Federal Energy
Regulatory
Commission

**Office of
Energy Projects**

March 2016

Transcontinental Gas Pipe Line Company, LLC **Docket No. CP15-117-000**

DALTON EXPANSION PROJECT

Environmental Assessment

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas 3
Transcontinental Gas Pipe Line
Company, LLC
Dalton Expansion Project
Docket No. CP15-117-000

TO THE PARTY ADDRESSED:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the Dalton Expansion Project proposed by Transcontinental Gas Pipe Line Company, LLC (Transco) in the above-referenced docket. Transco requests authorization to construct and operate about 115 miles of new natural gas pipeline and associated facilities in Coweta, Carroll, Douglas, Paulding, Bartow, Gordon, Murray, and Whitfield Counties, Georgia and a new compressor station in Carroll County, Georgia. Additionally, Transco plans to modify existing facilities along its mainline transmission system in Virginia and North Carolina to accommodate bi-directional flow. Transco has indicated that the Project would provide additional transportation capacity for 44.8 million cubic feet per day of natural gas to markets in northwest Georgia.

The EA assesses the potential environmental effects of the construction and operation of the Dalton Expansion Project in accordance with the requirements of the National Environmental Policy Act. The FERC staff concludes that approval of the proposed project, with appropriate mitigating measures, would not constitute a major federal action significantly affecting the quality of the human environment.

The proposed Dalton Expansion Project includes the following facilities:

- a new 21,830 horsepower compressor station (Compressor Station 116) in Carroll County, Georgia;

- three new meter stations in Bartow and Murray Counties, Georgia;

- about 7.8 miles of new 30-inch-diameter pipeline in Coweta and Carroll Counties, Georgia;

- 51.3 miles of new 24-inch-diameter pipeline in Carroll, Douglas, Paulding, and Bartow Counties, Georgia;

- 53.8 miles of new 20-inch-diameter pipeline in Bartow, Gordon, Murray, and Whitfield Counties, Georgia;
- 2.0 miles of new 16-inch-diameter pipeline in Murray County, Georgia; and
- ancillary facilities associated with the new pipeline including mainline valves and pig launcher/receiver facilities.

Transco would conduct certain modifications along its mainline facilities in Virginia and North Carolina to accommodate bi-directional flow and to accommodate a partially odorized facility. In Virginia, new valves, piping, and charcoal carbon filter vessels would be installed at Compressor Stations 165, 180, and 167 in Pittsylvania, Orange, and Mecklenburg Counties, respectively. Modifications in Virginia would be conducted at 10 meter and regulating stations, including 4 in Pittsylvania County, 3 in Mecklenburg, 1 in Brunswick, 1 in Greensville, and 1 in Halifax Counties. In addition, modifications would be conducted at three mainline valves in Pittsylvania County. In North Carolina, modifications would be conducted at 10 meter and regulating stations, including 6 in Rockingham, 3 in Northampton, and 1 in Hertford Counties. Modifications would also be conducted at one mainline valve in Rockingham County.

The FERC staff mailed copies of the EA to federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners and other interested individuals and groups; newspapers and libraries in the project area; and parties to this proceeding. In addition, the EA is available for public viewing on the FERC's website (www.ferc.gov) using the eLibrary link. A limited number of copies of the EA are available for distribution and public inspection at:

Federal Energy Regulatory Commission
Public Reference Room
888 First Street NE, Room 2A
Washington, DC 20426
(202) 502-8371

Any person wishing to comment on the EA may do so. Your comments should focus on the potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they will be. To ensure that the Commission has the opportunity to consider your comments prior to making its decision on this project, it is important that we receive your comments in Washington, DC on or before **May 2, 2016.**

For your convenience, there are three methods you can use to file your comments with the Commission. In all instances please reference the project docket number (CP15-117-000) with your submission. The Commission encourages electronic filing of comments and has expert staff available to assist you at 202-502-8258 or efiling@ferc.gov.

(1) You can file your comments electronically using the eComment feature located on the Commission's website (www.ferc.gov) under the link to Documents and Filings. This is an easy method for submitting brief, text-only comments on a project;

(2) You can also file your comments electronically using the eFiling feature on the Commission's website (www.ferc.gov) under the link to Documents and Filings. With eFiling, you can provide comments in a variety of formats by attaching them as a file with your submission. New eFiling users must first create an account by clicking on "eRegister." You must select the type of filing you are making. If you are filing a comment on a particular project, please select "Comment on a Filing"; or

(3) You can file a paper copy of your comments by mailing them to the following address:

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (Title 18 Code of Federal Regulations Part 385.214).[1] Only intervenors have the right to seek rehearing of the Commission's decision. The Commission grants affected landowners and others with environmental concerns intervenor status upon showing good cause by stating that they have a clear and direct interest in this proceeding that no other party can adequately represent. **Simply filing environmental comments will not give you intervenor status, but you do not need intervenor status to have your comments considered.**

Additional information about the project is available from the Commission's Office of External Affairs, at **(866) 208-FERC,** or on the FERC website (www.ferc.gov) using the eLibrary link. Click on the eLibrary link, click on "General Search," and enter the docket number excluding the last three digits in the Docket Number field (i.e., CP15-117). Be sure you have selected an appropriate date range. For assistance, please

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[1] See the previous discussion on the methods for filing comments.

contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659. The eLibrary link also provides access to the texts of formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription, which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. Go to www.ferc.gov/docs-filing/esubscription.asp.

Transcontinental Gas Pipe Line Company, LLC
DALTON EXPANSION PROJECT

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TECHNICAL ACRONYMS

°F	degrees Fahrenheit
ACHP	Advisory Council on Historic Preservation
APE	area of potential effect
ATWS	additional temporary workspace
CAA	Clean Air Act of 1970
CCWA	Carroll County Water Authority
Certificate	Certificate of Public Convenience and Necessity
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COE	U.S. Army Corps of Engineers
Commission	Federal Energy Regulatory Commission
dB	decibels
dBA	decibels on the A-weighted frequency scale
DOT	U.S. Department of Transportation
EA	environmental assessment
EI	environmental inspector
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPD	Environmental Protection Division
ERI	electric resistivity imaging
ESA	Endangered Species Act of 1973
ESC Plan	Erosion and Sediment Control Plan
FCV	flow-control valves
FERC	Federal Energy Regulatory Commission
FERC Plan	FERC’s Upland Erosion Control, Revegetation, and Maintenance Plan
FERC Procedures	FERC’s Wetland and Waterbody Construction and Mitigation Procedures
FWS	U.S. Fish and Wildlife Service
GADNR	Georgia Department of Natural Resources
GHG	greenhouse gas
GHGRP	Greenhouse Gas Reporting Program
HAP	hazardous air pollutant
HCA	high consequence area
HDD	horizontal directional drill
HDD Plan	Horizontal Directional Drill Contingency Plan
HUC	hydrologic unit code
IPCC	Intergovernmental Panel on Climate Change
L_{dn}	day-night averaged sound level
L_{eq}	24-hour equivalent sound level

TECHNICAL ACRONYMS (cont'd)

M&R	meter and regulating
mtpy	metric tons per year
MBTA	Migratory Bird Treaty Act
MLV	mainline valve
MMBtu	million British thermal units
MMBtu/hr	million British thermal units per hour
MOU	Memorandum of Understanding
MP	milepost
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NGA	Natural Gas Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise-sensitive area
NSPS	New Source Performance Standards
NSR	New Source Review
OEP	Office of Energy Projects
PGA	peak horizontal ground acceleration
PHMSA	Pipeline and Hazardous Materials Safety Administration
$PM_{2.5}$	particulate matter 2.5 microns or less in aerodynamic diameter
PM_{10}	particulate matter 10 microns or less in aerodynamic diameter
Project	Dalton Expansion Project
PSD	Prevention of Significant Deterioration
RICE	reciprocating internal combustion engine
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
SSURGO database	Soil Survey Geographic database
Terrestrial Species MOU	Memorandum of Understanding: Terrestrial Species Conservation Measure for the Dalton Expansion Project
tpy	tons per year
Transco	Transcontinental Gas Pipe Line Company, LLC
Transco's Plan	Transco's Upland Erosion Control, Revegetation, and Maintenance Plan
Transco's Procedures	Transco's Wetland and Waterbody Construction and Mitigation Procedures
USGCRP	U.S. Global Change Research Program
USGS	U.S. Geological Survey
VOC	volatile organic compound
Vulcan	Vulcan Materials Company
WMA	Wildlife Management Area

A. PROPOSED ACTION

1. Introduction

On March 19, 2015, Transcontinental Gas Pipe Line Company, LLC (Transco) filed an application with the Federal Energy Regulatory Commission (Commission or FERC) in Docket No. CP15-117-000 for a Certificate of Public Convenience and Necessity (Certificate) under section 7(c) of the Natural Gas Act (NGA) for construction, operation, and maintenance of a natural gas transmission pipeline and related facilities in Coweta, Carroll, Douglas, Paulding, Bartow, Gordon, Murray, and Whitfield Counties Georgia. The Dalton Expansion Project (Project) would consist of a new pipeline, one new compressor station, and other ancillary facilities. The Project would also include modifications to Transco's existing mainline facilities in Virginia and North Carolina in order to accommodate bi-directional flow and partial odorization on the Transco system. Transco filed supplemental information on July 16, 2015, indicating that it had adopted several route variations and provided updated resource reports reflecting these Project modifications. On September 30, 2015, Transco filed supplemental resource reports to reflect additional route variations it had incorporated into the proposed pipeline route as well as responses to a FERC environmental data request issued on September 1, 2015.

We[1] prepared this environmental assessment (EA) in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations for implementing NEPA (Title 40 of the Code of Federal Regulations [CFR], Parts 1500-1508), and the Commission's implementing regulations under Chapter 1, Title 18 CFR Part 380.

The assessment of environmental impacts is an important and integral part of FERC's decision on whether to issue Transco a Certificate to construct and operate the proposed facilities. Our principal purposes in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment that would result from implementation of the proposed action;
- assess reasonable alternatives to the proposed action that would avoid or minimize adverse effects to the environment;
- identify and recommend specific mitigation measures, as necessary, to minimize environmental impacts; and
- encourage and facilitate public involvement in the environmental review process.

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[1] "We," "us," and "our" refer to the environmental staff of the Office of Energy Projects.

2. Purpose and Need

Transco has indicated that the Project would expand its capability to transport natural gas supplies to growing areas of demand in northwest Georgia by about 44.8 million cubic feet per day. Transco held an open season for the Project and the proposed new capacity has been fully contracted through ten-year, firm agreements.

Under section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decisions on technical competence, financing, rates, market demand, gas supply, environmental impact, long-term feasibility, and other issues concerning a proposed project.

3. Public Review and Comment

On April 25, 2014, FERC granted Transco's request to use the Commission's pre-filing environmental review process (pre-filing process) in Docket No. PF14-10-000. The pre-filing process was established to encourage early involvement by citizens, governmental entities, non-governmental organizations, and other interested parties in the development of proposed natural gas transmission projects. During the pre-filing process, FERC staff worked with Transco and interested stakeholders, including federal and state agencies, to identify and resolve Project-related issues.

Transco hosted eight public open houses in Newnan, Carrollton, Dallas, Cartersville, Calhoun, and Dalton, Georgia between June 9 and September 25, 2014, to inform stakeholders about the Project and to provide an opportunity for stakeholders to ask questions and express their comments and concerns. Transco mailed open house notification letters to all Project stakeholders and published an announcement in local newspapers. FERC staff attended six of the open houses and participated in field visits of the Project area with Transco staff on June 10, and 17, 2014.

On October 21, 2014, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Planned Dalton Expansion Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings*. This notice was published in the Federal Register. Written comments were requested from the public on specific concerns about the Project that should be considered during preparation of the EA. FERC environmental staff conducted three scoping meetings on November 3, 4, and 5, 2014, in Dalton, Carrollton, and Cartersville, Georgia to receive verbal scoping comments on the Project. Three people spoke in Dalton, one person spoke in Cartersville, and one person in Carrollton.

On November 14, 2014, the Commission issued a *Supplemental Notice of Intent to Prepare an Environmental Assessment for the Planned Dalton Expansion Project and Request for Comments on Environmental Issues*. This notice was published in the Federal Register and was mailed to over 1,100 interested parties, including federal, state, and local officials; agency representatives; conservation organizations; local libraries and newspapers; Native American groups; and property owners affected by the Project facilities, notifying them that the scoping period was extended through December 20, 2014.

In response to concerns raised by the Georgia Department of Natural Resources (GADNR), the U.S. Fish and Wildlife Service (FWS), and the Nature Conservancy, Transco developed a route variation to avoid and/or minimize potential environmental impacts on the biologically sensitive Raccoon Creek Watershed. On February 13, 2015, the Commission issued a second *Supplemental Notice of Intent to Prepare an Environmental Assessment for the Planned Dalton Expansion Project and Request for Comments on Environmental Issues*. This notice was published in the Federal Register and was mailed to over 1,270 interested parties, including landowners that could be affected by the route variation. Transco held a public open house on February 24, 2015, in Dallas, Georgia to introduce the Project to landowners potentially affected by the route variation. A fourth scoping meeting was held in Dallas, Georgia on March 4, 2015, to receive verbal scoping comments from stakeholders about the potential route variation. Eighteen people spoke at the meeting. The route variation, referred to as the Raccoon Creek Alternative, was subsequently incorporated as the proposed route (see section C.3).

The transcripts of the public meetings and written scoping comments are part of the public record for the Project and are available for viewing n the FERC Internet website (http://www.ferc.gov).[2] Table A.3-1 summarizes the issues raised during scoping and the section of the EA where the comment is addressed.

TABLE A.3-1

Issues Identified During the Public Scoping Process for the Dalton Expansion Project

Comment / Concern	EA Section Addressing Comment
Impacts on water resources (e.g., Raccoon Creek)	Section B.2
Impacts on wildlife habitat	Section B.3
Impacts on protected species (e.g., Etowah darter)	Section B.4
Impacts on existing land use	Section B.5
Property values	Section B.6
Potentially significant cultural resources	Section B.7
Air and noise pollution (e.g., related to Compressor Station 116)	Section B.8
Concern about safety (e.g., pipeline explosion, radon gas)	Section B.8, Section B.9
Utilization of alternative pipeline routes (e.g., Raccoon Creek Alternative)	Section C

4. Proposed Facilities

An overview map of the Project locations and facilities is provided on figure A.4-1. Detailed maps showing the pipeline route, aboveground facility, access roads, and staging/contractor yards are contained in appendix A.

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[2] Using the "eLibrary" link, select "General Search" from the eLibrary menu and enter the docket number excluding the last three digits in the "Docket Number" field (i.e. PF14-10); be sure to select an appropriate date range. The pre-fling process concluded on March 19, 2015, following Transco's filing of its formal application. The proceedings for the Project are currently being conducted under Docket No. CP15-117-000.

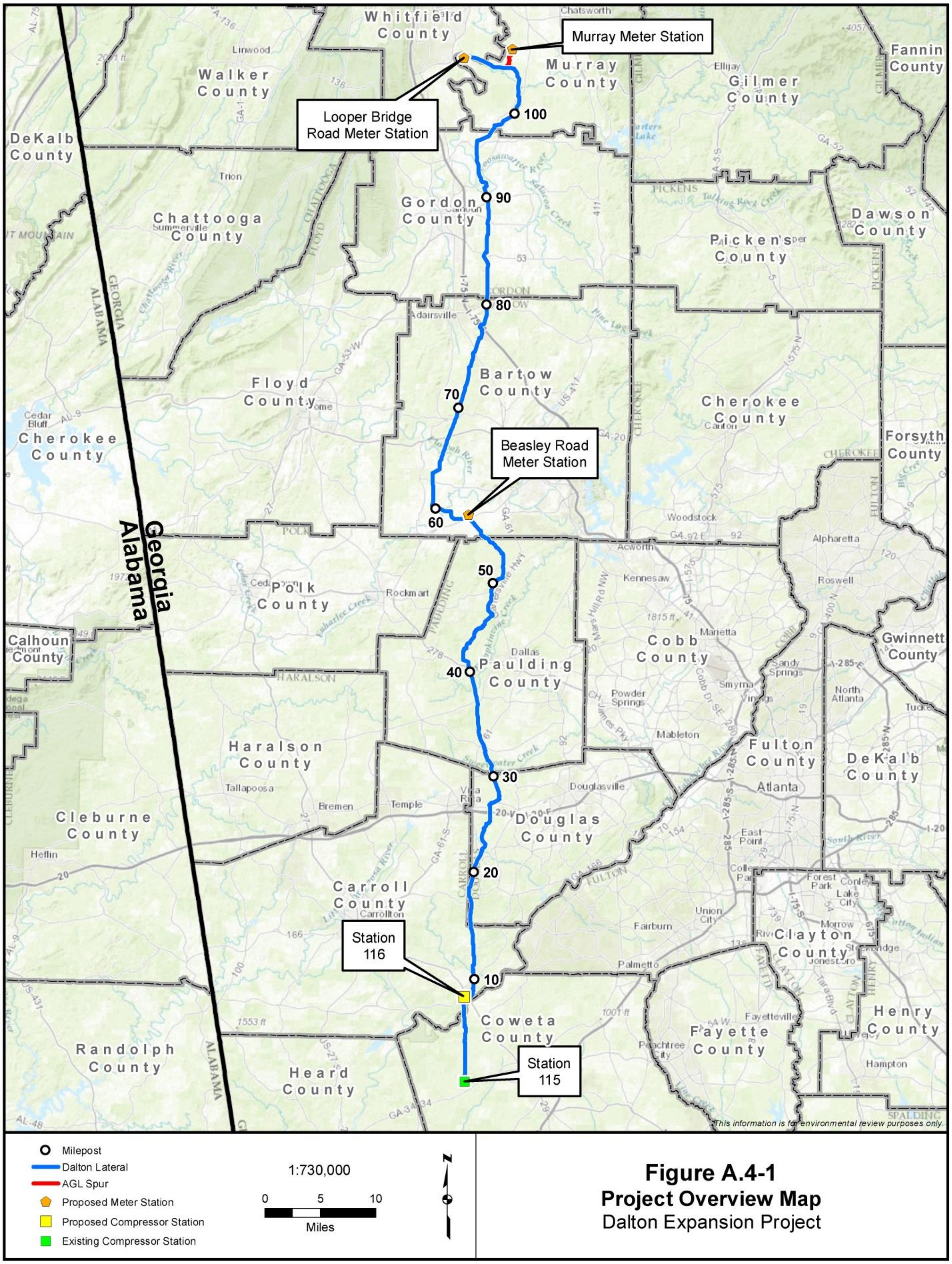

Figure A.4-1
Project Overview Map
Dalton Expansion Project

a. Pipeline Facilities

The Project pipeline would begin at Transco's existing Compressor Station 115 in Coweta County, Georgia, about 6.2 miles west of Newnan, Georgia. The pipeline would extend north of the compressor station for about 114.9 miles. The first 7.8 miles of pipeline would consist of 30-inch-diameter pipeline, followed by 51.3 miles of 24-inch-diameter pipeline. The remaining 53.8 miles would consist of 20-inch-diameter pipeline terminating at the Looper Bridge Road Meter Station in Murray County. A 2.0 mile section of 16-inch-diameter pipeline, the AGL Spur, would extend north of the Dalton Lateral at about milepost (MP) 104.4 connecting the lateral to the planned Murray Meter Station.

About 49 percent of the Dalton Lateral and about 60 percent of the AGL Spur would be collocated with existing pipeline and powerline rights-of-way. Table A.4.a-1 summarizes the Project pipeline facilities and length of collocation by county.

TABLE A.4.a-1

Proposed Pipeline Facilities for the Dalton Expansion Project

Facility/County	Begin Milepost [a]	End Milepost [a]	Total Length (miles)	Pipeline Diameter (inches)	Collocated Length (miles)
Dalton Lateral					
Coweta	0	6.3	6.3	30	5.9
Carroll	6.3	7.8	1.5	30	0.7
Carroll	7.8	15.0	7.5	24	6.4
Douglas	15.0	17.9	2.8	24	2.0
Carroll	17.9	18.0	0.1	24	0.0
Douglas	18.0	30.4	12.6	24	6.3
Paulding	30.4	53.9	25.5	24	10.2
Bartow	53.9	56.5	2.7	24	2.1
Bartow	56.5	80.6	25.0	20	11.3
Gordon	80.6	97.3	16.8	20	9.5
Murray	97.3	107.3	10.0	20	0.5
Whitfield	107.3	108.5	1.2	20	0.0
Murray	108.5	109.3	0.8	20	0.0
AGL Spur					
Murray	0.0	2.0	2.0	16	1.2
Pipeline Total			**114.9**		**56.1**

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[a] The mileposts are nominal and not reflective of actual mile lengths due to various reroutes incorporated into the Project route after mileposts were applied to the route.

b. Aboveground Facilities

Transco is proposing to construct Compressor Station 116 on the newly constructed pipeline, north of the Chattahoochee River crossing in Coweta County at about MP 7.8. Compressor Station 116 would be equipped with two 10,915 horsepower gas-fired Solar Taurus 70 units to provide a total of 21,830 horsepower of compression. Ancillary equipment at these stations would include emergency generators, storage tanks, blowdown silencers, and gas coolers.

Transco would install three new meter stations. The Beasley Road Meter Station would be located in Bartow County at about MP 56.5 of the Dalton Lateral pipeline where it would interconnect with the Atlanta Gas Light Company distribution system. The Looper Bridge Road Meter Station would be located at the terminus of the Dalton Lateral (MP 109.3) in Murray County where it would provide natural gas to the existing Oglethorpe Power, Thomas A Smith Energy Facility. The Murray Meter Station would be located at the terminus of the AGL Spur (MP 2.0) to interconnect again with Atlanta Gas Light Company distribution system.

Eleven mainline valves (MLV) would be installed along the pipeline route (see table A.4.b-1). New pig[3] receiver/launcher facilities would be installed at the beginning and end points of the lateral (MPs 0.0 and 109.3), where the lateral changes pipe diameter (MPs 7.6 and 56.5), the interconnect with the AGL Spur (MP 105.2), and the terminus of the AGL Spur (MP 2.0).

TABLE A.4.b-1

Proposed Mainline Valves for the Dalton Expansion Project

MLV Number	Milepost	County	Pipe Diameter (inches)
MLV-1	20.4	Douglas	24
MLV-2	27.8	Douglas	24
MLV-3	34.5	Paulding	24
MLV-4	41.8	Paulding	24
MLV-5	49.5	Paulding	24
MLV-6	67.8	Bartow	20
MLV-7	77.9	Bartow	20
MLV-8	85.3	Gordon	20
MLV-9	92.2	Gordon	20
MLV-10	98.7	Murray	20
MLV-11	105.2	Murray	20

Transco would install five cathodic protect/anode bed sites at MPs 8.4, 64.2, 81.7, 97.2 along the lateral and at MP 0.7 along the AGL Spur. Each of these sites would be located adjacent to a road crossing and extend perpendicular to the permanent right-of-way and parallel with the adjacent road. These buried sites would be 10 feet wide and extend between 600 to 800 feet away from the permanent right-of-way.

c. Mainline Facility Modifications

Transco would conduct modifications along its mainline facilities in Virginia and North Carolina to accommodate bi-directional flow and to accommodate a partially odorized system. The locations of these modifications are illustrated on figure A.4.c-1. Additional information is provided in appendix B.

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[3] A “pig” is a tool that is inserted into and moves through the pipeline, and is used for cleaning the pipeline, internal inspections, or other purposes.

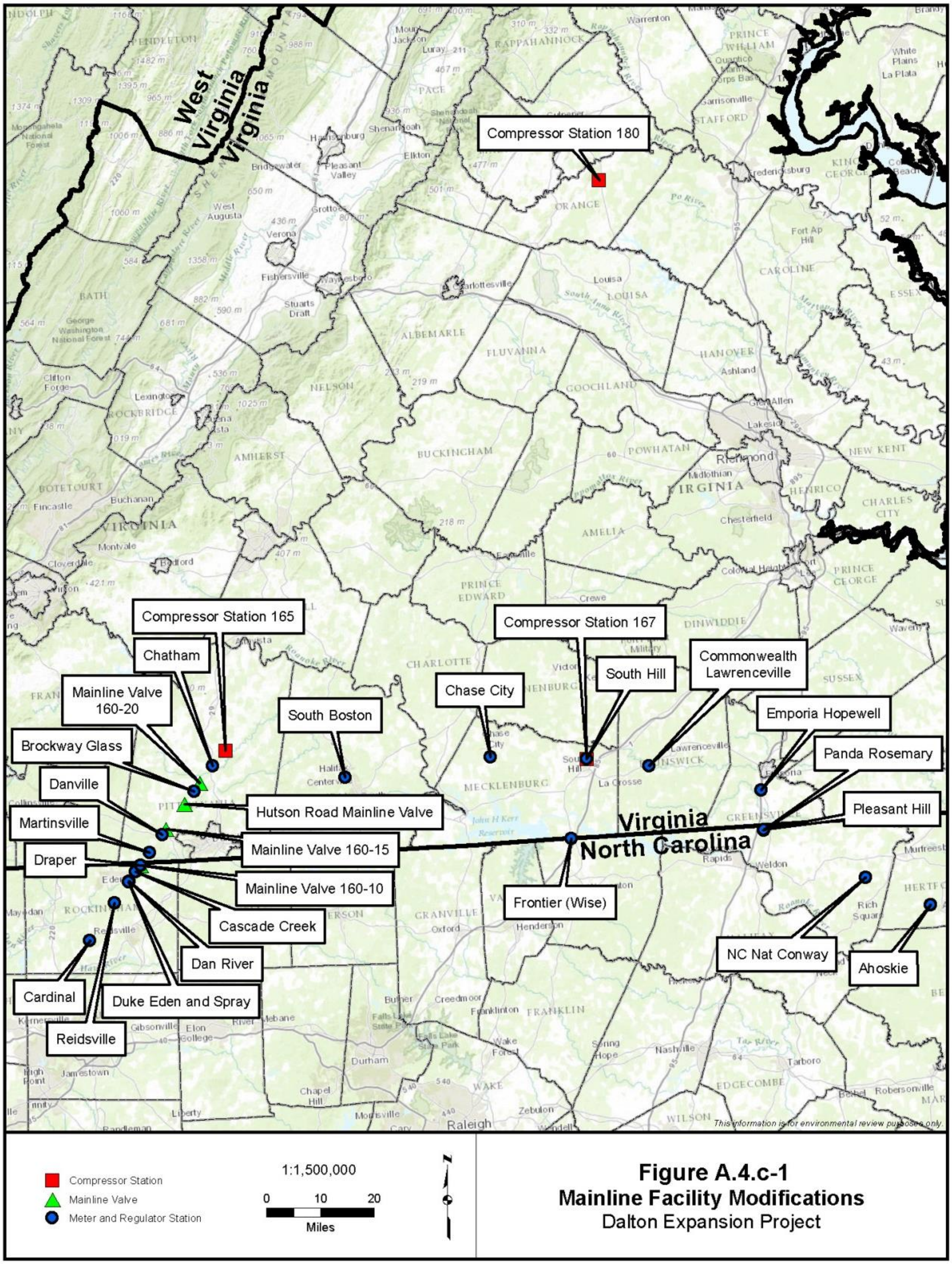

Figure A.4.c-1
Mainline Facility Modifications
Dalton Expansion Project

In Virginia, new valves, piping, and charcoal carbon filter vessels (to mitigate the odorant smell during planned unit blowdowns) would be installed at Compressor Stations 165, 180, and 167 in Pittsylvania County, Orange County, and Mecklenburg County, respectively. Modifications would be conducted at 10 meter and regulating (M&R) stations including 4 in Pittsylvania County, 3 in Mecklenburg, 1 in Brunswick, 1 in Greensville and 1 in Halifax Counties. In addition, modifications to accommodate bi-directional flow would be conducted at three MLVs in Pittsylvania County.

In North Carolina, modifications to accommodate a partially odorized system would be conducted at 10 M&R stations, including 6 in Rockingham, 3 in Northampton, and 1 in Hertford Counties, North Carolina. Modifications to accommodate bi-directional flow would also be conducted at one MLV in Rockingham County.

Because the mainline facility modification would be located within and/or directly adjacent to existing facilities and would represent little or no environmental impacts that are not discussed throughout the majority of the rest of this EA.

d. Access Roads and Staging/Contractor Yards

In addition to public roads in the area, Transco would utilize 88 private access roads during construction and operation. The majority of these roads consist of existing dirt or gravel roads that would require upgrades including grading and graveling activities; however, no widening of existing roads is proposed. Of these roads, 54 would be used for permanent access to the pipeline and aboveground facilities. Eleven access roads would be newly constructed for the Project. The existing road conditions, upgrade requirements, and approximate length and width of the Project access roads are provided in appendix C. The locations of the Project access roads are depicted in appendix A.

To support construction activities, Transco proposes to use 6 staging/contractor yards, located along the pipeline route in Carroll, Douglas, and Bartow Counties, for the storage of equipment and materials. The locations of the staging/contractor yards are depicted in appendix A.

5. Land Requirements

Construction of the Project would require a total of about 1,764.1 acres of land. Following construction, about 1,017.8 acres would be restored to preconstruction conditions. The remaining 746.3 acres of land would be retained to operate and maintain the facilities. Table A.5-1 summarizes the construction and operation impacts associated with the Project facilities. The typical construction right-of-way in uplands would vary in width based on pipeline diameter. For the 30-inch-diameter pipe, the construction right-of-way would be 90 feet wide; for the 24-inch-diameter pipe, it would be 85 feet wide; for the 20-inch diameter pipe, it would be 80 feet wide; and for the 16-inch-diameter pipe (AGL Spur), a 75-foot-wide construction right-of-way would be used. In wetlands, the construction right-of-way would typically be 75 feet wide for all the pipeline diameters.

TABLE A.5-1

Summary of Land Requirements for the Dalton Expansion Project

Facility	Construction Impacts (acres)	Operation Impacts (acres)
Pipeline Facilities		
Pipeline Right-of-Way	1136.2	687.4
Additional Temporary Workspace	318.8	0.0
Staging/Contractor Yards	89.7	0.0
Pipeline Facilities Subtotal	**1,544.7**	**687.4**
Aboveground Facilities		
Compressor Station116	65.7	30.2
Beasley Road Meter Station	2.9	1.6
Looper Bridge Road Meter Station	2.0	0.8
Murray Meter Station	1.7	0.8
Interconnects/Pig Launcher/Receivers	0.0	0.0
Mainline Valves	1.1	1.1
Cathodic Protection/Anode Bed Sites	1.6	0.9
Access Roads [a]	90.5	22.2
Aboveground Facilities Subtotal	**165.4**	**57.6**
Mainline Facility Modifications		
Compressor Stations	41.4	0.0
Meter and Regulating Facilities	9.0	1.3
Mainline Valves	3.6	0.0
Mainline Facility Modifications Subtotal	**54.0**	**1.3**
Project Total	**1,764.1**	**746.3**

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[a] Includes temporary access roads that would be utilized during construction and permanent roads that would be utilized during the operation and maintenance of the pipeline and aboveground facilities.

In addition to the typical construction rights-of-way, additional temporary workspace (ATWS) would be required to stage construction activities and store equipment, materials, and spoil in areas of topsoil segregation and at wetland, waterbody, and road crossings. For example, Transco would increase the workspace width by 25 to 35 feet for topsoil storage where full right-of-way or ditch plus spoil topsoil segregation is required. To address a common complaint expressed by landowners, Transco would overlap the pipeline construction right-of-way from 10 to 15 feet on adjacent collocated rights-of-way segments to reduce clearing requirements and avoid leaving a gap between easements or a strip of uncleared land between the collocated rights-of-way. To maintain safe working conditions for portions of the pipeline that would be collocated with other existing pipelines, Transco would maintain a 45-foot offset (distance from centerline to centerline) between the proposed pipeline and the existing Atlanta Gas Light Company pipelines. Following construction, Transco would retain a 50-foot-wide permanent easement over the pipeline. The typical right-of-way configurations proposed by Transco are included in appendix D.

Transco has identified areas where contractor yards, staging areas, ATWS, and access roads would be required to construct the Project. However, additional or alternative areas could be identified in the future due to changes in site-specific construction requirements. Transco would be required to file information on each of those areas for FERC's review and approval prior to use.

6. Construction Schedule and Workforce

Transco anticipates that mobilization and construction of the Project would commence in summer 2016. These start dates are subject to receipt of necessary permits and regulatory approvals. Transco anticipates that all facilities would be placed in service in May 2017.

Construction of the Project pipeline would be accomplished using two construction spreads with a peak temporary work force of up to 840 people. Transco would hire five new permanent employees to assist in operation and maintenance of the new facilities.

7. Construction, Operations, and Maintenance Procedures

The Project would be designed, constructed, operated, and maintained in accordance with applicable requirements defined by U.S. Department of Transportation (DOT) regulations in Title 49 CFR Part 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*; by FERC's *Siting and Maintenance Requirements* in 18 CFR 380.15; and by other applicable federal and state safety regulations.

Transco would comply with the FERC *Upland Erosion Control, Revegetation, and Maintenance Plan* (FERC Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (FERC Procedures)[4] with certain requested modifications.

Transco's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Transco's Plan) includes certain modifications to the FERC Plan that in general include additional details that address the requirements by the state of Georgia. These modifications are outlined at the beginning of Transco's Plan (see appendix E). For the most part, these changes are more stringent than the requirements in the FERC Plan (e.g., closer spacing of slope breakers, shorter time period between final grading and seeding, and more specific revegetation criteria). We conclude that the modifications identified in Transco's Plan provide equal or greater environmental protection.

Similarly, Transco's *Wetland and Waterbody Construction and Mitigation Procedures* (Transco's Procedures) includes modifications to the FERC Procedures, a majority of which provide either a certain level of clarification (e.g., a definition of water's edge) or address Georgia's more stringent requirements and provide equal or greater environmental protection. These modifications are outlined at the beginning of Transco's Procedures (see appendix E).

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[4] The FERC Plan and Procedures are a set of construction and mitigation measures that were developed in collaboration with other federal and state agencies and the natural gas pipeline industry to minimize the potential environmental impacts of the construction of pipeline projects in general. The FERC Plan can be viewed on the FERC Internet website at http://www.ferc.gov/industries/gas/enviro/plan.pdf. The FERC Procedures can be viewed on the FERC Internet website at http://www.ferc.gov/industries/gas/enviro/procedures.pdf.

However, we do not agree that all the modifications would provide equal or greater environmental protection (see sections B.2.b and B.2.c).

To avoid or minimize the potential for harmful spills and leaks during construction, Transco would implement measures outlined in its *Spill Prevention, Control, and Countermeasure Plan* (SPCC Plan; see appendix F). The SPCC Plan describes spill and leak preparedness and prevention practices and procedures for emergency incidence response. We have reviewed Transco's SPCC Plan and found it acceptable.

Other resource-specific plans (e.g., *Karst Mitigation Plan* and *Noxious and Invasive Weed Control Plan*) are discussed in more detail in section B.

a. General Pipeline Construction Procedures

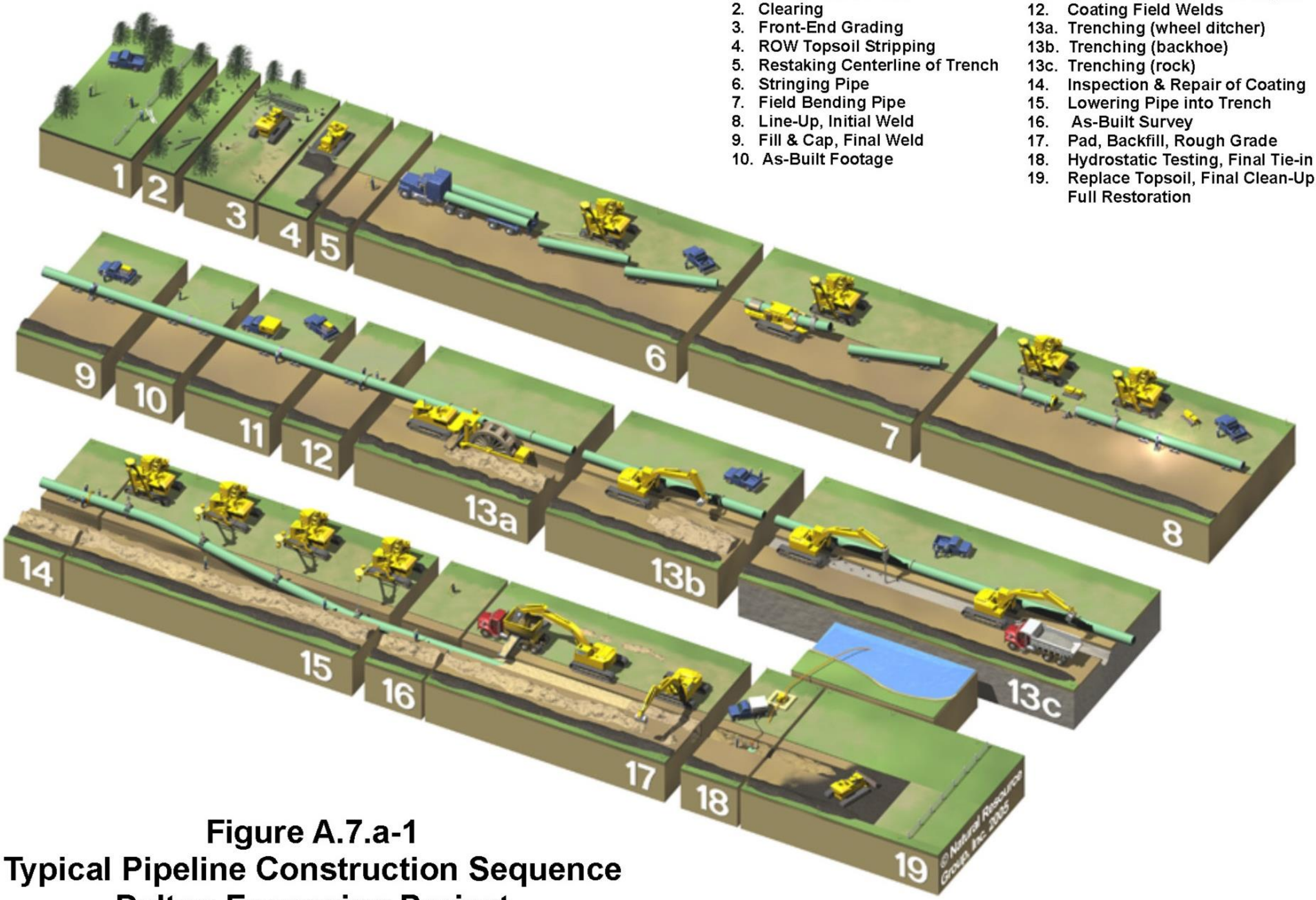
Construction of the Project pipeline would follow industry-standard practices and procedures, which involve a series of discrete activities conducted in a linear sequence. Figure A.7.a-1 shows the typical steps of cross-country pipeline construction.

Prior to construction, Transco's survey contractor would stake the pipeline centerline and the limits of the construction right-of-way and ATWS areas. Wetland boundaries and other environmentally sensitive areas would also be marked at this time. A clearing crew would then clear the work area of vegetation and other obstacles, including trees, stumps, logs, brush, and rocks. Cleared vegetation would be burned, chipped, or hauled offsite to a commercial disposal facility. Merchantable timber would be limbed, cut, and removed from the right-of-way.

Following clearing, the construction right-of-way and ATWS areas would be graded where necessary to provide a level work surface. In areas disturbed by grading, temporary erosion and sediment controls would be installed, in accordance with Transco's Plan and Procedures, to minimize erosion and sedimentation. These erosion and sediment controls would be inspected and maintained throughout the construction and restoration phases of the Project.

Trenching would be conducted following clearing and grading using trenching machines, backhoes, or other similar equipment. The depth of the trench would be a minimum of 5 feet or enough to provide for about 3 feet of cover over the pipeline. The width of the top of the trench would vary based on site-specific conditions. Trench spoil would be deposited adjacent to the trench within the construction right-of-way. To prevent mixing of the soil horizons, topsoil segregation would be performed in residential areas, non-saturated wetlands, croplands, improved pastures, and in areas requested by the landowner. In upland areas, Transco would strip topsoil either from the full work area or from the trench and subsoil storage area. In non-saturated wetlands, topsoil would be segregated within the trench line only.

Once trenching is completed the pipe would be positioned along the working side of the trench. The pipe would be bent by hydraulic pipe-bending machines, where necessary, to allow for a uniform fit with the contours at the bottom of the trench. After the pipe sections are bent, they would be welded together into long sections and placed on temporary supports. Welding would be conducted in compliance with Title 49 CFR Part 192 and American Petroleum Institute Standard 1104 Welding of Pipelines and Related Facilities.



1. Survey and Staking
2. Clearing
3. Front-End Grading
4. ROW Topsoil Stripping
5. Restaking Centerline of Trench
6. Stringing Pipe
7. Field Bending Pipe
8. Line-Up, Initial Weld
9. Fill & Cap, Final Weld
10. As-Built Footage
11. X-Ray Inspection, Weld Repair
12. Coating Field Welds
13a. Trenching (wheel ditcher)
13b. Trenching (backhoe)
13c. Trenching (rock)
14. Inspection & Repair of Coating
15. Lowering Pipe into Trench
16. As-Built Survey
17. Pad, Backfill, Rough Grade
18. Hydrostatic Testing, Final Tie-in
19. Replace Topsoil, Final Clean-Up, Full Restoration

Figure A.7.a-1
Typical Pipeline Construction Sequence
Dalton Expansion Project

Prior to lowering-in, the trench would be inspected to ensure it is free of rocks and other debris that could damage the pipe or its protective coating. If the bottom of the trench is rocky, the pipe may be lowered onto sandbags or support pillows. Alternatively, sand, gravel, or screened soil would be used as padding for the pipe. The pipe would then be lifted from the temporary supports and lowered into the trench using side-boom tractors or similar equipment. After lowering-in, the trench would be backfilled with previously excavated materials. In certain locations the trench may be crowned above its original elevation to compensate for subsequent settling.

After backfilling, the entire pipeline would be hydrostatically tested in accordance with Title 49 CFR Part 192 and applicable permit conditions, to ensure that the system is free from leaks and provides the required margin of safety at operating pressures. This testing involves filling the pipeline with water and then pressurizing the water for eight hours. Any considerable loss of pressure indicates that a leak may have occurred and would require further inspection. If a leak is discovered, the pipeline would be repaired and the segment retested. The primary water sources used for hydrostatic testing would be nearby waterbodies. The sources and discharge locations for the hydrostatic testing are identified in section B.2.b.

Final cleanup would begin after backfilling and as soon as weather and site conditions permit. During clean-up, construction debris and organic refuse not suitable for distribution over the right-of-way would be collected and taken to a disposal facility, unless the landowner or land managing agency approves leaving materials onsite for beneficial reuse, stabilization, or habitat restoration. Contours along the right-of-way would be restored to pre-existing conditions as closely as possible. Segregated topsoil would be returned to the stripped area and permanent erosion controls would be installed. Revegetation measures would be implemented in accordance with Transco’s Plan and Procedures or based on specific landowner requests. Section A.7.d describes additional environmental compliance and monitoring procedures.

b. Special Pipeline Construction Procedures

Transco would use special construction techniques when constructing across waterbodies; wetlands; roads and railroads; residential areas, agricultural areas; areas with shallow bedrock, and in areas with steep side slopes as described below.

Waterbody Crossings

Waterbodies that are less than 100 feet wide would typically be crossed using conventional excavator type equipment and dry-crossing techniques, provided there is perceptible flow at the time of crossing. Most waterbodies greater than 100 feet wide would be crossed using the horizontal directional drill (HDD) method with the exception of three waterbodies, which would be crossed using a dry crossing technique, and the Etowah River, which would be crossed using the wet open-cut technique. The proposed crossing method for each of the waterbodies in the Project area is included in appendix G.

Transco would cross ephemeral waterbodies and ditches, where there is no perceptible flow at the time of crossing, using standard upland crossing techniques. Transco would maintain adequate equipment on site to conduct a dry-ditch crossing should perceptible flow occur during construction. If a dry-ditch crossing method is determined to be infeasible, and a wet open cut, method is necessary, the pipeline would be strung across the waterbody, with all joints being welded prior to stringing. The pipeline would be lowered into place with weights slung over it, if necessary, and the trench backfilled. In-stream construction activities would be limited to 24 to 48 hours depending on stream width, unless site-specific conditions make completion within that time infeasible. Equipment operating in the waterbody would be limited to that needed to complete construction of the pipeline. All other construction equipment would cross on an equipment bridge. As part of its streambed restoration efforts Transco would construct riffles within the streambed at certain locations. Transco is consulting with the FWS to determine the specific crossing locations where this mitigation measure would be implemented.

For most waterbodies or ditches that exhibit perceptible flow at the time of construction, a dry-ditch crossing method would be conducted. The dry-ditch crossing method would involve installation of either flume pipe(s), a dam and pump or combination of both prior to trenching (if flow is present) to divert the stream flow over or around the construction area and allow trenching of the stream crossing in drier conditions isolated from the stream flow. Spoil removed during the trenching would be stored away from the water’s edge and protected by sediment containment structures.

To the extent possible, streambeds would be returned to their preconstruction contours, and stream and river banks would be restored to their preconstruction condition and allowed to revegetate in accordance with Transco’s Plan and Procedures and applicable permit conditions.

The HDD method allows for trenchless construction across an area by drilling a hole below the depth of a conventional lay, and then pulling a prefabricated section of pipe through the hole. This method is used to avoid direct impacts on sensitive environmental features or areas that otherwise present difficulties for standard pipeline construction. Table A.7.b-1 summarizes the HDD locations for the Project. Detailed crossing plans for each of the HDDs are included in appendix H.

TABLE A.7.b-1

Horizontal Directional Drill Locations for the Dalton Expansion Project

Name of HDD	Beginning Milepost	Ending Milepost	Length (feet)
Chattahoochee River (includes 1 tributary)	6.2	6.6	2,230
Interstate 20, (includes 3 tributaries to Keaton Creek)	25.9	26.3	2,275
Highway 120 (includes tributary to Little Pumpkinvine Creek)	37.0	37.4	1,980
Joe Frank Harris Parkway/ US 41	75.5	75.8	1,685
Interstate 75	77.9	78.1	675
Coosawattee River (includes Crane Eater Creek)	90.1	90.6	2,625
Holly Creek (includes 3 crossings of Holly Creek)	102.6	103.2	2,794
Conasauga River East (includes 1 tributary)	107.2	107.5	1,345
Conasauga River West (includes 2 tributaries)	108.2	108.7	2,262

To begin each crossing, a drill rig would be placed on the entry side of the HDD and a small pilot hole would be drilled along a predetermined path beneath the waterbody or roadway. The pilot hole would be progressively enlarged through a process called reaming. A reaming tool would be installed at the end of the drill string on the exit side of the pilot hole, and then drawn back to the drill rig to enlarge the hole. Several passes with progressively larger reaming tools could be needed to enlarge the hole to a sufficient diameter to accommodate the pipeline. During this process, drilling fluid, or mud, consisting of bentonite clay and water would be circulated through the hole to remove drill cuttings and maintain the integrity of the hole. Once the reaming process is complete, a prefabricated segment of pipe would be attached to the drill string on the exit side of the crossing, and pulled back through the hole toward the drill rig. In response to FWS recommendations, Transco would locate HDD entry and exit points at least 150 feet from the top of bank of major waterbodies and attempt to complete HDD crossings during low stream flow periods (between the months of June and November).

Wetland Crossings

Wetland boundaries would be delineated and marked in the field prior to construction activities. The pipeline construction right-of-way in wetlands would be limited to 75 feet in width, with the exception of the areas where we approved Transco’s requested modifications (see section B.2.c). Woody vegetation within the construction right-of-way would be cut off at ground level and removed from the wetlands, leaving the root systems intact. The pulling of tree stumps and grading activities would be limited to the area directly over the trench line unless it is determined that safety-related construction constraints require grading or the removal of stumps from the working side of the right-of-way. Construction equipment operating in wetland areas would be limited to that needed to clear the right-of-way, dig the trench, install the pipeline, backfill the trench, and restore the right-of-way. Topsoil segregation would be utilized in unsaturated wetlands to preserve the existing seed bank and aid in the successful restoration of the disturbed wetland. Trench plugs would be installed as necessary to maintain wetland hydrology.

The specific crossing procedures used to install the pipeline across wetlands would depend on the level of soil stability and saturation encountered during construction. Construction across unsaturated soils that can support the weight of equipment would be conducted in a manner similar to the upland construction procedures. In areas that are proposed for conventional open trench construction, but where soil conditions may not support the weight of equipment, timber mats would be used to minimize disturbance to wetland hydrology and maintain soil structure.

The push-pull method of construction could be used in inundated or saturated conditions where wetland soils and hydrology cannot support conventional pipe laying equipment, or in areas that have significant quantities of water that would allow for the pipe to be floated over the open trench. With this method, construction and excavation equipment would work from temporary work surfaces and a prefabricated pipeline segment would be pulled or floated into position then sunk with buoyancy control devices and placed in the trench.

Road and Railroad Crossings

Construction across paved roads, highways, and railroads would be conducted in accordance with requirements identified in road and railroad crossing permits or approvals. Roads, highways, and railroads where traffic cannot be detoured would be crossed using the conventional subsurface boring beneath the roadbed or railroad. Boring would consist of excavating a pit on each side of the road or railroad; placing boring equipment within the pits; boring a hole under the roadbed or railroad; and pulling a section of pipe through the hole. Typically, there would be little or no disruption to traffic at road, highway, or railroad crossings during boring operations. Roads where traffic can be detoured would be crossed via open cut.

Residential Areas

Construction activities in residential areas would be completed as quickly as practicable, while maintaining safe working conditions, to minimize disturbances to residents. Transco would implement the stove pipe or drag section or method of pipe installation as necessary to minimize impacts on residents. These methods involve installing one pipe joint (stove pipe method) or a short section of two or more pipe joints (drag section) to limit the amount of trench that is open at any time. All reasonable efforts would be made to maintain access to the residences during construction. Where feasible, Transco would use steel plates to provide access to driveways. If access is impeded, Transco would create temporary access routes that avoid the construction work area. Temporary safety fences would be erected along the construction right-of-way in areas where construction activities would occur within close proximity to residences. Homeowners would be notified 2 weeks in advance of construction and again 1 week prior construction. Topsoil would be segregated in residential areas unless specifically requested otherwise by a homeowner, or if Transco elects to import topsoil. Following the completion of construction activities, all debris would be removed and residential areas restored to preconstruction conditions. Transco has prepared site-specific plans for all residences within 50 feet of the construction workspace. These plans are shown in appendix I.

Agricultural Areas

In active croplands, pastures, or hayfields, the topsoil layer would be removed and segregated from the subsoil in accordance with Transco’s Plan and Procedures. Following pipeline installation, the subsoil would be returned to the trench and the topsoil replaced in the area from which it was stripped. The topsoil and subsoil would be tested for compaction in all agricultural areas disturbed by construction. Severely compacted agricultural areas would be mitigated through the use of deep tillage operations during restoration activities using a paraplow or similar implement.

If drain tiles are encountered, Transco would avoid impacting the tiles where possible. All drain tiles and irrigation systems disturbed during construction would be restored to preconstruction conditions.

Rock Removal and Blasting

Rock encountered during trenching would be removed using rock saws, rock trenchers, hydraulic hammers, and mechanical rippers. If it is determined that the bedrock cannot be removed by conventional techniques, blasting would be conducted.

If blasting is required for the Project, it would be conducted in accordance with Transco's *Blasting Plan* (see appendix J) as well as applicable state blasting codes and any local blasting requirements. All blasting activity would be performed by licensed professionals. Proper safeguards would be taken to protect personnel and property in the area. This includes conducting preconstruction surveys of structures and water quality and flow testing of wells or potable springs within 150 feet of the blasting locations. Blasting mats or soil cover would be used as necessary to prevent the scattering of loose rock. Blasting would be conducted during daylight hours and would not begin until occupants of nearby buildings, stores, residences, and places of business have been notified 72 hours in advance. Transco would comply with applicable regulations that apply to blasting. Rock removal and blasting are further discussed in section B.1 and in Transco's blasting plan.

Side Slopes

Portions of the pipeline would cross areas of steep side slope or rolling terrain that may require the use of cut-and-fill grading to provide for safe working conditions. In these areas, grading activities would cut down the upslope side of the construction right-of-way. Material from the cutting would be used to fill the downslope side of the construction right-of-way to create a safe and level surface for travel lanes and equipment operation. The trench would be excavated from the newly graded right-of-way. Following pipeline installation, the right-of-way would be restored as nearly as practicable to its original contours and stabilized in accordance with Transco's Plan.

c. Aboveground Facility Construction Procedures

Construction of the aboveground facilities would occur concurrently with the pipeline construction activities discussed above. Construction would begin with clearing and grading of the sites to establish suitable grades for the facilities. Subsequent activities would include preparing foundations, installing underground piping, erecting and installing buildings, installing aboveground piping and equipment, testing the piping, testing the control equipment, cleaning up the work area, and graveling access roads and parking areas. Compressor Station 116 and all meter stations sites would be fenced for security. Following construction, disturbed areas that are not paved or covered with gravel would be finish-graded and seeded.

d. Environmental Compliance Inspection and Monitoring

Transco would employ environmental inspectors (EI) to monitor environmental compliance during all phases of construction. At least one EI would be assigned to each construction spread. Additional EIs would be added to the Project as needed to adequately cover all activities associated with the construction of the pipeline and aboveground facilities. The EIs would be responsible for assuring that the measures contained in Transco's Plan and Procedures, Transco's Project-specific plans, and any other environmental permit conditions or agreements are followed during construction and restoration activities. The EIs would have peer status with other activity inspectors and would have stop-work authority in the event that violations of environmental conditions of the Certificate, state or federal environmental permit conditions, or landowner requirements occur, and authority to order appropriate corrective action. Other specific responsibilities of the EI include:

- verifying that the limits of authorized construction work areas, locations of access roads, and boundaries of sensitive resource areas are properly marked before clearing and throughout construction;
- identifying erosion/sediment control and stabilization needs and ensuring that proper controls are installed and maintained;
- ensuring that topsoil and subsoil are separated in agricultural, residential and wetland areas, and that they are tested for compaction following restoration in agricultural and residential areas;
- verifying that trench dewatering activities do not result in deposition of sediment into wetlands or waterbodies; and
- advising the Chief Construction Inspector when conditions (such as wet weather) make it advisable to restrict construction activities to avoid excessive rutting.

Environmental training would be given to Transco’s personnel and to contractor personnel whose activities may impact the environment during pipeline construction. All construction personnel from the chief inspector, EIs, craft inspectors, and contractor job superintendent to loggers, welders, equipment operators, and laborers would be given the appropriate level of environmental training. The training would be given prior to the start of construction and throughout the construction process, as needed. The training program would cover Transco’s Plan and Procedures and Transco’s Project-specific plans, job-specific permit conditions, company policies, and the environmental permit conditions issued for the Project. In addition to the EIs, all other construction personnel are expected to play an important role in maintaining strict compliance with all permit conditions to protect the environment during construction.

Construction contractors employed by Transco would be required to observe and comply with federal, state, and local laws, ordinances, and regulations that apply to the conduct of their work. Contractors must also comply with Minimum Federal Safety Standards adopted by the DOT under the Natural Gas Pipeline Safety Act of 1968, as well as Transco safety standards.

Transco has also committed to participate in a FERC third-party compliance monitoring program during the construction phase of the Project. Under this program, Transco would fund a contractor, to be selected and managed by FERC, to provide environmental compliance monitoring services. The FERC Third-party Compliance Monitor would provide daily reports to FERC on compliance issues and make recommendations to the FERC Project Manager on how to address compliance issues and construction changes, should they arise. FERC staff would also conduct periodic inspections.

e. Operation and Maintenance

Transco would operate and maintain the new pipeline and aboveground facilities in accordance with all applicable federal and state requirements, including the minimum federal safety standards identified in Title 49 CFR Part 192.

Maintenance of pipeline facilities would include periodic visual inspections as well as routine pedestrian surveys, as necessary, in accordance with the applicable regulatory requirements and Transco's operations requirements. Leak inspections, integrity management, and cathodic protection maintenance would be conducted in accordance with DOT requirements.

Post-construction monitoring would be conducted to identify erosion or washout areas, damaged or non-functional permanent erosion control devices, and to evaluate restoration of affected wetlands. Any issues identified during post-construction monitoring would be addressed in accordance with applicable federal and state regulations, and Transco's Plan and Procedures. Transco would file quarterly activity reports with FERC documenting problems, including those identified by landowners, and corrective actions taken for at least 2 years following construction.

Maintenance of the permanent pipeline right-of-way would include periodic mowing, as necessary, to allow for visual inspections. Actively cultivated areas would be allowed to revert to preconstruction use for the full width of the right-of-way. In all other upland areas a 50-foot-wide permanent pipeline right-of-way would be maintained in a primarily herbaceous state. In wetlands, a 10-foot corridor centered over the pipeline would be maintained; trees within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline coating would be selectively cut and removed.

Operation and maintenance activities at the new compressor station would include calibration, inspection, and other scheduled or routine maintenance. Operational testing would also be performed on safety equipment to ensure proper functioning.

8. Non-Jurisdictional Facilities

Under section 7 of the NGA, the Commission is required to consider, as part of its decision to approve facilities under Commission jurisdiction, all factors bearing on the public convenience and necessity. Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. These "non-jurisdictional" facilities may be integral to the need for the proposed facilities, such as a power plant at the end of a jurisdictional pipeline, or they may be minor, non-integral components of the facilities under the Commission's jurisdiction.

The non-jurisdictional facilities for the Project would include minor facilities necessary to provide electrical service to Compressor Station 116, the Beasley Road Meter Station, Looper Bridge Road Meter Station, and the Murray Meter Station. Delivering electrical service to these facilities would require new 10-foot-wide powerline rights-of-way of varying lengths for each facility affecting a total of 1.2 acres of land. These powerline facilities would not fall under FERC's jurisdiction. Based on the limited scope of these facilities, we believe that the powerline upgrades and facilities would not have a significant impact on the environment. However, we have included available information on the impacts associated these facilities in our cumulative impacts analysis (see section B.10).

9. Future Plans and Abandonment

Transco has not identified any current or reasonably foreseeable plans for future expansion or abandonment of the Project facilities.

10. Permits and Approvals

Transco would obtain all necessary permits and approvals relating to the construction and operation of the Project. Table A.10-1 lists the applicable permits, approvals, and consultations.

TABLE A.10-1

Permits, Approvals, and Consultations for the Dalton Expansion Project

Agency	Permit / Approval / Consultation	Filing / Consultation Date	Approval Date (Anticipated)
Federal			
U.S. Fish and Wildlife Service, Jackson and Daphne Ecological Services Field Office	Threatened and Endangered Species Consultation – Bats and Terrestrial Species	November 2015	(April 2016)
	Threatened and Endangered Species Consultation – Aquatic Species	November 2015	(April 2016)
	Migratory Bird Consultation	November 2015	(April 2016)
U.S. Army Corps of Engineers, Savannah District	Section 404/10 Individual Permit or Nationwide Permit 12	July 2015	(April 2016)
Georgia			
Department of Natural Resources	Section 401 Water Quality Certification (automatic with Nationwide Permit 12)	July 2015	(April 2016)
	Hydrostatic Test Water Uptake and Discharge Permit	Prior to construction	(Prior to construction)
	Stream Buffer Variance Permit	September 2015	(May 2016)
	NPDES Permit for Stormwater Discharges from Construction Activities	September 2015	February 2016
	Georgia State Implementation Plan (SIP) Air Permit (Compressor Station 116)	October 2014	March 2015
	Georgia SIP Air Permit (Looper Bridge Road Meter Station)	June 2015	July 2015
	Natural Heritage Inventory Listed Species Consultation and Coldwater Fisheries	June 2015	(May 2016)
	Cultural Resources Consultation, State Historic Preservation Office	May 2015	(May 2016)
Department of Transportation	Public road crossing permits	November 2015	(May 2016)
County			
All Counties	Road Crossing Permits	February 2016	(May 2016)
	Building Permits	TBD	(May 2016)

B. ENVIRONMENTAL ANALYSIS

Construction and operation of the Project would have temporary, short-term, long-term, and permanent impacts. As discussed throughout this EA, temporary impacts are defined as occurring only during the construction phase. Short-term impacts are defined as lasting between two and five years. Long-term impacts are defined as lasting five years or more. Permanent impacts are defined as lasting throughout the life of the Project.

1. Geology and Soils

a. Geology

Physiography and Geologic Setting

The Project would originate in the Piedmont Upland Section of the Piedmont Province and cross into the Tennessee Section of the Valley and Ridge Province at about MP 53 of the Dalton Lateral. The Piedmont Uplands Section is characterized by a highly weathered bedrock surface with low relief; bedrock outcrops are generally limited to stream valleys where fluvial processes have removed the highly weathered bedrock and other unconsolidated materials at the surface. The Tennessee Section features folded and faulted stratified sedimentary rocks, similar to the rest of the Valley and Ridge Province; however, the folds are less deeply dissected, resulting in scattered ridges and hills and a broader, more open terrain (Fenneman and Johnson, 1946; Fenneman, 1938; Hunt, 1967). Geologic formations crossed by the Project consist mainly of Precambrian to Paleozoic-age metamorphic bedrock and Cambrian to Ordovician-age sedimentary bedrock (Dicken.et al., 2005). Elevations in the Project area range from about 600 to 1,200 feet above mean sea level. Topography ranges from nearly level to steep, with average slopes ranging from 0 to 60 percent (Natural Resources Conservation Service [NRCS], 2016a, 2016b).

Mineral Resources

Based on a review of U.S. Geological Survey (USGS) topographic maps, recent aerial photography, and available federal databases, no active mining or oil and gas operations are located within 0.25 miles of the Project facilities (USGS, 2005a, 2005b; U.S. Energy Information Administration, 2012).

One active surface limestone quarry, the Vulcan Materials Company (Vulcan) Adairsville Quarry, is about 1,700 feet (0.3 mile) west of MP 78.6 of the Dalton Lateral. In 2013, Vulcan received approval from the Bartow County Zoning Office to expand the quarry to the east, toward the proposed Project area (Bartow County Planning and Zoning Division, 2013). Vulcan received approval to conduct mining operations up to 100 feet west of the existing electric transmission line right-of-way. The proposed pipeline would be collocated on the east side of the existing 175-foot wide electric transmission line right-of-way in this area. Once the Vulcan Adairsville quarry is fully expanded east towards the electric transmission line and the Project area, the pipeline would be located about 275 feet away from the maximum mining extent.

Blasting

Based on an analysis of the NRCS Soil Survey Geographic (SSURGO) database, about 25 percent (28.2 miles) of the proposed pipeline route would cross areas with bedrock at depths of less than 60 inches (NRCS, 2016b). About 1.8 miles of this bedrock is considered lithic (i.e., hard) and may require blasting or other special construction techniques during installation of the proposed pipeline. The remainder (26.4 miles) is considered paralithic (soft) and would not likely require blasting during construction. Transco performed 52 borings at roadway, railroad, foreign line crossings, and other areas along the proposed pipeline route to investigate areas of potential shallow bedrock. Shallow bedrock was not encountered in the majority of the borings; however, rock outcrop and shallow bedrock was identified in several locations along the pipeline route (S&ME, Inc., 2015). These locations are summarized in table B.1.a-1. Blasting for grade or trench excavations would only occur after all other reasonable means of excavation (e.g., rock saws, hydraulic rams, jack hammers) prove to be unsuccessful.

TABLE B.1.a-1

Summary of Shallow Rock Encountered Along the Proposed Route for the Dalton Expansion Project [a]

Boring ID [b]	County	Nearest Major Street Crossing	Nearest Milepost	Depth to Bedrock	Comments
8	Carroll	Old Newman Road	9.0	5 feet	Rock outcrops observed in the area
D	Carroll	Reese Road/South 5 Notch Road	6.7	1 foot	Three borings completed. One encountered bedrock at 1 foot, remaining borings terminated at 10 feet. Rock outcrops observed in the area.
L	Douglas	S. Helton Road	19.4	6 feet	Paralithic (soft) bedrock that may be rippable.
R	Douglas	Poole Road/Ephesus Church Road	25.3	0.5 foot	Two borings completed. Rock encountered at 0.5 and 1 foot. Rock outcrops observed in the area.
T	Douglas	Dobbs Mountain Road	28.5	6 feet	Rock outcrops observed in the area.
20	Douglas	Brewer Road	29.0	0.5 foot	Rock outcrops observed in the area.
Z	Paulding	Amanda Drive	34.8	3 feet	Two borings completed. Rock encountered at 3 and 5 feet. Rock outcrops observed in the area.
AA	Paulding	Cumberland Avenue	35.8	2 feet	Rock outcrops observed in the area.
24	Paulding	Cumberland Avenue	35.4	4 feet	Two borings completed. Rock encountered at 4 feet in one and remaining boring terminated at 10 feet. Rock outcrops observed in the area.
UU	Bartow	Harden Bridge Road	66.3	4 feet	Two borings completed. Rock encountered at 4 feet in one and remaining boring terminated at 10 feet.

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[a] Borings where rock was encountered at 7 feet or less.

[b] Boring ID designated by S&ME, Inc.: Numerical Boring = Foreign Line/Road Crossing, Alphabetical Boring = Shallow Rock Exploration

Geologic Hazards

Geologic hazards are natural, physical conditions that can result in damage to land and structures or injury to people. Such hazards typically include seismicity (e.g., earthquakes, surface faults, and soil liquefaction), landslides, flooding, and karst terrain. Conditions necessary for the development of other geologic hazards, including regional subsidence, avalanches, and volcanism, are not present in the Project area. In general, the potential for geologic hazards to significantly affect construction or operation of the Project facilities is low.

Historically, seismicity in Georgia has been very low. The closest significant earthquake to the Project area was a Modified Mercalli Intensity of VI event felt over about 1,500 square miles along the east face of Rocky Face Mountain on October 8, 1902. Rocky Face Mountain is about 6 miles northwest of MP 109 of the Dalton Lateral. An event with a Modified Mercalli Intensity of VI would result in strong perceived shaking, with light potential for damage (USGS, 2006).

The seismic risk is relatively minor for the southern portion of the Project route, and increases to moderate risk for the portion of the route north of MP 70. Based on USGS seismic hazard mapping, the Project site is located in an area where peak horizontal ground acceleration (PGA), with 10 percent probability of exceedance in 50 years, is 6 percent of gravity or less. At a 10 percent probability, the frequency of exceedance (return time) for a given horizontal ground acceleration is once every 500 years. PGA in the majority of the Project area, with a 2 percent probability of exceedance in 50 years (2,500-year return time), is 18 percent of gravity or less; however, PGA north of MP 70 ranges from 18 to 30 percent of gravity (USGS, 2014). For reference, PGA between 4 and 9 could result in moderate perceived shaking and very light damage, PGA between 9 and 18 could result in strong perceived shaking and light damage, and PGA between 18 and 34 could result in very strong perceived shaking and moderate damage (USGS, 2006). According to the USGS Quaternary Fault and Fold Database, the Project is not located near any known active faults (USGS, 2010).

Soil liquefaction is a phenomenon often associated with seismic activity in which saturated, non-cohesive soils temporarily lose their strength and liquefy (i.e., behave like viscous liquid) when subjected to forces such as intense and prolonged ground shaking. Soil conditions necessary for liquefaction to occur would likely be present in the Project area. The Project crosses several narrow bands of Recent-age alluvium bordering waterbodies where saturated conditions may be present. As discussed above, seismic risk along the pipeline alignment increases north of MP 70, where, PGA with a 2 percent probability of exceedance in 50 years could be as much as 30 percent gravity. However, because these narrow bands of unconsolidated alluvium occur at the low point along the local drainage, the downslope movement of soils and displacement of the pipeline due to liquefaction would be low. Outside of these narrow bands of alluvium, the Project pipeline would be underlain by competent bedrock that is not susceptible to soil liquefaction.

Landslides involve the down slope movement of earth materials under a force of gravity due to natural or man-made causes. According to Radbruch-Hall et al. (1982), the majority of the Project facilities are located in areas considered to have a low to moderate susceptibility and low incident of landslides. However, in Paulding County 18.3 miles of the Dalton Lateral would cross areas considered to have a high susceptibility to and moderate incidence of landslides. An analysis of the county soils data in Paulding County showed that 45 percent of the soils have average slopes greater than 15 percent and would, therefore, have a moderate to high susceptibility to landslides (NRCS, 2016a and 2016b). Transco conducted a desktop evaluation and field surveys along the proposed pipeline route to identify areas of existing or potential landslides (S&ME, Inc., 2014, 2015). No existing landslides were identified during the evaluation; however, eight locations with a high or very high risk of landslides were identified (see table B.1.a-2).

TABLE B.1.a-2

Areas with a High or Very High Risk of Landslides Along the Dalton Lateral

County	Milepost	Percent Slope	Landslide Risk
Carroll	13.9	67 to 100	High
Douglas	22.1	50 to 100	High
Douglas	23.7	57 to 67	High
Paulding	55.3	67 to 100	Very High
Paulding	55.7	50 to 57	High
Paulding	56.0	57	High
Murray	102.1	40 to >100	Very High
Murray	102.8	40 to 67	High

Source: S&ME, Inc., 2015

Karst Terrain

Karst features such as sinkholes, caves, and caverns can form as a result of the long-term action of groundwater on soluble carbonate rocks (e.g., limestone and dolostone). Based on Weary and Doctor (2014), about 51.4 miles of the proposed Dalton Lateral, 2.0 miles of the proposed AGL Spur, and the Murray Meter Station are located in areas considered to have potential karst features.

Transco conducted a desktop review of topographic maps, aerial photography, and LIDAR data to identify potential karst features in the Project area. Based on this review, several areas of concern were identified in Bartow and Murray Counties (S&ME, Inc., 2014). Transco conducted field investigations using the electric resistivity imaging (ERI) method along seven transects in Bartow County and two transects in Murray County. The ERI results along six of the transects identified subsurface features that could be related to karst (S&ME, Inc., 2015). We are recommending below that Transco conduct geotechnical investigations to analyze the extent of these anomalies.

The ERI method was also used to evaluate the feasibility of using the HDD method to cross the Etowah River in Bartow County. The ERI results in this area showed numerous large open cavities and discontinuities that are representative of karst features. In addition, two caves and a sinkhole were observed near the proposed crossing location. Based on these observations, it was determined that using the HDD method is not feasible due to the potential loss of drilling fluid in karst features during construction. Transco has modified their proposed action to use the open-cut crossing method to construct the pipeline across the Etowah River (see section B.2.b).

The potential for karst features is present in the Vulcan Adairsville Quarry area (0.3 mile west of MP 78.6) due to the presence of carbonate bedrock. In addition, because the Project area is within the estimated pumping zone of influence for the Vulcan Adairsville Quarry, the potential for activation/acceleration of karst subsidence due to groundwater pumping is also present. Based on information provided by a Vulcan consultant, the pumping zone of influence extends to a point about 700 to 1000 feet east of the Project centerline and underlies about 1.1 miles of the Project. The preliminary geotechnical evaluation and field surveys conducted between MPs 77.8 and 79.8 did not identify any karst features in the vicinity of the Vulcan Adairsville Quarry.

Paleontology

Transco contacted the GADNR to inquire about potential significant paleontological resources proximate to the Project area. Staff indicated that while the northern portion of the route, crossing through sedimentary bedrock terrain, could contain relatively common fossiliferous remains of benthic marine species, northwestern Georgia and the Project would not impact any known sensitive resources, such as dinosaur trackways or large concentrations of vertebrate animals (Kennedy, 2015). If fossils are encountered during construction, Transco would temporarily cease excavation in the area and notify the GADNR and FERC to ensure that all of the fossils discovered are properly documented.

General Impacts and Mitigation

The overall effect of the Project on topography and geology would be minor. The primary impacts would be limited to construction activities and would include temporary disturbance to slopes within the right-of-way resulting from grading and trenching operations. Transco would minimize impacts by returning contours to preconstruction conditions to the maximum extent practicable. At the aboveground facilities, grading and filling may be required to create a safe and stable land surface to support the facility.

