemeral			Perm AR	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	16.3	sleb113	UNT to Hackers Creek	Intermittent		2	Dam and Pump	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	16.4	sleb112	UNT to Hackers Creek	Perennial		4	Dam and Pump	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	17.2	sleb114	UNT to Hackers Creek	Perennial		7	1) Dam and Pump 2) Flume	UNT to A, B1, HQS		April 1 to June 30
West Virginia	AP-1	18.1	sleb116	UNT to Laurel Lick	Intermittent			Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	18.1	sleb115	Laurel Lick	Intermittent		5	1) Flume 2) Dam and Pump	B1		April 1 to June 30
West Virginia	AP-1	19.9	slea023	UNT to Buckhannon Run	Intermittent		4	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	19.9	nhd_wv_a_002	UNT to Buckhannon Run	Intermittent	5		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	20.3	sleb018	Buckhannon Run	Perennial		6	Dam and Pump	B1		April 1 to June 30
West Virginia	AP-1	20.6	sleb019	UNT to Buckhannon Run	Intermittent		3	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	23.3	supa001	Fink Run	Perennial		10	1) Dam and Pump 2) Flume	B1		April 1 to June 30

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	24.0	supa002	UNT to Fink Run	Intermittent	3	4	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	24.6	supa003	UNT to Brushy Fork	Intermittent		4	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	24.7	supa005	UNT to Brushy Fork	Intermittent		2	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	25.4	supb001	UNT to Brushy Fork	Intermittent		1	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	25.4	supb001	UNT to Brushy Fork	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	25.4	supb001	UNT to Brushy Fork	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	25.7	supb102	Brushy Fork	Intermittent			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	25.7	supb102	Brushy Fork	Intermittent			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	25.8	supb003	UNT to Brushy Fork	Intermittent		2	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	25.8	supc102	UNT to Brushy Fork	Intermittent			Contractor Yard - Temporary Impact	B1		April 1 to June 30
West Virginia	AP-1	25.8	supc102	UNT to Brushy Fork	Intermittent			Contractor Yard - Temporary Impact	B1		April 1 to June 30
West Virginia	AP-1	25.9	supe012	UNT to Left Fork Brushy Fork	Perennial			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	26.0	supb004	Brushy Fork	Perennial	16		1) Flume 2) Dam and Pump	B1		April 1 to June 30
West Virginia	AP-1	28.4	supb005	UNT to Lick Run	Intermittent	2		Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	28.5	oupa001	UNP to Lick Run	Pond	Pond		Pond	UNT to B1		April 1 to June 30
West Virginia	AP-1	29.2	supb006	Cutright Run	Perennial	23		1) Dam and Pump 2) Flume	B1		April 1 to June 30
West Virginia	AP-1	29.3	supa050	UNT to Cutright Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	29.9	supb007	UNT to French Creek	Perennial	6		1) Flume 2) Dam and Pump	UNT to B2, HQS		September 15 to March 31
West Virginia	AP-1	30.3	nhd_wv_a_005	UNT to French Creek	Intermittent			Perm AR	UNT to B2, HQS		September 15 to March 31
West Virginia	AP-1	30.5	supa006	UNT to French Creek	Perennial			Not Crossed by Centerline	UNT to B2, HQS		September 15 to March 31

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	30.6	supa006	UNT to French Creek	Perennial			Not Crossed by Centerline	UNT to B2, HQS		September 15 to March 31
West Virginia	AP-1	30.6	supb052	UNT to French Creek	Intermittent			Perm AR	UNT to B2, HQS		September 15 to March 31
West Virginia	AP-1	30.7	supb053	UNT to French Creek	Intermittent			Perm AR	UNT to B2, HQS		September 15 to March 31
West Virginia	AP-1	30.7	supb053	UNT to French Creek	Intermittent			Perm AR	UNT to B2, HQS		September 15 to March 31
West Virginia	AP-1	30.9	supa007	UNT to French Creek	Intermittent		3	Dam and Pump	UNT to B2, HQS		September 15 to March 31
West Virginia	AP-1	31.1	supa008	French Creek	Perennial		40	Cofferdam	B2, HQS		September 15 to March 31
West Virginia	AP-1	31.7	supa009	Buckhannon River	Perennial		90	Cofferdam	A, B2, HQS		September 15 to March 31
West Virginia	AP-1	32.1	supa011	UNT to Trubie Run	Intermittent		6	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	33.0	supb009	UNT to Trubie Run	Perennial		5	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	33.0	supb009	UNT to Trubie Run	Perennial			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	33.0	supb103	Trubie Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	34.1	supa012	UNT to Buckhannon Run	Ephemeral		3	Dam and Pump	UNT to A, B2, HQS		September 15 to March 31
West Virginia	AP-1	34.4	supa013	Grassy Run	Perennial		25	1) Flume 2) Dam and Pump	B1		April 1 to June 30
West Virginia	AP-1	35.9	supe011	Gravel Run	Perennial	16		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	35.9	supe011	Gravel Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	36.1	supb010	Gravel Run	Perennial		21	1) Flume 2) Dam and Pump	B1		April 1 to June 30
West Virginia	AP-1	36.1	supa014	UNT to Gravel Run	Intermittent		5	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	36.4	supe010	Laurel Run	Perennial	22		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	36.7	supa051	UNT to Laurel Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	36.7	supa051	UNT to Laurel Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	36.7	supa051	UNT to Laurel Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	36.8	supb011	Laurel Run	Perennial		21	1) Dam and Pump 2) Flume	B1		April 1 to June 30
West Virginia	AP-1	36.8	supb011	Laurel Run	Perennial			Perm AR	B1		April 1 to June 30

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West Virginia	AP-1	37.1	supa053	UNT to Tenmile Creek	Intermittent			Temp AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	37.1	supa053	UNT to Tenmile Creek	Intermittent	1		Temp AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	37.5	supa052	UNT to Tenmile Creek	Intermittent			Temp AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	37.5	supa052	UNT to Tenmile Creek	Intermittent			Temp AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	37.7	supa016	Tenmile Creek	Perennial			Temp AR	HQS		September 15 to March 31
West Virginia	AP-1	37.7	supa016	Tenmile Creek	Perennial	7		Temp AR	HQS		September 15 to March 31
West Virginia	AP-1	37.8	supa016	Tenmile Creek	Perennial		17	1) Dam and Pump 2) Flume	HQS		September 15 to March 31
West Virginia	AP-1	37.8	oupa002	UNP to Tenmile Creek	Pond		Pond	Pond	Unnamed Pond to HQS		September 15 to March 31
West Virginia	AP-1	37.8	supb050	UNT to Tenmile Creek	Perennial			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	37.8	oupa002	UNP to Tenmile Creek	Pond	Pond	Pond	Pond	Unnamed Pond to HQS		September 15 to March 31
West Virginia	AP-1	37.8	supb051	UNT to Tenmile Creek	Perennial			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	37.8	supb051	UNT to Tenmile Creek	Perennial			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	37.9	supa017	UNT to Tenmile Creek	Intermittent	8		Dam and Pump	UNT to HQS		September 15 to March 31
West Virginia	AP-1	37.9	oupa003	Unnamed Pond	Pond	Pond		Pond	NA		NA
West Virginia	AP-1	39.6	supa019	Tenmile Creek	Intermittent	8		Dam and Pump	HQS		September 15 to March 31
West Virginia	AP-1	40.5	supb013	UNT to Leonard Run	Intermittent	2		Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	40.7	supb012	UNT to Leonard Run	Intermittent	5		Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	41.3	supa015	Right Fork Middle Fork River	Perennial	45		1) Flume 2) Cofferdam	B2, HQS		September 15 to March 31
West Virginia	AP-1	41.4	supb106	UNT to Middle Fork	Intermittent			Temp AR	UNT to B2, HQS		September 15 to March 31
West Virginia	AP-1	41.9	supb105	UNT to Jackson Fork	Ephemeral			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	41.9	supb105	UNT to Jackson Fork	Ephemeral			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	41.9	supb104	Jackson Fork	Perennial			Perm AR	Unclassified		September 15 to March 31

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West Virginia	AP-1	41.9	supb104	Jackson Fork	Perennial			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	45.4	srab101	UNT to Jenks Fork	Intermittent		4	Dam and Pump	Unclassified		September 15 to March 31
West Virginia	AP-1	45.4	srac001	UNT to Jenks Fork	Intermittent			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	47.0	srab103	UNT to Long Run	Intermittent		4	Dam and Pump	UNT to HQS		September 15 to March 31
West Virginia	AP-1	47.1	sraa066	UNT to Long Run	Intermittent		4	1) Flume 2) Dam and Pump	UNT to HQS		September 15 to March 31
West Virginia	AP-1	47.4	srab104	UNT to Sugar Run	Intermittent		5	Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	49.3	srae202	UNT to Light Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	49.3	srae203	UNT to Light Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	49.3	srae204	UNT to Light Run	Intermittent	3		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	49.3	srae204	UNT to Light Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.2	srac100	UNT to Dry Run	Intermittent			Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.4	srac101	UNT to Dry Run	Intermittent		6	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.4	srac102	UNT to Dry Run	Ephemeral		3	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.4	sraa429	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.4	sraa429	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.4	sraa429	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.4	sraa429	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.4	sraa428	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.4	sraa429	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.4	sraa429	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.4	sraa428	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.5	sraa428	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.5	sraa428	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.5	sraa427	Dry Run	Intermittent	10		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	50.5	sraa426	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.5	sraa426	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.5	sraa426	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.5	sraa426	UNT to Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.5	sraa426	UNT to Dry Run	Intermittent	10		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.5	srac103	Dry Run	Perennial		23	Dam and Pump	B1		April 1 to June 30

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West Virginia	AP-1	50.6	sraa400	UNT to Dry Run	Intermittent			Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.7	sraa401	UNT to Dry Run	Intermittent		4	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.7	srae201	UNT to Left Fork Buckhannon River	Perennial			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	50.8	sraa403	UNT to Dry Run	Intermittent	4		Not Crossed by Centerline	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.8	sraa402	Dry Run	Intermittent		7	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.8	sraa402	Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.8	sraa402	Dry Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	50.9	srae002	UNT to Dry Run	Intermittent		4	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.2	srae179	UNT to Lick Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.2	srae179	UNT to Lick Run	Ephemeral	2		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.3	srae180	UNT to Lick Run	Ephemeral	2		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.4	sraa405	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.4	sraa412	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.4	sraa413	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.4	sraa405	UNT to Lick Run	Intermittent		4	1) Flume 2) Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.4	sraa413	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.4	sraa413	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.6	sraa407	unt to lick run	Intermittent		6	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.7	sraa414	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.7	sraa415	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.7	sraa415	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.8	sraa416	UNT to Lick Run	Perennial			Perm AR	UNT to B1		April 1 to June 30

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West Virginia	AP-1	51.8	sraa416	UNT to Lick Run	Perennial			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	51.8	sraa417	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	52.0	sraa418	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	52.0	sraa418	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	52.0	sraa418	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	52.0	sraa418	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	52.1	sraa419	UNT to Beech Run	Perennial			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	52.1	sraa418	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	52.1	sraa418	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	52.1	sraa418	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	52.1	sraa418	UNT to Lick Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	52.1	sraa420	Beech Run	Perennial	23		Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	52.1	sraa408	beech run	Perennial		27	1) Dam and Pump 2) Flume	HQS		September 15 to March 31
West Virginia	AP-1	52.4	sraa421	UNT to Beech Run	Intermittent	3		Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	52.4	sraa421	UNT to Beech Run	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	52.4	sraa421	UNT to Beech Run	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	52.6	sraa421	UNT to Beech Run	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	52.8	sraa422	UNT to Beech Run	Intermittent	32		Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	52.8	sraa423	UNT to Beech Run	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	52.8	sraa423	UNT to Beech Run	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	52.9	sraa424	UNT to Beech Run	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	52.9	sraa424	UNT to Beech Run	Intermittent			Perm AR	UNT to HQS		September 15 to March 31

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West Virginia	AP-1	53.0	sraa424	UNT to Beech Run	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	53.1	srac113	Left Fork Buckhannon River	Perennial			Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	53.1	srac114	UNT to Left Fork Buckhannon River	Ephemeral			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	53.1	srac113	Left Fork Buckhannon River	Perennial			Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	53.2	srac113	Left Fork Buckhannon River	Perennial			Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	54.0	srac116	UNT to Left Fork Buckhannon River	Perennial			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	54.0	srac116	UNT to Left Fork Buckhannon River	Perennial			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	54.0	srac116	UNT to Left Fork Buckhannon River	Perennial			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	54.0	srac117	UNT to Left Fork Buckhannon River	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	54.0	srac118	Left Fork Buckhannon River	Perennial			Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	54.1	srac125	Left Fork Buckhannon River	Perennial	6		Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	54.1	srac119	Left Fork Buckhannon River	Perennial	26		Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	54.1	srac119	Left Fork Buckhannon River	Perennial	24		Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	54.1	srac125	Left Fork Buckhannon River	Perennial			Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	54.1	srac125	Left Fork Buckhannon River	Perennial	12		Perm AR	HQS		September 15 to March 31

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West Virginia	AP-1	54.1	srac120	UNT to Left Fork Buckhannon River	Intermittent	12		Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	54.1	srac121	Left Fork Buckhannon River	Perennial			Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	54.2	srac122	UNT to Left Fork Buckhannon River	Intermittent			Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	54.2	srac123	UNT to Left Fork Buckhannon River	Perennial			Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	54.3	srac124	UNT to Left Fork Buckhannon River	Perennial	3		Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	54.3	sraa409	phillips camp run	Perennial		29	1) Dam and Pump 2) Flume	HQS		September 15 to March 31
West Virginia	AP-1	55.0	sraa411	short run	Perennial		9	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	55.1	srac128	UNT to Left Fork Buckhannon River	Perennial	21		Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	55.1	srac129	Long Run	Intermittent	19		Perm AR	HQS		April 1 to June 30
West Virginia	AP-1	55.3	srap001	UNT to Long Run	Intermittent		5	1) Dam and Pump 2) Flume	HQS		April 1 to June 30
West Virginia	AP-1	55.3	srap002	Long Run	Perennial		14	1) Dam and Pump 2) Flume	HQS		April 1 to June 30
West Virginia	AP-1	55.3	srac130	UNT to Long Run	Intermittent			Perm AR	UNT to HQS		April 1 to June 30
West Virginia	AP-1	55.3	srap002	Long Run	Perennial			Perm AR	HQS		April 1 to June 30
West Virginia	AP-1	55.3	srac131	UNT to Long Run	Intermittent			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	56.1	srap007	UNT to Left Fork Buckhannon River	Intermittent		4	1) Dam and Pump 2) Flume	UNT to HQS		September 15 to March 31
West Virginia	AP-1	56.3	srae136	UNT to Left Fork Buckhannon	Intermittent		8	Dam and Pump	UNT to HQS		September 15 to March 31
West Virginia	AP-1	56.3	orap001	Unnamed Pond	Pond		Pond	Pond	NA		NA

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West Virginia	AP-1	56.3	srap009	UNT to Left Fork Buckhannon River	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	56.4	srae198	UNT to Sugar Creek	Perennial	5		Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	56.5	srap010	UNT to Back Fork Elk River	Intermittent		3	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	56.5	srae197	UNT to Sugar Creek	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	56.5	srae197	UNT to Sugar Creek	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	56.5	srae197	UNT to Sugar Creek	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	56.7	orae119	Unnamed Pond	Pond		Pond	Pond	NA		NA
West Virginia	AP-1	56.7	srae103	UNT to Back Fork Elk River	Intermittent		4	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	57.0	srae100	UNT to Back Fork Elk River	Intermittent	4	5	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	57.1	srac108	UNT to Left Fork Back Fork Elk River	Intermittent	5		Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	57.1	srae101	UNT to Back Fork Elk River	Intermittent		14	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	57.2	orae118	Unnamed Pond	Pond		Pond	Pond	NA		NA
West Virginia	AP-1	57.3	srae102	UNT to Back Fork Elk River	Intermittent			Not Crossed by Centerline	Unclassified		September 15 to March 31
West Virginia	AP-1	57.3	srac109	Mitchell Run	Intermittent			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	57.3	srac109	Mitchell Run	Intermittent			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	57.3	srac110	Mitchell Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	57.3	srac110	Mitchell Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	57.3	srac111	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.3	srac110	Mitchell Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	57.3	srac110	Mitchell Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	57.4	srae174	UNT to Mitchell Run	Ephemeral	2		Perm AR	UNT to B1		April 1 to June 30

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West Virginia	AP-1	57.4	srae173	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.4	srae173	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.4	srae173	UNT to Mitchell Run	Intermittent	2		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.4	srae172	UNT to Mitchell Run	Ephemeral	2		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.4	srae171	UNT to Mitchell Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.5	srae171	UNT to Mitchell Run	Ephemeral	25		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.5	srae170	UNT to Mitchell Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.5	srae170	UNT to Mitchell Run	Ephemeral	2		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae168	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae167	UNT to Mitchell Run	Intermittent	25		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae168	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae167	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae165	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae165	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae166	UNT to Mitchell Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae164	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae163	UNT to Mitchell Run	Intermittent	27		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae163	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae169	UNT to Mitchell Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae169	UNT to Mitchell Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae162	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	57.6	srae162	UNT to Mitchell Run	Intermittent	6		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae169	UNT to Mitchell Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae161	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.6	srae160	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.7	srae155	UNT to Mitchell Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.7	srae156	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.7	srae156	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.7	srae154	UNT to Mitchell Run	Ephemeral	22		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.7	srae153	UNT to Mitchell Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	57.7	srae148	Mitchell Run	Perennial			Perm AR	Unclassified		April 1 to June 30
West Virginia	AP-1	57.7	srae148	Mitchell Run	Perennial	3		Perm AR	Unclassified		April 1 to June 30
West Virginia	AP-1	57.7	srae148	Mitchell Run	Perennial			Perm AR	Unclassified		April 1 to June 30
West Virginia	AP-1	57.8	srae196	Back Fork Elk River	Perennial	43		Temp AR	Unclassified		September 15 to March 31
West Virginia	AP-1	58.1	srae195	UNT to Back Fork Elk River	Intermittent	5		Temp AR	Unclassified		September 15 to March 31
West Virginia	AP-1	58.1	srae194	UNT to Back Fork Elk River	Ephemeral			Temp AR	Unclassified		September 15 to March 31
West Virginia	AP-1	58.1	srae193	UNT to Back Fork Elk River	Intermittent	3		Temp AR	Unclassified		September 15 to March 31
West Virginia	AP-1	58.2	srae159	Back Fork Elk River	Perennial		31	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	58.2	srae192	UNT to Back Fork Elk River	Ephemeral	3		Temp AR	Unclassified		September 15 to March 31
West Virginia	AP-1	58.2	srae191	UNT to Back Fork Elk River	Intermittent	2		Temp AR	Unclassified		September 15 to March 31
West Virginia	AP-1	58.2	srae191	UNT to Back Fork Elk River	Intermittent			Temp AR	Unclassified		September 15 to March 31

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	58.3	srae191	UNT to Back Fork Elk River	Intermittent			Temp AR	Unclassified		September 15 to March 31
West Virginia	AP-1	58.3	srae189	UNT to Hewett Fork	Ephemeral	2		Temp AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	58.4	srae190	UNT to Back Fork Elk River	Intermittent	10		Temp AR	Unclassified		September 15 to March 31
West Virginia	AP-1	58.7	srae186	UNT to Hewett Fork	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	59.4	srac106	UNT to Hickorylick Run	Intermittent	28		Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	59.6	srae185	UNT to Hewett Fork	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	59.6	srae184	UNT to Hewett Fork	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	59.6	srae184	UNT to Hewett Fork	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	59.7	srae184	UNT to Hewett Fork	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	59.7	srae184	UNT to Hewett Fork	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	59.7	srae183	UNT to Hewett Fork	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	59.7	srac105	UNT to Hickorylick Run	Ephemeral	5		Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	60.7	srae110	UNT to Valley Fork	Intermittent		8	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	60.7	srae111	Valley Fork	Perennial		51	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	60.7	srae112	UNT to Valley Fork	Intermittent		8	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	60.7	srae188	Valley Fork	Perennial			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	60.7	srae118	UNT to Valley Fork	Ephemeral			Not Crossed by Centerline	Unclassified		September 15 to March 31
West Virginia	AP-1	60.8	srae118	UNT to Valley Fork	Ephemeral		7	1) Flume 2) Dam and Pump	Unclassified		September 15 to March 31
West Virginia	AP-1	60.8	srae119	UNT to Valley Fork	Ephemeral		9	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31

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West Virginia	AP-1	60.8	srae187	UNT to Valley Creek	Intermittent	4		Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	60.9	srae187	UNT to Valley Creek	Intermittent	21		Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	60.9	srae120	UNT to Valley Fork	Ephemeral		12	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	60.9	srae187	UNT to Valley Creek	Intermittent			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	61.0	srae121	UNT to Valley Fork	Ephemeral		6	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	61.1	srae122	UNT to Valley Fork	Ephemeral		6	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	61.3	srae134	UNT to Elk River	Intermittent			Not Crossed by Centerline	UNT to HQS		September 15 to March 31
West Virginia	AP-1	61.7	orae113	Unnamed Pond	Pond		Pond	Pond	NA		NA
West Virginia	AP-1	62.0	srae131	UNT to Elk River	Intermittent			Not Crossed by Centerline	UNT to HQS		September 15 to March 31
West Virginia	AP-1	62.0	srae130	UNT to Elk River	Intermittent	7		1) Dam and Pump 2) Flume	UNT to HQS		September 15 to March 31
West Virginia	AP-1	62.2	srae129	UNT to Elk River	Intermittent	3		1) Dam and Pump 2) Flume	UNT to HQS		September 15 to March 31
West Virginia	AP-1	62.2	srae128	UNT to Elk River	Ephemeral			Not Crossed by Centerline	UNT to HQS		September 15 to March 31
West Virginia	AP-1	62.9	orae112	Unnamed Pond	Pond	Pond		Pond	NA		NA
West Virginia	AP-1	63.0	srae206	UNT to Elkwater Fork	Intermittent			Contractor Yard - Temporary Impact	UNT to HQS		September 15 to March 31
West Virginia	AP-1	63.0	orae120	Unnamed pond	Pond	Pond		Pond	NA		NA
West Virginia	AP-1	63.2	srac159e	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.2	srac159i	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30

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West Virginia	AP-1	63.2	srac159i	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.2	srac158	UNT to Falling Spring Run	Intermittent	6		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.2	srac159i	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.2	srac158	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.2	srac159i	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.3	srac157	UNT to Falling Spring Run	Ephemeral	9		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.4	srac156	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.5	sray001	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.6	srac133	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.6	srac133	UNT to Falling Spring Run	Ephemeral	1		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.7	srac134	Falling Spring Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	63.7	srac134	Falling Spring Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	63.7	srac136	Falling Spring Run	Perennial	63		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	63.8	srac136	Falling Spring Run	Perennial	39		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	63.8	srac155	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.8	srac136	Falling Spring Run	Perennial			Perm AR	B1		April 1 to June 30

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West Virginia	AP-1	63.8	srac136	Falling Spring Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	63.8	srac136	Falling Spring Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	63.8	srac136	Falling Spring Run	Perennial	14		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	63.8	srae175	UNT to Falling Spring Run	Intermittent	18		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.8	srac136	Falling Spring Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	63.8	srae175	UNT to Falling Spring Run	Intermittent	38		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.8	srac138	UNT to Falling Spring Run	Intermittent	5		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.8	srac138	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.8	srac155	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.8	srac136	Falling Spring Run	Perennial	16		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	63.9	srac155	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.9	srac139	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.9	srac155	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.9	srac155	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.9	srac155	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	63.9	srac155	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	64.1	srac154	UNT to Falling Spring Run	Ephemeral	10		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.1	srac154	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.1	srac154	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.2	orae111	Unnamed Pond	Pond		Pond	Pond	NA		NA
West Virginia	AP-1	64.2	srae176	UNT to Falling Spring Run	Ephemeral	2		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.2	orae110	Unnamed Pond	Pond		Pond	Pond	NA		NA
West Virginia	AP-1	64.3	srac153	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.3	srac153	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.3	srac153	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.4	srac152	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.4	srac152	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.4	srac152	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30

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West Virginia	AP-1	64.5	srac151	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac150	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac151	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac150	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac140	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac140	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac141	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac141	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30

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West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac142	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac142	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac143	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.5	srac149	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.6	srac148	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.6	srac148	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.6	srac143	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.6	srae113	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.6	srae113	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.6	srac146	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.6	srac147	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.7	srae115	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30

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West Virginia	AP-1	64.7	srae116	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.7	srae115	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.8	srae117	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.8	srae117	UNT to Falling Spring Run	Intermittent	5		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.8	srae117	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.9	srae137	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.9	srae138	UNT to Falling Spring Run	Intermittent	9		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.9	srae138	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.9	srae139	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.9	srae139	UNT to Falling Spring Run	Ephemeral	3		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.9	srae140	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.9	srae140	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	64.9	srae141	UNT to Falling Spring Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	65.0	srae141	UNT to Falling Spring Run	Intermittent	5		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	65.0	srae142	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30

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West Virginia	AP-1	65.0	srae142	UNT to Falling Spring Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	65.3	srac112	UNT to Mingo Run	Intermittent		19	1) Dam and Pump 2) Flume	B1		April 1 to June 30
West Virginia	AP-1	65.4	srae208	Mingo Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	65.4	srae208	Mingo Run	Perennial			Perm AR	B1		April 1 to June 30
West Virginia	AP-1	65.4	srae207	UNT to Mingo Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	65.4	srae207	UNT to Mingo Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	65.5	srae124	UNT to Mingo Run	Intermittent		9	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	65.7	nhd_wv_l_006	UNT to Mingo Run	Intermittent	17		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	66.6	nhd_wv_l_001	Douglas Fork	Intermittent	6		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	66.7	nhd_wv_j_001	Douglas Fork	Intermittent		5	1) Dam and Pump 2) Flume	B1		April 1 to June 30
West Virginia	AP-1	66.7	nhd_wv_j_002	Douglas Fork	Intermittent			Not Crossed by Centerline	B1		April 1 to June 30
West Virginia	AP-1	67.5	spoe017	Dry Fork	Intermittent		5	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	68.9	nhd_wv_h_016	UNT to Big Spring Fork	Intermittent	5		Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	69.1	spoe046	Big Spring Fork	Perennial			Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	69.2	spoe007	Big Spring Fork	Perennial		19	1) Dam and Pump 2) Flume	HQS		September 15 to March 31
West Virginia	AP-1	69.2	spoa442	UNT to Big Spring Fork	Intermittent	3		Temp AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	69.3	spoe022	Big Spring Fork	Perennial	37		Perm AR	HQS		September 15 to March 31
West Virginia	AP-1	69.6	spoe045	Mill Run	Intermittent	9		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	69.6	spoe045	Mill Run	Intermittent	8		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	70.3	spoe044	Mill Run	Intermittent	12		Perm AR	B1		April 1 to June 30
West Virginia	AP-1	70.4	spoe043	UNT to Mill Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	70.4	spoe043	UNT to Mill Run	Intermittent	6		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.4	spoe040	UNT to Mill Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.4	spoe041	UNT to Mill Run	Ephemeral	21		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.4	spoe042	UNT to Mill Run	Ephemeral	7		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.4	spoe039	UNT to Mill Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.4	spoe038	UNT to Mill Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.4	spoy001	UNT to Mill Run	Intermittent		4	1) Flume 2) Dam and Pump	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.5	spoy006	UNT to Mill Run	Intermittent	24		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.5	spoe037	UNT to Mill Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.5	spoe036	UNT to Mill Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.5	spoy007	UNT to Mill Run	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.5	spoe035	UNT to Mill Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.5	spoy009	UNT to Mill Run	Intermittent	3		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.5	spoy011	UNT to Mill Run	Intermittent	8		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.5	spoe034	UNT to Mill Run	Intermittent			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	70.8	spoe004	UNT to Big Spring Fork	Intermittent	2		Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	70.8	spoe004	UNT to Big Spring Fork	Intermittent		5	1) Dam and Pump 2) Flume	UNT to HQS		September 15 to March 31
West Virginia	AP-1	70.8	spoe031	UNT to Big Spring Fork	Ephemeral	5		Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	71.0	spoe028	UNT to Big Spring Fork	Intermittent	4		Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	71.0	spoe027	UNT to Big Spring Fork	Intermittent	2		Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	71.0	spoe029	UNT to Big Spring Fork	Ephemeral	2		Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	71.1	spoe030	UNT to Big Spring Fork	Ephemeral			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	71.1	spoe026	UNT to Big Spring Fork	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	71.1	spoe026	UNT to Big Spring Fork	Intermittent			Perm AR	UNT to HQS		September 15 to March 31

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	71.8	spoe001	UNT to Clover Creek	Ephemeral			Not Crossed by Centerline	Unclassified		September 15 to March 31
West Virginia	AP-1	71.9	spoa418	UNT to Slaty Fork	Ephemeral			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa425	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa425	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa422	UNT to Slaty Fork	Ephemeral			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa422	UNT to Slaty Fork	Ephemeral			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa423	UNT to Slaty Fork	Ephemeral			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa423	UNT to Slaty Fork	Ephemeral			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa424	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa427	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa427	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa428	UNT to Slaty Fork	Perennial			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa428	UNT to Slaty Fork	Perennial	2		Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa421	UNT to Slaty Fork	Ephemeral			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa421	UNT to Slaty Fork	Ephemeral			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa429	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	71.9	spoa429	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa420	Slaty Fork	Intermittent			Perm AR	HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa439	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa439	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa440	UNT to Slaty Fork	Intermittent	13		Perm AR	UNT to HQS, Tier 3		September 15 to March 31

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	72.0	spoa441	UNT to Slaty Fork	Perennial			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa434	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa435	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa435	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa436	UNT to Slaty Fork	Perennial			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa437	UNT to Slaty Fork	Intermittent	3		Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa437	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa438	UNT to Slaty Fork	Intermittent	32		Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa430	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa430	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa431	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa432	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa432	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.0	spoa433	UNT to Slaty Fork	Intermittent			Perm AR	UNT to HQS, Tier 3		September 15 to March 31
West Virginia	AP-1	72.3	spoc111	UNT to Clover Creek	Intermittent			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	72.4	spoc110	UNT to Clover Creek	Ephemeral			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	72.4	spoc110	UNT to Clover Creek	Ephemeral			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	72.5	spoc109	UNT to Clover Creek	Ephemeral			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	72.5	spoc109	UNT to Clover Creek	Ephemeral			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	72.8	spoc107	UNT to Clover Creek	Ephemeral			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	72.8	spoc107	UNT to Clover Creek	Ephemeral			Not Crossed by Centerline	Unclassified		September 15 to March 31

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	72.8	spoc106	UNT to Clover Creek	Perennial		24	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	72.8	spoc106	UNT to Clover Creek	Perennial	15		Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	74.6	spoe048	Clover Creek	Perennial			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	74.6	spoe048	Clover Creek	Perennial			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	74.6	spoc120	UNT to Clover Creek	Perennial		19	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	75.2	spoe032	UNT to Clover Creek	Intermittent		8	1) Flume 2) Dam and Pump	Unclassified		September 15 to March 31
West Virginia	AP-1	75.2	spoe033	UNT to Clover Creek	Ephemeral			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	75.2	spoe033	UNT to Clover Creek	Ephemeral			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	75.2	spoe032	UNT to Clover Creek	Intermittent			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	75.5	spoc101	Clover Creek	Perennial		56	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	75.5	spoc102	UNT to Clover Creek	Intermittent		8	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	76.0	spoc104	Glade Run	Perennial		19	1) Dam and Pump 2) Flume	B1		April 1 to June 30
West Virginia	AP-1	76.5	spoc119	UNT to Greenbrier River	Ephemeral		2	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	76.6	spoc118	Greenbrier River	Perennial		179	Cofferdam	B1, HQS	Potential for ESA-listed species	April 1 to June 30
West Virginia	AP-1	76.7	spoe049	UNT to Greenbrier River	Ephemeral	1		Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	76.8	spoe050	UNT to Greenbrier River	Ephemeral	5		Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	76.9	spoe012	UNT to Laurel Run	Intermittent		8	1) Dam and Pump 2) Flume	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	77.1	spoe051	UNT to Greenbrier	Ephemeral			Perm AR	UNT to B1, HQS		April 1 to June 30

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
				River							
West Virginia	AP-1	77.1	spoe052	UNT to Greenbrier River	Ephemeral			Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	77.1	spoe052	UNT to Greenbrier River	Ephemeral			Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	77.3	spoe008	UNT to Mile Branch	Intermittent		6	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	77.3	spoe009	Mile Branch	Perennial		13	Dam and Pump	B1		April 1 to June 30
West Virginia	AP-1	77.3	spoe053	UNT to Greenbrier River	Ephemeral			Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	77.9	spoe054	UNT to Greenbrier River	Ephemeral			Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	77.9	spoe054	UNT to Greenbrier River	Ephemeral			Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	78.1	spoe055	UNT to Greenbrier River	Ephemeral			Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	78.1	spoe055	UNT to Greenbrier River	Ephemeral	18		Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	78.1	spoe056	UNT to Little Thorny Creek	Ephemeral			Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	78.1	spoe057	UNT to Little Thorny Creek	Ephemeral			Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	78.1	spoe059	Little Thorny Creek	Perennial			Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	78.1	spoe059	Little Thorny Creek	Perennial			Perm AR	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	78.1	opoe003	Seneca Lake	Pond		Pond	Pond	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	78.1	opoe003	Seneca Lake	Pond		Pond	Pond	UNT to B1, HQS		April 1 to June 30
West Virginia	AP-1	78.1	spoc113	UNT to Thorn Creek	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	78.1	spoc113	UNT to Thorn Creek	Ephemeral	55		Perm AR	UNT to B1		April 1 to June 30

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	78.1	spoc113	UNT to Thorn Creek	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	79.2	spoc113	UNT to Thorn Creek	Ephemeral			Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	79.2	spoc113	UNT to Thorn Creek	Ephemeral	38		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	79.2	spoc113	UNT to Thorn Creek	Ephemeral	23		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	79.2	spoc113	UNT to Thorn Creek	Ephemeral	75		Perm AR	UNT to B1		April 1 to June 30
West Virginia	AP-1	79.3	spoe013	Thomas Creek	Perennial		9	Dam and Pump	B1		April 1 to June 30
West Virginia	AP-1	79.3	spoe014	Powder Lick Run	Intermittent		8	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	79.8	spoe010	UNT to Thomas Creek	Intermittent		6	1) Dam and Pump 2) Flume	UNT to B1		April 1 to June 30
West Virginia	AP-1	80.9	spoe019	UNT to Sugar Camp Run	Intermittent			Not Crossed by Centerline	Unclassified		September 15 to March 31
West Virginia	AP-1	81.0	spoe016	UNT to Sugar Camp Run	Intermittent		4	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	81.0	nhd_wv_k_012	Knapp Creek	Perennial			Contractor Yard - Temporary Impact	HQS		September 15 to March 31
West Virginia	AP-1	81.0	opoe002	Unnamed Pond	Pond		Pond	Pond	NA		NA
West Virginia	AP-1	81.1	spoe015	UNT to Sugar Camp Run	Intermittent		8	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	81.2	spoa408	UNT to Sugar Camp Run	Intermittent			Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	81.5	spoa402	UNT to Sugar Camp Run	Intermittent		4	1) Dam and Pump 2) Flume	Unclassified		September 15 to March 31
West Virginia	AP-1	81.9	spoa410	UNT to Sugar Camp Run	Ephemeral	2		Perm AR	Unclassified		September 15 to March 31
West Virginia	AP-1	82.0	spoa400	UNT to Shock Run	Perennial		12	1) Dam and Pump 2) Flume	UNT to Tier 3		September 15 to March 31
West Virginia	AP-1	83.5	spoa407	UNT to Knapp Creek	Intermittent			Perm AR	UNT to HQS		September 15 to March 31

State	Project Segment	Milepost	Unique ID	Feature_Name	Waterbody Regime	Access Road Crossing (feet)	Centerline Crossing (feet)	Construction Method	State Reg Class	Federal Classifications	State/Commonwealth or Federal Time of Year Restrictions (work limited between dates listed)
West Virginia	AP-1	83.5	spoa407	UNT to Knapp Creek	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	83.8	spoa406	UNT to Knapp Creek	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	83.8	spoa406	UNT to Knapp Creek	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	84.1	spoa405	UNT to Knapp Creek	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	84.1	spoa405	UNT to Knapp Creek	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	84.1	spoa404	UNT to Knapp Creek	Perennial			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	84.4	spoa403	UNT to Knapp Creek	Intermittent			Perm AR	UNT to HQS		September 15 to March 31
West Virginia	AP-1	84.4	spoa403	UNT to Knapp Creek	Intermittent			Perm AR	UNT to HQS		September 15 to March 31

APPENDIX F

Receiving Waters Table

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Lewis County	050200	Monongahela	05020002	West Fork	na
Upshur County	050200	Monongahela	05020001	Tygart Valley	na
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Big Spring Fork
Pocahontas County	050500	Kanawha	05050007	Elk	Douglas Fork
Pocahontas County	050500	Kanawha	05050007	Elk	Douglas Fork
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Knapp Creek
Pocahontas County	050500	Kanawha	05050007	Elk	Douglas Fork
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Mingo Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	Unnamed Pond
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Kincheloe Creek
Lewis County	050200	Monongahela	05020002	West Fork	Unnamed Pond
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Unnamed Pond
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Seneca Lake
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Seneca Lake
Randolph County	050500	Kanawha	05050007	Elk	Unnamed Pond
Randolph County	050500	Kanawha	05050007	Elk	Unnamed Pond
Randolph County	050500	Kanawha	05050007	Elk	Unnamed Pond
Randolph County	050500	Kanawha	05050007	Elk	Unnamed Pond
Randolph County	050500	Kanawha	05050007	Elk	Unnamed Pond
Randolph County	050500	Kanawha	05050007	Elk	Unnamed Pond
Randolph County	050200	Monongahela	05020001	Tygart Valley	Unnamed pond
Randolph County	050500	Kanawha	05050007	Elk	Unnamed Pond
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNP to Lick Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNP to Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNP to Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	Unnamed Pond
Harrison County	050200	Monongahela	05020002	West Fork	UNT to Tanner Fork
Harrison County	050200	Monongahela	05020002	West Fork	UNT to Tanner Fork
Harrison County	050200	Monongahela	05020002	West Fork	Tanner Fork
Harrison County	050200	Monongahela	05020002	West Fork	UNT to Tanner Fork
Harrison County	050200	Monongahela	05020002	West Fork	Tanner Fork
Harrison County	050200	Monongahela	05020002	West Fork	Kincheloe Creek
Harrison County	050200	Monongahela	05020002	West Fork	Kincheloe Creek
Harrison County	050200	Monongahela	05020002	West Fork	Kincheloe Creek
Lewis County	050200	Monongahela	05020002	West Fork	Kincheloe Creek
Lewis County	050200	Monongahela	05020002	West Fork	Sand Fork
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Kincheloe Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Kincheloe Creek

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Kincheloe Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Kincheloe Creek
Lewis County	050200	Monongahela	05020002	West Fork	Hollick Run
Lewis County	050200	Monongahela	05020002	West Fork	Hollick Run
Lewis County	050200	Monongahela	05020002	West Fork	Hollick Run
Lewis County	050200	Monongahela	05020002	West Fork	Hollick Run
Lewis County	050200	Monongahela	05020002	West Fork	Hollick Run
Lewis County	050200	Monongahela	05020002	West Fork	Hollick Run
Lewis County	050200	Monongahela	05020002	West Fork	Hollick Run
Lewis County	050200	Monongahela	05020002	West Fork	Broad Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Broad Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Buckhannon Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	Hog Camp Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hog Camp Run
Lewis County	050200	Monongahela	05020002	West Fork	Hog Camp Run
Lewis County	050200	Monongahela	05020002	West Fork	Elk Lick
Lewis County	050200	Monongahela	05020002	West Fork	Elk Lick
Lewis County	050200	Monongahela	05020002	West Fork	Elk Lick
Lewis County	050200	Monongahela	05020002	West Fork	Turkeypen Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Turkeypen Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Turkeypen Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hollick Run
Lewis County	050200	Monongahela	05020002	West Fork	West Fork River
Lewis County	050200	Monongahela	05020002	West Fork	West Run
Lewis County	050200	Monongahela	05020002	West Fork	West Run
Lewis County	050200	Monongahela	05020002	West Fork	West Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to West Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to West Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to West Run
Lewis County	050200	Monongahela	05020002	West Fork	Buckhannon Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Buckhannon Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hollick Run

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hollick Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hollick Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hollick Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	Laurel Lick
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Laurel Lick
Lewis County	050200	Monongahela	05020002	West Fork	Kincheloe Creek
Harrison County	050200	Monongahela	05020002	West Fork	Kincheloe Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hog Camp Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hog Camp Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hog Camp Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hog Camp Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Elk Lick
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Elk Lick
Lewis County	050200	Monongahela	05020002	West Fork	Broad Run
Lewis County	050200	Monongahela	05020002	West Fork	Broad Run
Lewis County	050200	Monongahela	05020002	West Fork	Broad Run
Lewis County	050200	Monongahela	05020002	West Fork	Broad Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Broad Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	Lifes Run
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Hackers Creek
Lewis County	050200	Monongahela	05020002	West Fork	UNT to Lifes Run
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Shock Run
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Sugar Camp Run
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Knapp Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Knapp Creek
Pocahontas	050500	Kanawha	05050003	Greenbrier	UNT to Knapp Creek

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
County					
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Knapp Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Knapp Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Knapp Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Knapp Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Knapp Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Knapp Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Sugar Camp Run
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Sugar Camp Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Slaty Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Big Spring Fork
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Glade Run
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
County					
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Thorn Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Thorn Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Thorn Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Thorn Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Thorn Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Thorn Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Thorn Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Big Spring Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Big Spring Fork
Pocahontas County	050500	Kanawha	05050007	Elk	Big Spring Fork
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Mile Branch
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Mile Branch
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Thomas Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Laurel Run
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Thomas Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Powder Lick Run
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Sugar Camp Run
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Sugar Camp Run
Pocahontas County	050500	Kanawha	05050007	Elk	Dry Fork
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Sugar Camp Run

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Pocahontas County	050500	Kanawha	05050007	Elk	Big Spring Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Big Spring Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Big Spring Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Big Spring Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Big Spring Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Big Spring Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Big Spring Fork
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Big Spring Fork
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Clover Creek
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	Mill Run
Pocahontas	050500	Kanawha	05050007	Elk	Big Spring Fork

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
County					
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Clover Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Greenbrier River
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Little Thorny Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	UNT to Little Thorny Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Little Thorny Creek
Pocahontas County	050500	Kanawha	05050003	Greenbrier	Little Thorny Creek
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Pocahontas County	050500	Kanawha	05050007	Elk	UNT to Mill Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Long Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Randolph County	050200	Monongahela	05020001	Tygart Valley	unt to lick run
Randolph County	050200	Monongahela	05020001	Tygart Valley	beech run
Randolph County	050200	Monongahela	05020001	Tygart Valley	phillips camp run
Randolph County	050200	Monongahela	05020001	Tygart Valley	short run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Beech Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Jenks Fork
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Long Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Sugar Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Jenks Fork
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Dry Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	Dry Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Hickorylick Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Hickorylick Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Left Fork Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Mingo Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	Left Fork Buckhannon River

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Randolph County	050200	Monongahela	05020001	Tygart Valley	Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	Long Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Long Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Long Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	SPLIT				
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Valley Fork
Randolph County	050500	Kanawha	05050007	Elk	Valley Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Valley Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Valley Fork

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Randolph County	050500	Kanawha	05050007	Elk	UNT to Valley Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Valley Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Valley Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Valley Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Valley Fork
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Mingo Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Left Fork Buckhannon
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Mitchell Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Randolph County	050500	Kanawha	05050007	Elk	UNT to Hewett Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Hewett Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Hewett Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Hewett Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Hewett Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Hewett Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Valley Creek
Randolph County	050500	Kanawha	05050007	Elk	UNT to Valley Creek
Randolph County	050500	Kanawha	05050007	Elk	UNT to Valley Creek
Randolph County	050500	Kanawha	05050007	Elk	Valley Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Hewett Fork
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Sugar Creek
Randolph County	050500	Kanawha	05050007	Elk	UNT to Sugar Creek
Randolph County	050500	Kanawha	05050007	Elk	UNT to Sugar Creek
Randolph County	050500	Kanawha	05050007	Elk	UNT to Sugar Creek
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Buckhannon River
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Light Run

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Light Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Light Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Light Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Elkwater Fork
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Mingo Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Mingo Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	Mingo Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	Mingo Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Long Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	Long Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	Long Run
Randolph County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Buckhannon R
Randolph County	050500	Kanawha	05050007	Elk	UNT to Left Fork Buckhannon R
Randolph County	050500	Kanawha	05050007	Elk	UNT to Back Fork Elk River
Randolph County	050500	Kanawha	05050007	Elk	UNT to Falling Spring Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	Fink Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Fink Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Brushy Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Brushy Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to French Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to French Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to French Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	French Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	Buckhannon River
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Trubie Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Buckhannon Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	Grassy Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Gravel Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	Right Fork Middle Fork River
Upshur County	050200	Monongahela	05020001	Tygart Valley	Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Cutright Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Laurel Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Laurel Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Laurel Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Brushy Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Brushy Fork

County	HUC6	HUC6_NAME	HUC8	HUC8_NAME	Feature_Name
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Brushy Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Brushy Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	Brushy Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Lick Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	Cutright Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to French Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Trubie Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Trubie Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	Gravel Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	Laurel Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	Laurel Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Leonard Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Leonard Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Tenmile Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to French Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to French Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to French Creek
Upshur County	050200	Monongahela	05020001	Tygart Valley	Brushy Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	Brushy Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	Trubie Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	Jackson Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	Jackson Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Jackson Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Jackson Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Middle Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Brushy Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Brushy Fork
Upshur County	050200	Monongahela	05020001	Tygart Valley	Laurel Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	Gravel Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	Gravel Run
Upshur County	050200	Monongahela	05020001	Tygart Valley	UNT to Left Fork Brushy Fork

APPENDIX G

ESC Plans for Pipe Storage and Contractor Yards

Provided Separately

ATLANTIC COAST PIPELINE PROJECT
CONTRACTOR YARDS

UPSHUR AND RANDOLPH COUNTIES, WEST VIRGINIA

EROSION & SEDIMENT CONTROL PLAN

PROJECT CONTACTS

OWNER/APPLICANT

DOMINION TRANSMISSION, INC.
5000 DOMINION BOULEVARD
GLEN ALLEN, VA 23060
PHONE: 804-335-4923

CONSULTANT

ENVIRONMENTAL RESOURCES MANAGEMENT
1000 IDS CENTER
80 SOUTH EIGHTH STREET
MINNEAPOLIS, MN 55402
WAYNE SICORA, PE, CPESC
612-347-7128
wayne.sicora@erm.com

EXISTING INFORMATION SOURCES

CONTOURS AND BASE MAP PROVIDED BY I3 CONSULTING, LLC WITH ADDITIONAL CONTOURS OBTAINED FROM THE USGS NATIONAL ELEVATION DATASET.

PLAN REPRODUCTION WARNING

THE PLANS HAVE BEEN CREATED ON 24"X36" SHEETS FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

THE PLANS HAVE BEEN CREATED FOR FULL COLOR PLOTTING, AND SET OF THE PLANS THAT IS NOT PLOTTED IN FULL COLOR SHALL NOT BE CONSIDERED ADEQUATE FOR CONSTRUCTION PURPOSES.

WARNING INFORMATION MAY BE LOST IN COPYING AND/OR GRAY SCALE PLOTTING.

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Know what's Below.
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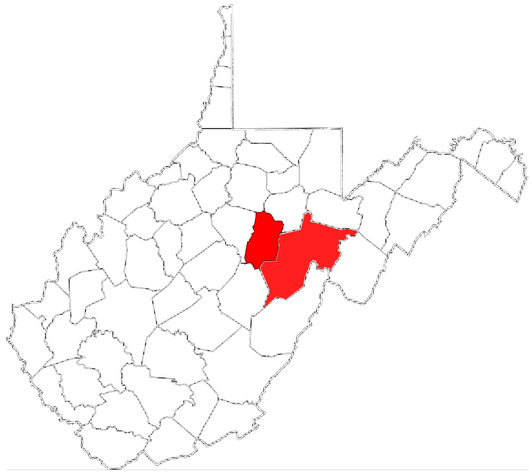
THREE DAYS BEFORE YOU DIG CALL WV ONE CALL SYSTEM TOLL FREE 811 OR 1-800-245-4848



WEST VIRGINIA

SHEET INDEX

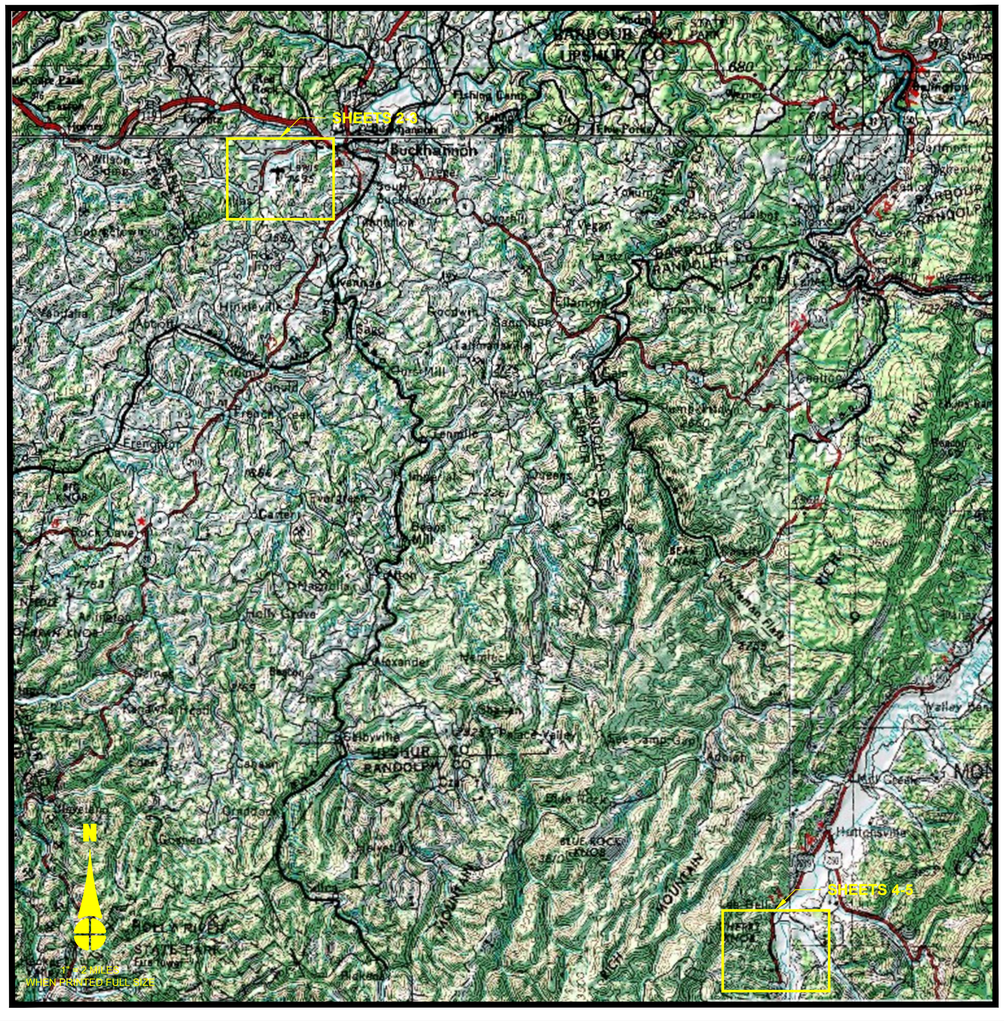
●		03/02/2017	SHEET 1 - COVER SHEET
●		03/02/2017	SHEET 2 - LEWIS AIR STRIP (SP1-2_CY SPR01-2-A) AERIAL OVERVIEW
●		03/02/2017	SHEET 3 - LEWIS AIR STRIP (SP1-2_CY SPR01-2-A) ESCP
●		03/02/2017	SHEET 4 - HUTTONSVILLE (SP2-2_CY SPR2-2A) AERIAL OVERVIEW
●		03/02/2017	SHEET 5 - HUTTONSVILLE (SP2-2_CY SPR2-2A) ESCP
●		03/02/2017	SHEET 6 - ESCP NOTES
●		03/02/2017	SHEET 7 - ESCP DETAILS
●		03/02/2017	SHEET 8 - ESCP DETAILS
●		03/02/2017	SHEET 9 - ESCP DETAILS

DRAWING INDEX LEGEND

FILLED CIRCLE INDICATES DRAWING INCLUDED WITHIN THIS ISSUE
MOST RECENT REVISION NUMBER
MOST RECENT ISSUE OR REVISION DATE

●	-	X/XX/201X	SHEET X - SHEET TITLE

LOCATION MAP



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LEGEND

- LIMITS OF CONSTRUCTION
- LIMITS OF DISTURBANCE
- OVERHEAD ELECTRIC LINE
- UNDERGROUND WATER LINE
- UNDERGROUND GAS LINE
- UNDERGROUND SANITARY SEWER
- BURIED TELEPHONE LINE
- FENCE
- STREAM
- CONTOUR
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- GRAVEL AREA.
- UTILITY POLE
- GUY ANCHOR
- UTILITY VALVE
- GAS LINE MARKER
- WATER LINE MARKER
- FIRE HYDRANT
- UTILITY METER
- TEMPORARY BENCH MARK
- GAS WELL
- UTILITY MANHOLE
- TELEPHONE PEDESTAL
- FLOW ARROW

GENERAL NOTES AND COMMENTS:

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4. DOMINION RESERVES THE RIGHT TO USE EITHER, OR BOTH, 12" COMPOST FILTER SOCK OR STANDARD SILT FENCE, FOR ANY APPLICATION IN WHICH EITHER OF THESE TWO CONTROL MEASURES ARE SPECIFIED.

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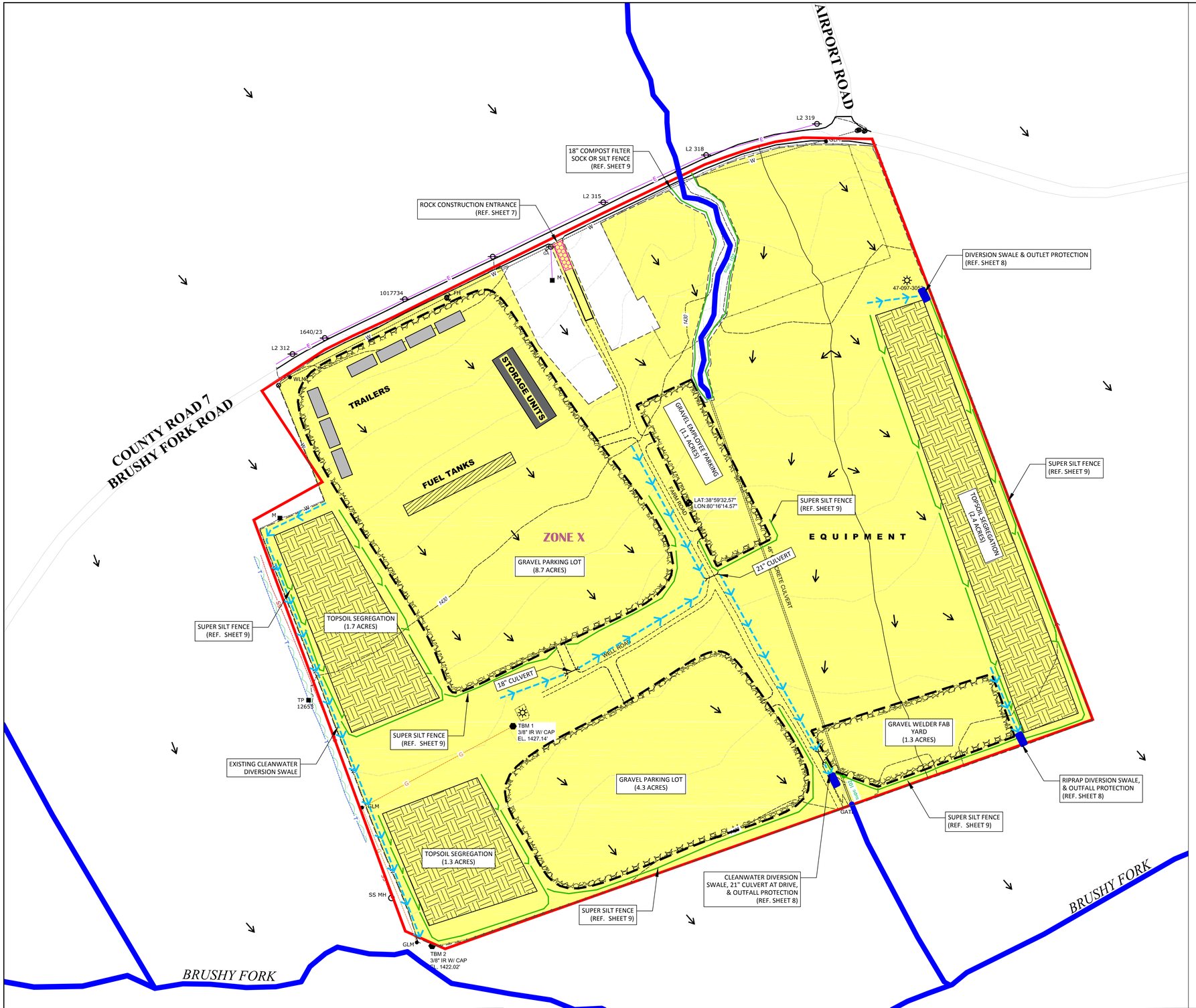
Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
LEWIS AIR STRIP CONTRACTOR YARD AERIAL OVERVIEW

DISTRICT:	-	COUNTY:	UPSHUR	STATE:	WV	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\West Virginia\					-	2 OF 9	0



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LEGEND

- LIMITS OF CONSTRUCTION (44.0 ACRES)
- LIMITS OF DISTURBANCE (41.7 ACRES)
- OVERHEAD ELECTRIC LINE
- UNDERGROUND WATER LINE
- UNDERGROUND GAS LINE
- UNDERGROUND SANITARY SEWER
- BURIED TELEPHONE LINE
- FENCE
- STREAM
- CONTOUR
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- GRAVEL AREA.
- PROPOSED COMPOST FILTER SOCK OR SILT FENCE
- UTILITY POLE
- GUY ANCHOR
- UTILITY VALVE
- GAS LINE MARKER
- WATER LINE MARKER
- FIRE HYDRANT
- UTILITY METER
- TEMPORARY BENCH MARK
- GAS WELL
- UTILITY MANHOLE
- TELEPHONE PEDESTAL
- FLOW ARROW
- ROCK CONSTRUCTION ENTRANCE (OR APPROVED ALT.)
- OUTLET PROTECTION
- PROPOSED CULVERT
- PROPOSED DIVERSION SWALE

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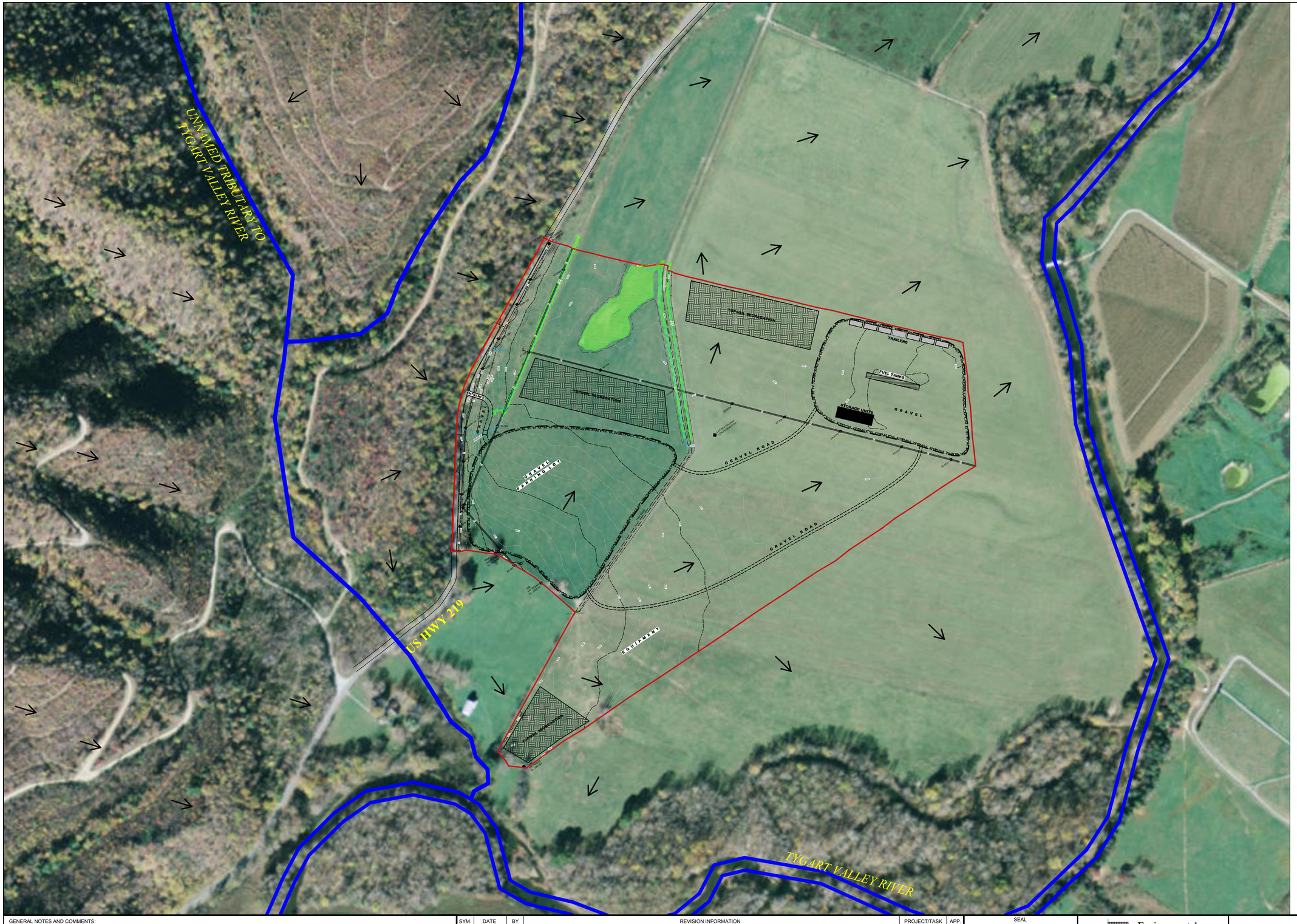
Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
LEWIS AIR STRIP CONTRACTOR YARD AERIAL OVERVIEW

DISTRICT:	-	COUNTY:	UPSHUR	STATE:	WV	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\West Virginia\					-	3 OF 9	0



LEGEND

- LIMITS OF CONSTRUCTION
- LIMITS OF DISTURBANCE
- FENCE
- OVERHEAD ELECTRIC LINE
- OVERHEAD TELEPHONE LINE
- DITCH
- CONTOUR
- FLOOD PLAIN
- GRAVEL AREA
- TOP SOIL SEGREGATION AREA
- TEMPORARY BENCH MARK
- CULVERT
- UTILITY POLE
- GUY ANCHOR
- GUY POLE
- WETLAND
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- FLOW ARROW

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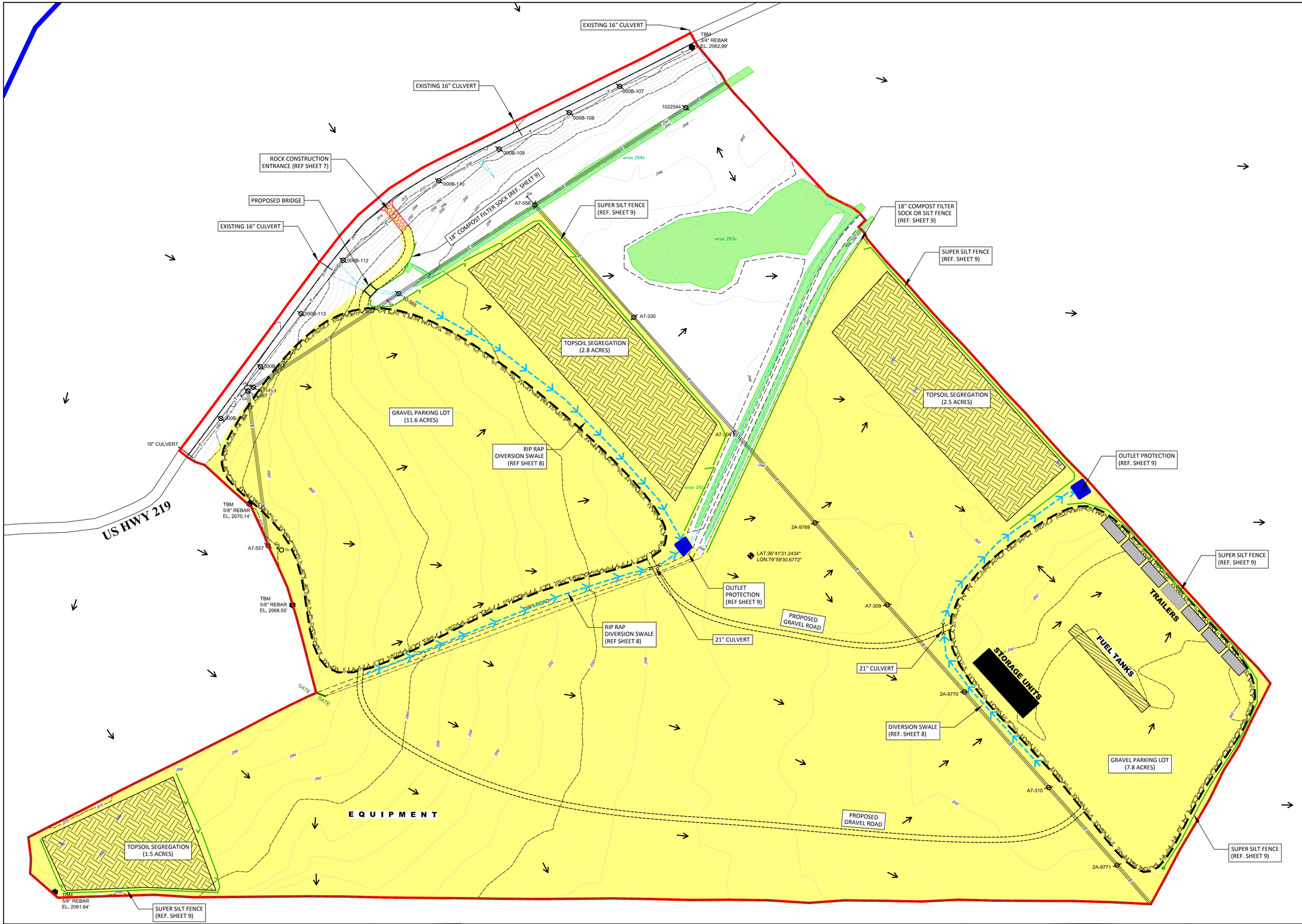
Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
HUTTONSVILLE CONTRACTOR YARD AERIAL OVERVIEW

DISTRICT:	-	COUNTY:	RANDOLPH	STATE:	WV	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\West Virginia\					-	4 OF 9	0



LEGEND

- LIMITS OF CONSTRUCTION (77.2 ACRES)
- LIMITS OF DISTURBANCE (64.9 ACRES)
- PROPOSED COMPOST FILTER SOCK OR SILT FENCE
- FENCE
- OVERHEAD ELECTRIC LINE
- OVERHEAD TELEPHONE LINE
- DITCH
- CONTOUR
- FLOOD PLAIN
- GRAVEL AREA
- TOP SOIL SEGREGATION AREA
- ROCK CONSTRUCTION ENTRANCE (OR APPROVED ALT.)
- TEMPORARY BENCH MARK
- CULVERT
- UTILITY POLE
- GUY ANCHOR
- GUY POLE
- WETLAND
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- FLOW ARROW
- OUTLET PROTECTION
- PROPOSED CULVERT
- PROPOSED DIVERSION SWALE

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925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
HUTTONSVILLE CONTRACTOR YARD ESCP

DISTRICT:	-	COUNTY:	RANDOLPH	STATE:	WV	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\West Virginia\					-	5 OF 9	0

EROSION AND SEDIMENT CONTROL PLAN NARRATIVE

THE EROSION AND SEDIMENT (E&S) CONTROL MEASURES FOR THE CONTRACTOR YARD ACTIVITIES CONSIST OF SAFETY FENCE, COMPOST FILTER SOCK AND/OR SILT FENCE, ROCK CONSTRUCTION ENTRANCES, DIVERSION SWALES, CULVERTS, OUTLET PROTECTION, AND TEMPORARY AND PERMANENT SEEDING AND MULCHING. BEST MANAGEMENT PRACTICES (BMP) SPECIFICATIONS FOR THE E&S CONTROL PLAN (E&SCP) ARE TO BE UTILIZED BY THE CONSTRUCTION CONTRACTOR ACCORDING TO THE PROVIDED PLAN.

GENERAL CONSTRUCTION NOTES:

1. DISCHARGING SEDIMENT LADEN WATER WHICH WILL CAUSE OR CONTRIBUTE TO THE DEGRADATION OF A BENEFICIAL USE OF A WATER OF THE STATE FROM THE CONSTRUCTION SITE, A DEWATERING SITE, INTO ANY WATERBODY OR STORM DRAIN WITHOUT FILTRATION OR EQUIVALENT TREATMENT IS PROHIBITED.
2. THE DISCHARGER SHALL AMEND THE EROSION & SEDIMENT CONTROL PLAN WHENEVER THERE IS A CHANGE IN THE CONSTRUCTION OR OPERATIONS, WHICH MAY EFFECT THE DISCHARGE OF POLLUTANTS TO SURFACE WATERS, GROUNDWATER, OR A MUNICIPAL STORM DRAIN SYSTEM.
3. DISCHARGES ORIGINATING FROM OFF-SITE SOURCES, WHICH FLOW THROUGH OR ACROSS THE AREAS DISTURBED BY CONSTRUCTION, SHALL BE DIVERTED AROUND THE ACTIVE CONSTRUCTION AREA WHENEVER POSSIBLE.
4. SOIL STABILIZATION (TEMPORARY SEED AND MULCHING) PROCEDURES WILL TAKE PLACE WITHIN 7 DAYS IF AREA IS TO BE LEFT IDLE FOR 21 DAYS AND/OR PRIOR TO PERIODS OF CESSATION IN CONSTRUCTION ACTIVITIES. PERMANENT STABILIZATION MUST ULTIMATELY BE COMPLETED IN ALL DISTURBED AREAS.
5. DUE TO VARYING SITE CONDITIONS, ADDITIONAL SEDIMENT CONTROL BMPS MAY BE NECESSARY BEYOND THE MEASURES SHOWN ON THE E&S CONTROL PLAN.
6. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES, LOCATED WITHIN THE IMMEDIATE AREA AND ABLE TO GET TO THE SITE WITHIN A REASONABLE TIMEFRAME. ALL NECESSARY MATERIALS SHALL BE STOCKPILED ON-SITE AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY BMP DEVICES WHEN RAIN OR SNOW MELT EVENTS ARE IMMINENT.
7. DUE TO VARYING SITE CONDITIONS, SOIL STOCKPILE LOCATIONS/EXTENT AND LOCATION OF EROSION CONTROL MEASURES ASSOCIATED WITH THESE STOCKPILES SHALL BE PREVIEWED/APPROVED BY PROJECT EI.
8. STAGING AREAS, ASSEMBLY AREAS, TEMPORARY EQUIPMENT AND NON-HAZARDOUS MATERIAL STORAGE AREAS SHALL BE LOCATED OUTSIDE 100-YR FLOOD ZONES. HAZARDOUS MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM SURFACE WATER BODIES.
9. AT MINIMUM, ALL BMPS ARE TO BE INSPECTED ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD DURING THE ENTIRE PROJECT. A WRITTEN REPORT MUST ALSO BE COMPLETED, DOCUMENTING EACH INSPECTION AND, IF NECESSARY, ANY REPAIR, REPLACEMENT OR MAINTENANCE ACTIVITY.
10. THE LOCATION AND EXISTENCE OF EXISTING UNDERGROUND FACILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM A SEARCH OF AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL TAKE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING FACILITY SHOWN ON THE DRAWINGS, AND ANY OTHER WHICH IS NOT ON RECORD OR NOT SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL POTHOLE EXISTING UTILITIES AT THE POINTS OF CONNECTION AND ALL UTILITY CROSSINGS TO DETERMINE EXACT LOCATIONS PRIOR TO THE START OF WORK. ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER OF RECORD IMMEDIATELY.
11. ALL REQUIRED PERMITS MUST BE OBTAINED PRIOR TO STARTING WORK.
12. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION, STABILIZATION AND MAINTENANCE OF ALL EXISTING AND PROPOSED SITE EROSION & SEDIMENTATION CONTROL DEVICES AND FACILITIES.
13. THE CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING EROSION & SEDIMENTATION DEVICES AND SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD THE ENGINEER OF RECORD HARMLESS OF ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF ENGINEER OF RECORD.
14. AS SITE SPECIFIC CONDITIONS MAY WARRANT, THE E&SC PLAN MAY REQUIRE MINOR MODIFICATIONS TO ENSURE PROPER PROTECTION OF RECEIVING WATERS. THE RESPECTIVE PROJECT ENVIRONMENTAL INSPECTOR (EI) WILL IDENTIFY SITE SPECIFIC AREAS WHERE A CERTAIN BMP MODIFICATION(S) IS NECESSARY TO EITHER OMIT OR ENHANCE BMPS IN SUCH AREAS. THIS PROCESS ENTAILS THE EI TO IDENTIFY LOCATIONS WHERE BMPS WILL NEED TO BE ALTERED, SUBSTITUTED OR OMITTED AND CONTACT THE DOMINION COMPLIANCE SPECIALIST TO REVIEW PROPOSED CHANGES. UPON REVIEW AND APPROVAL BY THE DOMINION COMPLIANCE SPECIALIST, THE EI WILL REDLINE, DATE, AND SIGN THE E&SCP DRAWING(S) DEPICTING THE REDLINE CHANGE(S). ONCE THIS PROCESS IS COMPLETED BY THE EI WILL NOTIFY THE WVDEP OF SUCH MINOR MODIFICATION REDLINE AMENDMENTS AS REQUIRED BY THE GENERAL PERMIT.
15. FOR THE PURPOSES OF THIS DOCUMENT, THE FOLLOWING DEFINITIONS APPLY:
    b. LIMITS OF DISTURBANCE (LOD) - THE BOUNDARY WITHIN WHICH GROUND DISTURBANCE OCCURS (OR MAY OCCUR) AS A RESULT OF CONSTRUCTION RELATED ACTIVITIES.
    c. LIMITS OF CONSTRUCTION (LOC) - THE BOUNDARY WITHIN WHICH GROUND DISTURBANCE OCCURS AS A RESULT OF THE CONSTRUCTION RELATED ACTIVITIES, IDENTIFIED AS LIMITS OF DISTURBANCE (LOD) ON THE E&SC PLANS, AS WELL AS WORK AREAS INCLUDING VEHICLE PARKING AND EQUIPMENT AND MATERIAL STAGING.

BMP INSTALLATION AND REMOVAL SEQUENCE

CONSTRUCTION MUST BE IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. THIS SEQUENCE IS DESIGNED TO MINIMIZE SOIL EROSION AND SEDIMENTATION. THE CONTRACTOR MAY DEVIATE SLIGHTLY FROM THE STAGING OF PERMANENT SITE IMPROVEMENTS, BUT NO DEVIATION FROM THE RELATIVE ORDER OF EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE ALLOWED.

THE STAGING OF EARTHMOVING ACTIVITIES FOR THIS PROJECT IS A GENERAL DESCRIPTION OF THE WORK REQUIRED. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH COMPANY STANDARDS, THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS AND ALL OTHER APPLICABLE FEDERAL, STATE OR LOCAL REQUIREMENTS.

THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN INCLUDING THE SOIL EROSION CONTROL DRAWINGS AND NARRATIVE SHALL BE AVAILABLE ON SITE AT ALL TIMES DURING EARTH DISTURBANCE.

1. STAKE/FLAG ALL LIMITS OF DISTURBANCE FOR CONSTRUCTION ACTIVITIES, CLEARLY IDENTIFYING WETLAND AND STREAM EDGES. INSTALL SIGNS TO DESIGNATE THE AREA TO IDENTIFY IMPORTANT PROJECT ATTRIBUTES SUCH AS WETLAND/STREAM BOUNDS, EXCLUSION AREAS ETC.
2. INSTALL ROCK CONSTRUCTION ENTRANCE IMMEDIATELY BEFORE INITIAL DISTURBANCES. THE ROCK CONSTRUCTION ENTRANCE TO BE UNDERLAIN BY FILTER FABRIC. ALL CONSTRUCTION TRAFFIC SHOULD USE ONLY ROCK CONSTRUCTION ENTRANCE FOR INGRESS AND EGRESS. ALL MUD OR SEDIMENT TRACKED ONTO THE EXISTING ROADWAY SHALL BE REMOVED BY THE CONTRACTOR AS NECESSARY.
3. INSTALL EROSION CONTROL MEASURES (I.E., COMPOST FILTER SOCK AND/OR SILT FENCE) AS NECESSARY WITH THE ACCESS ROADS TO PREVENT SEDIMENT LADEN RUNOFF FROM ENTERING DOWNSTREAM WATER BODIES. MAINTAIN THE ACCESS ROAD AS REQUIRED, ASSOCIATED DITCHES, AND NECESSARY OUTLET PROTECTION.
4. PRIOR TO GRADING AND EXCAVATION, INSTALL REMAINING COMPOST FILTER SOCKS AND/OR SILT FENCE SHOWN ON THE PLANS.
5. COMMENCE GRADING AND ASSOCIATED CUT AND FILL SLOPES. THE EARTH MOVING ACTIVITY SHALL BEGIN IN AREA OF CUT SO THAT THE CUTS CAN BE PLACED IN AREAS OF FILL.
6. FINALIZE CONTRACTOR YARD INSTALLATION AND ROADWAY GRADES AND PLACE TOPSOIL ON THE CUT AND FILL AREAS. IMMEDIATELY INSTALL EROSION CONTROL BLANKETS OR EQUIVALENT ON CUT AND FILL SLOPES, AFTER PLACEMENT OF STOCKPILES TOPSOIL ON EXCAVATED SLOPES, AND AS DIRECTED.
7. RE-DISTRIBUTION OF WET SEDIMENT FROM DEVICES AND FACILITIES SHALL ONLY BE PERMITTED UPHILL OF AN EFFECTIVE SEDIMENT CONTROL DEVICE OR FACILITY. SEDIMENT LADEN RUNOFF SHALL NOT BE ALLOWED TO FLOW DIRECTLY INTO, ONTO OR THROUGH UNPROTECTED INLETS, STORM DRAINS, AND WATER BODIES.
8. ANY EXPOSED TOPSOIL PILES SHOULD BE STABILIZED & SEEDED PER THE PERMIT REGULATIONS, AND BY TABLES SHOWN ON THE APPROVED EROSION CONTROL PLANS AND MULCHED WITH STRAW AS SPECIFIED BY THE PROJECT OWNER.
9. UPON 70% VEGETATIVE STABILIZATION, REMOVE TEMPORARY SEDIMENT CONTROLS. REMOVE ACCUMULATED SEDIMENTS WITHIN DEVICES, RE-GRADE TO FINAL CONTOURS. STABILIZE SITE PER THE PLANS.

SEQUENCE OF CONSTRUCTION

1. LIMITS OF CONSTRUCTION MUST BE FIELD MARKED PRIOR TO CLEARING, INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES.
2. DETAILED SEQUENCE OF CONSTRUCTION:
    a. INSTALL STABILIZED CONSTRUCTION ENTRANCE.
    b. GRADE AS NECESSARY FOR INSTALLATION OF SEDIMENT CONTROL DEVICES.
    c. INSTALL SEDIMENT CONTROL DEVICES.
    d. PREPARE "TEMPORARY" PARKING AND STORAGE AREA(S).
    e. CLEAR AND GRUB THE SITE, AS REQUIRED.
    f. START CONSTRUCTION OF THE SITE IMPROVEMENTS.
    g. BEGIN GRADING THE SITE.
    h. INSTALL CONTRACTOR YARD IMPROVEMENTS.
    i. COMPLETE GRADING, INSTALL GRAVEL AND PERMANENT SEEDING AND PLANTING.
    j. AT THE CONCLUSION OF THE CONSTRUCTION ACTIVITIES, TEMPORARY SOIL STOCKPILES, ROCK STAGING AREAS AND EQUIPMENT AREAS SHALL BE REMOVED, REGRADED, AND STABILIZED TO PRE-EXISTING CONDITIONS.
    k. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES (ONLY IF SITE IS STABILIZED).

MAINTENANCE SCHEDULE

AFTER CONSTRUCTION IS COMPLETED, ALL BMPS WILL BE REMOVED AND ANY LAND DISTURBED BY REMOVAL WILL BE PERMANENTLY STABILIZED. UNLESS OTHERWISE SPECIFIED, ALL MAINTENANCE MUST BE COMPLETED IMMEDIATELY AFTER AN INSPECTION IDENTIFIES THAT A BMP IS NOT FUNCTIONING AS REQUIRED.

- ALL E&S CONTROLS WILL BE INSPECTED, AT A MINIMUM, ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD DURING THE ENTIRE PROJECT.
- SEDIMENT MUST BE REMOVED WHERE ACCUMULATION REACHES ONE-HALF THE ABOVE GROUND HEIGHT OF THE CONTROL MEASURE.
- EROSION CONTROL MEASURES, WHICH HAVE BEEN UNDERMINED OR TOPPED, MUST IMMEDIATELY BE REPAIRED.
- OTHER REQUIRED REPAIRS OR MAINTENANCE SHALL BE MADE IMMEDIATELY.
- TEMPORARY AND PERMANENT E&S CONTROL BMPS SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION.

MATERIAL WASTE HANDLING AND RECYCLING

1. GARBAGE DISPOSAL IS HANDLED THROUGH ONE OF THE LOCAL WASTE MANAGEMENT PROVIDERS/FACILITIES. THE CONTRACTOR WILL LEASE A DUMPSTER FOR THE DURATION OF THE PROJECT WHICH WILL BE DISPOSED OF AT A LICENSED/PERMITTED MUNICIPAL LANDFILL.
2. THE CONTRACTOR WILL DISPOSE OF ALL SCRAP MATERIAL. THE SCRAP MATERIAL MUST BE REMOVED FROM THE SITE AND DISPOSED OF OR RECYCLED AT A PROPERLY LICENSED/PERMITTED FACILITY. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY PERMITS AND/OR DISPOSAL FEES. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO ASSURE THAT ALL MATERIALS AREA HANDLED AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS, RULES, AND REGULATIONS, INCLUDING BUT NO LIMITED TO THOSE ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY, WVDEP, AND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.

SEEDING AND MULCHING

1. SEEDBED PREPARATION: AREAS TO BE SEEDED SHALL BE FREE OF ROCKS AND STONES, DISKED TO A DEPTH OF 4-IN TO 6-IN, AND SMOOTHLY GRADED.
2. TOPSOIL SHALL BE REDISTRIBUTED ON ALL DISTURBED AREAS TO BE STABILIZED PRIOR TO SEEDING.
3. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 21 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS PERMANENTLY CEASED.
4. WHERE THE INITIATION OF STABILIZATION MEASURES WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW.
5. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED (e.g., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 21 DAYS), THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED.
6. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RE-SEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.

POLLUTANT CONTROLS

- SPILLS OCCURRING DURING CONSTRUCTION, OPERATION AND MAINTENANCE ARE TO BE REPORTED IMMEDIATELY TO THE MONITORING CENTER IN ACCORDANCE WITH DOMINION POLICIES, PLANS AND PROCEDURES. DOMINION'S ENVIRONMENTAL HEALTH AND SAFETY DEPARTMENT WILL BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE AGENCIES, EXCEPT AS PROVIDED FOR BELOW.
- IF THE CALL TO THE MONITORING CENTER IS NOT RETURNED WITHIN 30 MINUTES AND THE SPILL HAS IMPACTED WATER, THE PERSON DISCOVERING THE SPILL OR RELEASE WILL CONTACT THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 AND REPORT THE RELEASE. THAT PERSON WILL CONTINUE CALLING THE MONITORING CENTER UNTIL A REPRESENTATIVE IS REACHED.

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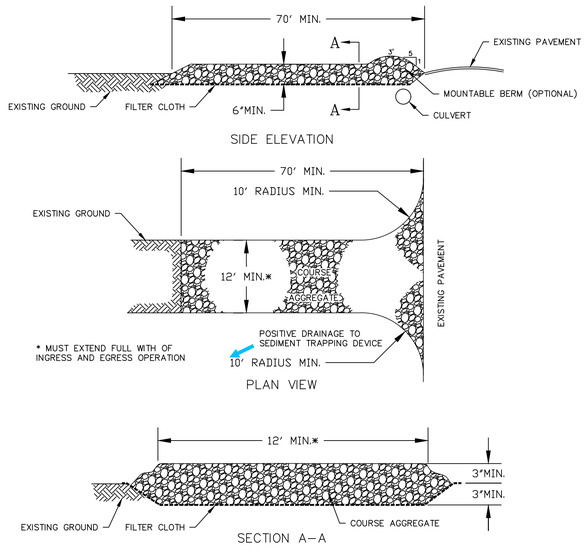
Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
WV CONTRACTOR YARD ESCP NOTES

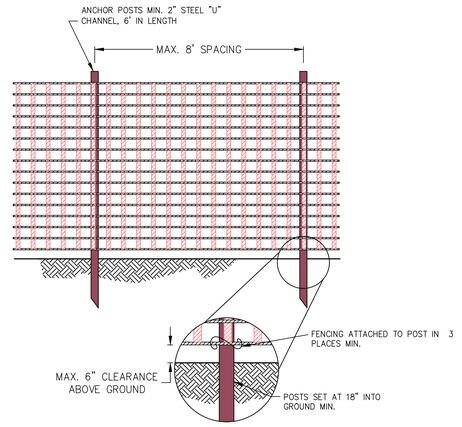
DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
-	-	WV	-	6 OF 9	0

DIR/FILE: ACP\West Virginia\



STONE CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



NOTES:
1. PROTECTION BARRIER SHALL BE 4' HIGH, CONSTRUCTED OF DURABLE AND HIGHLY VISIBLE MATERIAL (PLASTIC ORANGE CONSTRUCTION FENCE AND SNOW FENCE MAY BE USED).
2. PROTECTION BARRIERS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE WORK AT THE SITE.
3. ADDITIONAL WARNING SIGNS SHOULD ALSO BE PLACED ON THE FENCING AND IN APPROPRIATE AREAS NEAR THE WORK ZONE.

CONSTRUCTION FENCE DETAIL

NOT TO SCALE

INTRODUCTION

1. PROTECTIVE FENCING SHOULD BE INSTALLED TO PREVENT ACCESS TO POTENTIALLY HAZARDOUS AREAS OF A CONSTRUCTION SITE.

CONDITIONS WHERE PRACTICE APPLIES

1. APPLICABLE TO ANY CONTROL MEASURE OR SERIES OF MEASURES, WHICH CAN BE CONSIDERED UNSAFE BY VIRTUE OF POTENTIAL FOR ACCESS BY THE PUBLIC. THE DESIGNER, DEVELOPER, AND CONTRACTOR SHOULD ALWAYS BE SURE THAT THE MOST APPROPRIATE TYPE OF FENCE IS UTILIZED FOR A PARTICULAR NEED.

CONSTRUCTION SPECIFICATIONS

1. SAFETY FENCES SHOULD BE LOCATED SO AS TO CREATE A FORMIDABLE BARRIER TO UNDESIRED ACCESS, WHILE ALLOWING FOR THE CONTINUATION OF NECESSARY CONSTRUCTION OPERATIONS.
2. SAFETY FENCES ARE MOST APPLICABLE TO THE CONSTRUCTION OF TRAPS AND DAMS. IN USE WITH THOSE STRUCTURES, SAFETY FENCES SHOULD BE LOCATED FAR ENOUGH BEYOND THE OUTER TOE OF THE EMBANKMENT TO ALLOW FOR THE PASSAGE OF MAINTENANCE VEHICLES. FENCES SHOULD NOT BE INSTALLED ACROSS THE SLOPE OF A DAM OR DIKE.
3. SIGNS NOTING POTENTIAL HAZARDS SUCH AS "DANGER" OR "HAZARDOUS AREA – KEEP OUT" SHOULD BE POSTED AND EASILY SEEN BY ANYONE APPROACHING THE PROTECTED AREA.
4. PLASTIC (POLYETHYLENE) FENCE MAY BE USED AS SAFETY FENCING, PRIMARILY IN SITUATIONS WHERE THE NEED IS FOR A TEMPORARY BARRIER. THE FENCE SHOULD MEET THE PHYSICAL REQUIREMENTS NOTED IN TABLE 3.04.1.
5. SAFETY FENCES SHOULD BE INSTALLED PRIOR TO THE SEDIMENT CONTROL MEASURE BECOMING ACCESSIBLE.
6. APPLICABLE WARNING SIGNS NOTING HAZARDOUS CONDITIONS MUST BE INSTALLED IMMEDIATELY UPON INSTALLATION OF SAFETY FENCE.
7. CHAIN LINK FENCE SHOULD BE USED FOR PERMANENT STRUCTURES (GREATER THAN ONE YEAR).

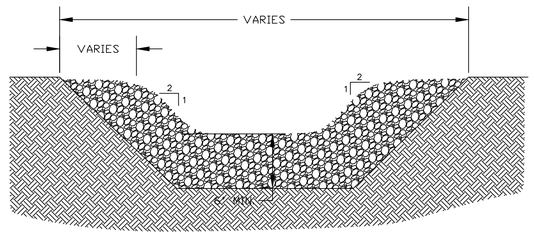
MAINTENANCE

1. SAFETY FENCE SHALL BE CHECKED REGULARLY FOR WEATHER-RELATED OR OTHER DAMAGE. ANY NECESSARY REPAIRS MUST BE MADE IMMEDIATELY.
2. CARE SHOULD BE TAKEN TO SECURE ALL ACCESS POINTS (GATES) AT THE END OF EACH WORKING DAY. ALL LOCKING DEVICES MUST BE REPAIRED OR REPLACED AS NECESSARY.

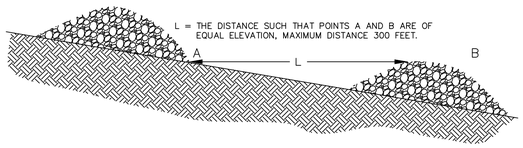
TABLE 3.04.1 PHYSICAL PROPERTIES OF PLASTIC SAFETY FENCE

PHYSICAL PROPERTY	TEST	REQUIREMENTS
RECOMMENDED COLOR	N/A	INTERNATIONAL ORANGE
TENSILE YIELD	ASTM D638	AVERAGE 2,000 lbs.
ULTIMATE TENSILE STRENGTH	ASTM D638	AVERAGE 2,000 lbs. per 4FT. WIDTH
ELONGATION AT BREAK(%)	ASTM D638	GREATER THAN 1000%
CHEMICAL RESISTANCE	N/A	INERT TO MOST CHEMICALS/ACIDS

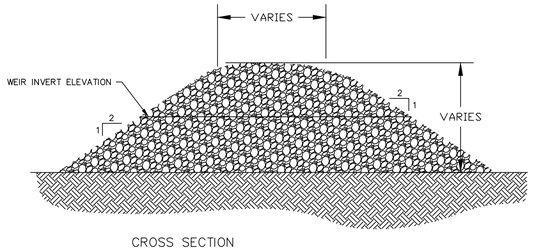
SAFETY FENCE SPECIFICATIONS



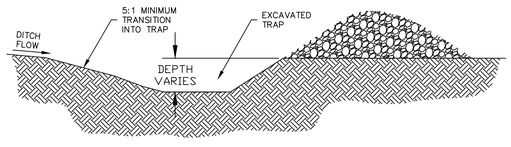
ELEVATION



CHECK DAM SPACING



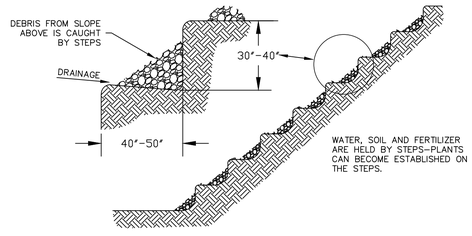
CROSS SECTION



CHECK DAM WITH SUMP

ROCK CHECK DAM DETAIL

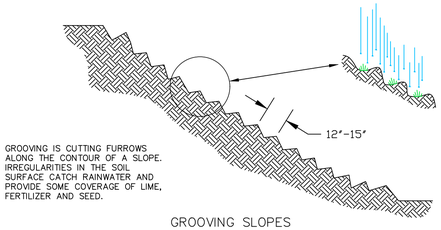
NOT TO SCALE



STAIR STEPPING CUT SLOPES

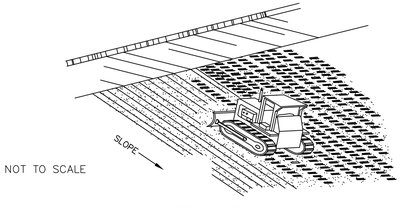
FILL SLOPE TREATMENT

NOTE:
EACH LIFT OF FILL IS COMPACTED, BUT THE OUTER FACE OF THE SLOPE IS ALLOWED TO REMAIN LOOSE SO THAT THE ROCKS, CLODS, ETC. REACH THE NATURAL ANGLE OF REPOSE.



GROOVING IS CUTTING FURROWS ALONG THE CONTOUR OF A SLOPE. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER AND PROVIDE SOME COVERAGE OF LIME, FERTILIZER AND SEED.

GROOVING SLOPES



NOT TO SCALE

TRACKING

NOTE:
DOZER TREADS CREATE GROOVES PERPENDICULAR TO THE SLOPE.