The expansion of the Vulcan Adairsville Quarry to the east will be prohibited within 100 feet of the existing electric transmission line right-of-way. Installation of the proposed pipeline on the east side of the electric transmission line would not represent additional restrictions on the mining operations. The majority of the remaining Project facilities would also be constructed directly adjacent to existing pipeline, electric transmission line, or other utility rights-of-way, which already preclude mining operations. Therefore, construction and operation of the Project would not result in a significant, additional restriction to current or future mining operations in the area.

Transco would implement measures outlined in its *Blasting Plan* to minimize the effects of blasting and ensure safety during blasting operations (see appendix J). In accordance with the blasting plan, an experienced contractor would analyze the rock type, and consider all other contributing factors, including location, surrounding environment, nearby facilities, residences, wells and springs, and/or resources before selecting the suitable rock removal technique. If blasting near other in-service pipelines or other underground utilities, the requirements of the third-party operating company would take precedence over Transco requirements, if the third-party limitations are stricter (e.g., peak-particle velocity limits). Transco would conduct pre- and post-blast water flow performance and water quality testing to all water wells and potable springs within 150 feet of areas were blasting is required. Transco would also inspect all structures within 150 feet of blasting locations before and after blasting. In the event damage occurs to structures or water supply as a result of construction, Transco would compensate owners for damages. All blasting techniques would comply with federal, state/commonwealth, and local regulations governing the safe storage, handling, firing, and disposal of explosive materials. We have reviewed Transco's blasting plan and found it acceptable.

Due to the limited potential for large, seismically induced ground movements in the Project area (USGS, 2014), there is very little risk of earthquake-related impacts on the pipeline and other Project facilities. Pipelines constructed using modern arc-welding techniques have performed well in seismically active areas of the United States, such as California (O'Rourke and Palmer, 1996). Aboveground structures would be designed and built in accordance with all applicable seismic design criteria and building codes.

The Project facilities would be designed and built in accordance with DOT standards (Title 49 CFR Part 192), which would provide adequate protection from washouts, floods, unstable soils, landslides, or other hazards that may cause the pipe to move or sustain abnormal loads. The potential for slope failure and erosion during construction would be minimized by implementing the measures in Transco's Plan, Procedures, and *Erosion and Sediment Control Plan* (ESC Plan). These measures would include the use of erosion control devices (e.g., silt fences, slope and trench breakers) and other best management practices to stabilize soils, such as:

- rerouting around landslide hazard;
- documenting landslide prone areas on construction alignment sheets;
- adjusting temporary workspace to limit soil stockpiling in high risk areas;
- installing pipeline below the slip plane; and
- using alternative backfill materials such as riprap, flowable low strength concrete, or geogrid reinforcement.

Based on the implementation of these measures and compliance with the DOT standards we conclude that the risk of impacts due to geologic hazards on the Project facilities is low.

Karst terrain and the potential for karst features such as sinkholes, and/or surface collapse features can be problematic during Project construction activities. Karst hazards include the potential for ground subsidence or collapse sinkholes; impact to groundwater quality; and sinkhole flooding. Loose rock or overburden soil could obscure possible solution openings in the bedrock surface prior to construction and only become evident during trenching activities. These overburden materials could be subject to differential subsidence at locations where voids have formed in the underlying bedrock resulting in closed-contour depression sinkholes and/or surficial collapse of the soil column at ground surface (collapse sinkholes).

This process could be significant in areas where the water table has been lowered either naturally or through man-induced activities such as groundwater pumping. For example, dewatering activities at the Vulcan Adairsville Quarry have reduced static groundwater depth in the Project area. However, as discussed above, no karst features were identified in proximity to the Vulcan Adairsville Quarry.

Impacts on groundwater quality could occur where sinkholes or karst features are present at or near ground surface. Karst systems have a very low self-purification or filtering capability which makes karst groundwater highly susceptible to impact from erosion of surface materials and/or spills. Erosion of excavated materials at ground surface into karst openings could impact local groundwater supplies such as springs and wells which would be manifested as increased turbidity and bacterial load. Inadvertent spills from equipment refueling and/or leaks could impact groundwater quality through rapid transport of contaminants discharging at springs and surface water bodies.

Transco has developed a draft *Karst Mitigation Plan* (see appendix K) which identifies measures for avoiding or minimizing impacts on karst features during construction and operation. Construction measures include:

- retaining a professional geotechnical engineer to evaluate suspected karst features and provide recommended mitigation measures;
- geophysical investigations (such as ERI testing) to evaluate potential subsurface features;
- rerouting the pipeline around identified karst features;
- if an unexpected karst cavity is exposed, plugging the cavity using cement grout, low-strength concrete, controlled density fill, or a graded aggregate filter; and
- installing additional erosion control measures to prevent drainage toward karst features.

Operational mitigation measures include:

- conducting surveys of the pipeline right-of-way during operation to identify potential ground subsidence;
- retaining a professional geotechnical engineer to evaluate suspected karst features and provide recommended mitigation measures; and
- stabilize karst features by plugging the cavity or installing additional erosion control measures as discussed above.

To ensure that suspected karst features are properly investigated and that the mitigation of karst features is addressed during construction, **we recommend that:**

- **<u>Prior to construction</u>, Transco should file with the Secretary of the Commission (Secretary), for review and approval by the Director of the Office of Energy Projects (OEP), a revised Karst Mitigation Plan that includes a comprehensive karst report providing a complete discussion of the desktop reviews and field surveys that were conducted to identify potential karst features along the route. The report should:**

  a. provide the results of geotechnical borings to determine the nature and extent of the anomalies detected during the ERI investigations;

  b. provide site-specific mitigation measures for any karst features identified (e.g., route adjustment); and

  c. provide an analysis to determine the pipeline's intrinsic ability to span subsidence features and provide documentation showing where these data can be found.

Based on Transco's proposed mitigation measures and our recommendation, we conclude that the Project would not have significant impacts on geological resources or be susceptible to significant geologic hazards.

b. Soils

Existing Soil Resources

Soil information for the Project area was obtained from the NRCS SSURGO database (NRCS, 2016b). The SSURGO database is a digital version of the original county soil surveys developed by the NRCS for use with geographic information systems. It provides the most detailed level of soils information for natural resource planning and management. Additional information about soils was obtained from Official Soil Series Descriptions (NRCS, 2016a). Soils within the Project area consist mainly of shallow to very deep, very poorly to excessively drained soils formed in alluvium and marine deposits.

General Impacts and Mitigation

Construction activities such as clearing, grading, trench excavation, backfilling, and the movement of construction equipment along the right-of-way may affect soil resources. Clearing removes protective vegetative cover and exposes the soil to the effects of wind and rain, which increases the potential for soil erosion and sedimentation of sensitive areas. Grading, spoil storage, and equipment traffic can compact soil, reducing porosity and increasing runoff potential. Construction activities can also affect soil fertility and revegetation potential, and facilitate the dispersal and establishment of weeds. In addition, contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely affect soils.

The soils in the Project area were evaluated to identify prime farmland and major soil characteristics that could affect construction or increase the potential for adverse construction-related soil impacts. The soil characteristics evaluated include erosion potential, the potential for compaction, and revegetation concerns. Table B.1.b-1 summarizes the amount of prime farmland and the significant soil characteristics in the Project area.

Prime Farmland

The U.S. Department of Agriculture defines prime farmland as "land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, and oilseed crops" (Soil Survey Division Staff, 1993). This designation includes cultivated land, pasture, woodland, or other lands that are either used for food or fiber crops. Areas that are not currently used for agriculture can be designated as prime farmland if they are available for these uses in the future. Urbanized land and open water are excluded from prime farmland. Prime farmland typically contains few or no rocks, is permeable to water and air, is not excessively erodible or saturated with water for long periods, and is not subject to frequent, prolonged flooding during the growing season. Soils that do not meet the above criteria may be considered prime farmland if the limiting factor is mitigated (e.g., artificial drainage). About 15 percent (261.6 acres) of the soils in the Project area are considered prime farmland.

TABLE B.1.b-1

Summary of Soil Characteristics in the Dalton Expansion Project Area

Facility	Total Acres [a]	Prime Farmland [b]	Highly Erodible		Compaction Prone [e]	Shallow Bedrock [f]		Rocky Soils [g]	Revegetation Concerns [h]
			Water [c]	Wind [d]		Lithic	Paralithic		
Pipeline Facilities									
Dalton Lateral	1,433.6	200.4	821.8	12.5	92.7	21.6	323.0	686.8	968.3
AGL Spur	21.4	2.8	15.3	0.0	0.9	0.0	10.4	14.8	14.9
Aboveground Facilities									
Compressor Station 116	65.7	1.8	50.4	3.1	0.3	0.0	12.5	43.6	60.8
Beasley Road Meter Station	2.9	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Looper Bridge Road Meter Station	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Murray Meter Station	1.7	0.0	1.7	0.0	0.0	0.0	1.7	1.7	1.7
Mainline Valves	1.1	<0.1	0.7	0.1	0.1	<0.1	0.4	0.5	0.7
Ancillary facilities									
Staging/Contractor Yards	89.7	36.6	4.2	0.0	3.9	0.0	0.0	64.2	20.2
Cathodic Protection Beds	1.6	0.3	0.3	0.0	0.0	0.0	0.3	1.0	0.5
Access Roads [i]	90.5	14.8	48.9	2.2	2.1	2.3	24.3	55.7	57.0
Project Total	**1,710.1**	**261.6**	**943.3**	**17.9**	**100.0**	**23.9**	**372.6**	**868.2**	**1,124.2**

Sources: NRCS, 2016b

[a] Values within rows do not add up to the totals listed for each facility due to the fact that soils may occur in more than one characteristic class or may not occur in any class listed in the table.

[b] As designated by the NRCS. Includes soils that considered prime if a limiting factor is mitigated (e.g., artificial drainage).

[c] Includes land in capability subclasses IVe through VIIe and soils with an average slope greater than 8 percent.

[d] Includes soils in wind erodibility groups 1 and 2.

[e] Includes soils in somewhat poor, poor, and very poor drainage classes with surface textures of sandy clay loam or finer.

[f] Paralithic refers to “soft” bedrock that will not likely require blasting during construction. Lithic refers to “hard” bedrock that could require blasting or other special construction techniques during installation of the proposed pipeline.

[g] Soils with one or more horizons that have a cobbley, stony, bouldery, channery, flaggy, very gravelly, or extremely gravelly modifier to the textural class and/or contain greater than 5 percent by weight rocks larger than 3 inches.

[h] Includes coarse-textured soils (sandy loams and coarser) that are moderately well to excessively drained and soils with an average slope greater than 8 percent.

[i] One new access road (DALT-A_AR-MU-065) would be constructed for operation of the Murray Meter Station. The remaining roads used for construction and/or operation of the Project are existing roads.

During construction, topsoil and subsoil would be disturbed during grading and trenching activities and the movement of heavy equipment. The potential mixing of topsoil with the subsoil from these activities could result in a loss of soil fertility. To prevent mixing of the soil horizons, topsoil segregation would be performed in residential areas, non-saturated wetlands, croplands, managed pastures and hayfields, and in areas requested by the landowner. In upland areas, Transco would strip topsoil from either the full work area or from the trench and subsoil storage area. In non-saturated wetlands, topsoil would only be segregated within the trench line. The topsoil would be segregated and replaced in the proper order during backfilling and final grading. Implementation of proper topsoil segregation would help to ensure post-construction revegetation success, thereby minimizing loss of crop productivity and the potential for long-term erosion problems.

About 6.7 acres of prime farmland soils would be permanently converted to industrial uses for the operation of Compressor Station 116, the Beasley Road Meter Station, the Looper the Bridge Meter Station, and the MLVs. With the exception of about 0.4 acres of land at the Beasley Meter Station, 3.1 acres of land for the Beasley Meter Station access road, and 0.2 acre of land for MLVs, none of these prime farmland soils are actively cultivated. Transco would compensate landowners for the loss of land that is permanently removed from agricultural production. The pipeline easement through prime farmland would be available for use as cropland following construction, if the landowner chooses.

Erosion

Erosion is a continuing natural process that can be accelerated by human disturbance. Factors such as soil texture, structure, slope, vegetative cover, rainfall intensity, and wind intensity can influence the degree of erosion. Soils most susceptible to erosion by water are typified by bare or sparse vegetative cover, non-cohesive soil particles with low infiltration rates, and moderate to steep slopes. Wind-induced erosion often occurs on dry soil where vegetative cover is sparse and strong winds are prevalent. About 55 percent (943.3 acres) of the soils that would be affected by construction are considered highly water erodible. About 1 percent (17.9 acres) of the soils are highly susceptible to wind erosion.

To minimize or avoid potential impacts due to soil erosion and sedimentation, Transco would utilize the erosion and sedimentation controls outlined in its Plan, Procedures, and ESC Plan. Revegetation of the right-of-way would begin immediately following construction. Temporary erosion controls, including slope breakers and sediment barriers (e.g., hay bales and silt fences), would be installed following initial ground disturbance to control runoff and prevent sediment transport off the construction right-of-way. Temporary erosion controls would be maintained until the Project area is successfully revegetated. Permanent erosion controls would be installed, as necessary, to ensure the successful restoration of the Project area.

Compaction Potential

Soil compaction modifies the structure and reduces the porosity and moisture-holding capacity of soils. Construction equipment traveling over wet soils could disrupt the soil structure, reduce pore space, increase runoff potential, and cause rutting. The degree of compaction depends on the moisture content and soils texture. Fine-textured soils with poor internal drainage that are moist during construction are the most susceptible to compaction. About 6 percent (100.0 acres) of the soils that would be affected by the Project are considered prone to compaction.

Transco would minimize compaction and rutting impacts during construction in soft or saturated soils by using measures outlined in its Plan and Procedures, including the use of low-ground-weight equipment and/or by temporary installation of equipment mats. The topsoil and subsoil would be tested for compaction in all agricultural and residential areas disturbed by construction. Severely compacted agricultural areas would be mitigated through the use of deep tillage operations during restoration activities using a paraplow or similar implement. In areas where topsoil segregation occurs, plowing with a paraplow or other deep tillage implement to alleviate subsoil compaction would be conducted before replacement of the topsoil. Soil compaction mitigation would also be performed in severely compacted residential areas.

Shallow Bedrock and Rocky Soils

About 23 percent (396.5 acres) of the Project facilities that would cross areas with bedrock at depths of less than 60 inches. About 51 percent (868.2 acres) of Project facilities would cross areas with rocky soil profiles. Construction through soils with shallow bedrock and rocky soils could result in the incorporation of rock fragments into surface soils. Introducing rocks to the surface soil horizon could reduce soil moisture-holding capacity, resulting in a reduction of soil productivity. Additionally, some agricultural equipment could be damaged by contact with large rocks. Rocks at the surface and in the surface soil horizon could be encountered during grading, trenching, and backfilling.

The introduction of subsoil rocks into agricultural topsoil would be minimized by segregating topsoil from trench spoil and replacing topsoil during cleanup and restoration. Transco would remove excess rock from at least the top 12 inches of soils in cultivated and rotated croplands, hayfields, pastures, and residential areas, as well as other areas at the landowner’s request. Following restoration, the size, density, and distribution of rock on the construction right-of-way would be similar to adjacent non-right-of-way areas. In addition, rock excavated from the trench may be used as backfill only to the top of the existing bedrock profile. Rock that is not returned to the trench would be considered construction debris and removed from all work areas, unless approved by the landowner for another construction use (e.g., mulch, riprap).

Revegetation

Successful restoration and revegetation are important for maintaining soil productivity and protecting the underlying soil from potential damage, such as erosion. The revegetation potential of soils crossed by the Project was evaluated based on the soil surface texture, drainage class, and slope class. Soils that have a coarse surface texture and are moderately well to excessively drained may prove to be difficult to revegetate because drier soils have less water to aid in seed germination and the eventual establishment of new vegetation. The coarser-textured soils also have a lower water holding capacity following precipitation, which could result in moisture deficiencies in the root zone and create unfavorable conditions for many plants. Steep slopes (greater than 8 percent) may make establishment of vegetation more difficult. The clearing and grading of soils with poor revegetation potential could result in a lack of adequate vegetation following construction and restoration of the right-of-way, which could lead to increased erosion, a reduction in wildlife habitat, and adverse visual impacts. About 66 percent (1,124.2 acres) of the soils that would be affected by the Project may be difficult to revegetate during restoration.

Transco would apply soil amendments, as necessary, to create a favorable environment for the re-establishment of vegetation. Transco would seed disturbed areas in accordance with the seed mixes, rates, and dates outlined in the Georgia Soil and Water Conservation

Commission's *Manual for Erosion and Sediment Control in Georgia, Sixth Edition*. Transco would conduct post-construction monitoring, at least 2 years in uplands and 3 years in wetlands, to ensure successful revegetation (see section B.3.a). See section A.7.d for additional discussion regarding environmental compliance inspection and monitoring procedures.

Soil Contamination

No historic landfills or contaminated sites were identified within the Project area. Contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely impact soils. However, the impacts of such contamination are typically minor because of the low frequency and volumes of spills and leaks. Measures outlined in Transco's SPCC Plan would be implemented to reduce potential impacts on soils from spills of the hazardous materials used during construction. These measures include regularly inspecting equipment to ensure it is in good working order, properly training employees regarding the handling of fuels and other hazardous materials, and promptly reporting any spills to the appropriate agencies.

Implementation of the measures outlined in Transco's Plan, Procedures, and ESC Plan would minimize soil impacts and ensure effective revegetation of disturbed areas. Further, Transco would implement its SPCC Plan to reduce the potential impacts on soils from spills of hazardous materials used during construction and manage contaminated soils should they be encountered. Given the impact minimization and mitigation measures described above, we conclude that soils would not be significantly affected by construction and operation of the Project.

2. Water Resources

a. Groundwater Resources

The Project would cross the Piedmont and Blue Ridge, and the Valley and Ridge Aquifer Systems. The Piedmont and Blue Ridge aquifers are crystalline-rock aquifers consisting of bedrock overlain by unconsolidated material. The porosity and permeability of the unweathered and unfractured bedrock are extremely low (USGS, 2015a). Wells within the Piedmont and Blue Ridge aquifers yield an average of 15 to 20 gallons per minute; however, large-diameter municipal wells will yield an average of up to 30 gallons per minute. The Valley and Ridge physiographic province consists of a series of parallel valleys separated by steep to well-rounded ridges. The valleys are underlain by easily eroded permeable rock formations, and the ridges by more resistant rocks. Wells drilled within the Valley and Ridge aquifers are more variable with average yields of 5 to 50 gallons of water per minute. Water from both of these aquifer systems has been characterized as generally satisfactory for municipal supplies and other purposes (USGS, 2015b). Additionally, the aquifers crossed by the Project would typically be found at depths deeper than the trench excavation. Groundwater within the Project area is generally located at depths of 15 feet or greater (USGS, 2009). Furthermore, groundwater directly underlying the Project area as well as existing water supply wells are not currently managed or protected by any federal or state programs.

Public and Private Water Supply Wells

Based on field surveys and a review of the USGS National Water Information System, no public water supply wells were identified within 150 feet of the Project facilities (USGS, 2015c). However, as identified in table B.2.a-1, field surveys, communications with landowners, and agency correspondence identified 23 private water supply wells within 150 feet of the Project area.

TABLE B.2.a-1

Water Supply Wells Within 150 Feet of the Dalton Expansion Project Facilities

Milepost	County	Type	Distance from Workspace (feet) [a]
0.4	Coweta	Private	143
3	Coweta	Private	33
3.9	Coweta	Private	Within construction workspace
5.2	Coweta	Private	10
24.5	Douglas	Private	57
26.4	Douglas	Private	Within construction workspace
31.1	Paulding	Private	39
31.2	Paulding	Private	108
31.2	Paulding	Private	78
34.2	Paulding	Private	138
36.1	Paulding	Private	134
36.3	Paulding	Private	43
41.7	Paulding	Private	64
42.3	Paulding	Private	22
42.3	Paulding	Private	Within construction workspace
43.2	Paulding	Private	119
52.1	Paulding	Private	148
56.9	Bartow	Private	31
61.1	Bartow	Private	140
73.6	Bartow	Private	27
101.4	Murray	Private	102
104.4	Murray	Private	34
108.9	Murray	Private	Within permanent right-of-way

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[a] Distance measured from the center point of the well to the edge of the nearest Project workspace.

Impacts and Mitigation

Pipeline construction could intersect underlying groundwater; however, construction activities would only affect shallow groundwater that is generally not used. Groundwater could also be affected by changes in overland water flow and recharge due to Project-related activities. In general, construction of the Project could temporarily impact groundwater quality, flow, and recharge.

To avoid and minimize impacts on groundwater, Transco would implement construction techniques and other measures as contained in its Plan and Procedures. These measures include:

- installing temporary and permanent trench plugs to prevent subsurface drainage along the pipeline;
- discharging trench water to well-vegetated upland areas to allow the water to infiltrate back into the ground, thereby minimizing any long-term impacts on the water table;
- restoring the ground surface as closely as practicable to original contours and revegetating the right-of-way to ensure restoration of preconstruction overland flow and recharge patterns; and
- conducting compaction testing in residential and agricultural areas and mitigate severely compacted soils through the use of deep tillage operations to increase the water infiltration and groundwater recharge (see section B.1.b).

Transco would conduct pre- and post-blast water flow performance and water quality testing to all water wells and potable springs within 150 feet of areas were blasting is required. In areas where blasting is not required, Transco would offer to provide landowners similar pre- and post-construction well testing.

Contamination from inadvertent releases of fuels, lubricants, and coolant from construction equipment could adversely affect groundwater resources. However, the impacts of such contamination are typically minor because of the low frequency and volumes of releases. Measures outlined in Transco's SPCC Plan would be implemented to reduce potential impacts from inadvertent releases of fluids used during construction. These measures include maintaining adequate supplies of spill cleanup materials, storing hazardous materials, chemicals, lubricating oils, and fuels in upland areas at least 100 feet from a wetland or waterbody, providing secondary containment for stored hazardous materials, and promptly reporting any spills to the appropriate agencies.

Because the majority of construction would involve shallow, temporary, and localized excavation, and implementation of Transco's Procedures and SPCC Plans would minimize the potential for impacts on water resources, we conclude that pipeline construction activities are not likely to result in significant impacts on groundwater resources.

b. Surface Water Resources

The Project facilities would be located within the Middle Chattahoochee-Lake Harding, Etowah, Oostanaula, Coosawattee, and Conasauga Watersheds. None of these watersheds are identified as public watershed areas (U.S. Environmental Protection Agency [EPA], 2015c) and no potable water intakes are located within 3 miles downstream of the proposed waterbody crossings.

State waters in Georgia are classified by designated use (i.e., as drinking water supplies, recreation, fishing, propagation of fish, shellfish, game, and other aquatic life, wild river, scenic river and coastal fishing). All of the waterbodies in the Project area have a designated use for fish and wildlife. In addition, the Chattahoochee River is designated for recreation, and the Coosawattee River and Raccoon Creek are designated for drinking water.

Constructing the Project would affect 377 waterbodies, including 155 perennial streams, 86 intermittent streams, and 136 ephemeral streams. The Project pipeline would cross 311 waterbodies, including 9 major crossings (greater than 100 feet wide), 91 intermediate crossings (between 10 and 100 feet wide), and 211 minor crossings (less than 10 feet wide). The remaining 66 waterbodies are located along an access road or contained within Project workspace but not physically crossed by the pipeline.

The milepost location, feature ID, waterbody name, state water quality classification, fisheries classification, FERC classification, flow regime, approximate crossing width, and proposed method of crossing for all 377 affected waterbodies are provided in appendix G.

The Project facilities would not affect any National Wild or Scenic Rivers (National Wild and Scenic Rivers, 2015). However, three waterbodies (i.e., the Conasauga River, Etowah River, Sweetwater Creek) that would be crossed by the Project pipeline are listed on the National Rivers Inventory (National Park Service, 2009).

The Conasauga, Coosawattee, and Etowah Rivers and Crane Eater, Holly, Euharlee, and Raccoon Creeks are listed by the GADNR as High Priority Waterbodies. High priority waters were selected by the GADNR to protect important populations of high priority species and also to protect or restore representative aquatic systems throughout the state (GADNR, 2015a).

Section 303(d) of the Clean Water Act requires that each state review, establish, and revise water quality standards for the surface waters within the state. States develop monitoring and mitigation programs to ensure that water standards are attained as designated. Waters that fail to meet their designated beneficial use(s) are considered impaired and are listed under a state's 303(d) list of impaired waters. Polecat Creek is the only 303(d) listed impaired water that would be crossed by the Project (GADNR, 2014b). Polecat Creek is crossed by the Project in Gordon and Murray Counties a total of five times and is listed due to the presence of fecal coliform bacteria resulting from non-point source pollution.

Impacts and Mitigation

Construction activities such as clearing and grading of adjacent land, in-stream trenching, trench dewatering, and backfilling would affect surface water. The activities could temporarily increase erosion, sedimentation, and turbidity rates; decrease dissolved oxygen concentrations; result in the loss and modification of aquatic habitat; and increase the potential for the introduction of foreign substances.

The degree of impact on a particular waterbody would vary depending on the site-specific characteristics (i.e. precipitation events, sediment loads, stream area/velocity, channel integrity, and bed material) of the affected waterbody. For example, turbidity and sedimentation resulting from instream and adjacent construction activities may vary measurably depending on soils types and erosion/deposition patterns. The highest levels of turbidity and sedimentation would result from the use of the wet open-cut crossing method. Transco proposes to use this method across four waterbodies including Wahoo Creek, Snake Creek, Wolf Creek, and the Etowah River. The specific amounts of turbidity and sedimentation would depend on the depth and width of the stream, flow rate, and soil composition.

The FWS expressed concern about potential impacts on the Etowah River. The Etowah River is a headwater tributary of the Coosa River system that originates in Lumpkin County, Georgia and extends to its confluence with the Coosa River in Floyd County, Georgia. The river provides significant aquatic habitat and recreational opportunities.

As previously discussed, Transco collected geotechnical data to determine if the Etowah River could be crossed using an HDD. Transco concluded that an HDD would be infeasible. We reviewed the data and concur with the determination. Transco filed a site-specific open-cut crossing plan.[6] As outlined in Transco supplemental information and based on a geotechnical investigation, blasting would likely be required prior to trench excavation. To minimize impacts from blasting, Transco would consolidate the number of blasting events, limit the number of charges to a minimum, bury the charges to a depth that would either minimize upward blast pressures or direct the blast pressure into the air, establish a delay between detonations to minimize instantaneous pressures and rely on downstream turbidity curtains to isolate the blast area from the rest of the stream.

Transco would then build an equipment bridge to span the waterbody either immediately upstream or downstream of the crossing location. The bridge would be constructed by building "islands" within the river using clean riprap; the spaces between the island(s) and the river banks would be spanned using either rail car sections or additional riprap and culverts while maintaining downstream river flow. An excavator would work within the river, over the trenchline, to excavate the trench and load the excavated materials onto dump trucks located along the equipment bridge. At certain depths within the river, the excavator would work off of a pad constructed of rip-rap (or material excavated from the streambed if suitable) overlain by a metal rail car frame covered with construction mats placed over the trench line. Turbidity curtains would be installed to isolate the construction area and reduce sediment flow outside of the work area. The excavated material would be stored in an upland workspace. Once the trench is excavated, a prefabricated length of pipe would be lowered into the trench, the pipe would then be backfilled using the material excavated from the trench. If required, imported clean pea gravel would be used to pad the pipe.

Once backfilling is complete, the equipment bridge, any other construction materials, and finally the turbidity curtains would be removed from the river. These construction activities would occur over an 8- to 12-week period. Transco evaluated the potential turbidity levels that would occur during construction in the Etowah River. Their analysis determined that the levels would fall within historical turbidity levels. Transco is currently coordinating with the GADNR's Environmental Protection Division (EPD) for review of an *Etowah River Turbidity Control and Monitoring Plan* that provides the approach and measures to be implemented to control and monitor turbidity during construction in the Etowah River. The monitoring plan will

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[6] Transco' site-specific crossing plan for the Etowah River can be viewed on the FERC Internet website at http://www.ferc.gov as part of Transco's September 30, 2015 response to FERC's September 1, 2015 data request. Using the "eLibrary" link, select "Advanced Search" from the eLibrary menu and enter 20150930-5093 in the "Accession Number" field. The figures are also available for public inspection at the FERC's Public Reference Room in Washington, DC (call (202) 502-8317 for instructions).

provide a real-time measurement of actual turbidity levels in the Etowah during construction. The plan also includes measures to suspend Project work if turbidity levels exceed the limits agreed upon with the EPD.

We requested that Transco characterize the impact footprint, in addition to characterizing the turbidity levels. Specifically, we requested that Transco provide quantitative modeling results of the turbidity and sedimentation associated with trenching across the Etowah River. In addition, we requested a description as well as a graphical depiction of the duration, extent, and magnitude of elevated turbidity levels and sedimentation. To date, Transco has only provided an estimate for turbidity concentrations. To ensure that potential spatial and temporal impacts on the Etowah River are disclosed and the proposed mitigation measures are fully evaluated, **we recommend that**:

- **<u>Prior to any construction within the Etowah River</u>, Transco file with the Secretary, for review and approval by the Director of OEP, quantitative modeling results of the turbidity and sedimentation associated with construction across the Etowah River. The modeling should consider blasting activities; trench excavation and backfilling; and the installation and removal of the riprap, equipment bridges, and turbidity curtains. The results of the analysis should illustrate the duration, extent, and magnitude of elevated turbidity levels and sedimentation. In addition, Transco should provide the final Etowah River Turbidity Control and Monitoring Plan.**

Less sediment would be generated where dry crossing methods (e.g., flume or dam and pump) are employed. At the 291 crossings where the flume or dam and pump methods would be used, temporary construction-related impacts would be limited primarily to short periods of increased turbidity before installation of the pipeline, during the installation of the upstream and downstream dams, and following installation of the pipeline when the dams are pulled and flow across the restored work area is re-established.

Impacts on the 16 waterbodies crossed by the HDD method would be avoided unless an inadvertent release of drilling mud (also referred to as a frac-out) occurs into the waterbody. Table B.2.b-1 summarizes the waterbodies that would be crossed by the HDD method; additional information for each waterbody crossing is provided in appendix G. Although drilling mud consists of nontoxic materials, if drilling mud were to be released into a waterbody in large quantities, it could affect fisheries or other aquatic organisms. Because the staging areas for the HDDs would be set back from the banks of the waterbodies, the potential for an inadvertent release to occur in the water would be minimized. To further minimize potential impacts of inadvertent releases of drilling fluids, Transco would implement the measures identified in its *Horizontal Directional Drill Contingency Plan* (HDD Plan; see appendix H). These measures include:

- visually inspecting the drill path for evidence of a release;
- monitoring of the drilling mud pressures and return flows;

- storing containment equipment on-site including portable pumps, hand tools, hay bales, and silt fencing; and

- notifying the GADNR, FERC, and the U.S. Army Corps of Engineers (COE) if a release occurs.

TABLE B.2.b-1

Waterbodies Crossed by Horizontal Direction Drills Along the Dalton Expansion Project

HDD Name	Begin Milepost	End Milepost	Waterbodies Crossed
Chattahoochee River	6.2	6.6	Chattahoochee River, UNT to Chattahoochee River
Interstate 20	25.9	26.3	3 UNTs to Keaton Creek
Highway 120	37.0	37.4	UNT to Little Pumpkinvine Creek
Coosawattee River	90.1	90.6	Coosawattee River, Crane Eater Creek
Holly Creek	102.6	103.2	Holly Creek (3 crossings)
Conasauga River East	107.2	107.5	Conasauga River, 1 UNT to Conasauga River
Conasauga River West	108.2	108.7	Conasauga River, 2 UNTs to Conasauga River

Note: UNT = unnamed tributary

Long-term impacts associated with pipeline operations and maintenance would be relatively minor and limited to periodic clearing of the vegetation within the permanent right-of-way at waterbody crossings. To allow for riparian areas to revegetate, clearing within 25 feet of waterbodies would be limited to a 10-foot-wide corridor over the pipeline being maintained in a herbaceous state and trees within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline coating being be selectively cut and removed.

Transco would minimize impacts on waterbodies by implementing measures outlined in its Plan and Procedures. These measures would include:

- completing in-stream work between June 1 and November 30 unless expressly permitted or required by appropriate agencies to cross the streams during another time frame;

- locating ATWS that are in undisturbed lands at least 50 feet back from waterbody boundaries unless a reduced setback is requested with sufficient justification on a site-specific basis;

- requiring temporary erosion and sediment control measures to be installed across the construction right-of-way as necessary to prevent the flow of spoil or heavily silt-laden water into any waterbody;

- maintaining adequate flow rates throughout construction to protect aquatic life and prevent the interruption of existing downstream uses;

- designing and maintaining equipment bridges to prevent soil from entering the waterbody;

- restricting spoil placement near surface waters to the construction right-of-way at least 10 feet from the water's edge or in other approved ATWS away from the water's edge; and

- mitigating the degree of sedimentation and turbidity by limiting the duration of in-stream construction activities (typically 24 to 48 hours) with the exception of crossings with approved site-specific plans (e.g., the Etowah River).

As discussed in section A.7, Transco's Procedures includes modifications to the FERC Procedures, a majority of which provide either a certain level of clarification (e.g., a definition of water's edge) or address Georgia's more stringent requirements and provide equal or greater environmental protection. These modifications are outlined at the beginning of Transco's Procedures (see appendix E). However, we do not agree that all the modifications would provide equal or greater environmental protection. Section IV.A.1.d of Transco's Procedures includes the requirement that all equipment be parked or refueled at least 100 feet from a wetland or waterbody boundary; however, Transco adds an exception for dry stream crossings using the dam and pump crossing method. We believe our Procedures adequately address this issue in section IV.A.1.d by allowing the EI to allow refueling within this buffer area when no reasonable alternative is available and additional protections (e.g., secondary containment) are implemented; therefore, we do not approve this modification. **We recommend that:**

- **Prior to construction, Transco should file with the Secretary, for review and written approval by the Director OEP, an updated version of its Procedures that complies entirely with section IV.A.1.d of the FERC Procedures.**

Transco is also requesting site-specific exceptions to section V.B.2.a of the FERC Procedures related to locating ATWS within 50 feet of waterbodies. Locations where these alternative measures are being proposed, Transco's site-specific justifications, and our decision whether Transco provided sufficient justification for the proposed workspace, are provided in appendix L. Based on our review, we conclude that the majority of Transco's requests are justified. However, we conclude that Transco should either provide additional justification for the remaining locations or modify these workspace areas to avoid and/or minimize impacts on wetlands and waterbodies. Therefore, **we recommend that:**

- **Prior to construction, Transco should file with the Secretary further site-specific justification for or modify its proposed workspace related to waterbodies without sufficient justification outlined in appendix L and file updated alignment sheets for review and written approval by the Director of OEP.**

In addition to the measure outlined in its Plan and Procedures, Transco would implement best management practices as required to obtain coverage under GADNR's Permits for Stormwater Discharges from Construction Activities and Stream Buffer Variance.

Transco proposes to avoid direct impacts on one of the waterbodies listed on the National Rivers Inventory (Conasauga River) by using the HDD method. Transco would cross Sweetwater Creek using a dry-ditch crossing method, in accordance with its Procedures, and is currently coordinating additional appropriate impact minimization construction measures with the FWS and GADNR. As discussed above, Transco would cross the Etowah River using a wet a wet open-cut crossing method. Based on Transco's proposed construction techniques and the implementation of minimization and mitigation measures, we conclude that construction and operation of the Project would not adversely affect the natural, cultural, and recreational values of these waterbodies.

Transco proposes to avoid direct impacts on four of the high priority waterbodies (Conasauga River, Coosawattee River, Crane Eater Creek, and Holly Creek) by using the HDD method. Transco would cross Raccoon Creek and Euharlee Creek using a dry crossing method.

Based on Transco's proposed construction techniques and the implementation of minimization and mitigation measures, we conclude that construction and operation of the Project would not significantly impact any surface water resources.

Water Use for HDDs and Hydrostatic Testing

Under DOT regulations (49 CFR Part 192), Transco is required to verify the integrity of the piping associated with the Project facilities before placing them into service by conducting hydrostatic testing. This testing would involve filling the pipeline with water, pressurizing it, and then checking for pressure losses due to pipeline leakage. Table B.2.b-2 summarizes the quantity and sources of water that would be required for the hydrostatic testing of the Project facilities. Additionally, the drilling fluid used during the HDD operations would also require large volumes of water. Table B.2.b-3 summarizes the volumes of water that would be required for the HDD operations. Each HDD segment would be tested before it is installed and again as part of the larger pipeline segments.

Transco would be required to obtain authorization from the GADNR prior to any water withdrawals in Georgia. Transco would implement the measures outlined in its Procedures to minimize impacts on waterbodies during withdrawals including:

- screening the intake hose to minimize the potential entrainment of fish;
- maintaining adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users; and
- locating the test manifolds outside wetlands and riparian areas to the maximum extent possible.

Following the completion of hydrostatic testing of the pipeline facilities, test water would be discharged into adjacent well-vegetated upland areas in a manner and at a rate that would minimize the potential of erosion and sedimentation. This water would infiltrate the soil and recharge the local groundwater system. Transco would be required to obtain authorization under the. Transco would utilize dissipation devices during discharge activities and no discharges would be made directly into waterbodies. Transco would comply with all the conditions included in the General Permit for Storm Water Discharges that would be obtained from the GADNR.

TABLE B.2.b-2

Hydrostatic Test Water Source Locations for the Dalton Expansion Project a

Facility/Water Source	Withdrawal Location (milepost)	Approximate Volume (gallons)
Dalton Lateral		
Chattahoochee River	8.2	7,452,970
Etowah River	65.6	4,364,700
AGL Spur		
Etowah River [a]	2.0	102,350
Compressor Station 115 Tie-In		
Municipal Source	NA	15,000
Compressor Station 116		
Chattahoochee River	NA	90,000
Beasley Road Meter Station		
Municipal Source	NA	10,000
AGL Lateral Spur Tie-In		
Municipal Source	NA	5,000
Looper Bridge Road Meter Station		
Municipal Source	NA	10,000
Project Total		**12,050,020**

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[a] A commercial/municipal source may be obtained at MP 2.0 of the AGL Spur or alternatively water may be obtained through the interconnect at MP 105.2.

Note: NA = Not applicable

TABLE B.2.b-3

Water Required for Horizontal Direction Drills Along the Dalton Expansion Project

			Drilling Mud Water		Hydrostatic Testing	
HDD Name	Begin Milepost	End Milepost	Source	Volume (gallons)	Source	Volume (gallons)
Chattahoochee River	6.2	6.6	Chattahoochee River	2,500,000	Chattahoochee River	76,000
Interstate 20	25.9	26.3	Municipal Source	2,000,000	Municipal Source	50,500
Highway 120	37.0	37.4	Municipal Source	450,000	Municipal Source	44,000
Joe Frank Harris Parkway/ US 41	75.5	75.8	Municipal Source	1,000,000	Municipal Source	27,500
Interstate 75	77.9	78.1	Municipal Source	150,000	Municipal Source	56,500
Coosawattee River	90.1	90.6	Coosawattee River	450,000	Coosawattee River	39,500
Holly Creek	102.6	103.2	Municipal Source	450,000	Municipal Source	44,000
Conasauga River East	107.2	107.5	Conasauga River	450,000	Conasauga River	21,000
Conasauga River West	108.2	108.7	Conasauga River	450,000	Conasauga River	35,000
Project Total				**7,900,000**		**394,000**

Because the facilities to be tested would consist of new pipe free of chemicals or lubricants and none of the hydrostatic test water would be chemically treated, we conclude that the test water discharges would not result in significant impacts on waterbodies in the Project area. In addition, we conclude that implementation of the measures in Transco's Procedures would minimize impacts associated with water withdrawals.

c. Wetland Resources

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of wetland vegetation adapted for life in saturated soil conditions.

Existing Wetland Resources

The Project would cross 114 wetlands including 41 palustrine forested, 14 palustrine scrub-shrub, and 59 palustrine emergent wetlands. The pipeline would directly cross 67 wetlands, and 47 wetlands would be located within the pipeline workspace. No wetlands would be affected by the proposed access roads or aboveground facilities. Wetlands affected by the Project including the milepost location, feature ID, wetland type, proposed crossing method, and approximate crossing length are provided in appendix M.

Forested wetlands are characterized by woody vegetation that is about 20 feet tall or taller and normally include an understory of young trees or shrubs, and an herbaceous layer. Woody vegetation associated with the forested wetlands in the Project area includes: red maple (*Acer rubrum*), American sycamore (*Platanus occidentalis*), green ash (*Fraxinus pennsylvanica*), and water oak (*Quercus nigra*) dominated this forest type. Other tree species identified during data collection include common persimmon (*Diospyros virginiana*), sweetgum (*Liquidambar styraciflua*), sweetbay (*Magnolia virginiana*), water tupelo (*Nyssa aquatica*), black gum (*Nyssa sylvatica*), willow oak (*Quercus phellos*), black willow (*Salix nigra*), and red elm (*Ulmus rubra*).

Scrub-shrub wetlands are generally dominated by woody vegetation less than about 20 feet tall. Dominant vegetation in the scrub-shrub wetlands in the Project area includes: silky dogwood (*Cornus amomum*), tag alder (*Alnus serrulata*), common buttonbush (*Cephalanthus occidentalis*), Chinese privet (*Ligustrum sinense*), common blackberry (*Rubus argutus*), common rush (*Juncus effusus*), rice cut grass (*Leersia oryzoides*), bearded sedge (*Carex comosa*), shallow sedge (*Carex lurida*), and devil's beggartick (*Bidens frondosa*).

Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes not including mosses and lichens. Dominant vegetation in the emergent wetlands in the Project area includes: swamp smartweed (*Persicaria hydropiperoides*), woolgrass (*Scirpus cyperinus*), redtop grass (*Agrostis gigantea*), bearded sedge, shallow sedge, needle spikerush (*Eleocharis acicularis*), common rush, cattail (*Typha latifolia*), devil's beggartick, jewelweed (*Impatiens capensis*), stilt grass, green arrow arum (*Peltandra virginica*), and arrowleaf tearthumb (*Persicaria sagittata*).

Impacts and Mitigation

Table B.2.c-1 summarizes the construction and operation impacts on wetlands in the Project area. As shown in this table, construction would impact about 20.9 acres of wetlands, including 10.8 acres of forested wetlands, 5.0 acres of scrub-shrub wetlands, and 5.1 acres of emergent wetlands.

TABLE B.2.c-1

Summary of Wetlands Affected by Construction and Operation of the Dalton Expansion Project [a,b]

	Emergent		Scrub-Shrub		Forested	
Facility/County	Construction (acres)	Operation (acres)	Construction (acres)	Operation (acres)	Construction (acres)	Operation (acres)
Dalton Lateral						
Coweta	<0.1	0.0	0.0	0.0	0.2	0.2
Carroll	0.2	0.0	0.0	0.0	0.3	0.2
Douglas	0.4	0.0	2.3	1.3	4.3	3.0
Paulding	1.5	0.0	1.2	1.1	1.6	1.2
Bartow	1.4	0.0	0.0	0.0	0.8	0.5
Gordon	1.2	0.0	0.6	0.3	2.2	1.0
Murray	0.4	0.0	0.9	0.6	1.3	0.9
AGL Spur						
Murray	<0.1	0.0	0.0	0.0	0.0	0.0
Project Total	**5.1**	**0.0**	**5.0**	**3.3**	**10.8**	**7.0**

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[a] Operation impacts associated with the pipeline facilities are based on a 10-foot-wide corridor being maintained in an herbaceous state and selective tree cutting within 10 feet of either side of the herbaceous corridor (30-foot-wide corridor). Therefore, there would be no operational impacts on emergent wetlands; impacts on scrub-shrub wetlands would be limited to the 10-foot-wide corridor; and forested wetland impacts are based on the 30-foot-wide corridor.

[b] No wetlands would be affected by the construction or operation of aboveground facilities.

During operation of the Project, a 10-foot-wide corridor centered on the pipeline would be maintained in an herbaceous state and trees within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline coating would be selectively cut and removed. These actions would permanently convert about 7.0 acres of forested wetland and 3.3 acres of scrub-shrub wetland to emergent wetland areas. No wetlands would be affected by the operation of the aboveground facilities.

Transco would minimize impacts on wetlands by implementing measures contained in its Procedures. These measures include reducing workspace in wetlands (75-foot-wide right-of-way) and segregating up to 12 inches of topsoil from the trench line in unsaturated wetlands.

Transco’s Procedures require that wetland elevations be restored and that wetlands not be converted to uplands. Construction of the Project would, however, temporarily and permanently affect wetlands. Specifically; wetland vegetation, hydrology, and soils characteristics would be affected. These effects would be most prominent during and immediately following construction. In emergent wetlands, impacts would be relatively short-term since herbaceous vegetation would regenerate quickly. In scrub-shrub wetlands, impacts would be greater due to the longer time required for woody vegetation to regenerate. In forested wetlands, impacts would be long-term as forested wetland vegetation would likely take decades to regenerate to its preconstruction condition.

Following construction, Transco would monitor the restoration/revegetation of affected wetlands annually for 3 years. Revegetation would be considered successful when:

- the affected wetland satisfies the current federal definition for a wetland (i.e., soils, hydrology, and vegetation);
- 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;
- 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
- invasive species and noxious weeds are absent, unless they are abundant in adjacent areas that were not disturbed by construction.

If revegetation is not successful after 3 years, a remedial revegetation plan would be developed and implemented in consultation with a professional wetland ecologist.

Construction would increase the potential for sedimentation and soil mixing. This in turn could alter biological activities and chemical conditions within the wetland soils and could affect the reestablishment of wetland vegetation. To minimize this, Transco would temporarily install mats or timber riprap where necessary to create a stable surface for equipment, or use other methods such as low-ground-weight equipment to minimize soils mixing and disturbance.

The temporary stockpiling of soil and use of equipment in wetlands could compact wetland soils, which could alter the natural hydrologic patterns and inhibit revegetation. Trenching could penetrate impervious soil layers and drain perched water tables resulting in drier soil conditions that could impact the reestablishment of wetland vegetation. Clearing of wetland vegetation could also temporarily affect the wetland's capacity to buffer flood flows and/or control erosion. To minimize these impacts, Transco would install trench plugs at the edges of wetlands to prevent subsurface drainage along the pipeline and install erosion controls.

Transco is requesting site-specific exceptions to section VI.B.1.a of the FERC Procedures related to locating ATWS within 50 feet of wetlands and section VI.A.3, which requires that the construction workspace in wetlands be limited to 75 feet wide. Locations where these alternative measures are being proposed, Transco's site-specific justifications, and our decision whether Transco provided sufficient justification for the proposed workspace, are provided in appendix L. Based on our review, we conclude that the majority of Transco's requests are justified. However, we conclude that Transco should either provide additional justification for the remaining locations or modify these workspace areas to avoid and/or minimize impacts on wetlands. Therefore, **we recommend that:**

- **Prior to construction, Transco should file with the Secretary further site-specific justification for or modify its proposed workspace related to wetlands without sufficient justification outlined in appendix L and file updated alignment sheets for review and written approval by the Director of OEP.**

Inadvertent releases of fluids used during construction, such as fuels, lubricants, and solvents, could contaminate wetland soils and vegetation. To minimize this impact, Transco would implement measures outlined in its Procedures and SPCC Plan. These measures include:

- storing hazardous materials, chemicals, lubricating oils, and fuels in upland areas at least 100 feet from wetland boundaries;
- preventing the parking and/or refueling of vehicles within 100 feet of wetland boundaries, unless approved by an EI and provided that additional precautions such as continual monitoring of fuel transfer, secondary containment structures, and utilization of spill kit readiness are employed; and
- performing concrete coating activities at least 100 feet from wetland boundaries, unless the location is an existing industrial site designated for such use.

To mitigate unavoidable impacts on wetlands, Transco is developing a compensatory mitigation plan, as part of the COE permitting process. As discussed above, the Project would result in the conversion of 10.3 acres of forested and scrub-shrub wetlands. Based on the mitigation ratios identified through discussion with the COE, Transco is proposing to purchase 23.8 acres of wetland mitigation credits from in-watershed mitigation banks. Because this process is ongoing, **we recommend that:**

- **Prior to construction, Transco should file with the Secretary a copy of its final wetland mitigation plan and documentation of COE approval of the plan.**

Based on the implementation of mitigation measures outlined in Transco's Plan and Procedures, which would minimize impacts on wetlands and help ensure the successful restoration of wetlands, and its commitment to mitigate for wetland impacts, we conclude that construction and operation of the Project would not significantly impact wetlands.

3. Vegetation, Fisheries, and Wildlife

a. Vegetation

Vegetation in the Project area was identified based on field surveys and a review of aerial photography. The general vegetation types that would be affected by the Project are described in table B.3.a-1.

TABLE B.3.a-1

Vegetation Types in the Dalton Expansion Project Area

Vegetation Type	General Description	Common Species
Natural Forest (Upland)	Deciduous, Evergreen, and Mixed Forest	white oak (*Quercus alba),* water oak (*Quercus nigra*), pignut hickory (*Carya glabra*), mockernut hickory (*Carya tomentosa*), sweetgum (*Liquidambar styraciflua*), American beech (*Fagus grandifolia*), tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), red elm (*Ulmus rubra*), chestnut (*Castanea spp.*), basswood (*Tilia spp.*), walnut (*Juglans spp.*), eastern hemlock (*Tsuga canadensis*), American holly (*Ilex opaca*), mountain laurel (*Kalmia latifolia*), Chinese privet (*Ligustrum sinense*), red mulberry (*Morus rubra*), sawtooth blackberry (*Rubus argutus*), American witchhazel (*Hamamelis virginiana*)
Agricultural	Cultivated Crops, Hay Fields, and Pasture	peanut (*Arachis hypogaea*), soybean (*Glycine max*), corn (*Zea mays*), sorghum (*Sorghum bicolor*), cotton (*Gossypium spp.*), onion (*Allium cepa*), bermudagrass (*Cynodon dactylon*), tall fescue (*Festuca arundinacea*), red fescue (Festuca rubra), Queen Anne's lace (*Daucus carota*), annual ragweed (*Ambrosia artemisiifolia*), wingstem (*Verbesina alternifolia*), broomsedge (*Andropogon virginicus*), Canada goldenrod (*Solidago canadensis*), dogfennel (*Eupatorium capillifolium*), Chinese lespedeza (*Lespedeza cuneata*)
Open Land	Existing Rights-of-Way, and Fallow Land	nodding fescue (*Festuca subverticillata*), red fescue, dallisgrass (*Paspalum dilatatum*), little bluestem (*Schizachyrium scoparium*), white goldenrod (*Solidago bicolor*), Canada goldenrod, deertongue (*Dichanthelium clandestinum*), dogfennel, Chinese lespedeza
Managed Forest	Planted Pine	loblolly pine (*Pinus taeda*), longleaf pine (*Pinus palustris*), shortleaf pine (*Pinus echinata*), slash pine (*Pinus elliottii*)
Wetland	Forested, Scrub-Shrub, Emergent Wetland	red maple, American sycamore (*Platanus occidentalis*), green ash (*Fraxinus pennsylvanica*), water oak, smooth alder (*Alnus serrulata*), common persimmon (*Diospyros virginiana*), sweetgum, sweetbay (*Magnolia virginiana*), water tupelo (*Nyssa aquatica*), blackgum (*Nyssa sylvatica*), willow oak (*Quercus phellos*), black willow (*Salix nigra*), red elm, loblolly pine, silky dogwood (*Cornus amomum*), common buttonbush (*Cephalanthus occidentalis*), Chinese privet, common blackberry (*Rubus allegheniensis*), poison ivy (*Toxicodendron radicans*), roundleaf greenbrier (*Smilax rotundifolia*), trumpet creeper (*Campsis radicans*), Virginia creeper (*Parthenocissus quinquefolia*), sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmunda cinnamomea*), lizard's tail (*Saururus cernuus*), giant cane (*Arundinaria gigantea*), Japanese stiltgrass (*Microstegium vimineum*), common rush (*Juncus effusus*), rice cutgrass (*Leersia oryzoides*), swamp smartweed (*Persicaria hydropiperoides*), woolgrass (*Scirpus cyperinus*), redtop (*Agrostis gigantea*), longhair sedge (*Carex comosa*), shallow sedge (*Carex lurida*), needle spikerush (*Eleocharis acicularis*), broadleaf cattail (*Typha latifolia*), devil's beggartick (*Bidens frondosa*), jewelweed (*Impatiens capensis*), green arrow arum (*Peltandra virginica*), white arrow arum (*Persicaria sagittata*)
Developed Land	Mowed Lawns and Landscape Plantings	deciduous, coniferous, and evergreen trees; ornamental trees and shrubs; and maintained grasses

Natural upland forest is the primary vegetation type that would be crossed by the Project and accounts for about 37 percent of affected lands. The remainder of the Project area consists of open land (28 percent), agricultural land (21 percent), managed forest (9 percent), developed land (4 percent), and wetland (1 percent).

Impacts and Mitigation

Construction and operation of the Project facilities would result in temporary and permanent impacts on vegetation. As described in section A.4.a, segments of the Project would be collocated with existing utility rights-of-way where vegetation has been previously disturbed and is regularly maintained. Table B.3.a-2 summarizes the acreage of each vegetation type that would be affected by the Project.

TABLE B.3.a-2

Vegetation Types Affected by the Dalton Expansion Project

Vegetation Cover Type	Construction Impacts (acres)	Operation Impacts (acres)
Forest	640.8	314.1
Agriculture	367.6	142.1
Open Land	486.5	188.7
Managed Forest	155.0	75.0
Wetland	20.9	13.4 [a]
Developed Lands	29.3	5.1
Project Total	**1,700.2**	**738.5**

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[a] Operation impacts in wetlands are based on a 50-foot-wide permanent easement. Permanent impacts associated with Transco's proposed maintenance activities are provided in table B.2.c-1.

Construction activities would include the cutting, clearing, and removal of vegetation to provide a safe working area for personnel and equipment. These activities would result in the temporary loss of vegetation and in some areas (primarily forested lands) the permanent conversion of one vegetation type to another. The loss and permanent conversion of vegetation could result in increased soil erosion, changes to surface water flow and infiltration, increase the potential for the introduction and establishment of noxious weeds, and reduce the amount of available wildlife habitat. The severity of these impacts would depend on the type and amount of vegetation affected, the rate at which the vegetation would regenerate after construction, and the frequency of vegetation maintenance conducted during operation. Forested lands within the permanent maintenance easement would also be permanently converted to open lands. Operation of the aboveground facilities would result in the permanent loss of vegetation and the conversion of existing vegetation to developed vegetation or unvegetated surface.

Transco would implement measures outlined in its Plan and Procedures to avoid and minimize impacts on vegetation during construction and aid in the restoration of disturbed areas. These measures would include:

- restricting construction activities to approved work areas;
- installing temporary erosion controls (e.g., silt fence) immediately after initial disturbance and properly maintaining them until permanent erosion controls are installed or restoration is complete; and
- reseeding temporary work areas and conducting post-construction monitoring, at least 2 years in uplands and 3 years in wetlands, to ensure successful revegetation.

On June 20, 2014, President Obama signed a Presidential Memorandum, "Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators." According to the memorandum, "there has been a significant loss of pollinators, including honey bees, native bees, birds, bats, and butterflies from the environment." The memorandum also states that "given the breadth, severity, and persistence of pollinator losses, it is critical to expand Federal efforts and take new steps to reverse pollinator losses and help restore populations to healthy levels." In response to the President's memorandum, the federal Pollinator Health Task Force published a National Strategy to Promote the Health of Honey Bees and Other Pollinators in

May 2015. This strategy established a process to increase and improve pollinator habitat. Constructing the proposed Project would temporarily impact about pollinator habitat (vegetation). The temporary loss of this habitat would increase the rates of stress, injury, and mortality experienced by honey bees and other pollinators. Following construction, Transco would seed disturbed areas in accordance with the seed mixes, rates, and dates outlined in the Georgia Soil and Water Conservation Commission's *Manual for Erosion and Sediment Control in Georgia, Sixth Edition*. However, to ensure the impacts on pollinator habitat are sufficiently minimized and consistent with the President's memorandum and subsequent strategy regarding pollinators, **we recommend that:**

- **Prior to construction, Transco should file with the Secretary a plan describing the feasibility of incorporating plant seeds that support pollinators into the seed mixes used for restoration of construction workspaces. These plans should also describe Transco's consultations with the relevant federal and/or state regulatory agencies.**

Several exotic and invasive plant species were identified during field surveys of the Project area, including mimosa, annual ragweed, common Beggar's tick, Queen Anne's lace, wild carrot, tall fescue, Chinese lespedeza, Chinese privet, Japanese honeysuckle, Japanese stiltgrass, kudzu, multiflora rose, johnsongrass, and white clover. To minimize the spread of exotic and invasive plant species following construction, Transco would implement measures outlined in its *Noxious and Invasive Weed Control Plan*[7] including:

- ensuring vehicles and equipment arrive at the work site clean and free of soil and debris;
- treating identified invasive species populations with appropriate methods (e.g., mechanical removal, herbicide applications);
- cleaning vehicles and equipment with compressed air to remove soil and propagules prior to leaving areas with known invasive species populations; and
- post-construction monitoring, and treatment as necessary, of areas with identified invasive species populations to ensure that the invasive species have not spread to new areas.

Based on Transco's proposed construction techniques and the implementation of impact minimization measures, we conclude that construction and operation of the Project would not significantly impact vegetation.

b. Fisheries

As discussed in section B.2.b, a total of 377 waterbodies would be crossed by the Project, including 322 warmwater fisheries and 55 coldwater fisheries. Of these, 222 waterbodies (59 percent) are classified as intermittent or ephemeral and typically provide limited or marginal

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[7] Transco's *Noxious and Invasive Weed Control Plan* can be viewed on the FERC Internet website at http://www.ferc.gov as part of Transco's September 30, 2015 supplemental filing (appendix II.K). Using the "eLibrary" link, select "Advanced Search" from the eLibrary menu and enter 20150930-5242 in the "Accession Number" field. The figures are also available for public inspection at the FERC's Public Reference Room in Washington, DC (call (202) 502-8317 for instructions).

fish habitat. The remaining waterbodies are classified as either perennial or open water and provide suitable fish habitat. Fish commonly found in these waterbodies include crappie, darters, catfish, trout, bass, shiners, and minnows. No commercial fisheries are located in the vicinity of the Project.

Fisheries of Special Concern

In the Project area, Fisheries of Special Concern are located within waterbodies designated as coldwater fisheries and waterbodies that could provide habitat for protected species. Federally and state-listed threatened and endangered species are discussed in section B.4. Table B.3.b-1 lists the coldwater fisheries in the Project area.

TABLE B.3.b-1

Coldwater Fisheries in the Dalton Expansion Project Area

Milepost(s)	Waterbodies
34.4, 34.4, 34.4, 34.9R	Shed Creek
34.5, 34.5, 35.0, 35.4	UNTs to Shed Creek
36.0, 37.5	Little Pumpkinvine Creek
36.2, 36.6, 36.6, 36.9, 37.3, 38.1	UNTs to Little Pumpkinvine Creek
38.3	Pumpkinvine Creek
38.3, 38.6, 39.1, 39.1	UNTs Pumpkinvine Creek
42.6R, 43.0, 43.4R, 43.5	UNTs to Little Raccoon Creek
46.1R,46.2R, 47.3R, 47.5R, 47.6R, 47.7R, 47.8R, 47.9R, 48.1R, 48.3R, 48.5R, 48.6R, 48.7R, 49.1R, 49.2R, 49.5R	UNTs to Raccoon Creek
68.0, 68.1, 68.5, 68.9	UNTs to Two Run Creek
68.8	Two Run Creek
69.4, 69.8R, 70.0R	Shanty Branch
72.2	UNT to Big Branch
73.1	Big Branch

The Conasauga, Coosawattee, and Etowah Rivers and Crane Eater, Holly, Euharlee, and Raccoon Creeks are listed by the GADNR as High Priority Waterbodies. High priority waters were selected by the GADNR to protect important populations of high priority species and also to protect or restore representative aquatic systems throughout the state (GADNR, 2015a).

Impacts and Mitigation

Construction of the Project would temporarily affect fisheries. In-stream construction and removal of vegetation would displace fish to similar adjacent habitats up- or downstream of the pipeline crossing. These activities would also temporarily increase turbidity levels and downstream sedimentation, affecting fisheries. Additionally, the clearing of aquatic habitat and the modification of stream banks could affect fisheries and other aquatic species by reducing shade and cover. Fisheries could also be affected by the inadvertent release of construction fluids (fuels, lubricants or drilling mud) and the entrainment of fish larvae from project-related water withdrawals. All of these effects on fisheries could increase the rates of stress, injury, and mortality experienced by fish. However, due to the limited construction workspace and duration, we would anticipate minimal temporary and localized impacts on fishery resources.

Transco would implement measures outlined in its Procedures to minimize impacts on waterbodies and thus fisheries. These measures would include:

- maintaining reduced workspace areas near waterbodies;
- implementing buffers to prevent run-off from entering waterbodies; and
- installing erosion control devices.

Potential impacts on fisheries resulting from inadvertent equipment fluid releases would be avoided and minimized by the implementation of measures outlined in Transco's SPCC Plan.

Hydrostatic testing could result in the entrainment of fish larvae and temporarily reduced water flow causing stress to fish species. To minimize these, Transco would implement the measures outlined in its Procedures and comply with all applicable federal and state permits. Transco would install a fish exclusion device, such as screen mesh, on intake hoses to prevent the entrainment of fish.

Forty-one of the coldwater fisheries would be crossed using a dry crossing method and one would be crossed using the HDD method. The remaining coldwater fisheries would be located within the construction workspace but would not be crossed by the pipeline. Transco would cross four of the high priority waterbodies (Conasauga River, Coosawattee River, Crane Eater Creek, and Holly Creek) using the HDD method. With the exception of an inadvertent release of drilling mud, the use of the HDD method would avoid impacts on fisheries, fish habitat, and other aquatic resources. Transco's HDD Plan would minimize potential impacts on fish resulting from any inadvertent release of drilling mud (see appendix H). Transco would cross Raccoon Creek and Euharlee Creek using a dry crossing method. Transco would cross the Etowah River using a wet open-cut crossing method, which would increase levels of sedimentation and impact fisheries. Transco filed a site-specific crossing plan describing how an open-cut crossing would be implemented at this river (see section B.2.b). In addition, Transco evaluated the potential turbidity levels that would occur during construction in the Etowah River. Their analysis determined that the levels would fall within historical turbidity levels. To ensure that potential impacts on the Etowah River are disclosed and the proposed mitigation measures are fully evaluated, we are recommending in section B.2.b that Transco provide quantitative modeling results of the turbidity and sedimentation associated with construction across the river.

Impacts on fisheries would be temporary and localized. Upstream and downstream areas adjacent to the Project waterbody crossing sites would provide similar and ample habitats for any fishery resources that would be temporarily displaced during construction. The Project would not permanently alter the character of the majority of available aquatic habitats. Based on the proposed construction methods, implementation of the proposed avoidance and minimization measures and Project plans discussed above, and the limited duration of construction and potential fishery impacts, we conclude that construction and operation of the Project would not significantly impact fisheries.

c. Wildlife

Existing Wildlife Resources

The Project would cross several habitat types including open land, upland forest, developed land, and wetland/open water. State and federally listed threatened and endangered species are addressed in section B.4. Common wildlife species occurring or potentially occurring in the Project area are listed in table B.3.c-1.

TABLE B.3.c-1

Common Wildlife Species Potentially Occurring Within the Dalton Expansion Project Area

Common Name	Scientific Name	Common Name	Scientific Name
Amphibians			
Black-bellied salamander	*Desmognathus quadramaculatus*	Patch-nose salamander	*Urspelerpes brucei*
Dwarf salamander	*Eurycea quadridigitata*	Pigeon Mountain salamander	*Plethodon petraeus*
Eastern hellbender	*Cryptobranchus alleganiensis*	Northern red salamander	*Pseudotriton ruber ruber*
Fowler’s toad	*Anaxyrus fowleri*		
Reptiles			
Common snapping turtle	*Chelydra serpentina*	Brown snake	*Storeria dekayi*
Box turtle	*Terrapene carolina*	Garter snake	*Thamnophis sirtalis*
Mimic glass lizard	*Ophisaurus mimicus*	Eastern ribbon snake	*Thamnophis sauritus*
River cooter	*Pseudemys concinna*	Black rat snake	*Elaphe obsoleta obsoleta*
Southern hognose snake	*Heterodon simus*	Copperhead	*Agkistrodon contortrix*
Spotted turtle	*Clemmys guttata*	Cottonmouth	*Agkistrodon piscivorus*
Birds			
Bachman’s sparrow	*Aimophila aestivalis*	Pileated woodpecker	*Dryocopus pileatus*
Bald eagle	*Haliaeetus leucocephalus*	Red-tailed hawk	*Buteo jamaicensis*
Bobwhite quail	*Colinus virginianus*	Ruffed grouse	*Bonasa umbellus*
Cerulean warbler	*Setophaga cerulea*	Tufted titmouse	*Baeolophus bicolor*
American Crow	*Corvus brachyrhynchos*	Turkey vulture	*Cathartes aura*
Mourning Dove	*Zenaida macroura*	Wild turkey	*Meleagris gallopav*
Henslow’s sparrow	*Ammodramus henslowii*	Wood duck	*Aix sponsa*
Common Raven	*Corvus corax*	American Woodcock	*Scolopax minor*
Red-bellied woodpecker	*Melanerpes carolinus*		
Mammals			
Beaver	*Castor canadensis*	Gray squirrel	*Sciurus carolinensis*
Black bear	*Ursus americanus*	Mink	*Neovison vison*
Eastern Chipmunk	*Tamias striatus*	Raccoon	*Procyon lotor*
Eastern Coyote	*Canis latrans*	Red fox	*Vulpes vulpes*
White-tailed Deer	*Odocoileus virginianus*	Eastern spotted skunk	*Spilogale putorius*
Eastern cottontail	*Sylvilagus floridanus*	Swamp rabbit	*Sylvilagus aquaticus*
Fox squirrel	*Sciurus niger*	Woodchuck	*Marmota monax*
Gray fox	*Urocyon cinereoargenteus*		

Source: GADNR, 2014a

Open land is composed of grasslands, agriculture land, pasture, and existing utility right-of-ways. Open land is characterized by herbaceous and shrub vegetation cover, which generally provides valuable foraging and shelter habitat for a variety of wildlife species.

Upland forested land in the Project area includes deciduous, evergreen, mixed deciduous/evergreen, and managed pine forests. This vegetation provides shelter and hunting ground for various birds and larger mammals. Additionally, organic material on the forest floor provides food and shelter for various invertebrates, reptiles, small mammals, and amphibians.

Developed land in the Project area is primarily low density residential areas composed of single-family housing units. These disturbed lands are generally characterized by maintained landscapes and provide little natural habitat but may support wildlife species that are adapted to human disturbance.

Wetlands within the Project area include wetland hardwood forests, scrub-shrub wetlands, and emergent wetlands. Wetlands support a diverse ecosystem that provides nutrients, vegetative cover, shelter, and water for a large variety of terrestrial and aquatic wildlife species. Open water in the project area includes major lakes, ponds, or rivers, which provide habitat for aquatic and semi-aquatic wildlife.

Protected and Sensitive Areas

The Project would cross the Paulding Forest Wildlife Management Area (WMA), which is located within the Raccoon Creek Watershed, between MPs 37.8 and 41.0 and result in about 51.5 acres of temporary disturbance and 27.6 acres of new permanent right-of-way. The majority of route in this area would parallel an existing transmission line right-of-way. The Project would also cross the Coosawattee WMA between MPs 99.6 and 100.3 and result in about 8.3 acres of temporary disturbance and 4.0 acres of new permanent right-of-way.

Impacts and Mitigation

Construction and operation of the Project would result in temporary, long-term, and permanent impacts on wildlife habitat and would increase the rates of displacement, stress, and injury to some mobile individual wildlife species. Construction activities could also result in direct mortality of some small, less mobile mammals, reptiles, and amphibians that are unable to leave the work areas. Transco would implement several measures to avoid and minimize impacts on wildlife during construction. These measures include prohibiting workers from feeding wildlife and adhering to speed limits and safe driving practices.

Clearing of forest vegetation would result in long-term impacts on available wildlife habitat. Areas within the permanent right-of-way and aboveground facility sites would be permanently converted from forested to open habitats for the operational life of the Project, and cleared areas within temporary work areas would take many years to revert to preconstruction conditions. Transco has designed the Project to parallel existing rights-of-way when possible and minimize the amount of workspace needed for safe pipeline construction, particularly in forested areas. Although the Project could contribute to forest fragmentation, much of the woodland in the Project area already exhibits edge effects, as it has previously been fragmented by agricultural land, managed timber operations, and other developments.

Impacts on protected and sensitive areas would be very similar to those described above. To further minimize impacts on these areas, Transco would implement required restrictions, mitigation measures, and restoration measures agreed upon as part of easement negotiation and acquisition process with the WMAs that would be crossed by the Project.

Although some wildlife would be affected by the Project, most of the impacts on wildlife would be short-term and limited predominantly to the construction period. The Project would not permanently alter the character of the majority of available habitats. Areas adjacent to the Project site provide similar and ample habitats for any wildlife that would be temporarily or permanently displaced during construction or operation of the Project facilities. Therefore, based on the implementation of the proposed avoidance and minimization measures and the fact that the majority of the disturbed areas would be restored and allowed to revert back to previous conditions following construction, we conclude that construction and operation of the Project would not have a significant impact on wildlife or its habitat.

Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA), originally passed in 1918. The MBTA states that it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg of any such bird, unless authorized under a permit issued by the Secretary of the Interior. Take is defined in the regulations as “pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect” (50 CFR 10) (FWS, 2015). The MBTA also protects resident, non-migratory bird species in the United States and its territories. The FWS delisted the bald eagle in 2007; however, bald and golden eagles are additionally protected under the Bald and Golden Eagle Protection Act (Title 16 U.S. Code 668-668d).

Executive Order (EO) 13186 was issued, in part, to ensure that environmental analyses of federal actions assess the impacts on migratory birds. It also states that emphasis should be placed on species of concern, priority habitats, and key risk factors and it prohibits the take of any migratory bird without authorization from the FWS. On March 30, 2011, the FWS and the Commission entered into a Memorandum of Understanding (MOU) that focuses on avoiding or minimizing adverse impacts on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the Commission and the FWS by identifying areas of cooperation. This voluntary MOU does not waive legal requirements under any other statutes and does not authorize the take of migratory birds.

A variety of migratory birds and birds of conservation concern use or could use the habitats affected by the Project. These birds use these habitats for resting (stopover), sheltering, foraging, breeding, and/or nesting. Birds of Conservation Concern are a subset of protected birds under the MBTA and include all species, subspecies, and populations of migratory nongame birds that are likely to become candidates for listing under the Endangered Species Act of 1973 (ESA) without additional conservation actions (FWS, 2008). The Project would be located within the Appalachian Mountains and Piedmont Bird Conservation Regions. Birds of conservation concern potentially occurring within these regions are summarized in table B.3.c-2.

TABLE B.3.c-2

Birds of Conservation Concern in the Appalachian Mountains and Piedmont Regions

Common Name	Scientific Name	Common Name	Scientific Name
Bachman's sparrow	*Peucaea aestivalis*	Northern saw-whet owl	*Aegolius acadicus*
Bald eagle	*Haliaeetus leucocephalus*	Peregrine falcon	*Falco peregrinus*
Bewick’s Wren	*Thryomanes bewickii bewickii*	Prairie warbler	*Setophaga discolor*
Black-capped Chickadee	*Poecile atricapillus*	Red crossbill	*Loxia curvirostra*
Black rail	*Laterallus jamaicensis*	Red-headed woodpecker	*Melanerpes erythrocephalus*
Blue-winged warbler	*Vermivora cyanoptera*	Rusty blackbird	*Euphagus carolinus*
Brown-headed nuthatch	*Sitta pusilla*	Swainson's warbler	*Limnothlypis swainsonii*
Canada warbler	*Cardellina canadensis*	Sedge wren	*Cistothorus platensis*
Cerulean warbler	*Setophaga cerulea*	Short-eared owl	*Asio flammeus*
Golden-winged warbler	*Vermivora chrysoptera*	Whip-poor-will	*Caprimulgus vociferus*
Henslow’s sparrow	*Ammodramus henslowii*	Wood thrush	*Hylocichla mustelina*
Kentucky warbler	*Geothlypis formosa*	Worm-eating warbler	*Helmitheros vermivorous*
Loggerhead shrike	*Lanius ludovicianus*	Upland sandpiper	*Bartramia longicauda*
Louisiana waterthrush	*Parkesia motacilla*	Yellow-bellied sapsucker	*Sphyrapicus varius*
Olive-sided flycatcher	*Contopus cooperi*		

Source: FWS, 2008

As described previously, the most significant change to any habitat type would be the permanent conversion of forested areas to herbaceous cover within the permanent right-of-way. Scrub-shrub cover, herbaceous cover, and open water habitat types would also be temporarily affected by construction activities. Migratory birds may utilize all of these habitat types in the Project area for foraging and nesting habitat.

Additionally, the temporary and permanent loss of wildlife habitat and the general disruption created by the use of construction equipment could result in the displacement of migratory birds and their avoidance of affected lands. Displacement and avoidance could impact bird migration, nesting, foraging, and mating behaviors. Behavior changes combined with the loss of habitat could increase the rates of mortality, injury, and stress experienced by migratory birds.

The majority of the Project would be collocated with existing utility rights-of-way, located on open land, or abutting fragmented hardwood or managed forests. Collocation or construction in previously disturbed areas would minimize the effects of forest fragmentation and forest edge effect caused by construction of the pipeline. Some birds prefer to nest away from the forest edge in non-fragmented forest tracts to help reduce nest predation and nest parasitism (Gates and Gysel, 1978; Hoover and Brittingham, 1998).

Based on Transco’s use of existing rights-of-ways, proposed construction procedures, the limited amount of habitat affected, the presence of similar habitat types within the vicinity of the

Project area, Transco's implementation of avoidance and minimization measures, we have determined that construction and operation of the Project could not result in population-level impacts or significant measureable negative impacts on birds of conservation concern or other migratory birds.

4. Threatened, Endangered, and Special Status Species

In consultation with the FWS and the GADNR, federally-listed threatened and endangered species, and species protected at the state level were identified. The species that occur or could potentially occur in the Project area are identified in appendix N.

a. Federally Listed Species

The Commission is required by section 7 of the ESA to ensure that the construction and operation of any certificated project would not jeopardize the continued existence of a federally listed threatened or endangered species or result in the destruction or adverse modification of the designated critical habitat of a federally listed species.

Throughout the pre-filing environmental review and our formal review of the Project, we have consulted with the FWS' Georgia Ecological Services Field Office. In addition, Transco, acting as the Commission's non-federal representative has also consulted with the FWS. As a result of these consultations, 18 federally listed threatened and endangered species and two candidate species were identified (see appendix N) as occurring or potentially occurring in the Project area. At the request of the FWS to ensure that these species are adequately protected and to improve the efficiency of subsequent consultation and mitigation efforts, we requested on February 26, 2016, in compliance with section 7 of the ESA the initiation of formal consultation with the FWS. In response to our request, the FWS informed us that information provided to it by Transco and in-part contained in Transco's application and supplements would satisfy the requirement to provide a biological assessment. This information is also summarized in the following analysis. Subsequent to our request to initiate formal consultation and upon further review, we revised our initial determination, changing the no effects on Etowah darter and Indiana bat to may affects, but not likely to adversely affect. Based on information provided in Transco's application and subsequent supplemental filings, including the December 2015 Habitat Assessment and Survey Report (see appendix O), our review of these species, and consultation with the FWS (technical assistance letter dated February 1, 2016), we determined that constructing and operating the Project would result in no effect on 13 threatened and endangered species; m*ay affect, but is not likely to adversely affect* 5 threatened and endangered species; and would not contribute to the listing of one candidate species. These species are not addressed further. The six species that we determined may be affected, but would not likely to be adversely affected are discussed below.

Northern Long-eared Bat

The threatened northern long-eared bat is a medium-sized bat about 3 to 3.7 inches with a wingspan of 9 to 10 inches. Its fur color can be medium to dark brown on the back and tawny to pale-brown on the underside. It typically eats insects and emerges at dusk to fly through the understory of forested hillsides and ridges feeding on moths, flies, leafhoppers, caddisflies, and beetles, which it catches while in flight using echolocation (FWS, 2014b). Northern long-eared bats typically hibernate during winter in large caves or mines with large passages and entrances, constant temperatures, and high humidity with no air currents. During summer, northern long-eared bats roost singly or in colonies beneath tree bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, such as caves and mines (FWS, 2014b). This species appears to opportunistically select roosts, using tree species that retain bark or provide cavities or crevices. The northern long-eared bat is a short range migratory species found from the eastern United States and Canada to western Montana and up to the southern Northwest Territories and eastern British Columbia in Canada (NatureServe, 2015). The FWS has stated that the emergence of white-nose syndrome has resulted in a dramatic population decline and that no threat is as severe and immediate as white nose syndrome. Other threats to the northern long-eared bat include human disturbance of hibernacula and loss or degradation of summer habitat as a result of development, mining, and timber production (NatureServe, 2015).

Transco conducted acoustic and mist-net surveys at nine locations in accordance with the survey protocol provided by FWS and GADNR. No northern long-eared bat vocalizations were identified during acoustic surveys. However, one female northern long-eared bat was identified during mist-nest surveys in Douglas County. This female was fitted with a radio transmitter and tracked to a roosting tree 0.5 mile from the proposed pipeline right-of-way.

Tree clearing and maintenance activities associated with the construction and operation of the Project could have long-term effects on bat roosting habitat. To mitigate impacts on bats and other terrestrial species Transco signed a MOU: Terrestrial Species Conservation Measure for the Dalton Expansion Project (Terrestrial Species MOU) with the FWS on December 1, 2015. As part of the Terrestrial Species MOU, Transco would provide financial resources to a conservation fund that would be administered by the FWS. The conservation fund would be used to purchase tracts of land for the permanent protection of occupied and potential summer bat habitat. The FWS would also use the fund for the development of an integrated disease management plan for white nose syndrome, in cooperation with Georgia State University. Based on the loss of habitat and potential impacts on this species and considering Transco’s mitigation efforts, we have determined that the Project *may affect, but is not likely to adversely affect* the northern long-eared bat.

Indiana Bat

The endangered Indiana ranges throughout much of eastern and mid-western North America. Although more than 85 percent of the population is found in Indiana, Missouri, and Kentucky, the Indiana bat is listed as potentially occurring in counties crossed by the Project. The Indiana bat is a temperate, insectivorous, migratory bat that hibernates in caves and mines in the winter, and spends the summer in wooded areas. Indiana bats roost in both live trees and snags with peeling or exfoliating bark, split trunks, or cavities. Indiana bats use stream corridors, riparian areas, and upland woodlots for roosting, foraging, and as travel corridors (NatureServe, 2015). Maternity roosts contain 50 to 100 adult females and are established in May. Each female has only one offspring per year (NatureServe, 2015). Female Indiana bats exhibit strong site fidelity to summer roosting and foraging areas (FWS, 2007). Population declines were caused primarily by loss and degradation of suitable hibernacula, human disturbance during hibernation, and loss and degradation of forested habitat. More recently, white nose-syndrome is projected to cause serious declines in Indiana bats (NatureServe, 2015).

During Transco's 2015 surveys, no Indiana bats were observed. However, tree clearing and maintenance activities associated with the construction and operation of the Project could affect Indiana bat roosting habitat. As discussed above, Transco would implement the minimization measures in the Terrestrial Species MOU to minimize or avoid impacts on bats and other terrestrial species, including the funding the purchase of land for the protection of summer bat habitat and the development of an integrated disease management plan for white nose syndrome. With the implementation of the mitigation measures outlined in the Terrestrial Species MOU, we have determined that the Project *may affect, but is not likely to adversely affect* the Indiana bat.

Large-Flowered Skullcap

The threatened large flowered skullcap is a plant that inhabits hardwood-pine forest with limited understory shrubs as well as wet hardwood forests (NatureServe, 2015). Flowers occur in late spring from May to June (Chafin, 2008). The clusters of small tubular flowers are white and capped with a darker blue hood. Threats to this species include clearcutting, overbrowsing by herbivores, and land development. This species also requires several years to mature and reproduce and flowers often fail to pollinate, resulting in low seed viability. The plant is also very susceptible to invasive species (NatureServe, 2015).

Transco completed 96 percent of its proposed surveys for the large-flowered skullcap. Two populations, totaling approximately 104 individuals spread over 0.9 acre, were identified between MPs 92.4 and 92.8. To avoid and minimize impacts on this species Transco would implement the minimization measures in the aforementioned Terrestrial Species MOU, including cordoning off areas adjacent to construction workspace that contain large-flowered skullcap to prevent inadvertent disturbance by workers or equipment. Transco would also fund a third-party salvage and relocation effort for the individuals within the proposed construction workspace. With the implementation of the mitigation measures outlined in the Terrestrial Species MOU, we have determined that the Project *may affect, but is not likely to affect* the large-flowered skullcap.

Cherokee Darter

The threatened Cherokee darter is endemic to the Etowah River system (FWS, 2014a). The Cherokee darter inhabits small to medium-sized streams containing a stone or course gravel substrate and flowing water (NatureServe, 2015). For breeding, the Cherokee darter requires clear, slower moving water and pools with large pebbles. Cherokee darters breed from mid-March to mid-June (FWS, 2014a). These species cannot survive in areas of heavy siltation or impounded waterways (NatureServe, 2015).

Transco's 2015 surveys identified Cherokee darters in eight waterbodies crossed by the Project. These waterbodies included Shed Creek (MP 34.4), Little Pumpkinvine Creek (MP 36.0), Pumpkinvine Creek (MP 37.5), two unnamed tributaries to Pumpkinvine Creek (MP 42.0 and 43.5,), Marable Creek (MP 52.4), Jackson Creek (MP 55.3), and an unnamed tributary to Jackson Creek (MP 55.4). All these waterbodies would be crossed using dry crossing methods (e.g., flume or dam and pump), which involve isolating and temporarily diverting the flow of water around or across the trenching area; thereby, minimizing impacts on fisheries. Temporary construction-related impacts would be limited primarily to short periods of increased turbidity before installation of the pipeline during the installation of the upstream and downstream dams, and following installation of the pipeline when the dams are pulled and flow across the restored work area is re-established. Transco would implement mitigation measures outlined in its Procedures to minimize impacts on these waterbodies during construction. None of these waterbodies are proposed as withdrawal locations for water needed during construction (e.g., hydrostatic test water). With the implementation of Transco's mitigation measures, we have determined that the Project *may affect, but is not likely to adversely affect* the Cherokee darter.

Etowah Darter

The endangered Etowah darter is endemic to the Etowah River system in Northwest Georgia (FWS, 2014a). This species inhabits creeks and medium sized rivers that contain quick running water or shoal habitat over cobble bottoms (NatureServe, 2015). Etowah daters require clear water with low siltation, and are known to be impacted by impounded water (NatureServe, 2015). Spawning is not well studied but believed to occur in spring. The female deposits 100 to 200 eggs into the sandy substrate (FWS, 2014a).

To determine the presence of the Etowah darter, Transco collected *Nothonotus* species for mitochondrial DNA analysis. Etowah darters closely resemble the more common and unlisted greenbreast darter and require mtDNA analysis to distinguish between the two species. In February 2016, Transco released an *Interim Nothonotus Darters mtDNA Report* that disclosed the current status of the analysis. The preliminary results suggest that all samples collected from the Etowah River were greenbreast darters. Based on this initial evidence, a detectable population of Etowah darters is unlikely to occur near the proposed Etowah River crossing. Previous studies of Raccoon Creek indicated a presence of Etowah darters; however, Transco did not find a presence during the 2015 survey. As a result of these findings and Transco's mitigation measures, we have determined that the Project *may affect, but is not likely to affect* the Etowah darter or its designated critical habitat.

Georgia Aster

The Georgia aster is a candidate for listing under the ESA. This species range is limited to the southeastern United States, including Georgia. It is a perennial herb that grows up to 40 inches tall with purple flowers that bloom in October to mid-November (NatureServe, 2015; Chafin and Patrick, 2014). Georgia aster is typically found in open areas, rocky barrens, dry hickory-pine forests, and utility right-of-ways. Fire-suppression practices and competition from other species have resulted in declines of this species (NatureServe, 2015).

No species specific surveys were proposed for the Georgia aster based on consultation with the FWS and GADNR. However, Transco identified 7 populations of the species between MPs 38.2 and 40.2 containing approximately 300 individual plants during its plants surveys. To minimize or avoid impacts on this species, Transco would implement the minimization measures in the Terrestrial Species MOU, including cordoning off areas adjacent to construction workspace that contain Georgia aster to prevent inadvertent disturbance by workers or equipment. Transco would also fund a relocation, augmentation, and monitoring program developed for the Georgia aster. Prior to construction, the FWS would temporarily relocate individuals within the proposed workspace. These plants would be taken into cultivation, divided, strengthened, and returned to the Georgia Power and Transco rights-of-way following Project restoration efforts. In accordance with the Terrestrial Species MOU, Transco would implement special maintenance provisions in areas where Georgia aster is present, including restricting mowing to outside the aster's growing season (May 15 to November 15), cleaning equipment to prevent introduction of invasive plant species, and leaving clippings on site to encourage germination and recruitment of asters. With the implementation of the mitigation measures outlined in the Terrestrial Species MOU, we have determined that the Project *may affect, but is not likely to affect* the Georgia Aster.

Conclusion

As described at the beginning of this section, and in compliance with section 7 of the ESA, we have requested the initiation of formal consultation with FWS for the Project. Because consultation has not yet been completed with the FWS regarding potential impacts on federally listed species within the Project area, **we recommend that:**

- **Transco should not begin construction activities <u>until</u>:**
  - **a. the FERC staff completes the formal ESA consultation process; and**
  - **b. Transco has received written notification from the Director of OEP that construction or use of mitigation may begin.**

b. State Protected Species

Threatened and endangered species in Georgia are protected under the Endangered Wildlife Act and Wildflowers Preservation Act. Seventy-eight state-listed species were identified as potentially occurring within the Project area, 20 of which are also federally listed or candidate species (see section B.4.a). The Project is expected to have no impact on 54 of the 58 remaining species based on Transco's consultations with the GADNR and the result of field surveys conducted for the Project. The remaining four state-listed species are discussed below.

Piedmont Barren Strawberry

The piedmont barren strawberry is a state-listed rare species in Georgia and is petitioned for federal listing. This perennial, evergreen herbaceous plant is low lying and spreads by horizontal stolons and rhizomes (NatureServe, 2015). It is typically found in cool, rich woods, stream terraces, and the rocky slopes of mixed forests. Logging activities and the spread invasive species are the largest threat to this species (Chafin, 2009).

Transco has completed 95 percent of its proposed surveys for piedmont barren strawberry. One population, totaling approximately 100 individuals spread over 0.05 acre, was identified near MP 13.4. Construction of the Project facilities in this area would result in direct impacts on this population. To mitigate these impacts Transco would implement the minimization measures in the Terrestrial Species MOU, including cordoning off areas adjacent to construction workspace that contain piedmont barren strawberry to prevent inadvertent disturbance by workers or equipment. Transco would also fund a third-party salvage and relocation plan, which will be developed by the FWS and GADNR, for the individuals within the construction workspace. With the implementation of the mitigation measures outlined in the Terrestrial Species MOU, we have determined that the Project would result in temporary and minor impacts on the piedmont barren strawberry.

Bluestripe Shiner

The bluestripe shiner is a state-listed rare species in Georgia that is petitioned for federal listing. This species is endemic to the Apalachicola River basin and inhabits main stem rivers that contain fast moving currents over sand (Dinkins and Freeman, 2009; NatureServe, 2015). Spawning occurs from April until August and eggs are deposited in rock crevasses. Bluestripe shiners are threatened by siltation and impoundment of streams (Dinkins and Freeman, 2009).

Transco's 2015 surveys identified bluestripe shiners in two waterbodies crossed by the Project: Snake Creek (MP 10.3) and Dog River (MP 22.5). Dog River would be crossed using a dry crossing method. As discussed above, use of a dry crossing method would reduce impacts during construction. Snake Creek would be crossed using the wet open-cut method. To minimize impacts at this crossing, Transco would implement measures outlined in its Procedures including installing turbidity curtains downstream of the crossing location, completing the crossing outside the spawning season, and limiting the construction time in the waterbody. Neither of these waterbodies are proposed as withdrawal locations for water needed during construction. With the implementation of Transco's mitigation measures, we have determined that the Project would result in temporary and minor impacts on the bluestripe shiner.

Highscale Shiner

The highscale shiner is a small, light-colored minnow that is state-listed rare in Georgia. It occupies benthic habitats of sandy pools, streams and small tributaries in Georgia and eastern Alabama (Freeman and Albanese, 2009). The highscale shiner is known to feed on small aquatic invertebrates and insects. The ecology and breeding behavior of the highscale shiner is not well studied. This species is threatened by the impoundment of rivers and siltation from construction activity (Freeman and Albanese, 2009; NatureServe, 2015).

Transco's 2015 surveys identified highscale shiners in four waterbodies crossed by the Project: Wahoo Creek (MP 4.6), Crawfish Creek (MP 22.3), and Keaton Creek (MPs 23.5 and 25.6). Crawfish Creek and Keaton Creek would be crossed using a dry crossing method. Wahoo Creek would be crossed using the wet open-cut method. Impacts associated with these crossing methods are discussed above. None of these waterbodies are proposed as withdrawal locations for water needed during construction. With implementation of Transco's mitigation measures, we have determined that the Project would result in temporary and minor impacts on the highscale shiner.

Lined Chub

The lined-chub is a small minnow that is state-listed rare in Georgia. Lined chubs are silvery-white below and yellow above (NatureServe, 2015). This species inhabits streams containing moderate current over sandy or gravel substrates (Albanese, 2008).

Transco's 2015 surveys identified lined chubs in two waterbodies crossed by the Project: Little Pumpkinvine Creek (MP 36.0) and Pumpkinvine Creek (MP 38.3). These waterbodies would be crossed using a dry crossing method. Impacts associated with this crossing method are discussed above. Neither of these waterbodies are proposed as withdrawal locations for water needed during construction. With implementation of Transco's mitigation measures, we have determined that the Project would result in temporary and minor impacts on the lined chub.

Conclusion

Based on Transco's proposed construction techniques and the implementation of minimization and mitigation measures, we conclude that construction and operation of the Project would not significantly impact any state-listed species in Georgia.

5. Land Use and Visual Resources

a. Land Use

Construction of the Project would disturb about 1,710.1 acres of land, including 1,455.0 acres for pipeline right-of-way and ATWS, 90.5 acres for access roads, 89.7 acres for contractor yards, and 75.0 acres for aboveground facilities. Following construction, about 745.0 acres would be retained for operation of the Project, including 687.4 acres for permanent pipeline right-of-way, 22.2 acres of permanent access roads, and 35.4 acres for aboveground facilities. Table B.5.a-1 summarizes the acres of each land use type that would be affected by construction and operation of the Project facilities.

Upland Forest

Forested areas in the Project are dominated by trees generally greater than 15 feet tall and include both deciduous and evergreen tree species. About 640.8 acres of upland forest would be affected during construction of the Project. Construction activities in these forested areas would require removal of all trees within the construction corridor and workspaces. Impacts would range from long-term within temporary work areas to permanent within areas where forested land would be converted to other land use types. Temporary work areas would be allowed to revegetate following construction. About 282.3 acres of upland forest within the permanent pipeline right-of-way would be converted to open land. In addition, operation of the aboveground facilities and permanent access roads would result in the permanent conversion of 31.8 acres of upland forest to industrial uses.

Planted Pine

Planted pine occurs in the Project area in plantations that typically consist of "tree farms" or areas of active silviculture. Common planted pine species include southern yellow pine species, which include longleaf pine; shortleaf pine; loblolly pine, and slash pine. Construction of the Project would affect about 155.0 acres of planted pine forest. Following construction, about 66.9 acres of these areas would be converted to open land for the permanent right-of-way and 8.1 acres would be converted to industrial uses for the operation of the aboveground facilities and permanent access roads. The remaining areas of managed forest would be allowed to revert to preconstruction conditions.

TABLE B.5.a-1

Acres of Land Affected by Construction and Operation of the Dalton Expansion Project

	Upland Forest		Open Lands		Agricultural Land		Planted Pine		Wetlands/ Open Water		Developed Land		Project total	
Facility	Con.	Oper.	Con.	Oper.	Con.	Oper.	Con.	Oper.	Con.	Oper.	Con.	Oper.	Con.	Oper.
Pipeline Facilities														
Pipeline Right-of-Way	464.3	282.3	301.2	176.4	223.2	138.4	110.2	66.9	30.1	19.8	7.3	3.5	1136.2	687.4
ATWS	103.5	0.0	110.2	0.0	79.3	0	21.7	0.0	0.7	0.0	3.4	0.0	318.8	0.0
Contractor Yards	0.1	0.0	26.0	0.0	50.5	0.0	0.0	0.0	0.0	0.0	13.1	0.0	89.7	0.0
Subtotal	**567.8**	**282.3**	**437.3**	**176.4**	**353.0**	**138.4**	**131.9**	**66.9**	**30.8**	**19.8**	**23.8**	**3.5**	**1544.7**	**687.4**
Aboveground Facilities														
Compressor Station 116	53.1	26.0	8.7	1.1	0.5	0.0	3.1	3.1	0.0	0.0	0.3	0.0	65.7	30.2
Beasley Road Meter Station	0.0	0.0	1.0	0.6	0.6	0.4	0.0	0.0	0.0	0.0	1.2	0.6	2.9	1.6
Looper Bridge Road Meter Station	1.2	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	2.0	0.8
Murray Meter Station	0.1	0.0	1.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.8
Access Roads	17.9	4.3	35.8	8.9	13.2	3.1	20.0	5.0	0.0	0.0	3.6	0.9	90.5	22.2
Mainline Valves	0.7	0.7	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.1	1.1	1.1
Cathodic Protection/Anode Bed Sites	0.0	0.0	1.6	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.9
Subtotal	**73.0**	**31.8**	**49.3**	**12.3**	**14.5**	**3.7**	**23.1**	**8.1**	**0.0**	**0.0**	**5.5**	**1.6**	**165.4**	**57.6**
Project Total	**640.8**	**314.1**	**486.5**	**188.7**	**367.6**	**142.1**	**155.0**	**75.0**	**30.8**	**19.8**	**29.3**	**5.1**	**1710.1**	**745.0**

Notes: Con. = Construction; Oper. = Operation. The totals shown in this table may not equal the sum of addends due to rounding.

Open Lands

Open land communities in the Project areas include open space, scrub-shrub areas, roadway and utility corridors, as well as fallow fields, and waterbodies. The Project would affect about 486.5 acres of open land during construction activities. The permanent right-of-way in these areas would be maintained in an herbaceous state and would not result in a change in land use. However, the operation of aboveground facilities and permanent access roads would require the conversion of 12.3 acres of open land to industrial uses.

Agricultural Lands

Agricultural land in the Project area consists primarily of improved pasture lands and to a lesser extent actively cultivated annual crops, such as corn, soybeans, vegetables, tobacco, and cotton; and perennial woody crops, such as orchards and vineyards. The Project would affect about 367.6 acres of agricultural land during construction. Transco would implement measures outlined in its Plan, including topsoil segregation and compaction mitigation, when constructing through agricultural lands to preserve soil productivity. Following construction, agricultural land would be restored to its original use, except at the aboveground facility sites and permanent access roads. Operation of these facilities would remove about 3.7 acres of agricultural land from future production.

We received several comments related to impacts on land use, particularly tracts of lands with agricultural covenants within Paulding County. Transco has generally routed the Project pipeline to avoid these designated tracts of land or reduce the crossing length. Transco would implement measures outlined in its Plan and Procedures to minimize or avoid impacts on the tracts that would be crossed.

Developed Land

Developed land in the Project areas is primarily low density residential areas composed of single-family housing units. The Project would affect about 29.3 acres of developed land during construction, of which about 5.1 acres would be retained for operational activities.

In total, 26 residences were identified within 50 feet of the construction work area. Construction across residential properties generally necessitates additional mitigation to address safety during construction and to minimize impacts near residences. Transco would implement measures to protect existing residential and commercial structures including, but not limited to avoiding the removal of mature trees; fencing the construction work area; and reducing pipeline separation to stay farther from residences. Immediately after backfilling the trench; Transco would restore all lawn areas. If major impacts cannot be avoided, Transco would purchase the residence or structure. For each of the 26 residences, Transco has developed site-specific plans that show how the Project would affect the property and identify construction requirements to minimize impacts on residences (see appendix I). We have reviewed the site-specific residential construction plans and find the plans are acceptable to minimize impacts to the extent practicable. **However, we encourage the owners of each of these residences to provide us comments on the plan specific for their property.**

Public Land, Recreation, and Special Interest Areas

The Project pipeline would cross two WMAs, Paulding Forest WMA and Coosawattee WMA, which have the primary purpose of supporting wildlife conservation and allowing public access to hunting, fishing, and other outdoor recreational activities (GADNR, 2015b). The Paulding Forest WMA consists of state, county, and city owned land, and land leased annually from private landowners. The Project would cross lands owned by the City of Atlanta within the Paulding Forest WMA between MPs 37.8 and 41.0 and result in about 51.5 acres of temporary disturbance and 27.6 acres of new permanent right-of-way, a majority of which would parallel an existing transmission line right-of-way. The Coosawattee WMA is located in Murray County between MPs 99.6 and 100.3 and consists of land leased annually and managed cooperatively with GADNR and private landowners. Construction through the Coosawattee WMA would result in about 8.3 acres of temporary disturbance and 4.0 acres of new permanent right-of-way. Transco would implement required restrictions, mitigation measures, agreement alterations, and restoration measures agreed upon as part of easement negotiation and acquisition process with the WMAs that would be crossed by the Project.

Three waterbodies that would be crossed by the Project pipeline, Sweetwater Creek, the Conasauga River, and the Etowah River, are listed on the National Park Service National Rivers Inventory. The Conasauga River would be crossed by HDD to avoid in-stream impacts. A dry-ditch crossing method would be used to cross Sweetwater Creek. Transco would cross Sweetwater Creek in accordance with its Procedures and is currently coordinating additional appropriate impact minimization construction measures with the FWS and GADNR. The Etowah River would be crossed via a wet open-cut method, and Transco has submitted a site-specific crossing plan to reduce impacts on the river during construction (see section B.2.b). Transco has submitted the plan with the COE as part of its Pre-Construction Notification for a Nationwide Permit. Based on Transco's proposed construction techniques and the implementation of minimization and mitigation measures, we conclude that construction and operation of the Project would not adversely affect the natural, cultural, and recreational values of these waterbodies.

Two recreational waterbodies, the Chattahoochee River and the Etowah River, would be crossed by the Project. The Chattahoochee River would be crossed by HDD to avoid in-stream work and recreational impacts. To address potential impacts on recreational use of the Etowah River during construction, Transco filed a *Draft Aid to Navigation Plan*[8]. According to the plan, an 80-foot-wide section of the river would be left free flowing during a majority of the instream construction activities by leaving construction of the proposed equipment bridge incomplete thus allowing recreational users access through the construction area. However, as construction nears the open portion of the river, the bridge would be completed and access through the construction area would be prohibited for a period between 2 to 4 weeks. The plan identifies portage locations to be used during the period when downstream access is prohibited, and includes a detailed signage plan to inform recreational users of access limitations and portage locations.

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[8] Transco' aid to navigation plan for the Etowah River crossing can be viewed on the FERC Internet website at http://www.ferc.gov as part of Transco's September 30, 2015 supplemental filing (appendix II.X). Using the "eLibrary" link, select "Advanced Search" from the eLibrary menu and enter 20150930-5242 in the "Accession Number" field. The figures are also available for public inspection at the FERC's Public Reference Room in Washington, DC (call (202) 502-8317 for instructions).

The Project pipeline would cross six Roundup Routes of the Trail of Tears National Historic Trail, which is administered by the NPS. Each of the Roundup Routes crossed are currently paved public roads. Impacts on the Trail of Tears Roundup Routes are discussed in more detail in section B.7. In addition, the Project would cross the Silver Comet Trail in Paulding County at about MP 42.6, a rails-to-trails project. The Silver Comet Trail is a 61.5-mile-long paved recreational trail that extends from Smyrna, Georgia to the Alabama state line. Transco would cross the Silver Comet Trail by conventional subsurface boring to avoid impacts. Transco is currently working with Georgia Department of Transportation to obtain a crossing permit and would implement mitigation measures as required by the crossing permit.

The Project would not cross and is not located within 0.25 mile of any registered natural landmarks, areas of critical environmental concerns, National Wilderness Areas, National Primitive Areas, National Scenic Areas, National Wild and Scenic Rivers, National Recreation Areas, National Wildlife Refuges, National Monument Areas, National Historic Areas, National Forests, National Protection Areas, Special Management Areas, Natural Botanical Areas, Scenic Recreation Areas, or Scenic Wildlife Areas. The project is located within 0.25 mile of the Clinton Nature Preserve in Douglas County, a 200-acre park owed by Douglas County; however, the project does not cross the preserve.

No known contaminated sites have been identified within 500 feet of the Project facilities. Transco does not anticipate any contaminated sediments would be encountered as a result of construction of the Project.

According to the Federal Emergency Management Agency flood insurance rate maps, about 14.6 miles of the pipeline route would be located within 100-year floodplains. None of the pipeline route would be located in 500-year floodplains. None of the proposed aboveground facilities would be located within 100- or 500-year floodplains. EO 11988 directs federal agencies to lead the Nation by example by demonstrating a comprehensive approach to floodplain management. The Order requires agencies to:

(1) avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains; and

(2) avoid the direct or indirect support of floodplain development whenever there is a practicable alternative.

EO 11988 establishes avoidance of actions on the base of the floodplain, or the 100-year floodplain, as the preferred method for meeting these requirements. Impacts on 100-year floodplains crossed by the pipeline would be restored following construction and would not reduce flood storage capacity. Further, no aboveground facilities would be sited in floodplains. Based on these factors we conclude that the use of the proposed Project does not conflict with the intent of EO 11988.

Based on the implementation of the proposed mitigation measures and the fact that the majority of the disturbed areas would be restored and allowed to revert back to previous conditions following construction, we conclude that construction and operation of the Project would not have a significant impact on land use.

b. Planned Developments

Transco identified 22 planned residential developments that would either be crossed by the construction work area or located within 0.25 mile. Of these, 12 would be crossed by the pipeline. At two of the developments that would be crossed by the Project facilities no lots would be affected. Transco has purchased three lots in one development and is currently conducting negotiations to minimize impacts and determine mitigation and compensation with nine other developments that would be crossed by the Project. The remaining 10 developments would not be crossed but are located less than 0.1 mile from the Project workspace. Many of the residential subdivisions have been partially or mostly developed.

We received several comments regarding whether the Project would be consistent with county and city future improvement plans. Transco stated it has developed relationships with the stakeholders in each county to gather feedback on potential land uses and ultimately influence pipeline routing decisions. In addition, Transco is working with federal, state, and local permitting agencies to develop installation plans and mitigation techniques that result in avoiding or minimizing the effects of pipeline construction.

With the implementation of Transco's proposed mitigation measures, we conclude that planned developments would not be significantly affected by the Project.

c. Visual Resources

The Project would be collocated within existing transmission line or roadway corridors for about 49 percent (54.9 miles) of the Dalton Lateral and 60 percent (1.2 miles) of the AGL Spur. The existing rights-of-way have been affected previously by other utility activities and are maintained periodically. Construction activities within or adjacent to existing rights-of-way typically minimize impacts on visual resources because new fragmentation of vegetation is minimized. Pipeline facilities not collocated would result in a new 50-foot maintained permanent right-of-way.

The Project would not cross any designated scenic areas. Temporary visual impacts would occur primarily during active construction due to construction equipment and disturbed soil and vegetation. After completion of construction, the temporary rights-of-way and ATWS would be restored to approximately preconstruction contours and allowed to revert to preconstruction uses and cover type. The long-term visual impacts resulting from the widening of existing right-of-way and creation of a new easement would be permanent but minor.

Compressor Station 116 and the Murray Meter Station would be constructed in an undeveloped and forested area, respectively, with a forested buffer being retained around each facility to reduce visibility. The Looper Bridge Road Meter Station and Beasley Road Meter Station would be located adjacent and/or within 0.5 mile of industrial facilities; therefore, both facilities are not expected to contribute to any visual effects in their respective areas. Transco would discuss visual impacts and determine screening mitigation during negotiations with individual landowners. Based on the minor impacts of the Project and its location, the aboveground facilities would represent a minor visual alternation that would persist for the life of the Project.

6. Socioeconomics

The potential socioeconomic effects of construction and operation of the Project include temporary changes in population levels or local demographics, increased opportunities for employment, increased demand for housing and public services, transportation impacts, and an increase in government revenue associated with sales, payroll, and property taxes within the Project area. The Project Area encompasses Coweta, Carroll, Douglas, Paulding, Bartow, Gordon, Murray, and Whitfield Counties in Georgia.

a. Population and Employment

A summary of selected demographic and socioeconomic conditions for affected communities is provided in Table B.6.a-1. Population estimates in the Project area range from 39,410 in Murray County to 148,987 in Paulding County. Population density, a general indicator of the extent of development in the Project area, ranges from 114 persons per square mile in Murray County to 694 persons per square mile in Douglas County (U.S. Census Bureau, 2015b). The civilian labor force within the counties crossed by the Project includes more than 405,468 individuals whose major employment sectors are educational, health, and social services; manufacturing; professional, scientific, management, and administrative services; and retail trade. Unemployment rates in the counties crossed by the Project range from 8 to 13 percent (U.S. Census Bureau, 2015a).

TABLE B.6.a-1

Existing Economic Conditions for the Dalton Expansion Project

County	Population [a]	Population Density (persons per square mile) [a]	Per Capita Income [a]	Rental Vacancy Rate (percent) [b]	Civilian Labor Force [b]	Unemployment Rate (percent) [b]	Major Industries [b, C]
Coweta	135,571	307	$27,462	5.3	65,332	7.9	E, M, R
Carroll	114,093	229	$21,384	6.2	53,893	13.1	E, M, R
Douglas	138,776	694	$23,356	6.8	68,029	11.5	E, R, P
Paulding	148,987	477	$24,868	5.7	75,674	9.9	E, R, P
Bartow	101,736	221	$21,715	8.5	48,804	10.5	E, M, R
Gordon	56,047	158	$19,595	10.7	25,701	9.5	M, E, R
Murray	39,410	114	$16,481	7.8	17,658	11.9	M, E, R
Whitfield	103,542	356	$20,124	14.0	50,377	11.7	M, E, R

Sources:
[a] U.S. Census Bureau, 2015b
[b] U.S. Census Bureau, 2015a
[c] Major industries include: educational services, and health care and social assistance (E); manufacturing (M); professional, scientific, and management, and administrative and waste management services (P); and retail trade (R).

Construction of the Project is expected to begin in summer 2016 and last through May 2017. The construction workforce would be about 781 to 960 workers, of which the majority of the workforce (80 to 95 percent or 625 to 912 workers) would come from outside of the local area. The total peak workforce would consist of 840 workers for construction of the pipeline, 88 workers for the construction of Compressor Station 116, and 32 workers for the construction of the three meter stations. Temporary population levels would increase as workers with specialized skills locate into the area. However, workers would be distributed along the length of the Project route, thereby minimizing the potential impact on population levels and demographics in any particular county. The influx of non-local workers would result in a temporary, negligible population increase within the affected counties.

Construction of the Project could result in the hiring of up to 192 local workers. Additional jobs would also be created because of secondary activities associated with construction of the Project. These jobs would represent a temporary, minor increase in employment within the area.

During operation, the Project would employ five additional staff to operate Compressor Station 116 and other Project facilities.

b. Housing

Rental vacancy rates within the counties crossed by the Project range from 5 percent in Coweta County to 14 percent in Whitfield County, Georgia. Within these counties, there are more than 15,000 rental units, 34 recreational vehicle and trailer parks, and 84 hotels/motels (U.S. Census Bureau, 2015a; Yellowbook, 2015; Google Maps, 2015; Global Hotel Database, 2015).

At its peak, construction of the Project would require up to 912 non-local workers, most of which are not expected to be accompanied by families. The temporary housing available within the Project area would be capable of meeting the temporary and moderate increased demand for housing resulting from construction of the Project. Additional temporary housing would be available in counties adjacent to the Project as well. The Project could have a short-term positive impact on the area rental industry through higher occupancy rates.

The five operational staff for Compressor Station 116 and other Project facilities that would be hired permanently would have a negligible long-term effect on housing demand.

c. Public Services

The numbers of existing public services available in each county crossed by the Project are found in table B.6.c-1. Construction of the Project could temporarily increase demand for medical, police, and fire protection services in the event of an emergency. Transco would work with local law enforcement and emergency response agencies to coordinate effective emergency procedures for the Project during construction and operation (see section B.9.a). Based on the number of existing police and fire stations and emergency medical services in the area, it is unlikely that the Project would represent an increased burden on the public services in the area.

TABLE B.6.c-1

Existing Public Services for the Dalton Expansion Project

County	Public Schools [a]	Nearest Hospital to Project Segments	Police Services [b]	Fire Services [c]
Coweta	31	Piedmont Newnan Hospital	1 state, 1 county, 2 municipal	2 county stations
Carroll	31	Tanner Medical Center	1 state, 1 county, 5 municipal	1 county station, 2 volunteer
Douglas	35	Wellstar Douglas Hospital	1 state, 1 county, 1 municipal	1 county station
Paulding	34	-	1 county, 2 municipal	1 county station
Bartow	25	Cartersville Medical Center	1 state, 1 county, 5 municipal	2 county stations, 1 volunteer
Gordon	15	Gordon Hospital	1 state, 2 county, 2 municipal	1 volunteer
Murray	11	Murray Medical Center	1 county, 2 municipal	3 volunteer
Whitfield	33	-	2 state, 2 county, 5 municipal, 1 private	1 county station, 2 volunteer

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[a] National Center for Education Statistics, 2015

[b] USACops, 2015

[c] U.S. Fire Administration, 2015

d. Transportation

Construction of the Project could result in minor, short-term impacts on the transportation network due to movement of and delivery of equipment, materials, and workers. Construction hours would typically be scheduled to take advantage of daylight hours; therefore, most workers would commute to and from the construction right-of-way during off-peak hours. The level of project-related traffic should remain consistent throughout the construction period as construction proceeds along the Project corridor. To minimize traffic congestion, Transco would encourage construction workers to leave their personal vehicles at the contractor yards and share rides to the construction right-of-way. Transco has identified several contractor yards along the Project route that would accommodate parking for construction workers. Major highways, railroads, and some paved roads would be crossed by boring or HDD. The drilling would result in limiting or avoiding impacts on surface traffic flows. To minimize traffic delays at open-cut road crossings, Transco would establish detours before and during construction. If no reasonable detours are feasible, at least one traffic lane of the road would be left open, except for brief periods of road closure for Project construction. Appropriate traffic control measures, such as flagmen and signs, would be used to ensure the safety of local traffic. Prior to construction, Transco would consult with and obtain all necessary permits from relevant agencies in each county crossed by the Project. To ensure safe travel conditions, contractors would be required to adhere to local vehicle weight restrictions, roads would be swept to reduce the deposition of soil, and mats or other measures would be utilized to protect the road surface at equipment crossings. As a result of these measures, we do not expect construction of the Project to have a major impact on road traffic.

e. Property Values

We received several comments regarding the Project’s potential impact on property values and related economic considerations. These concerns generally centered on the devaluation of property and property taxes within a pipeline easement.

Typically, an easement would be used to convey both temporary (construction-related) and permanent rights-of-way to Transco. The easement would give Transco the right to access, construct, operate, and maintain the pipeline. In return, Transco would compensate the landowner. If the Project is issued a Certificate, an easement could be obtained by use of eminent domain. In that case, the property owner would still be compensated by Transco but the amount of compensation would be determined by the courts.

The effect that a pipeline easement may have on property value is a damage-related issue that would be negotiated between the parties during the easement acquisition process. The easement acquisition process is designed to provide fair compensation to the landowner for the right to use the property for pipeline construction and operation. Appraisal methods used to value land are typically based on objective characteristics of the property and any improvements. The impact a pipeline could have on a property's value could vary greatly based on many factors including the size of the tract, the values of adjacent properties, the presence of other utilities, the current value of the land, and the current land use. Subjective valuation is generally not considered in appraisals. A potential purchaser of property may make a decision to purchase land based on his or her planned use. An industrial user might find the pipeline (i.e., a potential source of energy for an industrial plant) preferable; a farmer or resident may or may not find it objectionable. If the presence of a pipeline renders a planned use infeasible, it is possible that a potential purchaser would decide not to purchase the property; however, each potential purchaser has different criteria and differing capabilities to purchase land.

Property taxes for a piece of property are generally based on the actual use of the land. Construction of the pipeline would not change the general use of the land but would preclude construction of aboveground structures on the permanent right-of-way. If a landowner believes that the presence of a pipeline easement impacts the value of his or her land, resulting in an overpayment of property taxes, he or she could appeal the issue of the assessment and subsequent property taxation to the local property tax agency.

Several studies have looked at the effect of pipelines on sales and property values. We acknowledge that most were conducted on behalf of the natural gas transmission industry. However, our analysis did not identify any relevant studies to refute the conclusions presented here. A report by Allen, Williford & Seale, Inc., which was prepared in 2001 for the Interstate Natural Gas Association of America Foundation, Inc., evaluated the impact of natural gas pipelines on real estate in four separate and geographically diverse areas, including two suburban areas, one rural area, and one commercial area crossed by one to multiple natural gas pipelines. The study concluded that there was no significant impact on property sale prices along natural gas pipelines nor by the pipeline size or the product carried. Additionally, other studies have reached similar conclusions, including: PGP Valuation Inc. (2008) for Palomar Gas Transmission Inc.; ECONorthwest (Fruits, 2008) for the Oregon LNG Project; Diskin, Friedman, Peppas, and Peppas (2011); and Hansen et al. (2006).

f. Economy and Tax Revenues

We received several comments regarding local tax revenue associated with the Project. Construction and operation of the Project would have a beneficial impact through tax generation. A portion of the Project construction payroll would be spent locally for the purchase of housing, food, and entertainment during construction and operation. During construction, workers would spend $28.64 million with about $7.16 million spent locally. Additionally, a portion of the materials for construction of the Project (e.g., fuel, fencing, concrete, sand, and gravel) would be purchased from vendors within the Project counties. The majority of the construction-related purchases would be subject to state sales tax of 7 percent, except Whitfield County where it is 6 percent (Georgia Department of Revenue, 2015) and would generate an estimated $1.0 million in state and local sales taxes. During construction, and estimated $3.92 million of tax revenue from state and local sales, income, and property taxes would be created.

Beneficial impacts to the local economies during operation of the Project would include the payroll associated with the hiring of the five permanent staff to operate Compressor Station 116 and continued operations of the Project facilities. Operation of the Project would provide additional tax revenues through ad valorem and property taxes, estimated to be $1.8 million annually. Table B.6.f-1 summarizes the estimated taxes that would be generated annually in each county.

TABLE B.6.f-1

Annual Ad Valorem and Property Taxes Associated with the Operation of the Dalton Expansion Project

County, State	Ad Valorem and Property Taxes Generated
Coweta	$125,047
Carroll	$475,651
Douglas	$175,200
Paulding	$350,068
Bartow	$300,049
Gordon	$175,004
Murray	$175,001
Whitfield	$10,018
State	$3,828
Project Area Total (dollars per year)	**$1,789,866**

g. Environmental Justice

EO 12898 on Environmental Justice recognizes the importance of using the NEPA process to identify and address, as appropriate, any disproportionately high and adverse health or environmental effects of federal programs, policies, or activities on minority populations and low-income groups. The provisions of EO 12898 apply equally to Native American programs. Consistent with EO 12898, the CEQ has called on federal agencies to actively scrutinize the following issues with respect to environmental justice:

- the racial and economic composition of affected communities;
- health-related issues that may amplify project effects to minority or low-income individuals; and
- public participation strategies, including community or tribal participation in the NEPA process.

Table B.6.g-1 summarizes the minority and low income populations throughout the Project area compared to the state and federal averages.

TABLE B.6.g-1

Demographics and Low Income Populations for the Dalton Expansion Project

Country/State/County	Percent of Persons Below Poverty Level	Percent White Non-Hispanic	Percent Black or African American	Percent Hispanic or Latino	Percent Asian	Percent Native American
UNITED STATES	**14.8**	**62.1**	**13.2**	**17.4**	**5.4**	**1.2**
Georgia	**18.3**	**54.3**	**31.5**	**9.3**	**3.8**	**0.5**
Coweta	12.5	71.9	18.0	6.7	1.9	0.4
Carroll	22.9	71.8	19.1	6.5	1.0	0.5
Douglas	14.2	44.9	43.5	8.9	1.7	0.4
Paulding	10.7	73.8	18.0	5.7	1.1	0.4
Bartow	14.3	78.7	10.9	8.0	1.0	0.6
Gordon	17.8	78.2	4.4	15.2	1.1	0.6
Murray	18.7	83.3	1.4	14.0	0.5	0.9
Whitfield	20.7	60.1	4.4	33.3	1.6	1.4

Sources: U.S. Census Bureau, 2015b

The EPA provides guidance on determining whether there is a minority or low-income community to be addressed in a NEPA analysis. According to this guidance, low-income populations are those that fall within the annual statistical poverty thresholds. A poverty area is defined by the U.S. Census Bureau as a census tract or other area where at least 20 percent of the residents are below the poverty level. Minority population issues must be addressed when they encompass over 50 percent of an affected area or when the minority population percentage of the affected area is substantially greater than the minority percentage in the larger area of the general population.

As shown in table B.6.g-1, Carroll and Whitfield Counties have poverty levels over 20 percent. The proposed route of the pipeline is anchored at the ends by the source and destination of the gas. Between these points, a number of factors are considered including:

- collocating with existing corridors to reduce impacts;
- avoiding sensitive resources; and
- minimizing the impact and cost by utilizing the shortest route that accommodates the first two factors.

A pipeline corridor of any length typically traverses a diverse mixture of economic and racial assemblages. Figure B.6.g-1 illustrates that the proposed route crosses through population areas with different economic status.

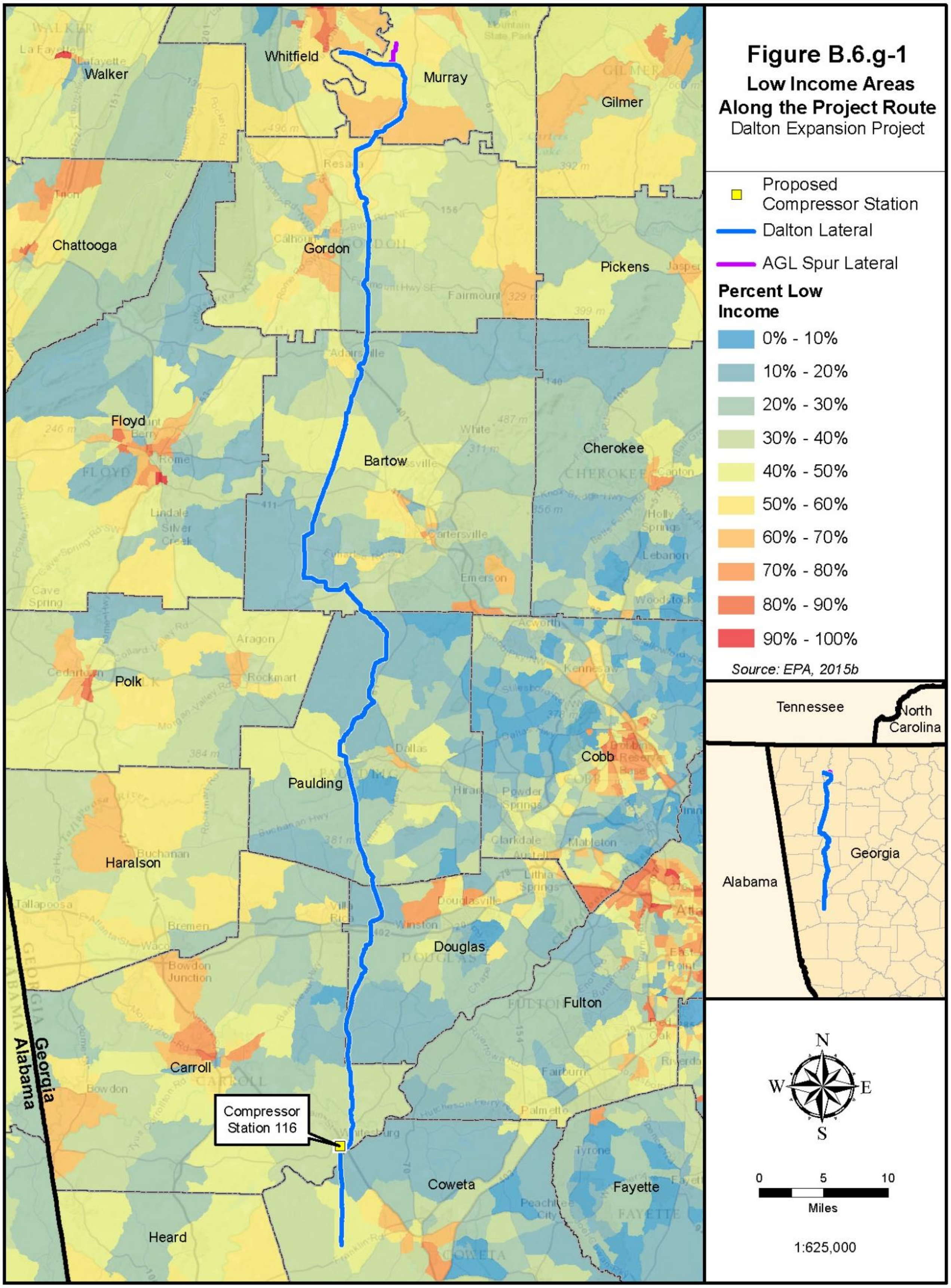

Figure B.6.g-1
Low Income Areas Along the Project Route
Dalton Expansion Project

Source: EPA, 2015b

Douglas County is the only county with a minority population over 50 percent. In order to identify populations with potential environmental justice concerns crossed by the Project, the EPA EJSCREEN mapping and screening tool was employed. As shown in table B.6.g-2, the minority population percentage within 29 of the 33 Census Block Groups crossed by the Project is less than the percentage within the respective county crossed by the Project. Based upon results from the EJSCREEN tool, the Project would not disproportionately affect minority populations. Impacts would be evenly distributed along the Project route. Given the spatial distribution of the Project area, impacts to one locality are expected to be minor.

TABLE B.6.g-2

Minority Populations Within the Dalton Expansion Project Area

		Minority Population (Percent)				
Census Block Group	County	Census Block Group	County [a]	EPA Region 4	State	United States
130771701003	Coweta	17	27	36	44	36
130459108002	Carroll	5	27	36	44	36
130459108001	Carroll	11	27	36	44	36
130970804023	Douglas	12	51	36	44	36
130970804022	Douglas	8	51	36	44	36
130970804021	Douglas	13	51	36	44	36
130970804031	Douglas	37	51	36	44	36
130970804043	Douglas	45	51	36	44	36
132231206051	Paulding	18	25	36	44	36
132231204003	Paulding	14	25	36	44	36
132231204002	Paulding	20	25	36	44	36
132231204001	Paulding	19	25	36	44	36
132231203021	Paulding	17	25	36	44	36
132231203023	Paulding	43	25	36	44	36
132231203021	Paulding	17	25	36	44	36
132231201041	Paulding	11	25	36	44	36
132231201031	Paulding	18	25	36	44	36
130159610001	Bartow	9	16	36	44	36
130159610002	Bartow	6	16	36	44	36
130159610004	Bartow	17	16	36	44	36
130159610003	Bartow	11	16	36	44	36
130159603002	Bartow	9	16	36	44	36
130159603001	Bartow	16	16	36	44	36
130159602005	Bartow	2	16	36	44	36
130159602001	Bartow	5	16	36	44	36
131299708003	Gordon	10	20	36	44	36
131299708001	Gordon	26	20	36	44	36
131299704001	Gordon	19	20	36	44	36
131299703001	Gordon	2	20	36	44	36
131299702001	Gordon	7	20	36	44	36
132130107003	Murray	0	16	36	44	36
132130107002	Murray	9	16	36	44	36
133130012002	Whitfield	45	38	36	44	36

Source: EPA, 2015a

[a] Minority population percentages presented in the EJSCREEN tool are based on the 2008-2012 American Community Survey 5-Year Estimates. Therefore, county percentages vary slightly from those listed in table B.6.g-1, which are based on the 2010-2014 American Community Survey 5-Year Estimates.

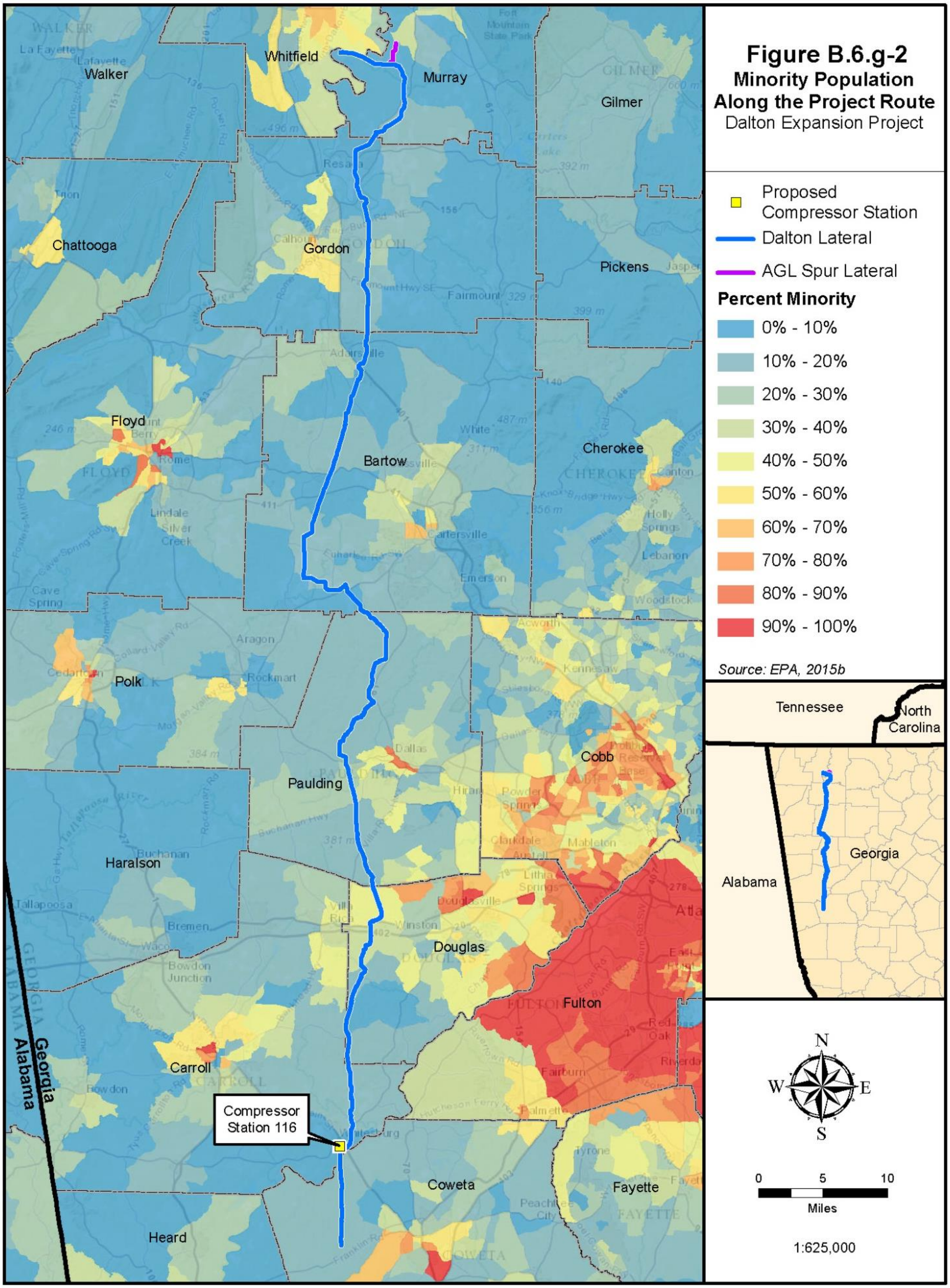

Figure B.6.g-2

Minority Population Along the Project Route

Dalton Expansion Project

Source: EPA, 2015b

Construction and operation of the Project would create temporary economic benefits for local communities by generating employment opportunities and local expenditures by workers. Completion of the Project would also result in an increase in state and local property tax revenues. These economic benefits could potentially impact minority and low-income populations in the counties crossed by the Project. We conclude that no disproportionately high and adverse impacts on environmental justice populations would be expected. Also, no disproportionately high and adverse impacts on environmental justice populations as a result of impacts on other resources would be expected.

7. Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires FERC to take into account the effect of its undertakings (including the issuance of certificates) on any properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP) and to provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the undertaking. Transco, as a non-federal party, is assisting the FERC in meeting its obligations under section 106 of the NHPA by preparing the necessary information, analyses and recommendations as authorized by 36 CFR Part 800.2(a)(3).

The FERC defines the area of potential effect (APE) for direct effects to include the construction right-of-way along the pipeline route, ATWS areas, compressor/meter station, staging areas, and new or to-be-improved access roads. The APE for indirect (visual or audible) effects includes those aboveground ancillary facilities or other Project elements that are visible from historic properties in which setting contributes to their NRHP-eligibility.

Transco conducted cultural resource surveys between June 2014 and October 2015 for the Project pipeline route and associated aboveground facilities. This included archaeological surveys along the pipeline route and an inventory of all historic structures within the Project viewshed. Cultural resources surveys were conducted within a 600-foot-wide survey corridor and the total acreage of aboveground facility construction footprints plus an additional 50-foot-wide buffer. To date, archaeological survey has been completed for about 111.4 miles of the total 114.9 miles of pipeline corridor, Compressor Station 116, and three M&R stations. Historic structures surveys have been completed along the entire pipeline route. Archaeological surveys have not been completed for about 3.5 miles of the pipeline corridor, access roads, contractor yards, and staging areas. Historic structures surveys have not been conducted at the compressor station, M&R stations, access roads, and contractor yards.

The archaeological survey identified 62 isolated finds, three previously recorded sites, and 61 newly recorded archaeological sites within the APE. The sites include 36 prehistoric sites, 8 historic sites, and 20 sites containing both historic and prehistoric components (Cardno, Inc., 2015b). A majority (48) of the archaeological sites (30 prehistoric, 5 historic, and 13 containing both historic and prehistoric components) and all 62 isolated finds are recommended as not eligible for listing in the NRHP.

Sixteen sites have not been evaluated for listing in the NRHP. Transco recommends that seven sites with unknown eligibility (three prehistoric [9BR1131, 9GO261, and 9GO305, which includes the previously recorded site 9GO306], one historic [9PA553], and three multicomponent [9BR1132, 9GO336, and 9PA517]) be avoided or undergo additional testing to determine their eligibility for listing in the NRHP.

Transco recommends a metal detection survey for historic site (9BR1170). The remaining eight unevaluated sites could not be delineated to their fullest extent due to environmental conditions, land access, or survey corridor limits; however, the portion of these sites located within the APE are recommended as not eligible for listing in the NRHP due to the lack of research potential.

Three historic cemeteries (9BR1069, 9CL433, and 9DO201) were identified and would be avoided by the Project. Transco recommends a ground penetrating radar survey at the cemeteries to confirm the boundaries and ensure the Project does not affect unidentified portions of the cemeteries.

In October 2015, Transco conducted a submerged cultural resources pedestrian and remote sensing survey of the Project where it crosses the Etowah River in order to identify any submerged cultural features such as rock dams or fish weirs (Faught, 2016). No cultural resources were identified during this survey.

The historic resource survey identified 54 historic resources located within the APE, including one NRHP-listed historic district (Etowah Valley District), one NRHP-listed historic property (John Thomas Carnes Family Log House), 43 historic structures, and 9 linear resources, including Trail of Tears Roundup Routes (Cardno, Inc., 2015a and 2015c). The Project would cross the boundaries of the John Thomas Carnes Family Log House. The Project would avoid all standing structures and therefore not have a have a direct effect on the historic property. There may be temporary indirect effects caused by construction activities.

The Project crosses the boundary of the Etowah Valley District, which is listed in the NRHP. The boundary of the district is defined by the natural Etowah River watershed and is crossed in five separate locations by the Project for a total of 6.9 miles. Seven archaeological sites were identified within the APE in the Etowah Valley District (9BR1131, 9BR1132, 9BR1152, 9BR1156, 9BR1163, 9BR1171, and 9BR1173). One of the historic cemeteries outside of the APE at which ground penetrating radar is recommended (9BR1069) is also located within the District.

The Project is located in the vicinity of the Trail of Tears National Historic Trail which follows routes used to remove Cherokee people from their homelands, including in Georgia, to present-day Oklahoma. Roundup Routes are trails that were used to move people from temporary camps in Georgia to removal camps in Tennessee. The Project does not cross the Trail's historic property boundary which has been listed in the NRHP. The Project does cross four Roundup Routes (Upper Alabama Road [State Route 293], Lower Alabama Road [State Route 20], the Western Connector [State Route 225], and an unnamed route [US Highway 41]), all of which are paved roads. These roads would be crossed by bore methods; therefore, the Project would not have a direct effect on the Roundup Routes. There may be indirect effects due to nearby tree clearing at the State Route 20 and one of the State Route 225 crossings and construction may temporarily affect sightlines at the two State Route 225 crossings.

Transco submitted the addendum 2 Phase I survey report which incorporated the results from the initial survey report and the addendum 1 report as well as the results from additional surveys to the State Historic Preservation Office (SHPO) on December 17, 2015. This report includes the results of metal detection survey for sites 9GO336 and 9BR1133.

On January 13, 3016, the SHPO commented on the addendum 2 Phase I survey report. The SHPO concurred with the recommendation that 48 sites and 62 isolated finds are not eligible for listing in the NRHP, and three sites that were not fully delineated but lack research potential (9BR1147, 9BR1173, and 9GO340) are not eligible for listing in the NRHP. The SHPO recommended avoidance or additional testing to determine the eligibility of eight sites (9PA553, 9DO203, 9BR1131, 9BR1132, 9GO261, 9GO305, 9GO336, and 9PA517). Five sites (9PA557, 9BR1133, 9BR1146, 9BR1156, and 9DO198) could not be delineated to their fullest extent due to environmental conditions, land access, or survey corridor limits and the SHPO concurred that the portion of these sites located within the APE lack of research potential.

The SHPO concurred with the recommendation to conduct an intensive metal detection survey within the APE for site 9BR1170 and also requested additional primary source research. The SHPO also concurred with the recommendation to conduct ground penetrating radar survey to delineate the boundaries of three historic cemeteries (9BR1069, 9CL433, and 9DO201) that are located adjacent to the APE to ensure the boundaries do not extend into the APE.

Results of additional surveys of access roads and areas not previously surveyed will be provided in a subsequent addendum report when the surveys are complete.

Transco submitted the initial historic resources report to the SHPO on May 25, 2015. The SHPO responded on July 2, 2015, requesting additional information. Transco submitted an addendum historic resources report and addressed the SHPO’s comments on September 14, 2015. To date, comments have not been received from the SHPO on this report.

Unanticipated Discoveries Plan

Transco has prepared an Unanticipated Discovery Plan which outlines the procedures that would be followed in the event that unanticipated cultural resources or human remains are encountered during construction. The plan provides for the notification of interested parties, including Indian tribes, in the event of a discovery. We have reviewed this plan and find it acceptable.

Native American Consultation

Transco contacted 27 Native American groups with traditional ties to the areas that would be affected by the Project. Transco wrote letters to the following federally recognized tribes: Absentee Shawnee Tribe of Indians of Oklahoma, Alabama Coushatta Tribe of Texas, Alabama Quassarte Tribal Town, Caddo Nation of Oklahoma, Catawba Indian Nation, Cherokee Nation, Chickasaw Nation, Chitimacha Tribe of Louisiana, Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Delaware Tribe of Indians, Eastern Band of Cherokee Indians, Eastern Shawnee Tribe of Oklahoma, Jena Band of Choctaw Indians, Kialegee Tribal Town, Kiowa Indian Tribe of Oklahoma, Miccosukee Tribe of Indians of Florida, Mississippi Band of Choctaw Indians, Muscogee (Creek) Nation of Oklahoma, Poarch Band of Creek Indians, the

Quapaw Tribe of Indians, Sac & Fox Tribe of the Mississippi in Iowa, the Seminole Nation of Oklahoma, Seminole Tribe of Florida, Shawnee Tribe, the Thlopthlocco Tribal Town, and the United Keetwoowah Band of Cherokee Indians. Transco sent letters to these tribes on May 29, 2014, requesting comments on the Project and the identification of any cultural or religious sites significant to the tribe.

The Quapaw Tribe of Indians replied on June 23, 2014, requesting a phone call to discuss the Project further. Transco called the Quapaw Tribe and after the discussion the Tribe determined the Project is located outside of their area of interest and no additional contact would be required for the Project. The Chicksaw Nation responded on June 25, 2014, indicating they prefer to deal directly with FERC. The Muscogee (Creek) Nation of Oklahoma and the United Keetwoowah Band of Cherokee Indians replied on June 25, 2014, and requested copies of materials provided to FERC and SHPO. Materials, including the Research Design, Phase I Archaeological Survey reports, and Historic Resource Survey reports, have been provided to the Muscogee (Creek) Nation as they have been submitted to the FERC and SHPO in May and September, 2015.

On July 17, 2014, Transco sent follow up letters to 22 tribes: Absentee Shawnee Tribe of Indians of Oklahoma, Alabama Coushatta Tribe of Texas, Alabama Quassarte Tribal Town, Caddo Nation of Oklahoma, Catawba Indian Nation, Cherokee Nation, Chitimacha Tribe of Louisiana, Coushatta Tribe of Louisiana, Delaware Tribe of Indians, Eastern Band of Cherokee Indians, Eastern Shawnee Tribe of Oklahoma, Jena Band of Choctaw Indians, Kialegee Tribal Town, Kiowa Indian Tribe of Oklahoma, Miccosukee Tribe of Indians of Florida, Mississippi Band of Choctaw Indians, Poarch Band of Creek Indians, Sac & Fox Tribe of the Mississippi in Iowa, the Seminole Nation of Oklahoma, Seminole Tribe of Florida, Shawnee Tribe, and the Thlopthlocco Tribal Town that had not responded to the initial May 29, 2014 letter.

On November 4 and 5, 2014, we sent letters to 19 federally recognized tribes: Kialegee Tribal Town, Miccosukee Tribe of Indians of Florida, Muscogee (Creek) Nation of Oklahoma, Poarch Band of Creek Indians, Seminole Nation of Oklahoma, Seminole Tribe of Florida, Shawnee Tribe, Thlopthlocco Tribal Town, and the United Keetoowah Band of Cherokee Indians, Absentee Shawnee Tribe of Indians of Oklahoma, Alabama Coushatta Tribe of Texas, Alabama Quassarte Tribal Town, Cherokee Nation, Chickasaw Nation, Choctaw Nation, Coushatta Tribe of Louisiana, Eastern Band of Cherokee Indians, Eastern Shawnee Tribe of Oklahoma, and the Jena Band of Choctaw Indians to request their comments on the Project. On November 17, 2014, we sent letters to three additional federally recognized tribes: Catawba Indian Nation, Mississippi Band of Choctaw Indians, and Tuscarora Nation.

On November 25, 2014, the Tuscarora Nation sent a letter indicating concern with unanticipated discovery of human remains and funerary and sacred objects during construction; Transco's Unanticipated Discovery Plan includes procedures to follow if cultural resources and/or human remains and associated objects are encountered during construction. The Tuscarora Nation also recommended contacting the Catawba Nation since the Project is in their area of interest. As indicated above, we sent a letter to the Catawba Nation on November 17, 2014.

On December 10, 2014, the Choctaw Nation of Oklahoma sent a letter stating the Project lies outside of their area of historic interest and defers to other tribes. On March 15, 2015, the

Jena Band of Choctaw Indians sent a letter indicating the Project is located outside of their area of interest and defers to the Poarch Band of Creek Indians and the Catawba Indian Nation. On August 10, 2015, the Muscogee (Creek) Nation provided comments on the Phase I survey report. Transco's addendum 2 survey report addressed most of the tribe's concerns. The tribe concurred with the recommendations for all sites located within the APE

General Impacts and Mitigation

Compliance with section 106 of the NHPA has not been completed for the project. Transco has not completed cultural resources surveys and evaluations. Consultation with the SHPO and Indian tribes is not yet complete. If NRHP-eligible resources are identified which cannot be avoided, Transco would prepare treatment plans for review and approval by the appropriate parties including FERC, the SHPO, and Indian tribes. The FERC would afford the ACHP an opportunity to comment in accordance with 36 CFR 800.6. Implementation of a treatment plan would only occur after certification of the project and after FERC provides written notification to proceed.

To ensure that FERC's responsibilities under the NHPA and its implementing regulations are met, **we recommend that:**

- **Transco should not begin implementation of any treatment plans/measures (including archaeological data recovery); construction of facilities; or use staging storage, or temporary work areas and new or to-be-improved access roads <u>until</u>:**
  - **a. Transco files with the Secretary:**
    - **i. all cultural resources survey reports, including special studies such as ground penetrating radar, evaluation reports, avoidance plans and treatment plans;**
    - **ii. comments on survey reports, special studies, evaluation reports, avoidance plans and treatment plans from the SHPO, as well as any comments from federally recognized Indian tribes;**
    - **iii. the ACHP is afforded an opportunity to comment on the undertaking if historic properties would be adversely affected; and**
  - **b. the FERC staff reviews and the Director of OEP approves all cultural resources reports and plans, and notifies Transco in writing that treatment plans/mitigation measures may be implemented and/or construction may proceed.**

All material filed with the Commission that contains <u>location, character, and ownership</u> information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering "<u>CONTAINS PRIVILEGED INFORMATION – DO NOT RELEASE</u>."

8. Air Quality and Noise

a. Air Quality

This section existing air quality, identifies the construction and operating emissions and projected air quality impacts, and outlines methods of compliance with regulatory requirements.

Construction and operation of the Project could potentially have an effect on local and regional air quality. Federal and state air quality standards have been designed to protect human health and the environment from airborne pollutants. The EPA has developed National Ambient Air Quality Standards (NAAQS) for criteria air pollutants as further described below. The NAAQS were set at levels the EPA believes are necessary to protect human health and welfare.

Greenhouse gases (GHG), the most common of which are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone, hydrofluorocarbons, and perfluorocarbons, are naturally occurring pollutants in the atmosphere as well as products of human activities, including burning fossil fuels. Fossil fuel combustion emits CO_2, CH_4, and N_2O. GHG emissions are generally calculated in terms of carbon dioxide equivalents (CO_2e) where the warming potential of each gas is expressed as a multiple of the warming potential of CO_2e. GHG emissions are typically used as a proxy to evaluate impacts on climate change, which is further discussed in section B.10.