SURFACE ROUGHENING DETAIL

NOT TO SCALE

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925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

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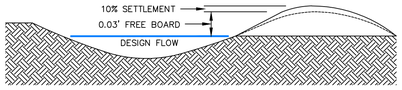
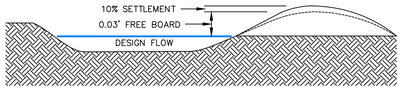
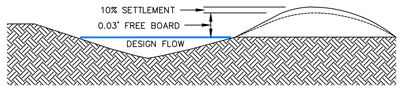


PARABOLIC DIVERSION



TRAPEZOIDAL DIVERSION



VEE–SHAPED DIVERSION

Table 3.15.1
CHANNEL CROSS SECTION REQUIREMENTS

	A	B
Drainage area	< 5 acres	5 – 10 acres
Bottom width flow channel	4 feet	6 feet
Depth of flow channel	1 foot	1 foot
Side slopes	2:1 or flatter	2:1 or flatter
Grade	0.5% minimum	0.5% minimum

DIVERSION DETAIL

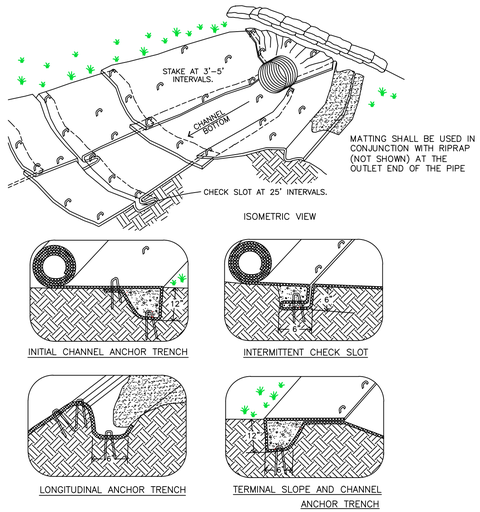
NOT TO SCALE

SOIL AMENDMENT	PERMANENT SEEDING APPLICATION RATE			NOTES
	PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YD.	
AGRICULTURAL LIME	7.5 TONS	300 LB.	3,100 LB.	OR AS PER SOIL TEST; MAY NOT BE REQUIRED IN AGRICULTURAL FIELDS
10-10-20 FERTILIZER	1,000 LB.	25 LB.	210 LB.	OR AS PER SOIL TEST; MAY NOT BE REQUIRED IN AGRICULTURAL FIELDS

MULCH TYPE	APPLICATION RATE (MIN.)			NOTES
	PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YD.	
STRAW	3 TONS	140 LB.	1,240 LB.	EITHER WHEAT OR OAT STRAW, FREE OF WEEDS, NOT CHOPPED OR FINELY BROKEN
HAY	3 TONS	140 LB.	1,240 LB.	TIMOTHY, MIXED FLOVER AND TIMOTHY OR OTHER NATIVE FORAGE GRASSES
WOOD CHIPS	4 - 6 TONS	185 - 275 LB	1,650 - 2,500 LB.	MAY PREVENT GERMINATION OF GRASSES AND LEGUMES
HYDROMULCH	1 TON	47 LB.	415 LB.	SEE NOTE 1

NOTES:
1. SHREDDED PAPER HYDROMULCH SHOULD NOT BE USED ON SLOPES STEEPER THAN 5% WOOD FIBER HYDROMULCH MAY BE APPLIED ON STEEPER SLOPES PROVIDED TACKIFIER IS USED. THE APPLICATION RATE FOR ANY HYDROMULCH SHOULD BE 2,000 LB./ACRE AT MINIMUM.

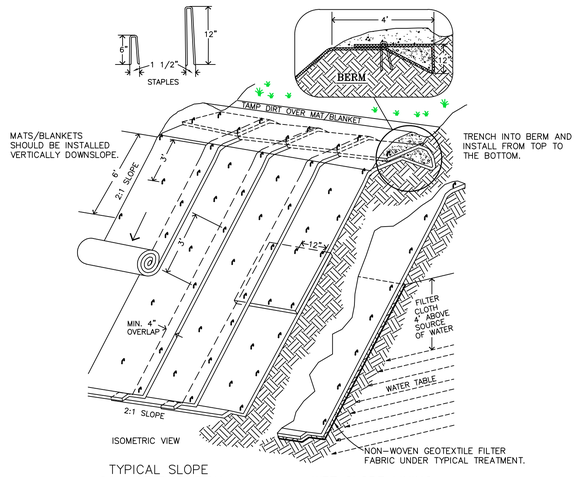
MULCH AND FERTILIZER



NOTES:
1. CHECK SLOTS TO BE CONSTRUCTED PER MANUFACTURERS SPECIFICATIONS.
2. STAKING OR STAPLING LAYOUT PER MANUFACTURERS SPECIFICATIONS.

TYPICAL RECP CHANNEL INSTALLATION DETAIL

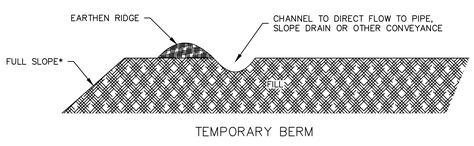
NOT TO SCALE



NOTES:
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

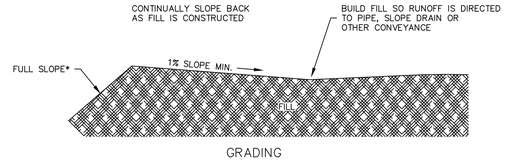
ROLLED EROSION CONTROL DETAIL

NOT TO SCALE



TEMPORARY BERM

* SEED AND MULCH FILL SLOPE EVERY 10 FEET OF FILL OR EVERY 7 DAYS, WHICHEVER COMES FIRST



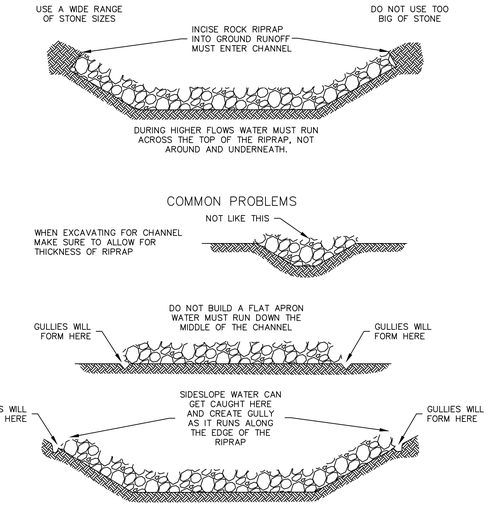
GRADING

Table 3.15.2
STABILIZATION RREQUIREMENTS

channel Grade (%)	A < 5 acres	B 5 – 10 acres
0.5 – 3.0	Seed & straw mulch	Seed & straw mulch
3.1 – 5.0	Seed & straw mulch	Seed & cover /RECP; sod; or line with riprap
5.1 – 8.0	Seed & cover w/ RECP; sod;or line with riprpa	Line with riprap
8.1 – 20.0	Line with riprap	Engineering design

TEMPORARY FILL DIVERSION DETAIL

NOT TO SCALE

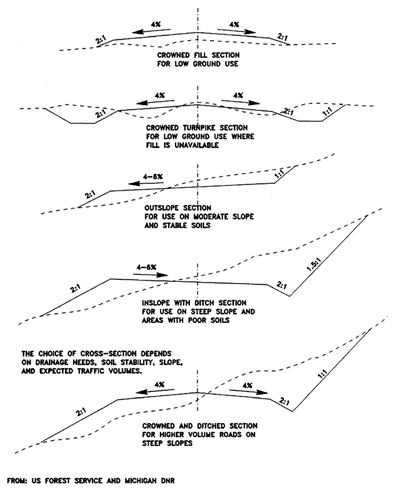


RIPRAP DIVERSION DETAIL

NOT TO SCALE

FIGURE 3.35.1

TYPES OF ROAD CROSS–SECTIONS



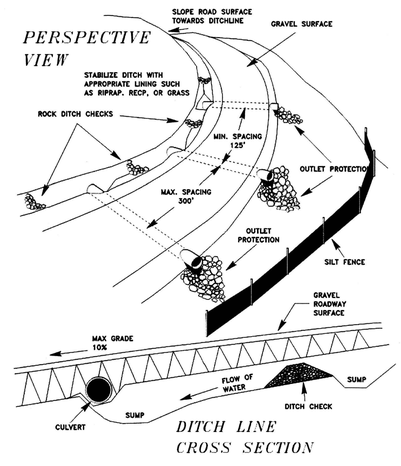
FROM: US FOREST SERVICE AND MICHIGAN DNR

TYPES OF ROAD CROSS–SECTIONS

NOT TO SCALE

FIGURE 3.35.2

SEDIMENT AND EROSION CONTROL FOR ACCESS ROADS AND DRIVEWAYS



SEDIMENT AND EROSION CONTROL FOR ACCESS ROADS AND DRIVEWAYS

NOT TO SCALE

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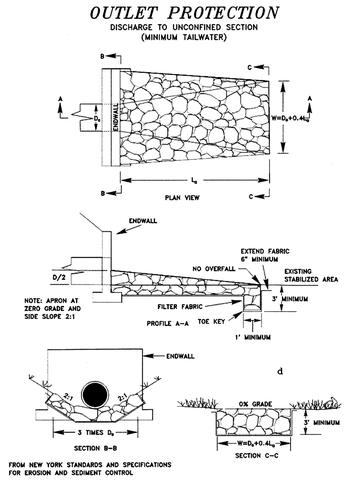
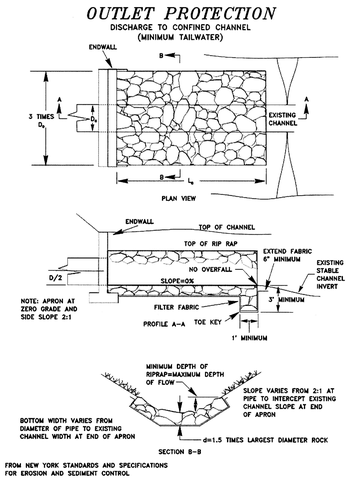
FIGURE 3.17.1



OUTLET PROTECTION UNCONFINED

NOT TO SCALE

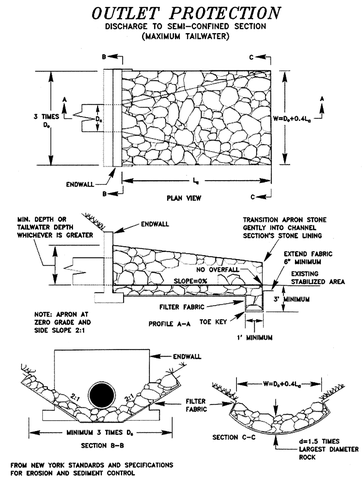
FIGURE 3.17.2



OUTLET PROTECTION CONFINED

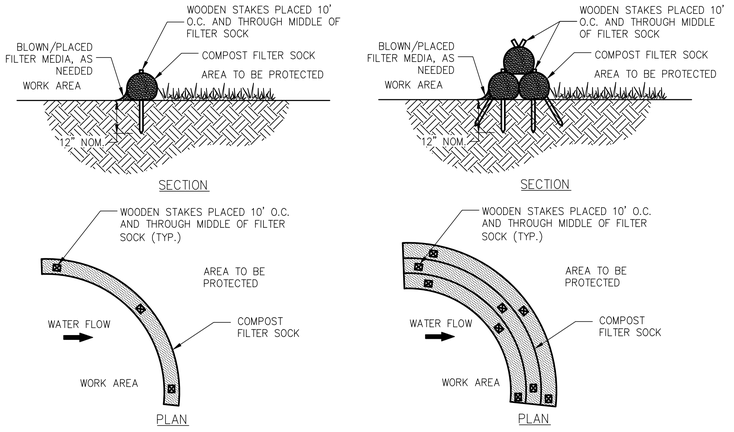
NOT TO SCALE

FIGURE 3.17.3



OUTLET PROTECTION SEMI-CONFINED

NOT TO SCALE



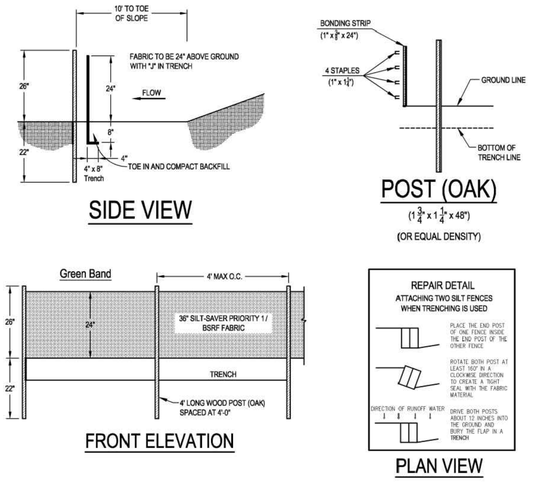
NOTES:

1. FILTER SOCK TO BE FILTREXX SEDIMENT CONTROL SILTSOXX OR APPROVED EQUAL. FILTER MEDIA INSIDE AND, AS NECESSARY UP-SLOPE OF FILTER SOCK, TO BE FILTREXX FILTERMEDIA OR APPROVED EQUAL.
2. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FILTER SOCK.

COMPOST FILTER SOCK

NOT TO SCALE

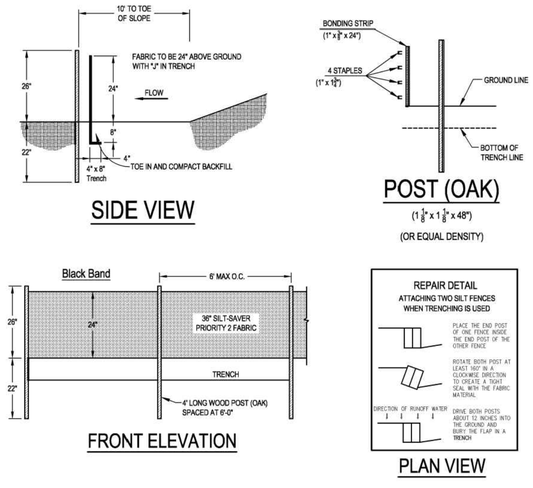
SILT - SAVER
EROSION AND SEDIMENT CONTROL PRODUCTS



BELTED SILT RETENTION FENCE (BSRF)
PRIORITY 1 – GREEN BAND

NOT TO SCALE

SILT - SAVER
EROSION AND SEDIMENT CONTROL PRODUCTS

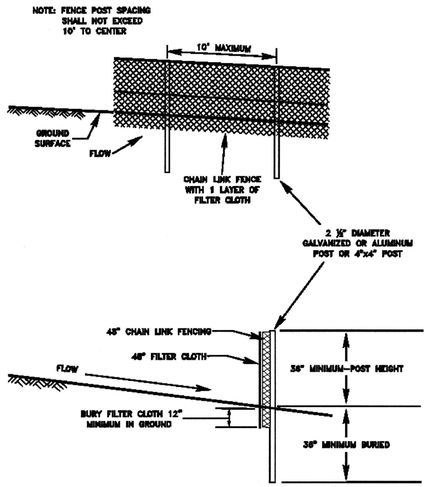


BELTED SILT RETENTION FENCE (BSRF)
PRIORITY 2

NOT TO SCALE

FIGURE 3.28.1

SUPER SILT FENCE



SUPER SILT FENCE

NOT TO SCALE

For Info on NPDES Stormwater Permit

To comment on Sediment Control Plan:

Call: 800-654-5227

or

DEP.Plan@wv.gov

DEP 601 57th Street SE, Charleston WV 25304

Application date: *XX/XX/XX*

ATLANTIC COAST PIPELINE, LLC
DOMINION TRANSMISSION, INC.

(804) 335-4923

NOTES:

1. SIGN SHALL BE INSTALLED AT THE ENTRANCE TO THE SITE.
2. SIGN SHALL BE 24-IN X 24 -IN MINIMUM.
3. SIGN LETTERING SHALL BE 1.6-IN AND 0.8-IN.
4. HIGH CONTRAST COLORS SHALL BE USED.
5. WHITE BACKGROUND WITH BLACK BLOCK LETTERS.
6. SIGN SHALL BE INSTALLED 36-IN FROM GROUND.

PUBLIC NOTICE SIGN

NOT TO SCALE

GENERAL NOTES AND COMMENTS:

SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
0	03/02/17	WTS	ISSUED FOR REVIEW	-	-

SEAL

Environmental Resources Management (ERM)

DRAWN:	NJB	03/02/17
CHECKED:	WTS	03/02/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
WV CONTRACTOR YARD ESCP DETAILS

DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
-	-	WV	-	9 OF 9	0

DIR/FILE: ACP\West Virginia\

APPENDIX H

Current Land Uses Table

APPENDIX H

Land Uses Affected by Construction and Operation of the AP-1 ROW and Aboveground Facilities within West Virginia(in acres) [a]

PROJECT/Facility Type/Facility	County	State	Agriculture (Cultivated Crop)		Agriculture (Pasture Land)		Agriculture (Tree Plantation/Harvested Forest)		Upland [b, c] Forest/Woodland		Developed (Open to Low Intensity)		Developed (Medium to High Intensity)		Open Land		Wetlands		Open Water		Total	
			Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.
ATLANTIC COAST PIPELINE																						
Pipeline Facilities																						
AP-1 ROW	Harrison	WV	0.0	0.0	0.4	0.3	0.0	0.0	14.5	8.9	0.3	0.2	< 0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	15.4	9.5
	Lewis	WV	6.6	3.6	81.5	49.1	3.2	2.1	181.0	108.8	15.0	9.4	0.6	0.4	0.8	0.6	0.4	0.3	0.9	0.5	289.9	174.8
	Upshur	WV	17.0	10.4	43.5	26.1	2.8	1.8	235.9	142.7	9.9	6.0	0.7	0.5	12.0	7.3	3.2	2.6	1.0	0.6	326.0	198.2
	Randolph	WV	0.2	0.1	0.9	0.7	1.3	0.7	411.9	249.0	19.3	12.1	< 0.1	0.0	6.0	3.8	3.7	2.9	1.0	0.6	444.2	269.9
	Pocahontas	WV	5.8	3.9	12.8	7.5	0.0	0.0	327.0	184.5	16.9	10.9	0.0	0.0	6.9	4.1	3.6	2.8	1.2	0.7	374.3	214.4
TOTAL			**29.6**	**18**	**139.1**	**83.7**	**7.3**	**4.6**	**1170.3**	**693.9**	**61.4**	**38.6**	**1.3**	**0.9**	**25.7**	**15.8**	**11**	**8.7**	**4.1**	**2.4**	**1,449.8**	**866.8**
Aboveground Facilities																						
Compressor Station 1	Lewis	WV	27.9	23.9	0.0	0.0	0.0	0.0	41.1	20.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	71.2	44.7
Long Run M&R Station	Randolph	WV	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9	1.1	1.1	0.0	0.0	0.0	0.0	<0.1	<0.1	0.0	0.0	3.0	3.0

[a] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the exact sum of the addends in all cases.

[b] Estimate based on the typical right-of-way configurations for each pipeline as described in Section 1.4.1.1.

[c] The numbers in this table are based on Atlantic Coast Pipeline's (ACP) Rev 12

APPENDIX I

Soil Map Unit Crossings Table

Appendix I

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
AP-1													
Harrison County, WV													
0.00	0.03	UF	50%	Udifluvents	0.01	N	N	N	N	N	N	Y	N
			50%	Fluvaquents	0.01	N	Y	Y	N	N	N	Y	N
0.03	0.09	GuE3	22%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			78%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Lithic
0.09	0.36	GuF3	22%	Upshur	0.06	N	N	N	Y	N	Y	Y	Paralithic
			78%	Gilpin	0.21	N	N	N	Y	N	Y	Y	Lithic
0.36	0.51	GuE3	22%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
0.36			78%	Gilpin	0.11	N	N	N	Y	N	Y	Y	Lithic
0.51	0.95	GuF3	22%	Upshur	0.10	N	N	N	Y	N	Y	Y	Paralithic
			78%	Gilpin	0.34	N	N	N	Y	N	Y	Y	Lithic
0.95	1.07	GuE3	22%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			78%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Lithic
1.07	1.10	UF	50%	Fluvaquents	0.01	N	Y	Y	N	N	N	Y	N
			50%	Udifluvents	0.01	N	N	N	N	N	N	Y	N
1.10	1.10	Lh	38%	Holly	<0.01	State	Y	Y	N	N	N	Y	N
			63%	Lobdell	<0.01	State	N	N	N	N	N	N	N
Lewis County, WV													
1.10	1.11	Lh	38%	Holly	0.01	State	Y	Y	N	N	N	Y	N
			63%	Lobdell	0.01	State	N	N	N	N	N	N	N
1.11	1.40	GwF3	41%	Upshur	0.11	N	N	N	Y	N	Y	Y	Paralithic
1.11			59%	Gilpin	0.17	N	N	N	Y	N	Y	Y	Paralithic
1.40	1.48	Su	100%	Sensabaugh	0.07	Prime	N	N	N	N	N	Y	N
1.48	2.34	GwF3	41%	Upshur	0.34	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.49	N	N	N	Y	N	Y	Y	Paralithic
2.34	2.37	VaD	100%	Vandalia	0.04	State	N	N	Y	N	Y	Y	N
2.37	2.52	GwF3	41%	Upshur	0.06	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
2.52	2.60	GuD	35%	Upshur	0.03	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.05	State	N	N	Y	N	Y	Y	Paralithic
2.60	3.78	GwF3	41%	Upshur	0.47	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.68	N	N	N	Y	N	Y	Y	Paralithic
3.78	3.85	GuE	35%	Upshur	0.03	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
3.85	3.91	GwF3	41%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
3.91	4.06	Su	100%	Sensabaugh	0.15	Prime	N	N	N	N	N	Y	N
4.06	4.78	GwF3	41%	Upshur	0.29	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.41	N	N	N	Y	N	Y	Y	Paralithic
4.78	4.88	GuE	35%	Upshur	0.04	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.07	N	N	N	Y	N	Y	Y	Paralithic
4.88	5.05	JaE	100%	Janelew	0.16	N	N	N	N	N	N	N	N

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
5.05	5.10	GuE	35%	Upshur	0.02	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
5.10	5.20	GuD	35%	Upshur	0.04	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.07	State	N	N	Y	N	Y	Y	Paralithic
5.20	5.50	GuE	35%	Upshur	0.10	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.19	N	N	N	Y	N	Y	Y	Paralithic
5.50	5.60	GuD	35%	Upshur	0.03	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.06	State	N	N	Y	N	Y	Y	Paralithic
5.60	5.69	GwF3	41%	Upshur	0.04	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
5.69	5.72	Sn	100%	Senecaville	0.03	Prime	N	N	N	N	N	N	N
5.72	5.74	GwF3	41%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
5.74	5.80	JaE	100%	Janelew	0.05	N	N	N	N	N	N	N	N
5.80	6.11	WuE3	41%	Upshur	0.12	N	N	N	Y	N	Y	N	Paralithic
			59%	Westmoreland	0.18	N	N	N	Y	N	Y	Y	Lithic
6.11	6.39	GuD	35%	Upshur	0.10	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.18	State	N	N	Y	N	Y	Y	Paralithic
6.39	6.44	WuE3	41%	Upshur	0.02	N	N	N	Y	N	Y	N	Paralithic
			59%	Westmoreland	0.03	N	N	N	Y	N	Y	Y	Lithic
6.44	7.41	JaE	100%	Janelew	0.97	N	N	N	N	N	N	N	N
7.41	7.45	GuD	35%	Upshur	0.01	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.02	State	N	N	Y	N	Y	Y	Paralithic
7.45	7.52	GuE	35%	Upshur	0.02	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
7.52	7.59	GuD	35%	Upshur	0.02	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.04	State	N	N	Y	N	Y	Y	Paralithic
7.59	7.62	GuC	39%	Upshur	0.01	State	N	N	Y	N	Y	N	Paralithic
			61%	Gilpin	0.02	State	N	N	Y	N	Y	Y	Paralithic
7.62	7.71	GwF3	41%	Upshur	0.04	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
7.71	7.76	Lh	38%	Holly	0.02	State	Y	Y	N	N	N	Y	N
			63%	Lobdell	0.03	State	N	N	N	N	N	N	N
7.76	7.79	GwF3	41%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
7.79	7.85	GuD	35%	Upshur	0.02	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.04	State	N	N	Y	N	Y	Y	Paralithic
7.85	7.89	GwF3	41%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
7.89	7.94	GuD	35%	Upshur	0.02	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.04	State	N	N	Y	N	Y	Y	Paralithic
7.94	7.97	GuC	39%	Upshur	0.01	State	N	N	Y	N	Y	N	Paralithic
			61%	Gilpin	0.02	State	N	N	Y	N	Y	Y	Paralithic
7.97	7.99	GuD	35%	Upshur	0.01	State	N	N	Y	N	Y	N	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			65%	Gilpin	0.02	State	N	N	Y	N	Y	Y	Paralithic
7.99	8.04	GuE	35%	Upshur	0.02	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
8.04	8.05	GwF3	41%	Upshur	<0.01	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
8.05	8.11	GuD	35%	Upshur	0.02	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.04	State	N	N	Y	N	Y	Y	Paralithic
8.11	8.14	GwF3	41%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
8.14	8.17	VaD	100%	Vandalia	0.03	State	N	N	Y	N	Y	Y	N
8.17	8.18	W	100%	Water	0.02	N	N	N	N	N	N	N	N
8.18	8.38	MoB	100%	Monongahela	0.19	State	N	N	N	N	N	N	N
8.38	8.42	VaC	100%	Vandalia	0.03	State	N	N	Y	N	Y	Y	N
8.42	8.48	GuE	35%	Upshur	0.02	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
8.48	8.62	GuD	35%	Upshur	0.05	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.09	State	N	N	Y	N	Y	Y	Paralithic
8.62	8.62	GuE	35%	Upshur	<0.01	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
8.62	8.63	GuD	35%	Upshur	<0.01	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.01	State	N	N	Y	N	Y	Y	Paralithic
8.63	8.66	GuE	35%	Upshur	0.01	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
8.66	9.10	WuE3	41%	Upshur	0.18	N	N	N	Y	N	Y	N	Paralithic
			59%	Westmoreland	0.25	N	N	N	Y	N	Y	Y	Lithic
9.10	9.22	GuE	35%	Upshur	0.04	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
9.22	9.37	MoB	100%	Monongahela	0.15	State	N	N	N	N	N	N	N
9.37	9.43	Cn	100%	Chagrin	0.07	Prime	N	N	N	N	N	N	N
9.43	9.50	MoB	100%	Monongahela	0.07	State	N	N	N	N	N	N	N
9.50	9.79	GuC	39%	Upshur	0.11	State	N	N	Y	N	Y	N	Paralithic
			61%	Gilpin	0.18	State	N	N	Y	N	Y	Y	Paralithic
9.79	9.84	GuD	35%	Upshur	0.02	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.03	State	N	N	Y	N	Y	Y	Paralithic
9.84	9.91	GuE	35%	Upshur	0.02	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
9.91	10.06	GuD	35%	Upshur	0.05	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.10	State	N	N	Y	N	Y	Y	Paralithic
10.06	10.37	GwF3	41%	Upshur	0.12	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.18	N	N	N	Y	N	Y	Y	Paralithic
10.37	10.50	GuD	35%	Upshur	0.05	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.08	State	N	N	Y	N	Y	Y	Paralithic
10.50	10.87	GuE	35%	Upshur	0.13	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.23	N	N	N	Y	N	Y	Y	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
10.87	11.10	GuD	35%	Upshur	0.08	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.15	State	N	N	Y	N	Y	Y	Paralithic
11.10	11.29	GuE	35%	Upshur	0.07	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.12	N	N	N	Y	N	Y	Y	Paralithic
11.29	11.57	GuD	35%	Upshur	0.10	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.18	State	N	N	Y	N	Y	Y	Paralithic
11.57	11.70	GuE	35%	Upshur	0.05	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.09	N	N	N	Y	N	Y	Y	Paralithic
11.70	11.82	VaC	100%	Vandalia	0.11	State	N	N	Y	N	Y	Y	N
11.82	11.87	GwF3	41%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
11.87	12.19	GuD	35%	Upshur	0.11	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.20	State	N	N	Y	N	Y	Y	Paralithic
12.19	12.29	GwF3	41%	Upshur	0.04	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
12.29	12.37	GuD	35%	Upshur	0.03	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.05	State	N	N	Y	N	Y	Y	Paralithic
12.37	12.44	GwF3	41%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
12.44	12.49	VaD	100%	Vandalia	0.04	State	N	N	Y	N	Y	Y	N
12.49	12.52	Su	100%	Sensabaugh	0.03	Prime	N	N	N	N	N	Y	N
12.52	12.60	VaD	100%	Vandalia	0.08	State	N	N	Y	N	Y	Y	N
12.60	12.69	Su	100%	Sensabaugh	0.09	Prime	N	N	N	N	N	Y	N
12.69	12.88	GwF3	41%	Upshur	0.08	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.11	N	N	N	Y	N	Y	Y	Paralithic
12.88	13.20	GuD	35%	Upshur	0.11	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.21	State	N	N	Y	N	Y	Y	Paralithic
13.20	13.46	GwF3	41%	Upshur	0.11	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.15	N	N	N	Y	N	Y	Y	Paralithic
13.46	13.65	GuD	35%	Upshur	0.08	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.14	State	N	N	Y	N	Y	Y	Paralithic
13.65	13.90	GwF3	41%	Upshur	0.11	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.16	N	N	N	Y	N	Y	Y	Paralithic
13.90	13.92	GuD	35%	Upshur	0.01	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.01	State	N	N	Y	N	Y	Y	Paralithic
13.92	13.99	GuC	39%	Upshur	0.03	State	N	N	Y	N	Y	N	Paralithic
			61%	Gilpin	0.04	State	N	N	Y	N	Y	Y	Paralithic
13.99	13.99	GwF3	41%	Upshur	<0.01	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
13.99	14.11	UF	100%	Udorthents	0.11	N	N	N	N	N	N	Y	N
14.11	14.23	GuC	39%	Upshur	0.05	State	N	N	Y	N	Y	N	Paralithic
			61%	Gilpin	0.07	State	N	N	Y	N	Y	Y	Paralithic
14.23	14.25	VaD	100%	Vandalia	0.02	State	N	N	Y	N	Y	Y	N
14.25	14.34	VaC	100%	Vandalia	0.08	State	N	N	Y	N	Y	Y	N

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
14.34	14.56	GwF3	41%	Upshur	0.09	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.13	N	N	N	Y	N	Y	Y	Paralithic
14.56	14.71	JaE	100%	Janelew	0.14	N	N	N	N	N	N	N	N
14.71	14.75	GwF3	41%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
14.75	14.77	GuD	35%	Upshur	0.01	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.01	State	N	N	Y	N	Y	Y	Paralithic
14.77	14.82	VaD	100%	Vandalia	0.05	State	N	N	Y	N	Y	Y	N
14.82	14.90	GuD	35%	Upshur	0.03	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.05	State	N	N	Y	N	Y	Y	Paralithic
14.90	15.00	VaD	100%	Vandalia	0.09	State	N	N	Y	N	Y	Y	N
15.00	15.12	GwF3	41%	Upshur	0.05	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.07	N	N	N	Y	N	Y	Y	Paralithic
15.12	15.18	JaE	100%	Janelew	0.06	N	N	N	N	N	N	N	N
15.18	15.25	GwF3	41%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
15.25	15.31	JaE	100%	Janelew	0.05	N	N	N	N	N	N	N	N
15.31	15.37	GwF3	41%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
15.37	15.48	GuD	35%	Upshur	0.04	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.07	State	N	N	Y	N	Y	Y	Paralithic
15.48	15.54	VaD	100%	Vandalia	0.06	State	N	N	Y	N	Y	Y	N
15.54	15.69	GwF3	41%	Upshur	0.06	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
15.69	15.85	JaE	100%	Janelew	0.15	N	N	N	N	N	N	N	N
15.85	16.07	GwF3	41%	Upshur	0.09	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.13	N	N	N	Y	N	Y	Y	Paralithic
16.07	16.17	JaE	100%	Janelew	0.10	N	N	N	N	N	N	N	N
16.17	16.43	GwF3	41%	Upshur	0.10	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.14	N	N	N	Y	N	Y	Y	Paralithic
16.43	16.55	JaE	100%	Janelew	0.11	N	N	N	N	N	N	N	N
16.55	16.56	GwF3	41%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
16.56	17.01	WuE3	41%	Upshur	0.18	N	N	N	Y	N	Y	N	Paralithic
			59%	Westmoreland	0.25	N	N	N	Y	N	Y	Y	Lithic
17.01	17.03	JaE	100%	Janelew	0.02	N	N	N	N	N	N	N	N
17.03	17.20	GuE	35%	Upshur	0.06	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.11	N	N	N	Y	N	Y	Y	Paralithic
17.20	17.23	Sn	100%	Senecaville	0.03	Prime	N	N	N	N	N	N	N
17.23	17.29	VaC	100%	Vandalia	0.06	State	N	N	Y	N	Y	Y	N
17.29	17.32	VaD	100%	Vandalia	0.03	State	N	N	Y	N	Y	Y	N
17.32	17.46	GwF3	41%	Upshur	0.06	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
17.46	17.54	WuE3	41%	Upshur	0.03	N	N	N	Y	N	Y	N	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			59%	Westmoreland	0.04	N	N	N	Y	N	Y	Y	Lithic
17.54	17.71	GwF3	41%	Upshur	0.07	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.10	N	N	N	Y	N	Y	Y	Paralithic
17.71	17.77	WuE3	41%	Upshur	0.03	N	N	N	Y	N	Y	N	Paralithic
			59%	Westmoreland	0.04	N	N	N	Y	N	Y	Y	Lithic
17.77	18.08	GwF3	41%	Upshur	0.12	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.18	N	N	N	Y	N	Y	Y	Paralithic
18.08	18.15	Ms	100%	Moshannon	0.07	Prime	N	N	N	N	N	N	N
18.15	18.22	GwF3	41%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
18.22	18.28	JaE	100%	Janelew	0.07	N	N	N	N	N	N	N	N
18.28	19.63	WuE3	41%	Upshur	0.54	N	N	N	Y	N	Y	N	Paralithic
			59%	Westmoreland	0.78	N	N	N	Y	N	Y	Y	Lithic
19.63	19.80	JaE	100%	Janelew	0.16	N	N	N	N	N	N	N	N
19.80	19.83	GuD	35%	Upshur	0.01	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.02	State	N	N	Y	N	Y	Y	Paralithic
19.83	19.84	GwF3	41%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
19.84	19.88	VaD	100%	Vandalia	0.04	State	N	N	Y	N	Y	Y	N
19.88	19.92	GwF3	41%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
19.92	20.02	JaE	100%	Janelew	0.10	N	N	N	N	N	N	N	N
20.02	20.16	GuD	35%	Upshur	0.05	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.09	State	N	N	Y	N	Y	Y	Paralithic
20.16	20.28	JaE	100%	Janelew	0.12	N	N	N	N	N	N	N	N
20.28	20.31	GwF3	41%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
20.31	20.36	Cn	100%	Chagrin	0.05	Prime	N	N	N	N	N	N	N
20.36	20.42	GwF3	41%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
20.42	20.52	GuD	35%	Upshur	0.04	State	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.07	State	N	N	Y	N	Y	Y	Paralithic
20.52	20.58	GuC	39%	Upshur	0.02	State	N	N	Y	N	Y	N	Paralithic
			61%	Gilpin	0.03	State	N	N	Y	N	Y	Y	Paralithic
20.58	20.63	GwF3	41%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
20.63	20.67	VaD	100%	Vandalia	0.04	State	N	N	Y	N	Y	Y	N
20.67	20.73	GwF3	41%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
20.73	20.78	JaE	100%	Janelew	0.05	N	N	N	N	N	N	N	N
20.78	20.97	GuE	35%	Upshur	0.06	N	N	N	Y	N	Y	N	Paralithic
			65%	Gilpin	0.12	N	N	N	Y	N	Y	Y	Paralithic
20.97	21.36	GwF3	41%	Upshur	0.16	N	N	N	Y	N	Y	Y	Paralithic
			59%	Gilpin	0.23	N	N	N	Y	N	Y	Y	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
21.36	21.37	GuF	33%	Upshur	<0.01	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
Upshur County, WV													
21.37	21.46	GuF	33%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
21.46	21.61	GwE3	33%	Upshur	0.05	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.10	N	N	N	Y	N	Y	Y	Paralithic
21.61	22.73	GwD3	35%	Upshur	0.39	N	N	N	Y	N	Y	Y	Paralithic
			65%	Gilpin	0.72	N	N	N	Y	N	Y	Y	Paralithic
22.73	22.84	GwE3	33%	Upshur	0.04	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
22.84	23.10	GwD3	35%	Upshur	0.09	N	N	N	Y	N	Y	Y	Paralithic
			65%	Gilpin	0.16	N	N	N	Y	N	Y	Y	Paralithic
23.10	23.14	GwC3	44%	Upshur	0.02	State	N	N	Y	N	Y	Y	Paralithic
			56%	Gilpin	0.03	State	N	N	Y	N	Y	Y	Paralithic
23.14	23.20	GuF	33%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
23.20	23.28	UF	100%	Udorthents	0.08	N	N	N	Y	N	N	N	N
23.28	23.33	VaC	100%	Vandalia	0.05	State	N	N	Y	N	Y	Y	N
23.33	23.33	VaD	100%	Vandalia	<0.01	State	N	N	Y	N	Y	Y	N
23.33	23.36	GuF	33%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
23.36	23.38	GwD3	35%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			65%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
23.38	23.40	GuE	33%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
23.40	23.44	GuF	33%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
23.44	23.69	GbD	100%	Gilpin	0.25	State	N	N	Y	N	Y	Y	Lithic
23.69	23.77	GuF	33%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
23.77	23.82	GuE	33%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
23.82	23.88	GuD	38%	Upshur	0.02	State	N	N	Y	N	Y	Y	Paralithic
			63%	Gilpin	0.04	State	N	N	Y	N	Y	Y	Paralithic
23.88	23.90	GuE	33%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
23.90	24.44	Uc	100%	Udorthents	0.53	N	N	N	N	N	N	N	N
24.44	24.55	GaD	100%	Gilpin	0.11	State	N	N	Y	N	Y	Y	Paralithic
24.55	24.60	EnC	100%	Ernest	0.05	State	N	N	Y	N	Y	Y	N
24.60	24.61	EnB	100%	Ernest	0.01	State	N	N	N	N	N	Y	N
24.61	24.70	Oh	36%	Holly	0.03	N	Y	Y	N	N	N	N	N
			64%	Orrville	0.06	N	N	Y	N	N	N	N	N
24.70	24.83	GaD	100%	Gilpin	0.13	State	N	N	Y	N	Y	Y	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
24.83	24.88	GbE	100%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Lithic
24.88	24.98	GwE3	33%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
24.98	25.01	GaC	100%	Gilpin	0.03	State	N	N	Y	N	Y	Y	Paralithic
25.01	25.16	GwE3	33%	Upshur	0.05	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.11	N	N	N	Y	N	Y	Y	Paralithic
25.16	25.19	GaC	100%	Gilpin	0.03	State	N	N	Y	N	Y	Y	Paralithic
25.19	25.28	GwE3	33%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
25.28	25.36	GwD3	35%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			65%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
25.36	25.41	VaC	100%	Vandalia	0.05	State	N	N	Y	N	Y	Y	N
25.41	25.48	GwE3	33%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
25.48	25.51	VaC	100%	Vandalia	0.03	State	N	N	Y	N	Y	Y	N
25.51	25.61	GwE3	33%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.07	N	N	N	Y	N	Y	Y	Paralithic
25.61	25.63	GwD3	35%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			65%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
25.63	25.71	VaC	100%	Vandalia	0.07	State	N	N	Y	N	Y	Y	N
25.71	25.94	Tg	100%	Tygart	0.23	N	N	Y	N	N	N	N	N
25.94	26.11	Oh	36%	Holly	0.06	N	Y	Y	N	N	N	N	N
			64%	Orrville	0.11	N	N	Y	N	N	N	N	N
26.11	26.16	Tg	100%	Tygart	0.05	N	N	Y	N	N	N	N	N
26.16	26.27	VaC	100%	Vandalia	0.11	State	N	N	Y	N	Y	Y	N
26.27	26.33	GaC	100%	Gilpin	0.05	State	N	N	Y	N	Y	Y	Paralithic
26.33	26.36	VaD	100%	Vandalia	0.04	State	N	N	Y	N	Y	Y	N
26.36	26.40	GwD3	35%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			65%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
26.40	26.47	GaC	100%	Gilpin	0.07	State	N	N	Y	N	Y	Y	Paralithic
26.47	26.57	GwD3	35%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			65%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
26.57	26.61	EnD	100%	Ernest	0.05	State	N	N	Y	N	Y	Y	N
26.61	26.70	GuD	38%	Upshur	0.03	State	N	N	Y	N	Y	Y	Paralithic
			63%	Gilpin	0.06	State	N	N	Y	N	Y	Y	Paralithic
26.70	26.70	GaC	100%	Gilpin	<0.01	State	N	N	Y	N	Y	Y	Paralithic
26.70	26.84	GuD	38%	Upshur	0.05	State	N	N	Y	N	Y	Y	Paralithic
			63%	Gilpin	0.08	State	N	N	Y	N	Y	Y	Paralithic
26.84	27.04	GwE3	33%	Upshur	0.07	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.13	N	N	N	Y	N	Y	Y	Paralithic
27.04	27.12	GwD3	35%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			65%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
27.12	27.33	GuF	33%	Upshur	0.07	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.15	N	N	N	Y	N	Y	Y	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
27.33	27.43	GwD3	35%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			65%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
27.43	27.49	GuF	33%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
27.49	27.56	GbC	100%	Gilpin	0.07	State	N	N	Y	N	Y	Y	Lithic
27.56	27.68	GuF	33%	Upshur	0.04	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
27.68	27.76	GaC	100%	Gilpin	0.08	State	N	N	Y	N	Y	Y	Paralithic
27.76	27.81	GuF	33%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
27.81	27.82	GwE3	33%	Upshur	<0.01	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
27.82	28.07	GwD3	35%	Upshur	0.09	N	N	N	Y	N	Y	Y	Paralithic
			65%	Gilpin	0.16	N	N	N	Y	N	Y	Y	Paralithic
28.07	28.13	GwE3	33%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
28.13	28.18	GwD3	35%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			65%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
28.18	28.24	GcF	100%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
28.24	28.33	GcE	100%	Gilpin	0.09	N	N	N	Y	N	Y	Y	Paralithic
28.33	28.39	GuF	33%	Upshur	0.02	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
28.39	28.41	GwE3	33%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
28.41	28.45	EnD	100%	Ernest	0.04	State	N	N	Y	N	Y	Y	N
28.45	28.54	GuE	33%	Upshur	0.03	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
28.54	28.80	GuD	38%	Upshur	0.10	State	N	N	Y	N	Y	Y	Paralithic
			63%	Gilpin	0.16	State	N	N	Y	N	Y	Y	Paralithic
28.80	28.80	GuF	33%	Upshur	<0.01	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
28.80	28.89	GaC	100%	Gilpin	0.09	State	N	N	Y	N	Y	Y	Paralithic
28.89	28.94	GbE	100%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Lithic
28.94	29.03	GaC	100%	Gilpin	0.09	State	N	N	Y	N	Y	Y	Paralithic
29.03	29.07	GbE	100%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Lithic
29.07	29.09	EnD	100%	Ernest	0.02	State	N	N	Y	N	Y	Y	N
29.09	29.12	EnC	100%	Ernest	0.03	State	N	N	Y	N	Y	Y	N
29.12	29.22	Oh	36%	Holly	0.03	N	Y	Y	N	N	N	N	N
			64%	Orrville	0.06	N	N	Y	N	N	N	N	N
29.22	29.28	MoB	100%	Monongahela	0.07	State	N	N	N	N	N	N	N
29.28	29.34	EnD	100%	Ernest	0.06	State	N	N	Y	N	Y	Y	N
29.34	29.40	GaC	100%	Gilpin	0.06	State	N	N	Y	N	Y	Y	Paralithic
29.40	29.42	GuE	33%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
29.42	29.45	GuF	33%	Upshur	0.01	N	N	N	Y	N	Y	Y	Paralithic
			67%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
29.45	29.57	GaC	100%	Gilpin	0.11	State	N	N	Y	N	Y	Y	Paralithic
29.57	29.60	GuD	38%	Upshur	0.01	State	N	N	Y	N	Y	Y	Paralithic
			63%	Gilpin	0.01	State	N	N	Y	N	Y	Y	Paralithic
29.60	29.66	GbE	100%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Lithic
29.66	29.70	EnD	100%	Ernest	0.03	State	N	N	Y	N	Y	Y	N
29.70	29.88	GbE	100%	Gilpin	0.16	N	N	N	Y	N	Y	Y	Lithic
29.88	29.98	EnD	100%	Ernest	0.09	State	N	N	Y	N	Y	Y	N
29.98	30.10	GcE	100%	Gilpin	0.11	N	N	N	Y	N	Y	Y	Paralithic
30.10	30.15	GcF	100%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
30.15	30.29	GaB	100%	Gilpin	0.13	Prime	N	N	N	N	N	Y	Lithic
30.29	30.32	GaD	100%	Gilpin	0.03	State	N	N	Y	N	Y	Y	Paralithic
30.32	30.41	GaC	100%	Gilpin	0.09	State	N	N	Y	N	Y	Y	Paralithic
30.41	30.45	GcF	100%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
30.45	30.50	GcE	100%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
30.50	30.56	BeD	31%	Ernest	0.02	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.04	N	N	N	Y	N	Y	Y	N
30.56	30.65	GcF	100%	Gilpin	0.09	N	N	N	Y	N	Y	Y	Paralithic
30.65	30.67	GcE	100%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
30.67	30.80	GbC	100%	Gilpin	0.13	State	N	N	Y	N	Y	Y	Lithic
30.80	30.84	GbD	100%	Gilpin	0.04	State	N	N	Y	N	Y	Y	Lithic
30.84	30.88	BeD	31%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.03	N	N	N	Y	N	Y	Y	N
30.88	30.91	GcE	100%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
30.91	30.96	GcC	100%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
30.96	31.04	GcE	100%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
31.04	31.08	EnD	100%	Ernest	0.04	State	N	N	Y	N	Y	Y	N
31.08	31.12	EnC	100%	Ernest	0.04	State	N	N	Y	N	Y	Y	N
31.12	31.13	W	100%	Water	0.01	N	N	N	N	N	N	N	N
31.13	31.17	BeD	31%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.03	N	N	N	Y	N	Y	Y	N
31.17	31.35	GcE	100%	Gilpin	0.17	N	N	N	Y	N	Y	Y	Paralithic
31.35	31.46	GkC	29%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
31.46	31.51	GkE	31%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
31.51	31.60	GkF	29%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
31.60	31.65	BeD	31%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.03	N	N	N	Y	N	Y	Y	N
31.65	31.67	W	100%	Water	0.02	N	N	N	N	N	N	N	N
31.67	31.73	EnC	100%	Ernest	0.06	State	N	N	Y	N	Y	Y	N
31.73	31.82	GkE	31%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			69%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
31.82	31.88	GdE	31%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
31.88	31.98	GaC	100%	Gilpin	0.10	State	N	N	Y	N	Y	Y	Paralithic
31.98	32.05	GdE	31%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
32.05	32.14	BeD	31%	Ernest	0.02	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.06	N	N	N	Y	N	Y	Y	N
32.14	32.24	GkE	31%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.07	N	N	N	Y	N	Y	Y	Paralithic
32.24	32.27	BeD	31%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.02	N	N	N	Y	N	Y	Y	N
32.27	32.52	GkE	31%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.17	N	N	N	Y	N	Y	Y	Paralithic
32.52	32.69	GkC	29%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.12	N	N	N	Y	N	Y	Y	Paralithic
32.69	32.71	GkE	31%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
32.71	32.71	GaC	100%	Gilpin	<0.01	State	N	N	Y	N	Y	Y	Paralithic
32.71	32.75	GkE	31%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
32.75	32.84	GaC	100%	Gilpin	0.09	State	N	N	Y	N	Y	Y	Paralithic
32.84	32.90	GkE	31%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
32.90	32.93	GkC	29%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
32.93	32.99	GkE	31%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
32.99	33.06	BeD	31%	Ernest	0.02	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.05	N	N	N	Y	N	Y	Y	N
33.06	33.11	GcF	100%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
33.11	33.12	GcE	100%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
33.12	33.29	GaC	100%	Gilpin	0.16	State	N	N	Y	N	Y	Y	Paralithic
33.29	33.32	GbD	100%	Gilpin	0.04	State	N	N	Y	N	Y	Y	Lithic
33.32	33.42	GbC	100%	Gilpin	0.10	State	N	N	Y	N	Y	Y	Lithic
33.42	33.46	GbD	100%	Gilpin	0.04	State	N	N	Y	N	Y	Y	Lithic
33.46	33.49	GbC	100%	Gilpin	0.03	State	N	N	Y	N	Y	Y	Lithic
33.49	33.59	LyB	100%	Lily	0.10	Prime	N	N	N	N	N	Y	Lithic
33.59	33.62	GaC	100%	Gilpin	0.03	State	N	N	Y	N	Y	Y	Paralithic
33.62	33.74	GcE	100%	Gilpin	0.12	N	N	N	Y	N	Y	Y	Paralithic
33.74	33.83	GaC	100%	Gilpin	0.09	State	N	N	Y	N	Y	Y	Paralithic
33.83	34.04	GbD	100%	Gilpin	0.20	State	N	N	Y	N	Y	Y	Lithic
34.04	34.06	GcE	100%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
34.06	34.09	BeD	31%	Ernest	0.01	N	N	N	Y	N	Y	Y	N