Existing Air Quality and Environment

The vast majority of the Project would occur in Georgia with small portions in Virginia and North Carolina. The Project area is located in a humid subtropical climatic zone. Precipitation in the region generally falls in the form of rain, but small amounts of snowfall may occur, especially in the northern portion of the Project area. The northern portion of the Project area is characterized by rolling hills and higher elevations. Areas of the Project without mountains have average temperatures ranging from less than 32 degrees Fahrenheit (°F) in winter months to greater than 90 °F in peak summer months. The wettest month of the year is March, and the driest months of the year are September and October. Average annual precipitation is 50 to 55 inches. Surface winds are predominately from the southwest from the Gulf of Mexico during summer months and from the northwest from over continental polar air masses during the winter months; however, local conditions can impact wind directions at any time (National Oceanic and Atmospheric Administration, 2011).

The Clean Air Act of 1970 (CAA) and the EPA designate seven pollutants for which the NAAQS are promulgated. The NAAQS for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter less than 10 microns (PM_{10}), particulate matter with an aerodynamic diameter less than 2.5 microns ($PM_{2.5}$), carbon monoxide (CO), ozone, and lead were established to protect human health (primary standards) and human welfare (secondary standards). State air quality standards cannot be less stringent than the NAAQS. Georgia, Virginia, and North Carolina have adopted the NAAQS, as defined in 40 CFR 50[9] (EPA, 2015b). North Carolina has also adopted total suspended particulate standards that are applicable in the

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[9] NAAQS are available for review online at: http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr50_main_02.tpl.

Project area[10] (North Carolina Department of Environment and Natural Resources, 2015). Federal, state, and local agencies monitor air quality concentrations to determine compliance with NAAQS and state air quality standards. The monitored air quality concentrations for criteria pollutants in the vicinity of the proposed Compressor Station 116 are summarized in table B.8.a-1.

TABLE B.8.a-1

Monitored Air Quality Concentrations for Criteria Pollutants for the Dalton Expansion Project

Monitoring Locations [a]	Year	CO 2nd Max. 1-hr (µg/m^3)	CO 2nd Max. 8-hr (µg/m^3)	NO_2 98th Perc. 1-hr (µg/m^3)	NO_2 Annual (µg/m^3)	Ozone 4th Perc. 1-hr (µg/m^3)	SO_2 99th Perc. 1-hr (µg/m^3)	SO_2 3-hr (µg/m^3)	$PM_{2.5}$ 98th Perc. 24-hr (µg/m^3)	$PM_{2.5}$ Annual (µg/m^3)	PM_{10} Max. 24-hr (µg/m^3)	Lead Mean 24-hr (µg/m^3)
Carroll County Monitoring Locations	2011 to 2013	745 [b]	618 [b]	32.4 [b]	5 [b]	--	30.3 [c]	23.8 [c]	19.5	9.3	38 [d]	--

[a] Source: GADNR EPD, 2014

[b] Yorkville monitoring site; Paulding County, GA

[c] Decatur monitoring site; DeKalb County, GA

[d] Statewide rural background concentration representative of the land use in the vicinity of Compressor Station 116.

The following portions of the Project area are currently in non-attainment for one or more of the NAAQS:

- Coweta County, Georgia – moderate non-attainment for $PM_{2.5}$ (1997 standard) and marginal non-attainment for 8-hour ozone (2008 standard) – Atlanta Metropolitan Area;
- Carroll County, Georgia – moderate non-attainment for $PM_{2.5}$ (1997 standard) – Atlanta Metropolitan Area;
- Douglas County, Georgia – moderate non-attainment for $PM_{2.5}$ (1997 standard) and marginal non-attainment for 8-hour ozone (2008 standard) – Atlanta Metropolitan Area;
- Paulding County, Georgia – moderate non-attainment for $PM_{2.5}$ (1997 standard) and marginal non-attainment for 8-hour ozone (2008 standard) – Atlanta Metropolitan Area;
- Bartow County, Georgia – moderate non-attainment for $PM_{2.5}$ (1997 standard) and marginal non-attainment for 8-hour ozone (2008 standard) – Atlanta Metropolitan Area; and
- Prince William County, Virginia – moderate non-attainment for $PM_{2.5}$ (1997 standard) and marginal non-attainment for 8-hour ozone (2008 standard), Ozone Transport Area – Washington, DC-Maryland – Virginia Metropolitan Area.

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[10] North Carolina state air quality standards are available for review online at: http://daq.state.nc.us/rules/rules/secD0400.pdf.

All other portions of the Project area are currently classified by the EPA as in attainment for all criteria pollutants.

Federal Regulatory Requirements

The CAA, 42 U.S. Code 7401 et seq., as amended in 1977 and 1990, and 40 CFR Parts 50 through 99 provide the federal statutes and regulations governing air pollution in the United States. The following federal requirements have been reviewed for applicability to the Project.

Prevention of Significant Deterioration and New Source Review

Preconstruction air permitting programs regulating the construction of new stationary sources of criteria pollutants are commonly referred to as New Source Review (NSR), which has two permitting programs:

- Prevention of Significant Deterioration (PSD); and
- non-attainment NSR.

Sources that have the potential to emit less than the major NSR thresholds are subject to state or local permitting requirements. The PSD program established a set of increments for new air pollution that would be allowed over a baseline level and set the maximum allowable increases in air pollution permitted for new sources.

Compressor Station 116 and the Beasley Road Meter Station would potentially be subject to non-attainment NSR because they are located in areas designated as non-attainment for one or more criteria pollutants. As shown in the Operation Impacts and Mitigation section below, the potential emissions for these facilities would be below non-attainment NSR thresholds; therefore, these facilities would not be subject to non-attainment NSR.

While sources located in nonattainment areas are subject to non-attainment NSR, permits for major sources located in attainment or unclassifiable areas are subject to the PSD program. Depending on potential emissions and facility location, a new or modified existing source could be subject to both permitting programs. The PSD major source threshold for criteria pollutants is 100 tons per year (tpy) for 28 listed source categories. The PSD major source threshold for unlisted source categories, such as natural gas pipeline compressor stations, is 250 tpy of any criteria pollutant. The PSD major source reporting threshold for GHG is 100,000 tpy expressed in CO_2e. As shown in the Operation Impacts and Mitigation section below, the potential emissions from each facility would not exceed PSD major source thresholds.

On June 23, 2014, the U.S. Supreme Court issued a decision addressing the application of stationary source permitting requirements to GHGs. In the decision, the Supreme Court deemed that the EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. However, if a Project were subject to PSD permitting for one or more criteria pollutants and the potential GHG emissions exceeded the major source reporting threshold of 100,000 tpy expressed in CO_2e, then GHG emissions would be subject to PSD review. None of the proposed aboveground facilities included in the Project would be subject to PSD; therefore, the GHG emissions associated with the Project would not be subject to PSD review.

Federal Class I Areas

Under the PSD program, 156 mandatory Class I federal areas are currently designated by the EPA to protect certain areas (e.g., wilderness areas, national parks, national forests) to ensure that deterioration of existing air quality-related values, such as visibility, are minimized in these areas. Class I areas have the most restrictive PSD increments. For a new major source or major modification located within 62 miles (100 kilometers) of a Class I area, the facility is required to notify the appropriate federal officials and assess the impacts of that project on the nearby Class I area. The nearest Class I areas to the proposed Compressor Station 116 are shown in table B.8.a-2. Compressor Station 116 would be located greater than 62 miles of the nearest Class I area. Transco also completed a Class I area air quality screening assessment, which is further described in the Operation Impacts and Mitigation section below.

TABLE B.8.a-2

Nearest Class I Areas to Compressor Station 116 for the Dalton Expansion Project

Class I Area	Distance from Compressor Station
Cohutta Wilderness Area – Georgia (USFS)	97 miles (156 km)
Great Smoky Mountains National Park – North Carolina and Tennessee (NPS)	140 miles (225 km)
Sipsey Wilderness Area, Alabama (USFS)	155 miles (250 km)
Joyce Kilmer-Slickrock Wilderness Area, North Carolina and Tennessee (USFS)	162 miles (261 km)

New Source Performance Standards

The New Source Performance Standards (NSPS), codified in 40 CFR 60, regulate criteria pollutants from stationary sources and have been incorporated into the Georgia air pollution control regulations. The NSPS are divided into subparts based on source types and sizes. The potentially applicable subparts are addressed below.

Subpart KKKK applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. The natural gas-fired turbines proposed at Compressor Station 116 would be subject to Subpart KKKK. Each of the proposed turbines meet the definition of a new turbine firing natural gas with a heat input rating between 50 and 850 million British thermal units per hour (MMBtu/hr). As such, the oxides of nitrogen (NO_X) emissions from each turbine would be limited to 25 parts per million on a dry basis at 15 percent oxygen. Solar Turbines guarantees that each of the proposed turbines would meet this NO_X limit. Initial and annual performance testing is required to demonstrate compliance with this NO_X limit and all performance tests must meet all of the requirements outlined in 40 CFR 60.4400 in order to be valid. Subpart KKKK also limits the sulfur content of fuel burned in each turbine to 0.0600 pound of SO_2 per 10 million British thermal units (MMBtu). Utilizing natural gas as a fuel source ensures compliance with the SO_2 standard due to the low sulfur content of pipeline quality natural gas.

Subpart JJJJ applies to stationary spark ignition reciprocating internal combustion engines (RICE). The emergency generators proposed to be located at Compressor Station 116 and the Looper Bridge Road Meter Station would both be subject to the NO_X, CO, and volatile organic compound (VOC) requirements of this subpart. The emission standards vary depending on the date of manufacture of the engine and whether the engine is an emergency or non-emergency unit. In addition to emission standards, Subpart JJJJ requires performance testing, work practice, monitoring, recordkeeping, and reporting for the engines. The proposed engines would comply with the emission standards, and the additional requirements would be included in the EPD's air permits issued for each of the facilities.

Subpart OOOO applies to crude oil and natural gas production, transmission, and distribution. Compressor Station 116, the Beasley Road Meter Station, the Looper Bridge Road Meter Station, and the Murray Meter Station would all fall under the natural gas transmission and storage segment of Subpart OOOO. The only sources affected by Subpart OOOO at natural gas transmission facilities are new storage tanks with potential VOC emissions greater than 6 tpy. The Project is not proposing any sources at these facilities that would be subject to any of the requirements of Subpart OOOO.

National Emission Standards for Hazardous Air Pollutants

The National Emission Standards for Hazardous Air Pollutants, codified in 40 CFR 63, regulate hazardous air pollutants (HAP) from stationary sources through Maximum Available Control Technology. Facilities are defined as major sources of HAPs if the facility-wide potential emissions are greater than 10 tpy for a single HAP or greater than 25 tpy for total HAPs. If neither of these thresholds is exceeded then the facilities are considered area sources of HAPs.

Subpart HHH applies to Natural Gas Transmission and Storage Facilities at major sources of HAPs that transport or store natural gas prior to entering the pipeline to a local distribution company or end user. New and existing glycol dehydration units located at a facility are an affected source. None of the facilities associated with the Project would be considered major sources of HAPs, and there are no glycol dehydration units proposed as part of the Project. Therefore, Subpart HHH would not apply to the Project.

Subpart YYYY applies to stationary combustion turbines at major sources of HAPs. Compressor Station 116 would not be a major source of HAPs; therefore, Subpart YYYY would not apply to the facility.

Subpart ZZZZ applies to stationary RICE. Any new stationary RICE located at an area source must meet the requirements of NSPS Subpart JJJJ to demonstrate compliance with National Emission Standards for Hazardous Air Pollutants Subpart ZZZZ. All of the compressor stations would be area sources of HAPs and subject to NSPS JJJJ; therefore, no additional requirements of Subpart ZZZZ apply to the RICE at the compressor stations.

Subpart JJJJJJ applies to industrial, commercial, and institutional boilers that are located at area sources of HAPs. This rule does not apply to gas-fired boilers as defined by the subpart. The proposed line heaters at the Looper Bridge Road Meter Station would meet the definition of a gas-fired boiler; therefore, Subpart JJJJJJ would not apply to any of the line heaters proposed at the Looper Bridge Road Meter Station.

Title V Permitting

Title V of the CAA, codified in 40 CFR 70, requires states to establish an air operating permit program. These rules are incorporated into the Georgia rules as Chapter 391-3-1-.03 (10).

The Title V major source thresholds are 100 tpy for each criteria pollutant excluding GHGs, 10 tpy for individual HAPs, 25 tpy for total HAPs, and 100,000 tpy for GHG as CO_2e. As shown in the Operation Impacts and Mitigation section below, none of the aboveground facilities would be a Title V major source; therefore, they would not require a Title V operating permit.

Greenhouse Gas Mandatory Reporting Rule

On October 30, 2009, the EPA published the final Mandatory Reporting of Greenhouse Gases rule, establishing the Greenhouse Gas Reporting Program (GHGRP) codified in Title 40 CFR 98. Since 2011, the GHGRP has required large direct emitters of GHGs, and certain suppliers (e.g., of fossil fuels, petroleum products, industrial gases, and CO_2) to report GHG information annually. Subpart W of Title 40 CFR 98 applies to petroleum and natural gas systems, including:

- both onshore and offshore petroleum and natural gas production;
- onshore natural gas processing;
- natural gas transmission compression;
- underground natural gas storage; and
- liquefied natural gas storage, import, and export facilities that emit greater than or equal to 25,000 metric tons[11] of GHG, as CO_2e, per year.

According to the EPA's GHGRP webpage, "EPA is using the Greenhouse Gas Reporting Program data to improve estimates of national greenhouse gas emissions… and to inform regulatory actions and voluntary emission reduction efforts" (EPA, 2016a).

GHGs occur in the atmosphere both naturally and as a result of human activities, such as the burning of fossil fuels. These gases are the integral components of the atmosphere's greenhouse effect that warms the earth's surface and moderates day/night temperature variation. The most abundant GHGs are water vapor, CO_2, CH_4, N_2O, and ozone. The primary GHGs produced by fossil fuel combustion are CO_2, CH_4, and N_2O. During construction and operation of the Project, these GHGs would be emitted from non-electrical construction equipment and any compressors, line heaters, and generators. Emissions of GHGs are typically expressed in terms of CO_2e, where the potential of each gas to increase heating in the atmosphere is expressed as a multiple of the heating potential of CO_2, or its global warming potential.

Emissions of GHG pollutants associated with the construction and operation of the Project, including all direct and indirect emission sources were calculated. In addition, GHG emissions were converted to total CO_2e emissions based on the global warming potential of each pollutant. The estimated GHG emissions from construction of the Project are about 34,232 metric tons in calendar year 2016 and 15,438 metric tons in calendar year 2017. The estimated GHG emissions from operation of the Project (i.e., Compressor Station 116, Beasley Road Meter Station, Murray Meter Station, Looper Bridge Road Meter Station, and fugitive pipeline emissions) on a potential basis are about 110,127 metric tons per year (mtpy). The GHGRP does not apply to construction emissions; however, we have included the construction emissions for accounting and disclosure purposes. The combustion-related GHG emissions from operation of Compressor Station 116 may exceed 25,000 mtpy based upon facility emission

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[11] A metric ton is 2,205 pounds, or about 1.1 tons.

calculation. If all actual GHG emissions from Compressor Station 116 are equal to or greater than 25,000 mtpy, Transco would be required to comply with all applicable requirements of 40 CFR 98. Based upon Transco's current estimates, the GHG emissions from the operation of the Beasley Road, Murray, and Looper Bridge Road Meter Stations would not exceed GHG emission reporting thresholds.

General Conformity

The lead federal agency must conduct a conformity analysis if a federal action would result in the generation of emissions that would exceed the conformity threshold levels of the pollutant(s) for which an air basin is designated non-attainment or maintenance. According to section 176(c) of the CAA (Title 40 CFR Part 93 Subpart B), a federal agency cannot approve or support any activity that does not conform to an approved SIP.

Conforming activities or actions should not, through additional air pollutant emissions:

- cause or contribute to new violations of the NAAQS in any area;
- increase the frequency or severity of any existing violation of any NAAQS; or
- delay timely attainment of any NAAQS or interim emission reductions.

General conformity assessments must be completed when the total direct and indirect emissions of a project would equal or exceed specified pollutant thresholds on a calendar year basis for each non-attainment or maintenance area. With regard to the Project, the relevant general conformity pollutant applicability thresholds are shown in table B.8.a-3, which are based on the current air quality designations (e.g., serious non-attainment, moderate non-attainment, maintenance, etc.).

TABLE B.8.a-3

Summary of Emissions Subject to General Conformity Review Associated with the Dalton Expansion Project

Designated Pollutant	Designated Area	Threshold (tpy)	Pollutant or Precursor	2016 Total Non-Exempt Emissions (tons)	2017 Total Non-Exempt Emissions (tons) [a]	Ongoing Operational Emissions (tpy)
Ozone	Atlanta, GA	100	VOC	8.1	5.5	0.2
		100	NO_X	85.6	50.8	0.0
	Washington, DC-MD-VA (Inside OTR)	50	VOC	0.3	0.0	0.0
		100	NO_X	1.7	0.0	0.0
$PM_{2.5}$	Atlanta, GA	100	$PM_{2.5}$	19.4	11.7	0.0
		100	SO_2	0.1	0.1	0.0
		100	NO_X	85.6	50.8	0.0
	Washington, DC-MD-VA (Inside OTR)	100	$PM_{2.5}$	0.5	<0.1	0.0
		100	SO_2	<0.1	<0.1	0.0
		100	NO_X	1.7	<0.1	0.0

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[a] Includes non-except operational emissions that may occur during 2017.

Notes: GA = Georgia; OTR = Ozone Transport Region; MD = Maryland; VA =Virginia.

Construction emissions for the Project subject to general conformity review are presented in table B.8.a-3. The construction emissions are separated by calendar year and non-attainment area for comparison to the associated general conformity applicability threshold.

Operational emissions for the Project are presented in the Operation Impacts and Mitigation section below. The operational emissions that would be permitted or otherwise covered by major or minor NSR permitting programs are not subject to the general conformity applicability analysis. Estimated emissions for the Project subject to review under the general conformity thresholds (construction emissions and operational emissions not subject to major or minor NSR permitting), along with a comparison to the applicable general conformity threshold, are presented in table B.8.a-3.

As presented in table B.8.a-3, the construction and operation emissions estimated for the Project in non-attainment and maintenance areas would be below the general conformity applicability thresholds; therefore, a general conformity determination is not required for the Project. However, while general conformity applicability thresholds are not exceeded in any calendar year, if significant construction schedule modifications occur within the Atlanta, Georgia Non-Attainment Area that materially impact the amount of NO_X emissions generated in a calendar year, the potential exists to exceed general conformity applicability thresholds for NO_X emissions from construction. Therefore, **we recommend that:**

- **If changes to the Project construction schedule occur that would materially impact the amount of NO_X emissions generated in a calendar year, Transco should file, in its weekly status report, revised construction emissions estimates prior to implementing the schedule modification with the Secretary demonstrating that the annual NO_X emissions resulting from the revised construction schedule do not exceed general conformity applicability thresholds.**

State and Local Air Quality Regulations

Georgia Rules for Air Quality Control (Chapter 391-3-1) regulate the construction and operation of emission sources at new or existing facilities, such as compressor stations. The Compressor Station 116 combustion turbines and emergency generator and Looper Bridge Road Meter Station line heaters and emergency generator would be subject to the applicable requirements stipulated in Georgia's Rules for Air Quality Control. The Beasley Road and Murray Meter Stations would not include equipment subject to the requirements in Chapter 391-3-1. Emissions from meter stations would be below *de minimis* levels required for permitting.

Potential state regulations that are applicable to Compressor Station 116 and the Looper Bridge Road Meter Station are discussed further below. Transco submitted an air permit application for Compressor Station 116 to the EPD on October 20, 2014, and an air permit application for the Looper Bridge Road Meter Station on June 12, 2015. The air permit for Compressor Station 116 was issued by the GADNR on March 11, 2015, and the air permit for the Looper Bridge Road Meter Station was issued by the GADNR on July 10, 2015.

Visible Emissions – Chapter 391-3-1-.02(2)(b) limits opacity to less than 40 percent for emission sources exhausting through stacks or similar structures. The proposed emissions sources would comply with this rule by combusting only natural gas.

Fuel-Burning Equipment – Chapter 391-3-1-.02(2)(d) states that no person shall cause, let, suffer, permit, or allow emissions from any air contaminant source the opacity of which is equal to or greater than 20 percent except for one 6-minute period per hour of not more than 27 percent opacity. This rule also sets specific limits for the emission of fly ash and/or other particulate matter from any fuel-burning equipment constructed after January 1, 1972 with a heat input equal to or greater than 10 MMBtu/hr and equal to or less than 250 MMBtu/hr.

The Compressor Station 116 turbines and emergency generator and Looper Bridge Road Meter Station line heaters and emergency generator would be subject to this rule. Compliance with the limits set forth in this rule would be maintained by using good combustion practices and by the exclusive firing of pipeline-quality natural gas in all proposed combustion equipment.

Sulfur Dioxide – Chapter 391-3-1-.02(2)(g) sets a limit on the sulfur content of fuels to 2.5 percent by weight for sources with heat inputs below 100 MMBtu/hr. The Compressor Station 116 turbines and emergency generator and Looper Bridge Road Meter Station line heaters and emergency generator would be subject to this limit. Transco would comply with this rule by combusting only pipeline-quality natural gas having a sulfur content less than 2.5 percent by weight.

NO_X Emissions from Stationary Gas Turbines and Stationary Engines Used to Generate Electricity – Chapter 391-3-1-.02(2)(mmm) sets forth standards of allowable NO_X emissions from any stationary gas turbine or any stationary engine used to generate electricity with a capacity greater than or equal to 100 kilowatts and less than or equal to 25 megawatts. This rule does not apply to the Compressor Station 116 turbines because they are not used to generate electricity and are only used to move gas.

Emergency standby stationary gas turbines and stationary engines that meet the definition of 391-3-1-.02(2)(mmm)(4)(i) are not subject to the emission limitations of this rule. Per this rule, "emergency standby stationary gas turbines and stationary engines" are defined as a unit that operates only when electric power from the local utility is not available and which operates less than 200 hours per year. Transco would operate the Compressor Station 116 emergency generator in accordance with this operating limitation; therefore, the emergency generator at Compressor Station 116 would not be subject to the requirements of this rule. This rule does not apply to sources located in Murray County and, therefore, the Looper Bridge Road Meter Station emergency generator is not subject to the requirements of this rule.

General Provisions – Under the general provisions specified in Chapter 391-3-1-.02(2)(a), the Director of the EPD approved the use air toxics modeling guidelines by the Air Protection Branch. These guidelines may be used in the review of all air quality applications for permit to construct/modify potential sources of air pollutants. The highest air toxic emission rate from the Project is formaldehyde, which is estimated to be emitted at a rate of 0.65 tpy at Compressor Station 116. Transco consulted with the EPD and determined that air toxic modeling is not needed for Compressor Station 116 under Georgia State rules.

Chapter 391-3-1(6)(a) indicates that mobile sources are exempt from permitting, and no other provisions exist is Chapter 391-3-1 that would regulate pipeline construction emissions. Therefore, Project construction emissions are not subject to regulation under Georgia state air quality rules.

No permit modifications would be required for the Mainline Facility Modification sites in Virginia (Compressor Stations 165, 167, and 180). At each of these compressor stations, none of the emission-producing equipment would be modified; therefore, the Project would not be subject to any of the Virginia state permitting or air quality emission regulations. No other state or local air quality regulations are known to apply to the Project's construction or operation.

Construction Impacts and Mitigation

Construction activities associated with the Project would result in localized emissions during the construction period. Emissions associated with construction activities would include:

- diesel or gasoline exhaust emissions from construction equipment, such as bulldozers, tractors, boom trucks, pickup trucks, and other mobile equipment, as well as construction workers commuting to the work site;
- fugitive dust emissions associated with vehicle and equipment movement on unpaved and paved roads; and
- fugitive dust emissions from construction activities.

Fugitive dust emission levels would vary in relation to moisture content, composition, and volume of soils disturbed. Fugitive dust and other emissions from construction activities generally do not result in a significant increase in regional pollutant levels, although local pollutant levels could increase temporarily.

Criteria pollutant and GHG emissions from construction equipment would result from combustion of gasoline and diesel fuels, primarily NO_2, CO, VOCs, PM_{10}, $PM_{2.5}$, and CO_2e, as well as small amounts of SO_2 and HAPs. Current EPA fuel sulfur standards would also minimize emissions from construction equipment.

Table B.8.a-4 shows the estimated total construction emissions for the Project presented by calendar year.

TABLE B.8.a-4

Potential Construction Emissions for the Dalton Expansion Project

Calendar Year	NO_X (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	VOC (tons)	CO_2e (tons)	Total HAPs (tons)
2016	164.1	228.8	0.2	103.0	37.2	20.4	37,734	<0.1
2017	74.2	95.1	0.1	45.8	16.2	9.1	17,018	<0.1
Totals (Tons/Project)	**238.3**	**323.9**	**0.3**	**148.8**	**53.4**	**29.5**	**54,752**	**<0.1**

During construction and in the work areas, Transco would employ standard construction practices to control fugitive dust emissions, including:

- where possible, use of water for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land;

- application of water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces that may create significant airborne dust;

- where possible, paving/grading of roadways and maintaining them in a clean condition;

- removal of spilled or tracked dirt or other materials from paved streets, and of dried sediments resulting from soil erosion; and/or

- reducing the speed of vehicular traffic to a point below that at which significant dust emissions are created.

In addition, Transco would minimize combustion emissions associated with construction equipment by:

- utilizing the most efficient construction equipment available;
- maintaining construction equipment in proper working condition; and
- minimizing idling time for construction equipment.

Once construction activities in an area are completed, the fugitive dust and construction equipment emissions would subside and the impact on air quality resulting from the construction of the Project would cease.

Emissions would occur over the duration of construction activity and would vary along the length of the Project. As stated, impacts from construction equipment would be temporary and, based upon the information provided by Transco and proposed mitigation measures, we conclude that construction emissions would not result in a significant impact on air quality or result in a violation of any applicable ambient air quality standard.

Operation Impacts and Mitigation

The Dalton Expansion Project would result in operating emissions. The main source of operating emissions would be the aboveground facilities. The significant emission-generating sources from each of the proposed aboveground facilities are as follows:

- Compressor Station 116 – two natural gas-fired turbines, one emergency generator, one condensate liquid storage tank, and one oil/water storage tank;

- Beasley Road Meter Station – one condensate liquid storage tank;

- Murray Meter Station – one condensate liquid storage tank; and
- Looper Bridge Road Meter Station – two natural gas-fired line heaters, one emergency generator, and one condensate liquid storage tank.

Potential emissions from operation of Compressor Station 116, the Beasley Road Meter Station, Murray Meter Station, and the Looper Bridge Road Meter Station are shown in table B.8.a-5. The operation of the remainder of the Project would not result in any new significant operating emissions. The potential exists that additional line heaters may be installed at the Beasley Road and Murray Meter Stations. These line heaters, if installed, would be owned and operated by the customer and would not be owned by Transco or associated with the proposed Project. Transco was unable to obtain any additional information regarding these potential sources of operational emissions; however, based upon the size of the meter station, these emission sources are unlikely to trigger state or federal air permitting requirements and would not significant sources of air emissions.

TABLE B.8.a-5

Potential Project Operating Emissions for the Dalton Expansion Project

Operating Emission Source	NO_X (tpy)	CO (tpy)	VOC (tpy)	SO_2 (tpy)	$PM/PM_{10}/PM_{2.5}$ (tpy)	Formaldehyde (tpy)	Total HAP (tpy)	CO_2e (tpy)
Compressor Station 116	45.5	78.7	9.1	2.8	5.5	0.6	1.1	100,898
Beasley Road Meter Station	--	--	0.2	--	--	-- [a]	<0.1	406
Murray Meter Station	--	--	0.2	--	--	-- [a]	<0.1	406
Looper Bridge Road Meter Station	13.2	19.4	0.9	<0.1	1.1	<0.1	0.3	15,943
Fugitive Pipeline Emissions	--	--	--	--	--	--	--	3,741
Project Total	**58.7**	**98.1**	**10.4**	**2.8**	**6.6**	**0.7**	**1.4**	**121,394**
PSD Major Source Permit Thresholds [b]	250	250	250	250	250	N/A	N/A	100,000 [c]
Title V Major Source Permit Thresholds [b]	100	100	100	100	100	N/A	N/A	100,000 [c]
Georgia Minor Source Permit Thresholds	20	50	20	20	20	2	5	N/A

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[a] The largest single HAP for the Beasley Road and Murray Meter Stations would be hexane. The estimated annual hexane emissions from each station would be less than 0.1 tpy.

[b] PSD and Title V major source thresholds are compared to each facility's individual emissions and not the total Project emissions.

[c] PSD and Title V major source thresholds for CO_2e would only apply if the facility were a major source for a non-GHG criteria pollutant.

Additional operational GHG emissions would be generated from pipeline operation in the form of fugitive CH_4 leaks and releases from Compressor Station 116, meter stations, pipeline valves, regulation facilities, and pig launcher/receiver facilities. While these emissions would not be subject to air permitting, Transco has estimated these emissions, and they are included in table B-8-a-5.

Transco performed air dispersion modeling analysis using the latest version of the EPA's AERSCREEN to evaluate NAAQS compliance at the proposed Compressor Station 116. AERSCREEN was run using the regulatory default option, which automatically implements EPA-recommended model options. Table B.8.a-6 provides the total predicted maximum ground-level concentrations outside of each station's facility boundary for each modeled pollutant. As shown in this table, the modeled concentrations meet the NAAQS for all pollutants when combined with existing ambient background concentrations. Therefore, these results demonstrate that impacts from operation of Compressor Station 116, when added to existing ambient concentrations obtained from the nearest available monitoring stations, would remain below applicable NAAQS.

TABLE B.8.a-6

AERSCREEN Results and National Ambient Air Quality Standards Compliance Summary for the Dalton Expansion Project

		Concentration ($\mu g/m^3$)				
Pollutant	Averaging Period	Modeled	Background	Model Plus Background	NAAQS	Percent of NAAQS
Compressor Station 116						
NO_2	1-hr	122.07	32.4	154.47	188	82
	Annual	12.21	5	17.21	100	17
$PM_{2.5}$	24-hour	8.99	19.5	28.49	35	81
	Annual	1.50	8.3	9.80	12	82
PM_{10}	24-hour	8.99	38	46.99	150	31
SO_2	1-hour	7.72	30.3	38.02	196	19
	3-hour[a]	7.72	23.8	31.52	1,300	<0.1
CO	1-hour	124.10	745	869.10	40,000	2
	8-hour	111.65	618	729.65	10,000	7

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[a] Conservatively assumed the 3-hour impact was the same as the 1-hour impact.

Note: $\mu g/m^3$ = microgram per cubic meter

Additionally, Transco completed a screening assessment based upon the proposed emissions associated with the compressor station and the distance from the Class I area, which showed that the emissions would be well below the screening criteria used to determine if a Class I impact analysis is needed. Therefore, we conclude that operation of Compressor Station 116 would have negligible impacts on Class I area air quality.

The Beasley, Murray, and Looper Bridge Road meter stations would generate a relatively minimal amount of operating emissions, and a similar modeling analysis is not needed for these proposed facilities. The operation of these proposed meter stations would have a minimal impact on regional air quality and would not contribute to an exceedance of any of the NAAQS.

We received comments during the EA scoping period regarding radon gas in natural gas. Radon is a naturally occurring radioactive gas that is odorless and tasteless. Radon can be entrained in fossil fuels including natural gas. Because radon is not destroyed by combustion, burning natural gas containing radon can increase the level of radon within a home (Agency for Toxic Substances and Disease Registry, 2010). While radon is inert, long-term (chronic) exposure to its decay products (progeny) can be carcinogenic (lung cancer), with increased risk to smokers. The EPA identifies that the average indoor radon level is 1.3 picocuries per liter and recommends that indoor levels be less than 2 to 4 picocuries per liter. Also, Congress passed the Indoor Radon Abatement Act in 1988, which established the long-term goal that indoor air radon levels be equal or better than outdoor air radon levels. Outdoor radon levels average about 0.4 picocuries per liter.

We note that several factors limit the indoor exposure to radon from natural gas. Radon's half-life, defined as the time it takes for the element to decay to half its initial concentration, is relatively short (3.8 days). The time needed to gather, process, store, and deliver natural gas allows a portion of the entrained radon to decay, which decreases the amount of radon in the gas before it is used in a residence. Additionally, radon concentrations are reduced when a natural gas stream undergoes upstream processing to remove liquefied petroleum gas. Processing can remove an estimated 30 to 75 percent of the radon from natural gas (Johnson et al., 1973). Other research suggests that the cumulative decay of radon from wellhead to burner tip is around 60 percent (Gogolak, 1980). Also, radon exposure associated with the combustion of natural gas may be lower now due to the improved ventilation and increased energy efficiency of modern boilers, furnaces, and hot water heaters, as well as new building codes requiring venting of gas-fired stoves and ovens.

While FERC has no regulatory authority to set, monitor, or respond to indoor radon levels, many local, state, and federal entities (e.g., the EPA) establish and enforce radon exposure standards for indoor air. Therefore, we conclude that the risk of exposure to radon is not significant.

Thus, through a review of the estimated emissions from construction and operation of the Project; an analysis of the modeled air quality impacts from operation of Compressor Station 116; Transco's mitigation measures, and our recommendation, we conclude that the Project would result in no local or regionally significant impacts on air quality.

b. Noise and Vibration

Construction and operation of the Project may affect overall noise levels in the project area. The ambient sound level of a region is defined by the total noise generated within the specific environment and is usually comprised of natural and man-made sounds. Noise quality can be affected during construction and operation of pipeline projects and the magnitude and frequency of noise can vary considerably during the day, week, or the seasons, based on changing weather conditions, vegetative cover, and non-Project sources of noise. This variation is caused in part by changing weather conditions and the effect of seasonal vegetation cover.

Noise is measured in decibels (dB), which measures the energy of the noise. Because the human ear is not uniformly sensitive to all noise frequencies, decibels on the A-weighted frequency scale (dBA) were devised to correspond with the sensitivity of the human ear. The human ear's threshold of perception for noise change is considered to be 3 dBA; 6 dBA is clearly noticeable to the human ear, and a 9-dBA increase is perceived as a doubling of noise.

Regulatory Requirements

Two measures that associate the time-varying quality of noise to its effect on people are the 24-hour equivalent sound level (L_{eq}) and day-night averaged sound level (L_{dn}). The L_{eq} is the level of steady sound with the same total (equivalent) energy as the time-varying sound of interest, averaged over a 24-hour period. The L_{dn} is the L_{eq} plus 10 dBA, added to account for people's greater sensitivity to nighttime sound (between the hours of 10:00 p.m. and 7:00 a.m.). The A-weighted scale is used as human hearing is less sensitive to low and high frequencies than mid-range frequencies. In 1974, the EPA published a document providing information for state and local regulators to use when developing their own ambient noise standards. The EPA has determined that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity noise interference (EPA, 1974). An L_{dn} of 55 dBA is equivalent to a continuous noise level of 48.6 dBA. For comparison, normal speech at a distance of three feet averages 60 to 70 dBA L_{eq}. FERC has adopted the EPA's determination and requires that noise attributable to a new compressor station not exceed an L_{dn} of 55 dBA at noise-sensitive areas (NSA). In addition to noise requirements, FERC requires that operation of the compressor station not result in any perceptible increase in vibration at nearby NSAs.

Georgia, North Carolina, and Virginia do not regulate noise at the state level. Of the counties and local municipalities to be traversed by the Project, only Prince William County, Virginia has existing regulations or ordinances that govern noise pollution from construction or industrial activities. Prince William County noise regulations specify that maximum permissible sound levels from any operation, activity, or source should not exceed 60 dBA during daytime and 55 dBA during nighttime in residential or mixed-use district areas. Noise from construction of public projects, repair or maintenance work, and work associated with repair of facilities for private or public utilities are excluded from this noise standard (Prince William County, 2014). The FERC's 55 dBA L_{dn} noise criteria is more restrictive than the Prince William County noise standard.

Construction Noise Impacts and Mitigation

Construction noise is highly variable. Construction equipment operates intermittently, and the type of equipment in use at a given location at any point in time changes with the phase of construction. The sound level impacts on NSAs along the pipeline right-of-way due to construction activities would depend on the type of equipment used, the duration of use for each piece of equipment, the number of construction vehicles and machines used simultaneously, and the distance between the sound source and receptor. Nighttime noise due to pipeline, compressor station, and other aboveground facility construction would be limited because construction generally occurs during daylight hours, Monday through Saturday. An exception to this is HDD activities, which are described in further detail below.

Compressor Station 116

While most of the construction activities would be limited to several days to a few weeks in any one location, the construction of Compressor Station 116 would last several months and has the potential to have a greater impact on nearby NSAs. To estimate potential impacts from construction activities at Compressor Station 116, Transco reviewed the type of construction equipment needed and construction-related activities that could contribute to noise levels to estimate the noise associated with the construction of this facility. Estimated construction noise impacts associated with Compressor Station 116 are provided in table B.8.b-1.

TABLE B.8.b-1

Construction Noise Estimates for Compressor Station 116 for the Dalton Expansion Project

NSA	Distance (ft) /Direction	Noise Attributable to Construction of Compressor Station 116 (L_{eq})	Measured Ambient L_d (dBA) [a]	Estimated L_{eq} of the Construction Activities at NSA (dBA) [a]	Estimated Construction Noise + Ambient L_{eq} (dBA) [a]	Potential Increase in Ambient Noise Level (dB)
NSA 1	1,670 / SE	113 dBA	41.7	47.0	48.1	6.4
NSA 2	1,480 / NNW	113 dBA	39.7	46.9	47.7	8.0
NSA 3	2,550 / W	113 dBA	38.0	42.2	43.6	5.6

[a] Because construction activities for Compressor Station 116 are only planned for daytime hours, only a daytime sound level and an L_{eq} is provided.

Notes: ft = feet; L_d = daytime equivalent sound level; SE = southeast; NNW = north-northwest; W = west;

The construction noise level at the nearest NSA is estimated to range from 42.2 to 47.0 dBA L_{eq} for Compressor Station 116, which corresponds to a potential increase in ambient noise levels ranging from 5.6 to 8.0 dBA at the NSAs. Based on this information, the noise from construction of Compressor Station 116 is likely to be clearly audible at the nearest NSAs; however, because construction would be limited to daytime hours, and would not exceed 55 dBA, we conclude that the impact associated with construction of Compressor Station 116 on nearby NSAs would not be significant.

Horizontal Directional Drilling

An exception to the typical daytime construction time period would be certain HDD activities, which would continue into nighttime hours and would operate 24 hours per day for several days. Because of the nighttime activity and the fact that the equipment used for the HDDs would be stationary for an extended period of time, there is a greater potential for a prolonged noise impact. Transco is proposing a total of 9 HDDs along the pipeline route.

Transco performed an ambient noise survey of the HDD entry and exit locations to calculate the HDD noise impact on the nearest NSAs. Table B.8.b-2 summarizes each proposed HDD, including nearest NSAs to each HDD entry and exit point. Table B.8.b-3 provides estimated noise impacts associated with the HDD activities at the nearest NSAs.

TABLE B.8.b-2

Summary of the Closest Noise-Sensitive Areas to the Horizontal Directional Drill Entry and Exit Points for the Dalton Expansion Project

HDD Name	Approximate Milepost	Entry or Exit Point	Closest NSA	Distance (ft)/ Direction of NSA	HDD Length (ft)
Chattahoochee River	6.2	Entry	Residence	1,410/NW	2,230
	6.6	Exit	Residence	1,470/SW	
I-20	25.9	Entry	Residence	410/N	2,275
	26.3	Exit	Residence	580/N	
Highway 120	37.0	Entry	Residences	530/W	1,980
	37.4	Exit	Residence	980/SE	
Joe Frank Harris Parkway	75.5	Entry	Residences	230/W	1,685
	75.8	Exit	Residence	1,560/W	
I-75	77.9	Entry	Residences	1,830/S	675
	78.1	Exit	Residence	1,560/NE	
Coosawattee River	90.1	Entry	Residence	1,340/SE	2,625
	90.6	Exit	Residence	1,850/SW	
Holly Creek	102.6	Entry	No NSA within 0.5 mile	N/A	2,794
	103.2	Exit	Residence	1,700/NW	
Conasuauga River I	107.2	Entry	Residences	1,500/E	1,345
	107.5	Exit	Residence	1,220/NW	
Conasuauga River II	108.2	Entry	Residences	1,360/NE	2,262
	108.7	Exit	No NSA within 0.5 mile	N/A	

Notes: ft = feet; NW = northwest; SW = southwest; N = north; E = east; S = south; W = west; SE= southeast; NE = northeast; N/A = not applicable

TABLE B.8.b-3

Horizontal Directional Drill Noise Quality Analysis at the Closest Noise-Sensitive Area for the Dalton Expansion Project

HDD Name	Entry or Exit Point	Ambient L_{dn} (dBA)	Estimated L_{dn} of the HDD (dBA)	Combined Sound Level of HDD L_{dn} + Ambient L_{dn} (dBA)	Potential Increase in Ambient Noise Level (dB)	Noise Criteria Exceeded
Chattahoochee River	Entry	39.3	48.3	48.8	9.5	No
	Exit	39.3	43.6	45.0	5.7	No
I-20	Entry	49.9	67.8	67.9	18.0	Yes
	Exit	50.8	51.0	53.9	3.1	No
Highway 120	Entry	44.6	65.4	65.4	20.8	Yes
	Exit	48.2	47.8	51.0	2.8	No
Joe Frank Harris Parkway	Entry	45.0	73.2	73.2	28.2	Yes
	Exit	45.0	43.0	47.1	2.1	No
I-75	Entry	48.9	50.8	52.9	4.0	No
	Exit	57.4	40.7	57.5	0.1	No
Coosawattee River	Entry	46.9	53.3	54.2	7.3	No
	Exit	46.2	39.4	47.0	0.8	No
Holly Creek	Entry	N/A	N/A	N/A	N/A	N/A
	Exit	40.0	40.3	43.2	3.2	No
Conasuauga River I	Entry	46.9	52.9	53.9	7.0	No
	Exit	45.4	43.7	47.7	2.3	No
Conasuauga River II	Entry	49.4	52.3	54.1	4.7	No
	Exit [a]	N/A	N/A	N/A	N/A	N/A

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[a] No NSAs are located within 0.5 mile of this area; therefore, an acoustical analysis was not completed.

Note: N/A = not applicable

The results of the acoustical analysis suggest that the noise of the HDD operations at some HDD entry sites could exceed the FERC's 55 dBA L_{dn} noise criterion at nearby NSAs if additional noise mitigation measures are not implemented.

Transco outlined potential mitigation measures they may implement, as practicable, to minimize impacts on nearby NSAs at locations where the FERC's 55 dBA L_{dn} noise criterion is likely to be exceeded, including:

- employing a temporary noise barrier (e.g., 16 feet high) around the entry/exit site workspace constructed of ¾-inch-thick plywood panels or constructed of a sound-absorptive/barrier material;
- covering the entry side workspace with a large acoustically lined tent designed with sound-absorptive/barrier liner material;
- employing residential-grade exhaust silencers on all engines in conjunction with any of the site HDD equipment (e.g., generators, pumps, hydraulic power unit);
- installing a partial noise barrier or enclosure around the hydraulic power unit and engine-driven pumps (e.g., cover sides of equipment with an acoustically lined plywood barrier system or sound-absorptive/barrier material);
- employing a partial noise barrier around any engine jacket-water coolers;
- installing a partial barrier or partial enclosure around the mud mixing/cleaning system;
- relocating specific equipment (e.g., remotely relocate mud rig);
- employing "low-noise" generators (i.e., designed with a factory-installed acoustical enclosure); and
- as an alternative to noise mitigation at NSA(s) that are relatively close to the HDD sites (e.g., NSAs within 200 to 300 feet of an entry site), temporary housing or equivalent compensatory mitigation may be offered to the affected homeowners.

Transco's noise contractor, Hoover and Keith, completed additional analyses at the entrance/exit points where noise attributable to the HDD activities would exceed 55 dBA L_{dn}. The results of that analysis, including specific noise measures assumed at each location, are summarized in table B.8.b-4.

TABLE B.8.b-4

Site-Specific Horizontal Directional Drill Noise Mitigation Measures for the Dalton Expansion Project

HDD Name	Entry or Exit Point	Specific Noise Mitigation Measures	Ambient L_{dn} (dBA)	Estimated L_{dn} of the HDD at Closest NSA with Mitigation (dBA)	Combined Sound Level of HDD with Mitigation L_{dn} + Ambient L_{dn} (dBA)	Potential Increase in Ambient Noise Level (dB)
I-20	Entry	Noise barrier around the hydraulic power unit and engine-driven equipment	49.9	53.3	54.9	5.0
Highway 120	Entry	Noise barrier around the hydraulic power unit and engine-driven equipment	44.6	51.3	52.1	7.5
Joe Frank Harris Parkway	Entry	Noise barrier around the hydraulic power unit and engine-driven equipment	45.0	53.2	53.8	8.8

We agree that the noise mitigation measures described in table B.8.b-4, if implemented correctly, would mitigate noise levels to below the FERC's 55 dBA L_{dn} noise criterion; however, Transco did not specifically identify which noise mitigation measures would be implemented at the HDD sites. Therefore, to ensure that these NSAs are not significantly impacted by HDD noise, **we recommend that:**

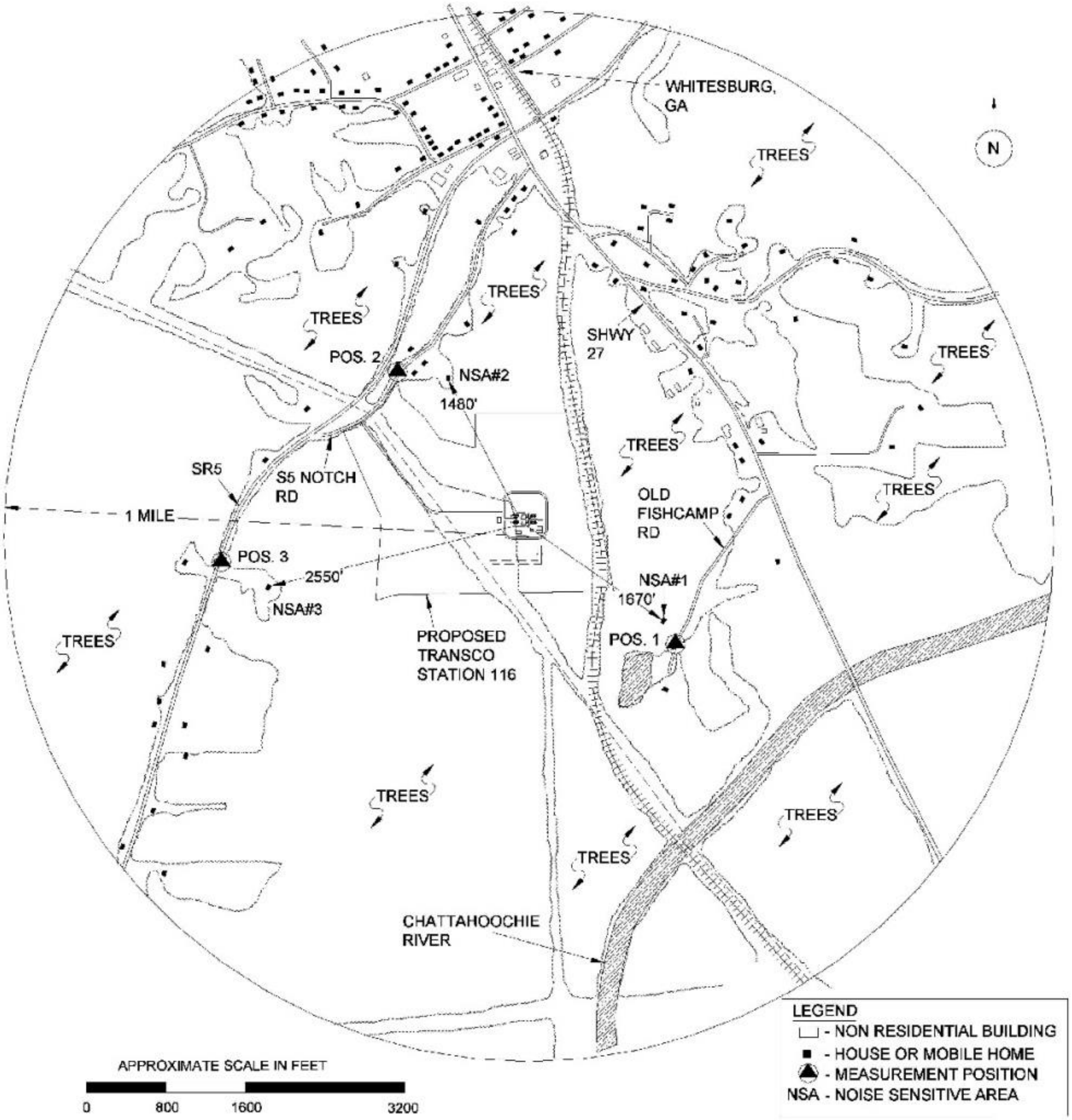
- **Prior to construction of the I-20, Highway 120, and Joe Frank Harris Parkway locations, Transco should file with the Secretary, for review and written approval by the Director of OEP, an HDD noise mitigation plan to reduce the projected noise level attributable to the proposed drilling operations at NSAs with predicted noise levels above 55 dBA. During drilling operations, Transco should implement the approved plan, monitor noise levels, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than an L_{dn} of 55 dBA at the NSAs.**

Operational Noise Sources

Noise from operation of the Project would be produced primarily through operation of the compressor station and other aboveground facilities including three meter stations, eight MLVs, eight pig traps, and two interconnects. A summary of operational noise sources and NSAs in the vicinity of each facility is detailed below. The proposed changes to other mainline facilities would not result in an increase of noise levels from these facilities and are, therefore, not discussed further.

Compressor Station 116

Compressor Station 116 would be located in Carroll County about 1 mile south of Whitesburg, Georgia. The compressor station would be located in an area that is primarily forested and open land with several NSAs located within 1 mile of the site, the closest of which is a residence located about 1,520 feet from the center of the proposed site (see figure B.8.b-1).



This information is for environmental review purposes only.

Figure B.8.b-1
Proposed Compressor Station 116
Closest Noise-Sensitive Areas
Dalton Expansion Project

The compressor station equipment would consist of two Solar Taurus 70 gas turbine-driven centrifugal gas compressor units (10,915 horsepower rating/each). Other notable auxiliary equipment that would produce noise includes lube oil coolers, aboveground gas valves and piping, and gas aftercoolers.

Noise at the compressor station would also be generated by gas blowdown events. During the period of commissioning and testing, it is anticipated that a unit blowdown could occur three to four times daily, typically only during the daytime hours. During normal operation of the station, it is anticipated that unit blowdown events would occur infrequently (two to three times monthly). A gas blowdown event generally lasts for a short amount of time (about 1 to 5 minutes).

Beasley Road Meter Station

The Beasley Road Meter Station would be located in Bartow County about 0.75 mile northeast of Stilesboro, Georgia. The meter station would be located in primarily developed land, hay/pasture, and open space, with several NSAs located within 0.5 mile of the site, the closest of which is a residence located about 2,080 feet from the center of the proposed site. Noise-generating equipment at the meter station would consist of flow-control valves (FCV) employed for gas flow-control and gas pressure regulation and gas line heaters.

Looper Bridge Road Meter Station

The Looper Bridge Road Meter Station would be located in Murray County about 5 miles southeast of Dalton, Georgia. The meter station would be located in primarily hay/pasture land, with no NSAs located within 0.5 mile of the site. Noise-generating equipment at the meter station would consist of FCVs employed for gas flow-control and gas pressure regulation and gas line heaters.

Murray Meter Station

The Murray Meter Station would be located in Murray County about 5.3 miles southwest of Chatsworth, Georgia. The compressor station would be located in primarily forested and scrub-shrub land, with several NSAs located within 0.5 mile of the site, the closest of which is a residence located about 370 feet from the center of the proposed site. Noise-generating equipment at the meter station would consist of FCVs employed for gas flow-control and gas pressure regulation and gas line heaters.

Other Aboveground Facilities

Other aboveground facilities include eight MLVs, eight pig traps, and two interconnects. The closest NSAs to the MLVs, pig traps, and interconnects are located about 200, 370, and 2,080 feet away, respectively. The MLVs, pig traps, and interconnects would not result in noise during normal operation; however, on a very infrequent basis, gas blowdown events may occur at the MLVs, which would result in operational noise.

Operational Noise and Vibration Impacts and Mitigation

The operational noise impacts on NSAs near Compressor Station 116, the Beasley Road Meter Station, and the Murray Meter Station are summarized in table B.8.b-5 and are further discussed below. For the meter stations, only the closest NSA was considered. An acoustical analysis was not completed for the Looper Bridge Road Meter Station because there are no NSAs located within 0.5 mile of the proposed site.

TABLE B.8.b-5

Aboveground Facility Operational Noise Quality Analysis for the Dalton Expansion Project

NSA	Distance to NSA	Direction to NSA	Ambient L_{dn} (dBA) [a]	Estimated L_{dn} of the Station at the NSA (dBA)	Total Sound Level at the NSA Station L_{dn} + Ambient L_{dn} (dBA)	Potential Increase in Ambient Noise Level (dB)
Compressor Station 116						
NSA 1 (residence)	1,670 feet	Southeast	44.3	43.9	47.1	2.8
NSA 2 (residences)	1,480 feet	North-northwest	42.2	45.2	46.9	4.7
NSA 3 (residence)	2,550 feet	West	42.0	39.4	43.9	1.9
Beasley Road Meter Station						
NSA 1 (residence)	2,080 feet	Northeast	48.5	37.7	48.8	0.3
Murray Meter Station						
NSA 1 (residence)	370 feet	Northwest	50.1	47.7	52.1	2.0

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[a] Ambient L_{dn} based on measured ambient daytime equivalent sound level and estimated nighttime equivalent sound level.

Compressor Station 116

Transco performed an ambient noise survey around the area of Compressor Station 116 to calculate the noise impact on nearby NSAs. Based on the full load operation for all of the continuously operated station equipment, the estimated sound contribution from Compressor Station 116 at the nearest NSAs would range from 39.4 to 45.2 dBA, which would result in potential noise increases at nearby NSAs ranging from 1.9 to 4.7 dB. While the noise from the proposed Compressor Station 116 would likely be audible at nearby NSAs, the impacts of the compressor station operation on the nearest NSAs would be below the 55 dBA L_{dn} criterion. Therefore, we feel that the noise impacts on nearby NSAs as a result of the operation of the proposed Compressor Station 116 would be minor to moderate.

The estimated noise impacts at the compressor station incorporate several mitigation measures that Transco would employ, including:

- blowdown silencers;
- air intake duct silencers;
- exhaust silencers;

- adequate skid-mounted compressor enclosures;
- equipment sound level specifications;
- specific compressor building acoustic design specifications; and
- acoustical insulation for aboveground gas piping.

Transco commits to installation of all recommended noise control measures specified in the acoustical assessment report performed for the compressor station.

The blowdown/vent system at the compressor station would employ a blowdown silencer. The estimated sound level of a unit blowdown at Compressor Station 116 would be about 41 dBA L_{eq} or 48 dBA L_{dn} at the closest NSA. Therefore, a blowdown event may be audible at the NSAs but the sound level would be below the 55 dBA L_{dn} criterion. Because unit blowdown events occur infrequently and for a short time, the impact of unit blowdowns at nearby NSAs would be minimal.

We have reviewed the acoustical analysis and proposed mitigation measures and agree that, if properly implemented, the proposed Compressor Station 116 is not likely to significantly contribute to noise at nearby NSAs. However, to verify compliance with the FERC's noise standard, **we recommend that:**

- **Transco should file a noise survey with the Secretary no later than 60 days after placing Compressor Station 116 into service. If a full load condition noise survey is not possible, Transco should provide an interim survey at the maximum possible power load and provide the full power load survey within 6 months. If the noise attributable to the operation of all of the equipment at Compressor Station 116 at interim or full power load conditions exceeds 55 dBA L_{dn} at any nearby NSAs, Transco should file a report on what changes are needed and should install additional noise controls to meet the level within 1 year of the in-service date. Transco should confirm compliance with the above requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.**

Beasley Road Meter Station

Transco performed an ambient noise survey around the area of the Beasley Road Meter Station to calculate the noise impact on the closest NSA. Based on the worst-case operation (operating conditions that generate maximum noise), the estimated sound contribution from the meter station at the nearest NSA would be 37.7 dBA. Therefore, the impacts of the meter station operation on the nearest NSA would be below the 55 dBA L_{dn} criterion and, based upon the acoustical analysis, would likely not be audible at the nearest NSA.

Several noise mitigation measures have been recommended for the Beasley Road Meter Station, which would be implemented by Transco to achieve the noise levels included in the acoustical analysis, including:

- designing the FCVs associated with the meter station to achieve a maximum 85 dBA for the full range of operating conditions;

- reducing pipe/valve-radiated noise associated with the regulator skid if FCVs are not capable of meeting the 85 dBA sound requirement for the design operating conditions);

- covering aboveground gas piping and associated piping components with a type of acoustical insulation and/or enclose the regulator skid/piping with an "off-skid" type of acoustical building; and

- employing "low-noise" line heaters at each facility unless water bath heaters are employed.

We have reviewed the acoustical analysis and proposed mitigation measures and agree that, if properly implemented, the proposed Beasley Road Meter Station is not likely to significantly contribute to noise at nearby NSAs.

<u>Murray Meter Station</u>

Transco performed an ambient noise survey around the area of the Murray Meter Station to calculate the noise impact on the closest NSA. Based on the worst-case operation (operating conditions that generate maximum noise), the estimated sound contribution from the meter station at the nearest NSA would be 47.7 dBA, which is lower than the current ambient noise of 50.1 dBA L_{dn} and would result in a potential noise increase at the nearest NSA of 2.0 dB.

Several noise mitigation measures have been recommended for the Murray Meter Station, which would be implemented by Transco, to achieve the noise levels included in the acoustical analysis. These mitigation measures include those described for the Beasley Road Meter Station, as well as enclosing the regulator skid and associated aboveground piping with an off-skid acoustical building.

The noise from the proposed Murray Meter Station would likely be audible at the nearest NSA. The noise from the Murray Meter Station would be close to our 55 dBA L_{dn} criterion. In addition, there are several NSAs in very close proximity to the Murray Meter Station. We are concerned that the noise at the NSAs may be above 55 dBA due to: the proximity of the meter station to the nearest NSA (370 feet), the noise impact data provided by Transco is underestimated, or if Transco chooses to install slightly different equipment at the station. To ensure that these NSAs would not be unduly affected and that the noise impacts at the NSAs would be less than 55 dB L_{dn}, **we recommend that:**

- **Transco should file a noise survey with the Secretary <u>no later than 60 days</u> after placing the Murray Meter Station in service. If the noise attributable to the operation of the meter station at maximum flow exceeds an L_{dn} of 55 dBA at any nearby NSAs, Transco should install additional noise controls to meet that level <u>within 1 year</u> of the in-service date. Transco shall confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary <u>no later than 60 days</u> after it installs the additional noise controls.**

In addition to noise requirements, the Commission, under 18 CFR 380.12(k)(v)(B), requires that operation of compressor stations not result in any perceptible increase in vibration. Transco has committed to installing mitigation measures at Compressor Station 116 to ensure that the operation of the facility would not result in perceptible vibration, including installing a two-stage silencer system on the turbine exhaust and "low-noise" gas coolers. If the new compressor station equipment results in perceptible vibration, the Commission would require Transco to investigate the cause and could require mitigation to reduce the vibration.

Based upon the information provided by Transco, its proposed mitigation measures, and our recommendations, we conclude that the construction and operation of the Project would result in no significant noise impacts.

9. Reliability and Safety

The transportation of natural gas by pipeline involves some incremental risk to the public due to the potential for an accidental release of natural gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, posing a slight inhalation hazard. If CH_4 is breathed in high concentrations, oxygen deficiency can occur resulting in serious injury or death.

Methane has an auto-ignition temperature of 1,000 °F and is flammable at concentrations between 5 and 15 percent CH_4 by volume. Unconfined mixtures of CH_4 in air are not generally explosive. Methane is buoyant at atmospheric temperatures and disperses rapidly in air.

a. Safety Standards

The DOT is mandated to provide pipeline safety under 49 U.S. Code Chapter 601. Within the DOT, the Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety, administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards that set a level of safety to be attained and allow the pipeline operator to use various technologies to achieve the required safety standard.

The DOT pipeline standards are published in 49 CFR Parts 190–199. Part 192 of 49 CFR specifically addresses natural gas pipeline safety issues. Under an MOU on Natural Gas Transportation Facilities dated January 15, 1993 between the DOT and FERC, the DOT is recognized as having the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of the FERC's regulations requires that an applicant certify that it will design, install, inspect, test, construct, operate, replace, and maintain the facility for which a Certificate is requested in accordance with federal safety standards and plans for maintenance and inspection, or certify that it has been granted a waiver of the requirements of the safety standards by the DOT in accordance with section 3(e) of the Natural

Gas Pipeline Safety Act. The FERC accepts this certification and does not impose additional safety standards other than the DOT standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the MOU to promptly alert the DOT. The MOU provides instructions for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipelines under the Commission's jurisdiction.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee, which determines if proposed safety regulations are reasonable, feasible, and practicable.

Section 5(a) of the Natural Gas Pipeline Safety Act provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards, while section 5(b) permits a state agency that does not qualify under section 5(a) to perform certain inspection and monitoring functions. A state may also act as DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement actions. Georgia, North Carolina, and Virginia do not have been delegated authority to inspect interstate pipeline facilities.

The Pipeline Safety, Regulatory Certainty and Job Creation Act of 2011 (U.S. House of Representatives 2845) was passed by Congress and signed into law on January 3, 2012 by President Barack Obama. This Act states that no later than 2 years after the date of enactment, the DOT Secretary, if appropriate, shall require by regulation the use of automatic or remote control shut-off valves, or equivalent technology, where economically, technically, and operationally feasible on transmission pipeline facilities constructed or entirely replaced after the date on which the Secretary issues the final rule containing such requirement. Transco has committed to the use of remotely controlled shut-off valves on the Dalton Lateral.

The 30-, 24-, 20-, and 16-inch-diameter pipelines and aboveground facilities associated with the Project would be designed, constructed, operated, and maintained in accordance with or to exceed the DOT Minimum Federal Safety Standards in 49 CFR Part 192. These regulations, which are intended to protect the public and to prevent natural gas facility accidents and failures, include specifications for material selection and qualification; minimum design requirements; and protection of the pipeline from internal, external, and atmospheric corrosion.

The DOT defines area classifications based on population density in the vicinity of the pipeline and specifies more rigorous safety requirements for populated areas. Pipe wall thickness and pipeline design pressures, hydrostatic test pressures, maximum allowable operating pressure, inspection and testing of welds, and frequency of pipeline patrols and leak surveys must conform to higher standards in more populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined below:

- <u>Class 1</u>: Location with 10 or fewer buildings intended for human occupancy;

- Class 2: Location with more than 10 but less than 46 buildings intended for human occupancy;

- Class 3: Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period; and

- Class 4: Location where buildings with four or more stories aboveground are prevalent.

In accordance with federal standards, class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. Pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock. All pipelines installed in navigable rivers, streams, and harbors must have a minimum cover of 48 inches in soil or 24 inches in consolidated rock. Class locations specify the maximum distance to sectionalized block valves (e.g., 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). About 87.0 miles (76 percent) of the Project would be located in Class 1 areas, 22.5 miles (20 percent) would be located in Class 2 areas, and 5.4 miles (5 percent) would be located in Class 3 areas.

Transco would place the MLVs based on Class location criteria for Class 2 or Class 3 specifications. If the Project is approved, the DOT regulations require that the pipeline be designed, at a minimum, to the appropriate Class location standard and that the spacing between MLVs meets DOT requirements.

If a subsequent increase in population density adjacent to the right-of-way indicates a change in class location for the pipeline, Transco would reduce the maximum allowable operating pressure or replace the segment with pipe of sufficient grade and wall thickness, if required, to comply with the DOT code of regulations for the new class location.

The Pipeline Safety Improvement Act of 2002 requires operators to develop and follow a written integrity management program that contains all the elements described in 49 CFR Part 192.911 and addresses the risks on each transmission pipeline segment. Specifically, the law establishes an integrity management program that applies to all high consequence areas (HCA).

The DOT published rules that define HCAs where a gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate for DOT to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

The HCAs may be defined in one of two ways. In the first method, an HCA includes:

- current Class 3 and 4 locations;
- any area in Class 1 or 2 locations where the potential impact radius[12] is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle[13]; or
- any area in Class 1 or 2 locations where the potential impact circle includes an identified site.

An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate.

In the second method, an HCA includes any area within a potential impact circle that contains:

- 20 or more buildings intended for human occupancy; or
- an identified site.

Once a pipeline operator has determined the HCAs on its pipeline, it must apply the elements of its Integrity Management Plan to those segments of the pipeline within HCAs. The DOT regulations specify the requirements for the Integrity Management Plan at 49 CFR Part 192.911. The pipeline integrity management rule for HCAs requires inspection of the pipeline every 7 years. The HCAs associated with the Project have been determined based on the relationship of the pipeline centerline to other nearby structures and identified sites. Of the 114.9 miles of the proposed pipeline route, Transco has identified about 1.1 miles that would be classified as an HCA. Table B.9.a-1 lists by milepost the HCAs that would be crossed by the Project.

TABLE B.9.a-1

Location of High Consequence Areas Along the Dalton Expansion Project

Facility/County	Begin Milepost	End Milepost	Length (miles)
Dalton Lateral			
Paulding	33.0	33.3	0.3
Paulding	44.0	44.5	0.5
Murray	104.8	105.1	0.3
AGL Spur			
None identified			

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[12] The potential impact radius is calculated as the product of 0.69 and the square root of the maximum allowable operating pressure of the pipeline in pounds per square inch multiplied by the pipeline diameter in inches.

[13] The potential impact circle is a circle of radius equal to the potential impact radius.

Title 49 CFR 192 prescribes the minimum standards for operating and maintaining pipeline facilities including the requirement to establish a written plan governing these activities. Under Part 192.615, each pipeline operator must also establish an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials and coordinating emergency response;
- initiating the emergency shutdown of system and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property and making them safe from actual or potential hazards.

49 CFR 192 requires that each operator establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. Transco would provide the appropriate training to local emergency service personnel before the pipeline is placed in service.

Transco also maintains operating policies and procedures that provide specific directions in preventive maintenance and monitoring of facilities, as well as procedures to be followed in the event of an accident or natural catastrophe. Periodic training sessions and review of operating and emergency procedures are conducted for all affected operations employees.

Transco would perform annual leak detection surveys of its pipeline facilities, similar field surveys of its aboveground facilities, and periodic aerial and vehicle/pedestrian surveys of all its facilities. All of Transco’s facilities also include many equipment features that ensure the overall safety of the system and the general public.

Transco would register with the one-call system programs and other related pre-excavation notification organizations in Georgia, North Carolina, and Virginia prior to the operation of the Project. Through these programs, Transco would be informed of planned third-party excavations, which would allow Transco to monitor activities around the right-of-way and to protect the pipeline.

In addition to pipeline safety standards, Transco would adhere to 49 CFR Parts 192.739 through 192.743 guidelines for inspection and monitoring at pressure limiting and regulating stations. Transco’s construction of the Project facilities would be designed, constructed, and operated to meet or exceed applicable specifications. The piping at the facilities would be manufactured in accordance with API specifications, and wall thickness would conform to PHMSA safety regulations contained in 49 CFR Part 192.

Transco would incorporate the Project into its existing gas monitoring and control systems. Transco would maintain a monitoring system that includes a gas control center that monitors system pressures, flows, and customer deliveries on its entire system. The center is staffed 24 hours a day, 7 days a week, and 365 days a year from Houston, Texas.

b. Pipeline Accident Data

The DOT requires all operators of natural gas transmission pipelines to notify the DOT of any significant incidents and to submit a report within 20 days. Significant incidents are defined as any leaks that:

- cause a death or personal injury requiring hospitalization; or
- involve property damage of more than $50,000 in 1984 dollars.[14]

During the 20-year period from 1995 through 2014, a total of 1,269 significant incidents were reported on the more than 300,000 total miles of natural gas transmission pipelines nationwide.

Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. Table B.9.b-1 provides a distribution of the causal factors as well as the number of each incident by cause. The dominant incident causes, corrosion and pipeline material, weld or equipment failure, comprise 49.5 percent of all significant incidents. However, the pipelines included in the data set in table B.9.b-1 vary widely in terms of age, pipe diameter, and level of corrosion control. Each of these variables influences the incident frequency that may be expected for a specific segment of pipeline. The frequency of significant incidents, for example, is strongly dependent on pipeline age. Older pipelines have a higher frequency of corrosion incidents because corrosion is a time-dependent process.

The use of both an external protective coating and a cathodic protection system, required on all pipelines installed after July 1971, significantly reduces the corrosion rate compared to unprotected or partially protected pipe.[15]

Excavations, natural forces, and outside forces are the causes in 34.2 percent of significant pipeline incidents. Table B.9.b-2 presents information on the outside forces incidents by cause. These mostly result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and willful damage.

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[14] $50,000 in 1984 dollars is about $113,000 as of April 2015 (Bureau of Labor Statistics, 2015.)

[15] Cathodic protection is a technique to reduce corrosion (rust) of the natural gas pipeline that includes the use of an induced current or a sacrificial anode (like zinc) that corrodes at faster rate to reduce corrosion.

TABLE B.9.b-1

Natural Gas Transmission Pipeline Significant Incidents by Cause (1995 to 2014) [a]

Cause	Number of Incidents	Percentage [b]
Corrosion	291	23.0
Excavation [c]	207	16.4
Pipeline Material, Weld or Equipment Failure	337	26.6
Natural Force Damage	147	11.6
Outside Forces [d]	79	6.2
Incorrect Operation	40	3.2
All Other Causes [e]	164	13.0
TOTAL	**1,265**	**-**

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[a] All data gathered from PHMSA Significant incident files, January 14, 2016. http://www.phmsa.dot.gov/pipeline/library/data-stats/pipelineincidenttrends.

[b] Due to rounding, column does not total 100 percent.

[c] Includes third-party damage.

[d] Fire, explosion, vehicle damage, previous damage, intentional damage.

[e] Miscellaneous causes or unknown causes.

TABLE B.9.b-2

Outside Forces Incidents by Cause (1995 to 2014) [a]

Cause	Number of Incidents	Percent of all Incidents [b]
Third-party excavation damage	172	13.6
Operator excavation damage	24	1.9
Unspecified equipment damage/Previous damage	11	0.9
Heavy Rain/Floods	72	5.7
Earth Movement	34	2.7
Lightning/Temperature/High Winds	26	2.1
Unspecified Natural Force	15	1.2
Vehicle (not engaged with excavation)	47	3.7
Fire/Explosion	8	0.6
Previous mechanical damage	6	0.5
Fishing or maritime activity	7	0.5
Unspecified/other outside force	7	0.6
Intentional damage	1	0.1
Electrical arcing from other equipment/facility	1	0.1
TOTAL	**433**	

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[a] Excavation, outside forces, and natural force damage from Table B.9.b-1 (PHMSA, 2015).

[b] Due to rounding, column does not equal 34.2 percent.

Older pipelines have a higher frequency of outside forces incidents partly because their location may be less well known and less well marked than newer lines. In addition, the older pipeline systems contain a disproportionate number of smaller diameter pipelines, which have a greater rate of outside forces incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movements.

The majority of fatalities from pipelines involve local distribution pipelines. These are natural gas pipelines that are not regulated by FERC and that distribute natural gas to homes and businesses after transportation through interstate natural gas transmission pipelines. In general, these distribution lines are smaller diameter pipes, often made of plastic or cast iron rather than welded steel, and tend to be older pipelines that are more susceptible to damage. In addition, distribution systems do not have large rights-of-way and pipeline markers common to FERC-regulated natural gas transmission pipelines.

c. Impact on Public Safety

We received several comments regarding safety concerns about the Project. Table B.9.c-1 presents the average annual injuries and fatalities that occurred on natural gas transmission lines between 2010 and 2014.