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			69%	Buchanan	0.02	N	N	N	Y	N	Y	Y	N
34.09	34.14	GcE	100%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
34.14	34.19	GbD	100%	Gilpin	0.05	State	N	N	Y	N	Y	Y	Lithic
34.19	34.25	GcE	100%	Gilpin	0.07	N	N	N	Y	N	Y	Y	Paralithic
34.25	34.31	GbD	100%	Gilpin	0.05	State	N	N	Y	N	Y	Y	Lithic
34.31	34.42	GcE	100%	Gilpin	0.11	N	N	N	Y	N	Y	Y	Paralithic
34.42	34.50	BeD	31%	Ernest	0.02	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.05	N	N	N	Y	N	Y	Y	N
34.50	34.56	GkE	31%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
34.56	34.59	GkF	29%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
34.59	34.67	GkE	31%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
34.67	34.81	GcE	100%	Gilpin	0.13	N	N	N	Y	N	Y	Y	Paralithic
34.81	35.37	GbC	100%	Gilpin	0.56	State	N	N	Y	N	Y	Y	Lithic
35.37	35.50	GkE	31%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.09	N	N	N	Y	N	Y	Y	Paralithic
35.50	35.56	GkF	29%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
35.56	35.72	GaC	100%	Gilpin	0.16	State	N	N	Y	N	Y	Y	Paralithic
35.72	36.02	GkE	31%	Dekalb	0.09	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.21	N	N	N	Y	N	Y	Y	Paralithic
36.02	36.11	BeC	38%	Ernest	0.03	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.05	N	N	N	Y	N	Y	Y	N
36.11	36.15	GkE	31%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
36.15	36.27	GkF	29%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
36.27	36.65	GkC	29%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.25	N	N	N	Y	N	Y	Y	Paralithic
36.65	36.70	GkF	29%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
36.70	36.75	GkE	31%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
36.75	36.83	BeD	31%	Ernest	0.02	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.05	N	N	N	Y	N	Y	Y	N
36.83	36.91	GkE	31%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
36.91	37.16	GkF	29%	Dekalb	0.07	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.17	N	N	N	Y	N	Y	Y	Paralithic
37.16	37.36	GkC	29%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.14	N	N	N	Y	N	Y	Y	Paralithic
37.36	37.37	GkF	29%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			71%	Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
37.37	37.44	GkC	29%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
37.44	37.60	GkF	29%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.11	N	N	N	Y	N	Y	Y	Paralithic
37.60	37.71	GkE	31%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.07	N	N	N	Y	N	Y	Y	Paralithic
37.71	37.79	Po	100%	Pope	0.08	Prime	N	N	N	N	N	N	N
37.79	37.84	EnC	100%	Ernest	0.05	State	N	N	Y	N	Y	Y	N
37.84	38.17	GkE	31%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.22	N	N	N	Y	N	Y	Y	Paralithic
38.17	38.91	LyC	100%	Lily	0.74	State	N	N	Y	N	Y	Y	Lithic
38.91	39.14	LyB	100%	Lily	0.22	Prime	N	N	N	N	N	Y	Lithic
39.14	39.32	GkE	31%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.12	N	N	N	Y	N	Y	Y	Paralithic
39.32	39.34	BeD	31%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.01	N	N	N	Y	N	Y	Y	N
39.34	39.56	GkE	31%	Dekalb	0.07	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.15	N	N	N	Y	N	Y	Y	Paralithic
39.56	39.68	BeD	31%	Ernest	0.04	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.08	N	N	N	Y	N	Y	Y	N
39.68	39.74	GbF	100%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Lithic
39.74	39.84	GkF	29%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.07	N	N	N	Y	N	Y	Y	Paralithic
39.84	40.16	LyC	100%	Lily	0.31	State	N	N	Y	N	Y	Y	Lithic
40.16	40.31	GkE	31%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.11	N	N	N	Y	N	Y	Y	Paralithic
40.31	40.34	GbE	100%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Lithic
40.34	40.44	BeD	31%	Ernest	0.03	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.07	N	N	N	Y	N	Y	Y	N
40.44	40.56	GbE	100%	Gilpin	0.12	N	N	N	Y	N	Y	Y	Lithic
40.56	40.60	LyC	100%	Lily	0.05	State	N	N	Y	N	Y	Y	Lithic
40.60	40.67	LyB	100%	Lily	0.06	Prime	N	N	N	N	N	Y	Lithic
40.67	40.69	GkE	31%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
40.69	40.72	BeD	31%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			69%	Buchanan	0.02	N	N	N	Y	N	Y	Y	N
40.72	40.84	GaD	100%	Gilpin	0.12	State	N	N	Y	N	Y	Y	Paralithic
40.84	40.90	LyB	100%	Lily	0.06	Prime	N	N	N	N	N	Y	Lithic
40.90	40.99	LyC	100%	Lily	0.08	State	N	N	Y	N	Y	Y	Lithic
40.99	41.06	GbD	100%	Gilpin	0.07	State	N	N	Y	N	Y	Y	Lithic
41.06	41.17	GkF	29%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
41.17	41.21	BeD	31%	Ernest	0.01	N	N	N	Y	N	Y	Y	N

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			69%	Buchanan	0.03	N	N	N	Y	N	Y	Y	N
41.21	41.32	Po	100%	Pope	0.11	Prime	N	N	N	N	N	N	N
41.32	41.37	GkF	29%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
41.37	41.91	GbD	100%	Gilpin	0.51	State	N	N	Y	N	Y	Y	Lithic
41.91	42.08	GkF	29%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.12	N	N	N	Y	N	Y	Y	Paralithic
42.08	42.14	GbE	100%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Lithic
42.14	42.53	GkC	29%	Dekalb	0.11	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.28	N	N	N	Y	N	Y	Y	Paralithic
42.53	42.58	GbE	100%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Lithic
42.58	43.00	GkC	29%	Dekalb	0.12	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.29	N	N	N	Y	N	Y	Y	Paralithic
43.00	43.03	GbE	100%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Lithic
43.03	43.04	GkC	29%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
43.04	43.08	GkE	31%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
43.08	43.11	GkC	29%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			71%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
43.11	43.14	GkE	31%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
43.14	43.20	GbF	100%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Lithic
43.20	43.31	GkE	31%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
43.31	43.71	GbC	100%	Gilpin	0.39	State	N	N	Y	N	Y	Y	Lithic
43.71	43.91	GkE	31%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
			69%	Gilpin	0.14	N	N	N	Y	N	Y	Y	Paralithic
43.91	43.92	GdE	47%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
Randolph County, WV													
43.92	44.27	GdE	47%	Dekalb	0.17	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.19	N	N	N	Y	N	Y	Y	Paralithic
44.27	44.31	GcE	100%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Lithic
44.31	44.37	GdE	47%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
44.37	44.48	GcE	100%	Gilpin	0.11	N	N	N	Y	N	Y	Y	Lithic
44.48	44.53	GdE	47%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
44.53	44.66	GdF	50%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
44.66	44.70	GdE	47%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
44.70	45.10	DaC	100%	Dekalb	0.40	N	N	N	Y	N	Y	Y	Lithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
45.10	45.25	GdE	47%	Dekalb	0.07	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
45.25	45.27	GcD	100%	Gilpin	0.03	State	N	N	Y	N	Y	Y	Lithic
45.27	45.35	GcC	100%	Gilpin	0.07	State	N	N	Y	N	Y	Y	Lithic
45.35	45.37	GcD	100%	Gilpin	0.02	State	N	N	Y	N	Y	Y	Lithic
45.37	45.49	BtE	38%	Ernest	0.05	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.08	N	N	N	Y	N	Y	Y	N
45.49	45.56	GdE	47%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
45.56	45.62	LyC	100%	Lily	0.06	State	N	N	Y	N	Y	Y	Lithic
45.62	45.72	CoB	100%	Cookport variant	0.11	State	N	N	N	N	N	N	Lithic
45.72	45.88	LyC	100%	Lily	0.15	State	N	N	Y	N	Y	Y	Lithic
45.88	46.05	CoB	100%	Cookport variant	0.17	State	N	N	N	N	N	N	Lithic
46.05	46.16	LyC	100%	Lily	0.11	State	N	N	Y	N	Y	Y	Lithic
46.16	46.41	DaD	100%	Dekalb	0.24	N	N	N	Y	N	Y	Y	Lithic
46.41	46.49	DaC	100%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
46.49	46.66	GdE	47%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.09	N	N	N	Y	N	Y	Y	Paralithic
46.66	46.84	DmC	100%	Dekalb	0.18	N	N	N	Y	N	Y	Y	Lithic
46.84	46.86	GdF	50%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
46.86	46.91	DmC	100%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
46.91	47.02	DaC	100%	Dekalb	0.11	N	N	N	Y	N	Y	Y	Lithic
47.02	47.03	GdF	50%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
47.03	47.05	BtE	38%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.02	N	N	N	Y	N	Y	Y	N
47.05	47.07	GdE	47%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
47.07	47.12	DaC	100%	Dekalb	0.07	N	N	N	Y	N	Y	Y	Lithic
47.12	47.13	GdE	47%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
47.13	47.19	BtE	38%	Ernest	0.03	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.05	N	N	N	Y	N	Y	Y	N
47.19	47.22	GdE	47%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
47.22	47.23	LyC	100%	Lily	0.02	State	N	N	Y	N	Y	Y	Lithic
47.23	47.30	DaC	100%	Dekalb	0.09	N	N	N	Y	N	Y	Y	Lithic
47.30	47.30	LyC	100%	Lily	<0.01	State	N	N	Y	N	Y	Y	Lithic
	47.34	DaC	100%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
47.34	47.42	DmF	100%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
47.42	47.63	DaC	100%	Dekalb	0.26	N	N	N	Y	N	Y	Y	Lithic
47.63	47.66	DmF	100%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
47.66	47.68	DrF	100%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
47.68	47.84	DbC	100%	Dekalb	0.19	N	N	N	Y	N	Y	Y	Lithic
47.84	47.86	DrF	100%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
47.86	47.97	DbC	100%	Dekalb	0.14	N	N	N	Y	N	Y	Y	Lithic
47.97	47.97	DrF	100%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
47.97	48.02	DbC	100%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
48.02	48.04	DrF	100%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
48.04	48.24	DbC	100%	Dekalb	0.28	N	N	N	Y	N	Y	Y	Lithic
48.24	48.28	DrF	100%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
48.28	48.44	GkE	47%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.12	N	N	N	Y	N	Y	Y	Paralithic
48.44	48.55	DrE	100%	Dekalb	0.16	N	N	N	Y	N	Y	Y	Lithic
48.55	48.58	DrF	100%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
48.58	48.62	DrE	100%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
48.62	48.79	DrF	100%	Dekalb	0.25	N	N	N	Y	N	Y	Y	Lithic
48.79	48.85	GkE	47%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
48.85	48.90	DrF	100%	Dekalb	0.07	N	N	N	Y	N	Y	Y	Lithic
48.90	49.37	DbC	100%	Dekalb	0.65	N	N	N	Y	N	Y	Y	Lithic
49.37	49.39	DrF	100%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
49.39	49.78	DbC	100%	Dekalb	0.56	N	N	N	Y	N	Y	Y	Lithic
49.78	49.81	DrF	100%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
49.81	49.86	GkE	47%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
49.86	49.91	DrF	100%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
49.91	49.95	DbC	100%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
49.95	50.07	DrF	100%	Dekalb	0.16	N	N	N	Y	N	Y	Y	Lithic
50.07	50.15	GkE	47%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
50.15	50.30	U2	100%	Udorthents	0.21	N	N	N	N	N	N	N	N
50.30	50.32	GkE	47%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
50.32	50.34	BtC	44%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			56%	Buchanan	0.01	N	N	N	Y	N	Y	Y	N
50.34	50.40	GkE	47%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
50.40	50.40	BtE	38%	Ernest	<0.01	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	<0.01	N	N	N	Y	N	Y	Y	N
50.40	50.52	GkE	47%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.09	N	N	N	Y	N	Y	Y	Paralithic
50.52	50.56	BtE	38%	Ernest	0.02	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.04	N	N	N	Y	N	Y	Y	N
50.56	50.65	GkF	50%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
50.65	50.78	GkE	47%	Dekalb	0.09	N	N	N	Y	N	Y	Y	Lithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			53%	Gilpin	0.10	N	N	N	Y	N	Y	Y	Paralithic
50.78	50.83	BtE	38%	Ernest	0.03	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.04	N	N	N	Y	N	Y	Y	N
50.83	51.01	GkE	47%	Dekalb	0.12	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.14	N	N	N	Y	N	Y	Y	Paralithic
51.01	51.05	DrF	100%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
51.05	51.18	DbC	100%	Dekalb	0.19	N	N	N	Y	N	Y	Y	Lithic
51.18	51.21	DrF	100%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
51.21	51.32	GkE	47%	Dekalb	0.07	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
51.32	51.38	BtE	38%	Ernest	0.03	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.05	N	N	N	Y	N	Y	Y	N
51.38	51.40	U5	100%	Udorthents	0.03	N	N	N	N	N	N	N	N
51.40	51.51	BtE	38%	Ernest	0.06	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.10	N	N	N	Y	N	Y	Y	N
51.51	51.51	U5	100%	Udorthents	<0.01	N	N	N	N	N	N	N	N
51.51	51.52	BtE	38%	Ernest	<0.01	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.01	N	N	N	Y	N	Y	Y	N
51.52	51.54	U5	100%	Udorthents	0.02	N	N	N	N	N	N	N	N
51.54	51.66	GkE	47%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.09	N	N	N	Y	N	Y	Y	Paralithic
51.66	51.91	GkC	41%	Dekalb	0.15	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	0.21	N	N	N	Y	N	Y	Y	Paralithic
51.91	52.02	GkE	47%	Dekalb	0.07	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
52.02	52.05	U5	100%	Udorthents	0.05	N	N	N	N	N	N	N	N
52.05	52.12	GkE	47%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
52.12	52.15	Pn	45%	Atkins	0.02	N	Y	Y	N	N	N	Y	N
			55%	Pope	0.03	N	N	N	N	N	N	Y	N
52.15	52.18	BtE	38%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.02	N	N	N	Y	N	Y	Y	N
52.18	52.36	GkE	47%	Dekalb	0.12	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.14	N	N	N	Y	N	Y	Y	Paralithic
52.36	52.45	GkF	50%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
52.45	52.53	GkE	47%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
52.53	52.62	GkF	50%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
52.62	52.70	GkE	47%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
52.70	52.73	GkF	50%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
52.73	52.76	GkE	47%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
52.76	52.78	GkF	50%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
52.78	52.86	GkE	47%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
52.86	52.87	GkC	41%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
52.87	52.96	GkE	47%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.07	N	N	N	Y	N	Y	Y	Paralithic
52.96	52.96	GkC	41%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
52.96	53.03	GkE	47%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
53.03	53.17	GkC	41%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	0.12	N	N	N	Y	N	Y	Y	Paralithic
53.17	53.26	EnC	100%	Ernest	0.13	State	N	N	Y	N	Y	Y	N
53.26	53.28	GkE	47%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
53.28	53.30	BtE	38%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.02	N	N	N	Y	N	Y	Y	N
53.30	53.31	GkE	47%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
53.31	53.32	GkC	41%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
53.32	53.34	GkF	50%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
53.34	53.40	GkC	41%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
53.40	53.48	GkE	47%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
53.47	53.49	GkF	50%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
53.49	53.56	GkC	41%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
53.56	53.59	GkF	50%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
53.59	53.68	GkC	41%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	0.07	N	N	N	Y	N	Y	Y	Paralithic
53.68	53.72	GkF	50%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
53.72	53.75	U5	100%	Udorthents	0.04	N	N	N	N	N	N	N	N
53.75	53.97	GkC	41%	Dekalb	0.13	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	0.19	N	N	N	Y	N	Y	Y	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
53.97	54.05	GkE	47%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
54.05	54.09	BtE	38%	Ernest	0.02	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.04	N	N	N	Y	N	Y	Y	N
54.09	54.23	GkE	47%	Dekalb	0.09	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.10	N	N	N	Y	N	Y	Y	Paralithic
54.23	54.29	GkF	50%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
54.29	54.32	BtE	38%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.02	N	N	N	Y	N	Y	Y	N
54.32	54.37	Fu	43%	Udifluvents	0.03	N	N	N	N	N	N	N	N
			57%	Fluvaquents	0.04	N	Y	Y	N	N	N	Y	N
54.37	54.39	BtE	38%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.01	N	N	N	Y	N	Y	Y	N
54.39	54.42	GkF	50%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
54.42	54.65	GkE	47%	Dekalb	0.15	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.17	N	N	N	Y	N	Y	Y	Paralithic
54.65	54.78	GkC	41%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	0.12	N	N	N	Y	N	Y	Y	Paralithic
54.78	54.94	GkE	47%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.12	N	N	N	Y	N	Y	Y	Paralithic
54.94	54.99	BtE	38%	Ernest	0.03	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.04	N	N	N	Y	N	Y	Y	N
54.99	55.29	GkE	47%	Dekalb	0.20	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.23	N	N	N	Y	N	Y	Y	Paralithic
55.29	55.37	BtE	38%	Ernest	0.04	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.07	N	N	N	Y	N	Y	Y	N
55.37	55.46	GkF	50%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
55.46	55.48	BtE	38%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.02	N	N	N	Y	N	Y	Y	N
55.48	55.49	GkC	41%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
55.49	55.55	GkE	47%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
55.55	55.81	GkC	41%	Dekalb	0.15	N	N	N	Y	N	Y	Y	Lithic
			59%	Gilpin	0.22	N	N	N	Y	N	Y	Y	Paralithic
55.81	55.87	DrC	100%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
55.87	55.95	BrB	100%	Brinkerton variant	0.12	N	N	Y	N	N	N	Y	N
55.95	55.95	GkF	50%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
55.95	56.10	U5	100%	Udorthents	0.21	N	N	N	N	N	N	N	N
56.10	56.17	BtE	38%	Ernest	0.04	N	N	N	Y	N	Y	Y	N

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			63%	Buchanan	0.06	N	N	N	Y	N	Y	Y	N
56.17	56.21	GcD	100%	Gilpin	0.05	State	N	N	Y	N	Y	Y	Lithic
56.21	56.24	GcC	100%	Gilpin	0.04	State	N	N	Y	N	Y	Y	Lithic
56.24	56.29	GcD	100%	Gilpin	0.08	State	N	N	Y	N	Y	Y	Lithic
56.29	56.51	U5	100%	Udorthents	0.31	N	N	N	N	N	N	N	N
56.51	56.52	BtE	38%	Ernest	<0.01	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.01	N	N	N	Y	N	Y	Y	N
56.52	56.64	U5	100%	Udorthents	0.17	N	N	N	N	N	N	N	N
56.64	56.75	GcE	100%	Gilpin	0.14	N	N	N	Y	N	Y	Y	Lithic
56.75	56.81	CoB	100%	Cookport variant	0.10	State	N	N	N	N	N	N	Lithic
56.81	56.87	GcE	100%	Gilpin	0.08	N	N	N	Y	N	Y	Y	Lithic
56.87	56.91	CoB	100%	Cookport variant	0.05	State	N	N	N	N	N	N	Lithic
56.91	57.07	GcE	100%	Gilpin	0.25	N	N	N	Y	N	Y	Y	Lithic
57.07	57.26	GkF	50%	Dekalb	0.15	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.15	N	N	N	Y	N	Y	Y	Paralithic
57.26	57.55	CoB	100%	Cookport variant	0.44	State	N	N	N	N	N	N	Lithic
57.55	57.83	DbC	100%	Dekalb	0.44	N	N	N	Y	N	Y	Y	Lithic
57.83	57.87	GkE	47%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
57.87	57.98	GcC	100%	Gilpin	0.15	State	N	N	Y	N	Y	Y	Lithic
57.98	58.08	GkF	50%	Dekalb	0.07	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.07	N	N	N	Y	N	Y	Y	Paralithic
58.08	58.11	GkE	47%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
58.11	58.18	GkF	50%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
58.18	58.24	Ud	100%	Udifluvents	0.09	N	N	N	N	N	N	N	N
58.24	58.27	BtE	38%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.02	N	N	N	Y	N	Y	Y	N
58.27	58.35	GkE	47%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.06	N	N	N	Y	N	Y	Y	Paralithic
58.35	58.37	U5	100%	Udorthents	0.02	N	N	N	N	N	N	N	N
58.37	58.81	GkF	50%	Dekalb	0.34	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.34	N	N	N	Y	N	Y	Y	Paralithic
58.81	58.89	DrC	100%	Dekalb	0.11	N	N	N	Y	N	Y	Y	Lithic
58.89	58.89	GkF	50%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
58.89	59.06	GkE	47%	Dekalb	0.12	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.14	N	N	N	Y	N	Y	Y	Paralithic
59.06	59.18	DrE	100%	Dekalb	0.17	N	N	N	Y	N	Y	Y	Lithic
59.18	59.21	GkE	47%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
59.21	59.25	GkF	50%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
59.25	59.31	BtE	38%	Ernest	0.03	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.06	N	N	N	Y	N	Y	Y	N
59.31	59.41	GkF	50%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.08	N	N	N	Y	N	Y	Y	Paralithic
59.41	59.45	DrC	100%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
59.45	59.47	GkF	50%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.02	N	N	N	Y	N	Y	Y	Paralithic
59.47	59.49	DrC	100%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
59.49	59.50	GkF	50%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.01	N	N	N	Y	N	Y	Y	Paralithic
59.50	59.53	BtE	38%	Ernest	0.01	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.02	N	N	N	Y	N	Y	Y	N
59.53	59.68	GkF	50%	Dekalb	0.12	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.12	N	N	N	Y	N	Y	Y	Paralithic
59.68	59.80	DbC	100%	Dekalb	0.18	N	N	N	Y	N	Y	Y	Lithic
59.80	59.83	GkF	50%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
59.83	59.87	GkE	47%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.03	N	N	N	Y	N	Y	Y	Paralithic
59.87	59.96	BtE	38%	Ernest	0.05	N	N	N	Y	N	Y	Y	N
			63%	Buchanan	0.08	N	N	N	Y	N	Y	Y	N
59.96	60.08	GcC	100%	Gilpin	0.19	State	N	N	Y	N	Y	Y	Lithic
60.08	60.14	GdF	50%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.05	N	N	N	Y	N	Y	Y	Paralithic
60.14	60.16	U5	100%	Udorthents	0.03	N	N	N	N	N	N	N	N
60.16	60.31	GkF	50%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.10	N	N	N	Y	N	Y	Y	Paralithic
60.31	60.36	GkE	47%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			53%	Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
60.36	60.43	GkF	50%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
				Gilpin	0.04	N	N	N	Y	N	Y	Y	Paralithic
60.43	60.46	CcC	100%	Calvin	0.04	N	N	N	Y	N	Y	Y	Paralithic
60.46	60.49	CcE	100%	Calvin	0.03	N	N	N	Y	N	Y	Y	Paralithic
60.49	60.49	MkE	100%	Meckesville	0.01	N	N	N	Y	N	Y	Y	N
60.49	60.52	CcE	100%	Calvin	0.04	N	N	N	Y	N	Y	Y	Paralithic
60.52	60.55	MkE	100%	Meckesville	0.04	N	N	N	Y	N	Y	Y	N
60.55	60.62	CcE	100%	Calvin	0.09	N	N	N	Y	N	Y	Y	Paralithic
60.62	60.66	MkE	100%	Meckesville	0.04	N	N	N	Y	N	Y	Y	N
60.66	60.72	Ud	100%	Udifluvents	0.08	N	N	N	N	N	N	N	N
60.72	60.74	CcF	100%	Calvin	0.02	N	N	N	Y	N	Y	Y	Paralithic
60.74	60.79	MkE	100%	Meckesville	0.06	N	N	N	Y	N	Y	Y	N
60.79	60.92	CcF	100%	Calvin	0.17	N	N	N	Y	N	Y	Y	Paralithic
60.92	61.05	CbB	100%	Calvin	0.17	State	N	N	N	N	N	Y	Paralithic
61.05	61.13	CbD	100%	Calvin	0.10	State	N	N	Y	N	Y	Y	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
61.13	61.24	CcE	100%	Calvin	0.14	N	N	N	Y	N	Y	Y	Paralithic
61.24	61.27	CbC	100%	Calvin	0.03	State	N	N	Y	N	Y	Y	Paralithic
61.27	61.36	CcF	100%	Calvin	0.12	N	N	N	Y	N	Y	Y	Paralithic
61.36	61.42	DrF	100%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
61.42	61.49	DrC	100%	Dekalb	0.09	N	N	N	Y	N	Y	Y	Lithic
61.49	61.53	DrF	100%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
61.53	61.70	DrC	100%	Dekalb	0.21	N	N	N	Y	N	Y	Y	Lithic
61.70	61.85	DrF	100%	Dekalb	0.20	N	N	N	Y	N	Y	Y	Lithic
61.85	61.92	LyB	100%	Lily	0.09	Prime	N	N	N	N	N	Y	Lithic
61.92	62.04	DrF	100%	Dekalb	0.16	N	N	N	Y	N	Y	Y	Lithic
62.04	62.96	U4	100%	Udorthents	1.18	N	N	N	N	N	N	N	N
62.96	63.08	LeD	100%	Leetonia	0.15	N	N	N	Y	Y	Y	Y	Lithic
63.08	63.11	DrC	100%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
63.11	63.25	LeD	100%	Leetonia	0.18	N	N	N	Y	Y	Y	Y	Lithic
63.25	63.32	BtC	44%	Ernest	0.04	N	N	N	Y	N	Y	Y	N
			56%	Buchanan	0.05	N	N	N	Y	N	Y	Y	N
63.32	63.59	U2	100%	Udorthents	0.35	N	N	N	N	N	N	N	N
63.59	63.66	LyC	100%	Lily	0.08	State	N	N	Y	N	Y	Y	Lithic
63.66	63.75	DrC	100%	Dekalb	0.12	N	N	N	Y	N	Y	Y	Lithic
63.75	63.87	DbD	100%	Dekalb	0.15	N	N	N	Y	N	Y	Y	Lithic
63.87	63.95	DrC	100%	Dekalb	0.11	N	N	N	Y	N	Y	Y	Lithic
63.95	63.98	DrF	100%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
63.98	64.00	DrC	100%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
64.00	64.44	DrF	100%	Dekalb	0.58	N	N	N	Y	N	Y	Y	Lithic
64.44	64.67	CbB	100%	Calvin	0.29	State	N	N	N	N	N	Y	Paralithic
64.67	64.76	CbF	100%	Calvin	0.12	N	N	N	Y	N	Y	Y	Paralithic
64.76	64.79	CbC	100%	Calvin	0.04	State	N	N	Y	N	Y	Y	Paralithic
64.79	64.92	CbE	100%	Calvin	0.17	N	N	N	Y	N	Y	Y	Paralithic
64.92	65.02	BaC	100%	Belmont	0.13	State	N	N	Y	N	Y	Y	Lithic
65.02	65.12	CbB	100%	Calvin	0.13	State	N	N	N	N	N	Y	Paralithic
65.12	65.33	BbF	20%	Rock outcrop	0.05	N	N	N	N	N	N	N	Lithic
			80%	Belmont	0.21	N	N	N	Y	N	Y	Y	Lithic
65.33	65.38	ShC	100%	Shouns	0.07	State	N	N	N	N	Y	N	N
65.38	65.42	BbD	15%	Rock outcrop	0.01	N	N	N	N	N	N	N	Lithic
			85%	Belmont	0.04	N	N	N	Y	N	Y	Y	Lithic
65.42	65.57	BbE	20%	Rock outcrop	0.04	N	N	N	N	N	N	N	Lithic
			80%	Belmont	0.16	N	N	N	Y	N	Y	Y	Lithic
65.57	65.60	BbF	20%	Rock outcrop	0.01	N	N	N	N	N	N	N	Lithic
			80%	Belmont	0.02	N	N	N	Y	N	Y	Y	Lithic
65.60	65.62	BaD	100%	Belmont	0.03	State	N	N	Y	N	Y	Y	Lithic
65.62	65.69	CcF	100%	Calvin	0.09	N	N	N	Y	N	Y	Y	Paralithic
65.69	65.79	CbC	100%	Calvin	0.13	State	N	N	Y	N	Y	Y	Paralithic
65.79	65.81	CcF	100%	Calvin	0.03	N	N	N	Y	N	Y	Y	Paralithic
65.81	65.87	CbC	100%	Calvin	0.07	State	N	N	Y	N	Y	Y	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
65.87	66.29	CbB	100%	Calvin	0.54	State	N	N	N	N	N	Y	Paralithic
66.29	66.39	DaC	100%	Dekalb	0.12	N	N	N	Y	N	Y	Y	Lithic
66.39	66.40	CcE	100%	Calvin	0.01	N	N	N	Y	N	Y	Y	Paralithic
66.40	66.48	CbD	100%	Calvin	0.12	State	N	N	Y	N	Y	Y	Paralithic
66.48	66.49	CcD	100%	Calvin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
66.49	66.56	BbF	20%	Rock outcrop	0.02	N	N	N	N	N	N	N	Lithic
			80%	Belmont	0.07	N	N	N	Y	N	Y	Y	Lithic
66.56	66.59	BbE	20%	Rock outcrop	0.01	N	N	N	N	N	N	N	Lithic
			80%	Belmont	0.03	N	N	N	Y	N	Y	Y	Lithic
66.59	66.61	BbD	15%	Rock outcrop	<0.01	N	N	N	N	N	N	N	Lithic
			85%	Belmont	0.03	N	N	N	Y	N	Y	Y	Lithic
66.61	66.64	ShC	100%	Shouns	0.03	State	N	N	N	N	Y	N	N
Pochantas County, WV													
66.64	66.64	ShC	100%	Shouns	<0.01	State	N	N	N	N	Y	N	N
66.64	66.68	ShC	100%	Shouns	0.06	State	N	N	Y	N	Y	Y	N
66.68	66.83	BbF	100%	Belmont	0.18	N	N	N	Y	N	Y	Y	Lithic
66.83	66.89	CfF	100%	Cateache	0.08	N	N	N	Y	N	Y	Y	Paralithic
66.89	67.02	CeD	100%	Cateache	0.17	State	N	N	Y	N	Y	Y	Paralithic
67.02	67.05	CfF	100%	Cateache	0.03	N	N	N	Y	N	Y	Y	Paralithic
67.05	67.09	CeB	100%	Cateache	0.06	Prime	N	N	N	N	N	Y	Paralithic
67.09	67.26	CfF	100%	Cateache	0.21	N	N	N	Y	N	Y	Y	Paralithic
67.26	67.31	CfE	100%	Cateache	0.07	N	N	N	Y	N	Y	Y	Paralithic
67.31	67.44	BbF	100%	Belmont	0.17	N	N	N	Y	N	Y	Y	Lithic
67.44	67.47	ShC	100%	Shouns	0.04	State	N	N	Y	N	Y	Y	N
67.47	67.56	ShB	100%	Shouns	0.12	Prime	N	N	N	N	N	Y	N
67.56	67.63	BbE	100%	Belmont	0.09	N	N	N	Y	N	Y	Y	Lithic
67.63	67.79	CfF	100%	Cateache	0.21	N	N	N	Y	N	Y	Y	Paralithic
67.79	67.91	CfE	100%	Cateache	0.21	N	N	N	Y	N	Y	Y	Paralithic
67.91	67.95	CfF	100%	Cateache	0.06	N	N	N	Y	N	Y	Y	Paralithic
67.95	68.00	CfC	100%	Cateache	0.09	N	N	N	Y	N	Y	Y	Paralithic
68.00	68.04	CfF	100%	Cateache	0.08	N	N	N	Y	N	Y	Y	Paralithic
68.04	68.05	CfC	100%	Cateache	0.01	N	N	N	Y	N	Y	Y	Paralithic
68.05	68.12	CeC	100%	Cateache	0.11	State	N	N	Y	N	Y	Y	Paralithic
68.12	68.19	CfF	100%	Cateache	0.09	N	N	N	Y	N	Y	Y	Paralithic
68.19	68.43	CfC	100%	Cateache	0.33	N	N	N	Y	N	Y	Y	Paralithic
68.43	68.64	CfF	100%	Cateache	0.30	N	N	N	Y	N	Y	Y	Paralithic
68.64	68.74	CfC	100%	Cateache	0.14	N	N	N	Y	N	Y	Y	Paralithic
68.74	68.87	CfE	100%	Cateache	0.19	N	N	N	Y	N	Y	Y	Paralithic
68.87	68.93	CfF	100%	Cateache	0.08	N	N	N	Y	N	Y	Y	Paralithic
68.93	69.02	BbF	100%	Belmont	0.13	N	N	N	Y	N	Y	Y	Lithic
69.02	69.10	BbE	100%	Belmont	0.11	N	N	N	Y	N	Y	Y	Lithic
69.10	69.13	BbF	100%	Belmont	0.03	N	N	N	Y	N	Y	Y	Lithic
69.13	69.21	Se	100%	Sensabaugh	0.12	Prime	N	N	N	N	N	Y	N
69.21	69.34	Pu	100%	Purdy	0.17	N	Y	Y	N	N	N	Y	N

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
69.34	69.42	BbC	100%	Belmont	0.11	N	N	N	Y	N	Y	Y	Lithic
69.42	69.45	SsE	100%	Shouns	0.05	N	N	N	Y	N	Y	Y	N
69.45	69.57	CfF	100%	Cateache	0.18	N	N	N	Y	N	Y	Y	Paralithic
69.57	69.69	CfE	100%	Cateache	0.17	N	N	N	Y	N	Y	Y	Paralithic
69.69	69.81	CfC	100%	Cateache	0.18	N	N	N	Y	N	Y	Y	Paralithic
69.81	69.84	CfE	100%	Cateache	0.05	N	N	N	Y	N	Y	Y	Paralithic
69.84	70.22	CfC	100%	Cateache	0.57	N	N	N	Y	N	Y	Y	Paralithic
70.22	70.30	CfE	100%	Cateache	0.14	N	N	N	Y	N	Y	Y	Paralithic
70.30	70.38	CfF	100%	Cateache	0.13	N	N	N	Y	N	Y	Y	Paralithic
70.38	70.42	SsE	100%	Shouns	0.05	N	N	N	Y	N	Y	Y	N
70.42	70.44	CeC	100%	Cateache	0.04	State	N	N	Y	N	Y	Y	Paralithic
70.44	70.60	CeB	100%	Cateache	0.25	Prime	N	N	N	N	N	Y	Paralithic
70.60	70.63	CeC	100%	Cateache	0.04	State	N	N	Y	N	Y	Y	Paralithic
70.63	70.70	CfF	100%	Cateache	0.11	N	N	N	Y	N	Y	Y	Paralithic
70.70	70.78	CfC	100%	Cateache	0.11	N	N	N	Y	N	Y	Y	Paralithic
70.78	70.90	CfF	100%	Cateache	0.18	N	N	N	Y	N	Y	Y	Paralithic
70.90	71.04	CfC	100%	Cateache	0.20	N	N	N	Y	N	Y	Y	Paralithic
71.04	71.20	CfF	100%	Cateache	0.24	N	N	N	Y	N	Y	Y	Paralithic
71.20	71.28	MfC	100%	Mandy	0.12	N	N	N	Y	N	Y	Y	Paralithic
71.28	71.31	MfF	100%	Mandy	0.04	N	N	N	Y	N	Y	Y	Paralithic
71.31	71.38	MfC	100%	Mandy	0.11	N	N	N	Y	N	Y	Y	Paralithic
71.38	71.41	MfF	100%	Mandy	0.03	N	N	N	Y	N	Y	Y	Paralithic
71.41	71.44	MfC	100%	Mandy	0.05	N	N	N	Y	N	Y	Y	Paralithic
71.44	71.50	CfF	100%	Cateache	0.08	N	N	N	Y	N	Y	Y	Paralithic
71.50	71.57	CfC	100%	Cateache	0.11	N	N	N	Y	N	Y	Y	Paralithic
71.57	71.65	CfF	100%	Cateache	0.11	N	N	N	Y	N	Y	Y	Paralithic
71.65	71.80	CfC	100%	Cateache	0.23	N	N	N	Y	N	Y	Y	Paralithic
71.80	71.83	CfF	100%	Cateache	0.05	N	N	N	Y	N	Y	Y	Paralithic
71.83	72.06	CfC	100%	Cateache	0.33	N	N	N	Y	N	Y	Y	Paralithic
72.06	72.12	CfF	100%	Cateache	0.10	N	N	N	Y	N	Y	Y	Paralithic
72.12	72.20	SsC	100%	Shouns	0.11	N	N	N	Y	N	Y	Y	N
72.20	72.36	CfC	100%	Cateache	0.24	N	N	N	Y	N	Y	Y	Paralithic
72.36	72.43	CfF	100%	Cateache	0.11	N	N	N	Y	N	Y	Y	Paralithic
72.43	72.60	CfE	100%	Cateache	0.24	N	N	N	Y	N	Y	Y	Paralithic
72.60	72.68	CfF	100%	Cateache	0.12	N	N	N	Y	N	Y	Y	Paralithic
72.68	72.72	BbE	100%	Belmont	0.06	N	N	N	Y	N	Y	Y	Lithic
72.72	72.77	SsE	100%	Shouns	0.07	N	N	N	Y	N	Y	Y	N
72.77	72.81	Se	100%	Sensabaugh	0.05	Prime	N	N	N	N	N	Y	N
72.81	72.82	SsC	100%	Shouns	0.02	N	N	N	Y	N	Y	Y	N
72.82	72.83	SsE	100%	Shouns	0.02	N	N	N	Y	N	Y	Y	N
72.83	72.88	BbF	100%	Belmont	0.07	N	N	N	Y	N	Y	Y	Lithic
72.88	73.05	CfE	100%	Cateache	0.24	N	N	N	Y	N	Y	Y	Paralithic
73.05	73.09	CfF	100%	Cateache	0.06	N	N	N	Y	N	Y	Y	Paralithic
73.09	73.11	CfF	100%	Cateache	0.03	N	N	N	Y	N	Y	Y	Paralithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
73.11	73.14	SsF	100%	Shouns	0.03	N	N	N	Y	N	Y	Y	N
73.14	73.38	CfF	100%	Cateache	0.34	N	N	N	Y	N	Y	Y	Paralithic
73.38	73.46	CfE	100%	Cateache	0.11	N	N	N	Y	N	Y	Y	Paralithic
73.46	73.63	CfC	100%	Cateache	0.24	N	N	N	Y	N	Y	Y	Paralithic
73.63	73.67	CfC	100%	Cateache	0.06	N	N	N	Y	N	Y	Y	Paralithic
73.67	73.70	CfE	100%	Cateache	0.05	N	N	N	Y	N	Y	Y	Paralithic
73.70	73.81	CfF	100%	Cateache	0.15	N	N	N	Y	N	Y	Y	Paralithic
73.81	74.05	CfE	100%	Cateache	0.37	N	N	N	Y	N	Y	Y	Paralithic
74.05	74.13	CuC	100%	Culleoka	0.14	State	N	N	Y	N	Y	Y	Lithic
74.13	74.17	CfE	100%	Cateache	0.07	N	N	N	Y	N	Y	Y	Paralithic
74.17	74.19	BbF	100%	Belmont	0.04	N	N	N	Y	N	Y	Y	Lithic
74.19	74.21	BbE	100%	Belmont	0.04	N	N	N	Y	N	Y	Y	Lithic
74.21	74.34	CuC	100%	Culleoka	0.22	State	N	N	Y	N	Y	Y	Lithic
74.34	74.35	BbE	100%	Belmont	0.04	N	N	N	Y	N	Y	Y	Lithic
74.35	74.47	BaC	100%	Belmont	0.22	State	N	N	Y	N	Y	Y	Lithic
74.47	74.50	BbF	100%	Belmont	0.05	N	N	N	Y	N	Y	Y	Lithic
74.50	74.53	BaD	100%	Belmont	0.06	State	N	N	Y	N	Y	Y	Lithic
74.53	74.55	BbF	100%	Belmont	0.04	N	N	N	Y	N	Y	Y	Lithic
74.55	74.56	SsE	100%	Shouns	0.02	N	N	N	Y	N	Y	Y	N
74.56	74.61	SsC	100%	Shouns	0.08	N	N	N	Y	N	Y	Y	N
74.61	74.64	BgF	47%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
			53%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
74.64	74.75	ShB	100%	Shouns	0.16	Prime	N	N	N	N	N	Y	N
74.75	74.92	SsC	100%	Shouns	0.27	N	N	N	Y	N	Y	Y	N
74.92	74.98	ShB	100%	Shouns	0.10	Prime	N	N	N	N	N	Y	N
74.98	75.01	BgF	47%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			53%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
75.01	75.18	SsC	100%	Shouns	0.25	N	N	N	Y	N	Y	Y	N
75.18	75.20	BgF	47%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			53%	Berks	0.02	N	N	N	Y	N	Y	Y	Paralithic
75.20	75.23	SsE	100%	Shouns	0.04	N	N	N	Y	N	Y	Y	N
75.23	75.26	BgF	47%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			53%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
75.26	75.36	LlC	100%	Lily	0.15	State	N	N	Y	N	Y	N	Lithic
75.36	75.50	BgF	47%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
			53%	Berks	0.11	N	N	N	Y	N	Y	Y	Paralithic
75.50	75.67	Se	100%	Sensabaugh	0.27	Prime	N	N	N	N	N	Y	N
75.67	75.73	BgF	47%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Berks	0.05	N	N	N	Y	N	Y	Y	Paralithic
75.73	75.76	Se	100%	Sensabaugh	0.05	Prime	N	N	N	N	N	Y	N
75.76	75.81	Ho	100%	Holly	0.08	N	Y	Y	N	N	N	N	N
75.81	76.01	Ch	100%	Chavies	0.31	Prime	N	N	N	N	N	N	N
76.01	76.04	Ho	100%	Holly	0.05	N	Y	Y	N	N	N	N	N
76.04	76.05	Ch	100%	Chavies	0.02	Prime	N	N	N	N	N	N	N

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
76.05	76.37	BgF	47%	Dekalb	0.23	N	N	N	Y	N	Y	Y	Lithic
			53%	Berks	0.26	N	N	N	Y	N	Y	Y	Paralithic
76.37	76.47	MaB	100%	Macove	0.17	Prime	N	N	N	N	N	Y	N
76.47	76.57	AlB	100%	Allegheny	0.16	Prime	N	N	N	N	N	Y	N
76.57	76.59	CbF	100%	Calvin	0.03	N	N	N	Y	N	Y	Y	Paralithic
76.59	76.61	W	100%	Water	0.03	N	N	N	N	N	N	N	N
76.61	76.62	Pt	100%	Potomac	0.02	N	N	N	N	N	N	Y	N
76.62	76.66	SsE	100%	Shouns	0.05	N	N	N	Y	N	Y	Y	N
76.66	76.71	CbF	100%	Calvin	0.09	N	N	N	Y	N	Y	Y	Paralithic
76.71	76.74	CbE	100%	Calvin	0.05	N	N	N	Y	N	Y	Y	Paralithic
76.74	76.77	CbF	100%	Calvin	0.04	N	N	N	Y	N	Y	Y	Paralithic
76.77	76.80	CbE	100%	Calvin	0.05	N	N	N	Y	N	Y	Y	Paralithic
76.80	76.86	CbF	100%	Calvin	0.09	N	N	N	Y	N	Y	Y	Paralithic
76.86	76.87	SsE	100%	Shouns	0.02	N	N	N	Y	N	Y	Y	N
76.87	76.90	SsE	100%	Shouns	0.04	N	N	N	Y	N	Y	Y	N
76.90	76.96	CbF	100%	Calvin	0.10	N	N	N	Y	N	Y	Y	Paralithic
76.96	77.17	BgE	39%	Dekalb	0.12	N	N	N	Y	N	Y	Y	Lithic
			61%	Berks	0.19	N	N	N	Y	N	Y	Y	Paralithic
77.17	77.24	CbF	100%	Calvin	0.10	N	N	N	Y	N	Y	Y	Paralithic
77.24	77.31	SsE	100%	Shouns	0.10	N	N	N	Y	N	Y	Y	N
77.31	77.57	CbF	100%	Calvin	0.38	N	N	N	Y	N	Y	Y	Paralithic
77.57	77.63	CbE	100%	Calvin	0.09	N	N	N	Y	N	Y	Y	Paralithic
77.63	77.67	CbF	100%	Calvin	0.06	N	N	N	Y	N	Y	Y	Paralithic
77.67	77.68	CbE	100%	Calvin	0.01	N	N	N	Y	N	Y	Y	Paralithic
77.68	77.73	CbF	100%	Calvin	0.07	N	N	N	Y	N	Y	Y	Paralithic
77.73	77.83	CbE	100%	Calvin	0.15	N	N	N	Y	N	Y	Y	Paralithic
77.83	77.85	CbF	100%	Calvin	0.03	N	N	N	Y	N	Y	Y	Paralithic
77.85	77.90	CbE	100%	Calvin	0.07	N	N	N	Y	N	Y	Y	Paralithic
77.90	78.00	CbF	100%	Calvin	0.14	N	N	N	Y	N	Y	Y	Paralithic
78.00	78.01	BfE	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Paralithic
78.01	78.02	CbF	100%	Calvin	0.01	N	N	N	Y	N	Y	Y	Paralithic
78.02	78.07	BfE	100%	Berks	0.06	N	N	N	Y	N	Y	Y	Paralithic
78.07	78.12	BfF	100%	Berks	0.08	N	N	N	Y	N	Y	Y	Lithic
78.12	78.40	BfE	100%	Berks	0.40	N	N	N	Y	N	Y	Y	Paralithic
78.40	78.41	BfF	100%	Berks	<0.01	N	N	N	Y	N	Y	Y	Lithic
78.41	78.46	BfE	100%	Berks	0.07	N	N	N	Y	N	Y	Y	Paralithic
78.46	78.49	BfF	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
78.49	78.88	WeD	100%	Weikert	0.55	N	N	N	Y	N	Y	Y	Lithic
78.88	78.94	WeF	100%	Weikert	0.10	N	N	N	Y	N	Y	Y	Lithic
78.94	79.05	WeD	100%	Weikert	0.15	N	N	N	Y	N	Y	Y	Lithic
79.05	79.08	WeF	100%	Weikert	0.04	N	N	N	Y	N	Y	Y	Lithic
79.08	79.11	WeD	100%	Weikert	0.05	N	N	N	Y	N	Y	Y	Lithic
79.11	79.13	WeF	100%	Weikert	0.03	N	N	N	Y	N	Y	Y	Lithic
79.13	79.18	Or	100%	Orrville	0.07	State	N	Y	N	N	N	N	N

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
79.18	79.29	Or	100%	Orrville	0.16	State	N	Y	N	N	N	N	N
79.29	79.32	WeF	100%	Weikert	0.05	N	N	N	Y	N	Y	Y	Lithic
79.32	79.40	WeD	100%	Weikert	0.11	N	N	N	Y	N	Y	Y	Lithic
79.40	79.42	WeF	100%	Weikert	0.02	N	N	N	Y	N	Y	Y	Lithic
79.42	79.44	WeF	100%	Weikert	0.04	N	N	N	Y	N	Y	Y	Lithic
79.44	79.54	WeD	100%	Weikert	0.13	N	N	N	Y	N	Y	Y	Lithic
79.54	79.57	WeF	100%	Weikert	0.04	N	N	N	Y	N	Y	Y	Lithic
79.57	79.75	MzC	100%	Mertz	0.25	N	N	N	Y	N	Y	Y	N
79.75	79.75	WeF	100%	Weikert	0.01	N	N	N	Y	N	Y	Y	Lithic
79.75	79.84	MzE	100%	Mertz	0.12	N	N	N	Y	N	Y	Y	N
79.84	79.90	WeD	100%	Weikert	0.08	N	N	N	Y	N	Y	Y	Lithic
79.90	79.95	MzE	100%	Mertz	0.08	N	N	N	Y	N	Y	Y	N
79.95	80.01	ElF	100%	Elliber	0.09	N	N	N	Y	N	Y	Y	N
80.01	80.16	DhF	39%	Hazleton	0.08	N	N	N	Y	N	Y	Y	Lithic
			61%	Dekalb	0.13	N	N	N	Y	N	Y	Y	Lithic
80.16	80.18	BlF	100%	Blackthorn	0.03	N	N	N	Y	N	Y	Y	N
80.18	80.45	CdF	25%	Berks	0.10	N	N	N	Y	N	Y	Y	Paralithic
			31%	Dekalb	0.12	N	N	N	Y	N	Y	Y	Lithic
			44%	Calvin	0.17	N	N	N	Y	N	Y	Y	Paralithic
80.45	80.46	CdF	25%	Berks	<0.01	N	N	N	Y	N	Y	Y	Paralithic
			31%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
			44%	Calvin	<0.01	N	N	N	Y	N	Y	Y	Paralithic
80.46	80.50	CdF	25%	Berks	0.02	N	N	N	Y	N	Y	Y	Paralithic
			31%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			44%	Calvin	0.03	N	N	N	Y	N	Y	Y	Paralithic
80.50	80.65	CdE	24%	Berks	0.05	N	N	N	Y	N	Y	Y	Paralithic
			35%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
			41%	Calvin	0.09	N	N	N	Y	N	Y	Y	Paralithic
80.65	80.67	CdE	24%	Berks	0.01	N	N	N	Y	N	Y	Y	Paralithic
			35%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			41%	Calvin	0.01	N	N	N	Y	N	Y	Y	Paralithic
80.67	80.70	BlE	100%	Blackthorn	0.03	N	N	N	Y	N	Y	Y	N
80.70	80.71	DhF	39%	Hazleton	0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
80.71	80.79	DhF	39%	Hazleton	0.04	N	N	N	Y	N	Y	Y	Lithic
			61%	Dekalb	0.07	N	N	N	Y	N	Y	Y	Lithic
80.79	80.86	ElF	100%	Elliber	0.11	N	N	N	Y	N	Y	Y	N
80.86	80.87	WeF	100%	Weikert	<0.01	N	N	N	Y	N	Y	Y	Lithic
80.99	81.03	WeC	100%	Weikert	0.06	N	N	N	Y	N	Y	Y	Lithic
81.03	81.19	WeF	100%	Weikert	0.23	N	N	N	Y	N	Y	Y	Lithic
81.19	81.22	WeD	100%	Weikert	0.04	N	N	N	Y	N	Y	Y	Lithic
81.22	81.40	WeD	100%	Weikert	0.26	N	N	N	Y	N	Y	Y	Lithic
81.40	81.42	WeF	100%	Weikert	0.03	N	N	N	Y	N	Y	Y	Lithic
81.42	81.49	WeD	100%	Weikert	0.11	N	N	N	Y	N	Y	Y	Lithic

Appendix I (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
81.49	81.55	WeF	100%	Weikert	0.08	N	N	N	Y	N	Y	Y	Lithic
81.55	81.94	WeD	100%	Weikert	0.56	N	N	N	Y	N	Y	Y	Lithic
81.94	82.13	BfF	100%	Berks	0.28	N	N	N	Y	N	Y	Y	Lithic
82.13	82.16	BfE	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Paralithic
82.16	82.31	BfC	100%	Berks	0.21	N	N	N	Y	N	Y	Y	Lithic
82.31	82.56	BfE	100%	Berks	0.37	N	N	N	Y	N	Y	Y	Paralithic
82.56	82.61	BfF	100%	Berks	0.07	N	N	N	Y	N	Y	Y	Lithic
82.61	83.54	PamE	39%	Madsheep	0.52	N	N	N	Y	N	Y	Y	Lithic
			61%	Paddyknob	0.81	N	N	N	Y	N	Y	Y	Lithic
83.54	83.79	PamC	37%	Madsheep	0.13	N	N	N	Y	N	Y	Y	Lithic
			63%	Paddyknob	0.22	N	N	N	Y	N	Y	Y	Lithic
83.79	83.80	PamE	39%	Madsheep	0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Paddyknob	0.01	N	N	N	Y	N	Y	Y	Lithic
83.80	83.92	PamC	37%	Madsheep	0.06	N	N	N	Y	N	Y	Y	Lithic
			63%	Paddyknob	<0.01	N	N	N	Y	N	Y	Y	Lithic

[a] The mileposts used in the Federal Energy Regulatory Commission (FERC) application, which was filed on September 18, 2015 (FERC Accession Number 20150918-5212), were based on three-dimensional changes in topography along the proposed pipeline routes. In areas where a pipeline route has changed due to the adoption of an alternative, the mileposts in the affected area have been scaled to account for the resulting difference in the length of the route. The straight-line distance between consecutive mileposts as indicated or depicted in tables and figures in this filing may be greater than or less than 5,280 feet. The mileposts should be considered as reference points only.