TABLE B.9.c-1

Annual Average Fatalities – Natural Gas Transmission Pipelines [a]

Year	Injuries	Fatalities
2010 [a]	61	10
2011	1	0
2012	7	0
2013	2	0
2014	1	1

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[a] All of the injuries and fatalities in 2010 were due to the Pacific Gas and Electric pipeline rupture and fire in San Bruno, California on September 9, 2010.

The nationwide totals of accidental fatalities from various manmade and natural hazards are listed in table B.9.c-2 to provide a relative measure of the industry-wide safety of natural gas transmission pipelines. Direct comparisons between the different accident categories listed in the table should be made cautiously because individual exposures to hazards are not uniform among all categories. The data nonetheless indicate a low risk of death due to incidents involving natural gas transmission pipelines compared to the other categories. For example, the fatality rate for incidents involving natural gas pipelines is more than 25 times lower than the rate from natural hazards such as lightning, tornados, floods, and earthquakes.

The available data shows that natural gas transmission pipelines continue to be a safe, reliable means of energy transportation. From 1995 to 2014, there were an average of 63 significant incidents, 9 injuries, and 2 fatalities per year. The number of significant incidents over the more than 303,000 miles of natural gas transmission lines indicates the risk is low for an incident at any given location. The operation of the Project would represent a slight increase in risk to the nearby public.

TABLE B.9.c-2

Nationwide Accidental Deaths [a]

Type of Accident	Annual Number of Deaths
All accidents	123,706
Motor Vehicle	43,945
Poisoning	29,846
Falls	22,631
Drowning	3,443
Fire, smoke inhalation, burns	3,286
Floods [b]	81
Lightning [b]	49
Tornado [b]	72
Tractor Turnover [c]	62
Natural gas distribution lines [d]	14
Natural gas transmission pipelines [d]	2

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[a] All data, unless otherwise noted, reflects 2005 statistics from U.S. Census Bureau, Statistical Abstract of the United States: 2010 (129th Edition) Washington, DC, 2009; http://www.census.gov/statab.

[b] National Oceanic and Atmospheric Administration, National Weather Service, Office of Climate, Water and Weather Services, 30 year average (1985 to 2014) http://www.weather.gov/om/hazstats.shtml.

[c] Bureau of Labor Statistics, 2007 Census of Occupational Injuries.

[d] PHMSA significant incident files, January 14, 2016. http://www.phmsa.dot.gov/pipeline/library/data-stats/pipelineincidenttrends, 20 year average.

10. Cumulative Impacts

The southeastern United States has been affected by human activity for over 15,000 years beginning with indigenous peoples who lived in large settlements and associated satellite villages. Today about 10 million people reside in Georgia. Although the region has been substantially affected by human activity, valuable natural resources remain. National Wetlands Inventory data indicates that there are about 65,000 acres of wetlands in the counties that would be crossed by the Project, and National Land Cover Data from the EPA indicates that there are about 1.1 million acres of upland forest in these same counties.

In accordance with NEPA, we identified other actions located in the vicinity of the Project facilities and evaluated the potential for a cumulative impact on the environment. As defined by CEQ, a cumulative effect is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. CEQ guidance states that an adequate cumulative effects analysis may be conducted by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions. In this analysis, we consider the impacts of past projects within the regions of influence as part of the affected environment (environmental baseline) which was described and evaluated in the preceding environmental analysis. However, present effects of past actions that are relevant and useful are also considered.

Consistent with CEQ guidance and to determine cumulative impacts, we expanded the geographic boundaries of our review into regions of influence as described below. Actions located outside the regions of influence are generally not evaluated because their potential to contribute to a cumulative impact diminishes with increasing distance from the Project.

As described in the environmental analysis section of this is EA, constructing and operating the Project would temporarily and permanently impact the environment. The Project would affect geology, soils, water resources, vegetation, wetlands, wildlife, cultural resources, visual resources, air quality, noise, and some land uses. However, we conclude that these impacts would not be significant. We also conclude that nearly all of the project-related impacts would be contained within or adjacent to the temporary construction right-of-way and ATWS. For example, erosion control measures included in the Transco's construction and restoration plans, would keep disturbed soils within work areas. For other resources, the contribution to regional cumulative impacts is lessened by the expected recovery of ecosystem function. For example, the Project would affect 20.9 acres of wetlands; however, permanent impacts would be limited to the conversion of the vegetative cover and the wetlands would remain functional wetland habitats. This is in contrast with other large-scale development projects in which wetlands are permanently converted to uplands. Similarly, vegetative communities would be cleared, but restoration would proceed immediately following construction. Additionally, we determined that visual impacts would be minimal at any discrete location along the proposed pipeline route.

Based on these conclusions and determinations, the collocation of the Project pipelines with existing rights-of-way (49 percent of the total length), Transco's implementation of impact avoidance, minimization, and mitigation measures as described in their construction and restoration plans, and their adherence to our recommendations, we find that most of the impacts of the Project would be largely limited to the 115-mile-long corridor followed by the pipeline. Furthermore, because the impacts of the Project would generally be localized, they would only contribute incrementally to a cumulative impact in the region of influence. As a result, we have related the scope of our analysis to the magnitude of the aforementioned environmental impacts.[16]

Based on the impacts of the Project as identified and described in this EA and consistent with CEQ guidance, we have determined that the following resource-specific regions of influence are appropriate to assess cumulative impacts:

- Impacts on geology, soils, wetlands, vegetation, and wildlife would be largely contained within or adjacent to proposed Project workspaces. Impacts on water resources (primarily increased turbidity) could extend outside of the workspaces, but would also be contained to a relatively small area. Therefore, for these resources we evaluated other projects/actions within the HUC 12[17] sub-watersheds crossed by the Project.

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[16] Please note this narrow corridor is not the expanded area of our cumulative impacts review, it is only the area directly affected by the Project.

[17] Drainage basins in the United States are divided and sub-divided at four different levels and each assigned a unique hydrologic unit code (HUC) consisting of eight digits based on these four levels.

- Impacts on cultural resources would also be largely contained within or adjacent to proposed Project workspaces. Therefore, we evaluated other projects/actions that overlapped with known cultural features potentially affected by the Project.
- Temporary impacts on air quality, including fugitive dust, would be largely limited to areas immediately around active construction. In an effort to evaluate potential cumulative impacts from operational air emissions associated with the Project, we identified permitted stationary air emission generating sources within a 50-kilometer radius of Compressor Station 116. We evaluated the proximity of these projects to the proposed Project to identify if the potential exists for cumulative impacts from long-term air emissions associated with the Project.
- Long-term impacts on NSAs were evaluated by identifying other stationary source projects with the potential to result in significant noise that would affect the same NSAs within 0.5 mile of the Project compressor stations. None were identified; therefore, we do not consider long-term cumulative noise impacts further in this analysis. However, we did consider areas where the temporary noise from construction of the Project would overlap with noise from other construction projects.
- Communities that could be affected by the increased workforce were considered in our analysis. In more rural locations of the Project, these communities could be located numerous miles from Project workspace.

Tables B.10-1 and B.10-2 identify the present and reasonably foreseeable projects or actions that occur within the regions of influence defined above. These projects were identified by a review of publicly available information; aerial and satellite imagery; consultations with federal, state, and local agencies/officials and development authorities; and information provided by Transco, affected landowners, and concerned citizens.

In addition to the geographic relationship between the Project and other projects in the area, we also consider the temporal relationship between the Project and other projects in the area. Transco proposes to begin construction in Summer 2016 and end with the in-service date of May 2017. As discussed throughout the EA, the majority of impacts associated with the Project would occur during construction and most resources (with exceptions) would return to preconstruction conditions shortly after or within 3 years of construction. Thus, construction-related cumulative impacts could occur if other projects in the regions of influence would affect the same resources within these timeframes. Additionally, permanent impacts resulting from the operation of the Project could contribute to a cumulative impact in the regions of influence. Specifically, permanent impacts on air quality and forest resources from operation of the Project could contribute to a cumulative impact in the regions of influence for those resources.

TABLE B.10-1

Present and Reasonably Foreseeable Projects Considered for Cumulative Impacts [a]

Project	Area of Impact	Location	Description / Comment / Area of Impact	Status
University of West Georgia's new downtown Newnan campus	4 acres	6.4 miles east of MP 1.0	The construction of 52,000 square feet of instructional and office space includes a 120-person lecture hall.	Opened Early 2015.
Niagara Bottling	21 acres	8.7 miles east of MP 2.8	Niagara bottling – water bottling facility 460,000-square-foot facility, a $79 million investment, is expected to create more than 70 new jobs in the Coweta area.	Opened December 2014.
State Route 92 expansion	85 acres	6.4 miles east-northeast of MP 27.8	The Georgia Department of Transportation proposes widening and realignment of 9.5 miles of State Route 92 from the intersection of the State Route/Fairburn Road and Pine Drive in Douglas County to the State Route/Dallas Highway and Nebo Road intersection in Paulding County. About 6093 linear feet of stream, 5.2 acres of wetland, no cultural resources (SAS-2007-01765). Standard Permit issued with Special Conditions on August 1, 2014.	Development to be completed in 2017.
Bill Carruth Parkway Extension	23 acres	7.8 miles east of MP 35.8	2.5-mile road extension.	Opened in 2014.
Paulding Commerce Business Park	98 acres	6.3 miles east-northeast of MP 37.3	130-acre site currently with one 400,000-square-foot building (Interroll).	Development status unknown.
WellStar Paulding Hospital	11 acres	6.8 miles east-northeast of MP 38.8	8-story 250,000-square-foot facility located at US 278 and Bill Carruth Parkway in Hiram, Georgia.	Opened April 2014.
City of Dallas Sewer Expansion	9 acres	Crosses MP 40.0	Installation of 3.7 miles of 8- to 24-inch-diameter sewer line. Phase I crosses the route near MP 40.0.	Development completed in 2014.
New Hangar at Silver Comet Field	2 acres	1.7 miles east-northeast of MP 41.4	New 35,000-square-foot hangar.	Opened 2014.
Vista Metals	None	1.1 miles east-southeast of MP 77.3	Announced September 25, 2014, it is about a $17 million expansion. There is no additional real estate in connection with this, but there will be an additional building done for this, as well as the improvements, which are additional ovens that will go in as part of the smelting operation.	Development complete in 2015.
Shaw Industries Group, Inc.	28 acres	3 miles east-southeast of MP 78.0	The 600,000 to 700,000 square feet of manufacturing and warehouse space was built on 117.6 acres near the intersection of Highway 140 and Hall Station Road in Adairsville. Construction started in 2014.	Development complete in 2015.
Vulcan Adairsville Quarry	90 acres	0.3 mile west of MP 78.0	Vulcan intends to expand this quarry to the east.	Development anticipated within the next 5+ years.
Nourison Industries	6 acres	3.1 miles east of MP 83.0	Nourison Industries added 132,000 square feet, expected to generate 40-50 new jobs.	Development mid-2015.
Calhoun County High School Expansion	3 acres	4.3 miles east of MP 87.5	Construction of a new 73,000 square foot Calhoun High School Natatorium.	Opened spring 2014.
Gordon Hospital Expansion	3 acres	2.6 miles east of MP 88.3	Hospital expansion of 59,000 additional square feet.	Complete mid-year 2015.
IVC US	14 acres	1.3 miles west of MP 108.4	Vinyl tile and plank plant. A 300,000-square-foot plant will enable IVC US to keep all its domestic manufacturing activities on the same site.	Complete first quarter of 2015.
Residential Developments	Variable	--	22 residential development projects identified within 0.25 mile of the Project.	Variable
Non-Jurisdiction Facilities	1 acre	MPs 7.8, 56.5, 109.3 and 2.0 (AGL Spur)	Electrical service required for Compressor Station 116, Beasley Road Meter Station, Looper Bridge Road Meter Station, and Murray Meter Station	Concurrent with Project

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[a] Includes projects within the HUC 12 Sub-Watersheds crossed by the Project.

TABLE B.10-2

Existing Air Emission Sources Within 50 Kilometers of Compressor Station 116

Project	County	Distance and Direction from Compressor Station 116	Types of Sources	Permits
Yates Steam Electric Generating Plant	Coweta	1.4 miles southeast	CO, NO_2, PM, SO_2, VOC	Title V Major
GA Power Plant Wansley	Carroll	8.0 miles southwest	CO, SO_2, NO_2, VOC, PM	Title V Major
Meag Wansley Unit 9	Heard	8.6 miles southwest	PM	Title V Major
Oglethorpe Chattahoochee Energy Facility	Heard	8.6 miles southwest	PM	Title V Major
Southern Power – Wansley Combined Cycle	Heard	8.6 miles southwest	PM	Title V Major
Hawk Road Energy Facility	Heard	9.4 miles southwest	CO, NO_2	Title V Major
Tenaska Georgia Generation Facility	Heard	9.8 miles southwest	VOC	Title V Major
Bon L Manufacturing CO	Coweta	8.7 miles southeast	Hydrocarbons, NO_2, PM, VOC	Title V Major
Caldwell Tanks Alliance LLC – Broad Street Facility	Coweta	9.8 miles southeast	VOC	Title V Major
Yamaha Motor Manufacturing Corp of America	Coweta	11.6 miles southeast	Hydrocarbons, PM, VOC,	Title V Major
Southwire CO	Carroll	10.1 miles northwest	NO_2, PM	Title V Major
Southwire Company Copper Rod Mill	Carroll	10.7 miles northwest	CO, NO_2, Pb, PM, VOC, SO_2	Title V Major
Southwire Company – Cofer Technology Cen	Carroll	10.6 miles northwest	PM	Title V Major
Decostar Industries Inc.	Carroll	14.1 miles northwest	VOC	Title V Major
Spurlin Industries Inc.	Fulton	14.5 miles northeast	PM, VOC	Title V Major
Owens Corning Insulating Systems LLC Fairburn GA	Fulton	17.5 miles northeast	CO, NO_2, PM, SO_2, VOC	Title V Major
Avery International Fasson Div.	Fayette	20.2 miles southeast	VOC	Title V Major
Gs Roofing Products CO Inc.	Fayette	21.9 miles southeast	CO, Fugitive dust, Fugitive emissions, NO_2, PM,SO_2, VOC	Title V Major
Meadwestvaco – Greenville Sawmill	Meriwether	29.8 miles south-southeast	CO, SO_2, NO_2, VOC, PM	N/A
Plasti-Paint Inc.	Heard	16.9 miles southwest	PM	N/A
Plantation Pipe Line CO Bremen	Haralson	20.0 miles northwest	VOC	Title V Major
Hl-A Co. Inc. (Honda Lock-America, Inc.)	Haralson	21.0 miles northwest	VOC	Title V Major
Printpack Incorporated	Douglas	17.8 miles north-northwest	VOC, Hydrocarbons	Title V Major
Caraustar Mill Group Inc. Auste Ll Boxboard Mills	Cobb	27.8 miles northeast	CO, NO_2, PM, SO_2, VOC, PM_{10}	Title V Major
Colonial Pipeline, Atlanta Junction Facility	Cobb	30.4 miles northeast	VOC	Title V Major
Marathon Petroleum Company – Powder Springs GA	Cobb	30.9 miles northeast	VOC, PM	Title V Major
Geiger International Inc.	Fulton	24.5 miles northeast	PM, VOC	Title V Major

TABLE B.10-2 (cont'd)

Existing Air Emission Sources Within 50 Kilometers of Compressor Station 116

Project	County	Distance and Direction from Compressor Station 116	Types of Sources	Permits
Free Flow Packaging Inc.	Fulton	26.1 miles northeast	VOC	N/A
Abrams Fixture Corp.	Douglas	26.2 miles northeast	HAP	N/A
Atlanta Utoy Creek Wpcp	Fulton	27.6 miles northeast	HG, NO_2, PM, SO_2	Title V Major
Owens Corning Roofing & Asphalt LLC Atlanta	Fulton	28.6 miles northeast	CO, PM, VOC, NO_2	Title V Major
Enviro-Grotechnology	Cobb	29.4 miles northeast	HG, NO_2, PM, SO_2	N/A
Printpack Inc.	Fulton	29.8 miles northeast	PM, VOC	N/A
Raylock Corp.	Fulton	30.1 miles northeast	Pb, PM, VOC, Asbestos	N/A
Rr Donnelley Williams Plant	Fulton	26.3 miles northeast	VOC	Title V Major
Alchemix Corp.	Fulton	28.0 miles northeast	PM, VOC	Title V Major
Hartsfield International Airport, City Of Atlanta	Fulton	29.1 miles northeast	NO_2, SO_2	Title V Major
Delta Air Lines Gen Offices	Fulton	30.7 miles northeast	PM	Title V Major
Ppg Architectural Finishes East Point	Fulton	31.2 miles northeast	VOC	Title V Major
Delta/Air Cargo	Fulton	30.7 miles northeast	SO_2	Title V Major
Pruett W E Co Plt 3	Clayton	30.9 miles northeast	PM, SO_2, VOC	N/A
Douglas & Lomason Co.	Coweta	6.39 miles southeast	VOC	N/A
Ljs Grease & Tallow I	Carroll	5.0 miles northwest	PM	N/A
Griffin's Used Parts	Carroll	8.1 miles west	PM	N/A
Grancoffee Roasting Company	Fulton	8.4 miles northeast	VOC	N/A

Notes: CO = carbon monoxide, VOC = volatile organic compound, PM_{10} = particulate matter 10 micrometers or less in diameter, NO_2 = nitrogen dioxide, Pb = lead, HAP = hazardous air pollutant, Hg = mercury, PM = particulate matter, SO_2 = sulfur dioxide, N/A = not applicable

Twenty-two residential development projects were identified within 0.25 mile of the Project as conceptual, having an approved site plan, or under construction. The Project would traverse 12 of these projects. Erecting permanent residential and other aboveground structures and facilities would result in the permanent loss of vegetation and associated wildlife habitat; displacement of wildlife; loss of soil and land use; alteration of surface and groundwater flow and aesthetic characteristics; and could temporarily and/or permanently increase dust, and impact noise and air quality. Due to the speculative nature (funding and permitting) of the housing and development markets, it is difficult to determine the amount of land that would ultimately be affected by these projects; and therefore, contributing to a cumulative impact. However, based on the permanent nature of these impacts and the largely temporary Project impacts, we have determined that adding these impacts to the Project impacts would not result in a significant cumulative impact on any of the affected resources.

As noted in section A.8, non-jurisdictional electric service would be provided to the proposed aboveground facilities. Delivering electrical service to these facilities would require new 10-foot-wide powerline rights-of-way of varying lengths for each facility affecting a total of 1.2 acres of land. Although specific resource impacts are not available at this time, the nature of these impacts would be similar to those described for the proposed pipeline. Due to the limited length of the non-jurisdictional electric service extensions and considering that the local electric service providers would obtain required permits, we have determined that the impacts of the electric service extensions when added to the impacts of the Project facilities would not result in significant cumulative impact on any affected resource.

In consideration of the minor direct and indirect impacts identified in the preceding sections of this EA, and after reviewing the region of influence of each resource and the other projects with the potential to contribute cumulative resource impacts, we conclude that the project may contribute to cumulative impacts on forest vegetation and air quality. Consequently, our analysis focuses on only these resources.

a. Cumulative Impacts on Forest

Constructing the Project would affect 806.6 acres of forest. Unlike other resources affected by the Project, impacts on forest would be long term. Due to collocation, forest impacts along most of the pipeline right-of-way would occur as an incremental expansion of existing rights-of-way, avoiding and minimizing some forest impacts (e.g., habitat fragmentation). Further, impacts on forest resources would occur along 115 miles of pipeline right-of-way, thereby avoiding significant cumulative impacts in any localized area or in conjunction with any other project. The forest impacts associated with the Project are not significant when considered in comparison to the substantial extent of the resource in the region. Assuming a similar percentage of the land affected would be forested (i.e., 47 percent), the projects identified in the region of influence would permanently affect about 190 acres of forest land. Adding the Project's impacts on forest with the forest clearing of other projects/actions would contribute to a cumulative impact within the region of influence. However, based on the linear nature of the Project and the impacts of the project as discussed above, we have determined that this cumulative impact would not be significant.

b. Cumulative Impacts on Air Quality

Other projects/actions within the regions of influence would involve the use of heavy equipment that would temporarily increase traffic, dust, and air emissions. Additionally, when completed, the energy, residential, commercial, industrial, and other developments in the regions of influence would permanently increase air emissions. The combination of these effects would add to a cumulative impact on air quality in the region.

Emissions from construction equipment would be primarily restricted to daylight hours and would be minimized through applicable equipment emission standards. Because the construction emissions would be short-term, intermittent, and highly localized they are not expected to contribute significantly to other air quality impacts in the region.

The proposed Compressor Station 116 would be located in Carroll County, Georgia, which is designated as moderate non-attainment for $PM_{2.5}$. Carroll County is designated as attainment for all other NAAQS criteria pollutants. Transco's air dispersion modeling analysis demonstrated that impacts from operation of Compressor Station 116, when added to existing ambient concentrations obtained from the nearest available monitoring stations, would remain below applicable NAAQS. Based on a review of the projects identified in table B.10-2, we identified one air emission generating source, the Yates Steam Electric Generating Plant, with the potential to overlap with the area of influence of the air emissions associated with the proposed Compressor Station 116. However, based on the air dispersion modeling completed for the Project, we have determined that the emissions from the Project, when combined with emissions associated with the Yate Steam Electric Generating Plant, would not have a significant cumulative impact on air quality in the region during the operation of the Project.

c. Cumulative Impacts on Climate Change

Climate change is the change in climate over time, whether due to natural variability or as a result of human activity, and cannot be represented by single annual events or individual anomalies. For example, a single large flood event or particularly hot summer are not indications of climate change, while a series of floods or warm years that statistically change the average precipitation or temperature over years or decades may indicate climate change.

The Intergovernmental Panel on Climate Change (IPCC) is the leading international, multi-governmental scientific body for the assessment of climate change. The United States is a member of the IPCC and participates in the IPCC working groups to develop reports. The leading U.S. scientific body on climate change is the U.S. Global Change Research Program (USGCRP). Thirteen federal departments and agencies participate in the USGCRP, which began as a presidential initiative in 1989 and was mandated by Congress in the Global Change Research Act of 1990.

The IPCC and USGCRP have recognized that:

- globally, GHGs have been accumulating in the atmosphere since the beginning of the industrial era (circa 1750);
- combustion of fossil fuels (coal, petroleum, and natural gas), combined with agriculture and clearing of forests is primarily responsible for this accumulation of GHG;
- these anthropogenic GHG emissions are the primary contributing factor to climate change; and
- impacts extend beyond atmospheric climate change alone, and include changes to water resources, transportation, agriculture, ecosystems, and human health.

In May 2014, the USGCRP issued a report, *Climate Change Impacts in the United States*, summarizing the impacts that climate change has already had on the United States and what projected impacts climate change may have in the future (EPA, 2014). The report includes a breakdown of overall impacts by resource and impacts described for various regions of the United States. Although climate change is a global concern, for this cumulative analysis, we will focus on the potential cumulative impacts of climate change in the Project area.

The USGCRP's report notes the following observations of environmental impacts that may be attributed to climate change in the Southeast region:

- temperatures are projected to increase another 4 to 8 °F by 2100, resulting in increased harmful algal blooms; increased disease-causing agents; spread of non-native plants; reduced dairy and livestock production; and reduced crop productivity;
- the number of days above 95 °F are projected to increase, resulting in major human health implications;
- the global sea level has risen by about 8 inches since reliable record keeping began in 1880, and is projected to rise another 1 to 4 feet by 2100;
- coastal water temperature in several regions are likely to continue warming as much as 4 to 8 °F by 2100;
- increasing acidification resulting from the uptake of CO_2 by ocean waters threatens corals, shellfish, and other living things that form their shells and skeletons from calcium carbonate;
- substantial increases in the extent and frequency of storm surge, coastal flooding, erosion, property damage, and loss of wetlands;
- the intensity, frequency, and duration of North Atlantic hurricanes, as well as the frequency of Category 4 and 5 hurricanes, have increased since the early 1980s;
- short-term droughts are expected to intensify, resulting in decreased aquifer recharge and groundwater availability;
- the number of days that fail to meet federal air quality standards is projected to increase with rising temperatures if there are no additional controls on ozone-causing pollutants; and
- extreme weather events are affecting energy production and delivery facilities, resulting in supply disruptions of varying lengths and magnitudes.

GHG emissions are a primary cause of climate change (EPA, 2014). Of the GHGs emitted, CO_2 is the most prevalent, accounting for 82 percent of all U.S. emissions in 2013 (EPA, 2016c). Methane is the second most prevalent, accounting for 10 percent of the total U.S. emissions in 2013 (EPA, 2016d). In 2013, natural gas and petroleum systems accounted for 26 percent of CH_4 emissions in the United States (EPA, 2016b). Although the amount of CH_4 being emitted into the atmosphere is significantly less than that of CO_2, the comparative impact of CH_4 on climate change over a 100-year period (that is, its global warming potential) is more than 25 times greater (EPA, 2016d). Fugitive CH_4 emissions are common in natural gas systems and can occur during natural gas production, transmission, storage, and distribution (EPA, 2016d).

Currently, there is no standard methodology to determine how the proposed Project's incremental contribution to GHGs would translate into physical effects of the global environment. However, we acknowledge that the operation of the Project (i.e., Compressor Station 116, Beasley Road Meter Station, Murray Meter Station, Looper Bridge Road Meter Station, and fugitive pipeline emissions) would generate about 110,127 mtpy of potential GHG emissions (expressed as CO_2e). Based upon Transco's current estimates, the GHG emissions from the operation of the Beasley Road, Murray, and Looper Bridge Road Meter Stations would not exceed GHG emission reporting thresholds. The combustion-related GHG emissions from operation of Compressor Station 116 may exceed 25,000 mtpy based upon facility emission calculation. If all actual GHG emissions from Compressor Station 116 are equal to or greater than 25,000 mtpy, Transco would be required to comply with all reporting requirements of the GHGRP.

The other facilities identified in the region of influence are required to comply with all state and federal air permitting processes and are subject to pertinent emission and mitigation requirements outline in the GHGRP. Therefore, we conclude the Project would not significantly contribute to GHG cumulative impacts.

d. Cumulative Impacts Conclusion

The Project would occur in a region that has been significantly affected by previous human activity. If constructed, the Project and the energy projects, residential and other developments, roadway projects, and mining operations that occur within the regions of influence would result in varying degrees of cumulative impact. The degree of impact would vary on different resources depending on the type and scope of each project, their proximity to each other, the timeframe in which they are constructed, and the measures that would be implemented to avoid or reduce impacts at each project site. The majority of the impacts resulting from the Project would be temporary and about 49 percent of the pipeline facilities would be collocated with existing infrastructure, thereby reducing overall impacts. As discussed in this EA, the environmental impacts associated with the Project would be less than significant if the Project is constructed and operated in accordance with the Transco's proposed construction and restoration plans, other applicable regulations or permit requirements, and our additional recommendations. Therefore, we conclude that the impacts of constructing and operating the Project when added to the impacts of the aforementioned projects would not result in a significant cumulative impact on the environment.

C. ALTERNATIVES

In consultation with the FWS, the GADNR, and landowners, Transco incorporated numerous alternatives into its proposed route that avoid conflicts with sensitive resources and existing or planned land uses. In accordance with NEPA, we evaluated alternatives to Transco's proposed action to determine whether they would be preferable to constructing the Project as proposed. Our evaluation criteria for selecting potentially preferable alternatives are:

- technical and economic feasibility and practicality;
- significant environmental advantage over the proposed action; and
- ability to meet the objectives of the proposed action (i.e., providing transportation of 44.8 million cubic feet per day of natural gas capacity to growing areas of demand in northwest Georgia).

Our evaluation of alternatives is based on project-specific information provided by the applicant, affected landowners, and other concerned parties; publicly available information; our consultations with federal and state resource agencies; and our expertise and experience regarding the siting, construction, and operation of natural gas transmission facilities and their potential impact on the environment.

Evaluation Process

Through environmental comparison and application of our professional judgement, each alternative is considered to a point where it becomes clear if the alternative could or could not meet the three evaluation criteria. To ensure a consistent environmental comparison and to normalize the comparison factors, we generally use desktop sources of information (e.g., publicly available data, geographic information system data, aerial imagery) and assume the same right-of-way widths and general workspace requirements. Where appropriate, we also use site-specific information (e.g., field surveys or detailed designs). Our environmental analysis and this evaluation consider quantitative data (e.g., acreage or mileage) and uses common comparative factors such as total length, amount of collocation, and land requirements. Our evaluation also considers impacts on both the natural and human environments. These impacts were described in detail in section B of this EA. Because the alternatives represent mostly alternative locations for natural gas facilities, the specific nature of these impacts on the natural and human environments would generally be similar to the impacts described in section B. In recognition of the competing interests and the different nature of impacts resulting from an alternative that sometimes exist (i.e., impacts on the natural environment versus impacts on the human environment), we also consider other factors that are relevant to a particular alternative and discount or eliminate factors that are not relevant or may have less weight or significance.

Many alternatives are technically and economically feasible. Technically practical alternatives, with exceptions, would generally require the use of common construction methods. An alternative that would require the use of a new, unique, or experimental construction method may not be technically practical because the required technology is not available or unproven.

Economically practical alternatives would result in an action that generally maintains the price competitive nature of the proposed action. Generally, we do not consider the cost of an alternative as a critical factor unless the added cost to design, permit, and construct the alternative would render the project economically impractical.

Determining if an alternative provides a significant environmental advantage requires a comparison of the impacts on each resource as well as an analysis of impacts on resources that are not common to the alternatives being considered. The determination must then balance the overall impacts and all other relevant considerations. In comparing the impact between resources, we also considered the degree of impact anticipated on each resource. Ultimately, an alternative that results in equal or minor advantages in terms of environmental impact would not compel us to shift the impacts from the current set of landowners to a new set of landowners.

One of the goals of an alternatives analysis is to identify alternatives that avoid significant impacts. In section B, we evaluated each environmental resource potentially affected by the Project and concluded that constructing and operating the Project would not significantly impact these resources. Consistent with our conclusions, the value gained by further reducing the (not significant) impacts of the Project when considered against the cost of relocating the route/facility to a new set of landowners was also factored into our evaluation.

1. No-Action Alternative

If the Commission decides to deny the proposed action, the environmental impacts addressed in this EA would not occur. Under this alternative, Transco would not provide natural gas to markets in northwest Georgia and the objectives of the Project would not be met. Customers in this region would seek alternate supplies of natural gas, and other natural gas transmission companies would likely propose to construct and operate similar facilities. These actions could result in impacts similar to or greater than the Project, and may not meet the proposed timeframes for delivery of additional gas volumes. Therefore, we conclude that the no-action alternative would not meet the objectives of the proposed action and because the market would seek alternative infrastructure to replace the Project, would likely not provide a significant environmental advantage.

2. System Alternatives

System alternatives would utilize other existing, modified, or proposed facilities to meet the objectives of the proposed action. A system alternative would make it unnecessary to construct all or part of the Project, although modifications or expansion of existing or proposed pipeline systems may be required. We are not aware of any natural gas pipeline systems proposed in the region which would meet the objectives of the proposed action. We evaluated two existing natural gas pipeline systems in the region to determine if they could meet the Project objectives and demonstrate a significant environmental advantage over the proposed action. Figure C.2-1 illustrates the portions of these systems proximate to the proposed Project.

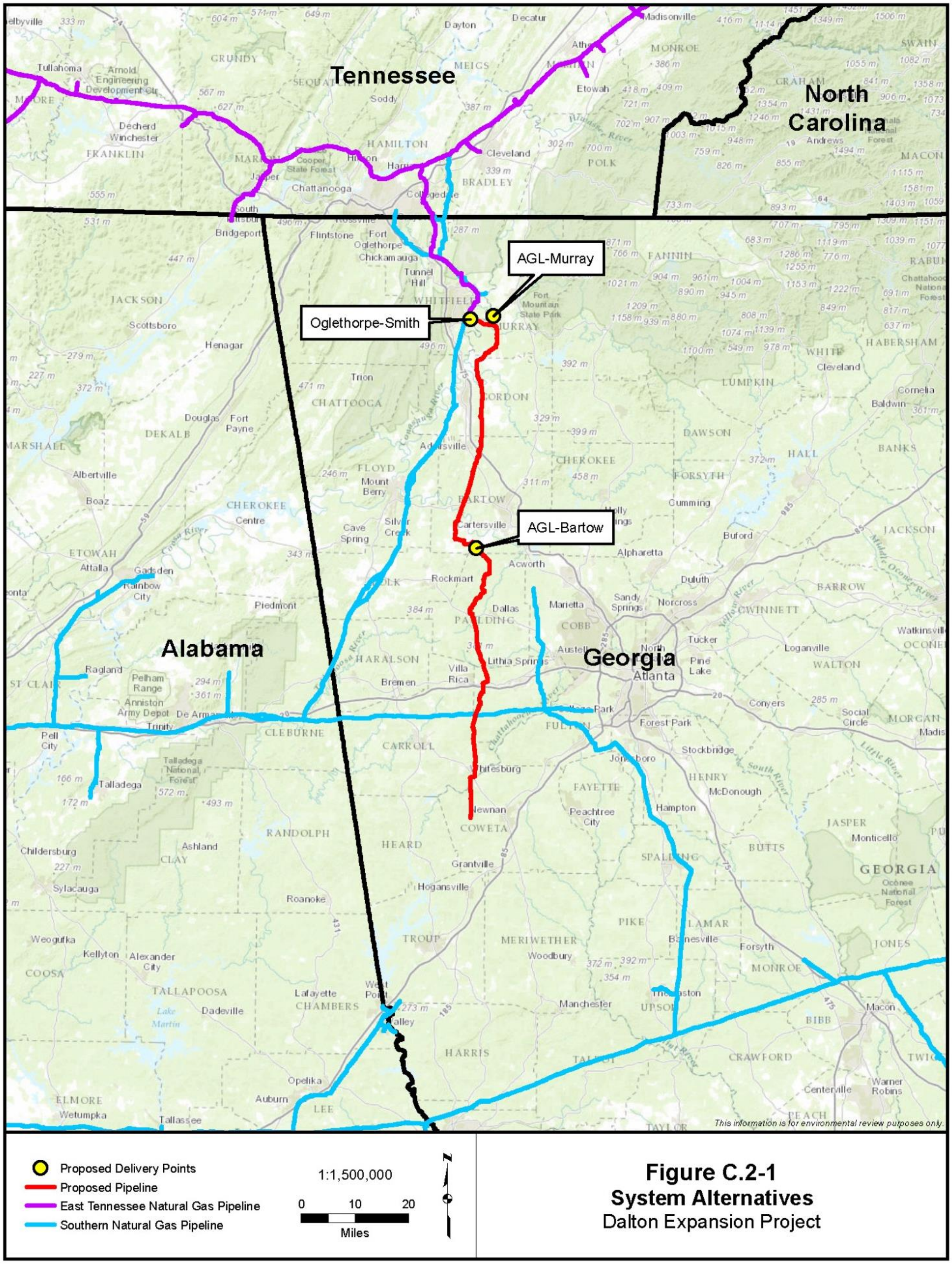

Figure C.2-1
System Alternatives
Dalton Expansion Project

Spectra Energy's East Tennessee Natural Gas Pipeline

The East Tennessee Natural Gas Pipeline is a 1,500-mile-long pipeline system that begins in Tennessee and extends to Virginia. To meet the objectives of the proposed action using this alternative, more than 50 miles of new pipeline and associated facilities, similar to the northern half of the proposed Project, would need to be constructed to connect to Transco's identified delivery points. In addition, looping pipelines and additional compression facilities would likely need to be constructed along the East Tennessee system in the same geographical region. Construction of these facilities would result in impacts similar to or greater than the Project and would therefore not provide a significant environmental advantage over the proposed action. For these reasons, we conclude that the East Tennessee Natural Gas Pipeline system alternative is not preferable to the proposed action.

Kinder Morgan's Southern Natural Gas Pipeline

The Southern Natural Gas Pipeline is a 7,600-mile-long pipeline system that extends from natural gas supply basins in Texas, Louisiana, Mississippi, Alabama and the Gulf of Mexico to market areas in Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina and Tennessee. To meet the objectives of the proposed action using this alternative, about 20 miles of new pipeline and associated facilities would need to be constructed to connect to Transco's identified delivery points. In addition, looping pipelines and additional compression facilities, proportional in size to the Project, would likely need to be constructed along the Southern Natural Gas system in the same geographical region. Construction of these facilities would result in impacts similar to or greater than the Project and would therefore not provide a significant environmental advantage over the proposed action. For these reasons, we conclude that the Southern Natural Gas Pipeline system alternative is not preferable to the proposed action.

3. Route Alternatives

We evaluated route alternatives to determine whether their implementation would be preferable to the proposed corresponding action. Environmental factors evaluated include total pipeline length; length the pipeline is collocated with existing rights-of-way; residences within 150 feet of the construction workspace, impacts on wetlands, waterbodies, and upland forest; and slope greater than 30 percent. Slopes greater than 30 percent are more susceptible to erosion and slope failures and may make establishment of vegetation during restoration more difficult.

We received a number of comments during the scoping period related to collocation of the Project with existing pipeline and powerline rights-of-way. About 49 percent of the Dalton Lateral and about 60 percent of the AGL Spur would be collocated with existing rights-of-way.

Compressor Station 115 Alternative

During the scoping period, we received a landowner request to evaluate a route that follows the existing access road to Transco's Compressor Station 115. The Compressor Station 115 Alternative begins at the compressor station site, parallels the access road, and then joins the proposed route near MP 0.7 (see figure C.3-1).

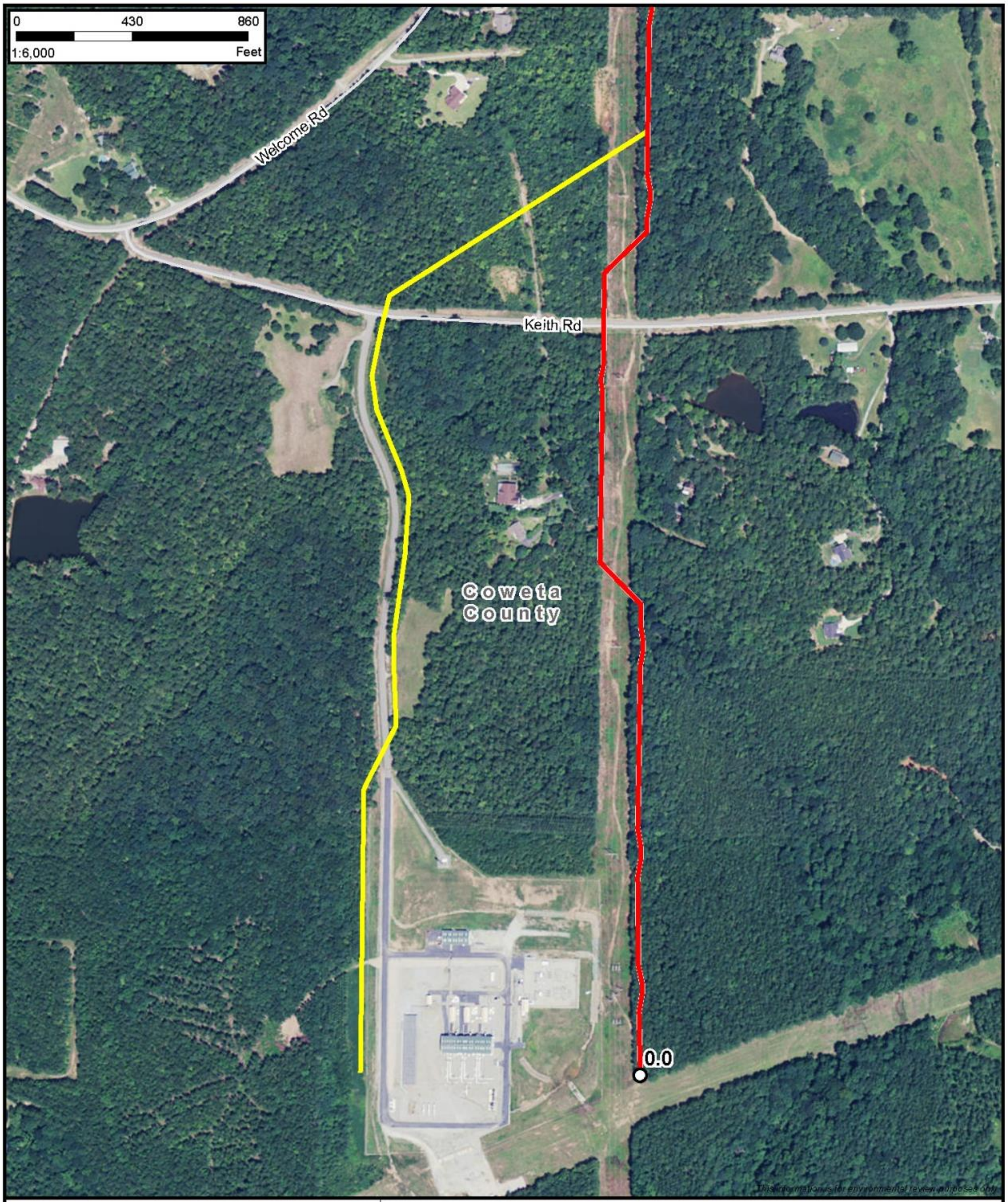

Figure C.3-1
Compressor Station 115 Alternative
Dalton Expansion Project

As shown in table C.3-1, the impacts associated with the Compressor Station 115 Alternative and the corresponding segment of the proposed route are very similar. However, the alternative route is 0.08 mile longer than the proposed route, would increase impacts on upland forest by about 0.4 acre, and impact an additional landowner not currently crossed by the Project. This alternative appears to be technically feasible and would meet the Project's objectives but would not provide a significant environmental advantage over the proposed action. Therefore, we conclude that the Compressor Station 115 Alternative would not be preferable to the corresponding segment of the proposed route. The landowner identified two additional route alternatives in his request. These alternatives would require the installation of the pipeline directly below and parallel to the existing powerlines for several hundred feet, as opposed to the diagonal crossing of the powerlines by the proposed route. Based on the constructability issues and safety concerns associated with the installation of longer segments of pipeline below high voltage powerlines, we concluded that these routes did not represent a significant environmental advantage over the proposed route.

TABLE C.3-1

Environmental Comparison of the Compressor Station 115 Alternative with the Proposed Route (MPs 0.0 to 0.7) for the Dalton Expansion Project

Environmental Factor	Unit	Proposed	Alternative
Total Length	miles	0.69	0.77
Parallel/Adjacent to Existing Right-of-Way	miles	0.7	0.0
Residences within 150 feet of the Workspace	number	0	0
Wetlands Affected [a]	acres	0.0	0.0
Waterbodies Crossed [b]	number	0	0
Upland Forest Affected [c]	acres	5.6	6.0

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[a] Based on National Wetlands Inventory data.
[b] Based on Nation Hydrography Data and aerial photo interpretation.
[c] Based on aerial photo interpretation.

Villa Rica Highway Alternative

During the scoping period, several stakeholders commented about the proposed and alternative route discussed below. The Villa Rica Highway Alternative follows an alignment that Transco eliminated due to constructability concerns along the Georgia Power powerline right-of-way. Based on additional field review, Transco adopted the currently proposed route. The Villa Rica Highway Alternative deviates from the proposed route near MP 32.3, heads northwest around a large residential development and commercial area, and then northeast where it rejoins the proposed route near MP 33.7 (see figure C.3-2).

The Villa Rica Highway Alternative would reduce the number of residences within 150 feet of the pipeline by 7 and cross 2 less intermittent streams; however, the alternative route is 0.6 mile longer and would increase impacts on upland forest by about 3.9 acres (see table C.3-2). This alternative appears to be technically feasible and would meet the Project's objectives but would not provide a significant environmental advantage over the proposed action. Therefore, we conclude that the Villa Rica Highway Alternative would not be preferable to the corresponding segment of the proposed route.

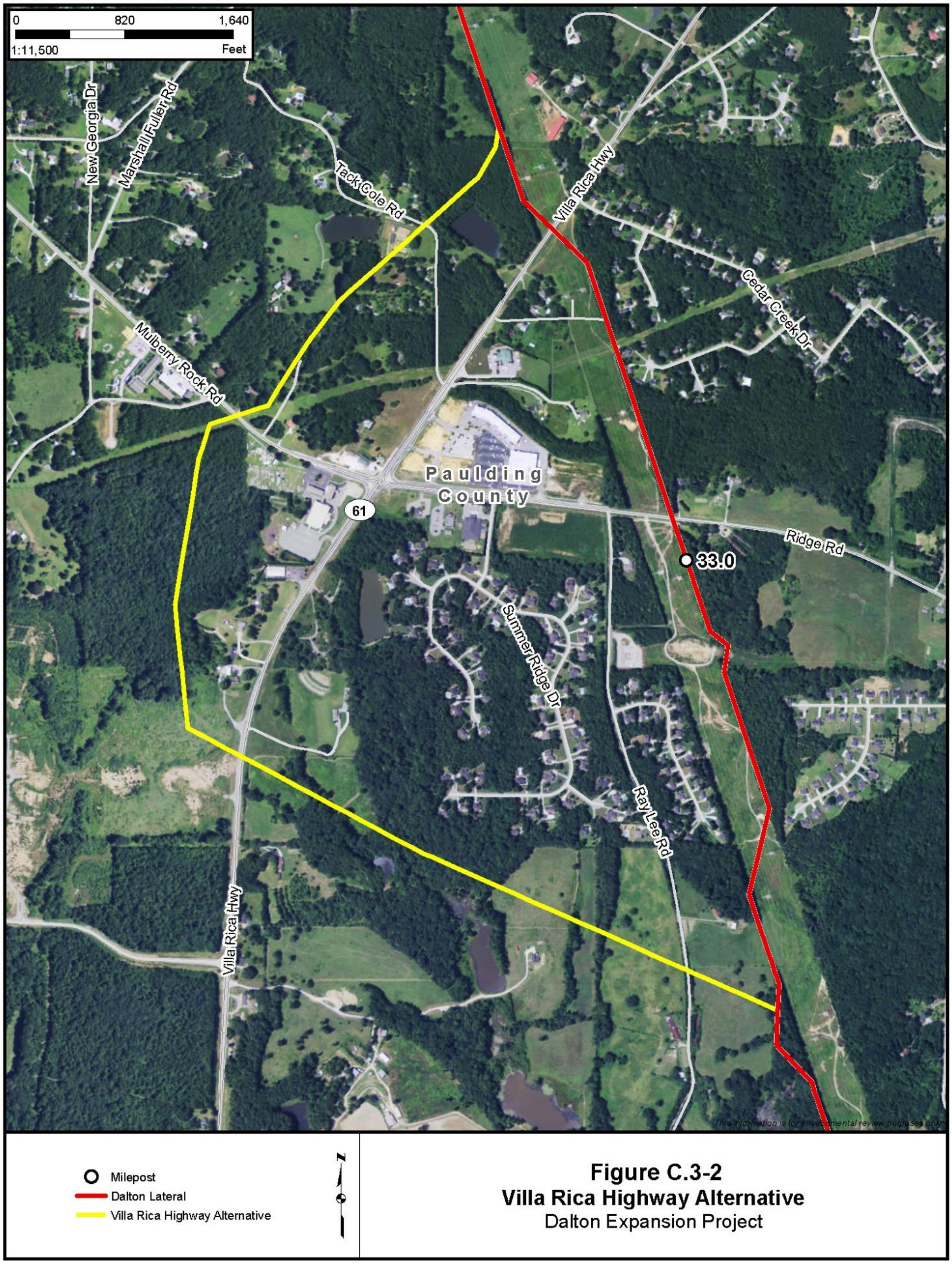

Figure C.3-2
Villa Rica Highway Alternative
Dalton Expansion Project

TABLE C.3-2

Environmental Comparison of the Villa Rica Highway Alternative with the Proposed Route (MPs 32.3 to 33.7) for the Dalton Expansion Project

Environmental Factor	Unit	Proposed	Alternative
Total Length	miles	1.4	2.0
Parallel/Adjacent to Existing Right-of-Way	miles	1.3	0.1
Residences within 150 feet of the Workspace	number	11	4
Wetlands Affected [a]	acres	0.0	0.0
Waterbodies Crossed [b]			
Perennial	number	0	0
Intermittent	number	4	2
Upland Forest Affected [c]	acres	8.3	12.2

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[a] Based on National Wetlands Inventory data.
[b] Based on Nation Hydrography Data and aerial photo interpretation.
[c] Based on aerial photo interpretation.

Willow Springs Road Alternative

During the scoping period, we received comments from stakeholders to evaluate an alternative route that follows the Georgia Power powerline right-of-way north of U.S. Highway 278. The Willow Springs Road Alternative deviates from the proposed route near MP 40.2, heads northwest then northeast around a large residential area, and then rejoins the proposed route near MP 43.8 (see figure C.3-3).

The Willow Springs Road Alternative is 0.8 mile shorter than the proposed route, would be 97 percent collocated with an existing right-of-way (the proposed route is not collocated), and would decrease impacts on upland forest by about 21.2 acres (see table C.3-3). However, the alternative route would require the construction workspace to be located directly adjacent to several large residential developments located along the powerline right-of-way. This alternative appears to be technically feasible and would meet the Project's objectives and does provide an environmental advantage over the proposed action for many of the resources considered. However, we conclude that the advantages would not be significant because of the additional impact on the residential areas. Therefore, we conclude that the Willow Springs Road Alternative would not be preferable to the corresponding segment of the proposed route.

TABLE C.3-3

Environmental Comparison of the Willow Springs Road Alternative with the Proposed Route (MPs 40.2 to 43.8) for the Dalton Expansion Project

Environmental Factor	Unit	Proposed	Alternative
Total Length	miles	3.7	2.9
Parallel/Adjacent to Existing Right-of-Way	miles	0.0	2.8
Residences within 150 feet of the Workspace	number	8	10
Wetlands Affected [a]	acres	0.0	0.0
Waterbodies Crossed [b]			
Perennial	number	2	2
Intermittent	number	2	4
Upland Forest Affected [c]	acres	36.6	15.4
Slopes greater than 30 percent [d]	miles	0.01	0.08

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[a] Based on National Wetlands Inventory data.
[b] Based on Nation Hydrography Data and aerial photo interpretation.
[c] Based on aerial photo interpretation.
[d] Based on digital elevation model raster data.

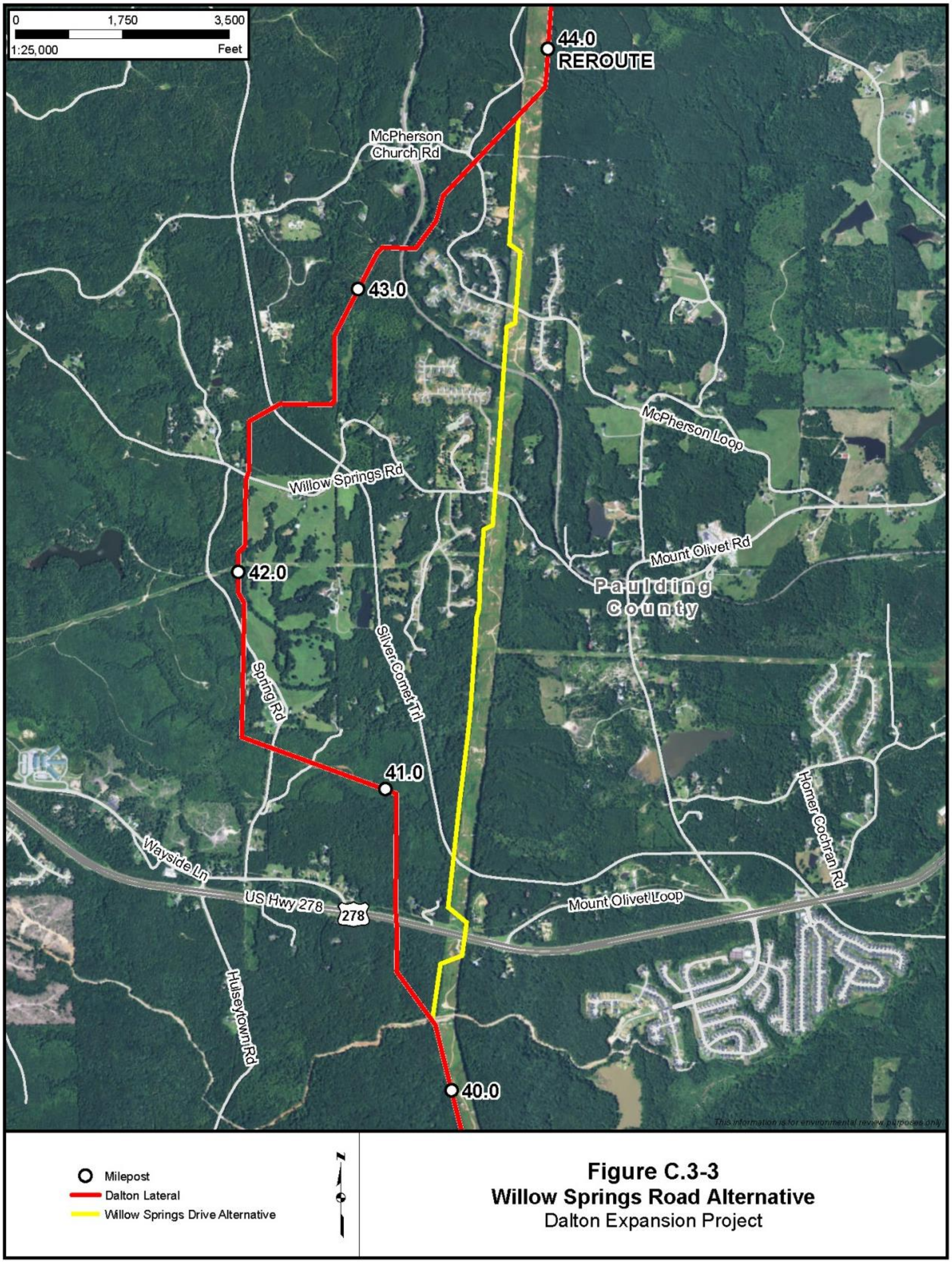

Figure C.3-3
Willow Springs Road Alternative
Dalton Expansion Project

Raccoon Creek Alternative

During the scoping period, the GADNR, the FWS, and the Nature Conservancy raised concerns about the collocation of the Project with the Georgia Power powerline right-of-way through the Raccoon Creek Watershed. Their concerns were related to impacts on protected aquatic species due to the multiple crossing of Raccoon Creek and impacts on restoration efforts conducted along the powerline right-of-way to reduce erosion and sedimentation and improve water quality in the streams crossed by the powerline. The Raccoon Creek Alternative follows the original route, which deviates from the proposed route near MP 43.8, heads generally north adjacent to the powerline right-of-way, and then rejoins the proposed route near MP 54.9 (see figure C.3-4).

The Raccoon Creek Alternative is 1.8 miles shorter than the proposed route and would decrease impacts on upland forest by about 24.3 acres (see table C.3-4). However, the alternative route would require the crossing of 8 additional perennial streams, including 6 crossings of Raccoon Creek. The Raccoon Creek Alternative would also cross 1.7 miles of the Sheffield WMA and 1.0 miles of the Paulding WMA, which are avoided by the corresponding segment of the proposed route. This alternative appears to be technically feasible and would meet the Project's objectives but, based on the potential impacts within the biologically sensitive Raccoon Creek Watershed, would not provide a significant environmental advantage over the proposed action. Therefore, we conclude that the Raccoon Creek Road Alternative would not be preferable to the corresponding segment of the proposed route.

TABLE C.3-4

Environmental Comparison of the Raccoon Creek Alternative with the Proposed Route (MPs 43.8 to 54.9) for the Dalton Expansion Project

Environmental Factor	Unit	Proposed	Alternative
Total Length	miles	11.1	9.3
Parallel/Adjacent to Existing Right-of-Way	miles	1.4	6.4
Residences within 150 feet of the Workspace	number	8	2
Wetlands Affected [a]	acres	0.0	0.15
Waterbodies Crossed [b]			
Perennial	number	1	9
Intermittent	number	10	10
Upland Forest Affected [c]	acres	97.5	73.1
Slopes greater than 30 percent [d]	miles	0.26	0.74

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[a] Based on National Wetlands Inventory data.

[b] Based on Nation Hydrography Data and aerial photo interpretation.

[c] Based on aerial photo interpretation.

[d] Based on digital elevation model raster data.

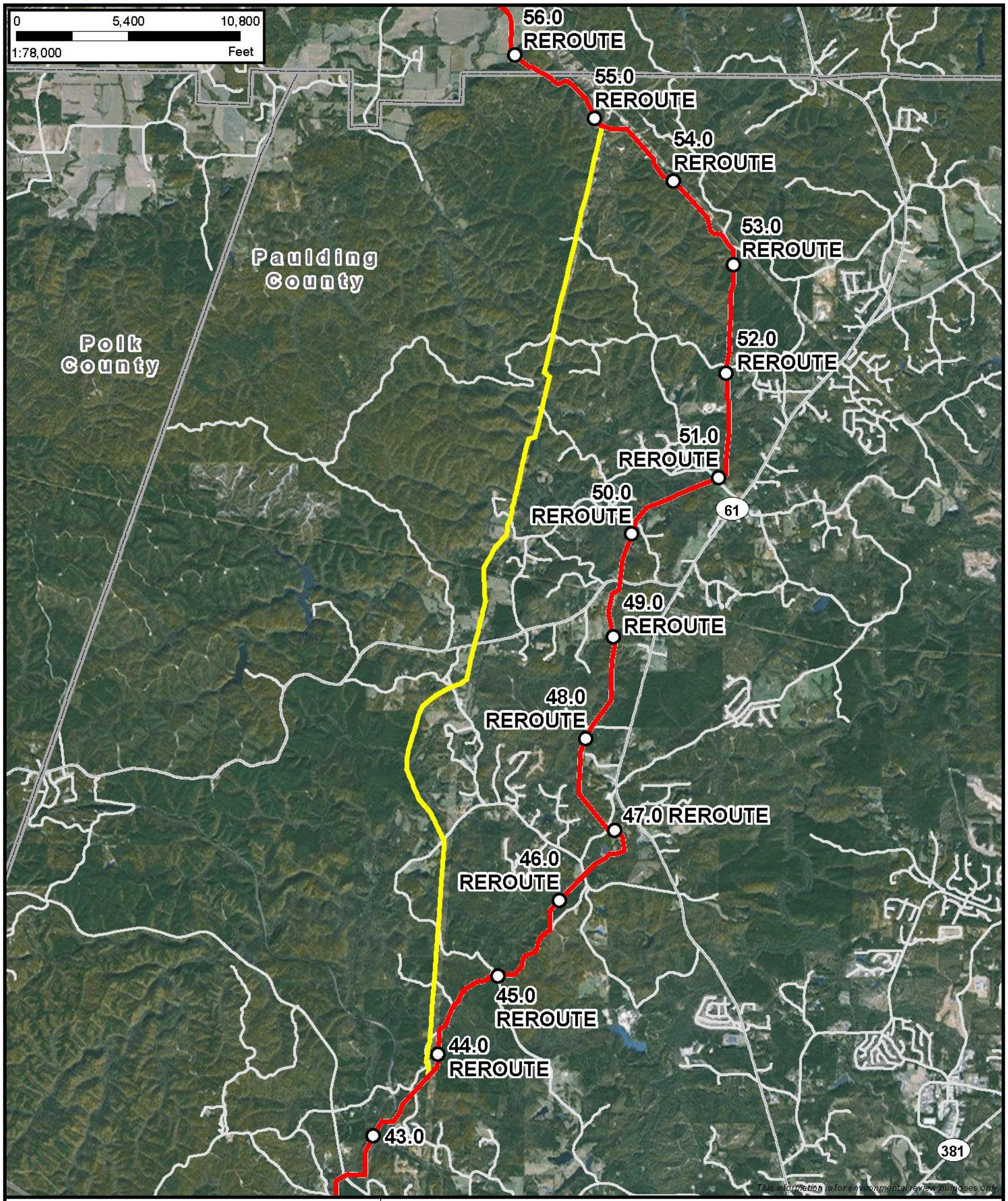

Figure C.3-4
Raccoon Creek Alternative
Dalton Expansion Project

Power Plant Alternative

During the scoping period, we received comments from stakeholders to evaluate an alternative route that follows the powerline rights-of-way closer to the Georgia Power Plant Bowen. The Power Plant Alternative deviates from the proposed route near MP 56.6, heads generally west parallel to the existing Georgia Power powerline rights-of-way, and then rejoins the proposed route near MP 59.8 (see figure C.3-5).

The Power Plant Alternative is 0.4 mile shorter and is collocated for 2.5 more miles than the proposed route but would require 1.3 acres of additional impacts on upland forest and 0.2 acre of additional wetland impacts (see table C.3-5). This alternative appears to be technically feasible and would meet the Project's objectives but would not provide a significant environmental advantage over the proposed action. Therefore, we conclude that the Power Plant Alternative would not be preferable to the corresponding segment of the proposed route.

TABLE C.3-5

Environmental Comparison of the Power Plant Alternative with the Proposed Route (MPs 56.6 to 59.8) for the Dalton Expansion Project

Environmental Factor	Unit	Proposed	Alternative
Total Length	miles	3.4	3.0
Parallel/Adjacent to Existing Right-of-Way	miles	0.1	2.6
Residences within 150 feet of the Workspace	number	3	0
Wetlands Affected [a]			
Forested	acres	0.0	0.0
Emergent	acres	0.03	0.03
Open Water	acres	0.0	0.22
Waterbodies Crossed [b]			
Perennial	number	1	1
Intermittent	number	1	1
Upland Forest Affected [c]	acres	5.8	7.1

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[a] Based on National Wetlands Inventory data.
[b] Based on Nation Hydrography Data and aerial photo interpretation.
[c] Based on aerial photo interpretation.

Highway 53 Alternative

During the scoping period, we received comments from stakeholders to evaluate an alternative route that follows the Georgia Power powerline right-of-way near Highway 53. The Highway 53 Alternative deviates from the proposed route near MP 83.7, heads north parallel to the powerline right-of-way, and then rejoins the proposed route near MP 85.0 (see figure C.3-6).

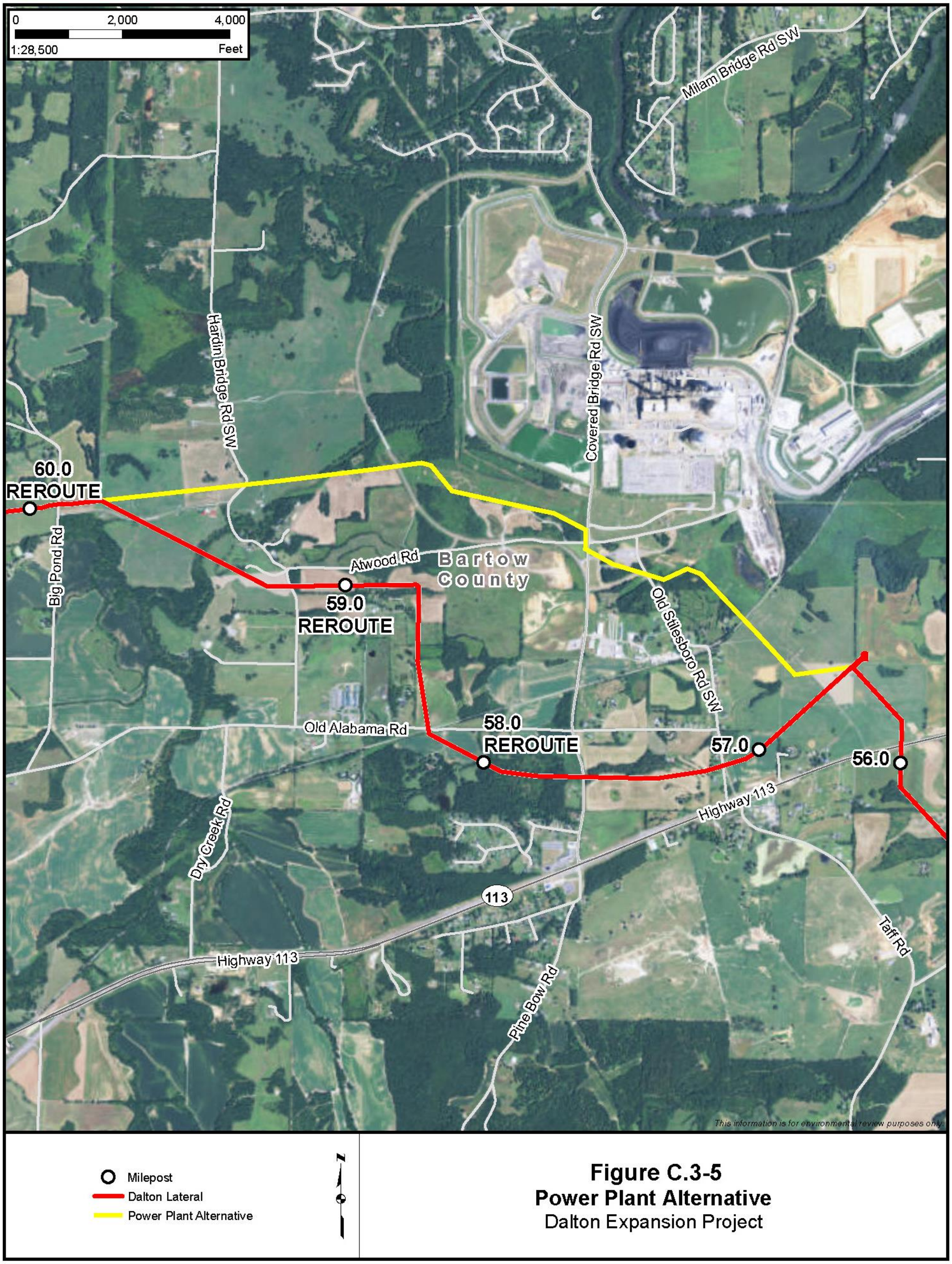

Figure C.3-5
Power Plant Alternative
Dalton Expansion Project

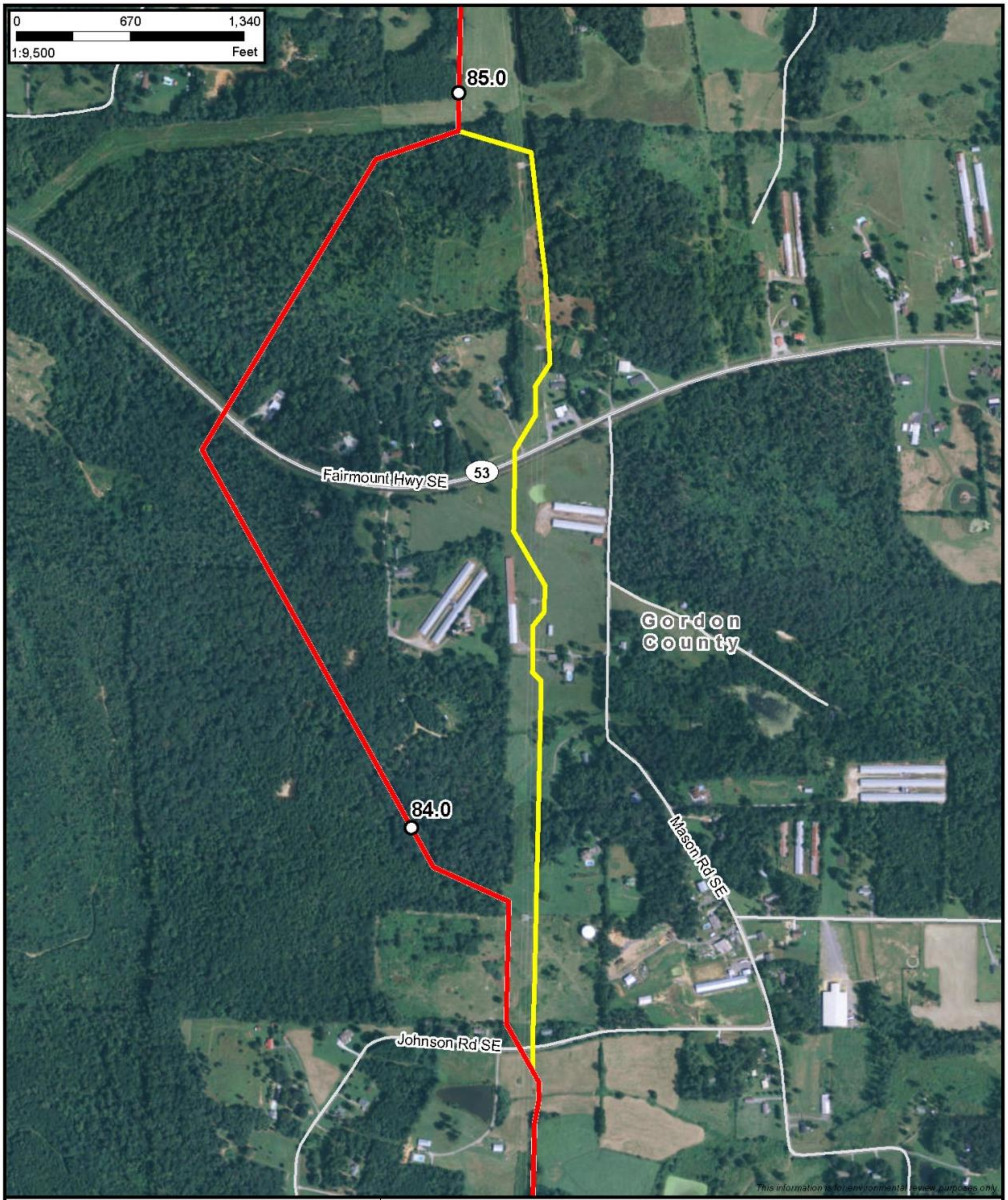

Figure C.3-6
Highway 53 Alternative
Dalton Expansion Project

The Highway 53 Alternative is slightly shorter than the proposed route and would decrease impacts on upland forest by about 8.2 acres (see table C.3-6). This alternative appears to be technically feasible, would meet the Project's objectives, and does provide an environmental advantage over the proposed action for some of the resources considered. However, we conclude that the advantages would not be significant. Therefore, we conclude that the Highway 53 Alternative would not be preferable to the corresponding segment of the proposed route.

TABLE C.3-6

Environmental Comparison of the Highway 53 Alternative with the Proposed Route (MPs 83.7 to 85.0) for the Dalton Expansion Project

Environmental Factor	Unit	Proposed	Alternative
Total Length	miles	1.3	1.1
Parallel/Adjacent to Existing Right-of-Way	miles	0.2	1.1
Residences within 150 feet of the Workspace	number	3	2
Wetlands Affected [a]	acres	0.0	0.02
Waterbodies Crossed [b]			
Perennial	number	0	0
Intermittent	number	1	1
Upland Forest Affected [c]	acres	10.6	2.4

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[a] Based on National Wetlands Inventory data.

[b] Based on Nation Hydrography Data and aerial photo interpretation.

[c] Based on aerial photo interpretation.

Polecat Creek Alternative

During the scoping period, we received comments from stakeholders to evaluate an alternative route that follows the Georgia Power powerline right-of-way near MP 94 in Gordon County. The Polecat Creek Alternative deviates from the proposed route near MP 93.4, heads north parallel to the powerline right-of-way, and then rejoins the proposed route near MP 95.6 (see figure C.3-7).

The Polecat Creek Alternative is slightly shorter and is collocated for 1.8 more miles than the proposed route but would increase impacts on upland forest by about 6.6 acres, impact 1.8 acres of additional wetlands, and require 6 more perennial stream crossings (see table C.3-7). This alternative appears to be technically feasible and would meet the Project's objectives but would not provide a significant environmental advantage over the proposed action. Therefore, we conclude that the Polecat Creek Alternative would not be preferable to the corresponding segment of the proposed route.

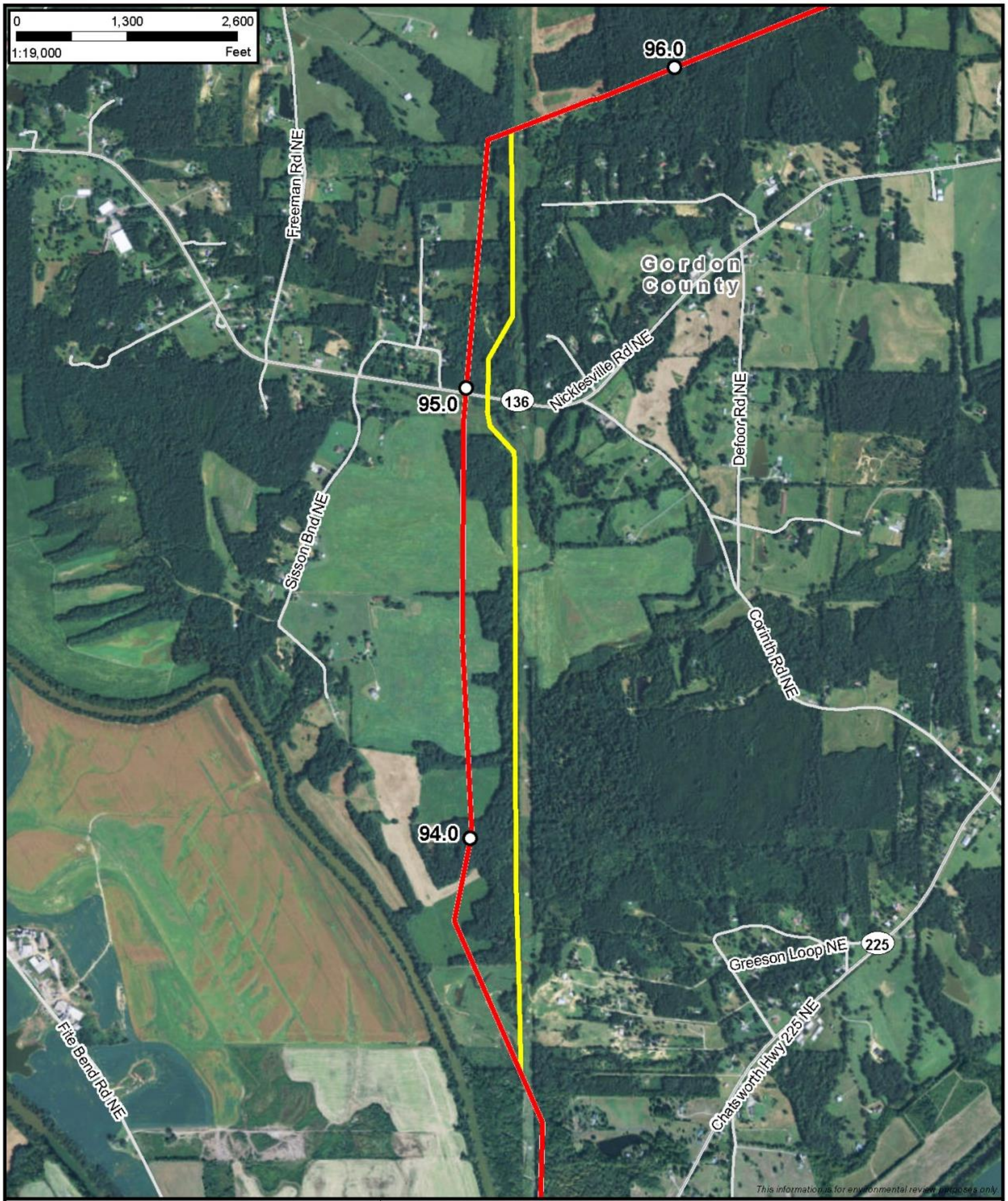

Figure C.3-7
Polecat Creek Alternative
Dalton Expansion Project

TABLE C.3-7

Environmental Comparison of the Polecat Creek Alternative with the Proposed Route (MPs 93.4 to 95.6) for the Dalton Expansion Project

Environmental Factor	Unit	Proposed	Alternative
Total Length	miles	2.2	2.1
Parallel/Adjacent to Existing Right-of-Way	miles	0.0	1.8
Residences within 150 feet of the Workspace	number	0	0
Wetlands Affected [a]			
Forested	acres	3.2	4.3
Emergent	acres	0.13	0.87
Open Water	acres	0.0	0.0
Waterbodies Crossed [b]			
Perennial	number	1	7
Intermittent	number	2	2
Upland Forest Affected [c]	acres	5.1	11.7

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[a] Based on National Wetlands Inventory data.

[b] Based on Nation Hydrography Data and aerial photo interpretation.

[c] Based on aerial photo interpretation.

Dalton Utilities Alternative

During the scoping period, we received comments from stakeholders to evaluate Transco’s preliminary alignment for the northern portion of the pipeline route that crosses through the Dalton Utilities property. The Dalton Utilities Alternative deviates from the proposed route near MP 95.6, heads generally north parallel to the Georgia Power powerline right-of-way, and then ends at the terminus of the proposed route (see figure C.3-8).

The Dalton Utilities Alternative is 2.1 miles shorter than the proposed route, would reduce impacts on wetlands by about 3.2 acres, and require 9 less perennial stream crossings (see table C.3-8). However, the alternative route would affect about 83 acres of the Dalton Utilities sewage spray field, including more than 40,000 feet of spray field piping. These impacts would temporarily, and possibly permanently, reduce the spray field's capacity and affect riparian buffers along the Conasauga River. To offset this reduced capacity, Dalton Utilities would need to increase application rates in the system, which may not be possible under the current permits, and/or acquire additional property to allow for additional piping. This alternative appears to be technically feasible, would meet the Project’s objectives, and would provide some environmental advantages over the proposed action. However, based on constructability issues (e.g., contamination and safety), potential impacts on the operation of the Dalton Utilities sewage spray field, and potential impacts associated with the increased application rates or acquisition of additional properties, we conclude that the Dalton Utilities Alternative would not be preferable to the corresponding segment of the proposed route.

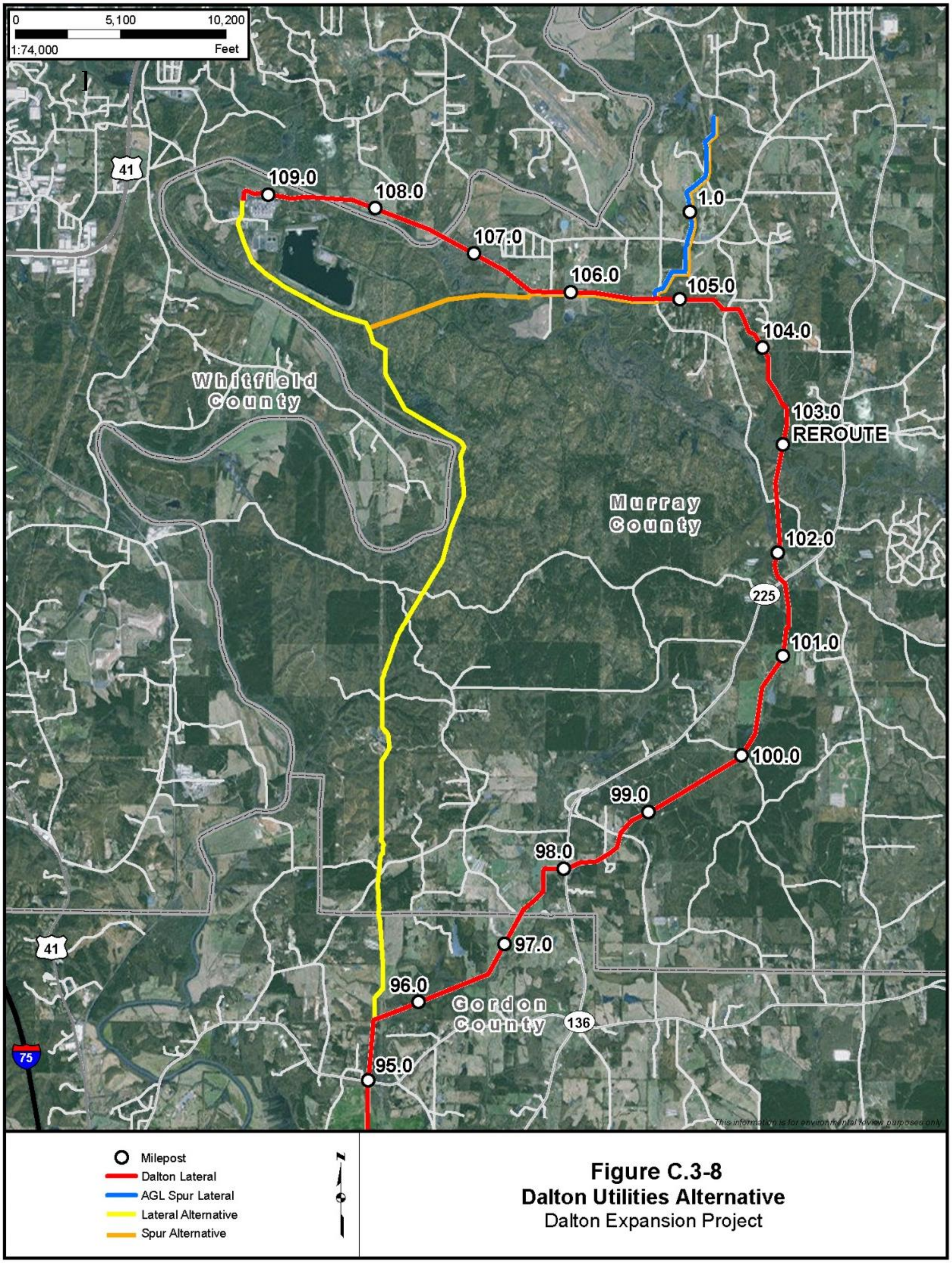

Figure C.3-8
Dalton Utilities Alternative
Dalton Expansion Project

TABLE C.3-8

Environmental Comparison of the Dalton Utilities Alternative with the Proposed Route (MPs 95.6 to 109.3) for the Dalton Expansion Project

Environmental Factor	Unit	Proposed	Alternative
Total Length	miles	15.7	13.6
Parallel/Adjacent to Existing Right-of-Way	miles	2.0	5.8
Residences within 150 feet of the Workspace	number	18	9
Wetlands Affected [a]			
Forested	acres	7.1	5.2
Emergent	acres	0.24	0.0
Open Water	acres	1.1	0.04
Waterbodies Crossed [b]			
Perennial	number	12	3
Intermittent	number	21	22
Upland Forest Affected [c]	acres	83.1	84.6
Slopes greater than 30 percent [d]	miles	0.03	0.33

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[a] Based on National Wetlands Inventory data.
[b] Based on Nation Hydrography Data and aerial photo interpretation.
[c] Based on aerial photo interpretation.
[d] Based on digital elevation model raster data.

The Carroll County Water Authority (CCWA) submitted comments on February 26, 2016 identifying concerns related to the alignment of the proposed pipeline route. The CCWA stated that the proposed route would cross through an 18-acre tract of land that is dedicated for the future expansion of the CCWA's wastewater treatment facility located west of MP18.6. The CCWA stated that the pipeline would prevent the use of the tract for the expansion and require the purchase of additional land and the installation of additional equipment (e.g., pumps and piping). The CCWA did not suggest an alternative route that would be acceptable and did not provide specific areas where it would expect conflict with the Project. Consequently, we are unable to evaluate an alternative route. We expect that Transco and the CCWA may resolve specific areas of concern during easement negotiations, if the Project is approved.

4. Aboveground Facility Site Alternatives

Our review of the Project found that no significant environmental impacts would drive an evaluation of additional alternatives for Compressor Station 116, the Beasley Road Meter Station, the Looper Bridge Road Meter Station, or the Murray Meter Station. We also did not receive any aboveground facility site alternatives from stakeholders during the scoping and review process.

5. Conclusion

We reviewed alternatives to Transco's proposal based on our independent analysis and comments received during scoping. Although the majority of the alternatives appear to be technically feasible, no system or route alternatives provide a significant environmental advantage over the Project. Based on these findings we conclude that the proposed action is the preferred alternative that meets the Project's stated objectives.

D. CONCLUSIONS AND RECOMMENDATIONS

Based upon the analysis in this EA, we have determined that if Transco was to construct and operate the proposed facilities in accordance with its application, supplements, Project-specific plans, and the staff's recommended mitigation measures below, approval of the Project would not constitute a major federal action significantly affecting the quality of the human environment. The staff recommends that the Commission Order contain a finding of no significant impact and the following mitigation measures be included as conditions of any Certificate the Commission may issue.

1. Transco shall follow the construction procedures and mitigation measures described in its application, supplemental filings (including responses to staff data requests), and as identified in the EA, unless modified by the Commission's Order. Transco must:

    a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;

    b. justify each modification relative to site-specific conditions;

    c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and

    d. receive approval in writing from the Director of OEP **before using that modification**.

2. The Director of OEP has delegated authority to take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the Project. This authority shall allow:

    a. the modification of conditions of the Commission's Order; and

    b. the design and implementation of any additional measures deemed necessary (including stop-work authority) to ensure continued compliance with the intent of the environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from construction and operation of the Project.

3. **Prior to any construction**, Transco shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EIs' authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs before becoming involved with construction and restoration activities for the Project.

4. The authorized facility locations shall be as shown in the EA, as supplemented by filed alignment sheets. **As soon as they are available and before the start of construction**, Transco shall file with the Secretary any revised detailed survey alignment maps/sheets for the Project at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the

Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

Transco's exercise of eminent domain authority granted under NGA section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. Transco's right of eminent domain granted under NGA section 7(h) does not authorize it to increase the size of its natural gas facilities to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. Transco shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage and ware yards, new access roads, and other areas for the Project that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area**.

This requirement does not apply to extra workspace allowed by Transco's Plan and/or minor field realignments per landowner needs and requirements that do not affect other landowners or sensitive environmental areas such as wetlands.

Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

a. implementation of cultural resources mitigation measures;

b. implementation of endangered, threatened, or special concern species mitigation measures;

c. recommendations by state regulatory authorities; and

d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.

6. **Within 60 days of the acceptance of the Certificate and before construction begins**, Transco shall file an Implementation Plan for the Project for review and written approval by the Director of OEP. Transco must file revisions to the plan as schedules change. The plan shall identify:

a. how Transco will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;

b. how Transco will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to on-site construction and inspection personnel;

c. the number of EIs assigned per spread, and how Transco will ensure that sufficient personnel are available to implement the environmental mitigation;

d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;

e. the location and dates of the environmental compliance training and instructions Transco will give to all personnel involved with construction and restoration (initial and refresher training as the Project progresses and personnel changes), with the opportunity for OEP staff to participate in the training session;

f. the company personnel (if known) and specific portion of Transco's organization having responsibility for compliance;

g. the procedures (including use of contract penalties) Transco will follow if noncompliance occurs; and

h. for each discrete facility, a Gantt chart (or similar project scheduling diagram), and dates for:

   i. the completion of all required surveys and reports;
   ii. the environmental compliance training of on-site personnel;
   iii. the start of construction; and
   iv. the start and completion of restoration.

7. Transco shall employ one or more EIs per construction spread. The EIs shall be:

a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;

b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;

c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;

d. a full-time position, separate from all other activity inspectors;

e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and

f. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, Transco shall file updated status reports **on a weekly basis for the Project until all construction and restoration activities are complete**. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

   a. an update of Transco's efforts to obtain the necessary federal authorizations;

   b. the current construction status of each spread of the Project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;

   c. a listing of all problems encountered and each instance of noncompliance observed by the EI(s) during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);

   d. a description of the corrective actions implemented in response to all instances of noncompliance, and their cost;

   e. the effectiveness of all corrective actions implemented;

   f. a description of any landowner/resident complaints that may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and

   g. copies of any correspondence received by Transco from other federal, state, or local permitting agencies concerning instances of noncompliance, and Transco's response.

9. **Prior to receiving written authorization from the Director of OEP to commence construction of any Project facilities**, Transco shall file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

10. Transco must receive written authorization from the Director of OEP **before commencing service on each discrete facility of the Project**. Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way and other areas affected by the Project are proceeding satisfactorily.

11. **Within 30 days of placing the authorized facilities for the Project into service**, Transco shall file an affirmative statement, certified by a senior company official:

    a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or

    b. identifying which of the Certificate conditions Transco has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

12. **Prior to construction**, Transco shall file with the Secretary, for review and approval by the Director of the OEP, a revised Karst Mitigation Plan that includes a comprehensive karst report providing a complete discussion of the desktop reviews and field surveys that were conducted to identify potential karst features along the route. The report shall:

    a. provide the results of geotechnical borings to determine the nature and extent of the anomalies detected during the ERI investigations;

    b. provide site-specific mitigation measures for any karst features identified (e.g., route adjustment); and

    c. provide an analysis to determine the pipeline's intrinsic ability to span subsidence features and provide documentation showing where these data can be found. ***(Section B.1.a)***

13. **Prior to any construction within the Etowah River**, Transco file with the Secretary, for review and approval by the Director of OEP, quantitative modeling results of the turbidity and sedimentation associated with construction across the Etowah River. The modeling shall consider blasting activities; trench excavation and backfilling; and the installation and removal of the riprap, equipment bridges, and turbidity curtains. The results of the analysis shall illustrate the duration, extent, and magnitude of elevated turbidity levels and sedimentation. In addition, Transco shall provide the final Etowah River Turbidity Control and Monitoring Plan. ***(Section B.2.b)***

14. **Prior to construction**, Transco shall file with the Secretary, for review and written approval by the Director OEP, an updated version of its Procedures that complies entirely with section IV.A.1.d of the FERC Procedures. ***(Section B.2.b)***

15. **Prior to construction**, Transco shall file with the Secretary further site-specific justification for or modify its proposed workspace related to waterbodies without sufficient justification outlined in appendix L and file updated alignment sheets for review and written approval by the Director of OEP. ***(Section B.2.b)***

16. **Prior to construction**, Transco shall file with the Secretary further site-specific justification for or modify its proposed workspace related to wetlands without sufficient justification outlined in appendix L and file updated alignment sheets for review and written approval by the Director of OEP. ***(Section B.2.c)***

17. **Prior to construction**, Transco shall file with the Secretary a copy of its final wetland mitigation plan and documentation of COE approval of the plan. ***(Section B.2.c)***

18. **Prior to construction**, Transco shall file with the Secretary a plan describing the feasibility of incorporating plant seeds that support pollinators into the seed mixes used for restoration of construction workspaces. These plans shall also describe Transco's consultations with the relevant federal and/or state regulatory agencies. ***(Section B.3.a)***

19. Transco shall not begin construction activities **until**:

    a. the FERC staff completes the formal ESA consultation process; and

    b. Transco has received written notification from the Director of OEP that construction or use of mitigation may begin. ***(Section B.4.a)***

20. Transco **shall not begin implementation** of any treatment plans/measures (including archaeological data recovery); construction of facilities; or use staging storage, or temporary work areas and new or to-be-improved access roads **until**:

    a. Transco files with the Secretary:

        i. all cultural resources survey reports, including special studies such as ground penetrating radar, evaluation reports, avoidance plans and treatment plans;

        ii. comments on survey reports, special studies, evaluation reports, avoidance plans and treatment plans from the SHPO, as well as any comments from federally recognized Indian tribes;

        iii. the ACHP is afforded an opportunity to comment on the undertaking if historic properties would be adversely affected; and

    b. the FERC staff reviews and the Director of OEP approves all cultural resources reports and plans, and notifies Transco in writing that treatment plans/mitigation measures may be implemented and/or construction may proceed.

    All material filed with the Commission that contains **location, character, and ownership** information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering **"CONTAINS PRIVILEGED INFORMATION – DO NOT RELEASE."** ***(Section B.7)***

21. If changes to the Project construction schedule occur that would materially impact the amount of NO_X emissions generated in a calendar year, Transco shall file, in its weekly status report, revised construction emissions estimates prior to implementing the schedule modification with the Secretary demonstrating that the annual NO_X emissions resulting from the revised construction schedule do not exceed general conformity applicability thresholds. ***(Section B.8.a)***

22. **Prior to construction of the I-20, Highway 120, and Joe Frank Harris Parkway locations**, Transco shall file with the Secretary, for review and written approval by the Director of OEP, an HDD noise mitigation plan to reduce the projected noise level attributable to the proposed drilling operations at NSAs with predicted noise levels above 55 dBA. During drilling operations, Transco shall implement the approved plan, monitor noise levels, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than an L_{dn} of 55 dBA at the NSAs. ***(Section B.8.b)***

23. Transco shall file a noise survey with the Secretary **no later than 60 days** after placing Compressor Station 116 into service. If a full load condition noise survey is not possible, Transco shall provide an interim survey at the maximum possible power load and provide the full power load survey **within 6 months**. If the noise attributable to the operation of all of the equipment at any compressor station at interim or full power load conditions exceeds 55 dBA L_{dn} at any nearby NSAs, Transco shall file a report on what changes are needed and shall install additional noise controls to meet the level **within 1 year** of the in-service date. Transco shall confirm compliance with the above requirement by filing a second noise survey with the Secretary **no later than 60 d**ays after it installs the additional noise controls. ***(Section B.8.b)***

24. Transco shall file a noise survey with the Secretary **no later than 60 days** after placing the Murray Meter Station in service. If the noise attributable to the operation of the meter station at maximum flow exceeds an L_{dn} of 55 dBA at any nearby NSAs, Transco shall install additional noise controls to meet that level **within 1 year** of the in-service date. Transco shall confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls. ***(Section B.8.b)***

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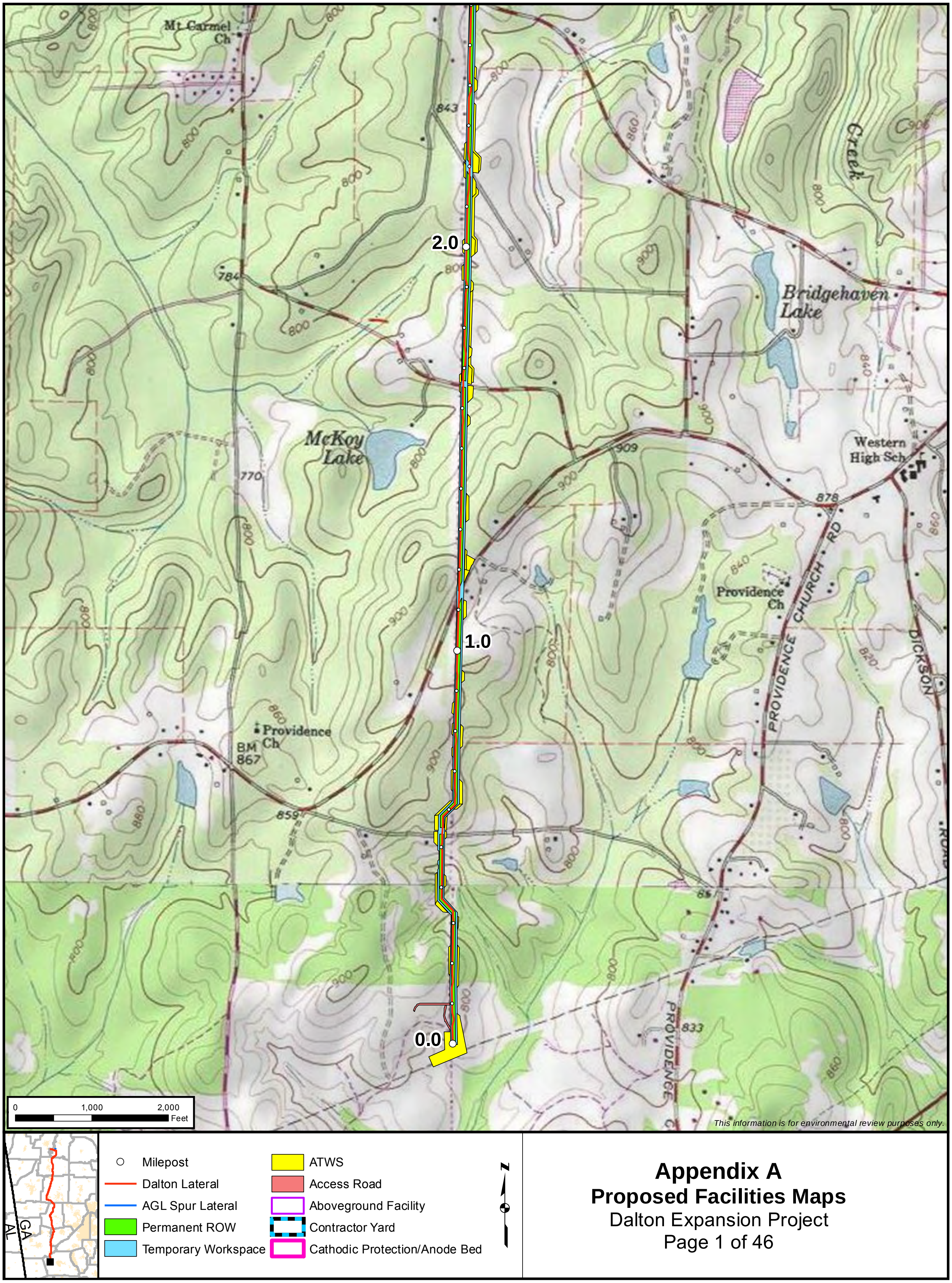
APPENDIX A

PROPOSED FACILITIES MAPS



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Proposed Facilities Maps

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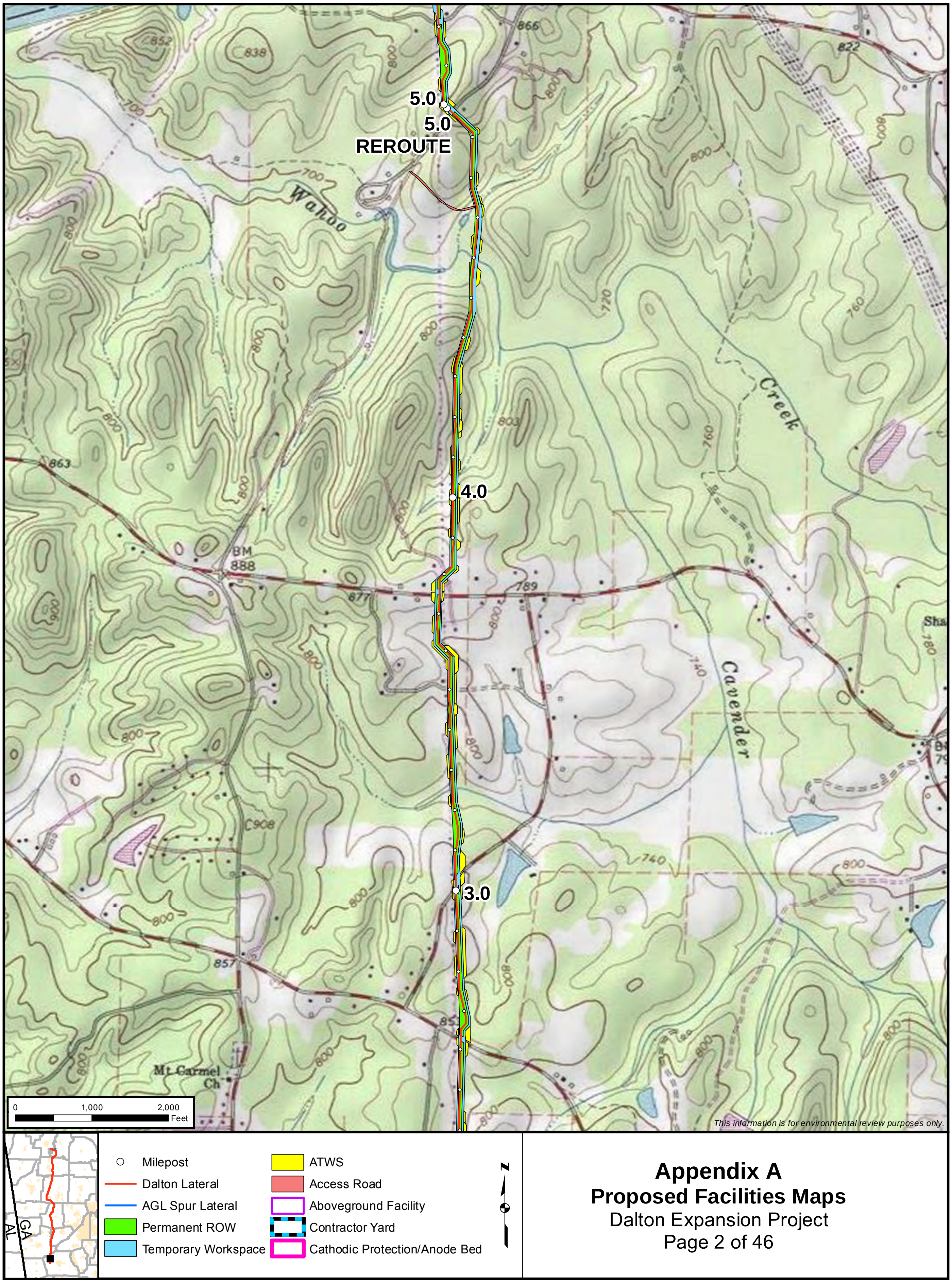

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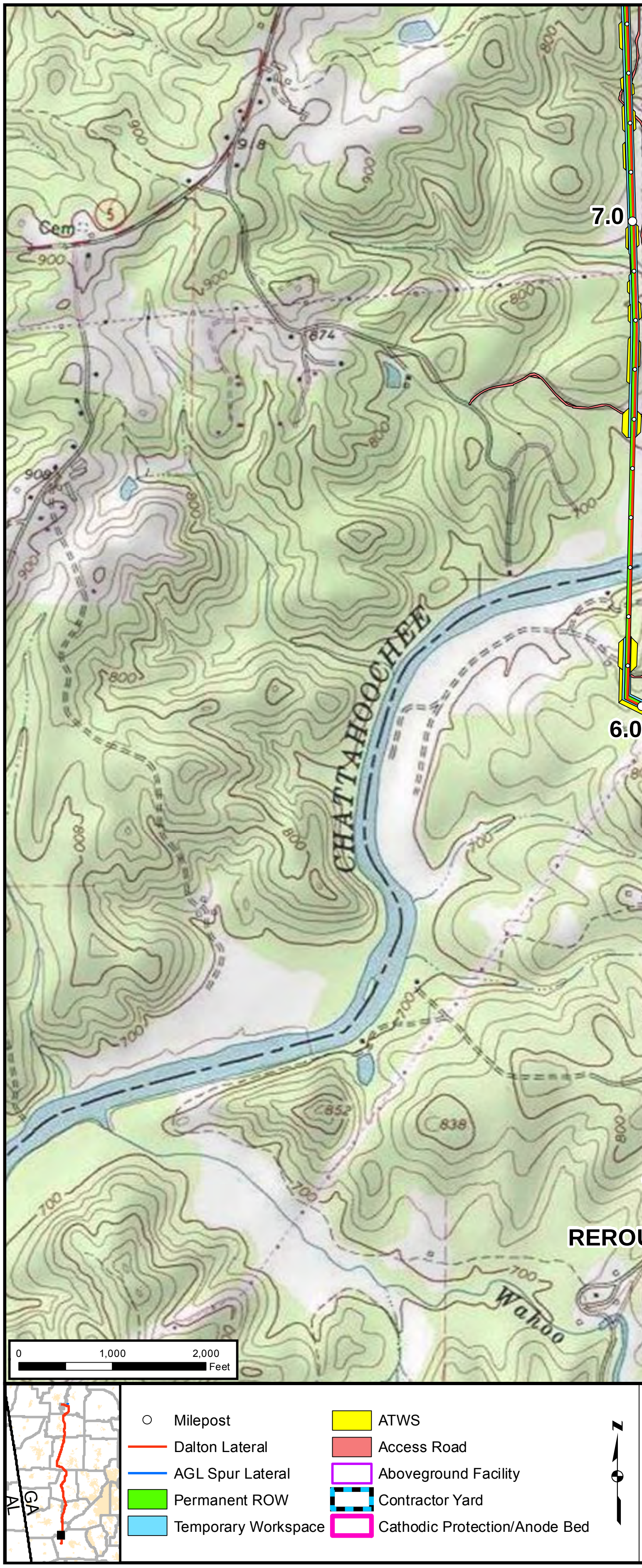

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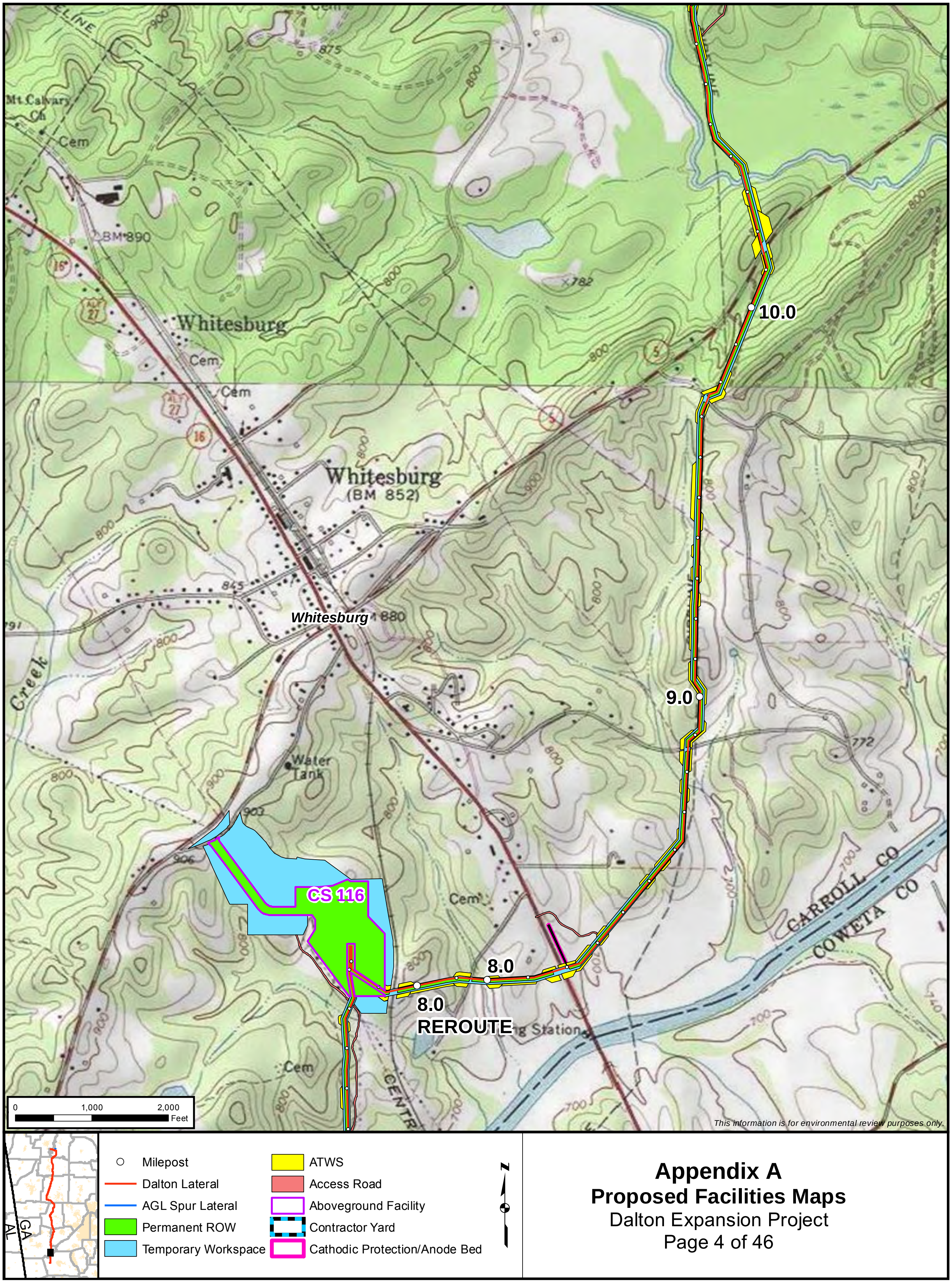

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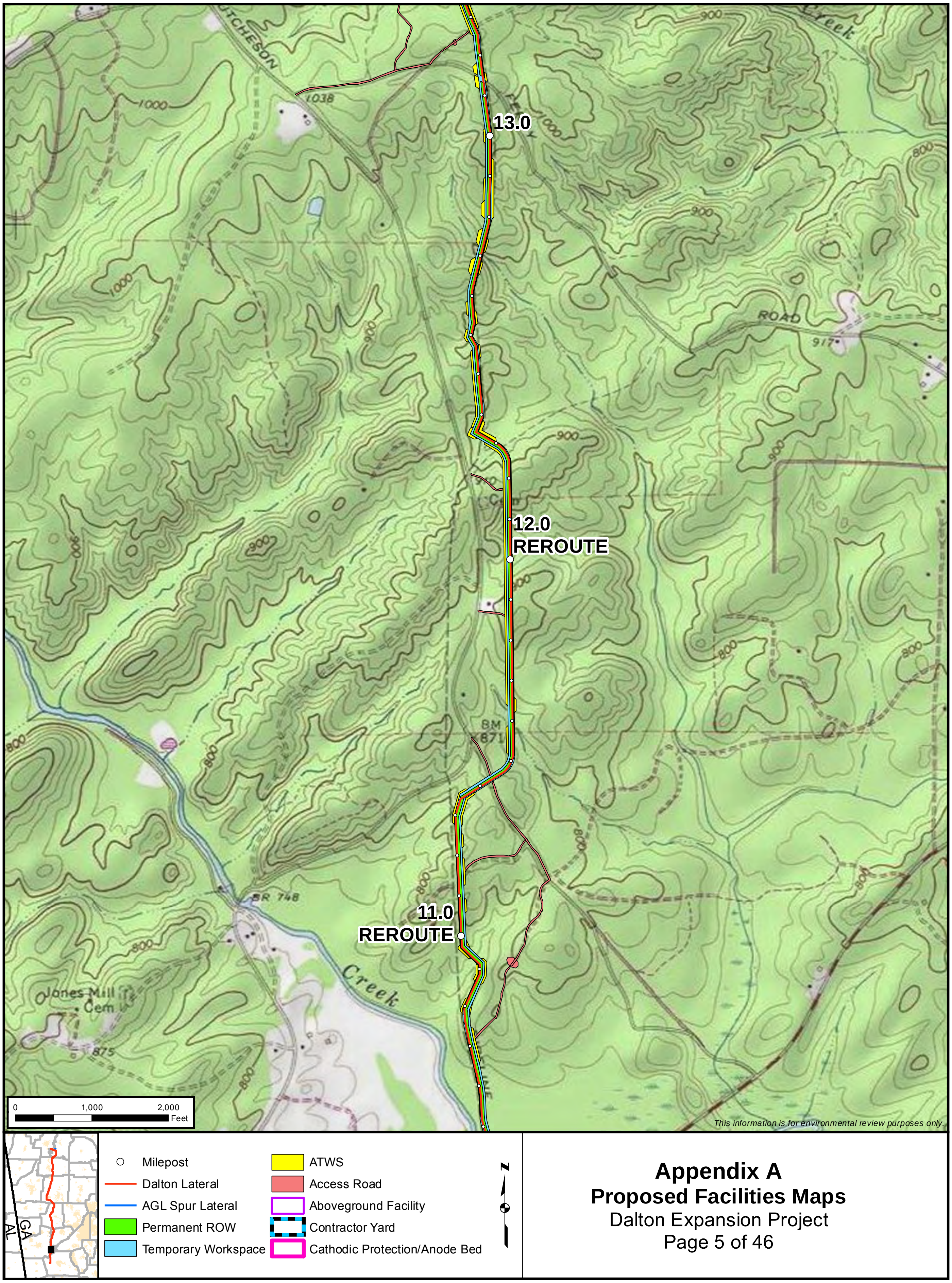

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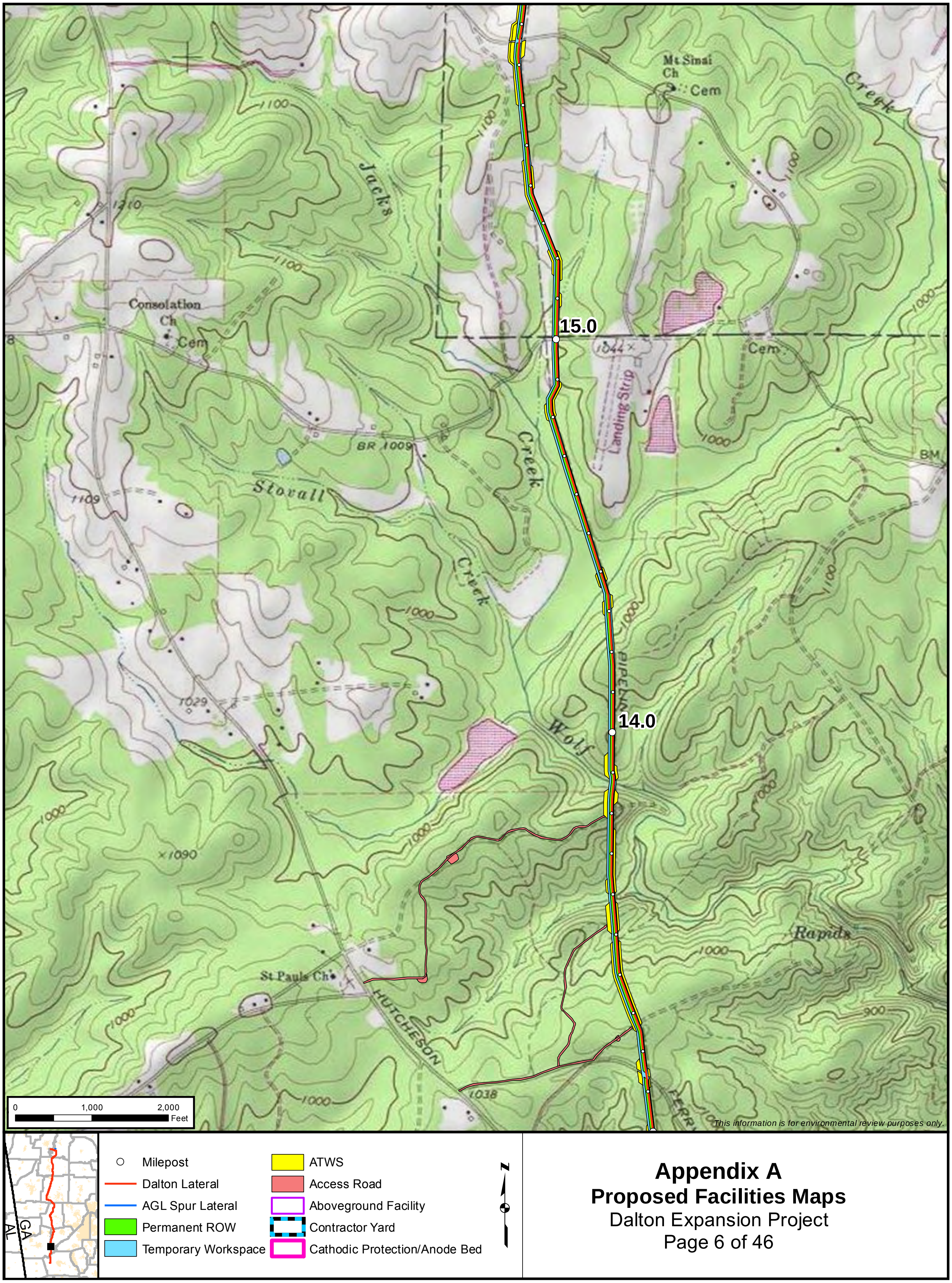

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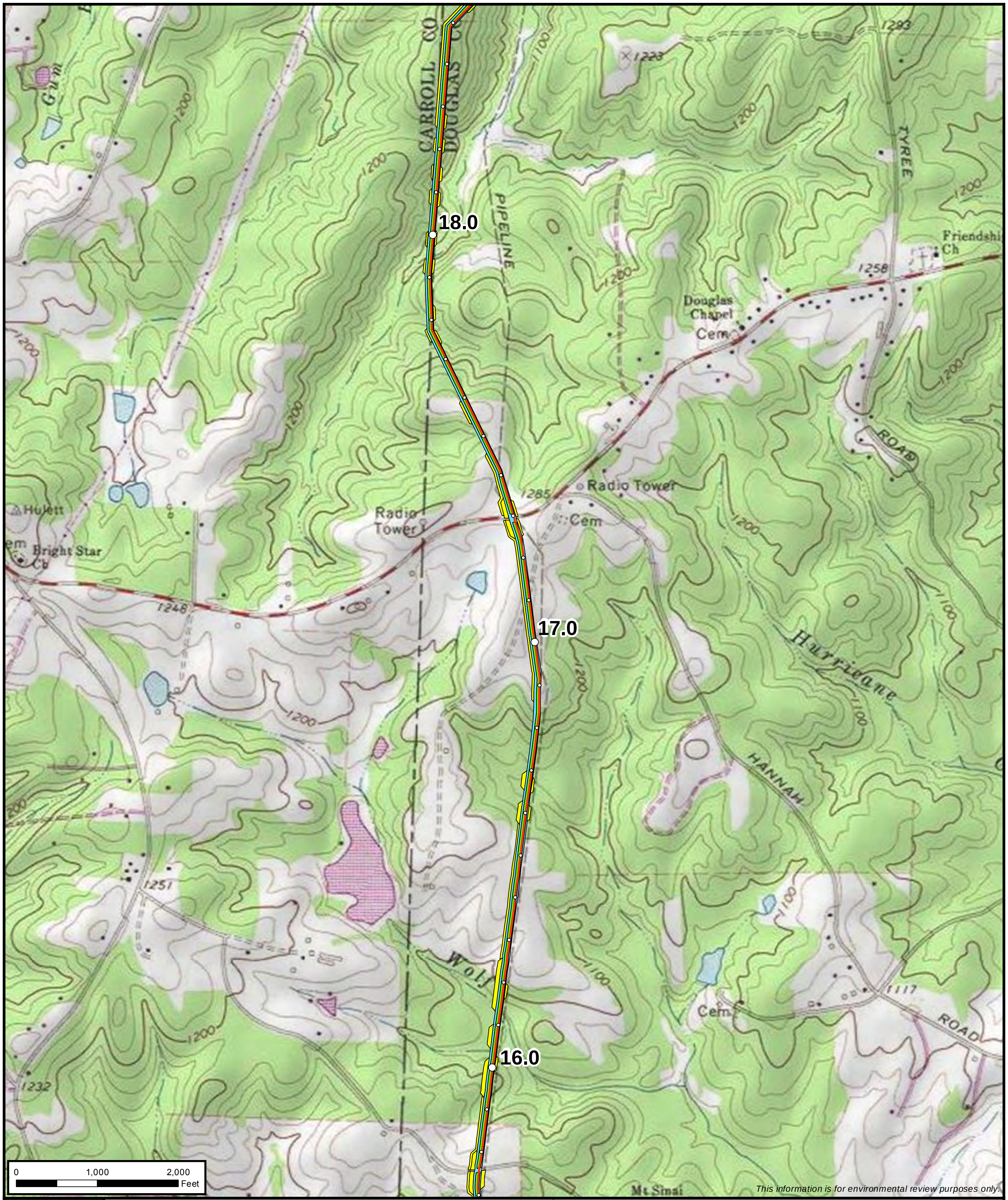

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Proposed Facilities Maps

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○	Milepost	🟨	ATWS
—	Dalton Lateral	🟥	Access Road
—	AGL Spur Lateral	☐	Aboveground Facility
🟩	Permanent ROW	☐	Contractor Yard
🟦	Temporary Workspace	☐	Cathodic Protection/Anode Bed

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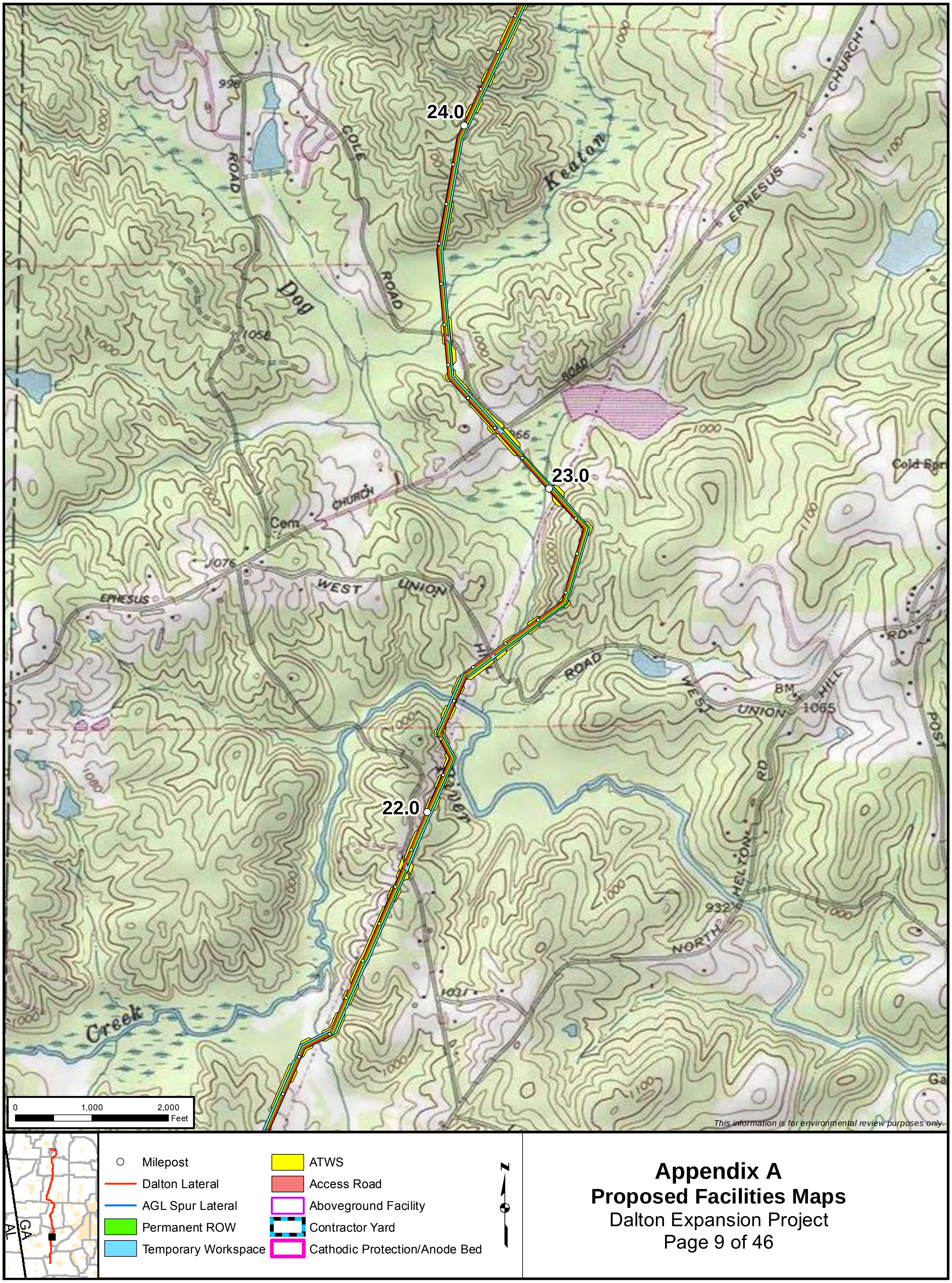

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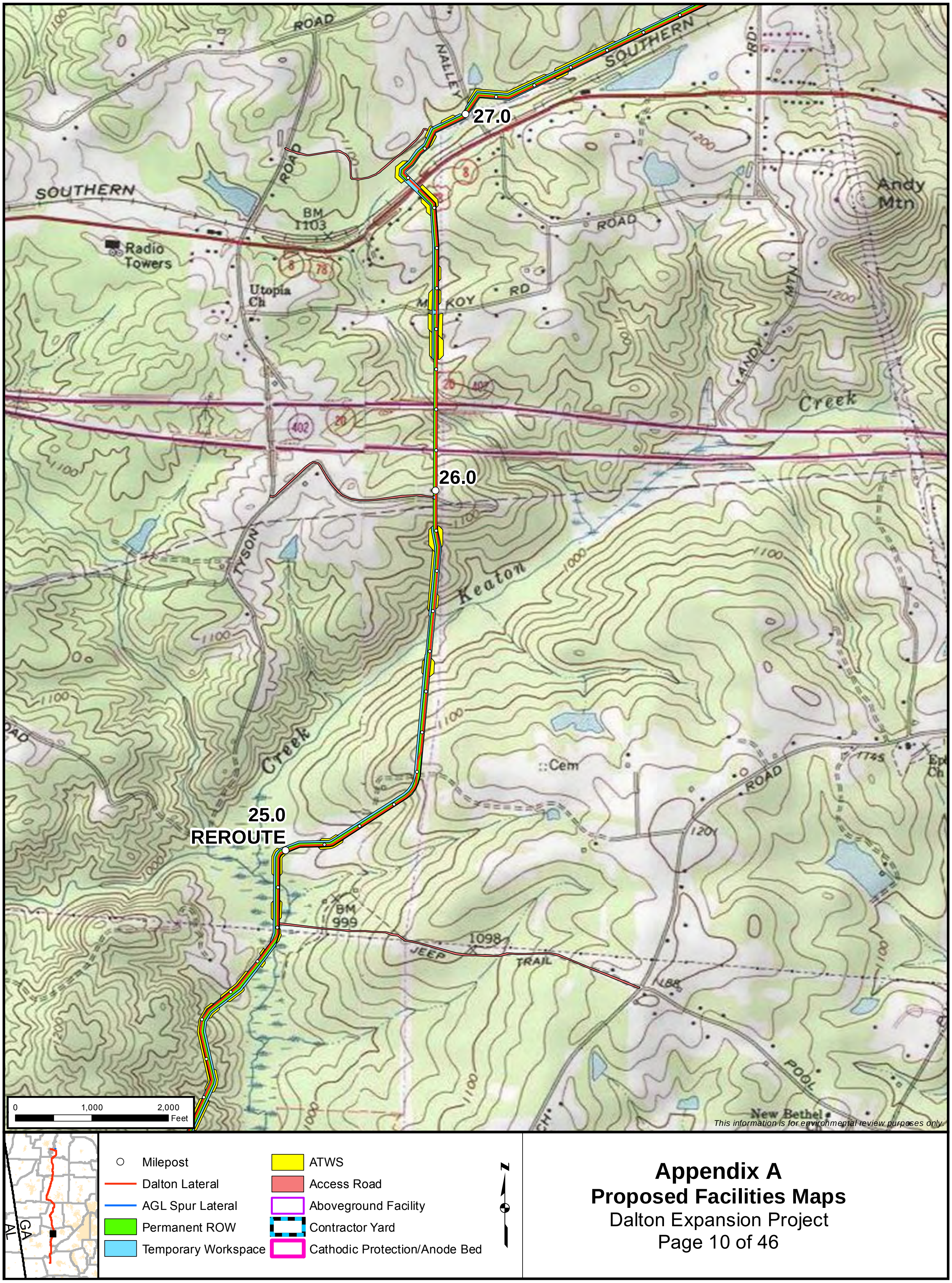

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Proposed Facilities Maps

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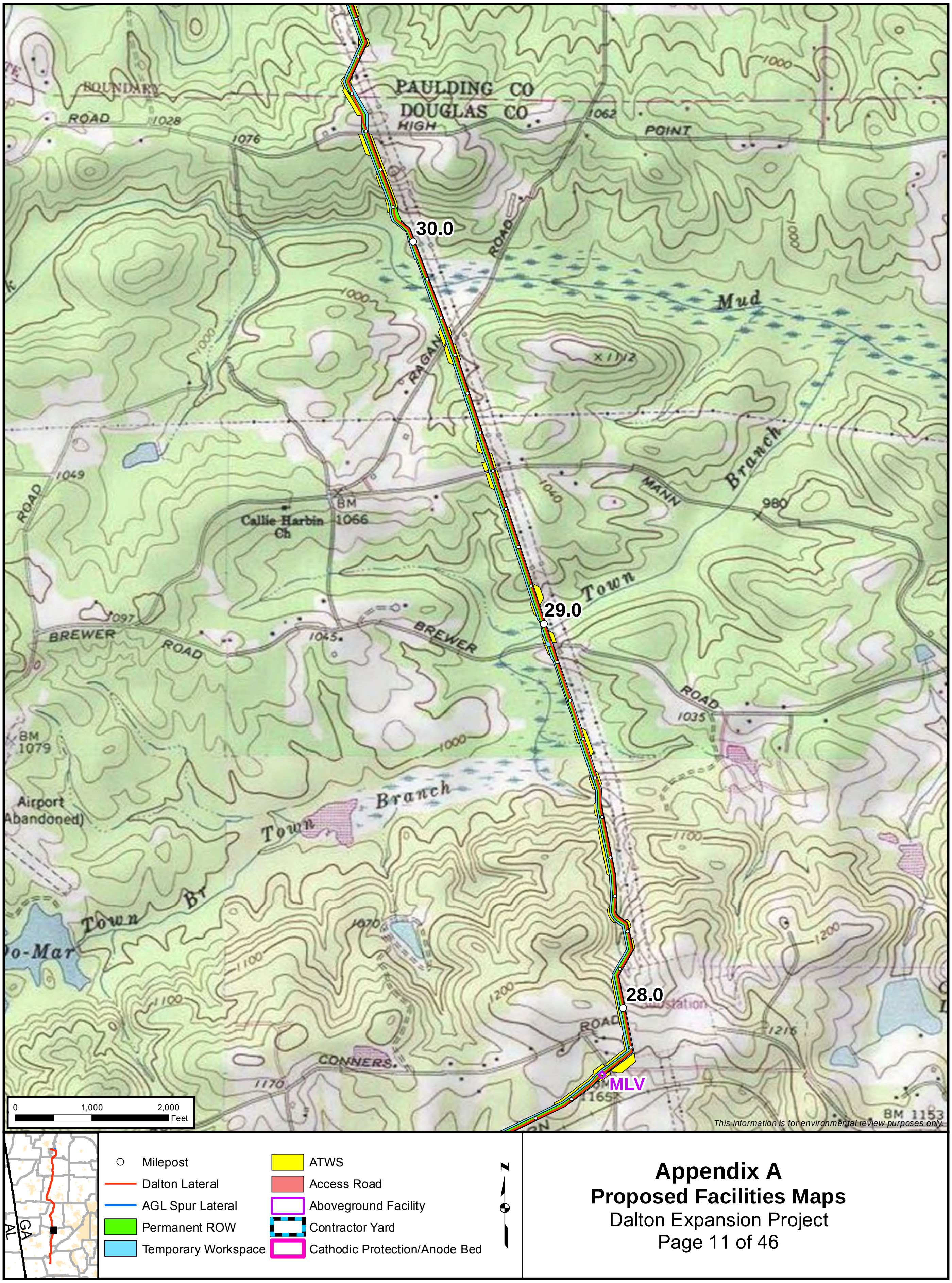

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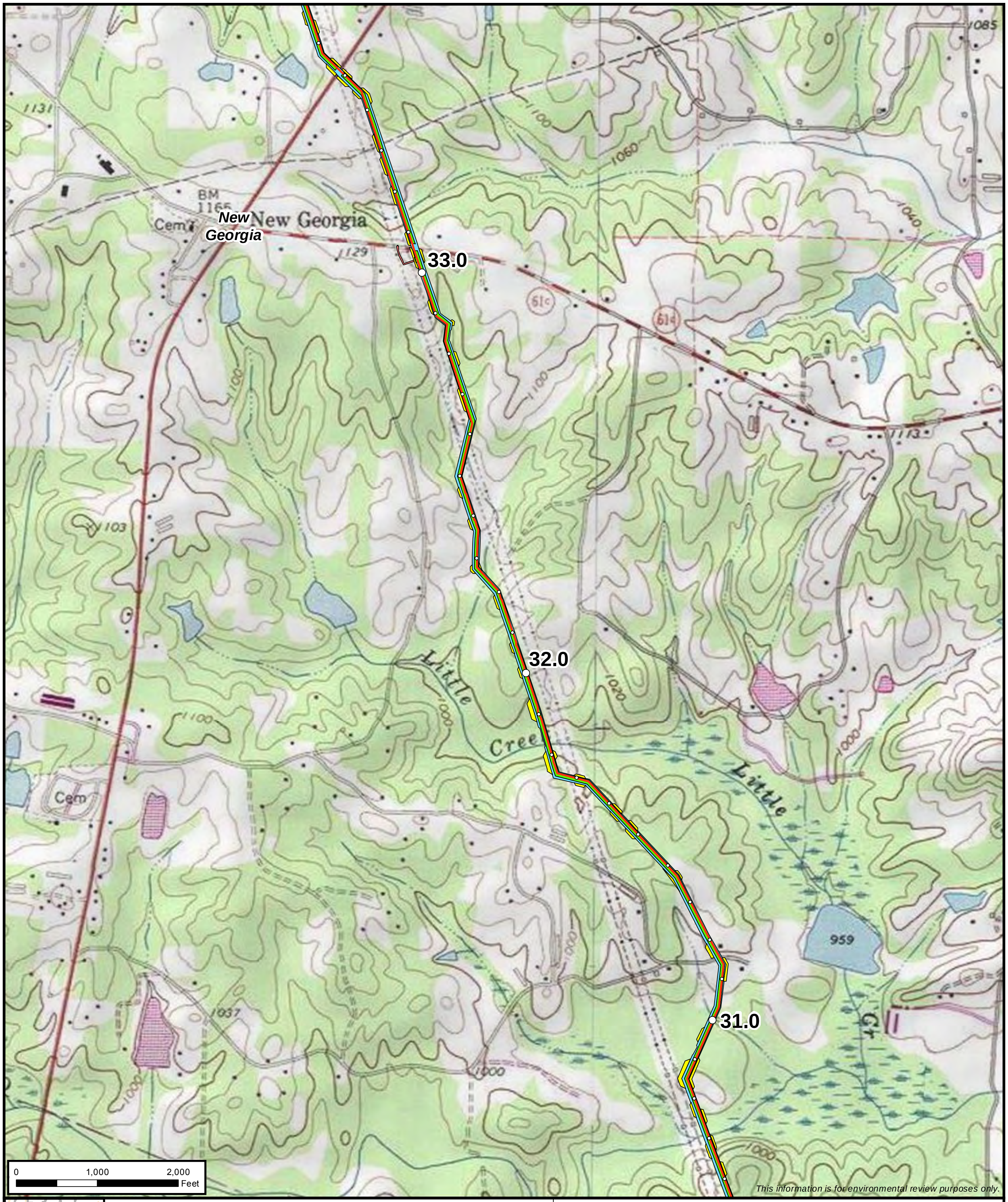

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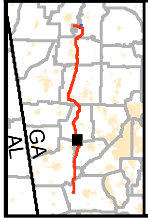

- ○ Milepost
- Dalton Lateral
- AGL Spur Lateral
- 🟩 Permanent ROW
- 🟦 Temporary Workspace
- 🟨 ATWS
- 🟥 Access Road
- ☐ Aboveground Facility
- ☐ Contractor Yard
- ☐ Cathodic Protection/Anode Bed

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Proposed Facilities Maps

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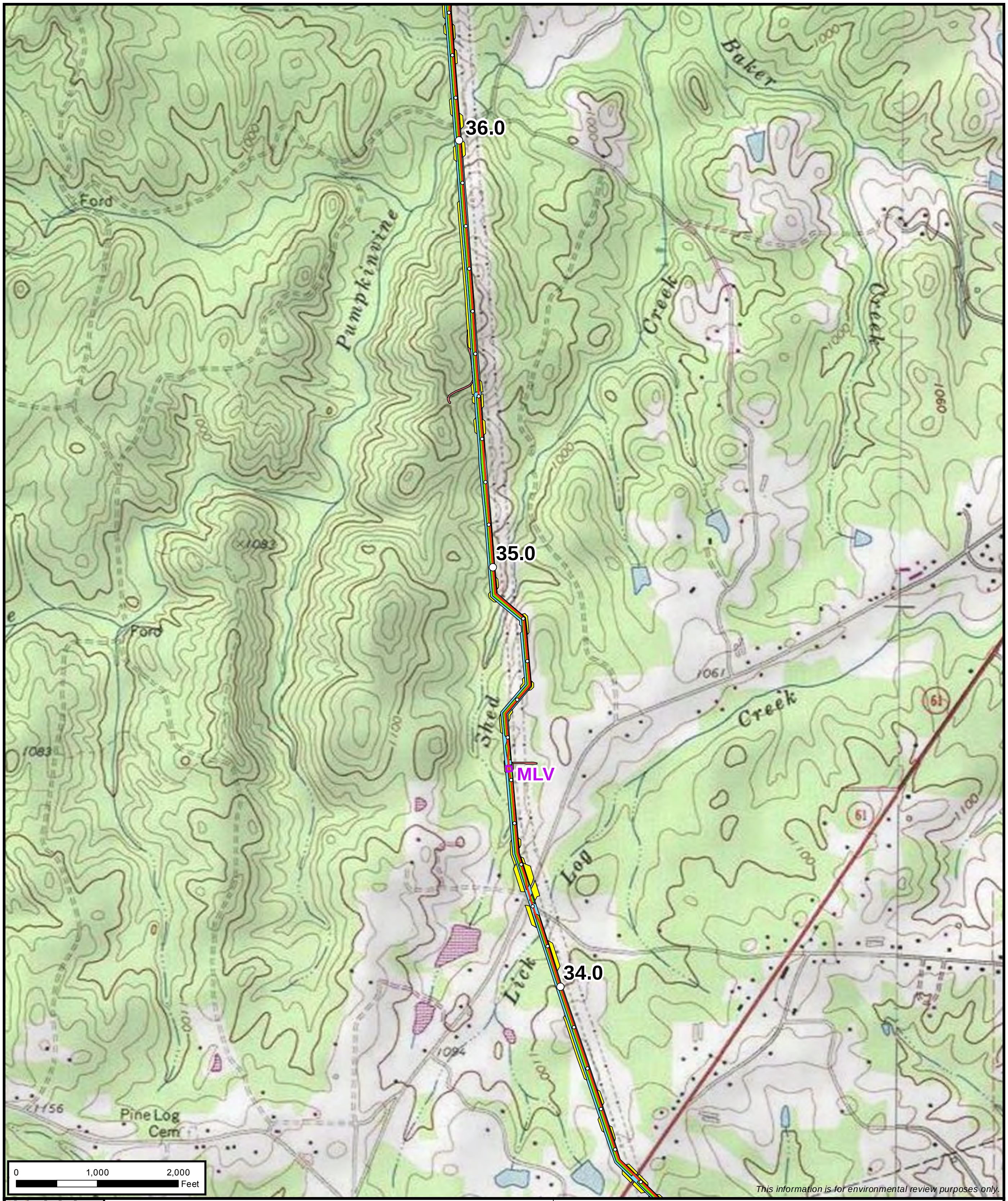

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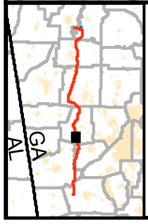

- ○ Milepost
- 🟥 Dalton Lateral
- 🟦 AGL Spur Lateral
- 🟩 Permanent ROW
- 🟦 Temporary Workspace
- 🟨 ATWS
- 🟥 Access Road
- ☐ Aboveground Facility
- ☐ Contractor Yard
- ☐ Cathodic Protection/Anode Bed

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Dalton Expansion Project
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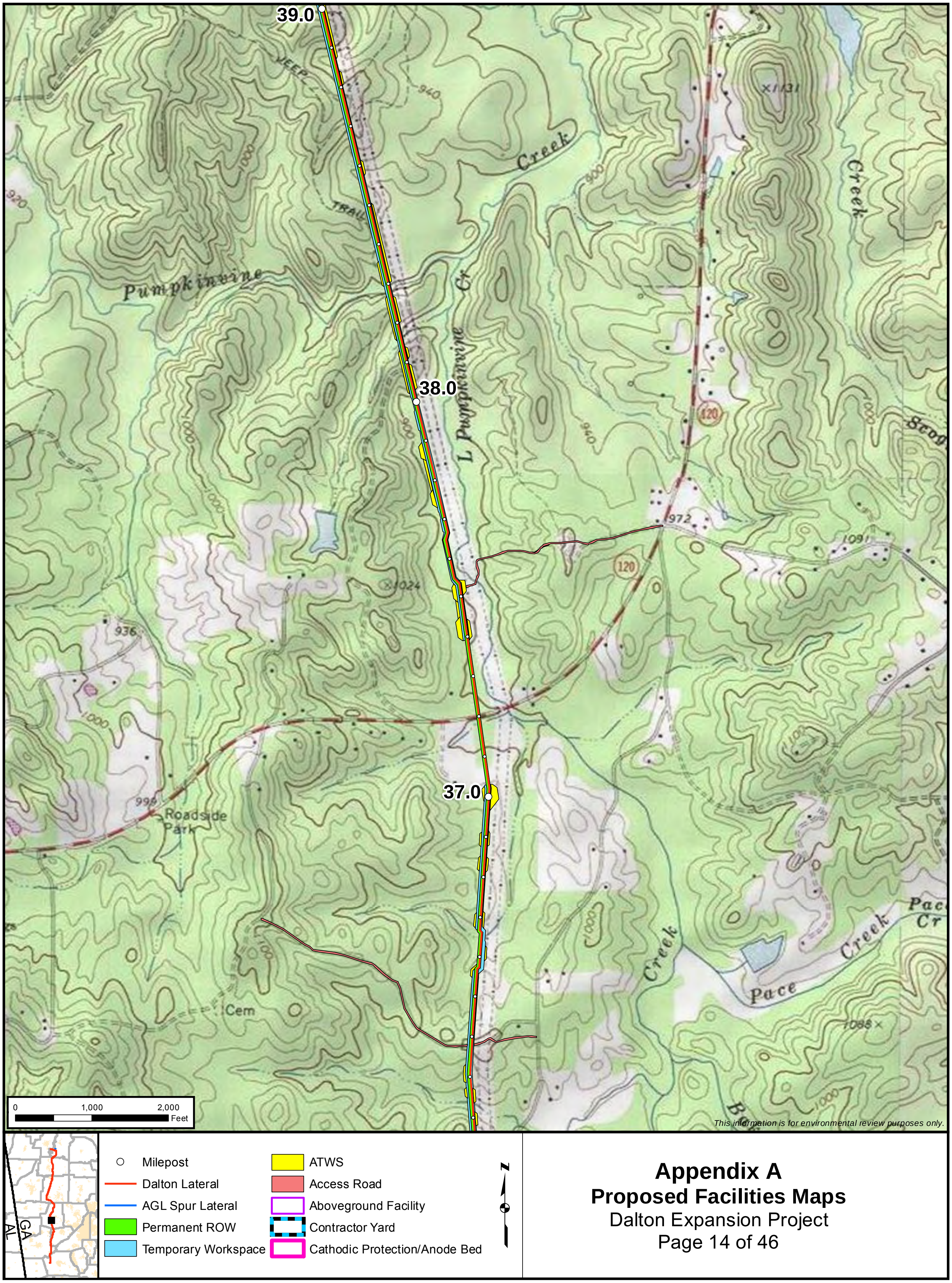