[b] As designated by the Natural Resources Conservation Service. Prime = Prime with no mitigation, State = soil of statewide importance

[c] Includes soils that have clay loam or finer textures in somewhat poor, poor, and very poor drainage classes.

[d] Includes land in capability subclasses IVE through VIIIE and soils with an average slope greater than or equal to 9 percent.

[e] Includes soils with Wind Erodibility Group classification of one or two.

[f] Includes coarse-textured soils (sandy loams and coarser) that are moderately well to excessively drained and soils with an average slope greater than or equal to 9 percent.

[g] Includes soils that have either: 1) a very gravelly, extremely gravelly, cobbley, stony, bouldery, flaggy, or channery modifier to the textural class, or 2) have greater than 5 percent (weight basis) of rock fragments larger than 3 inches in any layer within the profile.

[h] Includes soils that have bedrock within 60 inches of the soil surface. Paralithic refers to "soft" bedrock that will not likely require blasting during construction. Lithic refers to "hard" bedrock that may require blasting or other special construction techniques during installation of the proposed pipeline segments.

Notes: Y = Yes; N = No

APPENDIX J

Karst Plan

January 20, 2017

Karst Terrain Assessment Construction, Monitoring and Mitigation Plan

Atlantic Coast Pipeline Randolph and Pocahontas Counties in West Virginia and Highland, Augusta, and Nelson Counties in Virginia

GeoConcepts Engineering, Inc.

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Ashburn, VA 20147
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Ashburn, Virginia 20147
(703) 726-8030
www.geoconcepts-eng.com

January 20, 2017

Ms. Brittany Moody
Dominion Transmission, Inc.
445 West Main Street
Clarksburg, West Virginia 26301

Subject: **Karst Terrain Assessment, Construction, Monitoring and Mitigation Plan, Atlantic Coast Pipeline, Randolph and Pocahontas Counties in West Virginia, and Highland, Augusta, and Nelson Counties in Virginia (Our 15200)**

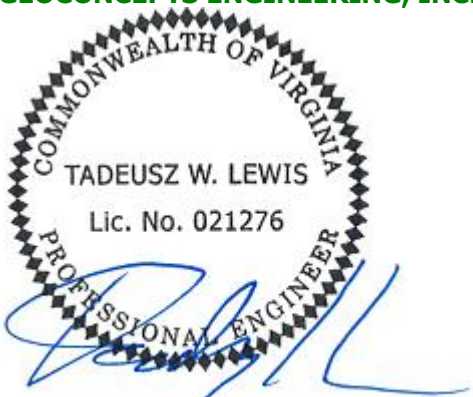
Dear Ms. Moody:

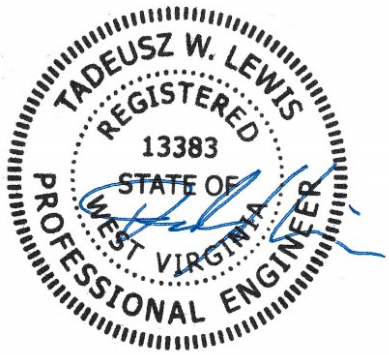
Per your request, GeoConcepts Engineering, Inc. (GeoConcepts) has completed a Karst Terrain Assessment, Construction Monitoring, and Mitigation Plan in support of the development of the Atlantic Coast Pipeline in areas of Randolph and Pocahontas Counties, West Virginia Highland, Augusta, and Nelson Counties, Virginia, and Westmoreland County, PA.

We appreciate the opportunity to serve as your geotechnical consultant on this project. Please do not hesitate to contact me if you have any questions or want to meet to discuss the findings and recommendations contained in the report.

Sincerely,

GEOCONCEPTS ENGINEERING, INC.





Tadeusz W. Lewis, PE
Principal
tlewis@geoconcepts-eng.com

GeoConcepts Engineering, Inc.

ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE
Docket No. PF15-6-000

and

DOMINION TRANSMISSION, INC
SUPPLY HEADER PROJECT
Docket No. PF15-5-000

Karst Terrain Assessment, Construction, Monitoring, and Mitigation Plan

Prepared by
GeoConcepts Engineering, Inc.
January 2017

GeoConcepts Engineering, Inc.

Table of Contents

Plan Outline

At the request of Atlantic Coast Pipeline, LLC (Atlantic), and Dominion Transmission, Inc. (DTI), GeoConcepts has developed a plan describing the assessment, monitoring, and mitigation activities for the proposed Atlantic Coast Pipeline (ACP) and the Dominion Supply Header Project (SHP) routes through areas of karst terrain. The requested plan is outlined as follows:

Definitions

This section provides a summary of karst-specific terms used in the plan.

Geological Overview

This section provides a brief discussion of karst terrain and features and the overall regional karst geology in the general area of the project. It is of note that the plan as written is a "generic" document due to possible changes that may occur in the specific project alignment. However, regardless of reroutes the alignment will need to pass across each of the provinces discussed in the geological overview section of the plan.

Pre-Construction Assessment and Field Survey

This section describes in detail the pre-construction database and remote sensing review, as well as field survey methods and procedures which are currently being completed.

Construction Monitoring Protocols

This section describes the methods and procedures to be utilized during the construction phase of the ACP/SHP. It includes:

- a description of the pre-excavation electrical resistivity investigation (ERI) methods and procedures, and the manner in which the ERI data will be analyzed, summarized, and presented; and
- a description of the activities to be conducted by the field geologist during excavation and trenching activities, including how the observations will be made and the reporting format and frequency.

Karst Mitigation and Conservation Procedures

This section discusses the best management practices (BMPs) to be utilized for mitigating, remediating, and minimizing impacts to karst features that may be encountered during construction activities. This includes features that either are within or receive drainage from the pipeline right-of-way, or features that are intercepted during the excavation and trenching process, as well as access roads, additional temporary workspace areas, or any other areas where land disturbance necessary for pipeline construction is planned. It is noted that these mitigation and conservation procedures will not apply for existing access roads that do not require land disturbance. The format and manner in which the mitigation and remedial activities will be undertaken and reported are addressed in this section of the plan. The intent is to provide agreed upon solutions to the karst features that may be encountered prior to the start of construction so that those features can be protected. However, in some cases, the actual remedial measure employed may be customized to the specific karst features identified.

Definitions

Karst Specialist – A Licensed Professional Geologist engaged in the practice of engineering geology (or) a Virginia Registered Professional Engineer engaged in the practice of Geotechnical Engineering, with a minimum of 10 years of experience in karst geology characterization and remediation. Practice experience shall be demonstrated by a statement of qualifications.[1]

[1]Adapted from the VA Cave Board Karst Assessment and Survey Guidelines (and) Denton, et al. 2016. All other definitions adapted from Field, 2002.

Cave – A natural hole in the ground, large enough for human entry. This covers the enormous variety of caves that do occur, but eliminates the many artificial tunnels and galleries incorrectly named caves. The size criterion is arbitrary and subjective, but practical, as it eliminates narrow openings irrelevant to explorers but very significant hydrologically, that may be better referred to as *proto-caves*, *sub-conduits*, or *fissures*. A cave may be a single, short length of accessible passage, or an extensive and complex network of tunnels as long as hundreds of kilometers.

Doline; Sinkhole – A basin- or funnel-shaped hollow or depression in limestone, dolostone or other soluble bedrock, ranging in diameter from a few meters up to a kilometer and in depth from a few to several hundred meters. Some dolines are gentle grassy hollows or depressions; others are rocky cliff-bounded basins. A distinction may be made by direct solution of the limestone surface zone (solution dolines), and those formed by collapse over a cave (collapse dolines), but it is generally not possible to establish the origin of individual examples. Generally referred to as a "sinkhole" in the United States, the term doline is more widely accepted by the international geology community.

Throat – An opening within a sinkhole leading into the subsurface through which material passes or has passed from the sinkhole into underlying solutional voids and conduits, which is generally too small to qualify as a cave and often called a *proto-cave*, *sub-conduit*, or *fissure*. Throats may be "open" (i.e. air-filled or water-filled), or "closed/clogged" (filled with debris including but not limited to: loose-soil; gravel; rock; dead-fall wood or brush; or trash).

Parapet – The outer edge or perimeter of a doline (sinkhole).

Ponor – a) Hole or opening in the bottom or side of a depression where a surface stream or lake flows either partially or completely underground into the karst groundwater system. b) Hole in the bottom or side of a doline through which water passes to or from an underground channel. Also known as a swallow hole or swallet.

Solution Cavity – A natural cavity or depression formed by the dissolution of soluble bedrock, typically not large enough to allow the entry of a human being and, therefore, not classified as a cave.

Breccia – Angular fragments of rock commonly, but not always, cemented by finer-grained materials including silica, iron minerals, and calcite to form a new rock. Many fault planes are marked by zones of broken rock, either loose or re-cemented, forming a fault breccia.

Non-Karst Closed Depression – A natural or non-natural topographic depression that is not formed by karst processes and is not floored by bedrock. Examples include (but are not limited to) construction-related soil subsidence, silage pits, farm ponds, scour pools, animal wallows, large animal burrows, and pits created by removal of tree stumps.

Sinking Stream/Swallet – A perennial or intermittent stream whose bed and bank disappear entirely underground, usually through an open throat sinkhole or cave entrance.

Losing Stream – A perennial or intermittent stream which loses flow volume into its bed due to the presence of sub-channel (hyporheic) solution cavities or conduits.

Geological Overview of the Karst Terrain Sections of the Proposed ACP/SHP

Overview of regional karst terrain within the project area

The term "karst" refers to a type of landform or terrain, just like "desert", "marsh", "tundra", "steppe" or "montane". It was named for a province in Slovenia where it was first described in the late 17th and early 18th century by geologists of the former Austro-Hungarian Empire. Simply stated, karst terrain is characterized or diagnosed by the presence of sinkholes, caverns, an irregular "pinnacled" bedrock surface,

and many large springs; however, the development of karst terrain is a result of the presence of soluble bedrock such as limestone, dolomite, marble or gypsum. Any landscape that is underlain by soluble bedrock has the potential to develop a karst terrain landform.

As in any region where soluble bedrock is present, a karst landform regime has developed in three known regions of the proposed ACP/SHP. Folding and faulting of the local carbonate rocks has opened up numerous fractures both parallel with the axis of the geologic structures, as well as perpendicular to them. Surface fractures and joints weather differentially, producing a pinnacled or "saw-tooth" profile at the bedrock/soil interface (referred to as the "epikarst" zone). In contrast, rock-enclosed fractures can be secondarily enlarged by the action of carbon dioxide charged groundwater, in some cases forming water-filled or air-filled conduits. As the regional terrain is "mature" karst, nearly all the fractures have undergone successive cycles of sediment filling and flushing. In areas such as the ACP project area, where there is little topographic relief and a relatively minimal groundwater gradient, the great majority of solution fissures are sediment-filled.

The most prevalent type of karst features in the project area are dolines or sinkholes, and these features comprise the greatest potential geohazard risk to any type of construction in karst terrain. Sinkholes fall into two broad categories, "vault-collapse" sinkholes, and "cover-collapse" sinkholes. Vault-collapse type sinkholes (i.e., where a cavern "vault" or roof has failed catastrophically) are rare in the ACP/SHP Project area (Campbell, et al., 2006). Cover-collapse sinkholes, which are common in the ACP project area, develop by the raveling of fines from the soil overburden into solution channels within the bedrock mass, in which water is the transport medium for the movement of the soil fines. The natural raveling process is generally a very slow one, such that sinkhole development generally occurs over a very long time span. However, various changes at a site can sometimes lead to the very sudden development of sinkholes. The most common changes that will exacerbate sinkhole development are:

1. Increase or redirection of overland or subsurface water flow paths, which accelerates the raveling of soil fines;
2. Removal of vegetation cover and topsoil (i.e., stripping and grubbing), which can reduce the cohesive strength of the soils overlying a conduit; and
3. Sudden changes in the elevation of the water table (such as drought, over-pumping of wells, or quarry dewatering), which removes the neutral buoyancy of the water supporting a conduit's soil plug, and can often result in rapid and catastrophic soil collapse.

Geological Setting

The proposed ACP/SHP will cross three distinct regional provinces of karst geology, from east to west:

1. The **Great Valley subsection of the Valley and Ridge physiographic province**, encompassing the portion of Augusta County, Virginia from the Blue Ridge on the east to Little North Mountain on the west.
2. The **Folded Appalachian subsection of the Ridge and Valley province**, encompassing the westernmost section of Augusta County, and all of Bath County and Highland County, Virginia and extending from the North Mountain area on the east to the Allegheny Mountain on the west.
3. The **Allegheny Front and Appalachian Plateau** provinces of West Virginia, encompassing Pocahontas and Randolph Counties, West Virginia, and the karst section of the SHP located in Westmoreland County, Pennsylvania.

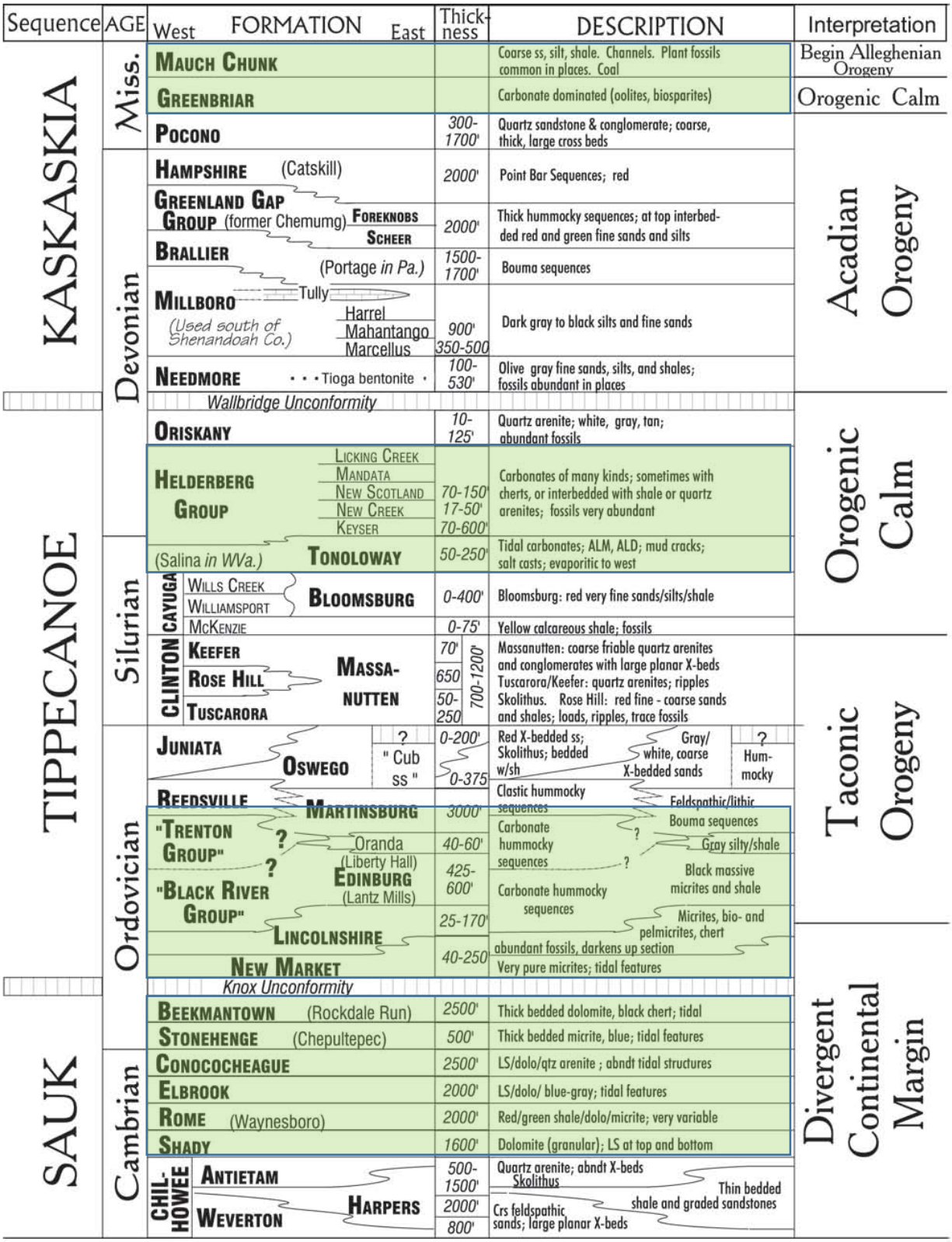


Figure 1. Stratigraphic Column of the central Virginia Great Valley, Folded Appalachians, and eastern Allegheny Front of west central Virginia and eastern West Virginia (Fichter, 2010). (The karst forming units are highlighted in green.)

The Great Valley (Augusta County, VA)

The Great Valley section is a generally downwarped trough (synclinorium) of Paleozoic limestones, shales, and sandstones that lie between the Blue Ridge Massif on the east and the Allegheny Mountains to the west. The Valley extends between the two mountain uplands from northeast to southwest, parallel with the average strike of the bedrock.

The karst terrain of the Great Valley section of the ACP project area is characterized by numerous circular to oval-shaped sinkholes, ranging in size from a few feet to several hundred feet in diameter, the majority of which are completely vegetated and lack any opening to the subsurface ("throat") at their base. Sinkhole depths can vary, but are usually controlled by the angle of repose of the sediments lining their walls. Steep, rock-walled sinkholes are rare in this section, but generally occur in the small hills and uplands that are erosional remnants of the prior valley floor.

The Great Valley section contains large karst springs in the region. It is also characterized by sinkholes called "estavelles", which are insurgences for water during dry periods, and flood or act as springs (resurgences) during wet seasons. There are also numerous caves (i.e., air-filled voids large enough to permit the entry of a human being and that have an entrance to the surface) and subsurface caverns (air-filled voids large enough for human entry with no connection to the surface) in the region. Most of the caves and caverns range in length from a few feet to several miles; however, the average length rarely exceeds 2,500 feet. This is in contrast to the Folded Appalachian and Appalachian Plateau provinces to the west, where some of the longest caves in the region have been surveyed, many of which are more than 10 miles in length. Nevertheless, though not of great length, some of the most voluminous underground chambers in the region occur in the Great Valley section.

A unique type of karst terrain has developed in the eastern portion of Augusta County along the base of the Blue Ridge Mountains. Here, the characteristic karst terrain has been buried beneath a mantle of alluvial material which was shed off the mountains to the east. This alluvium ranges in age from less than 1 million years (Quaternary Period) to over 50 million years (Paleogene Period). The alluvium thins towards the west, and disappears completely west of Waynesboro, Virginia. Although the primary karst terrain is mantled by the alluvium, numerous shallow broad sinkholes are present and indicate the presence of large karst features in the underlying bedrock.

Bedrock Geology

Specifically, the proposed ACP project area in the Great Valley section has been extensively studied and mapped as being underlain by a series of karst-forming carbonate and calcareous clastic rocks (Campbell et al., 2006; DMME, 1993; Rader & Gathright, 2001; Rader & Wilkes, 2001; Hubbard, 1988; Southworth, et al., 2013) ranging in age from the Lower Cambrian to Middle Ordovician geological periods as follows:

Ordovician Period

Martinsburg Formation (Om)

The upper 100 to 200 feet of this formation is a brown, medium-to coarse-grained, fossiliferous sandstone. An olive-green silty shale and dark-gray siltstone comprises the middle portion of this formation, along with a medium-to coarse-grained, locally pebbly sandstone. The Stickley Run Member exists as the lower 400 to 900 feet of the formation. This is a medium-gray to grayish-black, very fine-grained (aphanitic), very thin- to thin-bedded, argillaceous limestone with interbedded medium- to dark-gray, calcareous shale.

Edinburg Formation (Oeln)

A black, fine-grained to aphanitic limestone with layered black shale that commonly contains pyrite, and medium- to light-gray, fine- to coarse-grained, nodular limestone with thin partings of black shale. This formation lies in thicknesses ranging from 450 to 1,000 feet throughout the three subject areas.

Lincolnshire Limestone (Oeln)

Gradational contact with the overlying Edinburg. A light- to very dark-gray, fine- to coarse-grained, medium to very thick-bedded limestone with black chert nodules. The Murat Limestone Member, generally found at the top of the formation, is a light colored, coarse-grained limestone composed of fossil fragments. Thicknesses throughout the subject areas range from 50 to 250 feet.

New Market Limestone (Oeln)

Unconformable upper contact with the Lincolnshire. The upper unit of this formation is a medium-gray, aphanitic, thick-bedded, limestone with scattered calcite crystals. The lower unit is a medium- to dark-gray, fine-grained, thin-bedded, argillaceous, bioturbated limestone that is dolomitic in parts, with its base being a carbonate pebble conglomerate. Formation thicknesses throughout the subject areas range from 100 to 250 feet.

Pinesburg Station Dolomite* (Ob)

This formation is a medium-to light gray, fine-grained, medium- to thick-bedded dolostone, with sparse fossils. When weathered, this dolomite is very light-gray, and exhibits a "butcher-block" structure. A medium-gray, fine-grained limestone exists as the base of this unit. The formation's average thickness is 400 feet.

Rockdale Run Formation* (Ob)

The upper contact with the overlying Pinesburg Station is unconformable. This formation is comprised of a medium-gray, fine-grained, fossiliferous limestone and a light- to medium-gray, fine-grained, laminated dolomitic limestone and dolostone with mottled beds. Thin lenses of gray chert are common near the base of the formation. Formation thickness ranges from 1,500 to 2,400 feet.

Stonehenge Limestone* (Ob)

Upper contact with the Rockdale Run Formation is gradational. The upper 400 to 500 feet is comprised of a medium- to dark-gray and black, fine- to medium-grained limestone, with thin beds of macerated fossil debris. The lower 50 to 150 feet (Stoufferstown Member) is a dark-gray to black, fine-grained limestone with thin sheet-like, crinkly partings due to cleavage, and thin beds of coarse-grained, bioclastic limestone.

***Beekmantown Group (Note – This unit consists of the Pinesburg Station Dolomite, Rockdale Run Formation, and the Stonehenge Limestone)**

Cambrian Period

Conococheague Formation (OCco)

The upper contact with the Stonehenge Limestone of the Beekmantown Group is unconformable. The upper 2,000 feet of this formation is a light- to dark-gray, fine-grained, laminated limestone, dolomitic limestone, and dolostone with flat-pebble conglomerate beds. Some cross laminated sandstone beds occur in the uppermost part of this unit. The Lower 200 to 500 feet (Big Spring Station Member) consists of a light-gray, fine-grained dolostone, medium- to dark-gray, fine-grained laminated limestone and dolomitic limestone, and gray, coarse-grained sandstone and dolomitic sandstone. Beds of flat-pebble conglomerate occur in the dolomite.

Elbrook Formation (Ce)

This unit's thickness ranges from 2,000 to 2,500 feet. The formation is a dark- to medium-gray, fine- to medium-grained limestone, dolomitic limestone, dolostone, and dolomitic shale. These lithologies commonly occur as erosion-surface-bounded sequences of algal limestone overlain by laminated dolomite. Decalcified, ocherous shale-like chips on the ground surface characterize this unit. The lower 300 to 400 feet is green to greenish-gray, fine-grained dolostone, dolomitic limestone, and shale.

Waynesboro Formation (Cw)

The upper contact with the Elbrook Formation is gradational. A dusky-red to olive-gray, fine- to medium-grained sandstone and dusky-red to gray shale exists as the upper 300 feet. The middle 400 feet is a medium- to dark-gray, saccharoidal dolomite and fine-grained limestone. The lower 500 feet is dusky-red, olive-gray, and dark-gray shale and dusky-red to brownish-gray, fine- to medium-grained sandstone. Overall thickness is approximately 1,200 feet.

Tomstown Dolomite/Shady Dolomite (Ct/Cs)

The upper 600 feet is light- to dark-gray, fine- to coarse-grained, medium- to thick-bedded, locally laminated dolostone with white chert rosettes and nodules in the upper 50 feet. The middle unit (about 210 feet) is very light- to medium-gray, medium-grained, very thick-bedded dolostone and high-magnesium dolostone. The lower unit (about 325 feet) is dark-gray to black, very fine-grained, thin- to very thin-bedded limestone and dolomitic limestone with argillaceous laminations. The overall unit thickness ranges from 1,100 to 1,200 feet. The Shady Dolomite is the homologous unit in the southeastern Great Valley at the base of the western edge of the Blue Ridge Mountains.

The Folded Appalachians (Augusta County, Bath County, Highland County, VA)

The western edge of the Great Valley is demarcated by the North Mountain Fault, and the ridges of Little North and Great North Mountain. The rocks underlying this section are younger than those of the Great Valley, dating primarily from the Late Ordovician through the Devonian periods in age. In general, the mountain ridges are underlain by sandstone and siltstone, clastic rocks which are insoluble and not prone to karst terrain development. In contrast, the intervening deep valleys are often floored by carbonate rocks, and a characteristic karst landscape characterized by sinkholes, caves and springs has developed in many cases along the axis and flanks of these valleys (Hubbard, 1988; Rader & Wilkes, 2001; DMME, 1993).

Bedrock Geology

The regional geology of the Folded Appalachians in the project area has been mapped (DMME, 1993) as being underlain by a series of karst-forming carbonate rocks ranging in age from the Lower Ordovician to Lower Devonian geological periods as follows:

Devonian – Silurian Periods

Helderberg Group (Dh)

This group consists of thick- to massive-bedded, dark gray/black micritic limestone with reef structures. The limestone shows some degree of recrystallization. The uppermost Helderberg is typically silicified near its contact with the overlying Oriskany sandstone. In many areas the Helderberg gives off a distinct petroliferous odor when freshly broken. The contact with the overlying Oriskany Sandstone is poorly exposed regionally, but the contact with the underlying Tonoloway Formation is distinct and often unconformable, where the massive bedding of the Helderberg gives way to the thin-bedding of the Tonoloway Formation. The contact can be identified in places by a lag deposit consisting of flat, packstone rip-ups and pebble conglomerate.

The group is a major cave forming unit of the Folded Appalachian section, however, it is of note that the stratigraphy of this unit has been the subject of a much detailed study in recent years (Haynes, et al., 2014). The Helderberg Group consists of a series of individual formations, from oldest to youngest, respectively: the Keyser Limestone, New Creek Limestone, Corriganville Limestone, and Licking Creek Limestone formations. It should be noted that based on biostratigraphic analysis the Keyser Limestone, the basal formation of the Helderberg Group, is considered to straddle the boundary of the Silurian and Devonian periods (Denkler and Harris, 1988a).

The entire Helderberg Group varies regionally, ranging from 85 feet to over 400 feet in thickness. The Keyser is considered the thickest of the individual formations comprising the group, ranging from 50 to 230 feet in thickness.

Silurian Period

Tonoloway Limestone (Sto)

This formation consists of extremely thin-bedded (0.5 inches or less) dark gray micritic limestone interbedded with fissile, calcareous shale. The formation gives off a distinct petroliferous odor when freshly broken. The contact with the overlying Keyser Limestone is distinct; however, it grades into the underlying Wills Creek Limestone. The Tonoloway Formation varies from 150 to 600 feet in thickness.

Wills Creek Limestone (Swc)

This formation consists of thin-bedded (less than 5 inches) dark gray calcareous shale and fossiliferous micrite, which is poorly exposed in the ACP project area. The thickness is variable, ranging from 3 feet to 230 feet.

Ordovician Period

Juniata, Oswego, Reedsville, Dolly Ridge, and Eggleston Formations (Oun)

Karst forming unit present only in the westernmost Valley and Ridge section of the ACP alignment (Highland and Bath Counties). The Dolly Ridge and Eggleston Formations are the only karst-forming units and consist of a medium-gray, fine-grained, thin-bedded, argillaceous limestone with interbedded olive-gray calcareous claystone, silt argillaceous limestone, gray shale, and K-bentonite beds. Thickness is about 400 feet in Bath and Highland Counties. The unit is laterally equivalent to the Middle Ordovician ("Trenton Group") limestones and part of the lower Martinsburg Formation.

Middle Ordovician Limestones, Undivided (Olm)

These limestones consist of the Edinburg Formation, the Lincolnshire Formation, and the New Market Limestone. The Edinburg is a black, fine-grained to aphanitic limestone with layered black shale that commonly contains pyrite, and medium- to light-gray, fine- to coarse-grained, nodular limestone with thin partings of black shale. Thickness is 400 feet to 500 feet. The Edinburg grades downward into the Lincolnshire Formation, a light- to very dark-gray, fine- to coarse-grained, medium- to very thick-bedded limestone with black chert nodules. Thicknesses throughout the ACP project area range from 25 to 250 feet. This unit is underlain by the New Market Limestone. The upper contact with the Lincolnshire is generally unconformable. The upper unit of this formation is a medium-gray, aphanitic, thick-bedded, limestone with scattered calcite crystals. The lower unit is a medium- to dark-gray, fine-grained, thin-bedded, argillaceous, bioturbated limestone that is dolomitic in parts, with its base being a carbonate pebble conglomerate. Formation thicknesses throughout the ACP project area range from 0 to 150 feet.

Beekmantown Formation (Ob)

This formation is a medium- to light-gray, fine-grained, medium- to thick-bedded dolostone, with sparse fossils. When weathered, this dolomite is very light-gray, and exhibits a "butcher-block" structure. A medium-gray, fine-grained limestone exists as the base of this unit. This formation is comprised of a medium-gray, fine-grained, fossiliferous limestone and a light- to medium-gray, fine-grained, laminated dolomitic limestone and dolostone with mottled beds. Thin lenses of gray chert are common near the base of the formation. Formation thickness ranges from 1,500 to 2,400 feet. The Beekmantown Formation typically consists of three members, which although distinct in the Great Valley region are hard to distinguish in the Folded Appalachian province.

The Allegheny Front & Appalachian Plateau (Pocahontas County and Randolph County, WV)

The last section of the folded Appalachian karst is located in eastern Pocahontas County. To the west occurs the relatively flat-bedded geology of the Allegheny Front and Appalachian Plateau provinces. The karst terrain in this area is formed almost exclusively by the carbonate rocks of the Mauch Chunk and Greenbrier Groups.

In general, the Mauch Chunk and Greenbrier Group carbonates exhibit a high density of caves relative to the other two karst sections along the pipeline. There are several factors that contribute to this, the main one being that the units act as a drain system for groundwater infiltrating downward through the fractured clastic rocks above them. Where they are exposed along the mountain flanks, the steep groundwater gradients have enhanced this cavern development. In many places surface water plunges directly into the carbonates via steep-walled, open throat sinkholes (swallets). Most of the caves are linear networks, and exhibit conduit flow, capturing surface streams upgradient which then emerge as springs at the downgradient end.

Bedrock Geology

The Appalachian Plateau section has been mapped (Cardwell, et al., 1968; Davies, 1958) as being underlain by the karst-forming carbonate rocks of the Greenbrier and Mauch Chunk Groups, exclusively. The geology is described from youngest to oldest as follows:

Mississippian Period

Mauch Chunk Group – Includes the Bluestone and Princeton Formations (Mbp), Hinton Formation (Mh), and Bluefield Formation (Mbf). The group is predominantly red, green and medium-gray shale and sandstone, with a few thin limestone lenses in each formation. Although the limestone strata in the unit are considered secondary, the topographic position of the Mauch Chunk along the edges of the eroded upland of the Allegheny Plateau where there is a relatively steep downward hydraulic gradient has enhanced water flow through the carbonate lenses, forming karst conduit networks with high transmissivity (Kozar & Mathes, 2001), thus from a karst hydrology viewpoint this unit is significant.

Greenbrier Group (Mg) – In the project area the Greenbrier Group (or "Big Lime" as it is known locally) is up to 400 feet in thickness. It is primarily a gray to dark gray, massively bedded marine limestone, with interbeds of red and green marine and nonmarine shale and thin discontinuous beds of sandstone. The Group is divided into six stratigraphic units; from oldest to youngest they are: the Denmar Limestone, Taggard Shale, Pickaway Limestone, Union Limestone, Greenville Shale, and Alderson Limestone. The principle cave forming units are the Pickaway and Union limestones.

Pre-Construction Assessment and Field Survey

The proposed ACP/SHP involves the installation of a gas pipeline extending through West Virginia, Virginia, and into southern North Carolina. The currently proposed pipeline construction alignment information shows that the primary route being considered for the pipeline passes across approximately 32.5 miles of karst terrain located in Randolph and Pocahontas Counties in West Virginia, and Highland, Bath, and Augusta Counties in Virginia, based on regional geological mapping.

The "Karst Review Area" (hereinafter referred to as the "KRA") assessed by data desktop review generally extended 0.25-mile from either side of the centerline of the proposed pipeline and alternate routes, and a 300 foot "study corridor" (300FC) extending 150 feet from either side of the centerline for field review. However, if observed or mapped karst features received drainage from the proposed pipeline work area then these features were delineated to the extent possible, and included in the assessment, even if they were outside of these perimeters.

Thus, the pre-construction assessment and field survey scope can be summarized as follows:

- Located and delineated surface karst features (e.g., sinkholes and karst related subsidence, cave entrances, closed depressions, and sinking and losing streams) within the KRA, with particular emphasis on features that had a direct connection with the phreatic zone such as "open-throat" sinkholes, karst windows, cave entrances, abandoned wells, sinking streams, and areas that could affect the integrity of the pipeline, such as actively forming cover-collapse sinks, areas of soil subsidence, or caves which have passages that extend below the proposed right-of-way at elevations less than 15 feet below the surface. Direct field observations were made by conducting a site reconnaissance over the entire 300FC where access was available.
- Delineated zones of karst terrain, subsidence, and drainages based on the surface karst features assessment.
- Prepared a report summarizing the methods and findings of the assessment.

Methods and Procedures

The above scope of services was accomplished by the following means:

Existing Data Review and Analysis

Potential karst features were identified remotely and/or by database review, and then their presence was confirmed in the field. This process helped to focus the actual field location and survey tasks. The following sources were reviewed:

1. The (proprietary) Cave Databases of the Virginia Speleological Survey (VSS) and the West Virginia Speleological Survey (WVSS);
2. Caves of Virginia (Douglas, 1961);
3. Description of Virginia Caves (Holsinger, 1975);
4. Caverns of West Virginia (Davies, 1965);
5. Maps of selected karst features (sinkholes, caves, springs) available from the Virginia Division of Mines and Mineral Resources and the United State Geological Survey (USGS);
6. 2-foot and 4-foot contour interval maps for the KRA (to determine the presence of surface karst features not included in the above listed databases based on the presence of closed, descending contours or other suspect karst "fingerprint" features);
7. LIDAR data (where available);
8. Aerial photographs (both recent and historical);
9. USGS Topographic 7.5-minute topographic quadrangles;
10. Sinkhole and depression locations available from the US Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) soil studies for the Counties through which the ACP will pass.
11. Weary, D.J. and D.H. Doctor. 2014. Karst in the United States: A digital map compilation and database, USGS open-file report 2014-1156, 23p

In addition, the survey team reviewed the readily available geological literature for bedrock and structural characteristics, relying upon the closest resolution mapping that existed for the particular KRA being examined.

Field Reconnaissance

Upon completion of the existing data review activities for a specific area, GeoConcepts undertook field reconnaissance and survey activities. Specifically, the field reconnaissance entailed:

1. Location and verification of surface karst features identified in the database review;
2. Location of uncatalogued or previously unidentified surface karst features, specifically sinkholes, cave entrances, dry runs and sinking streams.

The field reconnaissance placed particular emphasis on locations where pathways existed to phreatic groundwater such as open-throat sinkholes, cave entrances, karst "windows", and sinking streams. Potential reroutes were identified based on the field observation of sensitive karst features, such as significant caves, sinking streams, or open throat sinkholes.

The 300FC was delineated and the path of the 300FC was examined for karst features (both catalogued and previously unidentified) by field survey. This entailed conducting a site reconnaissance over the 300FC (i.e., the proposed pipeline route) in a systematic manner, to observe any existing surface karst features that fit the criteria. The locations and outlines of all relevant features were recorded using a sub-meter accurate Global Positioning System (GPS) device. For the purpose of this study, the outline (parapet) of sinkholes were defined by the last closed descending contour at mapping interval available for the area under study. Cave entrances were identified as single points, unless the entrance was located within a larger sinkhole structure, in which case the cave entrance was indicated as a point within the sinkhole's parapet. Sinking streams were located as points of entry into the subsurface; however, losing streams were identified as linear features.

All digital data was transmitted in the Universal Transverse Mercator (UTM) Coordinate system. The horizontal datum of reference is NAD83.

Summary Report

The results of the data review and field survey has been summarized in a final report. The report details the methods and findings, and contains an inventory and contained a delineation of karst features and terrain. The frequency and density of karst features was also correlated with the encompassing geological unit at the formational level (e.g., Elbrook Formation, etc.). The report is accompanied by a data set containing the attributed digital points and polygon data as shapefiles with metadata (maps and/or tables). The results of the karst survey work was used during routing and workspace design. In addition, these data will be used during the construction phase to assist in the pre-construction inspection tasks described in the following sections.

Construction Monitoring

The purpose of this section of the plan is to establish a standard set of monitoring protocols for karst features encompassed by the proposed ACP pipeline right-of-way and adjacent areas. The intent of these protocols is to minimize impact to the subterranean environment, ensure water quality, and protect the integrity of the pipeline (Burden, 2012).

I. Geophysical Survey

To obtain more information about the subsurface conditions, and possible karst development along the proposed ACP pipeline alignment, an electrical resistivity investigation (ERI) will be conducted in the areas that are mapped with limestone bedrock. The ERI will be performed along the entire length of the pipeline centerline in karst terrain prior to any earth-disturbance and/or excavation activity.

Instrumentation

The geophysical survey instrument which will be used during this survey is an electrical resistivity meter that maps the resistivity changes in the earth. Resistivity refers to the electrical resistance of a material. The ERI survey will be conducted by introducing a measured current into the earth through two electrodes and measuring the resultant voltage (i.e., potential) across two different electrodes. At the low currents used, voltage is proportional to the current. The meter measures the voltage/current ratio or resistance in Ohms.

The ERI survey will be conducted using an earth resistivity meter which measures the apparent conductivity of the subsurface employing an artificial source that is introduced through point electrodes. The automatic electrode system is designed to optimize survey efficiency by gathering maximum information with a minimum of electrodes. The instrument also uses redundancies in the data set to reduce the effects of lateral heterogeneities in the earth and to calculate uncertainties in the data. The survey will be conducted automatically using a dipole-dipole array system.

Interpretation Method

The ERI data will be converted into a resistivity depth model using a Rapid 2D resistivity inversion model and the least-squares method (RES2DINV). Soundings from each line will be modeled to produce the measured apparent resistivity pseudo-sections. The model will calculate the apparent resistivity pseudo-sections using finite-difference forward modeling. The least-squares optimization technique will be used for the inversion routine that calculates the modeled resistivity section. The generated profiles will include cross-sections that consist of the inverse model resistivity cross-section. The horizontal and vertical scales will be in meters.

The cross-section is the inverse model resistivity pseudo-section. The ER data will be converted into a resistivity depth model (RES2DINV) using a resistivity inversion model by the least-squares method, which will be topographically corrected. RES2DINV will confirm the model reliability by calculating the modeled data into empirical data or the calculated resistivity pseudo-section. The difference between the measured and calculated data is the percent error. The modeled calculated error will be calculated within the five percent range, which is considered very accurate.

Low resistive materials can be caused by certain conductive soils, such as clay, wet silts, and sands, or ionized water. High resistive materials are caused generally by porous soils (i.e., poorly consolidated gravels), laminated bedrock with interstitial clay-filled voids, wood, or large, air-filled cavities. Lower ER anomalies are generally associated with soil-filled voids, saturated sinkhole soils, and water-bearing fractures. High ER anomalies are frequently associated with caverns, buried air filled structures, or weathered, laminated bedrock with air filled cavities.

Resistivity values can vary widely as the geology, mineralogy, and stratigraphy changes from site to site. Therefore, it is important to correlate resistivity results with boring logs for equivalent sections at a specific locality. Typical values are:

Subsurface Material	**Resistivity Range (Ωm)**
Topsoil	1 – 10
Clays	10 – 100
Sands and Gravels (unconsolidated)	600 – 10,000
Fresh Water	3 – 100
Limestone	100 – 10,000
Sandstone	100 – 1,000
Igneous and Metamorphic Rocks	100 – 1,000,000
Open Voids (i.e. caverns, solution conduits)	>10,000

Although the above values are characteristic of various subsurface materials, the absolute resistivity ranges will vary considerably depending on the local geology. Therefore, it is required that the ERI survey is calibrated using soil test/air track borings. In addition, if high ER anomalies are detected, their locations will need to be documented and further investigated. The specific type of investigation will be dictated by the characteristics of each anomaly identified, but typically air track borings will be used to verify anomalies observed during an ERI survey.

II. Inspection Protocols

Inspection protocols will be provided to the contractor and will be reviewed at a pre-construction meeting led by the Karst Specialist (KS). In addition, all geologist or engineering staff utilized during construction will have received training from the KS prior to mobilization to the site regarding the identification and mitigation of karst features that have been previously identified within the project boundaries, or that may be identified during construction.

Pre-Construction Inspection

Prior to the commencement of any earth disturbance activity, the area of the pipeline that will be affected by the planned activities will be inspected by the karst specialist (KS) as follows:

a. The KS will inspect the entire section of the pipeline ROW (right-of-way) in the designated work area, and note any suspect karst features including sinkholes, caves, areas of soil subsidence, or closed depressions.

b. The KS shall conduct a final preconstruction field assessment of seeps and springs within 500 feet of construction workspaces in karst terrain. The KS shall subsequently determine if construction activities could have an impact on the seeps and/or springs, and provide construction alternatives to avoid or mitigate impacts where practical.

c. The locations of observed features will be noted on site drawings and flagged for surveying and/or recorded using sub-meter accuracy GPS instrumentation.

d. The KS will issue a report summarizing the findings of the inspection. Findings will supplement the summary report and shall include an inventory of feature type(s), drainages, and potential impact to the feature by the planned activities, and recommendations to limit impacts if they are expected. This inspection is intended to supplement the aforementioned pre-construction karst assessment and field survey report, as new features may have developed, or existing features described in identified in the original assessment may have changed.

e. Features that are considered to have potential impacts are: caves, sinkholes with open throats, ponors, open solution cavities, abandoned wells, and sinking streams. (Note – If a sinkhole throat is filled, the type of fill, i.e. rock, soil, flood debris, etc., will be described in detail).

f. Features that are not considered to have a potential impact are: soil-bottomed (stable) sinkholes (i.e., no evidence of recent soil raveling or tension cracks along the parapet), karst springs, or non-karst closed depressions. However, it is of note that land disturbance to stable sinkholes can render them unstable. Not structurally unstable in general, but strictly in terms of raveling of surface materials (sediment) and associated contaminants into the subsurface.

g. The pre-construction inspection will have a "shelf-life" of 1 year from the day of the inspection. If work does not commence within 1 year, a new inspection will need to be completed prior to any earth disturbing activities.

h. The pre-construction inspection report shall be delivered to Atlantic/DTI no later than 1-month after the completion of the field survey.