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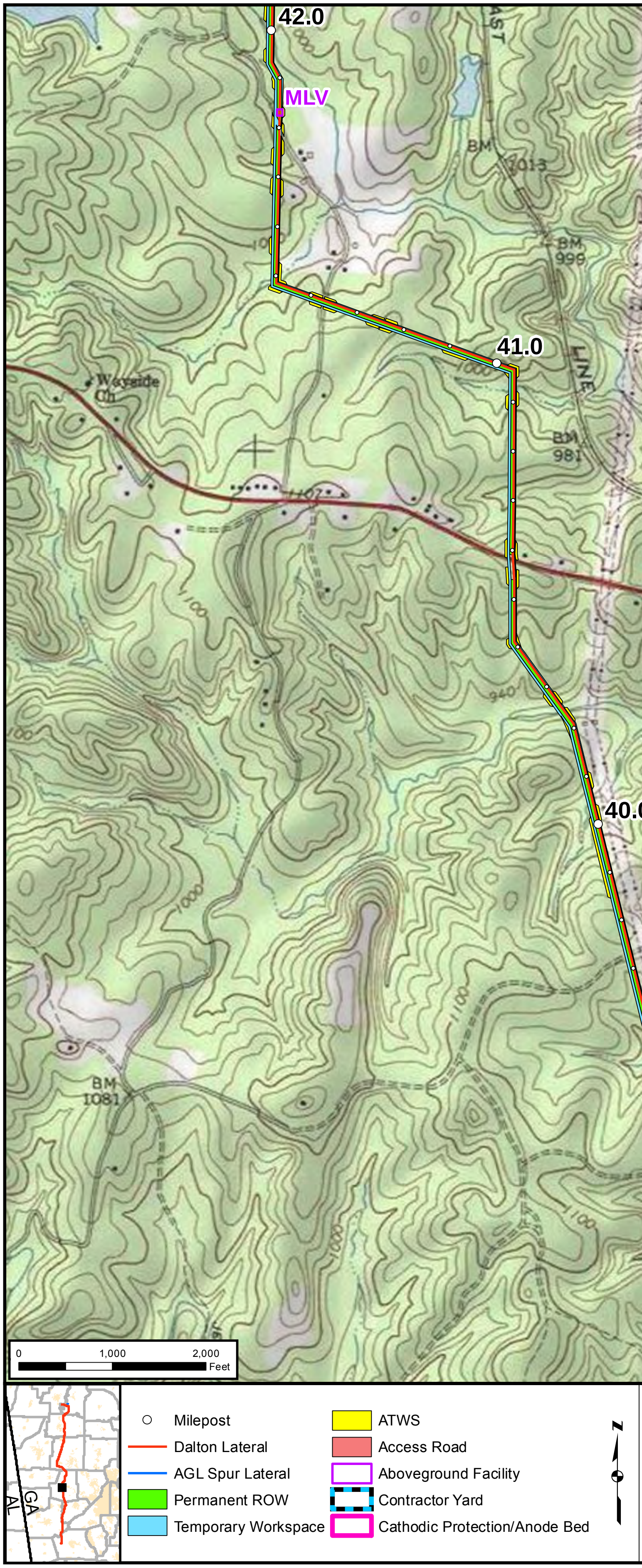

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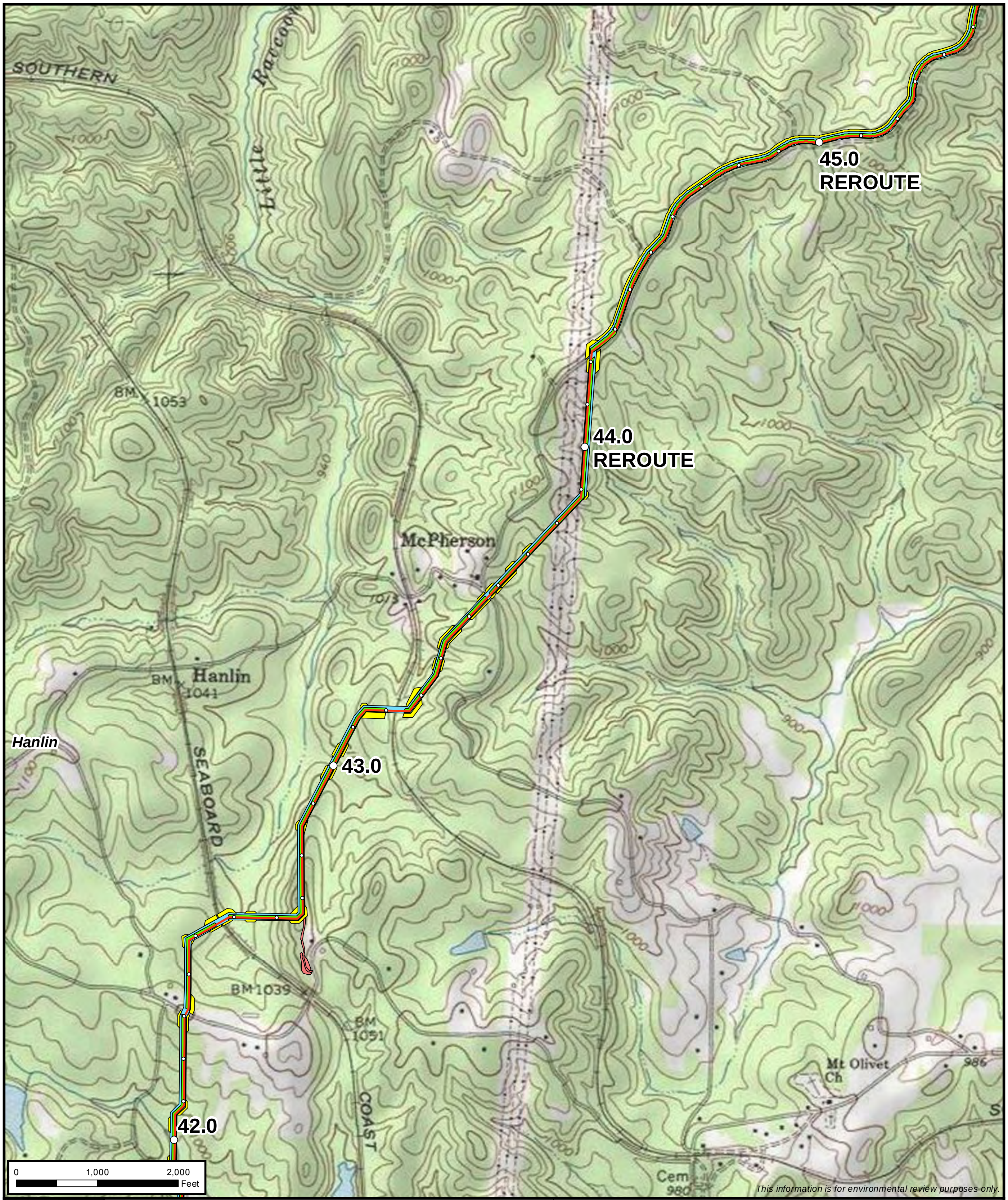

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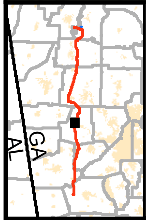

- ○ Milepost
- Dalton Lateral
- AGL Spur Lateral
- 🟩 Permanent ROW
- Temporary Workspace
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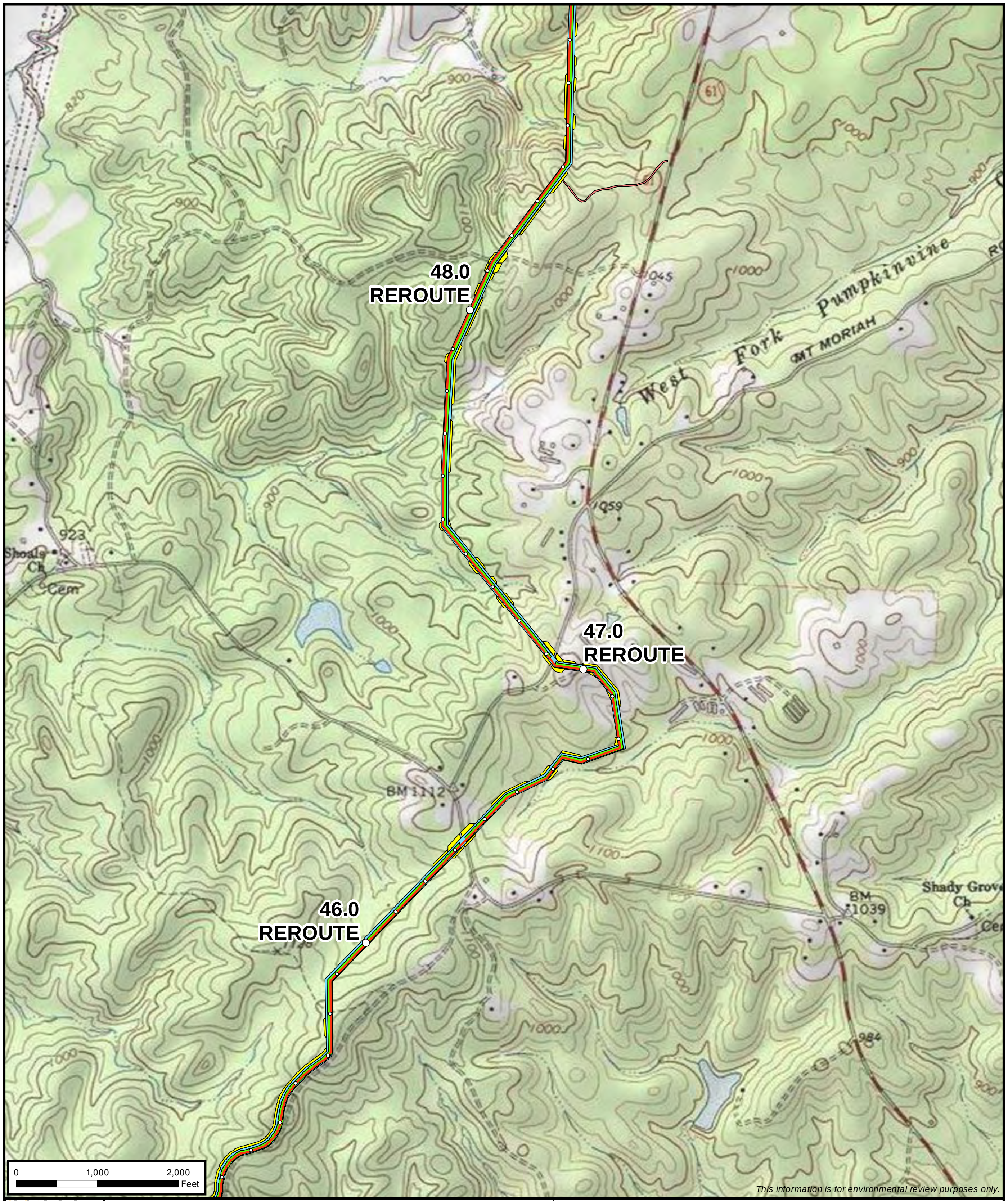

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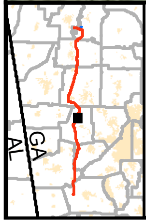

○ Milepost

Dalton Lateral

AGL Spur Lateral

🟩 Permanent ROW

Temporary Workspace

🟨 ATWS

🟥 Access Road

☐ Aboveground Facility

Contractor Yard

☐ Cathodic Protection/Anode Bed

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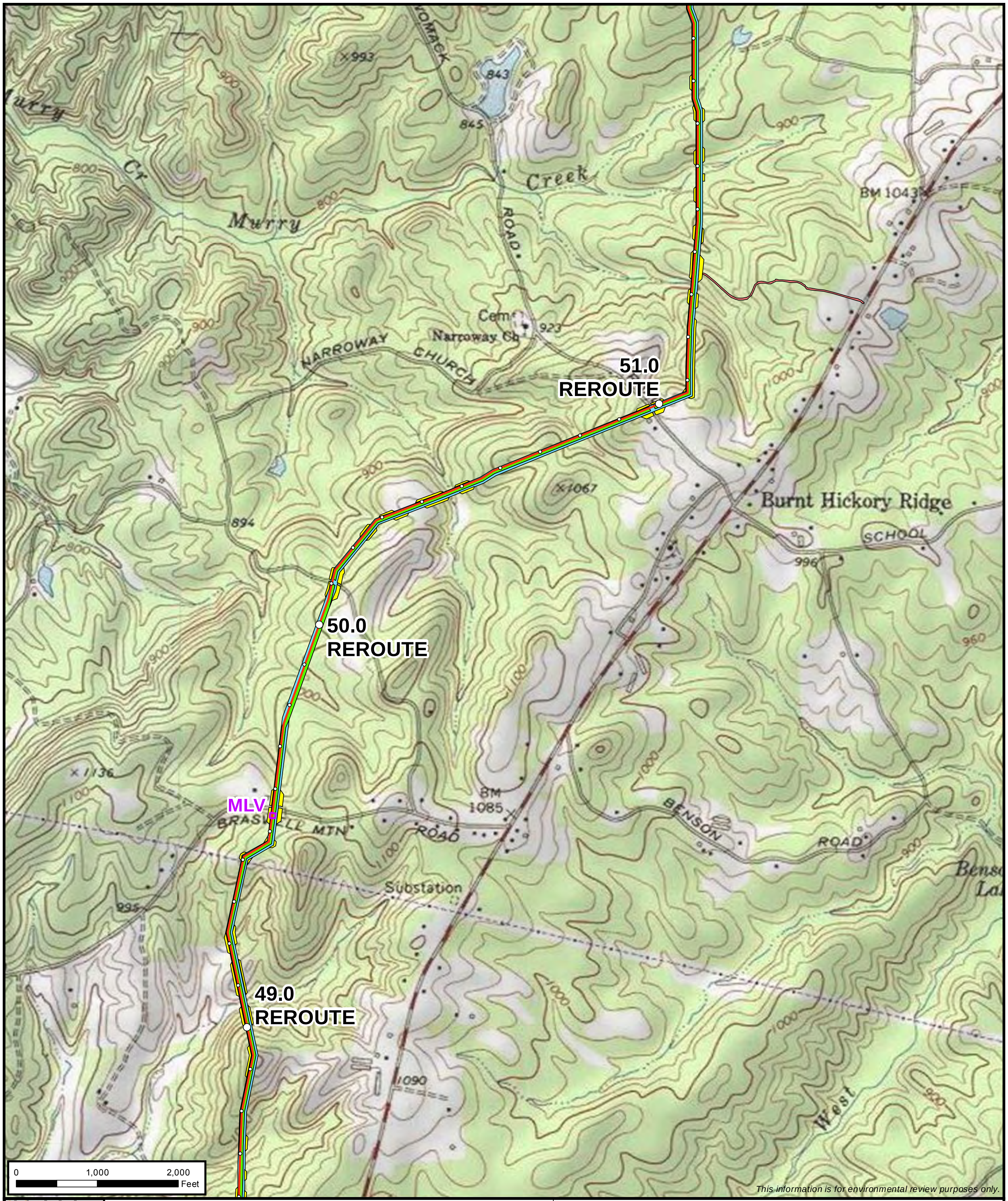

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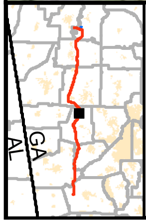

○ Milepost	🟨 ATWS
Dalton Lateral	🟥 Access Road
AGL Spur Lateral	☐ Aboveground Facility
🟩 Permanent ROW	☐ Contractor Yard
🟦 Temporary Workspace	☐ Cathodic Protection/Anode Bed

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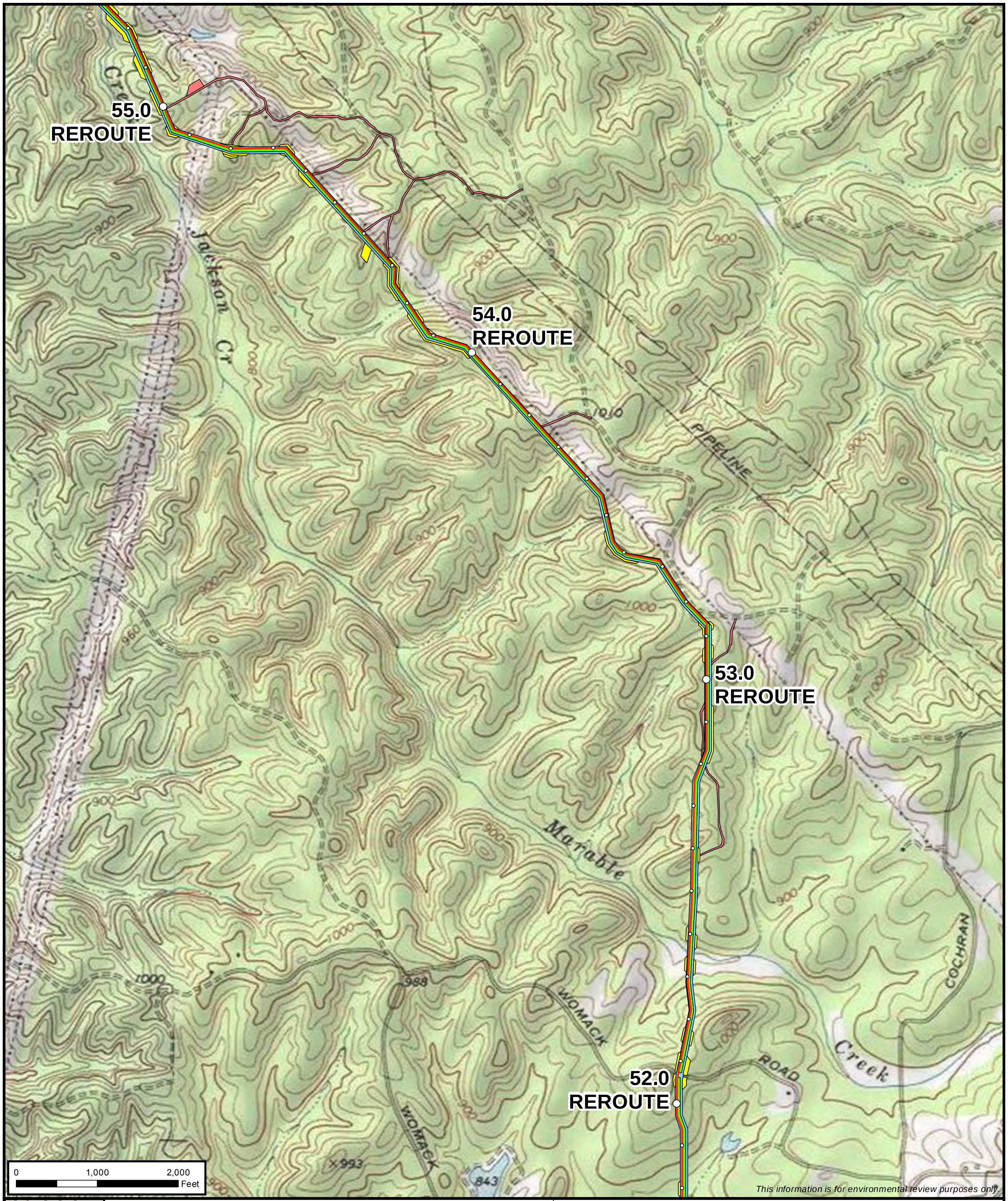

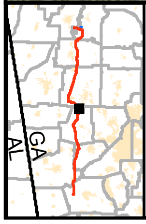

- ○ Milepost
- — Dalton Lateral
- — AGL Spur Lateral
- 🟩 Permanent ROW
- 🟦 Temporary Workspace
- 🟨 ATWS
- 🟥 Access Road
- ☐ Aboveground Facility
- ☐ Contractor Yard
- ☐ Cathodic Protection/Anode Bed

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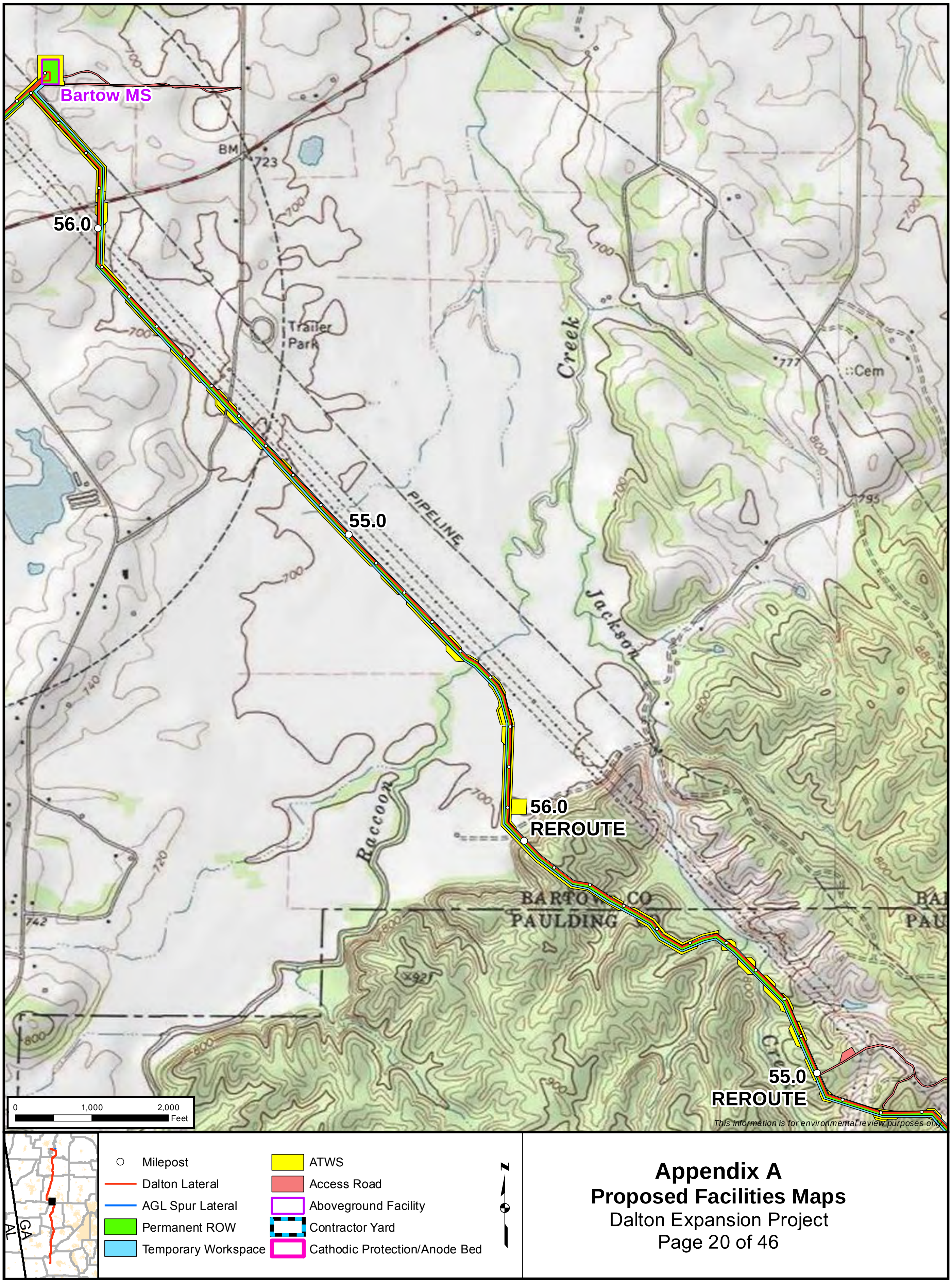

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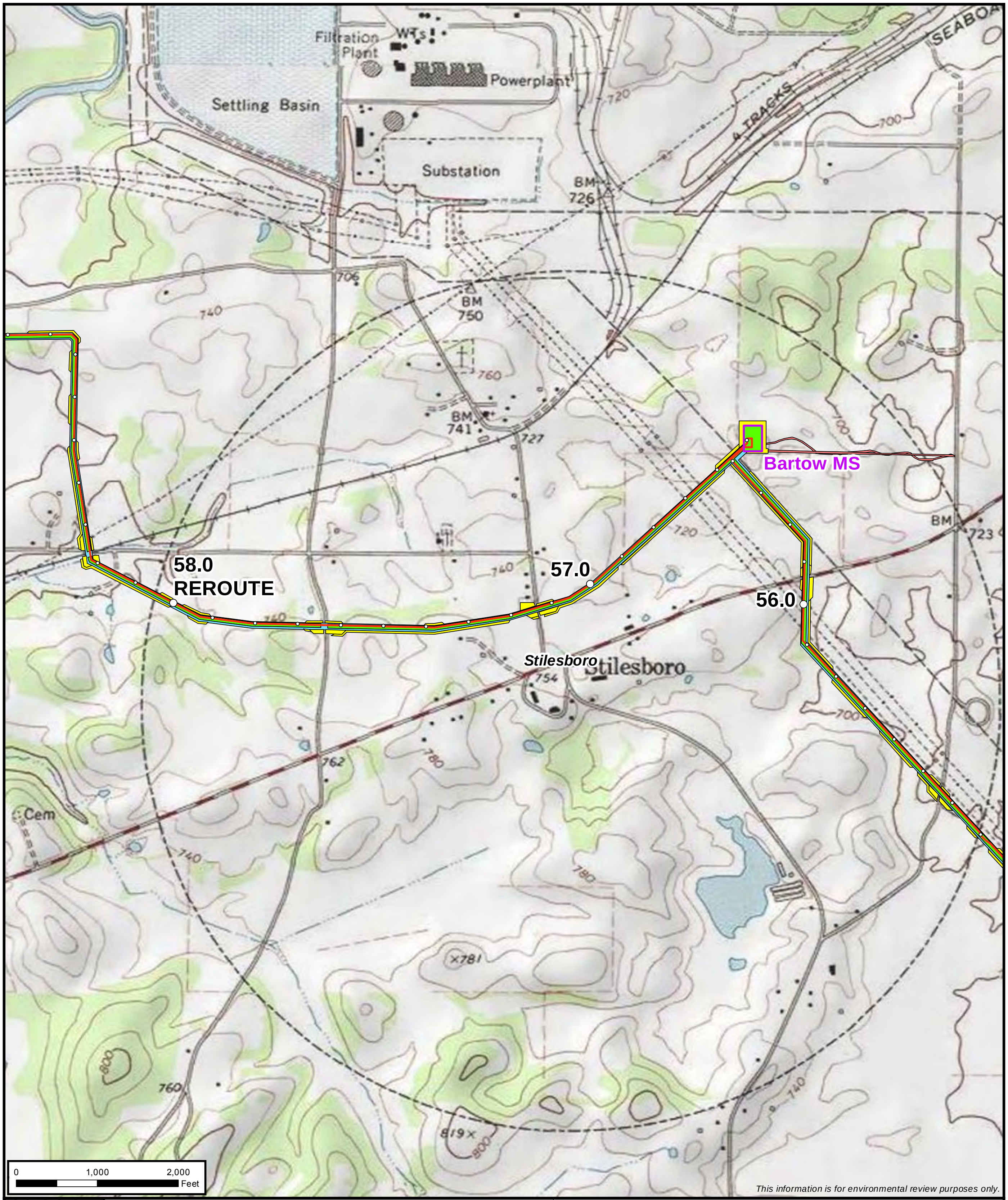

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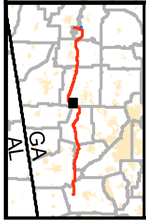

○ Milepost
— Dalton Lateral
— AGL Spur Lateral
🟩 Permanent ROW
🟦 Temporary Workspace
🟨 ATWS
🟥 Access Road
☐ Aboveground Facility
☐ Contractor Yard
☐ Cathodic Protection/Anode Bed

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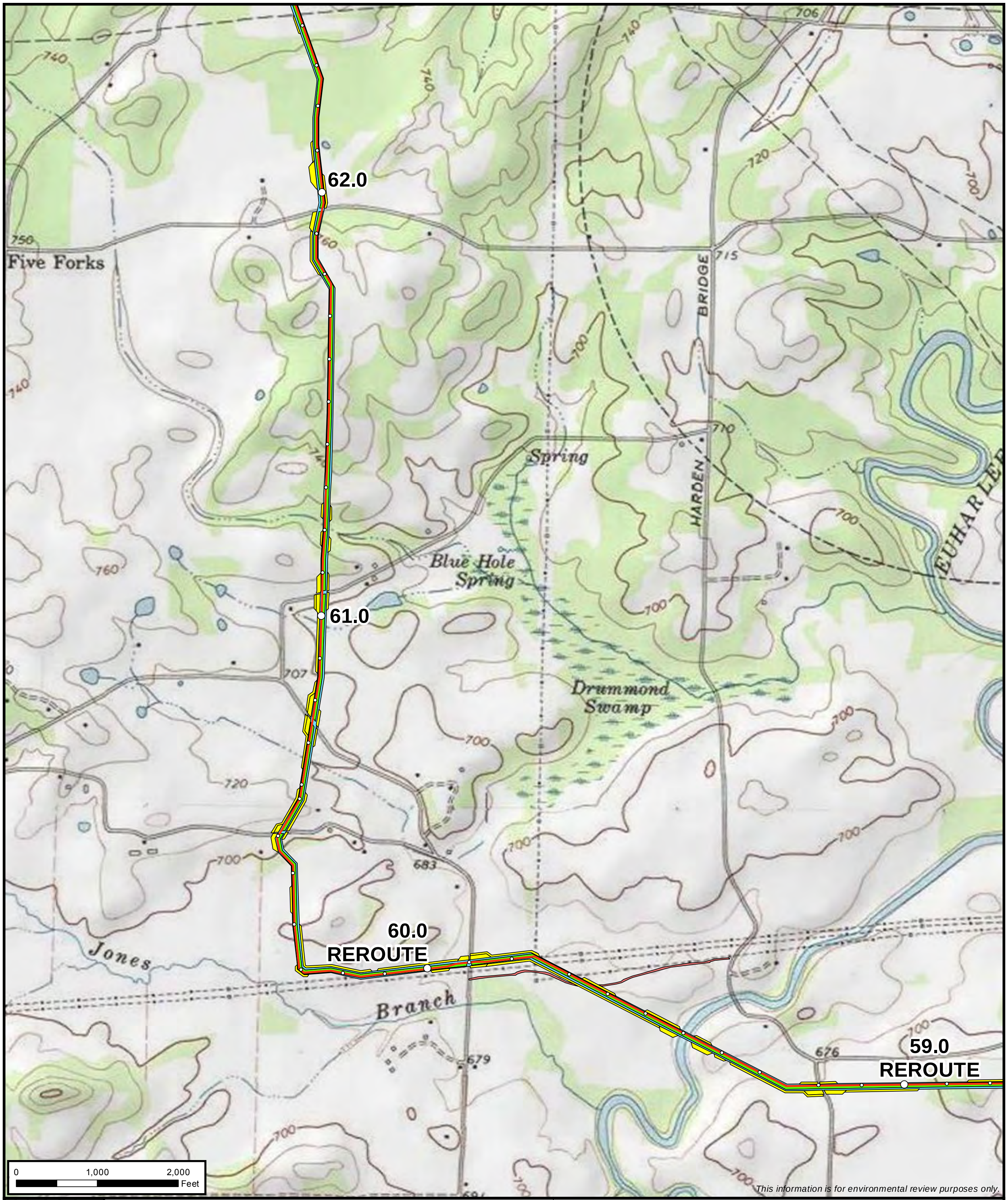

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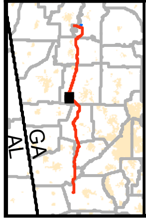

- ○ Milepost
- ― Dalton Lateral
- ― AGL Spur Lateral
- 🟩 Permanent ROW
- 🟦 Temporary Workspace
- 🟨 ATWS
- 🟥 Access Road
- ☐ Aboveground Facility
- ☐ Contractor Yard
- ☐ Cathodic Protection/Anode Bed

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Proposed Facilities Maps
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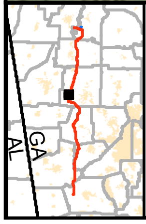

- ○ Milepost
- Dalton Lateral
- AGL Spur Lateral
- 🟩 Permanent ROW
- 🟦 Temporary Workspace
- 🟨 ATWS
- 🟥 Access Road
- ☐ Aboveground Facility
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- ☐ Cathodic Protection/Anode Bed

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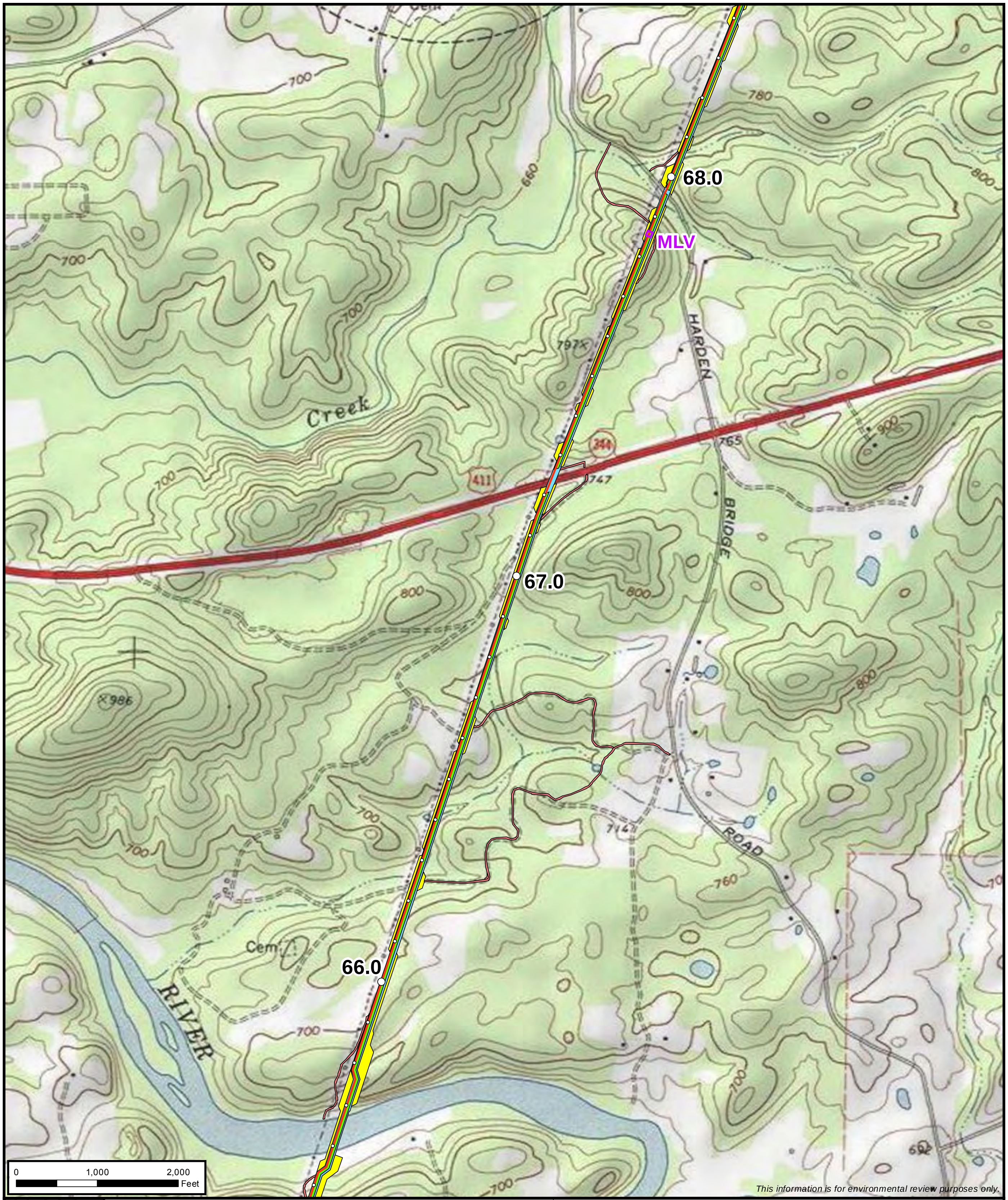

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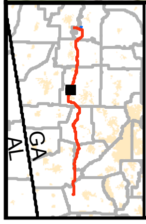

○ Milepost
― Dalton Lateral
― AGL Spur Lateral
🟩 Permanent ROW
▭ Temporary Workspace
🟨 ATWS
🟥 Access Road
☐ Aboveground Facility
☐ Contractor Yard
☐ Cathodic Protection/Anode Bed

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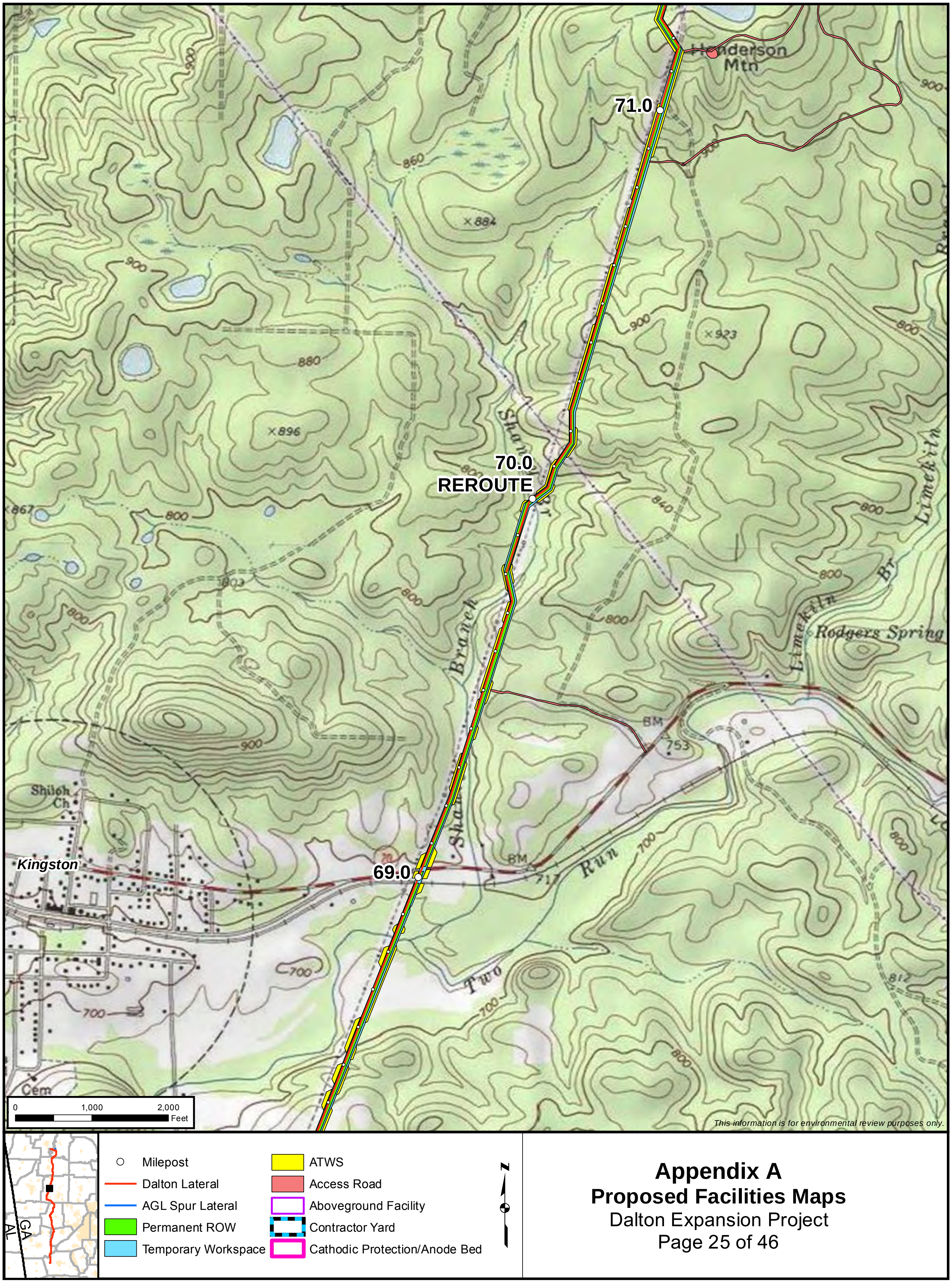

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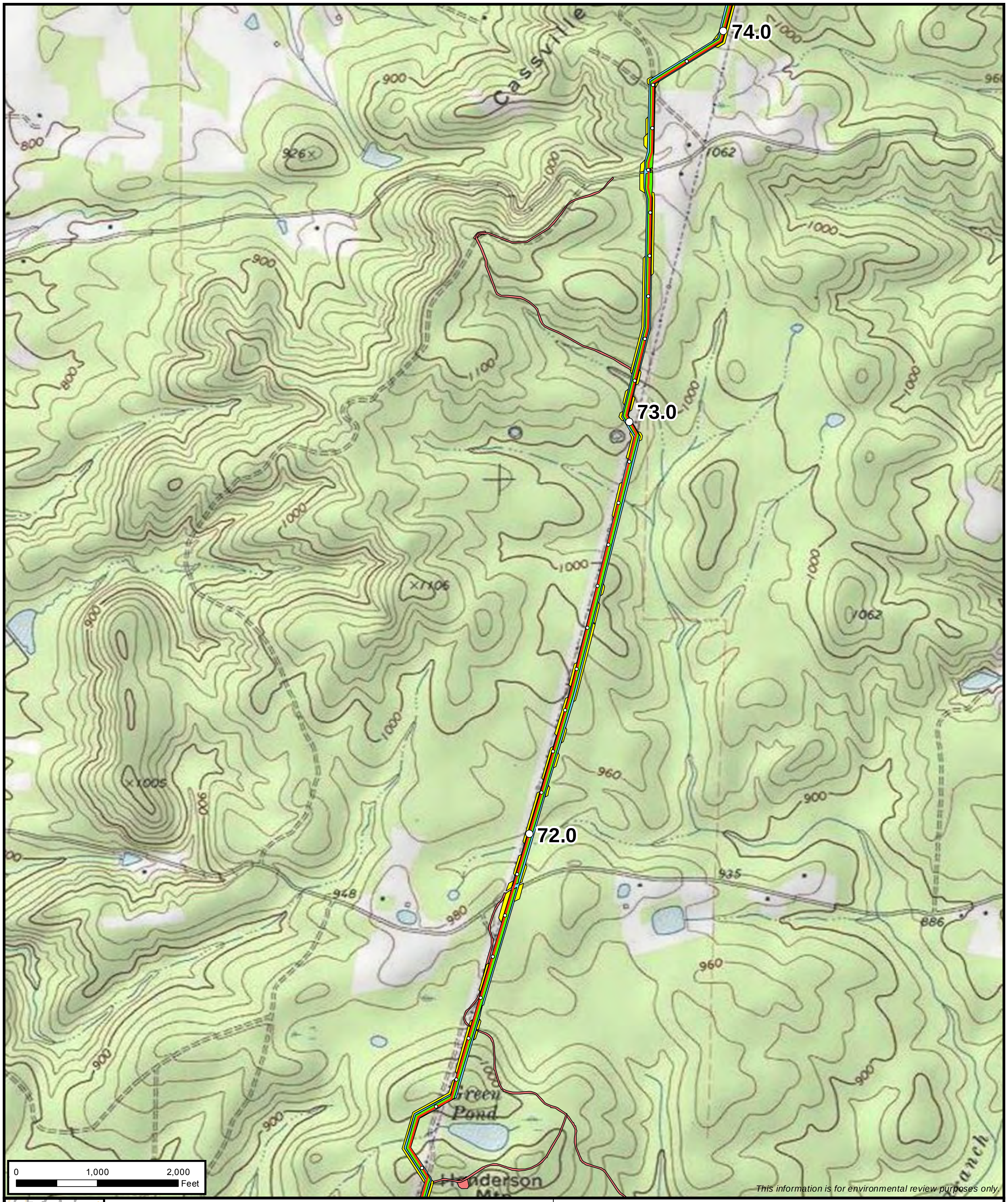

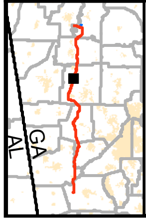

○ Milepost
Dalton Lateral
AGL Spur Lateral
🟩 Permanent ROW
🟦 Temporary Workspace
🟨 ATWS
🟥 Access Road
☐ Aboveground Facility
Contractor Yard
Cathodic Protection/Anode Bed

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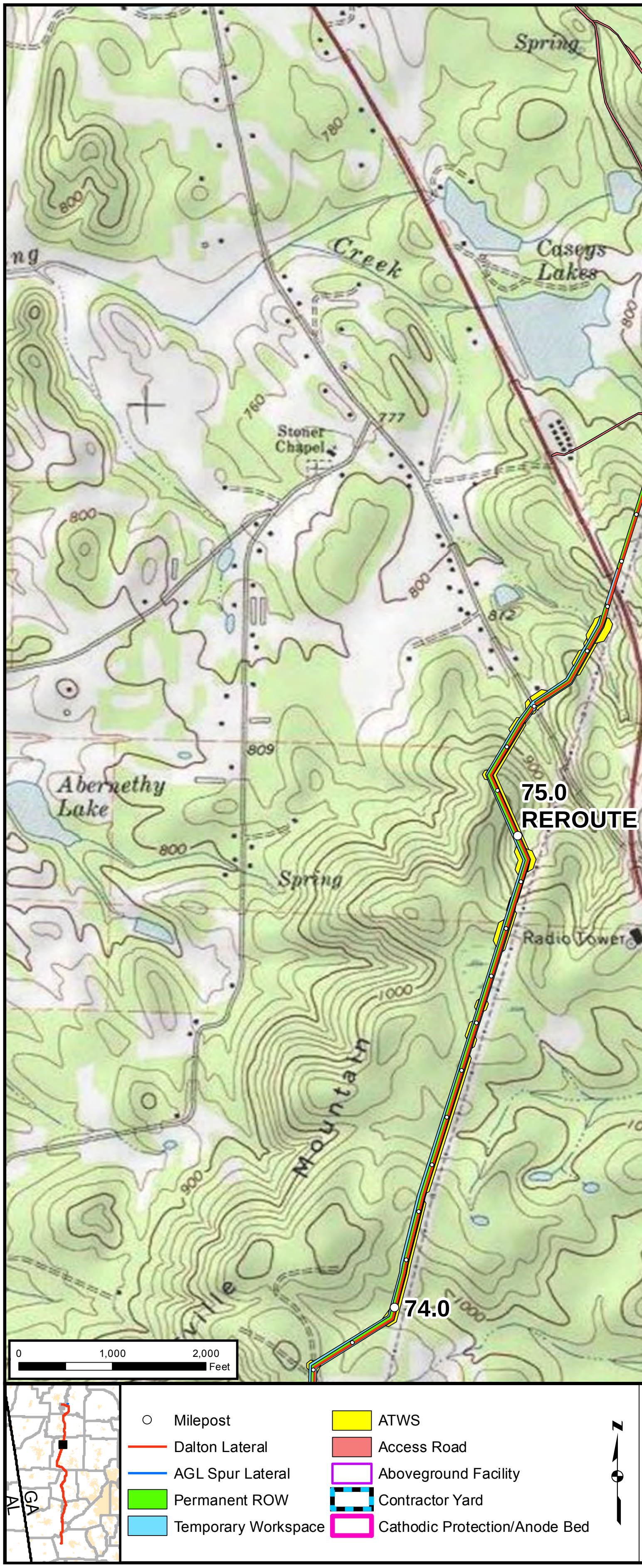

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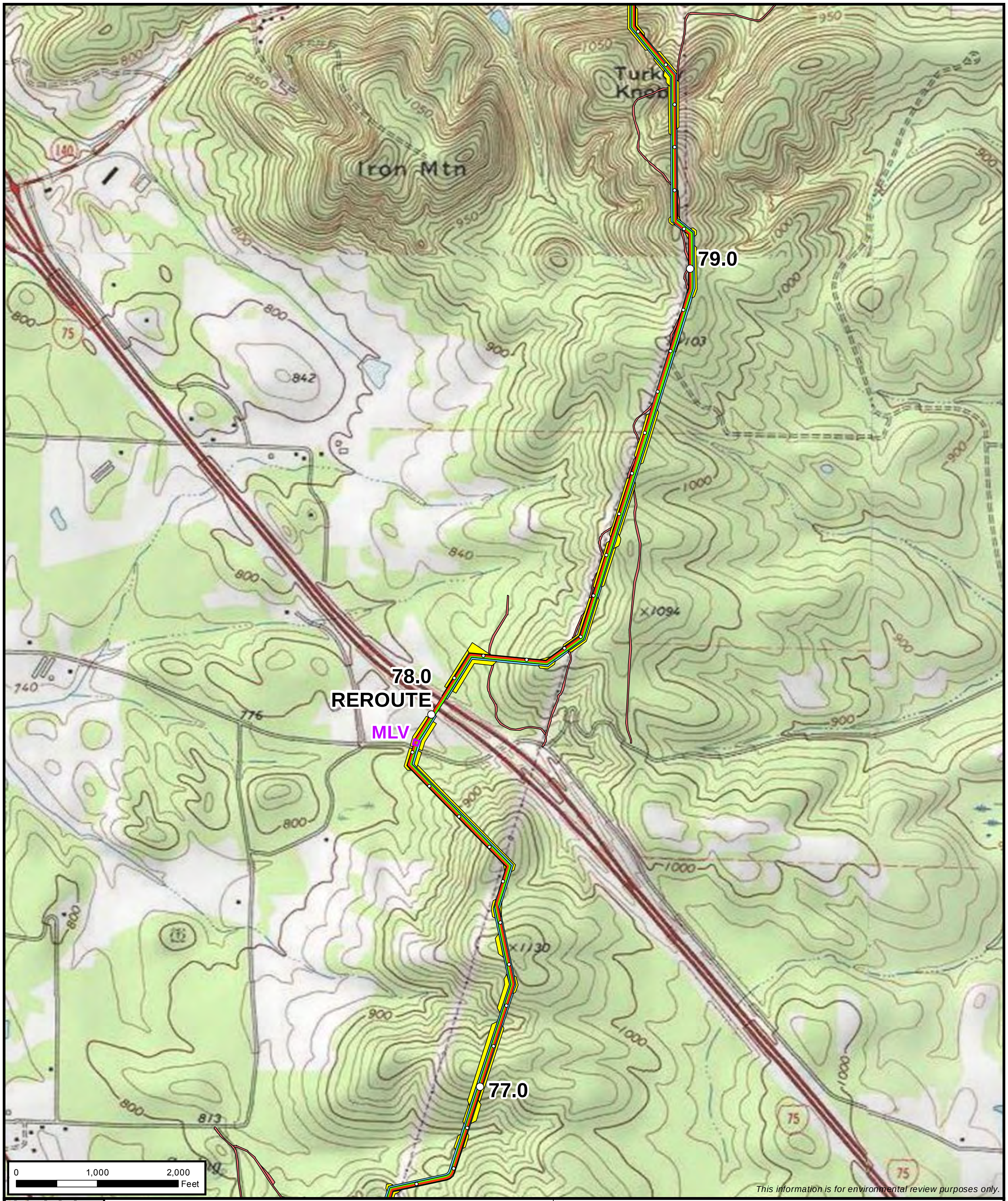

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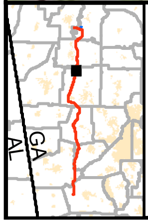

○ Milepost
— Dalton Lateral
— AGL Spur Lateral
🟩 Permanent ROW
🟦 Temporary Workspace
🟨 ATWS
🟥 Access Road
☐ Aboveground Facility
▨ Contractor Yard
☐ Cathodic Protection/Anode Bed

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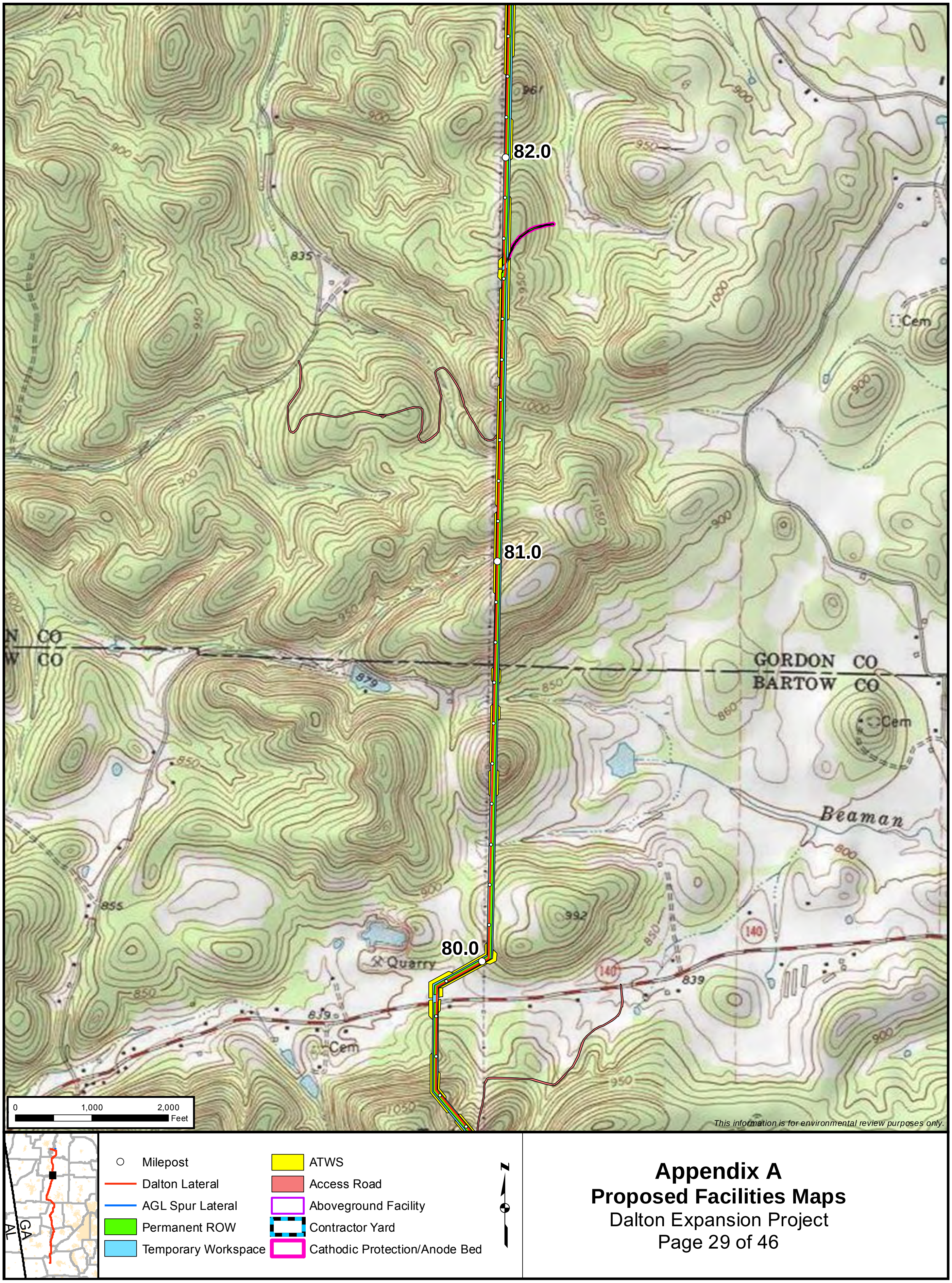

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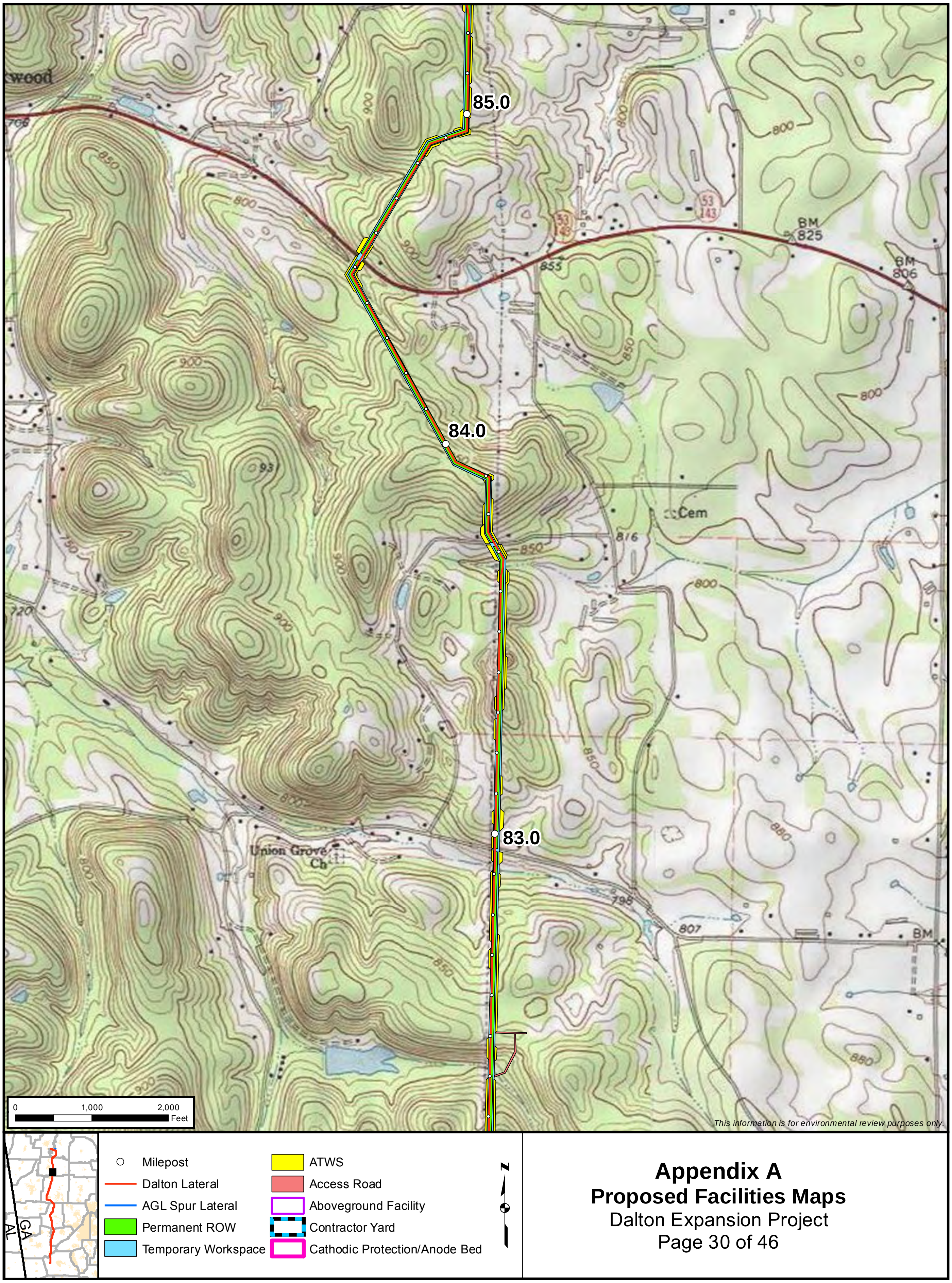

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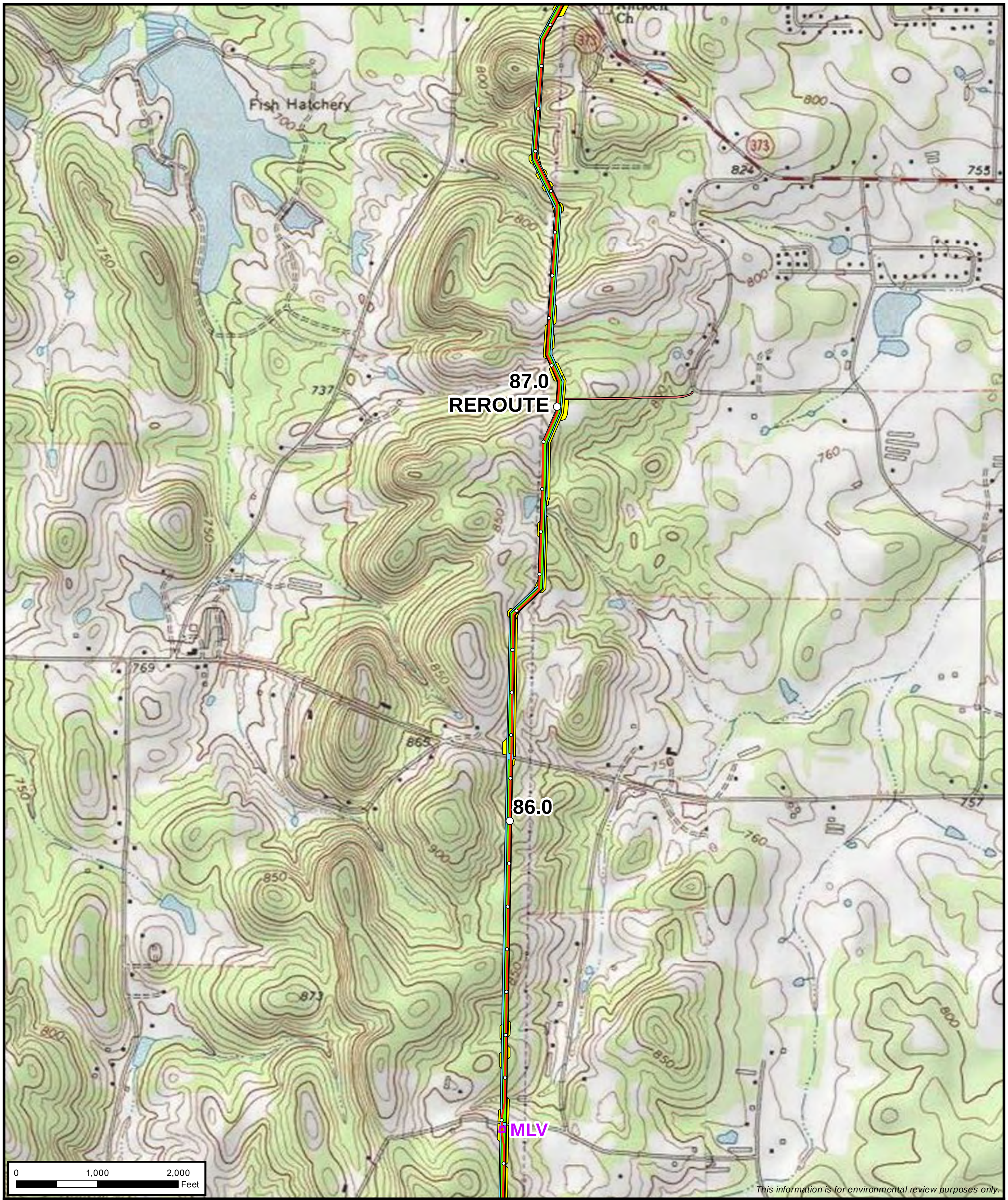

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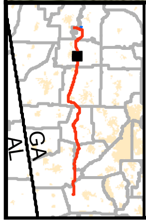

○ Milepost

— Dalton Lateral

— AGL Spur Lateral

🟩 Permanent ROW

🟦 Temporary Workspace

🟨 ATWS

🟥 Access Road

☐ Aboveground Facility

☐ Contractor Yard

☐ Cathodic Protection/Anode Bed

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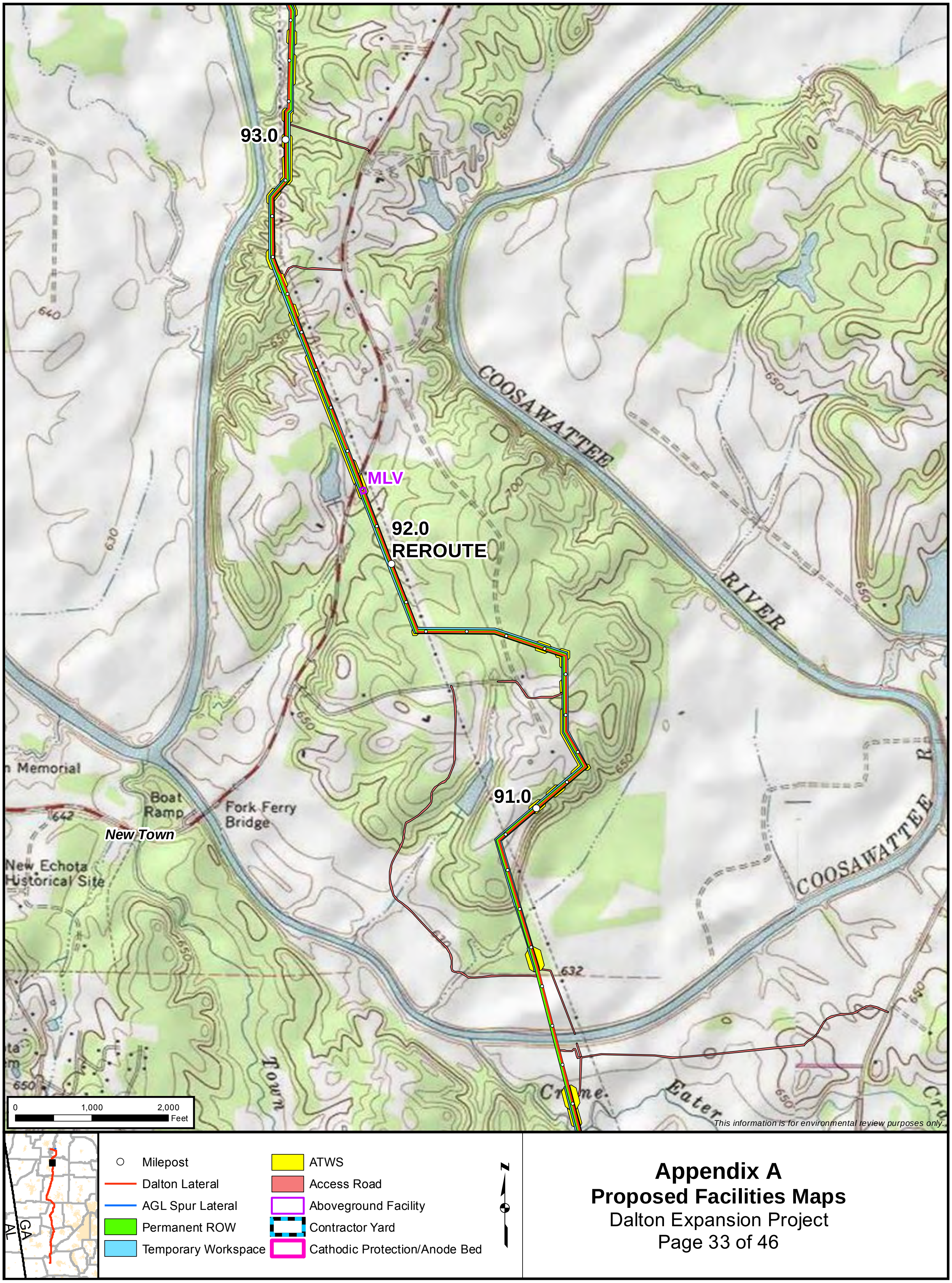

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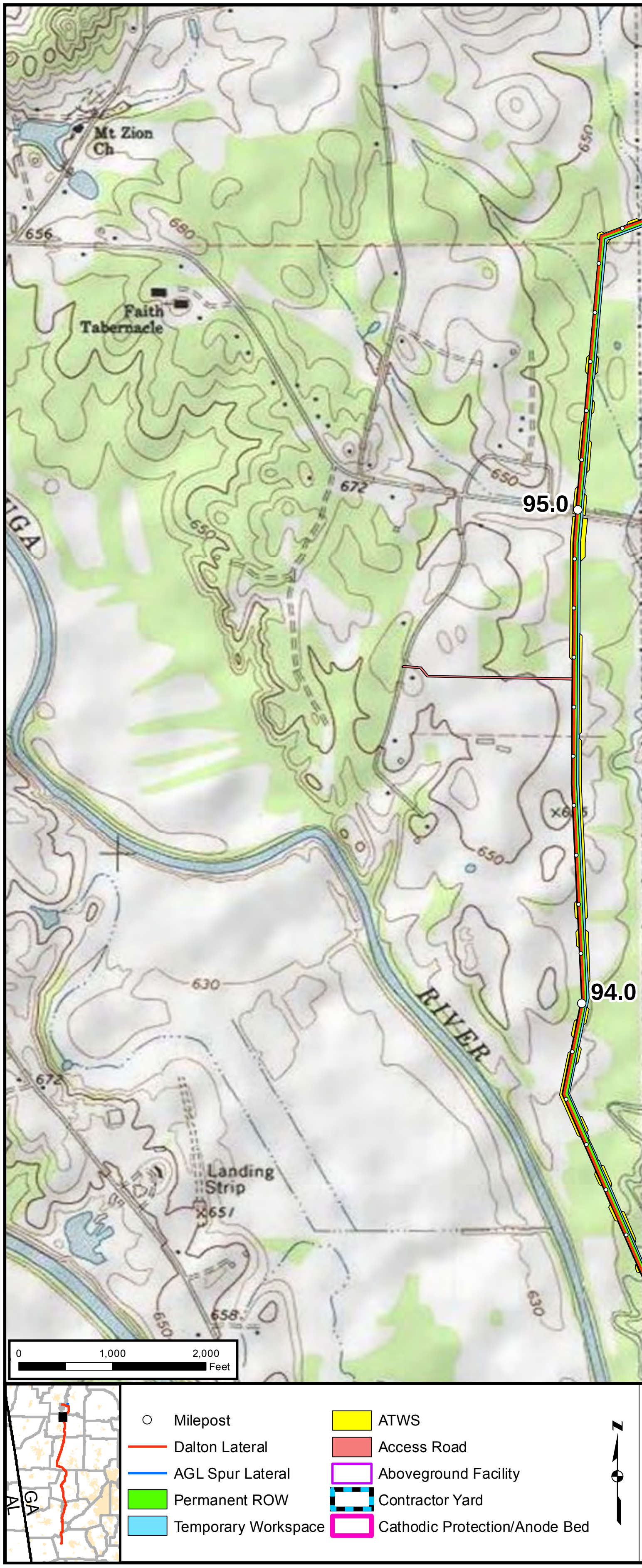

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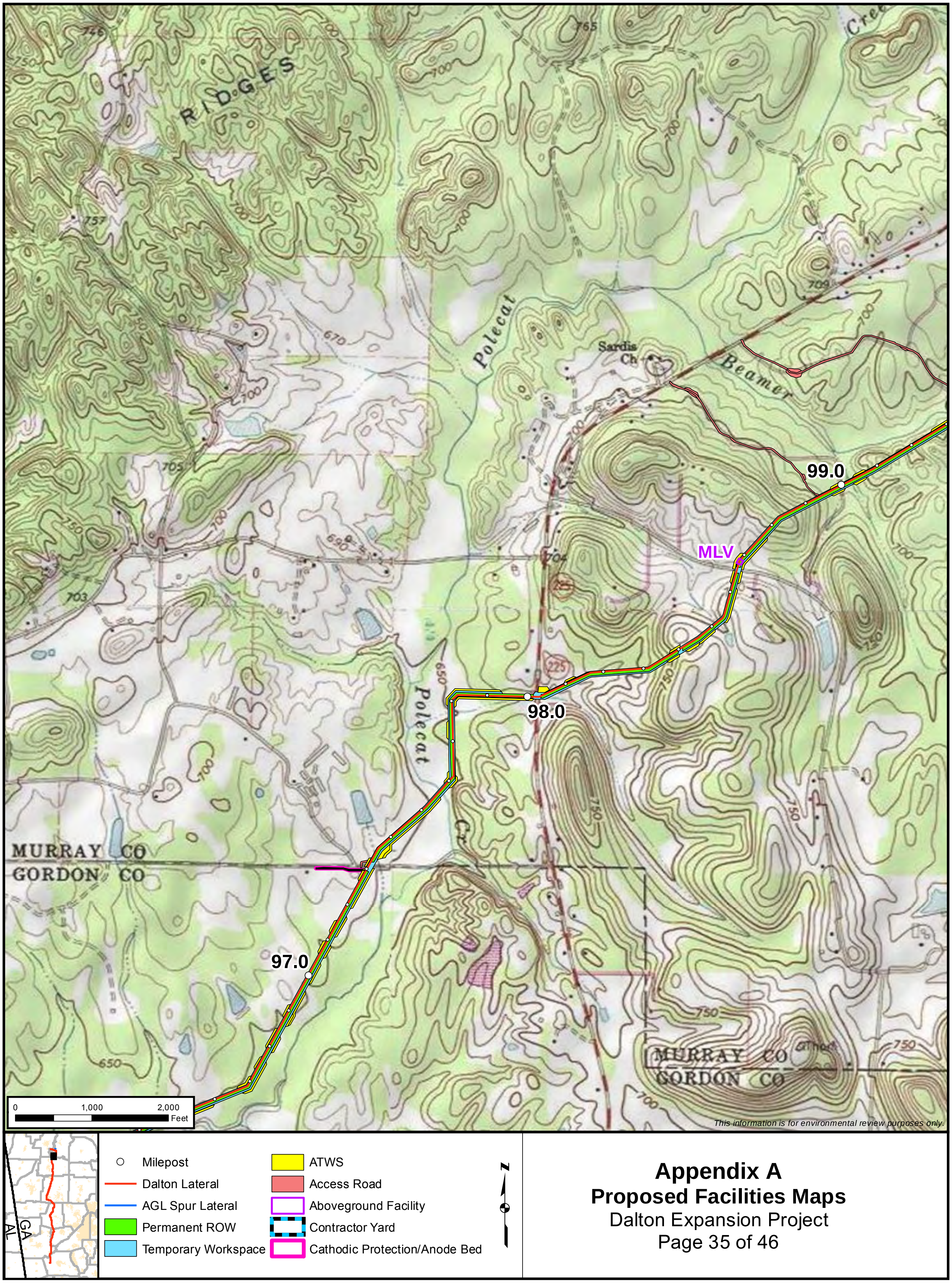