Monitoring of Pre-Identified Features During Construction

Features identified during the pre-construction inspection will be monitored as follows:

a. If an identified feature with potential impact to the subterranean environment falls within the area designated for earth disturbing activities and cannot be avoided, the feature will be documented by field location and photographs, and then assessed for pre-construction remediation by Atlantic/DTI staff with input and guidance to be provided by the KS. Remediation will be in compliance with the USDA-NRCS's Conservation Practice Standard Code 527 "Karst Sinkhole Treatment" (2010) and the West Virginia Department of Environmental Protection Division of Water and Waste Management Ground Water Protection Program Sinkhole Mitigation Guidance, August 8, 2005. (see Appendix A)

b. If a feature that has potential impact falls within the right-of-way but is not intercepted by the excavation, that feature will be monitored during the work by Atlantic/DTI staff for changes such as:

    1. soil subsidence;
    2. rock collapse;
    3. sedimentation;
    4. increased surface water infiltration;
    5. flooding;
    6. clogging; and/or other changes in morphology or function that might indicate potential impact to the epikarst stratum caused by the work.

c. All features, whether remediated or left in an undisturbed natural state, will be monitored by Atlantic/DTI staff, or their designee, for any changes in appearance, drainage, siltation, etc., at 1 year, 2 year, and 5 year intervals after the completion of the earth disturbing activities. If changes in the features are observed, Atlantic/DTI staff will report the condition to the KS who will provide consultation on potential impacts to the karst environment and possible remedial actions.

Monitoring of Features That are Intercepted During Construction

Features that are intercepted during construction shall be monitored as follows:

Level 1 Inspection of Features Intercepted During Construction

If any feature is intercepted during work activities including borings, blasting, and excavation or trenching, the onsite geologist will conduct an initial assessment of the feature to determine if further inspection (Level 2) by the KS will be required. Suspect features shall include:

1. Bedrock enclosed conduits, cave entrances[2] and voids;
2. Solution pockets that extend beyond visual examination range (and therefore may be open);
3. Areas of soft soils;
4. Soil voids;
5. Highly fractured bedrock;
6. Areas of breccia enclosed within the surrounding bedrock.

Level 2 Inspection of Features Intercepted During Construction

If any of the aforementioned features are observed during the Level 1 inspection, work will stop within a 100-foot radius of the feature, and then the KS will conduct a Level 2 inspection as follows:

a. The KS will examine the feature and determine if it has potential impact to the subterranean environment based on potential connectivity with the phreatic aquifer via the epikarst stratum (Moore, et al, 2013). The choice of characterization methods will be determined by the KS, and will include any combination of (but not be limited to):

    1. visual assessment;
    2 geophysical survey;
    3 track drill probes;
    4. infiltration or dye trace testing; or
    5. other techniques utilized to facilitate subsurface characterization of karst features.

b. If the feature is determined to have potential impact to the subterranean environment, the KS will advise Atlantic/DTI staff regarding appropriate remedial actions.

[2]If an opening to a cave is intercepted during construction activities, there should be immediate coordination with the US Fish and Wildlife Service, US Forest Service (if within Forest Service ownership land) Virginia DCR-NHP Karst Program (or) West Virginia Department of Conservation, for investigation.

c. If the feature is determined to not have potential impact to the subterranean environment, work will resume as planned.

d. All features that are intercepted during construction and subsequently remediated will be located by project surveyors exclusively, and monitored by Atlantic/DTI staff, or their designee, for any changes in appearance, drainage, siltation, etc., at 1 year, 2 year, and 5 year intervals after the completion of the earth disturbing activities. If any changes are observed, the KS will provide consultation on potential impact and recommend remedial actions, if necessary.

e. All Level 2 inspections, findings, and remedial activity will be summarized in a report by the KS, to be delivered to Atlantic/DTI after the completion of the field work.

Monitoring of Features That Form During Construction

Features that form during construction will be monitored as follows:

Level 1 Inspection of Features That Form During Construction

If any feature forms during work activities including hydrostatic testing, drilling, blasting, and excavation or trenching, Atlantic/DTI staff will conduct an initial assessment of the feature to determine if further inspection (Level 2) by the KS will be required. Suspect features will include:

a. Cave entrances[3]
b. Sinkholes;
c. Soil subsidence areas; and/or
d. Rock collapses.

This will apply to any of the above features that may form either within the work area, whether located along the proposed disturbance section or anywhere within a 300-foot radius of the work area.

Level 2 Inspection of Features That Form During Construction

If any of the aforementioned features are observed during the Level 1 inspection, work will stop in the area of the feature based on the observed site conditions, and then the KS will conduct a Level 2 Inspection as follows:

a. The KS will examine the feature and determine if it has potential impact to the subterranean environment based on potential hydraulic connectivity with the karst aquifer via the epikarst stratum.

b. The choice of characterization methods will be determined by the KS, and will include any combination of (but not be limited to) the following:

    a. visual assessment;
    b. electrical resistivity survey;
    c. track drill probes;
    d. infiltration testing; and/or
    e. other techniques utilized to perform subsurface characterization of karst features.

c. If the feature is determined to have potential impact to the subterranean environment, the KS will consult with Atlantic/DTI staff regarding appropriate remedial actions.

d. If the feature is determined to not have potential impact to the subterranean environment, work will commence as planned.

e. All features that form during construction, whether remediated or left in an undisturbed natural state, will be located on the site plans by the project surveyors, and will be monitored for any changes in appearance, drainage, siltation, etc. at 1 year, 2 year, and 5 year intervals after the completion of the earth disturbing activities. If any changes are observed, the KS will provide consultation on potential impact to the karst environment and remedial actions, if necessary. This

[3]If an opening to a cave forms during construction activities, should be immediate coordination with the Virginia DCR-NHP Karst Program (or) West Virginia Department of Conservation for investigation.

monitoring will be carried out on all features that form during work activities, regardless of whether they have a potential impact to the karst environment or not.

III. Notification and Consultation

Notification of, and consultation with State and Federal regulatory and administrative agencies will be completed for the following:

1. Any planned invasive subsurface exploration, including: geotechnical soil borings; rock coring; air track borings; test pits; or other invasive investigative measures that have the potential for intercepting subsurface voids, conduits, or caverns.
2. Any karst features that were identified and located prior to construction that will require remediation or mitigation.
3. Any karst features that were identified and located prior to construction that will require periodic monitoring, whether remediated or left in an undisturbed natural state. The results of the monitoring shall be documented and reported to the appropriate agencies.
4. Any karst features that are intercepted during construction. Notification and consultation will take place after the performance of the Level I inspection.
5. Any karst features that form during construction. Notification and consultation will take place after the performance of the Level I inspection.
6. Any karst features that form following construction which are observed during the post-construction karst feature monitoring (*see* Level 2 Inspection of Features that form during construction, part e).

Federal Agencies to be Notified

United States Fish and Wildlife Service (USFWS)
Federal Energy Regulatory Agency (FERC)
United States Forest Service (USFS)[4]

State Agencies to be Notified (Virginia)

Virginia Department of Conservation and Recreation – Natural Heritage Program (DCR-NHP)
Virginia Department of Environmental Quality (VDEQ)

State Agencies to be Notified (West Virginia)

West Virginia Division of Natural Resources (WVDNR)
West Virginia Department of Environmental Protection (WVDEP)

Karst Mitigation and Conservation Procedures

The following procedures will be used to avoid and minimize any impact of pipeline construction and/or O&M activity which might present a risk to environmental receptors, in particular obligate subterranean taxa. Please note that other resource protection measures that may be implemented for the ACP may provide redundancy with regard to the karst mitigation and conservation procedures detailed herein.

Measures to Avoid Impact to the Karst Aquifer and Environment

These measures shall apply to any karst feature which allows the unfiltered and unimpeded flow of surface drainage into the subsurface environment, including (but not limited to): open throat sinkholes, caves which receive surface drainage, sinking streams, and losing stream segments. These avoidance measures were derived from the NiSource Habitat Conservation Plan, Madison Cave Isopod Avoidance and Minimization Measures, and the Columbia Pipeline Group HCP and non-HCP species Best Management Practices

[4] Only if within USFS lands.

Guidance Document. They are intended to prevent impact to the karst aquifer and the subsurface habitat of obligate stygobiont species through protection of groundwater quantity and quality (Burden, 2012).

1. Protect known and/or future mapped recharge areas of cave streams and other karst features by following relevant conservation standards, specifically the FERC 2013 Upland Erosion Control, Revegetation and Maintenance Plan, the FERC 2013 Wetland and Waterbody Construction and Mitigation Procedures, and the ACP Spill Prevention, Containment, and Control (SPCC) plan.
2. Buffers of 300 feet around karst features in all work areas (within and off-ROW including discharge areas) must be clearly marked in the field with signs and/or highly visible flagging until construction related ground disturbing activities are completed. If a karst feature or its 300-ft buffer falls within the 125-ft wide workspace the following steps should be taken:
    a. The workspace should be narrowed (if practicable) to impact as little of the buffer as possible.
    b. No spraying of insecticides or herbicides shall be allowed within the 300-ft buffer.
    c. No refueling, repair or maintenance of vehicle or equipment shall be allowed within the 300-ft buffer.
    d. Soil disturbance within the buffer (i.e. trenching) shall be performed in a manner which prevents sediment from entering the subsurface through the use of carefully designed and continuously maintained sediment and erosion control measures, and shall follow the procedures and BMPs specified in the FERC plans and procedures mentioned in section 1, above.
    e. If the karst feature is located downgradient from the area of soil disturbance, drainage shall be directed away from the karst feature and its 300-ft buffer through the use of diversion trenches, water breaks, or other engineered methods. This shall apply even if the feature itself is located outside of the 125-ft workspace, but the workspace intercepts the 300-ft buffer.
    f. No activity of any kind shall be allowed within the parapet of a sinkhole or within a 25-ft buffer around the parapet, which should remain in an undisturbed, natural state. The sinkhole and the 25-ft parapet buffer should be delineated using temporary fencing.
3. Earth disturbing activities will be conducted in a manner that minimizes alteration of existing grade and hydrology of existing surficial karst features. Pre-existing flow channels will be stabilized but will not otherwise be altered. Concentrated flow caused by construction activities will be dispersed with a suitable spreading or diversion technique. Surface water flow volume will be maintained at historic (or predevelopment) levels as changes to the volume of surface water flow can disturb the subsurface hydrology.
4. Any open-throat sinkholes and cave entrances within 300 feet of the workspace, located downgradient from the centerline which receives drainage from the workspace will be carefully protected using silt fences, diversion trenches, constructed temporary berms around the parapet, or water breaks. If the feature receives flow via a discreet drainage channel, the channel will be equipped with absorptive boom and a double row of silt fences.
5. In addition to the aforementioned requirements, the following will be implemented in construction workspace areas:
    a. If a new open throat, cover-collapse sinkhole forms within the ROW or construction work space, work in that area will stop and the sinkhole will be isolated from the rest of the work area with sandbags or other suitable materials. The sinkhole will be inspected by the KS and appropriate action taken (e.g., pipeline relocated, sinkhole remediated, etc.) to ensure pipeline integrity and protection of the aquatic resource and subterranean habitat. The preferred method for remediation will be the graded/inverted filter method (Ralstein and Oweis, 1999). This technique involves excavation and cleaning out collapsed, soft soils in the weakened zone to limit further soil raveling, and placing rocks or boulders large enough to bridge the bedrock conduit or "throat" at the bottom of the excavation. Progressively finer rock and gravel are then placed and compacted above the base course, above which is placed a layer of permeable

geotextile fabric and soil to the final grade which is then seeded. The advantage of this method is that it allows surface water to continue to infiltrate into the subsurface, but prevents further soil raveling (which is the root cause of cover-collapse sinkholes). The vegetated soil stratum and underlying gravel acts as a natural filter for the water infiltrating to the underlying solution enlarged conduits and fracture system. (see Appendix A).

b. If a subsurface void or conduit should open or be intersected in the process of excavation and/or trenching, work in that area will stop and the void will be isolated from the rest of the work area with sandbags or other suitable materials. The void will be inspected by the KS and the most appropriate remedial method will be determined on a case-by-case basis. Soil voids will be backfilled using the graded filter method as described above. Small conduits (< 1 foot in diameter) may be closed with low mobility grout and/or flowable fill. Large conduits (>1 foot in diameter) will require specific remedial actions (capping, void bridging, or plugging) based on the location and geometry of the conduit (i.e. whether the conduit is located at the bottom, one side, or both sides of the trench).

c. If a subsurface void or conduit should open or be intersected in the process of excavation and/or trenching through which water is flowing (i.e. an underground stream) work in that area will stop, and the void will be isolated from the rest of the work area with sandbags or other suitable materials. The void will be inspected by the KS, and the most appropriate remedial method will be determined on a case-by-case basis. All efforts will be made to ensure that the existing flow path is not interrupted by isolating the stream using trench breakers, and backfilling the location of the saturated karst feature or stream with permeable material such as well-graded stone or other material which will not interfere with the continued flow of water from one side of the trench to the other.

d. In linear excavations adjacent to karst features, spoils will be placed on the upgradient side of the excavation so that if any erosion takes place the stockpiled soil will flow back into the excavation and not downgradient towards the karst feature.

e. Surface water control measures, including, but not limited to: diversion (direct water flow into trench or off right-of-way areas past the area of concern), detention or collection and transportation, will be utilized to prevent construction-influenced surface water from free flowing into open throated surface karst features, and eventually into the subsurface.

f. Open throat surface karst features will not be utilized for the disposal of water. This shall include, but not be limited to: hydrostatic test water, water from trench dewatering, or any other water generated by, or utilized in, construction activities.

6. Blasting will be conducted in a manner that will not compromise the structural integrity or alter the karst hydrology of known or inferred subsurface karst structures. If blasting or hammering is deemed necessary then the following parameters will be adhered to:

   a. The excavation will be carefully inspected for any voids, openings or other tell-tale signs of solution activity.

   b. If the rock removal intercepts an open void, channel, or cave, the work in that area will be stopped until a remedial assessment can be carried out by a qualified geologist or engineer with experience in karst terrain.

   c. All use of explosives will be limited to low-force charges that are designed to transfer the explosive force only to the rock which is designated for removal (e.g., maximum charge of 2 inches per second ground acceleration).

   d. If the track drill used to prepare the hole(s) for the explosive charge(s) encounters a subsurface void larger than 6 inches within the first 10 feet of bedrock, or a group of voids totaling more than 6 inches within the first 10 feet of bedrock, then explosives should not be used (or) a subsurface exploration should be conducted to determine if the voids have connectivity with a deeper structure. The subsurface exploration can be carried out with track drill probes, coring drill, electrical resistivity, or other techniques capable of resolving open voids in the underlying

bedrock. If a track drill or coring rig is used, then all open holes will be grouted shut after the completion of the investigation.

7. Horizontal Directional Drilling (HDD) will not be used in karst terrain.
8. If authorized by the landowner, block (e.g. gate) all access roads and ROWs leading to cave entrances or open throat sinkhole structures to prevent unauthorized access.
9. Comply with requirements of project SPCC plan.
10. A Spill Prevention, Control, and Countermeasures Plan (SPCC) has been developed for the proposed ACP/SHP which will further avoid and minimize potential impact of spills by implementing the following measures:
    g. equipment refueling will not be performed within flagged or marked buffer areas of streambeds, sinkholes, fissures, or areas draining into these or other karst features, except by hand-carried cans (5 gallon maximum capacity) when necessary;
    h. equipment servicing and maintenance areas will be sited outside of flagged or marked buffer areas of streambeds, sinkholes, fissures, or areas draining into these or other karst features;
    i. prevent runoff resulting from construction equipment washing operations to directly enter any karst feature by locating these operations outside of the buffer area;
    j. construction equipment vehicles, materials, hazardous materials, chemicals, fuels, lubricating oils, and petroleum products will not be parked, stored, or serviced within 300 feet of any karst feature;
    k. all equipment will be checked by a construction inspector daily for leaks prior to beginning work in karst areas; damaged or defective equipment will be removed or repaired; and
    l. if a reportable spill has impacted a karst feature:
        i. follow the SPCC Plan and
        ii. call the National Response Center (800-424-8802) and the Virginia Department of Environmental Quality (800-469-8892) or the West Virginia Department of Environmental Protection (304-558-5938), as appropriate.
11. Hydrostatic test water will not be obtained from karst features (only free-flowing streams).
12. Hydrostatic testing water from new pipe installations shall not be discharged into flagged or marked buffer areas of sinkholes, fissures, or other karst features or channels or surface features that flow towards those features. Discharging of hydrostatic testing water shall be performed in the following manner (in order of priority and preference):
    a. Discharge hydrostatic test water downgradient of flagged or marked buffer areas of sinkholes, fissures, or other karst features unless on-the-ground circumstances (e.g., man-made structures, terrain, or other sensitive resources) prevent such discharge.
    b. If water cannot be discharged downgradient as described in 12a, discharge water into uplands greater than 300 feet from flagged or marked buffer areas of sinkholes, fissures, or other karst features unless on-the-ground circumstances (e.g. man-made structures, terrain, other sensitive resources) prevent such discharge.
    c. If the conditions listed in either 12a or 12b are not practicable, discharge water as far from flagged or marked sinkholes, fissures, or other karst features as is practical and utilize additional sediment and water flow control devices to minimize effects.

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West Virginia DEP, 2005, Sinkhole Mitigation Guidance Document, August 8, 2005, WVDEP Division of Water and Waste Management, Groundwater Protection Program.

Appendix A – Sinkhole Mitigation Guidance Documents

West Virginia Department of Environmental Protection
Division of Water and Waste Management
Groundwater Protection Program

Sinkhole Mitigation Guidance

August 8, 2005

Purpose:

These sinkhole mitigation designs serve to allow the filling of sinkholes while maintaining recharge to the aquifer, reducing potential contamination threats to groundwater, and eliminating safety hazards at sinkhole entries.

General:

Consideration should be given to the method used for removing contaminated materials from sinkholes and reducing or eliminating direct inflow of surface water into sinkholes. Land treatment methods that improve the filtration and infiltration of surface water before it enters the sinkhole should be used along with the mitigation of the sinkhole.

Before selecting a treatment option the following should be considered:

- Land use
- Existing and planned land treatment
- Sinkhole drainage area
- Dimensions of the sinkhole opening
- Safe outlet for diverted surface water
- Environmentally safe disposal of sinkhole "clean out" material
- Availability and quality of filter material
- Safety of equipment and operators and laborers during installation

Treatment selection should be based on the dimensions of the sinkhole drainage area and include direct sinkhole treatment with surface water control measures and filter strips. Whichever treatment option is chosen, it should avoid surface water ponding or the creation of high soil moisture conditions in excess of 72 hours.

Treatment designs apply to sinkholes with excavated depths of 5 to 25 feet and with drainage areas up to 15 acres. Excavations up to 5 feet are sufficient for most sinkholes. Sinkholes with excavation depths of greater than 25 feet or with uncontrolled drainage areas greater than 15 acres may require adjustments to the treatment measure(s) and/or surface water control measure(s). In these cases, geologic and engineering assistance must be obtained and a site-specific treatment design prepared.

Treatment for Sinkholes with Drainage Areas Less than 5 Acres

Treat the sinkhole using the mitigation design in Figure 1 of this guidance document. The treatment site should be inspected after periods of heavy precipitation because some material may run into adjacent sinkhole voids causing a surface depression. In this case, maintenance will include adding soil material at the surface. The existing land use or practice may continue over the treated sinkhole as long as the treatment is maintained.

Treatment for Sinkholes with Drainage Areas of 5 Acres or More and Having a Safe Outlet

The following additional treatment criteria are applicable to sinkholes with drainage areas of 5 acres or more where a safe outlet can be provided to divert surface water away from the sinkhole. A safe outlet is one that does not erode, divert surface water to another sinkhole or injection well, or cause flood damage to crops, property, buildings, or highways/roads.

Surface water control measures should be situated to reduce the internal drainage area around the sinkhole to less than 5 acres. The choice of surface water control measures is generally based on site-specific conditions.

Treatment for Sinkholes with Drainage Areas of 5 to 15 acres and Having No Safe Outlet

Treat the sinkhole using the mitigation design in Figure 2 of this guidance document. The site should be inspected after periods of heavy precipitation because some material may run into adjacent sinkhole voids causing a surface depression. In this case, maintenance will include adding soil material at the surface. The sinkhole should remain as unused land.

Vegetated Buffer Area

A vegetated buffer area should be installed around the sinkhole to improve runoff water quality by filtration and adsorption of contaminants. The vegetated buffer area should be installed within the sinkhole drainage area and should begin at the treated sinkhole.

The minimum width (in feet) of the vegetated buffer area is determined by multiplying the sinkhole drainage area (in acres) by seven. This width should provide beneficial filtering for some distance outside the sinkhole because surface water runoff may be temporarily held before reaching the treated sinkhole.

Appropriate vegetation should be used for the buffer area. Use native vegetation as much as possible. **DO NOT** use noxious plants or weeds. It is recommended that a plant nursery be consulted for the appropriate vegetation.

Acceptable Materials

Engineering fabric - must meet the applicable requirements of AASHTO M-288.

Aggregates – fine aggregates, gravel, or rock rip rap that conforms to the West Virginia Department of Highways, Standard Specifications for Roads and Bridges, Sections 702, 703, and 704.

Specifications

Use the following guidance for installing a mitigation design for sinkholes and sinkhole areas with drainage areas of less than 5 acres:

1. Remove and properly dispose of materials dumped in and around the sinkhole in accordance with applicable federal, state, and local laws.

2. Excavate loose material from the sinkhole and try to expose the solution void(s) in the bottom. Enlarge the sinkhole, as necessary, to allow for installation of the filter material.

3. Select stone that is approximately 1.5 times larger than the solution void(s). Place the stone into the void(s) forming a competent bridge. Stone used for the bridge should have rock strength equal to, at least, moderately hard (*e.g.*, resistant to abrasion or cutting by a knife blade but can be easily dented or broken by light blows with a hammer). Shale or similar soft and non-durable rock is not acceptable.

4. Place a layer of filter material over the bridge to a minimum thickness of 24 inches. Approximately 35 percent of the material should be larger than the opening between the bridge and the void(s). There should be no discernable large openings around the bridge. The material should be either gabion stone, stone for rip rap, or stone for special rock fill that conforms to West Virginia Department of Highways, *Standard Specification Roads and Bridges*, Section 704.

5. Place a layer of smaller size filter material over the previous layer to a minimum thickness of 10 inches. The size of the material should be ¼ to ½ the size of that used in the previous layer. The material should be No. 57 aggregate, which conforms to West Virginia Department of Highways, *Standard Specifications Roads and Bridges*, Sections 703.1.1, 703.1.2, 703.1.3, 704.1.4, and 703.2.1. Unacceptable filter material consists of pea gravel or slags (steel, electromagnetic, or power plant).

6. Place a layer of sand-sized filter material over the previous layer ~~at~~ to a minimum thickness of 10 inches. The sand must be compatible in size with the previous layer to prevent piping. The material should be fine aggregate that conforms to West Virginia Department of Highways, *Standard Specification Roads and Bridges*, Sections 702.1.1, 702.1.2, and 702.1.3.

7. Engineering fabric conforming to AASHTO M 288 may be substituted for the stone and sand filter materials discussed in 5 and 6.

8. Backfill over the top filter layer or engineering fabric with soil material to the surface. This should be mineral soil with at least 12 percent fines. Reuse soil material excavated from the sinkhole as much as possible and place any available topsoil over the backfill. Overfill by about 5 percent to allow for settling.

9. Establish vegetation on the mitigated sinkhole and other disturbed areas of the site.

Use the following guidance for installing a mitigation design for sinkholes and sinkhole areas with drainage areas of 5 to 15 acres:

1. Remove and properly dispose of materials dumped in and around the sinkhole.

2. Excavate loose material from the sinkhole.

3. Place a layer of filter material into the sinkhole, allowing the stone to fill the void(s) below the bottom of excavated sinkhole. The size should be ¼ to ½ the size of the void(s). This material can be WVDOH gabion stone, rip rap stone, or special rock fill stone.

4. Place a layer of the same size filter material to a thickness of about ¾ TD (TD = total depth) above the sinkhole bottom.

5. Place a layer of smaller size filter material over the previous layer to a thickness of about ¼ D. Bring this layer to surface level. The size should be ¼ to ½ the size of the previous layer. The material should be No. 57 aggregate, which conforms to West Virginia Department of Highways, *Standard Specification Roads and Bridges*, Sections 703.1.1, 703.1.2, 703.1.3, 703.2.1, and 704.1.4. Unacceptable stone consists of pea gravel or slags (steel, electrometallurgical, or power plant).

6. Shale or similar soft and non-durable rock is not acceptable.

7. Establish vegetation on the mitigated sinkhole and disturbed areas of the site.

Engineering Fabric Requirements for Subsurface Drainage

Engineering fabric used in the mitigation of sinkholes should meet the applicable requirements of AASTHO M 288, Section 7.2

Engineering Fabric Installation

Proper construction and installation techniques are essential to ensure that the intended function of the engineering fabric is fulfilled.

When sewn seams are necessary, the seam strength must be equal to or greater than 90 percent of the specified grab strength, as measured in accordance with ASTM D 4632.

When sewn seams are used for the seaming of the engineering fabric, the thread must be high strength polypropylene, or polyester. Nylon thread is unacceptable.

For Sinkhole Mitigation Design A, place the engineering fabric loosely, with no wrinkles or folds, and with no void spaces between the fabric and the bridge. Overlap successive sheets of engineering fabric a minimum of 12 inches, with the upstream sheet overlapping the downstream sheet.

Prior to covering, the engineering fabric should be inspected to ensure that it has not been damaged (*e.g.* holes, tears, rips) during installation. An engineer or the engineer's designated representative should conduct the inspection. The designated representative should be a certified field inspector.

Damaged fabric must be repaired immediately. Cover the damaged area with an engineered fabric patch that overlaps to 12 inches beyond the damaged area.

Any damaged engineering fabric that cannot be repaired shall be replaced as directed by the engineer.

Place material over the engineering fabric in such a manner as to avoid stretching and subsequently tearing the fabric. Do not drop stone and soil placement from a height greater then one meter. Do not allow stone with a mass of more than 100 kg to roll down the slope of the sinkhole.

Grading the sinkhole slope is not permitted if the grading will result in the movement of the stone directly above the engineering fabric.

Operation and Maintenance

The owner/operator is responsible for maintaining the mitigated sinkhole and sinkhole area. At a minimum, the following maintenance practices should be performed:

1. Mow grass and plantings as necessary to promote vigorous growth.

2. Inspect mitigation measures at least twice a year and after all major rain events. Repairs to the sinkhole mitigation measures should be made promptly were warranted.

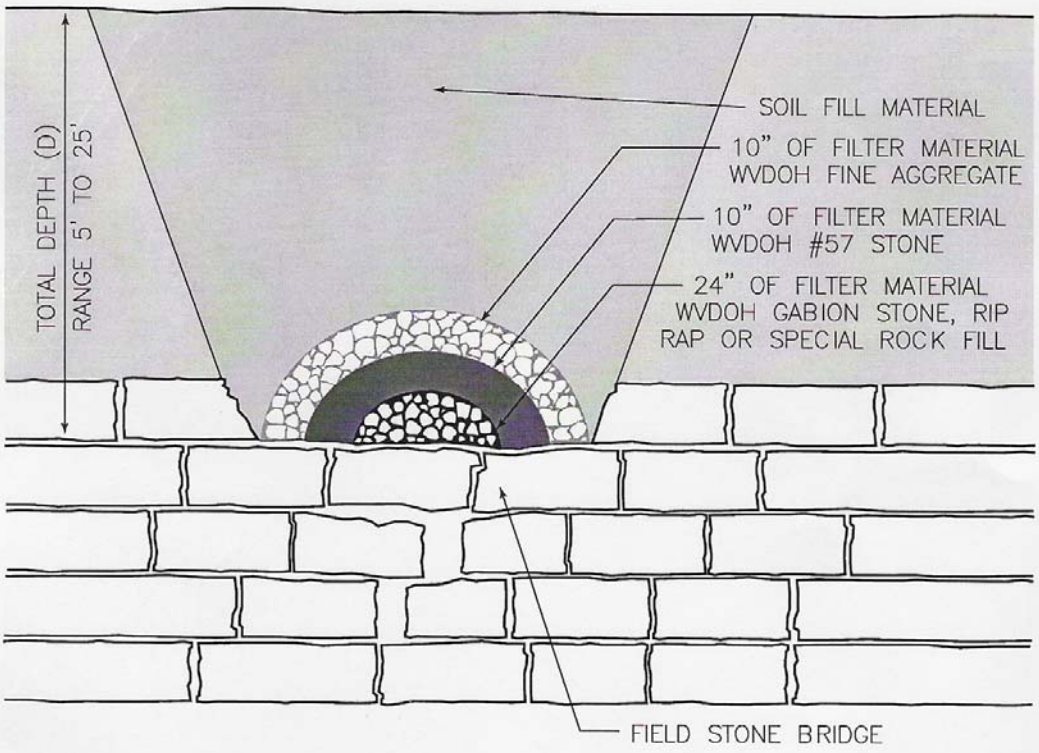
References:

USDA Natural Resources Conservation Center, January 2004. *Maryland Conservation Practice Standard, Sinkhole and Sinkhole Area Treatment, Code 725.*

West Virginia Department of *Highways, Standard Specifications Roads and Bridges*, 2000, Section 702, "Fine Aggregates", Section 703, "Coarse Aggregates", Section 704, "Stone and Crushed Aggregate", Section 715, "Miscellaneous Materials".

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SINKHOLE MITIGATION GUIDANCE

FIGURE 1



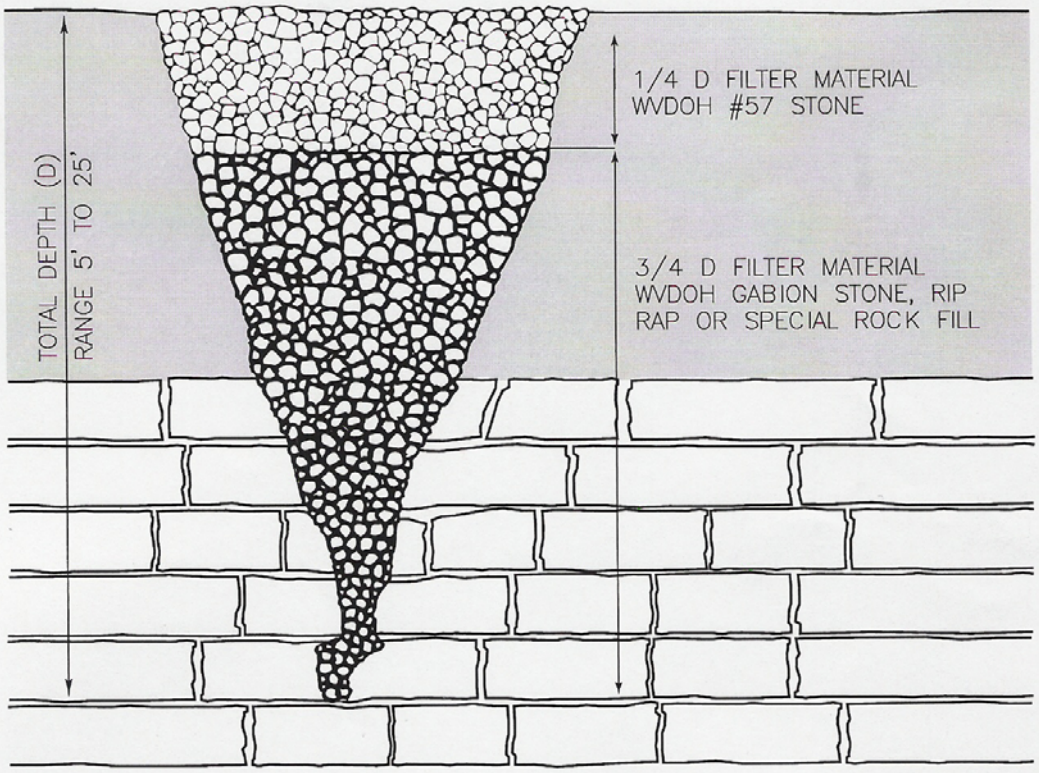
NOTE:
A NONWOVEN GEOTEXTILE MEETING AASHTO M288, SECTIONS 7.1+7.2 MAY BE SUBSTITUTED FOR THE WVDOH #57 STONE AND WVDOH FINE AGGREGATE

SINKHOLE MITIGATION

(DRAINAGE AREA LESS THAN 5 ACRES)

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SINKHOLE MITIGATION GUIDANCE

FIGURE 2



SINKHOLE MITIGATION

(DRAINAGE AREA 5 TO 15 ACRES)

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

KARST SINKHOLE TREATMENT

(No.)

CODE 527

DEFINITION

The treatment of sinkholes in karst areas to reduce contamination of groundwater resources, and/or to improve farm safety.

PURPOSE

This practice may be applied as part of a conservation management system in karst topography, which is an area underlain by solutioned carbonate bedrock with sinkholes and caverns. The practice supports one or more of the following purposes:

- Improve water quality
- Improve farm safety

CONDITIONS WHERE PRACTICE APPLIES

On any land surface or in conjunction with any existing practice where the soils and geologic conditions are characterized by sinkholes or karst topography.

This practice does not apply to erosional or collapse features caused by failure or leakage of underground pipes or constructed surface drainage features (e.g., canals), or due to piping of unstable soil materials, or due to poorly compacted or poorly constructed features.

This practice does not apply to sinkholes that may appear in or beneath structures or in flowing streams. Treatment of sinkholes in these areas will be determined through engineering investigations and structural design solutions.

CRITERIA

General Criteria Applicable to all Purposes

The installation and operation of karst sinkhole treatment(s) will comply with all Federal, State, and local laws, rules, and regulations.

A geologic investigation of the potential impact of the treatment on groundwater, surface water run-in, and the karst features will be conducted by a qualified geologist.

Trash and other material will be removed from the sinkhole and disposed of in an environmentally sound manner.

Excess surface water caused by construction activities will be diverted from the sinkhole area.

Nutrient and pest management plans will be developed for the drainage area of the sinkhole controlled by the landowner.

Vegetative Treatment. All sinkholes treated will have a vegetated buffer established and/or maintained. The buffer will be a minimum of 25-feet wide measured from the rim of the sinkhole. The buffer area may be extended to prevent concentrated flow channels from occurring and entering the sinkhole. The width of the vegetated buffer will be established and maintained in accordance with the type of buffer chosen. The sinkhole and surrounding buffer area will be fenced.

Livestock will be excluded from the vegetative buffer except when grazing would be beneficial to maintenance of the buffer.

Nutrients, herbicides, pesticides, and animal waste will not be applied within an established buffer area. Only mechanical treatments shall be used for weed control.

Appropriate erosion and sediment control measures will be used to reduce the amount of sediment entering sinkhole openings during the establishment of the vegetative buffer.

Surface Water Control. Changes to the volume of surface water that enters a sinkhole may disturb the underground hydrology. To the extent possible, the surface water flow should be maintained at historic (or predevelopment) volumes.

Pre-existing concentrated flow channels will be stabilized but should not otherwise be altered. If a plug or inverted filter is used, the area to be protected will be characterized by a qualified Geologist to enable a suitable design. Concentrated flow caused by construction activities will be dispersed with a suitable spreading or diversion technique.

Sinkhole Treatment/Closing. Adequate protection of most sinkhole and sinkhole areas can be achieved by the use of vegetative buffers and livestock exclusion. However, if an open sinkhole is a safety hazard, it may be treated with a rock filter, gabions, or other methods approved by the State Conservation Engineer or delegated authority.

Sinkholes to be treated or closed via a reverse filter or plug shall be excavated to stable, unweathered bedrock, if possible, prior to construction.

Sinkholes that open into caves shall not be filled under any circumstances. Gated openings may be used for safety reasons.

CONSIDERATIONS

Current and planned land use should be considered. In particular, structures, septic drain fields, wells, feedlots, ponds, and animal waste storage systems should not be located over a sinkhole site or within the impact area.

Sinkholes may be natural conveyances of organic material and nutrients important to cave fauna.

For a sinkhole receiving contaminated overland flow, every effort should be made to first treat the source of the contamination. Although it is important to maintain the hydrology of the karst system, it may be more beneficial to the groundwater quality to divert the contaminated water away from the sinkhole. In some cases, it may be necessary to completely plug a sinkhole with sealing materials rather than treat it with an inverted filter. Acceptable sealing materials are provided in ASTM D 5299, part 6.4. An example of this would be a sinkhole in a feedlot or a site that is difficult to protect by any other method.

The sinkhole treatment should not result in excessive surface water ponding or high soil moisture conditions over an extended period of time.

When filling a sinkhole, mounding of the fill material may be needed to offset future settlement due to consolidation and migration of the fill material into subsurface voids. Additional fill may be required as treatment ages.

Treatment of one sinkhole may have an effect on other sinkholes or solution features in the vicinity.

The use of a conservation easement for the buffer and sinkhole should be considered.

PLANS AND SPECIFICATIONS

Plans and specifications for Sinkhole and Sinkhole Area Treatment will be in keeping with this standard and will describe the requirements for applying the practice to achieve its intended purpose.

Plans and specifications shall include the following:

- Plan view showing sinkhole and sinkhole area Include topographic information and photographs
- The geologic investigation will include a study of potential impacts on the karst resource
- Depth to stable, unweathered bedrock
- Description of planned treatment measures
- The drainage area of sinkhole delineated on a topographic map
- Availability of safe outlet for surface water, if applicable
- Operation and Maintenance requirements
- Special safety requirements

OPERATION AND MAINTENANCE

An operation and maintenance (O&M) plan will provide specific instructions for maintaining the sinkhole and sinkhole area treatment, including reference to periodic inspections and the prompt repair and/or replacement of damaged components.

APPENDIX K

Site Specific Construction Plans for Major Waterbodies

LEGEND

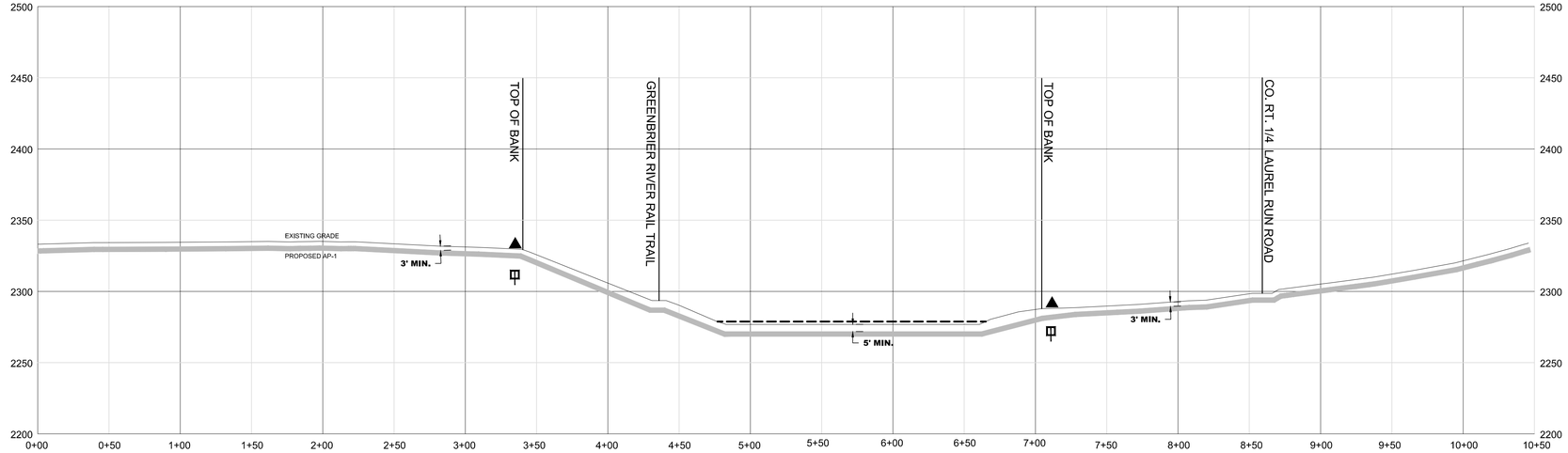
- PERMANENT RIGHT-OF-WAY
- TEMPORARY RIGHT-OF-WAY
- TOPSOIL SEGREGATION AREA
- ADDITIONAL TEMPORARY WORK SPACE
- WETLAND
- STREAM
- LIMITS OF DISTURBANCE
- 100 CONTOUR
- SILT FENCE
- SILT SOCK
- ROCK CONSTRUCTION ENTRANCE
- TRENCH PLUG
- WATER BAR
- TEMPORARY SLOPE BREAKER

WATERBODY IMPACT		
WATERBODY #	TEMP. IMPACT	PERMANENT IMPACT
-	0.55 ACRES	0.00 ACRES

WATERBODY IMPACT

WATERBODY CONSTRUCTION NOTES:

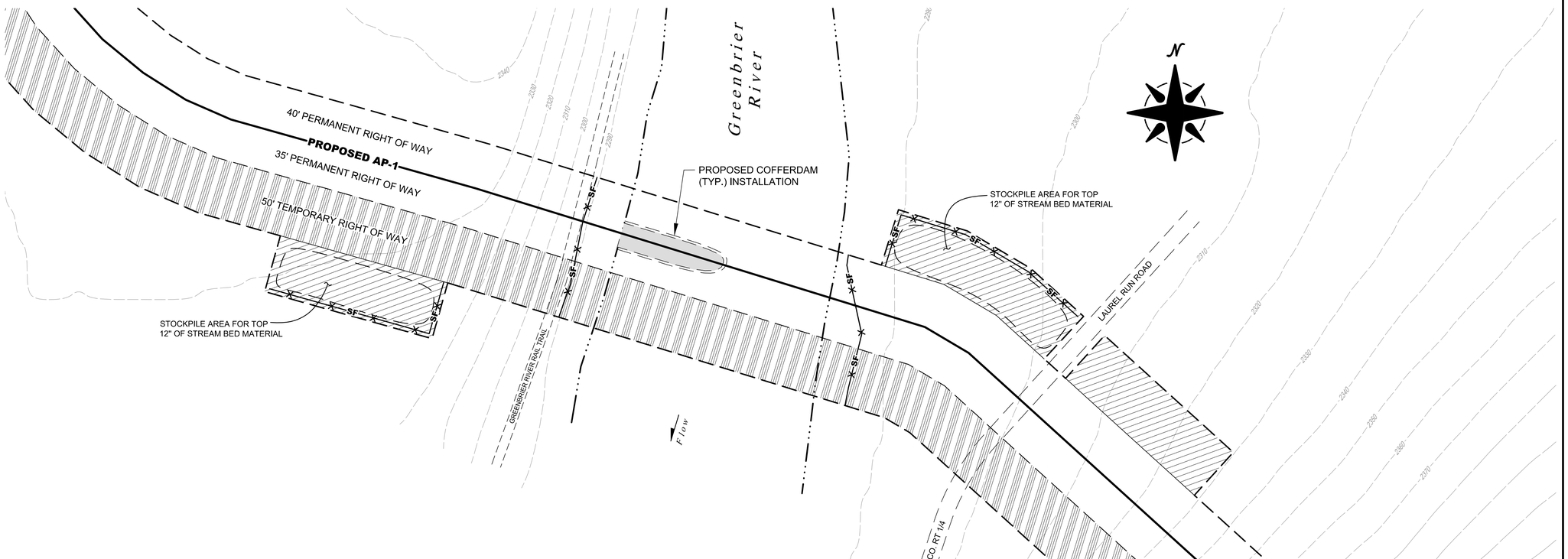
1. CROSSING TO BE COMPLETED VIA THE USE OF A COFFERDAM.
2. CONSTRUCTION TO BE PERFORMED IN LOW FLOW PERIODS. FLOW SHALL BE MAINTAINED.
3. RIP RAP (OR OTHER NON-ERODIBLE MATERIALS) TO BE PLACED IN SEMICIRCLE ALONG SIDE OF STREAM. ABOVE THE ORDINARY HIGHWATER MARK.
4. DISCHARGED WATER THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE.
5. STABILIZE WATER WATERBODY BANKS AND INSTALL TEMPORARY SEDIMENT BARRIERS WITHIN 24-HOURS OF COMPLETING IN-STREAM CONSTRUCTION ACTIVITIES.
6. RETURN ALL WATERBODY BANKS TO PRE-CONSTRUCTION CONTOURS OR TO A STABLE ANGLE OF REPOSE AS APPROVED BY THE ENVIRONMENTAL INSPECTOR. FILL BELOW THE ORDINARY HIGH WATER MARK SHOULD BE AVOIDED.
7. INSTALL TRENCH PLUGS AND WATERBARS AS DIRECTED BY THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN ON BOTH SIDES OF THE WATERWAY, AND AS DEPICTED. ON THIS PLAN.
8. PIPELINE SHALL BE WEIGHTED WITH CONCRETE COATING IN THE RIVER CROSSING TO ACHIEVE NEGATIVE BUOYANCY.
9. UPON COMPLETION OF CONSTRUCTION WITHIN THE COFFERDAM. THE COFFERDAM WILL BE RELOCATED TO OPPOSITE SIDE OF WATERBODY FOR COMPLETION OF PIPELINE CONSTRUCTION.



STREAM CROSSING PROFILE

50' 0 50' 100'

SCALE:1"□50□



PLAN VIEW

50' 0 50' 100'

SCALE:1"□50□

GENERAL NOTES AND COMMENTS:

REFERENCE

ELEVATION DATA FROM THE USGS GIS DATA CLEARING HOUSE.

PIPELINE SURVEY INFORMATION PROVIDED BY GAI CONSULTANTS.

STREAM AND WETLAND DATA COLLECTED BY NATIONAL RESOURCE GROUP, LLC.

MAPPING DATUM-UTM1□-NAD 83
CONTOUR INTERVAL - 10 FEET

SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
B	1/06/1□	ALC	ISSUED FOR REVIEW - ALIGNMENT RELOCATION		
A	4/5/16	RLR	ISSUED FOR REVIEW		

SEAL

I3 Engineering and Consulting, LLC
INTEGRITY • INITIATIVE • INNOVATION

DRAWN:	RLR	4/5/16
CHECKED:	RVS / DLM	4/5/16
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS SHOWN	

Atlantic Coast Pipeline, LLC

□25 White Oa□s Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: **AP□□ SITE SPECIFIC PLAN FOR GREENBRIER RI□ER**

DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
HUNTERSVILLE	POCAHONTAS	WV			B

DIR/FILE: DOM/ACP/Site Speci□ic/Green□rier River

LEGEND

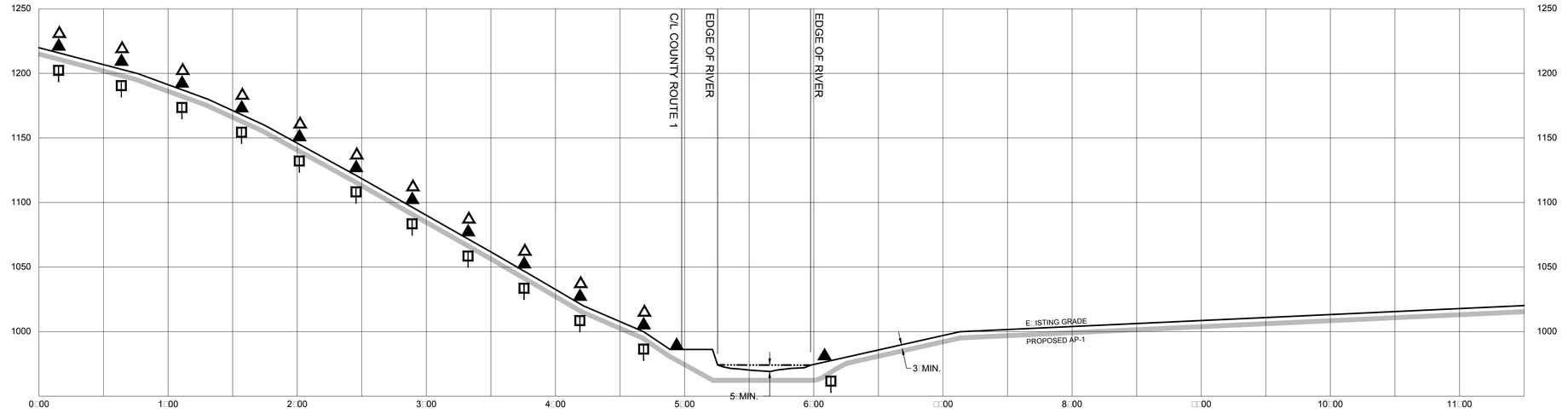
- PERMANENT RIGHT-OF-WAY
- TEMPORARY RIGHT-OF-WAY
- TOPSOIL SEGRAGATION AREA
- E□TRA WORK SPACE
- WETLAND
- STREAM
- LIMITS OF DISTURBANCE
- 100 CONTOUR
- SF SILT FENCE
- SILT SOCK
- ROCK CONSTRUCTION ENTRANCE
- TRENCH PLUG
- WATER BAR
- TEMPORARY SLOPE BREAKER

WATERBODY IMPACT		
WATERBODY □	TEMP. IMPACT	PERMANENT IMPACT
SLEB00□	0.25 ACRES	0.0 ACRES

WATERBODY IMPACT

WATERBODY CONSTRUCTION NOTES:

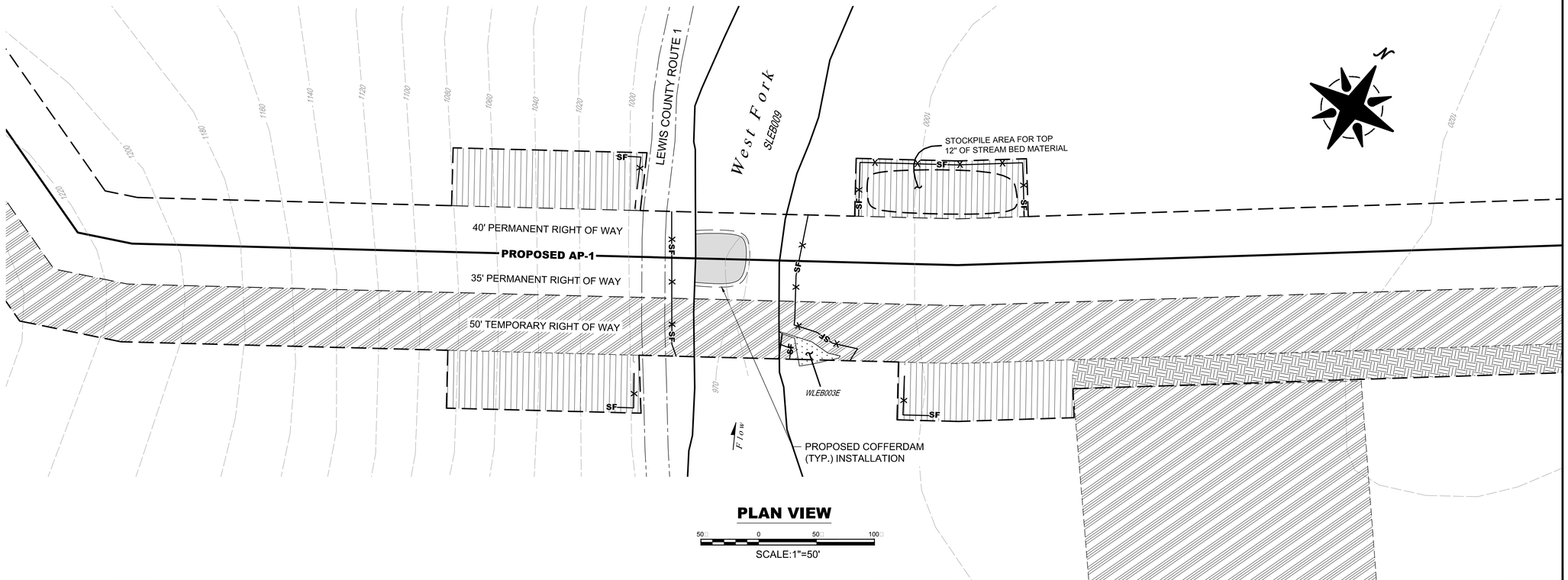
1. CROSSING TO BE COMPLETED VIA THE USE OF A COFFERDAM.
2. CONSTRUCTION TO BE PREFORMED IN LOW FLOW PERIODS. FLOW SHALL BE MAINTAINED AT ALL TIMES.
3. RIP RAP □OR OTHER NON-ERODIBLE MATERIALS□TO BE PLACED IN SEMICIRCLE ALONG SIDE OF STREAM, ABOVE THE ORDINARY HIGH WATER MARK.
4. DISCHARGE ALL WATER THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE.
5. STABILIZE WATER WATERBODY BANKS AND INSTALL TEMPORARY SEDIMENT BARRIERS WITHIN 24-HOURS OF COMPLETING IN-STREAM CONSTRUCTION ACTIVITIES.
6. RETURN ALL WATERBODY BANKS TO PRE-CONSTRUCTION CONTOURS OR TO A STABLE ANGLE OF REPOSE AS APPROVED BY THE ENVIRONMENTAL INSPECTOR. FILL BELOW THE ORDINARY HIGH WATER MARK SHOULD BE AVOIDED.
7. □. INSTALL TRENCH PLUGS AND WATERBARS AS DIRECTED BY THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN ON BOTH SIDES OF THE WATERWAY, AND AS DEPICTED. ON THIS PLAN.
8. PIPELINE SHALL BE WEIGHTED WITH CONCRETE COATING IN THE RIVER CROSSING TO ACHIEVE NEGATIVE BUOYANCY.
9. □. UPON COMPLETION OF CONSTRUCTION WITHIN THE COFFERDAM, THE COFFERDAM WILL BE RELOCATED TO OPPOSITE SIDE OF WATERBODY FOR COMPLETION OF PIPELINE CONSTRUCTION.



STREAM CROSSING PROFILE

50□ 0 50□ 100□

SCALE:1"=50'



PLAN VIEW

50□ 0 50□ 100□

SCALE:1"=50'

GENERAL NOTES AND COMMENTS:

REFERENCE

ELEVATION DATA FROM THE USGS GIS DATA CLEARING HOUSE.

PIPELINE SURVEY INFORMATION PROVIDED BY GAI CONSULTANTS.

STREAM AND WETLAND DATA COLLECTED BY NATIONAL RESOURCE GROUP, LLC.

MAPPING DATUM-WV STATE PLANE SOUTH-NAD 83
CONTOUR INTERVAL - 20 FEET

SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
C	□/1/15	RLR	REVISED PER BATHOMETRIC DATA		
B	8/18/15	RRC	REVISED PER CLIENT COMMENTS		
A	□/13/15	RRC	ISSUED FOR REVIEW		

SEAL

DRAWN:	RRC/RLR	□/13/15
CHECKED:	RVS / DLM	□/13/15
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS SHOWN	

Atlantic Coast Pipeline, LLC

445 West Main St. Clar□s□□rg, West Virginia 26301 / Phone: □304□623-8000

TITLE: **AP□□ SITE SPECIFIC PLAN FOR WEST FORK RI□ER**

DISTRICT:	COUNTY: LEWIS	STATE: WV	GROUP	DWG. NO.	REV.
DIR/FILE: DOM/ACP/Site Speci□ic/West For□River					C

LEGEND

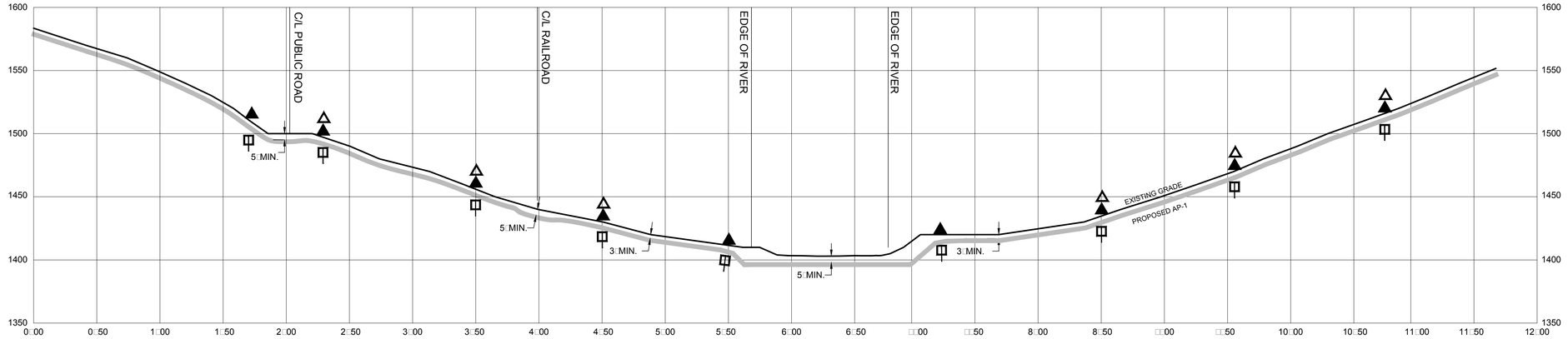
- PERMANENT RIGHT-OF-WAY
- TEMPORARY RIGHT-OF-WAY
- TOPSOIL SEGREGATION AREA
- E□TRA WORK SPACE
- WETLAND
- STREAM
- LIMITS OF DISTURBANCE
- 100 CONTOUR
- SILT FENCE
- SILT SOCK
- ROCK CONSTRUCTION ENTRANCE
- TRENCH PLUG
- WATER BAR
- TEMPORARY SLOPE BREAKER

WATERBODY IMPACT		
WATERBODY □	TEMP. IMPACT	PERMANENT IMPACT
SUPA00□	0.30 ACRES	0.00 ACRES

WATERBODY IMPACT

WATERBODY CONSTRUCTION NOTES:

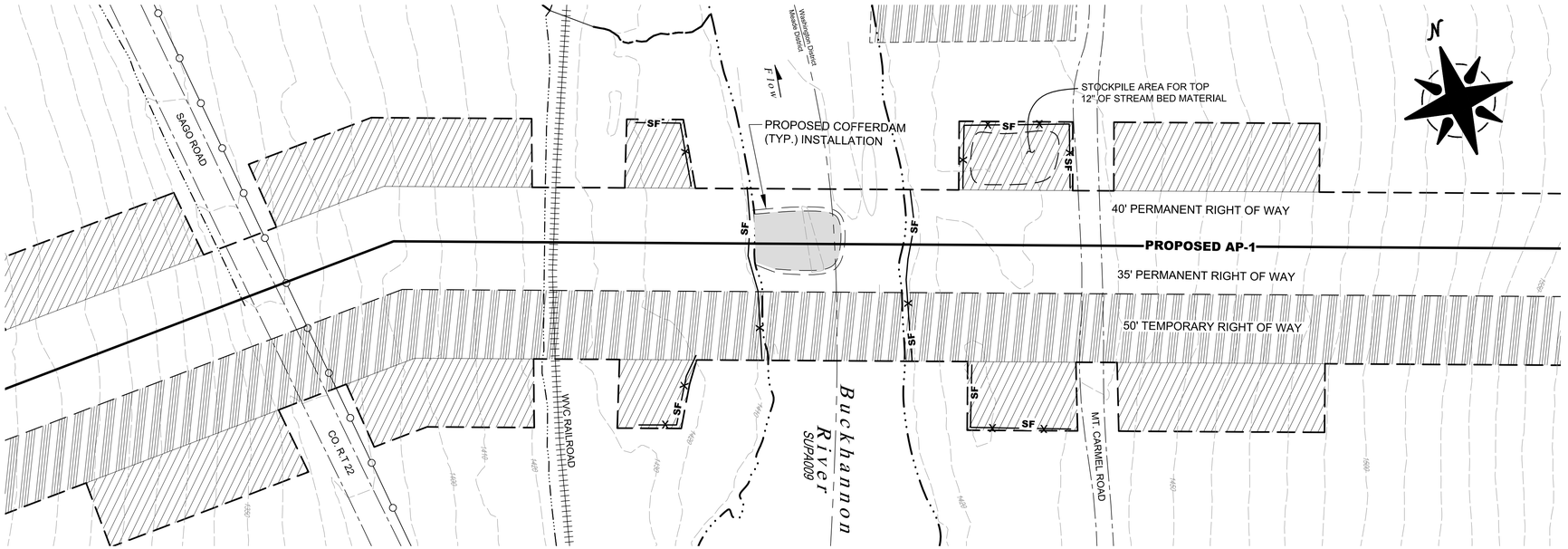
1. CROSSING TO BE A COFFERDAM.
2. CONSTRUCTION TO BE PREFORMED IN LOW FLOW PERIODS.
3. RIP RAP □OR OTHER NON-ERODIBLE MATERIALS□TO BE PLACED IN SEMICIRCLE ALONG SIDE OF STREAM.
4. DISCHARGED WATER INTO A SEDIMENT TRAPPING DEVICE.
5. STABILIZE WATER WATERBODY BANKS AND INSTALL TEMPORARY SEDIMENT BARRIERS WITHIN 24-HOURS OF COMPLETING IN-STREAM CONSTRUCTION ACTIVITIES.
6. RETURN ALL WATERBODY BANKS TO PRE-CONSTRUCTION CONTOURS OR TO A STABLE ANGLE OF REPOSE AS APPROVED BY THE ENVIRONMENTAL INSPECTOR.
7. □ INSTALL TRENCH PLUGS AND WATERBARS AS DIRECTED BY THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN ON BOTH SIDES OF THE WATERWAY, AND AS DEPICTED. ON THIS PLAN.
8. DO NOT USE HERBICIDES OR PESTICIDES IN OR WITHIN 100 FEET OF THE WATERBODY.



STREAM CROSSING PROFILE

0 50□ 100□

SCALE:1"=50'



PLAN VIEW

50□ 0 50□ 100□

SCALE:1"=50'

GENERAL NOTES AND COMMENTS:

REFERENCE

ELEVATION DATA PROVIDED BY GAI CONSULTANTS.

PIPELINE SURVEY INFORMATION PROVIDED BY GAI CONSULTANTS.

STREAM AND WETLAND DATA COLLECTED BY NATIONAL RESOURCE GROUP, LLC.

MAPPING DATUM-UTM 1□-NAD 83
CONTOUR INTERVAL - 10 FEET

SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
A	11/2/15	RLR	ISSUED FOR REVIEW		

SEAL

DRAWN:	RLR	11/6/15
CHECKED:	RVS / DLM	11/6/15
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS SHOWN	

Atlantic Coast Pipeline, LLC

445 West Main St. Clar□s□□rg, West Virginia 26301 / Phone: □304□623-8000

TITLE: **AP□□ SITE SPECIFIC PLAN FOR BUCK□ ANNON RI□ ER**

DISTRICT: MEADE / WASHINGTON	COUNTY: UPSHUR	STATE: WV	GROUP	DWG. NO.	REV.
DIR/FILE: DOM/ACP/Site Speci□ic/B□c□hannon River					A

APPENDIX L

Wetlands Crossed and Crossing Method Table

Appendix L

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/ County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
AP-1								
West Virginia								
Harrison County								
	0.0	05020002	whab001e	PEM	39	<0.1	0.0	Open Cut
	0.0	05020002	whab001s	PSS	0	<0.1	0.0	NA
	0.0	05020002	whab001s	PSS	0	<0.1	0.0	Open Cut
	0.0	05020002	whab001s	PSS	0	<0.1	0.0	NA
	0.0	05020002	whab001e	PEM	3	<0.1	0.0	Open Cut
	0.5	05020002	whab002e	PEM	7	<0.1	0.0	Open Cut
	1.1	05020002	wleb001e	PEM	0	<0.1	0.0	NA
Lewis County								
	1.1	05020002	wleb001e	PEM	25	<0.1	0.0	Open Cut
	5.7	05020002	wlea002e	PEM	53	<0.1	0.0	Open Cut
	5.8	05020002	wlea004e	PEM	44	0.1	0.0	Open Cut
	7.2	05020002	wlea005e	PEM	9	<0.1	0.0	Open Cut
	8.2	05020002	wleb003e	PEM	0	<0.1	0.0	NA
	9.2	05020002	wlea006e	PEM	6	<0.1	0.0	Open Cut
	9.2	05020002	wleb004e	PEM	0	0.0	0.0	NA
	9.2	05020002	wleb004e	PEM	0	<0.1	0.0	Open Cut
	10.3	05020002	wleb006s	PSS	24	<0.1	<0.1	Open Cut
	11.8	05020002	wlea007e	PEM	26	0.1	0.0	Open Cut
	13.8	05020002	wleh003e	PEM	0	<0.1	0.0	NA
	13.8	05020002	wleh003e	PEM	0	<0.1	0.0	NA
	14.5	05020002	wleh006e	PEM	0	0.0	0.0	NA
	15.0	05020002	wleb106e	PEM	0	<0.1	0.0	NA
	15.3	05020002	wleb107e	PEM	11	<0.1	0.0	Open Cut
	16.4	05020002	wleb108e	PEM	16	<0.1	0.0	Open Cut
	16.4	05020002	wleb108e	PEM	0	<0.1	0.0	Open Cut
	19.9	05020002	wlea011e	PEM	0	<0.1	0.0	Open Cut
	20.7	05020002	wlea012f	PFO	0	<0.1	0.0	NA
Upshur County								

Appendix L

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/ County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	24.0	05020001	wupa001e	PEM	26	<0.1	0.0	Open Cut
	24.0	05020001	wupa001e	PEM	29	0.1	0.0	Open Cut
	24.3	05020001	wupa002e	PEM	12	<0.1	0.0	Open Cut
	24.7	05020001	wupa003e	PEM	25	<0.1	0.0	Open Cut
	24.7	05020001	wupa003e	PEM	15	<0.1	0.0	Open Cut
	25.4	05020001	wupb001e	PEM	39	0.1	0.0	Open Cut
	25.4	05020001	wupb001e	PEM	5	<0.1	0.0	Open Cut
	25.7	05020001	wupb002e	PEM	0	<0.1	0.0	NA
	25.9	05020001	wupb003e	PEM	429	0.7	0.0	Open Cut
	26.0	05020001	wupb004e	PEM	873	1.5	0.0	Open Cut
	26.3	05020002	wupa005e	PEM	72	0.1	0.0	Open Cut
	26.6	05020002	wupa004e	PEM	39	0.1	0.0	Open Cut
	26.8	05020002	wupa006e	PEM	8	<0.1	0.0	Open Cut
	29.1	05020001	wupb006e	PEM	55	0.1	0.0	Open Cut
	29.3	05020001	wupb007e	PEM	98	0.1	0.0	Open Cut
	30.5	05020001	wupa007e	PEM	0	<0.1	0.0	Open Cut
	30.6	05020001	wupa007e	PEM	3	<0.1	0.0	Open Cut
	30.9	05020001	wupa008e	PEM	21	0.1	0.0	Open Cut
	30.9	05020001	wupa008e	PEM	0	<0.1	0.0	NA
	36.1	05020001	wupb009f	PFO	1	<0.1	<0.1	Open Cut
	36.1	05020001	wupa010f	PFO	15	<0.1	<0.1	Open Cut
	36.1	05020001	wupa010f	PFO	1	<0.1	<0.1	Open Cut
	36.1	05020001	wupa010f	PFO	0	<0.1	0.0	NA
	36.1	05020001	wupb009f	PFO	18	<0.1	<0.1	Open Cut
	36.8	05020001	wupb010e	PEM	0	<0.1	0.0	NA
	37.9	05020001	wupb011e	PEM	0	<0.1	0.0	NA
	39.4	05020001	wupa012e	PEM	141	0.1	0.0	Open Cut
	39.6	05020001	wupa015f	PFO	0	<0.1	0.0	NA
	41.3	05020001	wupa011e	PEM	23	<0.1	0.0	Open Cut
Randolph County								
	47.3	05020001	wraa104e	PEM	23	<0.1	0.0	Open Cut

Appendix L

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/ County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	47.4	05020001	wrab103e	PEM	22	0.1	0.0	Open Cut
	48.4	05020001	wraf002e	PEM	0	<0.1	0.0	Open Cut
	48.8	05020001	wrac099e	PEM	61	0.1	0.0	Open Cut
	50.2	05020001	wrac100e	PEM	58	0.1	0.0	Open Cut
	50.2	05020001	wrac100e	PEM	0	<0.1	0.0	NA
	50.3	05020001	wrac101e	PEM	22	<0.1	0.0	Open Cut
	50.7	05020001	wraa402f	PFO	12	0.1	<0.1	Open Cut
	50.7	05020001	wraa402f	PFO	4	<0.1	<0.1	Open Cut
	50.8	05020001	wraa403e	PEM	11	<0.1	0.0	Open Cut
	50.8	05020001	wrae001e	PEM	17	<0.1	0.0	Open Cut
	50.9	05020001	wraa404f	PFO	32	<0.1	<0.1	Open Cut
	50.9	05020001	wraa404e	PEM	125	0.2	0.0	Open Cut
	51.0	05020001	wraa405f	PFO	0	<0.1	0.0	NA
	51.2	05020001	wraa406e	PEM	14	<0.1	0.0	Open Cut
	51.2	05020001	wraa407e	PEM	11	<0.1	0.0	Open Cut
	51.4	05020001	wraa408f	PFO	0	<0.1	<0.1	Open Cut
	51.4	05020001	wraa409e	PEM	0	<0.1	0.0	NA
	51.4	05020001	wraa409e	PEM	0	<0.1	0.0	NA
	51.4	05020001	wraa410f	PFO	29	<0.1	<0.1	Open Cut
	51.5	05020001	wraa411f	PFO	31	<0.1	<0.1	Open Cut
	51.6	05020001	wraa412f	PFO	30	<0.1	<0.1	Open Cut
	51.6	05020001	wraa413f	PFO	14	<0.1	<0.1	Open Cut
	51.7	05020001	wraa414e	PEM	8	<0.1	0.0	Open Cut
	51.8	05020001	wraa418e	PEM	0	<0.1	0.0	Open Cut
	51.9	05020001	wraa417e	PEM	19	<0.1	0.0	Open Cut
	52.0	05020001	wraa416e	PEM	0	<0.1	0.0	Open Cut
	52.0	05020001	wraa415f	PFO	30	<0.1	<0.1	Open Cut
	52.1	05020001	wraa420f	PFO	31	0.1	<0.1	Open Cut
	52.2	05020001	wraa423e	PEM	0	<0.1	0.0	NA
	52.3	05020001	wraa422e	PEM	0	<0.1	0.0	NA
	53.3	05020001	wraa421e	PEM	71	0.1	0.0	Open Cut

Appendix L

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/ County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	53.7	05020001	wraa424e	PEM	29	<0.1	0.0	Open Cut
	54.3	05020001	wraa429e	PEM	71	0.1	0.0	Open Cut
	54.4	05020001	wraa430s	PSS	21	<0.1	<0.1	Open Cut
	55.1	05020001	wrap001e	PFO	16	0.1	<0.1	Open Cut
	55.3	05020001	wrap003e	PEM	0	<0.1	0.0	NA
	55.4	05020001	wrap004e	PEM	31	<0.1	0.0	Open Cut
	55.8	05020001	wrap005e	PEM	0	<0.1	0.0	Open Cut
	55.9	05020001	wrap007e	PEM	0	<0.1	0.0	NA
	55.9	05020001	wrap008e	PEM	16	<0.1	0.0	Open Cut
	56.0	05020001	wrap009e	PEM	32	<0.1	0.0	Open Cut
	56.0	05020001	wrap011e	PEM	0	<0.1	0.0	NA
	56.1	05020001	wrap012e	PEM	135	0.2	0.0	Open Cut
	56.1	05020001	wrap012e	PEM	0	<0.1	0.0	NA
	56.3	05050007	wrap017e	PEM	0	<0.1	0.0	NA
	56.4	05050007	wrap019e	PEM	0	<0.1	0.0	NA
	56.4	05050007	wrap020e	PEM	0	<0.1	0.0	Open Cut
	56.4	05050007	wrap020s	PSS	0	0.2	<0.1	Open Cut
	56.4	05050007	wrap022e	PEM	0	<0.1	0.0	NA
	56.5	05050007	wrap024s	PSS	0	<0.1	0.0	NA
	56.5	05050007	wrap025e	PEM	0	<0.1	0.0	NA
	56.7	05050007	wrap026e	PEM	14	<0.1	0.0	Open Cut
	56.7	05050007	wrap027e	PEM	10	0.1	0.0	Open Cut
	56.7	05050007	wrap028e	PEM	8	<0.1	0.0	Open Cut
	56.7	05050007	wrap029e	PEM	11	<0.1	0.0	Open Cut
	56.8	05050007	wrap030e	PEM	0	<0.1	0.0	NA
	56.8	05050007	wrae200e	PEM	0	<0.1	0.0	NA
	57.3	05050007	wrae201e	PEM	0	<0.1	0.0	NA
	57.4	05050007	wrae202e	PEM	0	<0.1	0.0	NA
	57.4	05050007	wrae203e	PEM	10	<0.1	0.0	Open Cut
	57.4	05050007	wrae205e	PEM	0	<0.1	0.0	Open Cut
	57.4	05050007	wrae204e	PEM	0	<0.1	0.0	NA

Appendix L

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/ County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	57.4	05050007	wrac104e	PEM	76	0.1	0.0	Open Cut
	57.9	05050007	wrae240e	PEM	11	<0.1	0.0	Open Cut
	57.9	05050007	wrae239e	PEM	0	<0.1	0.0	Open Cut
	58.2	05050007	wrae237e	PEM	8	<0.1	0.0	Open Cut
	58.3	05050007	wrae236e	PEM	0	<0.1	0.0	NA
	58.3	05050007	wrae235e	PEM	88	0.2	0.0	Open Cut
	58.7	05050007	wrae234e	PEM	12	<0.1	0.0	Open Cut
	60.3	05050007	wrae207e	PEM	15	<0.1	0.0	Open Cut
	61.2	05050007	wrae209e	PEM	0	<0.1	0.0	NA
	61.7	05050007	wrae225e	PEM	0	<0.1	0.0	Open Cut
	62.2	05050007	wrae223e	PEM	45	0.1	0.0	Open Cut
	62.2	05050007	wrae222e	PEM	110	0.2	0.0	Open Cut
	62.4	05050007	wrae220s	PSS	0	<0.1	0.0	NA
	62.4	05050007	wrae220e	PEM	14	<0.1	0.0	Open Cut
	62.4	05050007	wrae219e	PEM	0	0.1	0.0	Open Cut
	62.6	05050007	wrae218e	PEM	0	<0.1	0.0	Open Cut
	62.6	05050007	wrae217e	PEM	31	<0.1	0.0	Open Cut
	62.8	05050007	wrae216e	PEM	86	0.2	0.0	Open Cut
	63.0	05020001	wrae215f	PFO	49	0.1	<0.1	Open Cut
	63.0	05020001	wrae214e	PEM	78	0.1	0.0	Open Cut
	63.3	05020001	wrae212e	PEM	15	<0.1	0.0	Open Cut
	63.3	05020001	wrae213f	PFO	0	<0.1	0.0	NA
	63.5	05020001	wrae211e	PEM	28	<0.1	0.0	Open Cut
	63.8	05020001	wrae210e	PEM	26	<0.1	0.0	Open Cut
Pocahontas County								
	68.7	05050007	wpoy013e	PEM	0	<0.1	0.0	NA
	70.4	05050007	wpoy003e	PEM	19	<0.1	0.0	Open Cut
	70.4	05050007	wpoy002e	PEM	0	<0.1	0.0	Open Cut
	71.0	05050007	wpoe002e	PEM	7	<0.1	0.0	Open Cut
	71.7	05050003	wpoa406e	PEM	0	<0.1	0.0	NA
	71.7	05050003	wpoa404e	PEM	0	<0.1	0.0	NA

Appendix L

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/ County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	71.7	05050003	wpoa404e	PEM	0	<0.1	0.0	NA
	71.7	05050003	wpoa403e	PEM	344	0.5	0.0	Open Cut
	72.2	05050003	wpoc105f	PFO	181	0.3	0.1	Open Cut
	74.6	05050003	wpoe219e	PEM	29	0.1	0.0	Open Cut
	74.6	05050003	wpoc109e	PEM	36	0.1	0.0	Open Cut
	74.6	05050003	wpoc109e	PEM	0	<0.1	0.0	NA
	75.5	05050003	wpoc100e	PEM	70	0.1	0.0	Open Cut
	75.6	05050003	wpoc101e	PEM	25	<0.1	0.0	Open Cut
	75.7	05050003	wpoc102e	PEM	961	1.7	0.0	Open Cut
	76.2	05050003	wpoc103e	PEM	38	0.3	0.0	Open Cut
	76.3	05050003	wpoc103e	PEM	147	0.3	0.0	Open Cut
	76.4	05050003	wpoc104e	PEM	16	0.1	0.0	Open Cut
	76.4	05050003	wpoc106e	PEM	27	<0.1	0.0	Open Cut
	76.5	05050003	wpoc107s	PSS	17	<0.1	<0.1	Open Cut
	76.5	05050003	wpoc107s	PSS	23	<0.1	<0.1	Open Cut
	81.0	05050003	wpoe011e	PEM	8	<0.1	0.0	Open Cut
	81.0	05050003	wpoe011e	PEM	14	<0.1	0.0	Open Cut
	81.1	05050003	wpoe010e	PEM	27	<0.1	0.0	Open Cut
	82.7	05050003	wpoa400e	PEM	0	<0.1	0.0	Open Cut
ACP PIPELINE FACILITIES TOTAL					**5,971**	**15.5**	**1.15**	
ABOVEGROUND FACILITIES								
Marts L&R								
West Virginia								
Harrison County	0.0	05020002	whab001e	PEM	39	0.1	0.1	NA
	0.0	05020002	whab001s	PSS	0	<0.1	<0.1	NA
Long Run M&R								
West Virginia								
Randolph County	47.3	05020001	wrab102e	PEM	0	<0.1	<0.1	NA
ABOVEGROUND FACILITIES TOTALS					**0**	**<0.1**	**<0.1**	

Appendix L

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/ County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
CONTRACTOR YARDS/PIPE YARDS								
AP-1								
CY Spr 02-A								
West Virginia								
Randolph County	44.8	05020001	wrac102e	PEM	0	0.3	0.0	NA
	44.8	05020001	wrac103e	PEM	0	0.3	0.0	NA
	44.8	05020001	wrac105e	PEM	0	1.7	0.0	NA
CY GWNF-6 Spr 02A-B								
West Virginia								
Randolph County	51.1	05020001	wrae262e	PEM	0	0.2	0.0	NA
	51.1	05020001	wrae263e	PEM	0	1.7	0.0	NA
	51.1	05020001	wrae264e	PEM	0	0.4	0.0	NA
CY GWNF-6 Spr 02A-A								
West Virginia								
Randolph County	53.7	05020001	nwi_wv_k_007	PFO	0	0.2	0.0	NA
	59.7	05020001	nwi_wv_k_005	PEM	0	1.3	0.0	NA
PY 01-A								
West Virginia								
Randolph County	63.0	05020001	wrae261e	PEM	0	<0.1	0.0	NA
CY GWNF-6 Spr 03-B								
West Virginia								
Pocahontas County	81.0	05050003	wpoy004e	PEM		0.4	0.0	NA
	81.0	05050003	wpoy005e	PEM	0	7.7	0.0	NA
	81.0	05050003	wpoy007e	PEM	0	0.1	0.0	NA
	81.0	05050003	wpoy008e	PEM	0	2.6	0.0	NA
	81.0	05050003	wpoy009e	PEM	0	0.0	0.0	NA
CY GWNF-6 Spr 03-A								
West Virginia								
Pocahontas County	81.0	05050003	wpoe214e	PEM	0	1.3	0.0	NA
PY 06-A								
West Virginia								

Appendix L

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/ County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
Pocahontas County	82.7	05050003	wpoa400e	PEM	0	<0.1	0.0	NA
CONTRACTOR YARDS/PIPE YARDS TOTAL					**0**	**18.3**	**0**	

[a] Wetland types according to Cowardin et al. (1979):
- PFO = palustrine forested
- PSS = palustrine scrub-shrub
- PEM = palustrine emergent
- PUB = palustrine unconsolidated bottom
- E = estuarine
- R = riverine

[b] The crossing length is the measure of the distance of the centerline through the wetland. It does not include feet crossed outside the centerline. A value of 0 indicates that the centerline does not cross the wetland.

[c] Temporary wetland impacts associated with the construction right-of-way (includes permanent impacts, temporary impacts, ATWS impacts, ground bed impacts and water impoundment impacts).

[d] Operational impacts are associated with scrub-shrub and forested wetlands. Operational requirements allow a 10-foot-wide corridor centered over the pipeline to be maintained in an herbaceous state, and for the removal of trees within 15 feet on either side of the pipeline. To determine conversion impacts on scrub-shrub wetlands, a 10-foot-wide corridor centered over the pipeline was assessed. A 30-foot-wide corridor centered over the pipeline was assessed for forested wetlands. Because the easement will be maintained in an herbaceous state, there will be no operational impacts on emergent wetlands.

[e] Pending the results of geotechnical investigations and final engineering, Atlantic is evaluating use of the HDD method to cross six waterbodies, a water impoundment area, two highways, and the Appalachian Trail/Blue Ridge Parkway. Use of the HDD method would avoid these features as well as adjacent wetlands and riparian areas. If successfully implemented, the HDD method would avoid impacts on the adjacent wetlands, including wetlands identified in this table.

[f] NA = wetland occurs within workspace but is not crossed by the centerline, trenching thru the wetland is not expected.

Note: The totals shown in this table may not equal the sum of addends due to rounding.

APPENDIX M

Site-specific Construction Plans for Residences

[illegible]

[illegible]

[illegible]

CONSTRUCTION TECHNIQUES
NEAR RESIDENTIAL STRUCTURES
GENERAL NOTES

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

gai consultants
SOUTHPOINTE OFFICE
6000 TOWNE CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

DWN. JJP	CHKD. DLH	APPD. NET	DATE 07/28/2016
SCALE: NONE			TASK NO. 00

PROJECT NO./DASH NO. C140468

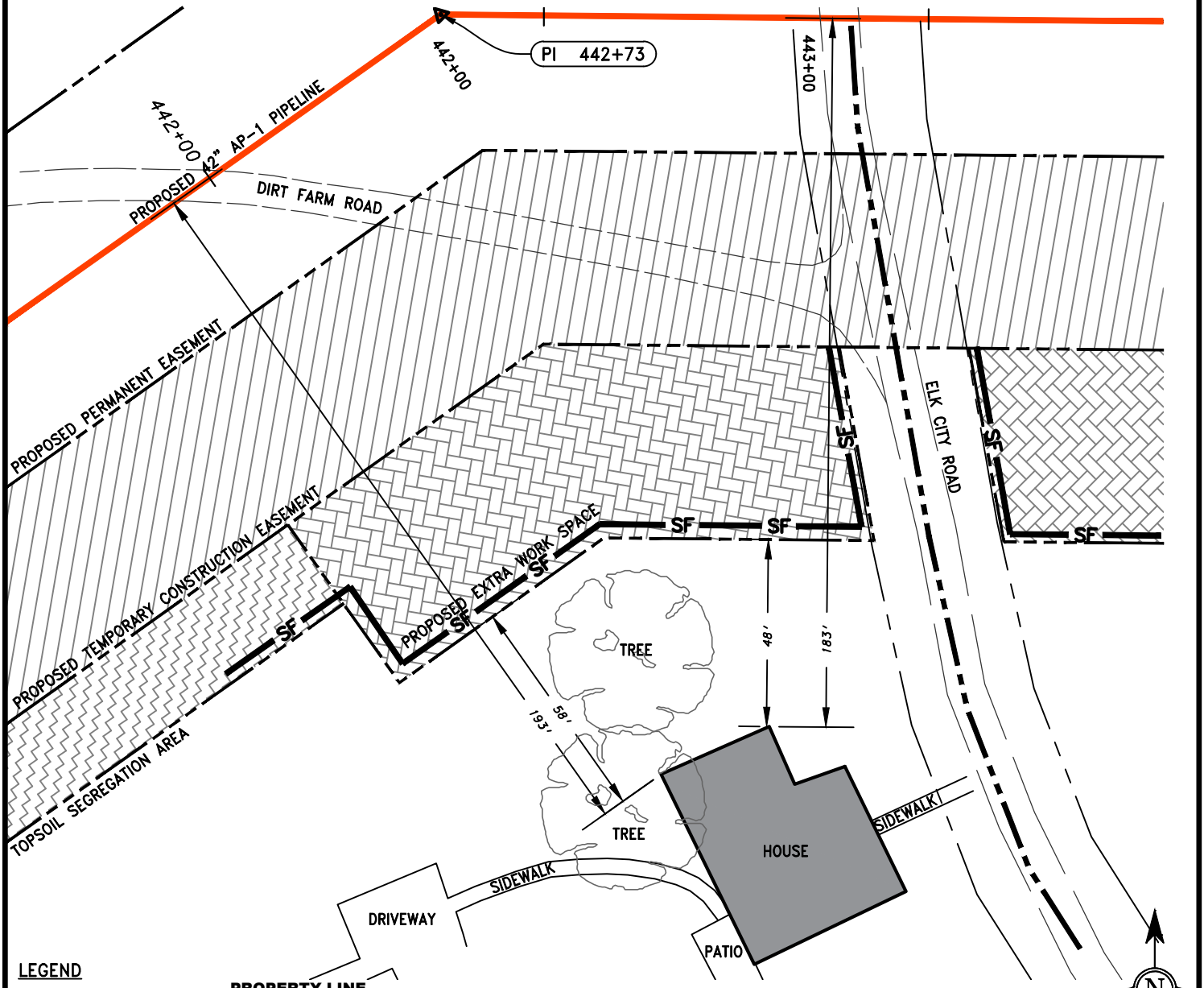
DRAWING NO. A001

REV –

GAI CAD FILE: Z:\ENERGY\2014\C140468.00 - DOMINION - SOUTHEAST PIPE\CAD\MASTER ROUTE\DRG\DRAWINGS\HOUSE_SITE_SPECIFIC_GENERAL_NOTES.DWG

7/19/2016 8:44 AM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- SF — ORANGE SAFETY FENCE
- EXTRA WORK SPACE
- PROPOSED TEMPORARY R.O.W.
- TOPSOIL SEGREGATION AREA

LL-02-039
789 ELK CITY ROAD
JANE LEW, WEST VIRGINIA 26378
TAX MAP # 04-7B000200000000
AP-1 PIPELINE
MILE POST 8.37

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
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724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
LEWIS COUNTY, WEST VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

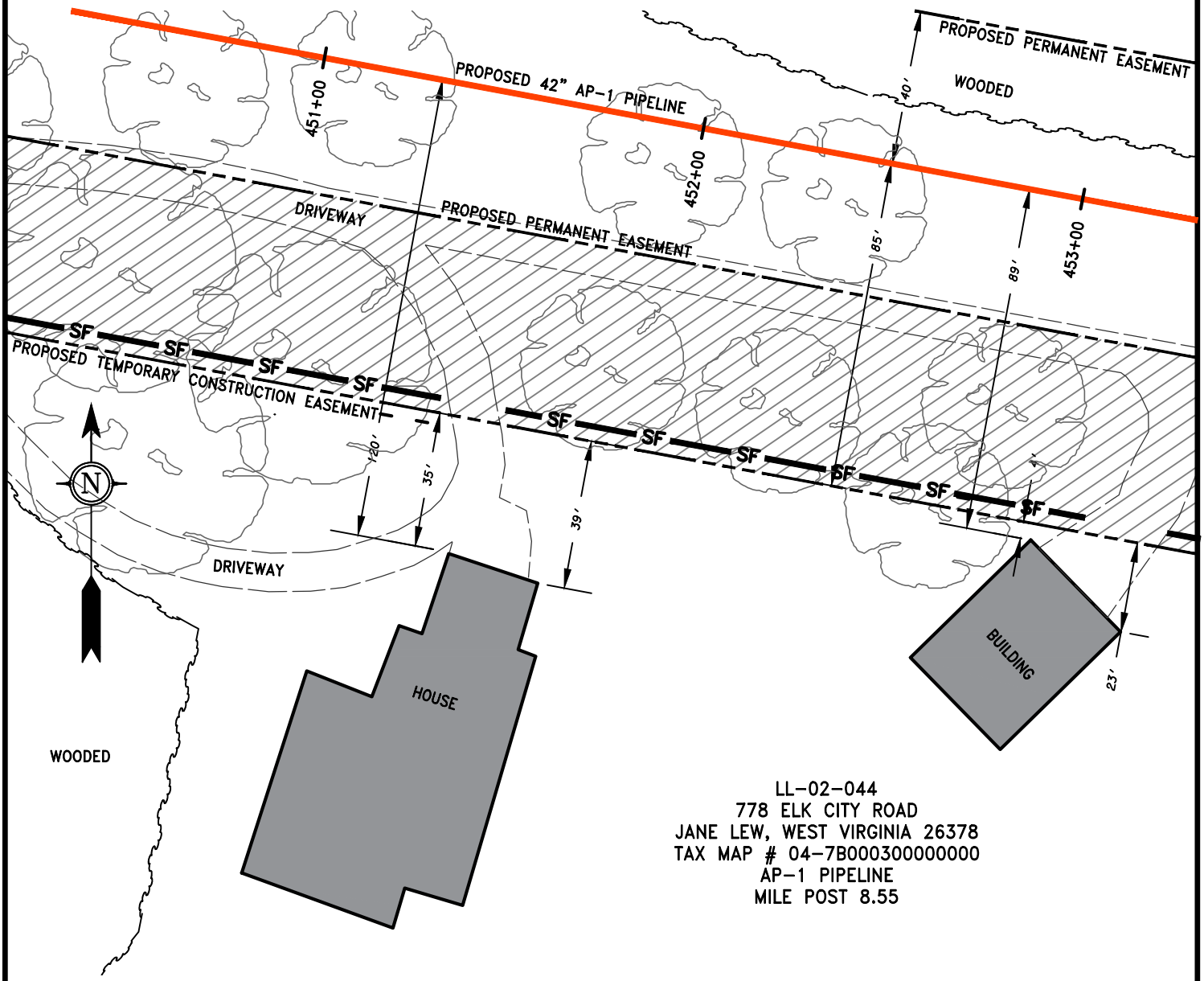
DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/28/2016
SCALE: AS SHOWN			TASK NO. 01

PROJECT NO./DASH NO. 140468
DRAWING NO. LL-02-039 REV –

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 02 - SOUTHEAST PIPELINE (SECTION 1)\BUILDING CONFLICT EXHIBITS\2665-01 SPREAD-1 - BUILDING CONFLICT EXHIBITS LL-02-039.DWG

6/28/2016 3:34 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LL-02-044
778 ELK CITY ROAD
JANE LEW, WEST VIRGINIA 26378
TAX MAP # 04-7B000300000000
AP-1 PIPELINE
MILE POST 8.55

LEGEND

- PROPERTY LINE
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED GAS PIPELINE
- SF — ORANGE SAFETY FENCE
- EXTRA WORK SPACE
- PROPOSED TEMPORARY R.O.W.

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
LEWIS COUNTY, WEST VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/28/2016
SCALE: AS SHOWN			TASK NO. 01

PROJECT NO./DASH NO. 140468
DRAWING NO. LL-02-044 REV -

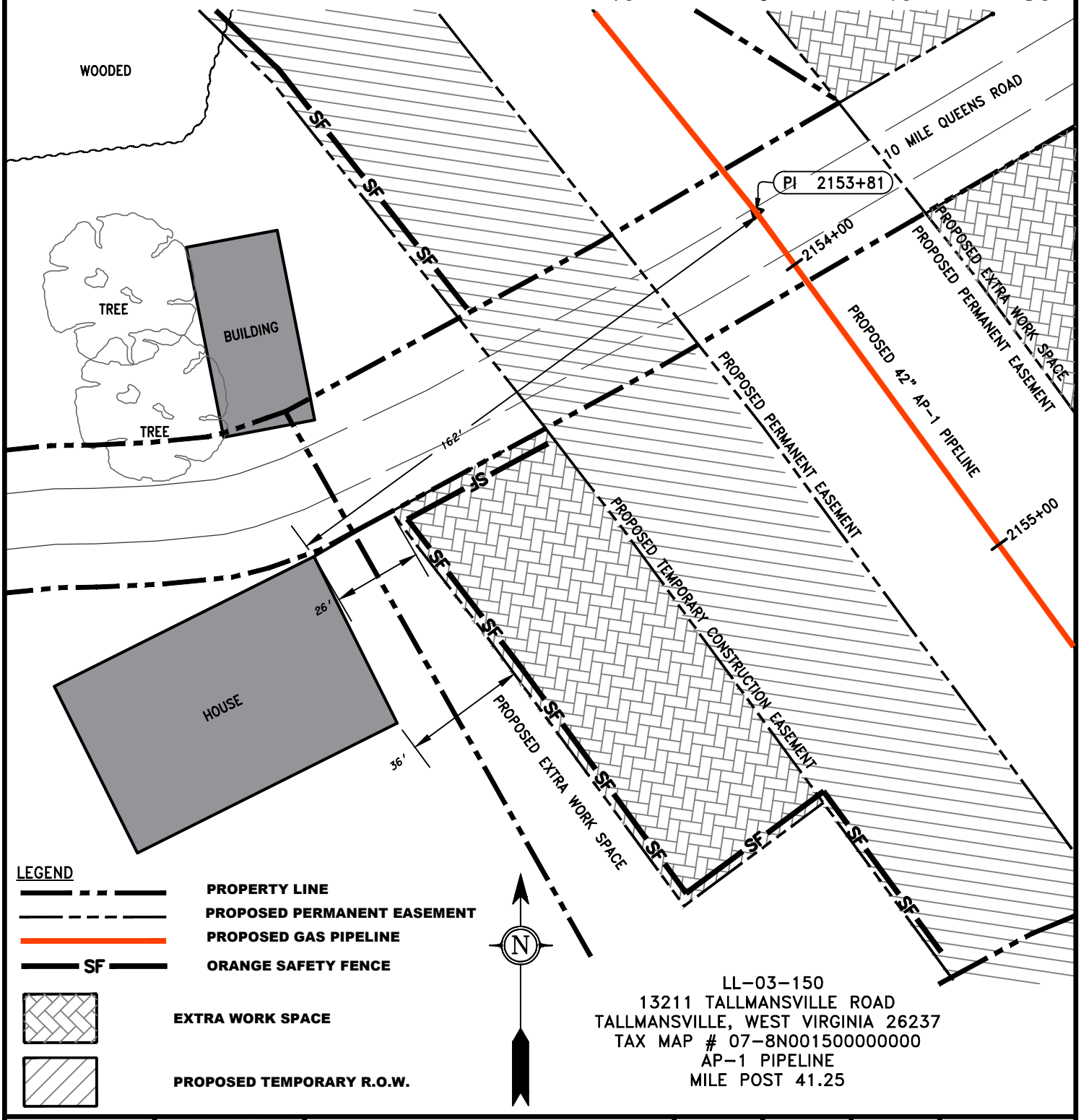
GAI CAD FILE: J:\2665 -GAI\WORK ORDER 02 - SOUTHEAST PIPELINE (SECTION 1)\BUILDING CONFLICT EXHIBITS\2665-01 SPREAD-1 - BUILDING CONFLICT EXHIBITS LL-02-044.DWG

6/28/2016 3:29 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 40'

40' 0 40' 80'



LEGEND

- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- SF — ORANGE SAFETY FENCE
- EXTRA WORK SPACE
- PROPOSED TEMPORARY R.O.W.

N

LL-03-150
13211 TALLMANSVILLE ROAD
TALLMANSVILLE, WEST VIRGINIA 26237
TAX MAP # 07-8N001500000000
AP-1 PIPELINE
MILE POST 41.25

gai consultants
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6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
UPSHUR COUNTY, WEST VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

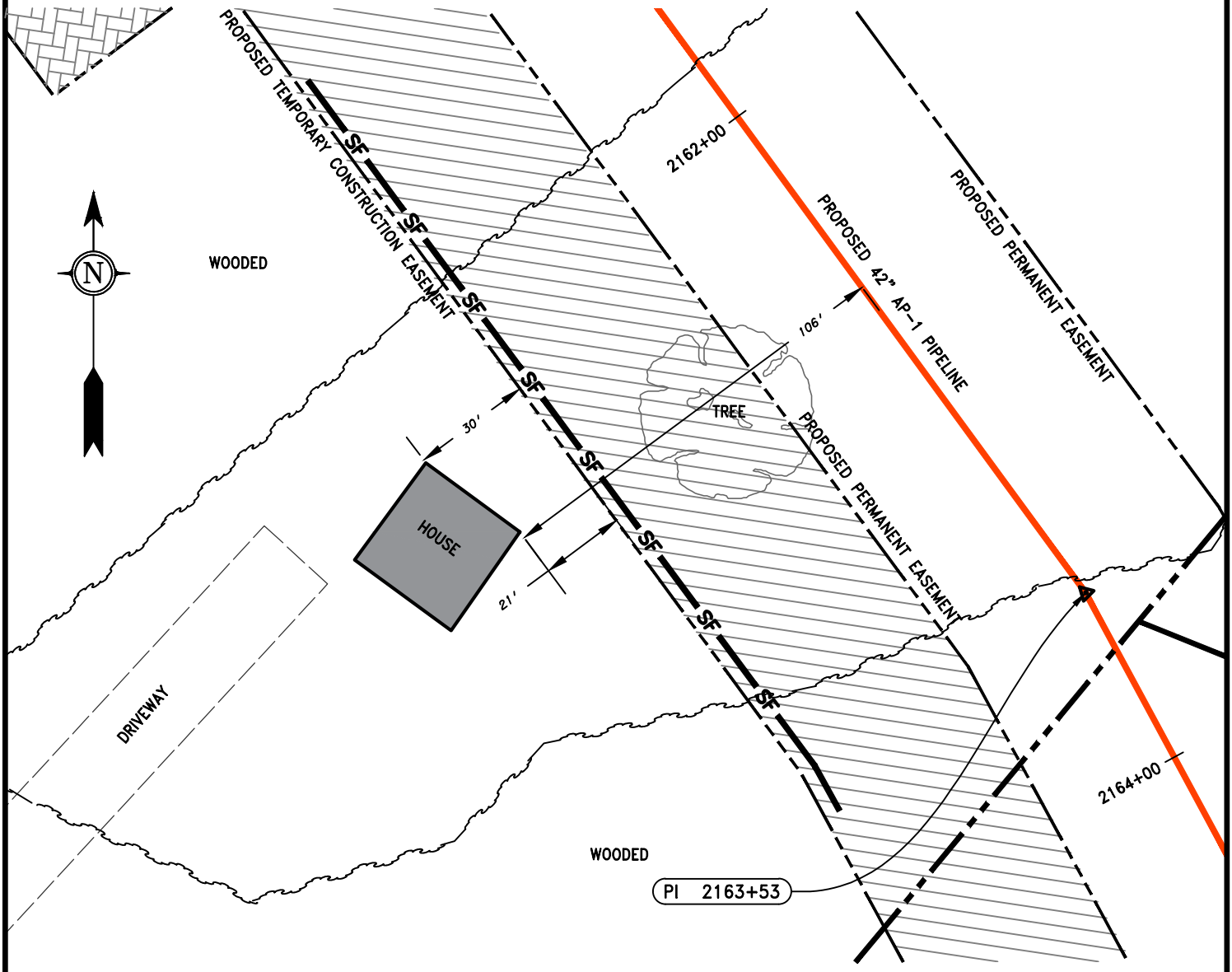
DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/28/2016
SCALE: AS SHOWN			TASK NO. 01

PROJECT NO./DASH NO. 140468
DRAWING NO. LL-03-150
REV -

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 02 - SOUTHEAST PIPELINE (SECTION 1)\BUILDING CONFLICT EXHIBITS\2665-01 SPREAD-1 - BUILDING CONFLICT EXHIBITS LL-03-150.DWG

6/28/2016 3:24 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- SF — ORANGE SAFETY FENCE
- EXTRA WORK SPACE
- PROPOSED TEMPORARY R.O.W.

LL-03-154
1950 GUM ROAD
ELKINS, WEST VIRGINIA 26241
TAX MAP # 07-8N002800000000
AP-1 PIPELINE
MILE POST 41.41

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
UPSHUR COUNTY, WEST VIRGINIA

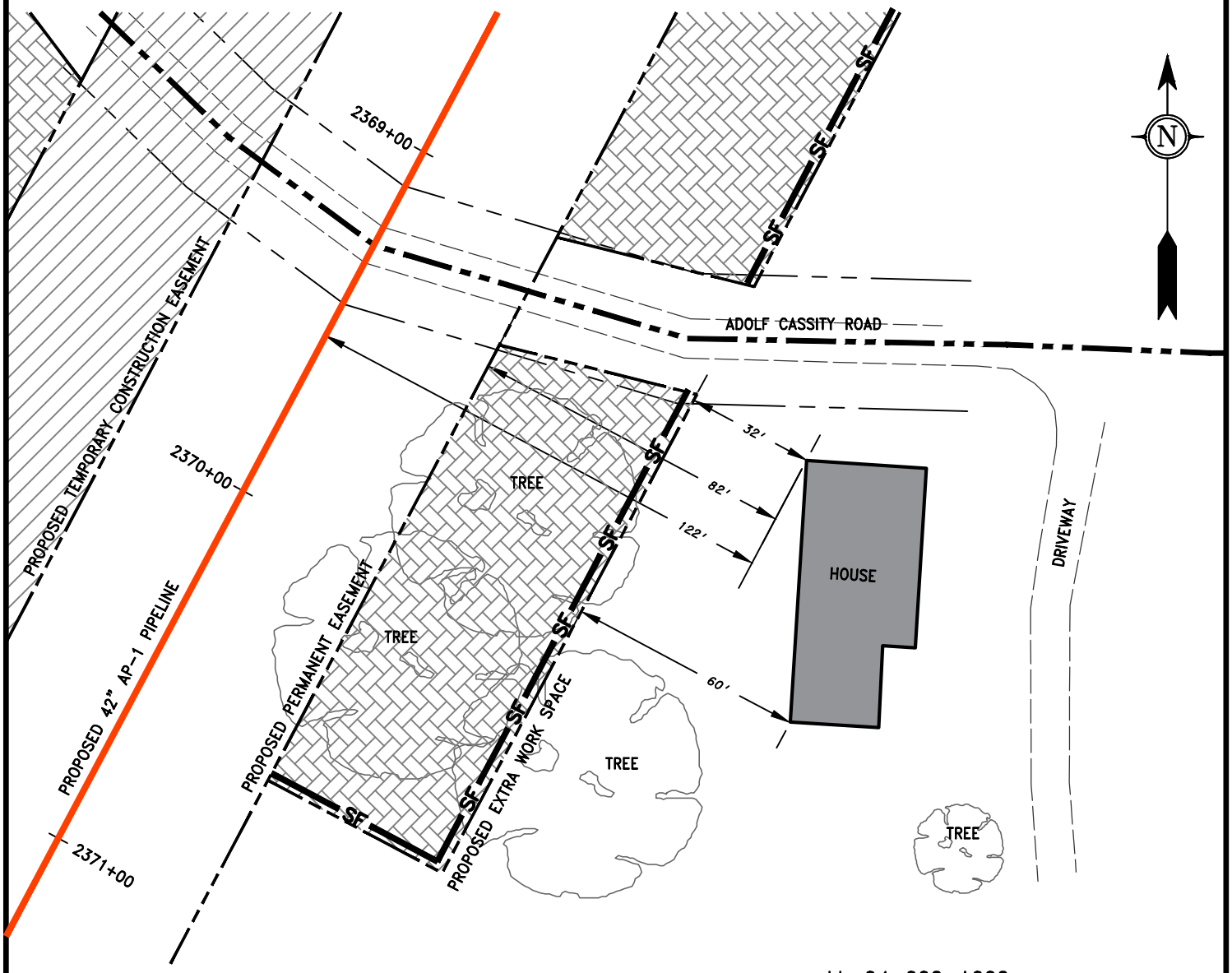
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/24/2016
SCALE: AS SHOWN			TASK NO. 01

PROJECT NO./DASH NO. 140468
DRAWING NO. LL-03-154 REV -

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 02 - SOUTHEAST PIPELINE (SECTION 1)\BUILDING CONFLICT EXHIBITS\2665-01 SPREAD-1 - BUILDING CONFLICT EXHIBITS LL-03-154.DWG
6/24/2016 3:03 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- SF — ORANGE SAFETY FENCE
- EXTRA WORK SPACE
- PROPOSED TEMPORARY R.O.W.

LL-04-002-A002
2332 CASSITY ROAD
MABIE, WEST VIRGINIA 26278
TAX MAP # 11-111001000000000
AP-1 PIPELINE
MILE POST 45.35

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
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724-873-3545

mbe monaloh basin engineers
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412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
RANDOLPH COUNTY, WEST VIRGINIA

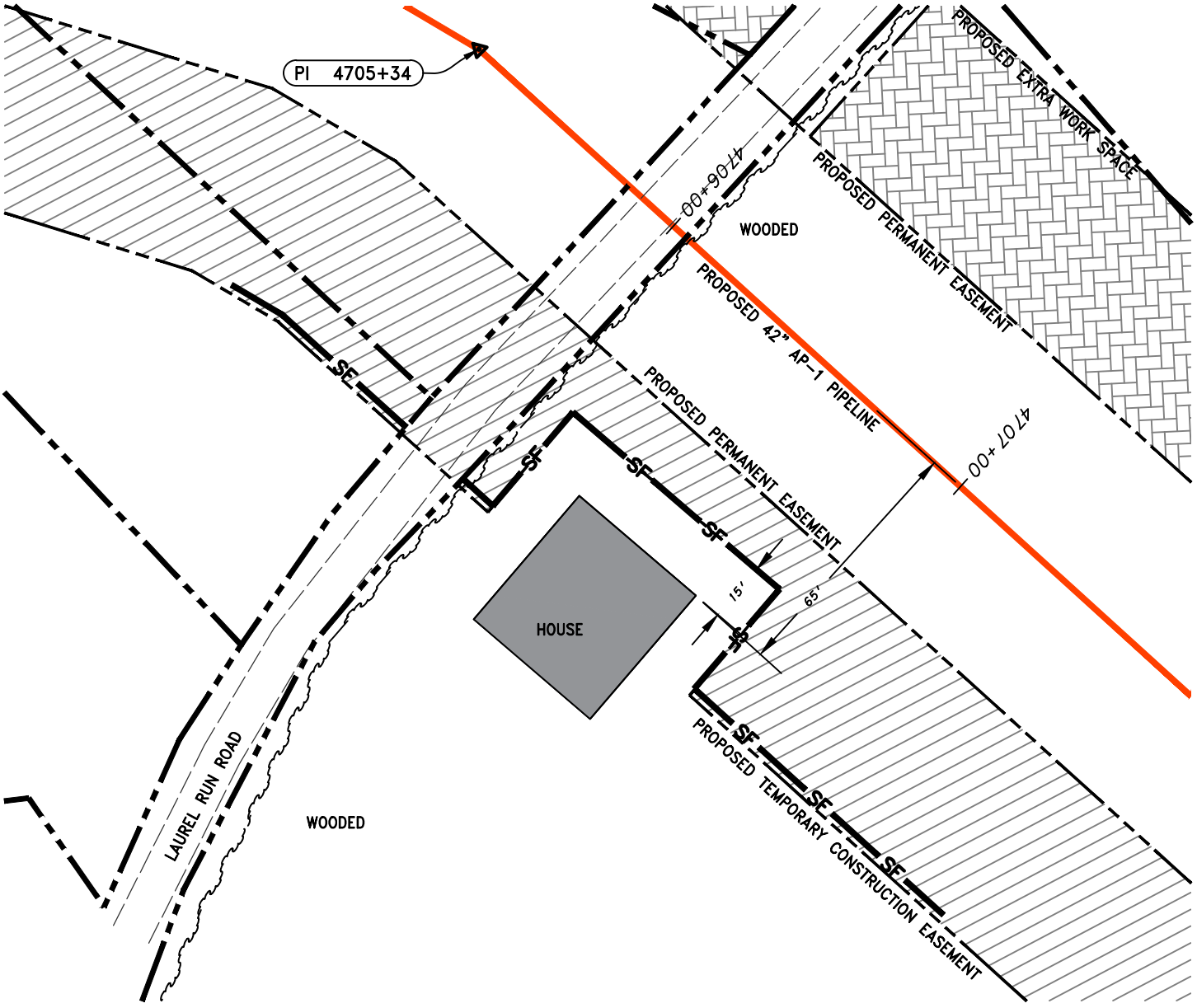
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/24/2016
SCALE: AS SHOWN			TASK NO. 01

PROJECT NO./DASH NO. 140468
DRAWING NO. LL-04-002-A002 1 REV

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 02 - SOUTHEAST PIPELINE (SECTION 1)\BUILDING CONFLICT EXHIBITS\2665-01 SPREAD-1 - BUILDING CONFLICT EXHIBITS LL-04-002-A002.DWG
6/24/2016 2:41 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- SF — ORANGE SAFETY FENCE
- EXTRA WORK SPACE
- PROPOSED TEMPORARY R.O.W.
- TOPSOIL SEGREGATION AREA

LL-05-001-E102
P.O. BOX 4938
EASTMAN, GEORGIA
TAX MAP # 04 83A001300000000
AP-1 PIPELINE
MILE POST 76.5

SCALE: 1" = 40'

40' 0 40' 80'

N

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

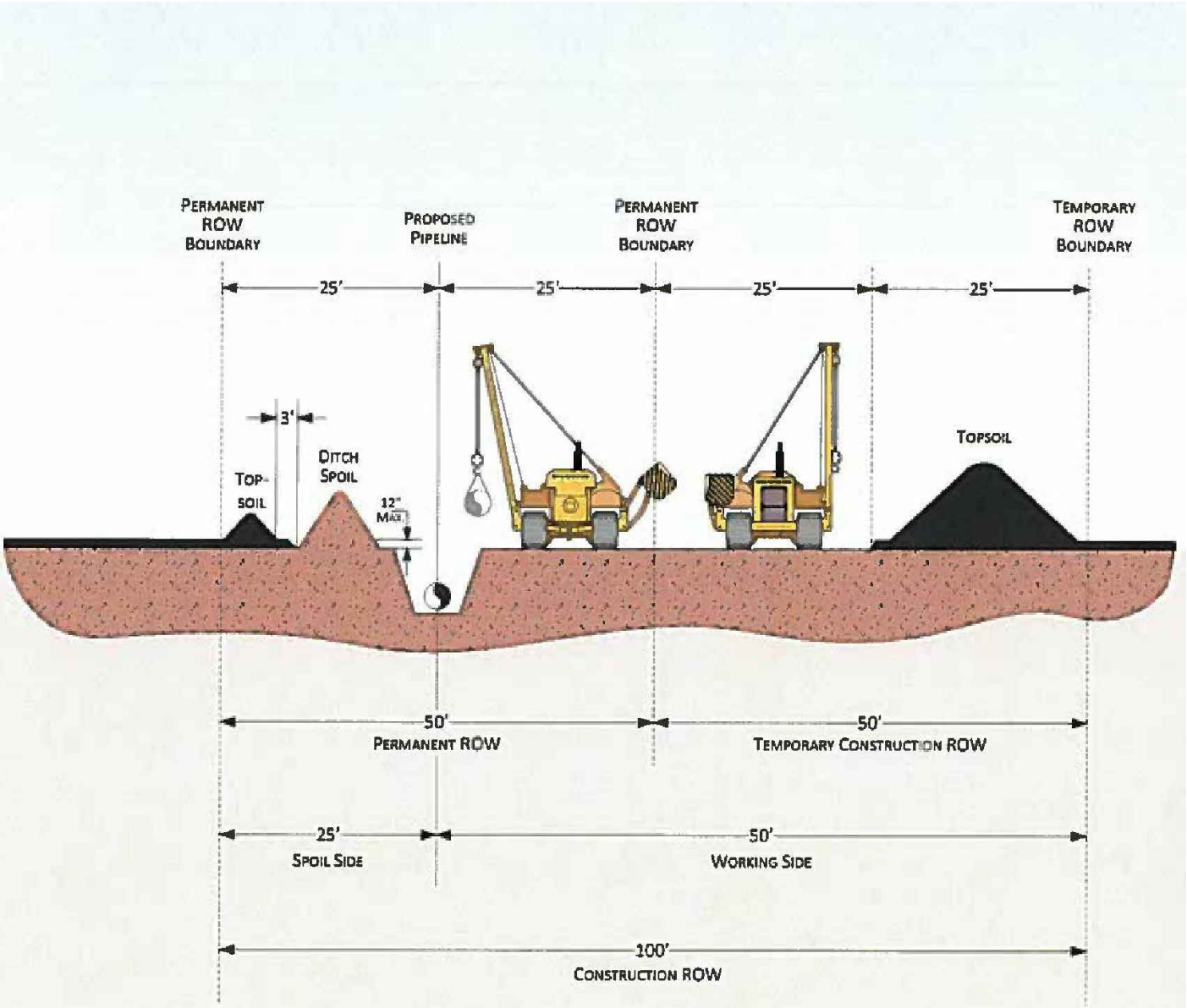
mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
POCAHONTAS, WEST VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/18/2016
SCALE: AS SHOWN			TASK NO. 01

PROJECT NO./DASH NO. 140468
DRAWING NO. LL-05-001-E102 1 REV



PROFILE

NOTES:

1. IN AGRICULTURAL AREAS WHERE FULL WIDTH TOPSOIL STRIPPING IS REQUIRED, AN ADDITIONAL 25' OF TEMPORARY WORKSPACE WILL BE REQUIRED. IN THIS SCENARIO, THE CONSTRUCTION RIGHT-OF-WAY WILL BE 100' WIDE, CONSISTING OF 50' OF PERMANENT RIGHT-OF-WAY AND 50' OF TEMPORARY CONSTRUCTION RIGHT-OF-WAY. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.

CLIENT
DOMINION

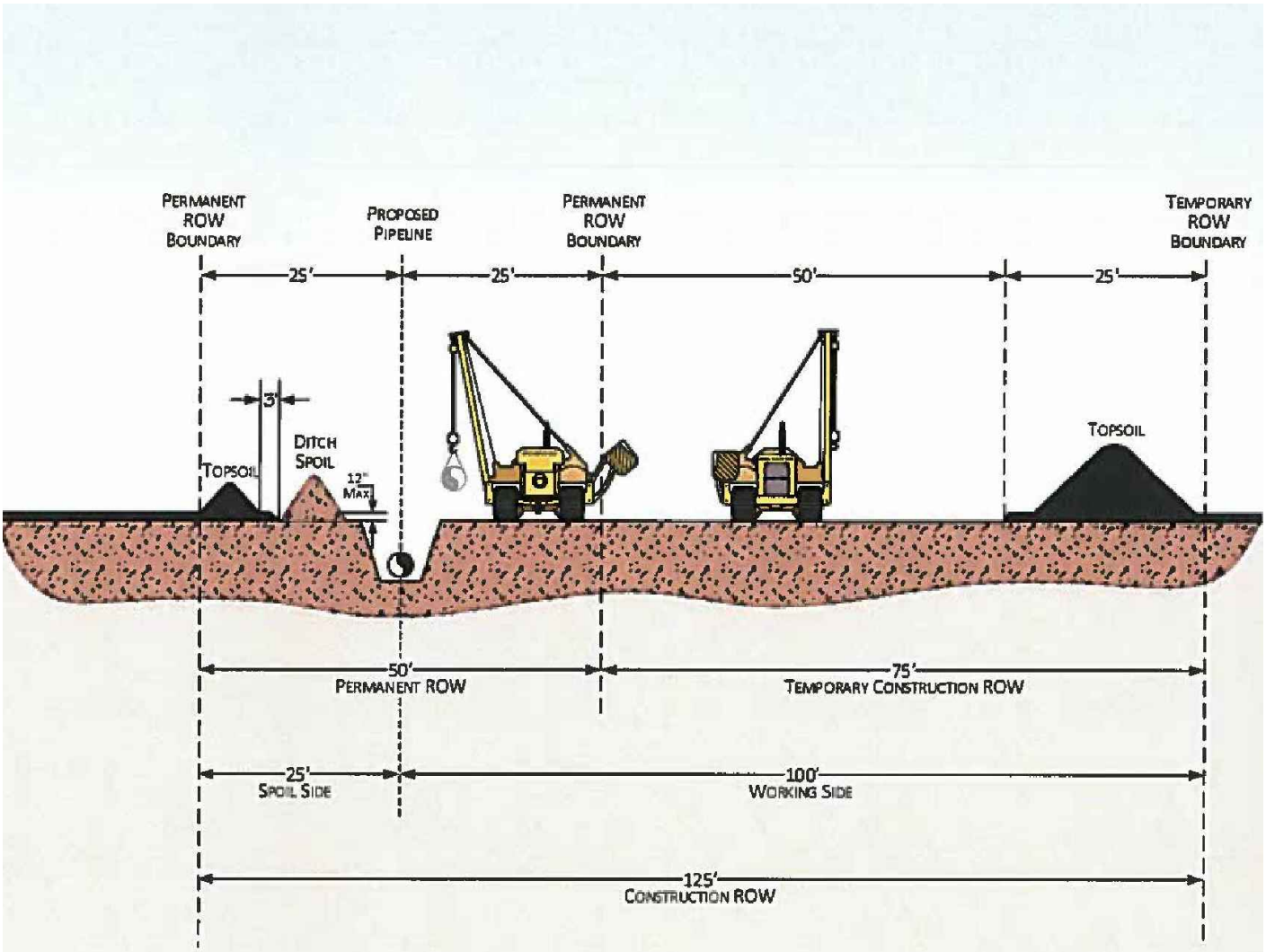
PROJECT
BIC/INCREMENTAL CONTROLS

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-02-28
PREPARED	REDMOND
DESIGN	DBC
REVIEW	-
APPROVED	AQK

TITLE
TYP CONSTRUCTION ROW IN AG AREAS ACP AP-3 AP-4 AP-5

PROJECT No.	PHASE	Rev.	FIGURE
1535050	500	F	13K-2



PROFILE

NOTES:

1. IN AGRICULTURAL AREAS WHERE FULL WIDTH TOPSOIL STRIPPING IS REQUIRED, AN ADDITIONAL 25' OF TEMPORARY WORKSPACE WILL BE REQUIRED. IN THIS SCENARIO, THE CONSTRUCTION RIGHT-OF-WAY WILL BE 125' WIDE, CONSISTING OF 50' OF PERMANENT RIGHT-OF-WAY AND 75' OF TEMPORARY CONSTRUCTION RIGHT-OF-WAY. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.

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DOMINION

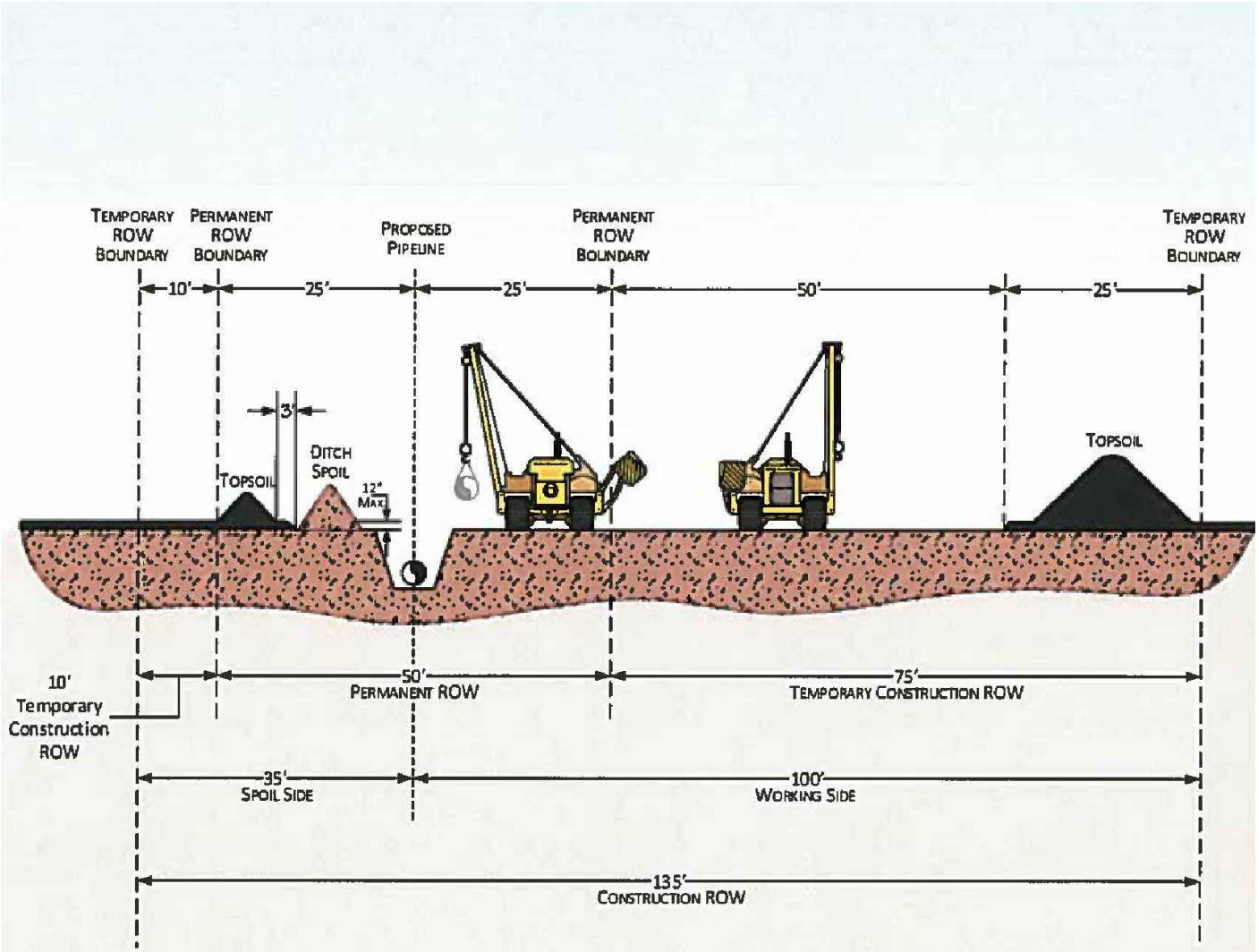
PROJECT
BIC/INCREMENTAL CONTROLS

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-02-28
PREPARED	REDMOND
DESIGN	DBC
REVIEW	-
APPROVED	AQK

TITLE
TYP CONSTRUCTION ROW COLLOCATED IN AG AREAS SHP TL-635 TL-636

PROJECT No.	PHASE	Rev.	FIGURE
1535050	500	F	13K-3



PROFILE

NOTES:

1. IN AGRICULTURAL AREAS WHERE FULL WIDTH TOPSOIL STRIPPING IS REQUIRED, AN ADDITIONAL 25' OF TEMPORARY WORKSPACE WILL BE REQUIRED. IN THIS SCENARIO, THE CONSTRUCTION RIGHT-OF-WAY WILL BE 135' WIDE, CONSISTING OF 50' OF PERMANENT RIGHT-OF-WAY AND 85' OF TEMPORARY CONSTRUCTION RIGHT-OF-WAY. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.

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DOMINION

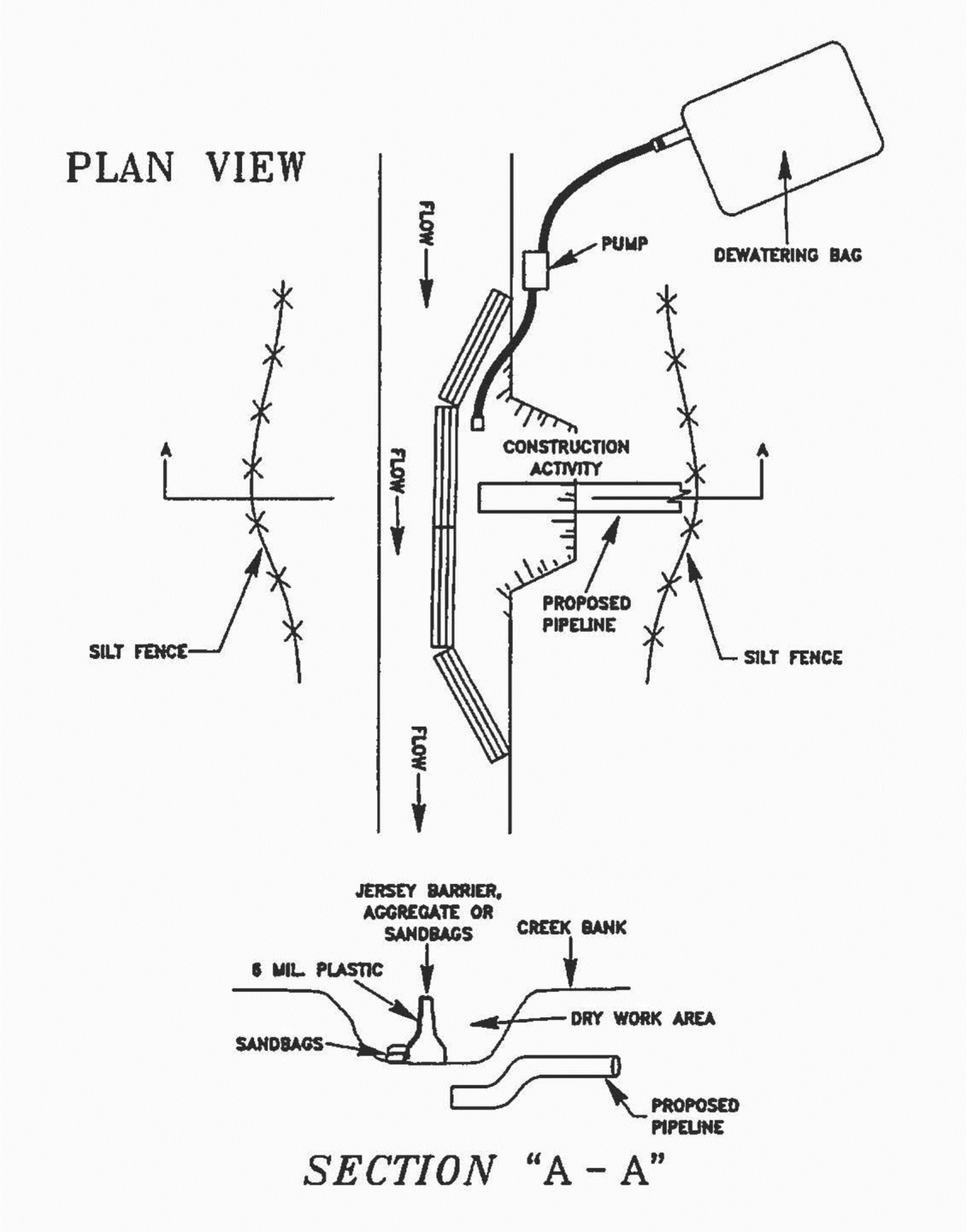
PROJECT
BIC/INCREMENTAL CONTROLS

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-02-28
PREPARED	REDMOND
DESIGN	DBC
REVIEW	-
APPROVED	AQK

TITLE
TYP CONSTRUCTION ROW NOT-COLLOCATED IN AG AREAS SHP TL-635 TL-636

PROJECT No.	PHASE	Rev.	FIGURE
1535050	500	F	13K-4



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Golder Associates

YYYY-MM-DD	2017-02-28
PREPARED	REDMOND
DESIGN	DBC
REVIEW	-
APPROVED	AQK

TITLE
TYP COFFERDAM CROSSING

PROJECT No.	PHASE	Rev.	FIGURE
1535050	500	F	13L

NOTE(S)

1. FINAL CONFIGURATION OF ROW RESTORATION MEASURES TO BE DETERMINED BASED ON CONDITIONS ENCOUNTERED AT TIME OF CONSTRUCTION, AND MAY CHANGE OR VARY AND/OR INCORPORATE ADDITIONAL TYPICAL DETAILS TO MITIGATE TARGETED CONDITIONS.

2. INCLUDES, BUT IS NOT LIMITED TO, SITE SPECIFIC INVESTIGATIONS, ASSESSMENTS, ANALYSIS, DETAILED ENGINEERING, AND DESIGN WORK DEVELOPED TO MITIGATE FOR SPECIALIZED SITE GEOTECHNICAL, HYDROTECHNICAL, OR GEOLOGIC CONDITIONS THAT MAY BE IMPOSED ON THE PIPELINE.

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PROJECT
BIC/INCREMENTAL CONTROLS

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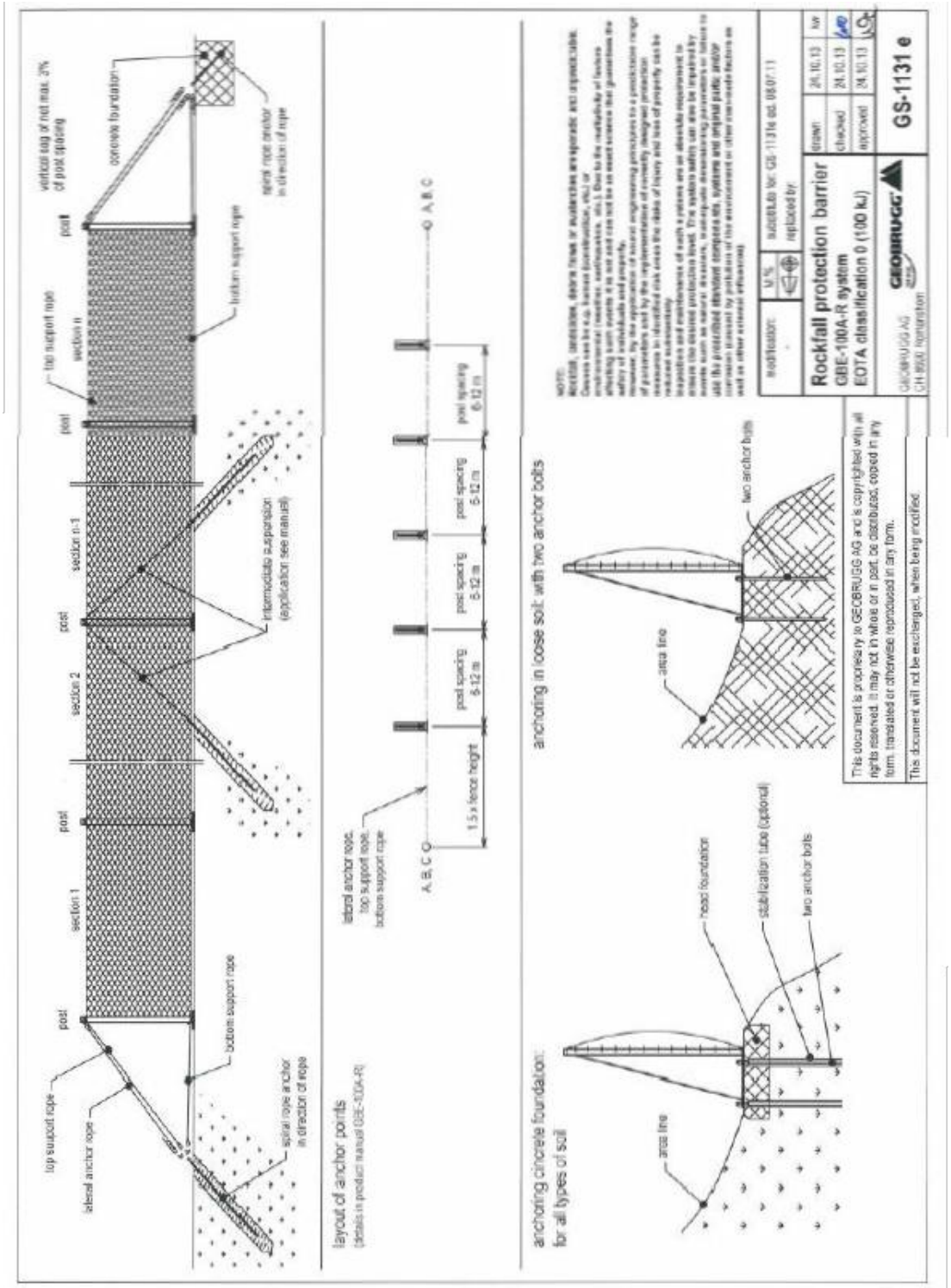
YYYY-MM-DD	2017-02-28
PREPARED	REDMOND
DESIGN	DBC
REVIEW	-
APPROVED	AQK

TITLE
SITE SPECIFIC DETAILED ENGINEERING

PROJECT No.	PHASE	Rev.	FIGURE
1535050	500	F	14A



NOTE(S)

1. FINAL CONFIGURATION OF ROCK FALL PROTECTION MEASURES TO BE DETERMINED BASED ON CONDITIONS ENCOUNTERED AT TIME OF CONSTRUCTION, AND MAY CHANGE OR VARY AND/OR INCORPORATE ADDITIONAL TYPICAL DETAILS TO MITIGATE TARGETED CONDITIONS.

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DOMINION

PROJECT
BIC/INCREMENTAL CONTROLS

CONSULTANT

Golder Associates

YYYY-MM-DD	2017-02-28
PREPARED	REDMOND
DESIGN	DBC
REVIEW	-
APPROVED	AQK

TITLE
MESH FENCE - ROCK FALL PROTECTION

PROJECT No.	PHASE	Rev.	FIGURE
1535050	500	F	14B

0 1 cm 1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI A

NOTE(S)

1. FINAL PLANNING, DESIGN, AND IMPLEMENTATION OF BLASTING ACTIVITIES TO BE DETERMINED BASED ON SITE SPECIFIC CONDITIONS, AND MUST FOLLOW SPECIFICATIONS AND REQUIREMENTS AS DIRECTED BY DOMINION.

CLIENT
DOMINION

PROJECT
BIC/INCREMENTAL CONTROLS

CONSULTANT

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YYYY-MM-DD	2017-02-28
PREPARED	REDMOND
DESIGN	DBC
REVIEW	-
APPROVED	AQK

TITLE
BLASTING PLANS

PROJECT No.	PHASE	Rev.	FIGURE
1535050	500	F	14C

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI A

0 1 in

NOTE(S)

1. FINAL CONFIGURATION OF ROW RESTORATION MEASURES TO BE DETERMINED BASED ON CONDITIONS ENCOUNTERED AT TIME OF CONSTRUCTION, AND MAY CHANGE OR VARY AND/OR INCORPORATE ADDITIONAL TYPICAL DETAILS TO MITIGATE TARGETED CONDITIONS.

2. ADJUST ROUTING, ALIGNMENT, LOCATION (VERTICALLY OR HORIZONTALLY), OR POSITION WITHIN THE ROW OF THE PIPELINE TO AVOID IDENTIFIED HAZARDS. EXAMPLES MAY INCLUDE, BUT ARE NOT LIMITED TO, NEW ROW LOCATIONS THAT DEPART ENTIRELY FROM THE CURRENT ALIGNMENT BY SIGNIFICANT DISTANCES, RELATIVELY SMALLER ALIGNMENT SHIFTS THAT OFFSET FOR SHORTER DISTANCES FROM THE CURRENT ALIGNMENT, MINOR ADJUSTMENTS TO THE ALIGNMENT THAT REMAIN WITHIN THE ROW BOUNDARIES, LOWERING THE PIPELINE BELOW IDENTIFIED HAZARDS WHILE STAYING WITHIN THE ROW, ETC. CHANGING ROW ALIGNMENTS REQUIRES SITE SPECIFIC PLANNING, PERMITTING, ASSESSMENTS, LAND AND PROPERTY REVIEW AND COORDINATION, ENGINEERING DESIGN TO FIT THE NEW SITE CONDITIONS, AND OTHER TECHNICAL SUPPORT EFFORTS.

CLIENT
DOMINION

PROJECT
BIC/INCREMENTAL CONTROLS

CONSULTANT

Golder Associates

YYYY-MM-DD	2017-02-28
PREPARED	REDMOND
DESIGN	DBC
REVIEW	-
APPROVED	AQK

TITLE
AVOIDANCE

PROJECT No.	PHASE	Rev.	FIGURE
1535050	500	F	15A

0 1 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI A

NOTE(S)

1. FINAL CONFIGURATION OF ROW RESTORATION MEASURES TO BE DETERMINED BASED ON CONDITIONS ENCOUNTERED AT TIME OF CONSTRUCTION, AND MAY CHANGE OR VARY AND/OR INCORPORATE ADDITIONAL TYPICAL DETAILS TO MITIGATE TARGETED CONDITIONS.

2. SITE INVESTIGATIONS NEEDED TO CONFIRM LATERAL AND VERTICAL EXTENT OF IDENTIFIED LANDSLIDE OR OTHER UNSTABLE SLOPE CONDITIONS.

3. INVESTIGATION MAY INCLUDE PROBES, TEST PITS, EXCAVATIONS ALONG PIPELINE TRENCH, GEOPHYSICAL METHODS (I.E. NON-INTRUSIVE GPR, SEISMIC OR ELECTRICAL METHODS), OR MAY REQUIRE DEEPER SUBSURFACE DRILLING METHODS. FINAL INVESTIGATION METHONGS(S) TO BE DETERMINED BASED ON SITE CONDITIONS AND REQUIREMENTS OF SITE WORK.

4. EXCAVATIONS TO REMOVE IDENTIFIED LANDSLIDE OR OTHER UNSTABLE SLOPE CONDITIONS SHOULD BE COMPLETED FOR THE FULL EXTENT OF CHARACTERIZED HAZARD AREA, AT A MINIMUM MATCHING OR EXCEEDING THE UNDERLYING AND/OR LATERAL BOUNDING FAILURE SURFACE AND/OR SLIP PLANE. THE GOAL AND INTENT OF THIS MITIGATION APPROACH IS TO ESSENTIALLY REMOVE THE SLOPE HAZARD FROM THE SITE BY DIGGING OUT THE LIMITS OF THE IDENTIFIED HAZARD.

5. REMOVAL OF TARGETED LANDSLIDE AND/OR UNSTABLE SLOPE MATERIALS MAY REQUIRE SPECIAL CONSIDERATIONS FOR OTHER DIRECTLY OR INDIRECTLY RELATED OR CONNECTED SITE MITIGATION MEASURES AND/OR SITE ACTIVITIES TO ADDRESS SAFETY, SLOPE STABILITY, ACCESS, CONSTRUCTION FEASIBILITY, ETC, THEREFORE, PLANNING FOR IMPLEMENTATION OF THIS OPTION SHOULD INCLUDE A COMPREHENSIVE REVIEW OF EXISTING PROPOSED WORK AT THE SITE.

6. EXCAVATED MATERIALS SHOULD BE SPOILED IN LOCATION(S) THAT DO NOT ACCELERATE OR EXACERBATE THE TARGETED LANDSLIDE OR UNSTABLE SLOPE AREA, OR IMPACT OTHER NEIGHBORING LANDSLIDES OR UNSTABLE SLOPE AREAS.

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PROJECT
BIC/INCREMENTAL CONTROLS

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YYYY-MM-DD	2017-02-28
PREPARED	REDMOND
DESIGN	DBC
REVIEW	-
APPROVED	AQK

TITLE
EXCAVATION REMOVAL OF HAZARD

PROJECT No.	PHASE	Rev.	FIGURE
1535050	500	F	15B

NOTE(S)

1. ACCESS FOR PIPELINE ROW'S IN RUGGED AND REMOTE TERRAIN MAY BE LIMITED TO THE CONSTRUCTED ROW. IN THESE SCENARIOS, CONSTRUCTING INDEPENDENT ACCESS POINTS AND ROADS IS TYPICALLY MINIMIZED TO THEREBY ALSO MINIMIZE DISTURBANCE. AS SUCH, THE PRIMARY ACCESS IS COMMONLY ALONG THE TEMPORARY CONSTRUCTED ROW FOLLOWING THE PIPELINE ALIGNMENT, AND IS THEN NO LONGER AVAILABLE AFTER THE ROW IS RESTORED. THIS BIC MITIGATION MEASURE IS INTENDED TO IDENTIFY AREAS WHERE ACCESS MAY BE NEEDED TO SUPPORT MONITORING, OPERATION, AND MAINTENANCE OF THE ROW; AND TO COMPLETE THE PLANNING, PERMITTING, DESIGN, AND CONSTRUCTION FOR ACCESS TO THESE LOCATIONS. ADDITIONAL PLANNING, PERMITTING, LAND COORDINATION, ENVIRONMENTAL, AND TECHNICAL EFFORTS ARE REQUIRED TO SUPPORT THIS MITIGATION MEASURE, NOT SPECIFICALLY OUTLINED AND ADDRESSED HEREIN, BUT ANTICIPATED TO BE NEEDED TO IMPLEMENT THIS MITIGATION MEASURE.

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PROJECT
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YYYY-MM-DD	2017-02-28
PREPARED	REDMOND
DESIGN	DBC
REVIEW	-
APPROVED	AQK

TITLE
ACCESS TO REMOTE ROW LOCATIONS

PROJECT No.	PHASE	Rev.	FIGURE
1535050	500	F	15C

NOTE(S)

1. FINAL CONFIGURATION OF ROW RESTORATION MEASURES TO BE DETERMINED BASED ON CONDITIONS ENCOUNTERED AT TIME OF CONSTRUCTION, AND MAY CHANGE OR VARY AND/OR INCORPORATE ADDITIONAL TYPICAL DETAILS TO MITIGATE TARGETED CONDITIONS.

2. SITE SPECIFIC STUDIES FOR POTENTIAL KARST HAZARDS WILL BE COMPLETED TO IDENTIFY, CHARACTERIZE, AND DEVELOP MITIGATION RECOMMENDATIONS, AS NEEDED.

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PROJECT
BIC/INCREMENTAL CONTROLS

CONSULTANT

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YYYY-MM-DD	2017-02-28
PREPARED	REDMOND
DESIGN	DBC
REVIEW	-
APPROVED	AQK

TITLE
KARST HAZARDS

PROJECT No.	PHASE	Rev.	FIGURE
1535050	500	F	16A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI A

0 1 in