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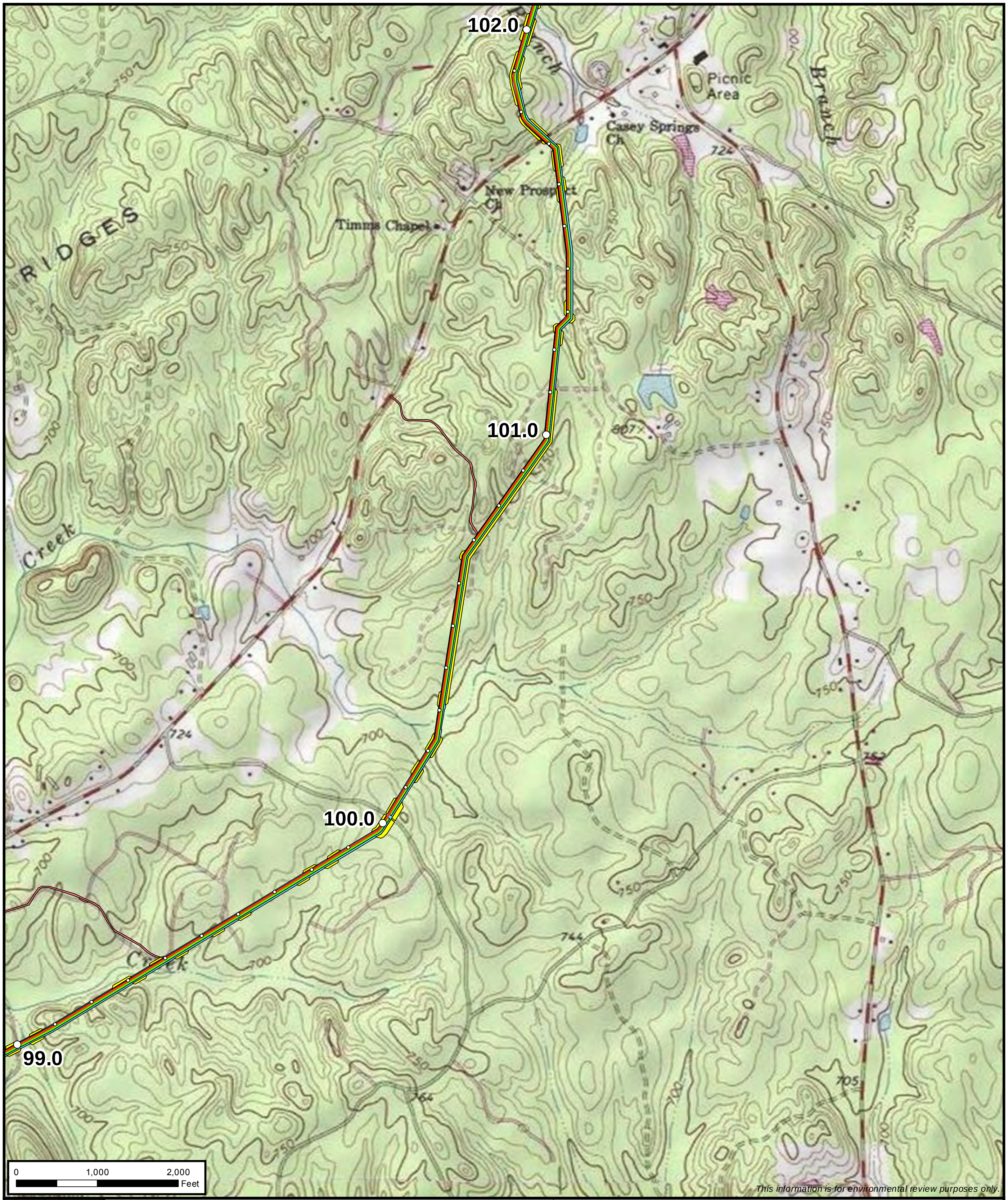

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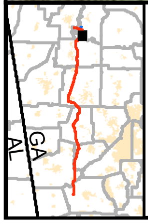

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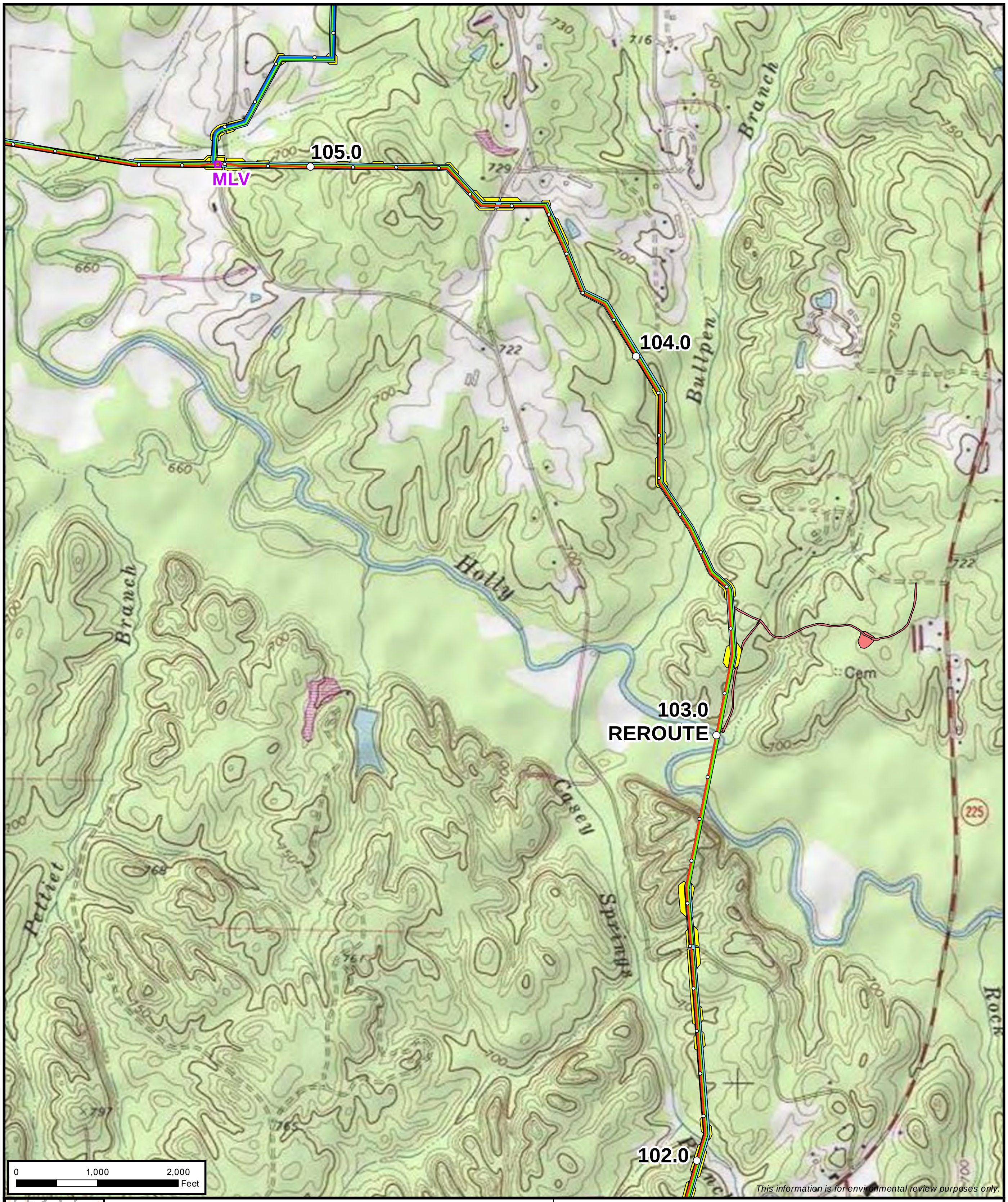

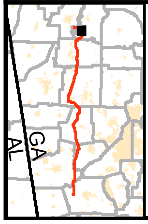

○ Milepost
🟥 Dalton Lateral
🟦 AGL Spur Lateral
🟩 Permanent ROW
🟦 Temporary Workspace
🟨 ATWS
🟥 Access Road
☐ Aboveground Facility
☐ Contractor Yard
☐ Cathodic Protection/Anode Bed

N

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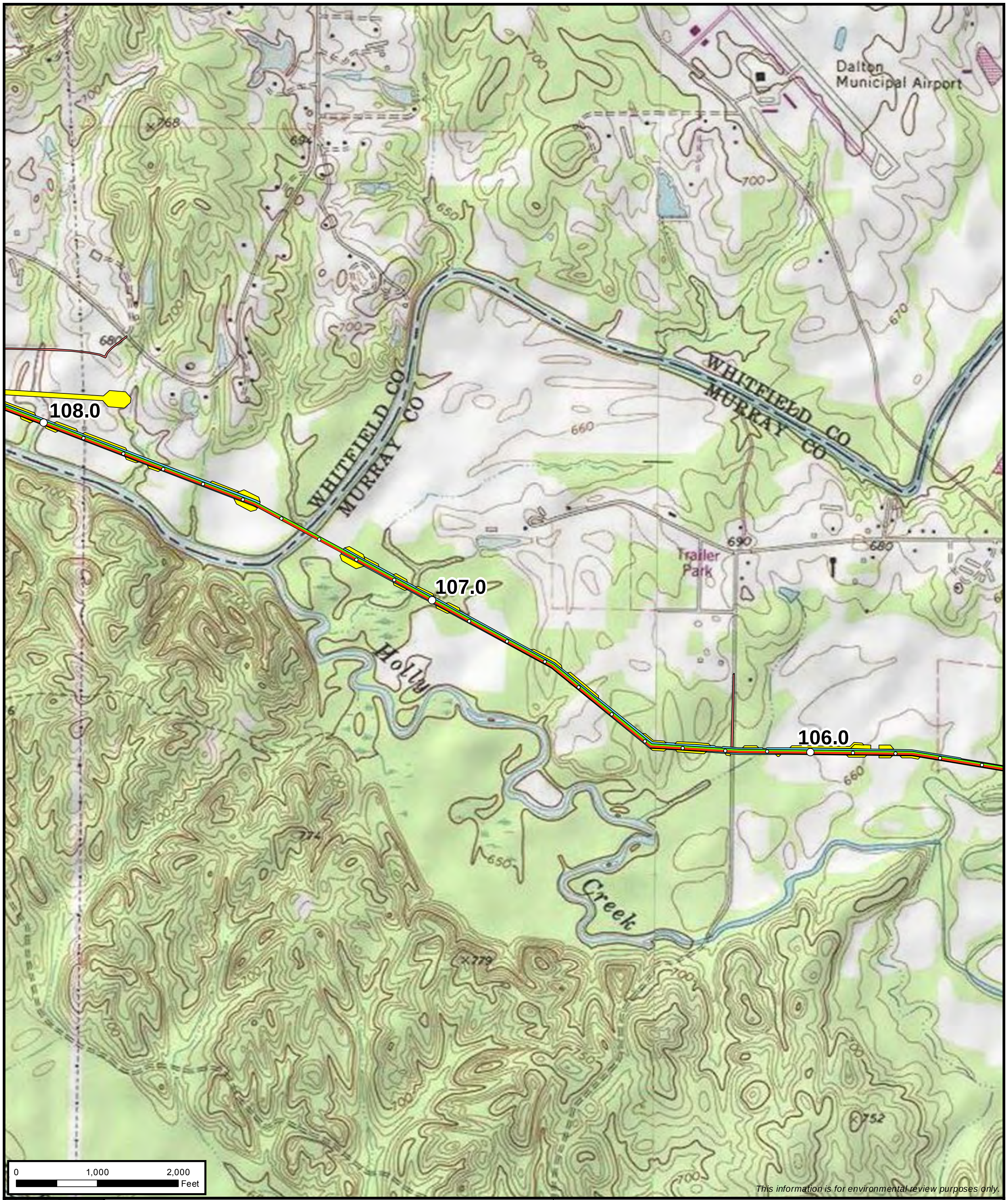

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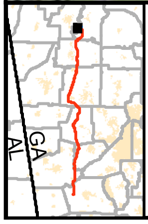

- ○ Milepost
- — Dalton Lateral
- — AGL Spur Lateral
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- ▨ Temporary Workspace
- 🟨 ATWS
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- ☐ Cathodic Protection/Anode Bed

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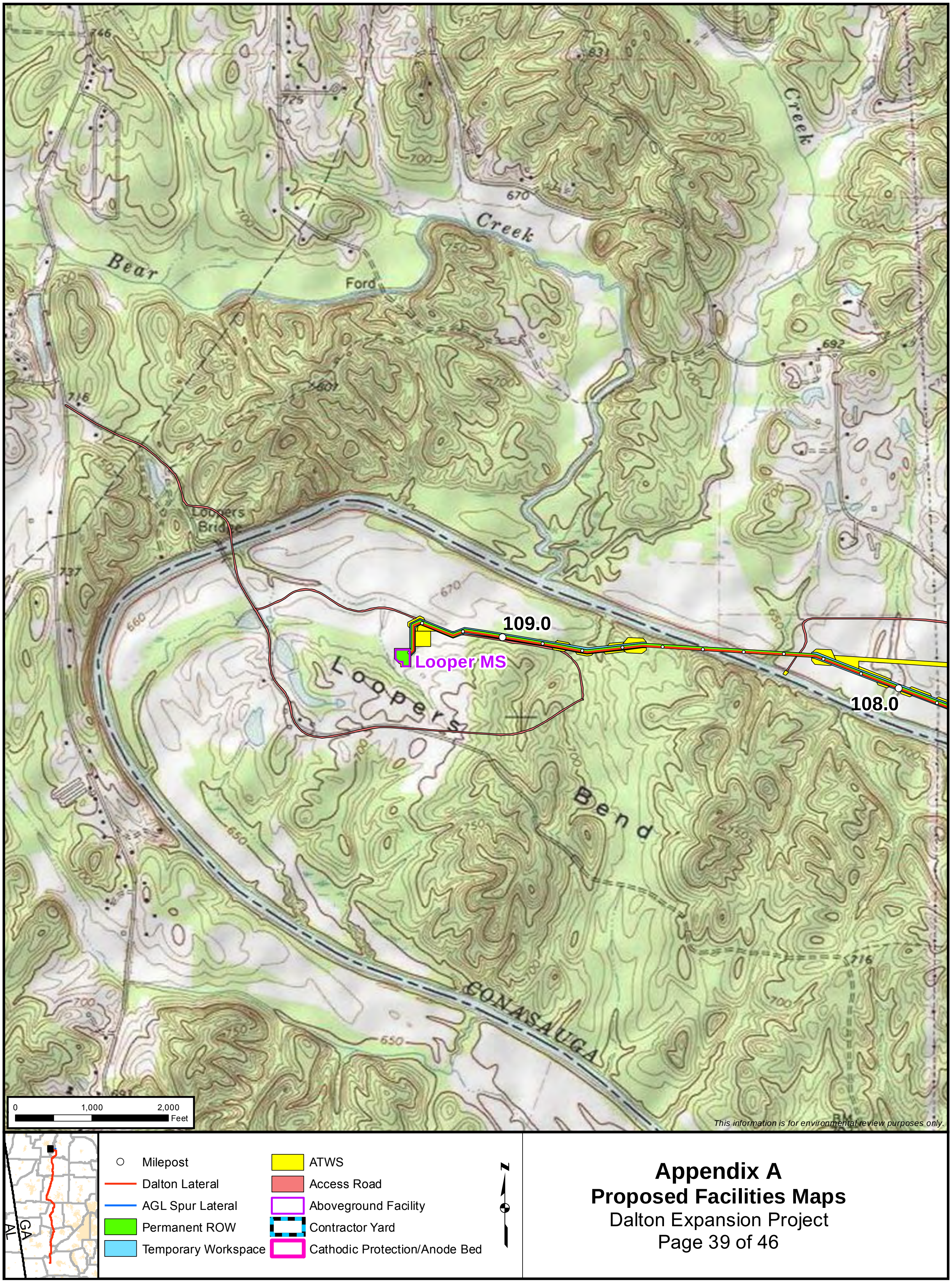

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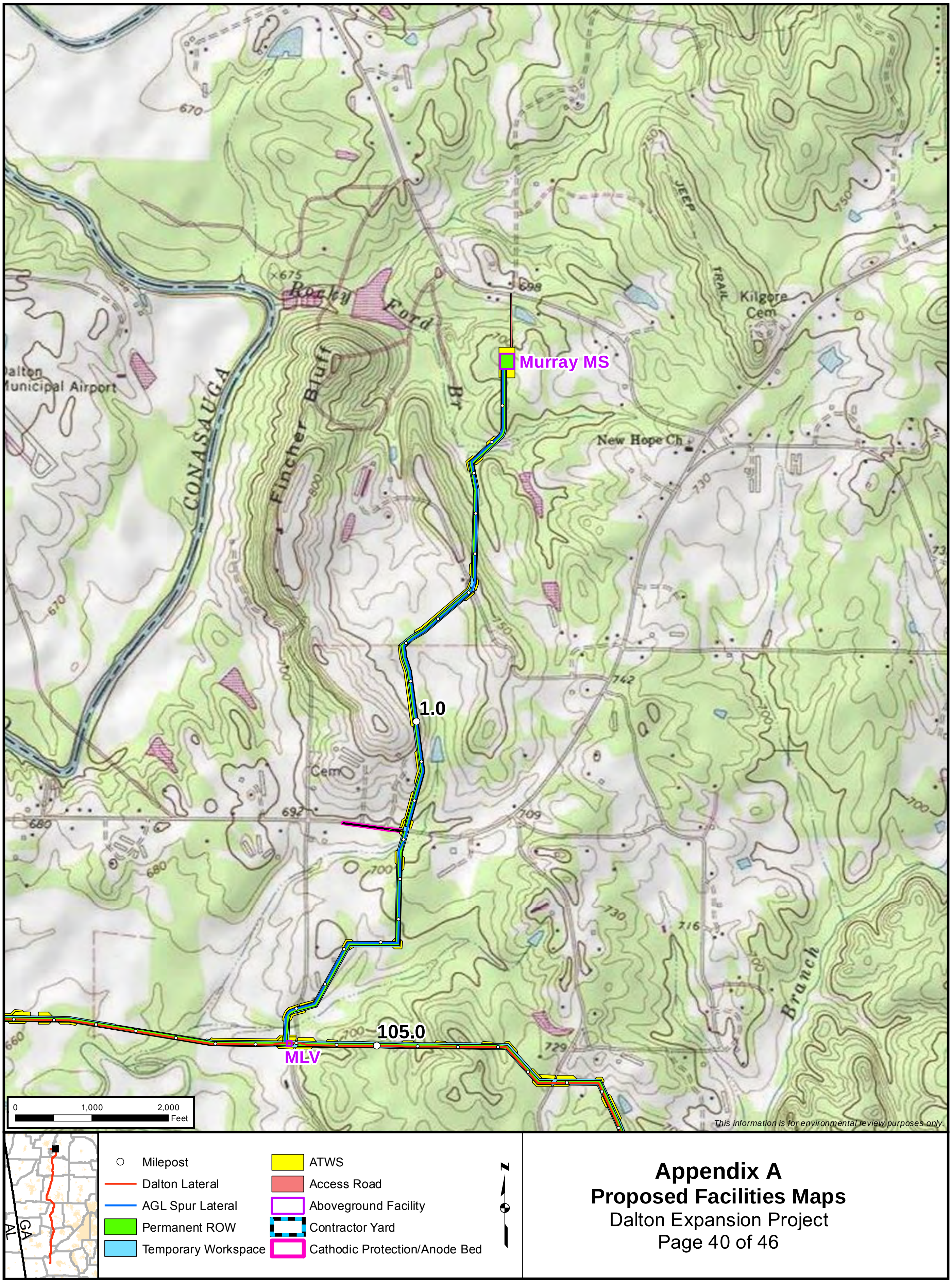

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This information is for environmental review purposes only.

○ Milepost
— Dalton Lateral
— AGL Spur Lateral
🟩 Permanent ROW
🟦 Temporary Workspace
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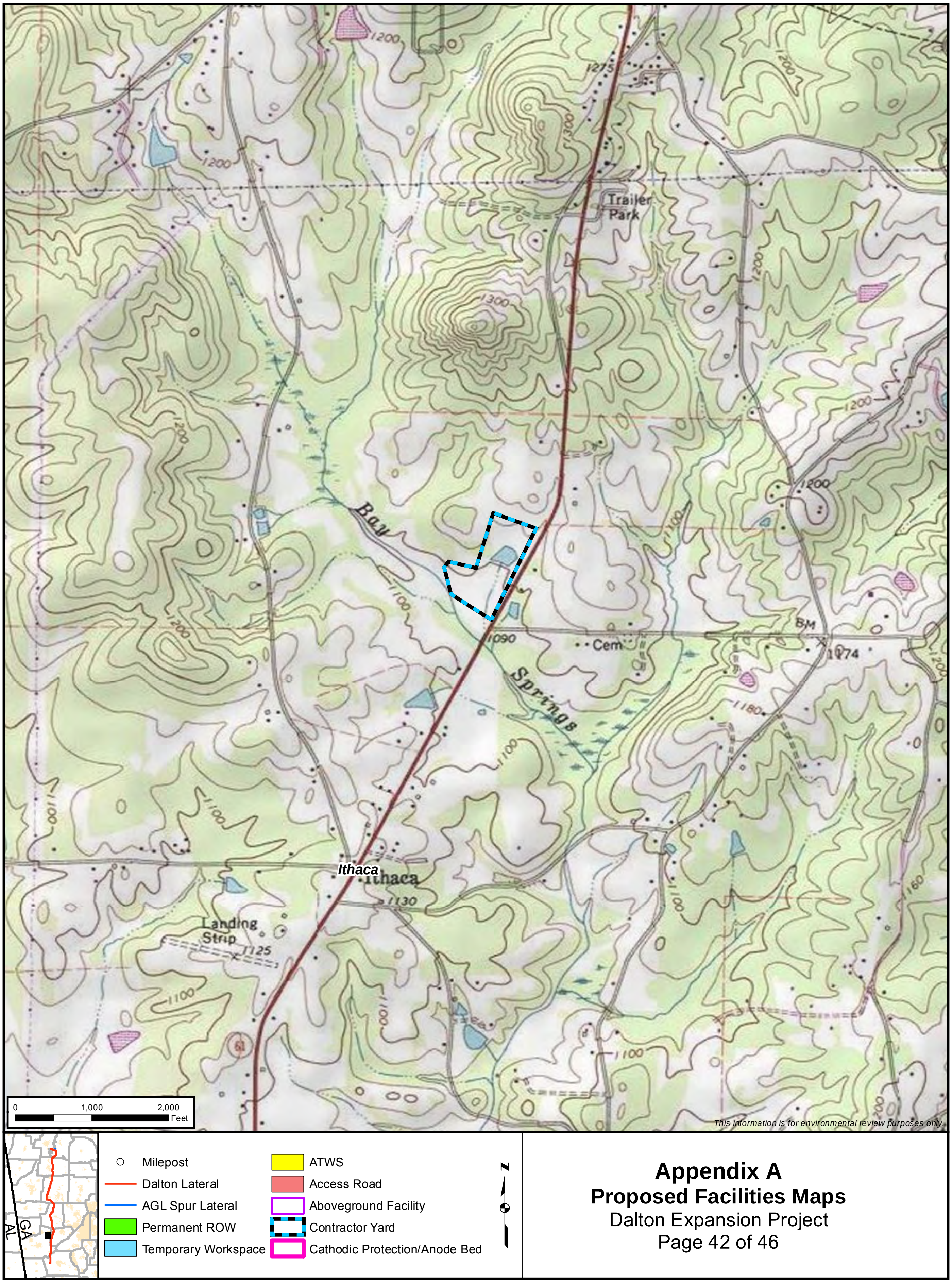

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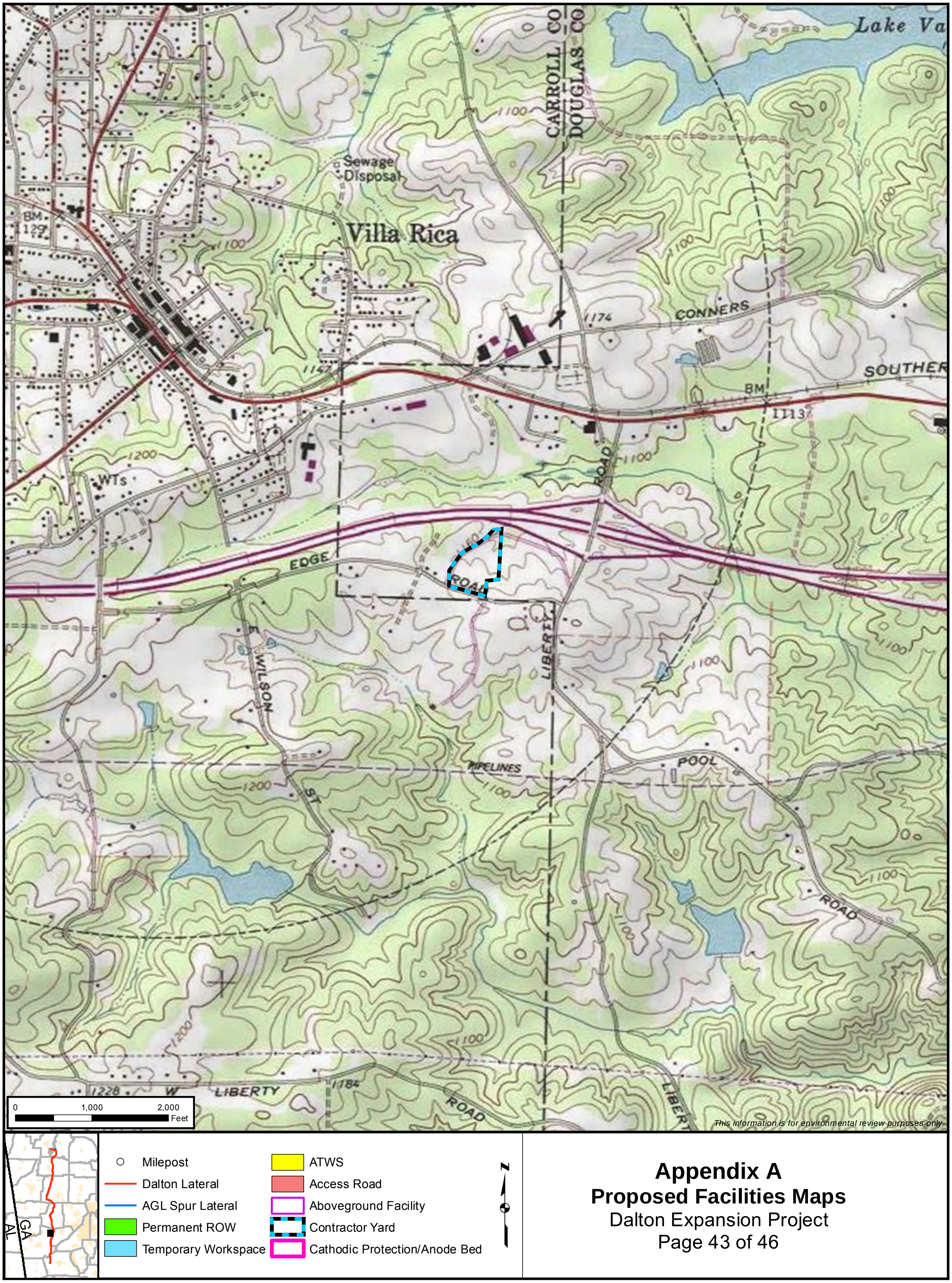

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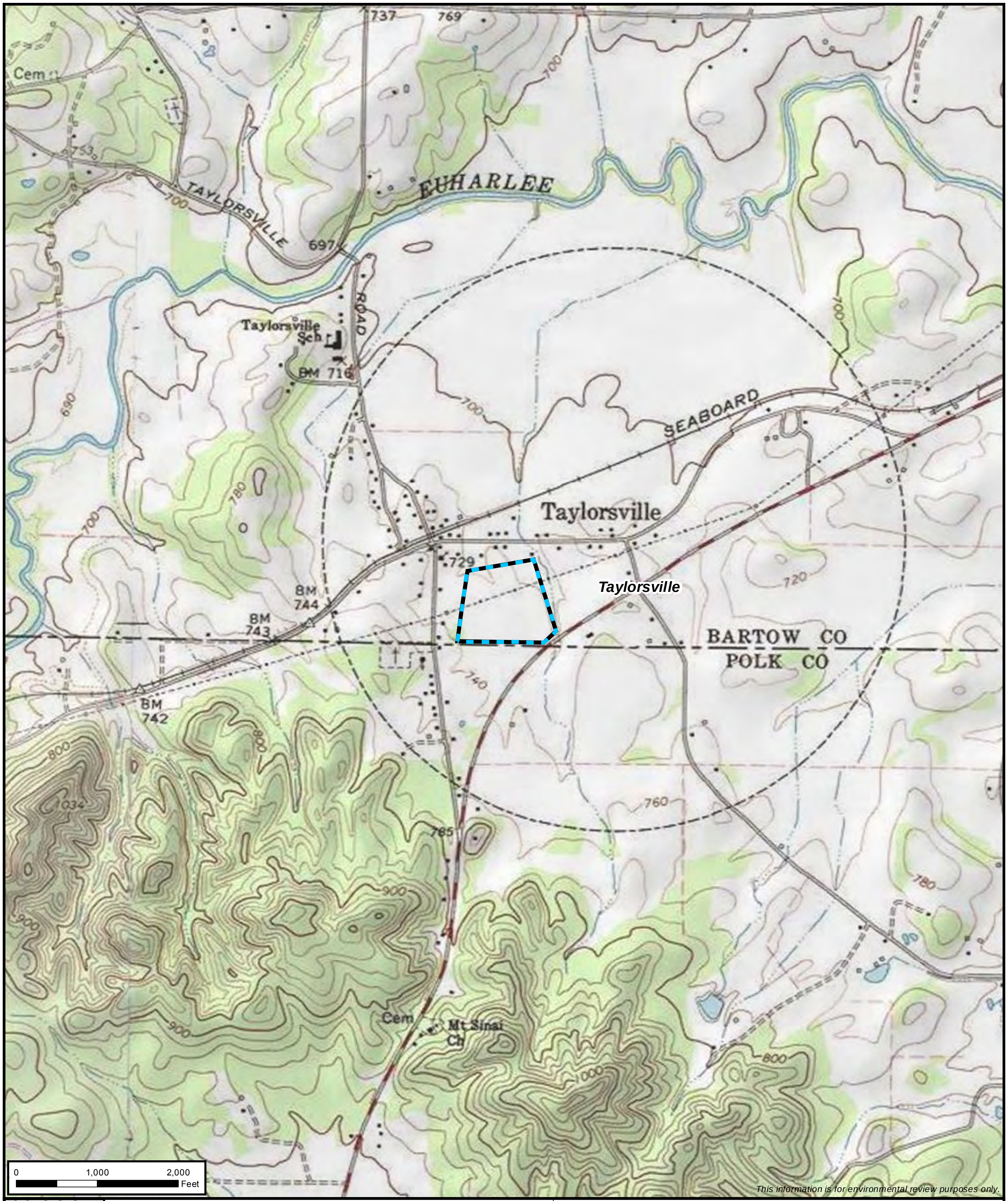

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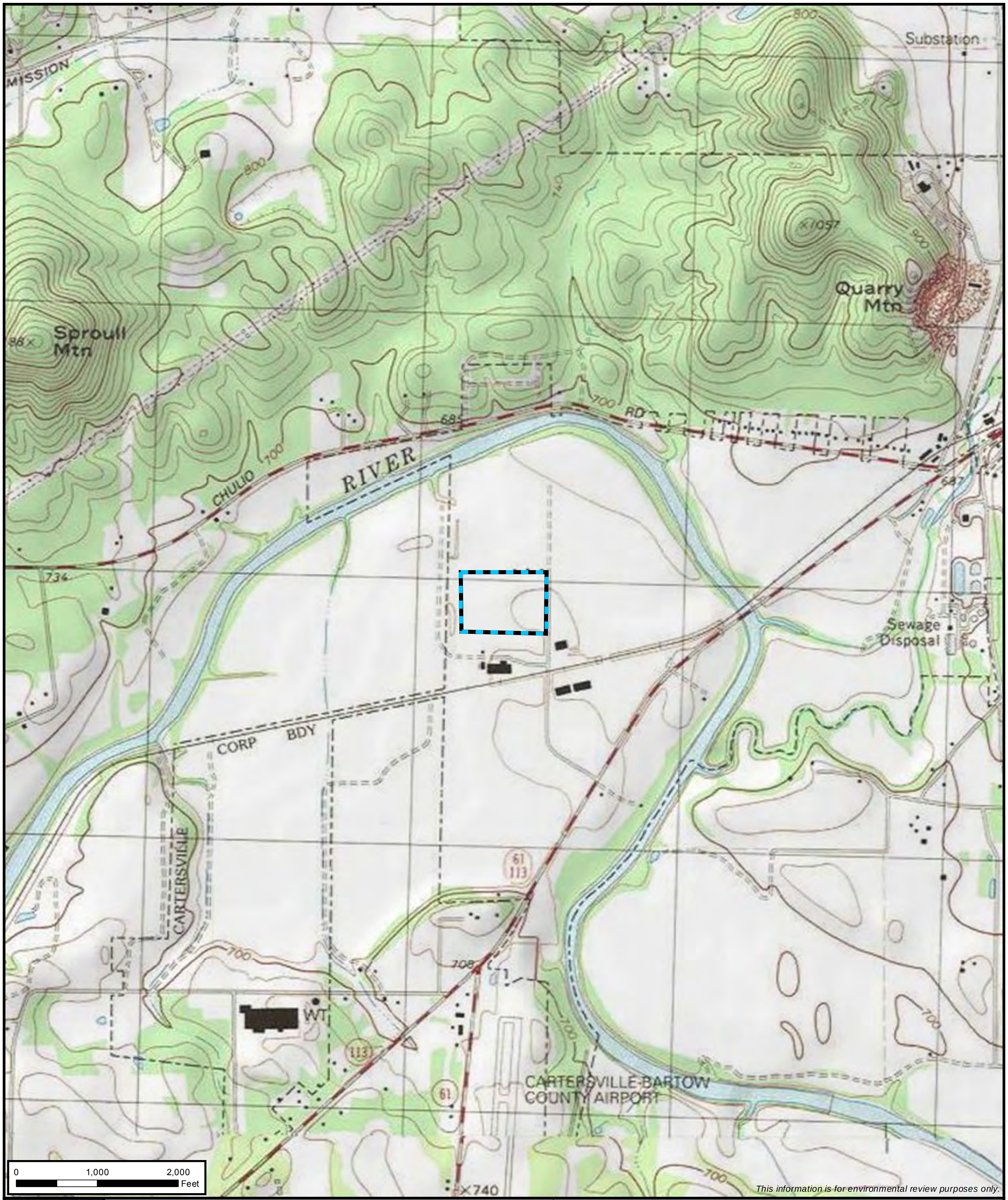

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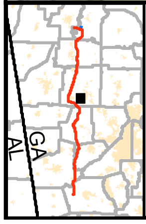

- ○ Milepost
- — Dalton Lateral
- — AGL Spur Lateral
- 🟩 Permanent ROW
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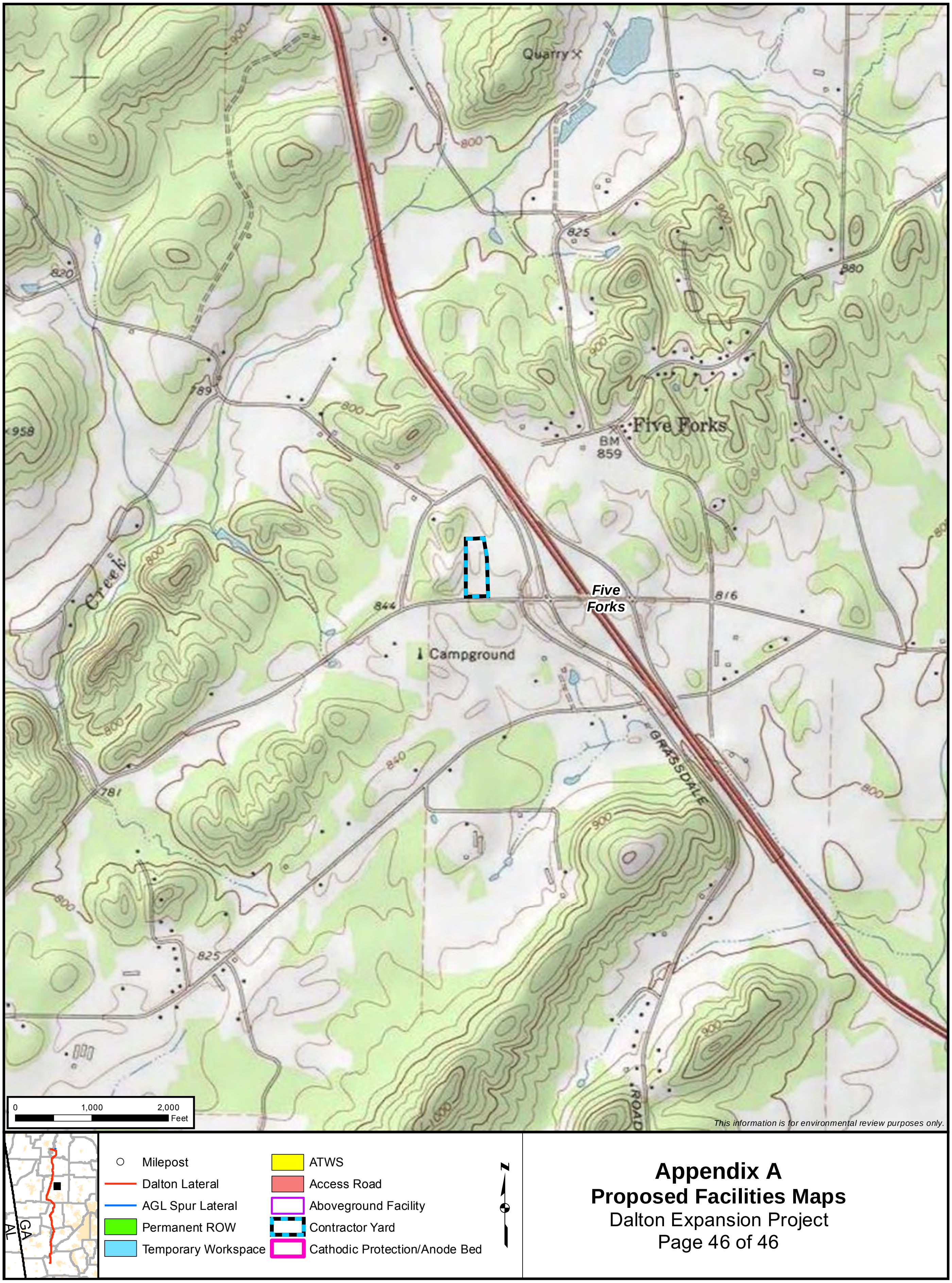

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APPENDIX B

PROPOSED MAINLINE FACILITY MODIFICATIONS FOR THE DALTON EXPANSION PROJECT

APPENDIX B

Proposed Mainline Facility Modifications for the Dalton Expansion Project

Facility	County, State	Workspace (acres) [a]		Site Description	Site Modification Description
		Temporary	Permanent		
Compressor Stations					
Compressor Station 165	Pittsylvania, VA	19.2	0.0	Existing compressor station (fenced and graveled). No environmental resources are present.	Installation of valves and yard piping, retrofit actuators vents and bleeds, and install charcoal carbon filter vessels. Ground-disturbing activities would be limited to 1.2 acres. The remaining impacts are associated with equipment staging and vehicle parking within the existing fence line.
Compressor Station 180	Orange County, VA	16.7	0.0	Existing compressor station (fenced and graveled). No environmental resources are present. The nearest wetland or waterbody (Mountain Run and Mill Run) is located more than 130 feet north of the temporary workspace.	Installation of valves and yard piping, retrofit actuators vents and bleeds, and install charcoal carbon filter vessels. Ground-disturbing activities would be limited to 0.6 acre. The remaining impacts are associated with equipment staging and vehicle parking within the existing fence line.
Compressor Station 167	Mecklenburg, VA	5.5	0.0	Existing compressor station (fenced and graveled). No environmental resources are present. The nearest wetland or waterbody (Smith Creek) is located more than 670 feet north of the temporary workspace.	Retrofit actuators vents and bleeds, install charcoal carbon filter vessels. Ground-disturbing activities would be limited to 0.6 acre. The remaining impacts are associated with equipment staging and vehicle parking within the existing fence line.
Subtotal		**41.4**	**0.0**		
Mainline Valves					
MLV 160-10	Rockingham, NC	0.8	0.0	Existing mainline valve (fenced and graveled), access road, and existing Transcontinental Gas Pipe Line Company, LLC (Transco) pipeline right-of-way (maintained herbaceous). No environmental resources are present.	Installation of charcoal carbon filters. Ground-disturbing activities would be limited to a 300-square-foot area. The remaining impacts are associated with equipment staging and vehicle parking within the existing fence line.
MLV 160-15	Pittsylvania, VA	0.9	0.0	Existing mainline valve (fenced and graveled), access road, and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. No ground-disturbing activities.	Installation of charcoal carbon filters. No ground-disturbing activities are planned. The impacts are associated with equipment staging and vehicle parking within the existing fence line.
MLV 160-20	Pittsylvania, VA	0.8	0.0	Existing mainline valve (fenced and graveled), access road, and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present.	Installation of charcoal carbon filters. Ground-disturbing activities would be limited to a 300-square-foot area. The remaining impacts are associated with equipment staging and vehicle parking within the existing fence line.
Hudson Road MLV	Pittsylvania, VA	1.1	0.0	Existing mainline valve (fenced and graveled), access road, and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. No ground-disturbing activities.	Installation of charcoal carbon filters. No ground-disturbing activities are planned. The impacts are associated with equipment staging and vehicle parking within the existing fence line.
Subtotal		**3.6**	**0.0**		

APPENDIX B (cont'd)

Proposed Mainline Facility Modifications for the Dalton Expansion Project

		Workspace (acres) [a]			
Facility	County, State	Temporary	Permanent	Site Description	Site Modification Description
Meter and Regulator Stations					
Cardinal Meter and Regulator Station	Rockingham, NC	0.7	0.0	Existing meter and regulator station (fenced and graveled). No environmental resources are present.	Addition of one 6- by 10-foot gas chromatograph building within the existing fence line.
Reidsville Meter and Regulator Station	Rockingham, NC	0.4	0.1	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (Unnamed Tributary to Town Creek) is located more than 160 feet northeast of the temporary workspace.	Addition of one 10- by 18-foot remote terminal unit (RTU)/gas chromatograph combination building. The existing fence line would be extended to include the new building and a new access road would be constructed.
Duke Eden and Spray Meter and Regulator Station	Rockingham, NC	0.8	0.0	Existing meter and regulator station (fenced and graveled). No environmental resources are present.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building and a 10- by 6-foot gas chromatograph building within the existing fence line.
Dan River Meter and Regulator Station	Rockingham, NC	0.0	0.0	Existing meter and regulator station (fenced and graveled). No environmental resources are present.	Addition of one 6- by 10-foot gas chromatograph building within the existing fence line.
Cascade Creek Meter and Regulator Station	Rockingham, NC	0.0	0.0	Existing meter and regulator station (fenced and graveled). No environmental resources are present.	Installation of a vent stack within the existing fence line.
Draper Meter and Regulator Station	Rockingham, NC	0.3	0.5	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (Unnamed Tributary to Mountain Run) is located more than 120 feet north of the temporary workspace.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building and addition of a new communication tower. The existing fence line would be extended and connected to an adjacent facility to include the new building and additional land would be purchased.
Martinsville Meter and Regulator Station	Pittsylvania, VA	0.2	0.1	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (Unnamed Tributary to Dan River) is located more than 350 feet south of the temporary workspace.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building and addition of a new communication tower. The existing fence line would be extended to include the new building and additional land would be purchased.

APPENDIX B (cont'd)

Proposed Mainline Facility Modifications for the Dalton Expansion Project

Facility	County, State	Workspace (acres) [a]		Site Description	Site Modification Description
		Temporary	Permanent		
Danville Meter and Regulator Station	Pittsylvania, VA	0.3	0.1	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (Unnamed Tributary to Sandy River) is located about 25 feet east of the temporary workspace.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building. The existing fence line would be extended to include the new building and a new access road would be constructed.
Brockway Glass Meter and Regulator Station	Pittsylvania, VA	0.3	0.1	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (White Oak Creek) is located more than 1,900 feet southeast of the temporary workspace.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building. The existing fence line will be extended to include the new building.
Chatham Meter and Regulator Station	Pittsylvania, VA	0.3	0.1	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (Unnamed Tributary to Bannister River) is located more than 300 feet east of the temporary workspace.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building. The existing fence line would be extended to include the new building.
Ahoskie Meter and Regulator Station	Hertford, NC	0.5	0.0	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (Unnamed Pond) is located more than 475 feet southwest of the temporary workspace.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building within the existing fence line. The southern portion of the existing fence would be removed to incorporate the facility into the adjacent existing facility.
NC Nat Conway Meter and Regulator Station	Northampton, NC	0.6	0.0	Existing meter and regulator station (fenced and graveled). No environmental resources are present.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building within the existing fence line.
Panda Rosemary Meter and Regulator Station	Northampton, NC	0.4	0.0	Existing meter and regulator station (fenced and graveled). No environmental resources are present.	Installation of a vent stack within the existing fence line.
Pleasant Hill Meter and Regulator Station	Northampton, NC	0.3	0.0	Existing meter and regulator station (fenced and graveled). No environmental resources are present.	Installation of a vent stack within the existing fence line.

APPENDIX B (cont'd)

Proposed Mainline Facility Modifications for the Dalton Expansion Project

		Workspace (acres) [a]			
Facility	County, State	Temporary	Permanent	Site Description	Site Modification Description
Emporia Hopewell Meter and Regulator Station	Greensville, VA	0.6	0.0	Existing meter and regulator station (fenced and graveled). No environmental resources are present.	Installation of a vent stack within the existing fence line.
Commonwealth Lawrenceville Meter and Regulator Station	Brunswick, VA	0.3	0.02	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (Flat Branch) is located more than 900 feet east of the temporary workspace.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building. The existing fence line would be extended to include the new building.
Frontier (Wise) Meter and Regulator Station	Mecklenburg, VA	0.7	0.02	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (National Wetlands Inventory forested wetland) is located more than 185 feet east of the temporary workspace.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building. The existing fence line would be extended to include the new building.
South Hill Meter and Regulator Station	Mecklenburg, VA	0.5	0.03	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (Smith Creek) is located more than 1,300 feet east of the temporary workspace.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building. The existing fence line would be extended to include the new building.
Chase City Meter and Regulator Station	Mecklenburg, VA	0.4	0.1	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (Unnamed Tributary to Butcher Creek) is located more than 1,000 feet north of the temporary workspace.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building. The existing fence line would be extended to include the new building and a new access road would be constructed.
South Boston Meter and Regulator Station	Halifax, VA	0.1	0.1	Existing meter and regulator station (fenced and graveled) and existing Transco pipeline right-of-way (maintained herbaceous). No environmental resources are present. The nearest wetland or waterbody (Unnamed Tributary to Toots Creek) is located more than 800 feet northeast of the temporary workspace.	Addition of one 10- by 18-foot RTU/gas chromatograph combination building. The existing fence line would be extended to include the new building.
Subtotal		**7.7**	**1.3**		
PROJECT TOTAL		**52.7**	**1.3**		

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[a] Temporary workspace does not include permanent workspace.

APPENDIX C

PROPOSED ACCESS ROADS FOR THE DALTON EXPANSION PROJECT

APPENDIX C

Proposed Access Roads for the Dalton Expansion Project

						Current Conditions			
Access Road ID	Existing Road Name	Milepost	New/ Existing	Public/ Private/ New	Temporary/ Permanent	Surface Type	Average Width (feet)	Length (feet)	Proposed Improvements/ Modifications
Dalton Lateral									
DALT-A_AR-CO-001	Unnamed Road	0.0	Existing	Private	Temporary	Unpaved	20	582	Blade and gravel as needed
DALT-A_AR-CO-002	Unnamed Road	0.1	Existing	Private	Permanent	Unpaved	20	543	Blade and gravel as needed
DALT-A_AR-CO-002A	Wahoo Overlook Trail	4.7 REROUTE	Existing	Private	Permanent	Paved	20	1096	Gravel entrance as needed
DALT-A_AR-CO-002B	Unnamed Road	5.6	Existing	Private	Permanent	Unpaved	8	1173	Side trim, grade and gravel as needed
DALT-A_AR-CO-003A	Unnamed Road	5.9	Existing	Private	Permanent	Unpaved	8	480	Side trim, grade and gravel as needed
DALT-A_AR-CO-003	Plant Yates Rd	6.1	Existing	Private	Permanent	Unpaved	8	2,672	Blade and gravel as needed
DALT-A_AR-CA-005B	Unnamed Road	6.6	Existing	Private	Temporary	Unpaved	20	460	Blade and gravel as needed
DALT-A_AR-CA-005A	Unnamed Road	6.6	Existing	Private	Temporary	Unpaved	20	278	Blade and gravel as needed
DALT-A_AR-CA-006	Unnamed Road	6.6	Existing	Private	Permanent	Unpaved	8	2,022	Side trim, grade and gravel as needed
DALT-A_AR-CA-005	Unnamed Road	7.6 REROUTE	Existing	Private	Temporary	Unpaved	20	6,282	Blade and gravel as needed
DALT-A_AR-CA-008	Unnamed Road	7.6 REROUTE	Existing	Private	Temporary	Unpaved	20	2,836	Blade and gravel as needed, gravel entrance
DALT-A_AR-CA-011	Unnamed Road	8.3	Existing	Private	Permanent	Unpaved	20	1,058	Blade and gravel as needed, gravel entrance
DALT-A_AR-CA-011A	Unnamed Road	10.7	Existing	Private	Permanent	Unpaved	8	3,944	Side trim, grade and gravel as needed
DALT-A_AR-CA-011B	Unnamed Road	11.1 REROUTE	Existing	Private	Permanent	Unpaved	8	1,213	Side trim, grade and gravel as needed
DALT-A_AR-CA-011C	Unnamed Road	11.4 REROUTE	Existing	Private	Temporary	Unpaved	8	478	Side trim, grade and gravel as needed
DALT-A_AR-CA-011D	Unnamed Road	11.9 REROUTE	Existing	Private	Permanent	Unpaved	8	437	Side trim, grade and gravel as needed
DALT-A_AR-CA-011E	Unnamed Road	12.2 REROUTE	Existing	Private	Permanent	Unpaved	8	491	Side trim, grade and gravel as needed
DALT-A_AR-CA-012	Unnamed Road	13.3	Existing	Private	Permanent	Unpaved	20	2,564	Blade and gravel as needed, gravel entrance
DALT-A_AR-CA-012A	Unnamed Road	13.5	Existing	Private	Permanent	Unpaved	8	2,346	Side trim, grade and gravel as needed

APPENDIX C (cont'd)

Proposed Access Roads for the Dalton Expansion Project

Access Road ID	Existing Road Name	Milepost	New/ Existing	Public/ Private/ New	Temporary/ Permanent	Current Conditions			Proposed Improvements/ Modifications
						Surface Type	Average Width (feet)	Length (feet)	
DALT-A_AR-CA-013	Unnamed Road	13.8	Existing	Private	Permanent	Unpaved	8	4,387	Side trim, grade and gravel as needed
DALT-A_AR-DO-014	Unnamed Road	24.8 REROUTE	Existing/ New	Private	Permanent	Unpaved	8	4,777	Side trim, grade and gravel as needed
DALT-A_AR-DO-015	E Tyson Road	26	Existing	Public	Temporary	Paved	20	2,568	Gravel entrance as needed
DALT-A_AR-DO-016	Summer Cypress Drive	26.9 REROUTE	Existing	Public/ Private	Permanent	Paved/ Unpaved	20	2,485	Gravel entrance as needed (unpaved portion)
DALT-A-AR-PA-017	Amanda Drive	34.5	Existing	Public	Permanent	Paved	20	348	Gravel entrance as needed
DALT-A-AR-PA-017A	Unnamed Road	35.6	Existing	Private	Permanent	Paved	8	1,208	Side trim, grade and gravel as needed
DALT-A_AR-PA-019A	Unnamed Road	36.4	Existing	Private	Permanent	Unpaved	8	629	Side trim, grade and gravel as needed
DALT-A_AR-PA-020	Unnamed Road	36.4	Existing	Private	Temporary	Unpaved	8	3,464	Side trim, grade and gravel as needed
DALT-A_AR-PA-021	Unnamed Road	37.5	Existing	Private	Permanent	Unpaved	8	3,094	Side trim, grade and gravel as needed
DALT-A_AR-PA-022B	Unnamed Road	42.8 REROUTE	Existing	Private	Permanent	Unpaved	8	774	Side trim, grade and gravel as needed
DALT-A_AR-PA-23	Unnamed Road	48.4 REROUTE	Existing	Private	Permanent	Unpaved	8	1,646	Side trim, grade and gravel as needed
DALT-A_AR-PA-023A	Unnamed Road	51.3 REROUTE	Existing	Private	Permanent	Unpaved	8	2,403	Side trim, grade and gravel as needed
DALT-A_AR-PA-023B	Unnamed Road	52.6 REROUTE	Existing	Private	Permanent	Unpaved	8	3,390	Side trim, grade and gravel as needed
DALT-A_AR-PA-023C	Unnamed Road	53.7 REROUTE	Existing	Private	Permanent	Unpaved	8	657	Side trim, grade and gravel as needed
DALT-A_AR-PA-023D	Unnamed Road	54.3 REROUTE	Existing	Private	Permanent	Unpaved	8	645	Side trim, grade and gravel as needed
DALT-A_AR-PA-023E	Unnamed Road	54.3 REROUTE	Existing	Private	Permanent	Unpaved	8	1,803	Side trim, grade and gravel as needed
DALT-A_AR-PA-023F	Unnamed Road	54.5 REROUTE	Existing	Private	Permanent	Unpaved	8	1,948	Side trim, grade and gravel as needed
DALT-A_AR-PA-023H	Unnamed Road	55.0 REROUTE	Existing	Private	Permanent	Unpaved	8	1,568	Side trim, grade and gravel as needed
DALT-A_AR-BA-024_1	Beasley Road Southwest	56.4	Existing	Private	Temporary	Unpaved	8	2,410	Blade and gravel as needed, gravel entrance

APPENDIX C (cont'd)

Proposed Access Roads for the Dalton Expansion Project

						Current Conditions			
Access Road ID	Existing Road Name	Milepost	New/ Existing	Public/ Private/ New	Temporary/ Permanent	Surface Type	Average Width (feet)	Length (feet)	Proposed Improvements/ Modifications
DALT-A_AR-BA-024_2	(New Road)	56.5	New	New	Permanent	--	0	2,383	--
DALT-A_AR-BA-025A	Unnamed Road	59.5 REROUTE	Existing	Private	Temporary	Unpaved	20	1,744	Blade and gravel as needed
DALT-A_AR-BA-025B	Unnamed Road	59.5 REROUTE	Existing	Private	Permanent	Unpaved	20	1,546	Blade and gravel as needed
DALT-A_AR-BA-027	Dixon Drive	65.4	Existing	Private	Permanent	Paved	20	5,944	Gravel entrance as needed
DALT-A_AR-BA-028	Unnamed Road	65.4	Existing	Private	Temporary	Unpaved	20	1,076	Blade and gravel as needed
DALT-A_AR-BA-030	Unnamed Road	65.9	Existing	Private	Temporary	Unpaved	20	1,465	Blade and gravel as needed
DALT-A_AR-BA-033	Unnamed Road	66.2	Existing	Private	Temporary	Unpaved	8	4,851	Side trim, grade and gravel as needed
DALT-A_AR-BA-036	Unnamed Road	66.6	Existing	Private	Temporary	Unpaved	20	2,672	Blade and gravel as needed, gravel entrance
DALT-A_AR-BA-037	Unnamed Road	67.1	Existing	Private	Permanent	Unpaved	8	948	Side trim, grade and gravel as needed
DALT-A_AR-BA-038	Unnamed Road	67.3	Existing	Private	Temporary	Unpaved	8	674	Side trim, grade and gravel as needed
DALT-A_AR-BA-039	Unnamed Road	67.7	Existing	Private	Temporary	Unpaved	20	877	Blade and gravel as needed, gravel entrance
DALT-A_AR-BA-040	Oxford Lane	67.9	Existing	Public	Permanent	Paved	20	1,438	Gravel entrance as needed
DALT-A_AR-BA-040A	Unnamed Road	68	Existing	Private	Temporary	Unpaved	8	674	Side trim, grade and gravel as needed
DALT-A_AR-BA-041	Unnamed Road	69.5	Existing	Private	Temporary	Unpaved	8	2,367	Side trim, grade and gravel as needed
DALT-A_AR-BA-041A	Unnamed Road	70.9	Existing	Private	Temporary	Unpaved	20	5549	Blade and gravel as needed
DALT-A_AR-BA-042	Unnamed Road	71.1	Existing	Private	Temporary	Unpaved	20	3,997	Blade and gravel as needed, gravel entrance
DALT-A_AR-BA-043	Wellons Road	71.5	Existing	Private	Temporary	Unpaved	20	1,828	Gravel entrance as needed
DALT-A_AR-BA-043A	Unnamed Road	73.1	Existing	Private	Temporary	Unpaved	20	5,066	Blade and gravel as needed, gravel entrance
DALT-A_AR-BA-043C	Unnamed Road	75.9	Existing	Private	Temporary	Unpaved	20	1,397	Blade and gravel as needed, gravel entrance
DALT-A_AR-BA-044	Hunting Club	76.3	Existing	Private	Permanent	Unpaved	8	3,379	Side trim, grade and gravel as needed
DALT-A_AR-BA-044A	Unnamed Road	76.6	Existing	Private	Permanent	Unpaved	20	2,199	Blade and gravel as needed, gravel entrance

APPENDIX C (cont'd)

Proposed Access Roads for the Dalton Expansion Project

						Current Conditions			
Access Road ID	Existing Road Name	Milepost	New/ Existing	Public/ Private/ New	Temporary/ Permanent	Surface Type	Average Width (feet)	Length (feet)	Proposed Improvements/ Modifications
DALT-A_AR-BA-046A	Unnamed Road	78.2 REROUTE	Existing	Private	Permanent	Unpaved	8	2,301	Side trim, grade and gravel as needed
DALT-A_AR-BA-046	Unnamed Road (on ROW)	78.1	Existing	Private	Temporary	Unpaved	20	9,201	Blade and gravel as needed, gravel entrance
DALT-A_AR-BA-046B	Unnamed Road	78.5	Existing	Private	Permanent	Unpaved	20	3,354	Blade and gravel as needed, gravel entrance
DALT-A_AR-BA-049	Unnamed Road	79.4	Existing	Private	Permanent	Unpaved	8	3,475	Side trim, grade and gravel as needed
DALT-A_AR-GO-051	Unnamed Road	81.3	Existing	Private	Permanent	Unpaved	20	5,925	Blade and gravel as needed, gravel entrance
DALT-A_AR-GO-052	Unnamed Road	82.4	Existing	Private	Temporary	Unpaved	8	755	Side trim, grade and gravel as needed
DALT-A_AR-GO-053	Unnamed Road	82.5	Existing	Private	Permanent	Unpaved	8	179	Side trim, grade and gravel as needed
DALT-A_AR-GO-057	Unnamed Road	87.0 REROUTE	Existing	Private	Permanent	Unpaved	20	1,679	Blade and gravel as needed, gravel entrance
DALT-A_AR-GO-057B	Unnamed Road	89.2	Existing/ New	Private	Permanent	Unpaved	20	2,346	Side trim, grade and gravel as needed
DALT-A_AR-GO-058	Unnamed Road	90.2	Existing	Private	Permanent	Unpaved	8	4,265	Side trim, grade and gravel as needed
DALT-A_AR-GO-059	Unnamed Road	90.3	New	New	Temporary	--	0	567	--
DALT-A_AR-GO-060	Unnamed Road	90.5	New	New	Temporary	--	0	1,054	--
DALT-A_AR-GO-061	Unnamed Road	90.5	Existing	Private	Permanent	Unpaved	8	5,507	Side trim, grade and gravel as needed
DALT-A_AR-GO-061A	Unnamed Road	91.4	Existing	Private	Permanent	Unpaved	20	1,181	Blade and gravel as needed
DALT-A_AR-GO-061B	Unnamed Road	92.6	Existing	Private	Permanent	Unpaved	20	869	Blade and gravel as needed
DALT-A_AR-GO-061C	Unnamed Road	93	Existing	Private	Permanent	Unpaved	8	1,135	Side trim, grade and gravel as needed
DALT-A_AR-GO-061D	Unnamed Road	94.7	New	New	Temporary	--	0	1,868	--
DALT-A_AR-MU-061E	Unnamed Road	97.3	New	New	Temporary	--	0	205	--
DALT-A_AR-MU-061F	Unnamed Road	98.9	Existing	Private	Temporary	Unpaved	8	2,551	Side trim, grade and gravel as needed
DALT-A_AR-MU-061G	Unnamed Road	99.4	Existing	Private	Permanent	Unpaved	8	3,710	Side trim, grade and gravel as needed
DALT-A_AR-MU-061H	Unnamed Road	100.7	Existing	Private	Permanent	Unpaved	20	2,470	Blade and gravel as needed

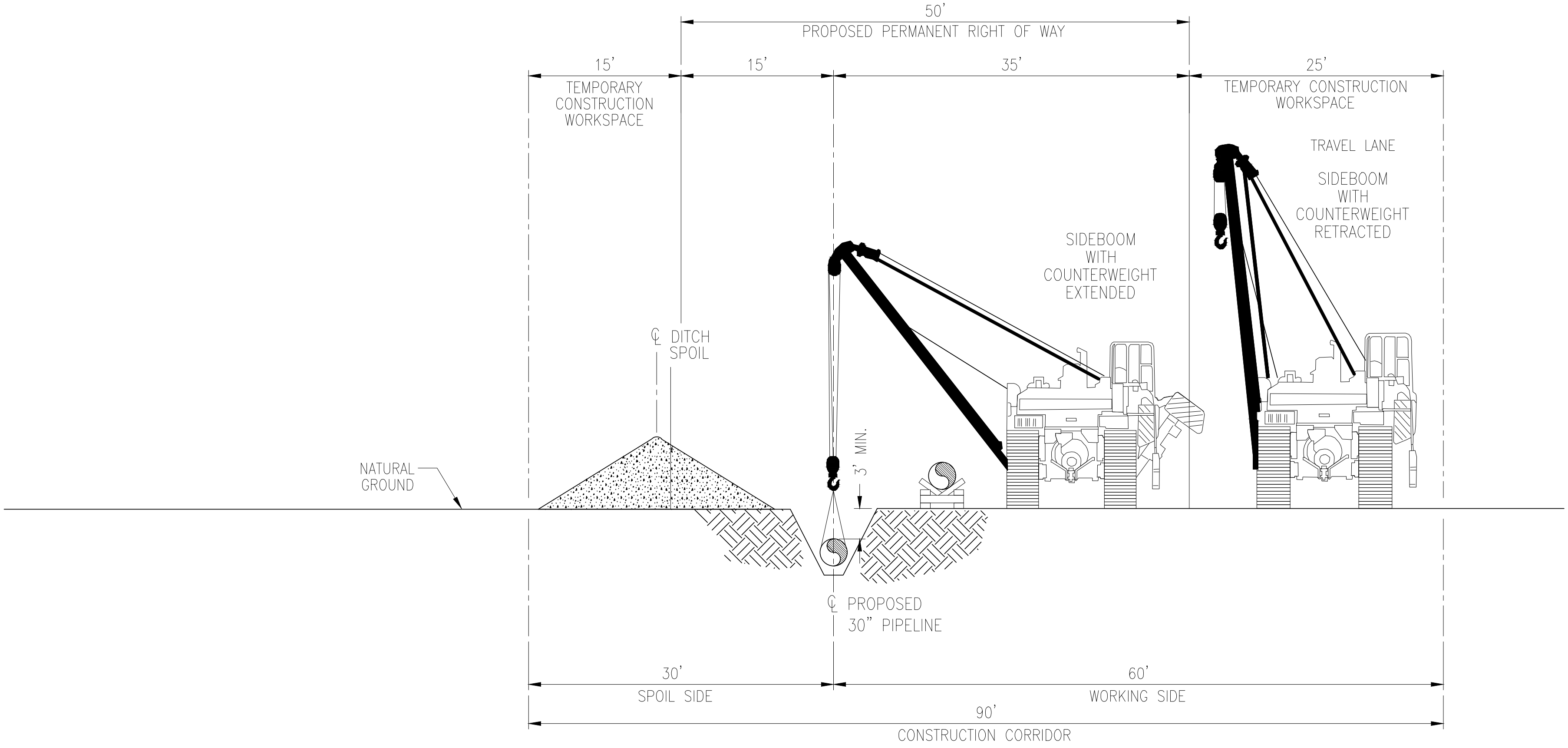
APPENDIX C (cont'd)

Proposed Access Roads for the Dalton Expansion Project

						Current Conditions			
Access Road ID	Existing Road Name	Milepost	New/ Existing	Public/ Private/ New	Temporary/ Permanent	Surface Type	Average Width (feet)	Length (feet)	Proposed Improvements/ Modifications
DALT-A_AR-MU-061J	Unnamed Road	103.0 REROUTE	Existing	Private	Permanent	Unpaved	8	4,082	Side trim, grade and gravel as needed
DALT-A_AR-MU-061K	Unnamed Road	103.3	New	New	Temporary	--	0	99	--
DALT-A_AR-MU-061L	Unnamed Road	103.4	New	New	Temporary	--	0	442	--
DALT-A_AR-MU-061O	Unnamed Road	106.2	Existing	Private	Permanent	Unpaved	20	955	Blade and gravel as needed
DALT-A_AR-WH-064	Unnamed Road	108.3	Existing/ New	Private	Permanent	Unpaved	8	2,879	Blade and gravel as needed, gravel entrance
DALT-A_AR-MU-062	Unnamed Road	109.1	Existing	Private	Temporary	Unpaved	20	4,947	Blade and gravel as needed
DALT-A_AR-MU-063	South Riverbend Road	109.1	Existing	Private	Temporary	Paved	20	9,509	Blade and gravel as needed
AGL Spur									
DALT-A_AR-MU-065	Unnamed Road	1.9	Private	New	Permanent	Unpaved	20	824	Clear, grade and gravel

APPENDIX D

TYPICAL RIGHT-OF-WAY CONFIGURATIONS



TYPICAL CROSS SECTION NO. 1

STANDARD WORK CORRIDOR

BEGIN M.P.	**END M.P.**
2.6	2.8
3.1	3.2
4.3	5.0
5.1	5.2
6.0	6.8
7.6R	7.7R

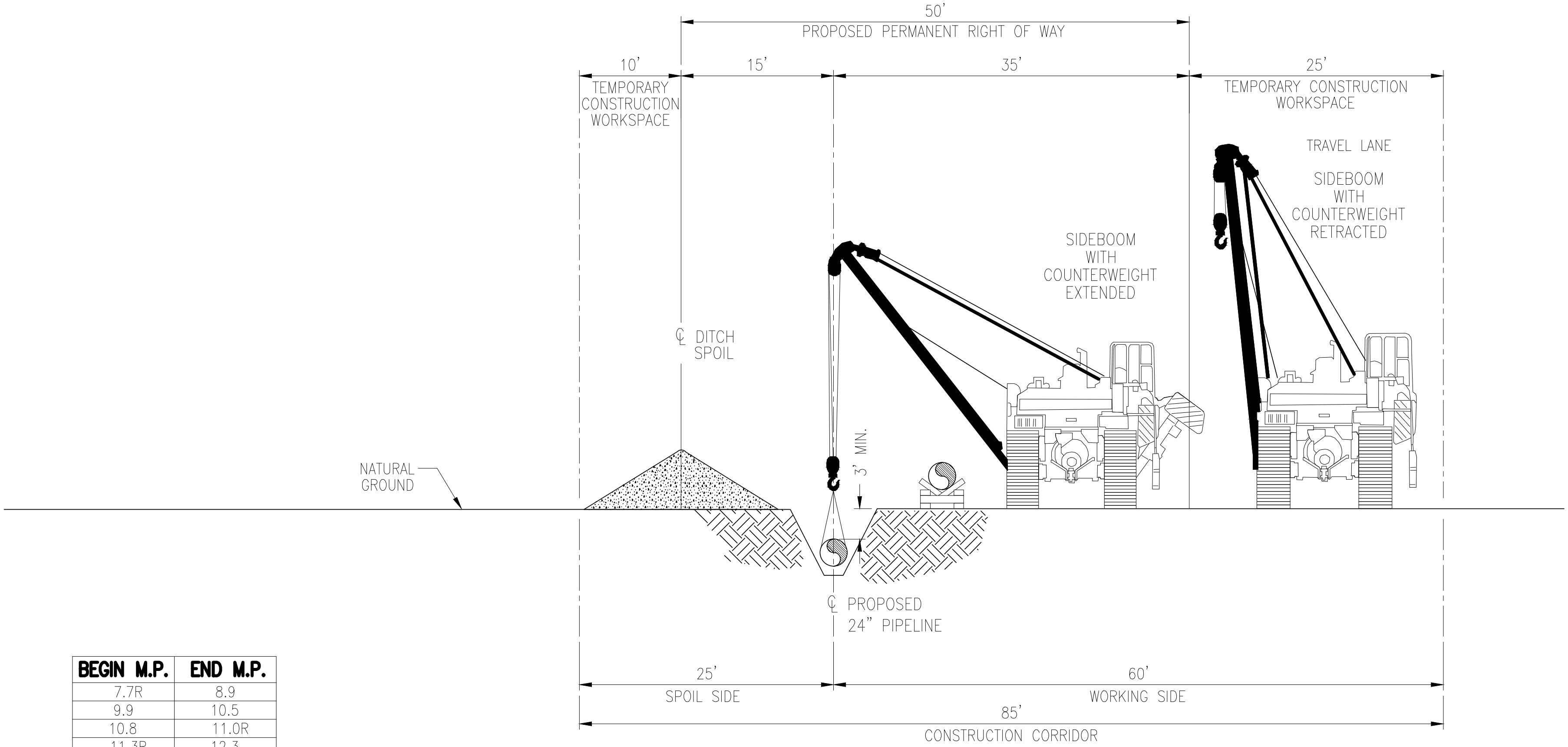
DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 30" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_01	SHEET 01
WO: 1113191		7:06:54 AM 9/23/2015	OF 24



TYPICAL CROSS SECTION NO. 2

STANDARD WORK CORRIDOR

BEGIN M.P.	END M.P.
7.7R	8.9
9.9	10.5
10.8	11.0R
11.3R	12.3
12.5	12.5
15.0	15.4
17.4	19.2
19.8	20.0
20.1	20.2
22.5	25.3
25.9	26.5
26.7	26.9R
27.0	27.1
28.2	28.3
30.0	30.1
30.3	30.4
30.8	31.7R
32.2	32.4
32.8	32.9
37.0	37.7
40.2	43.8R
44.2R	53.6R
54.0R	54.3R
54.7R	55.2R
55.3R	54.5

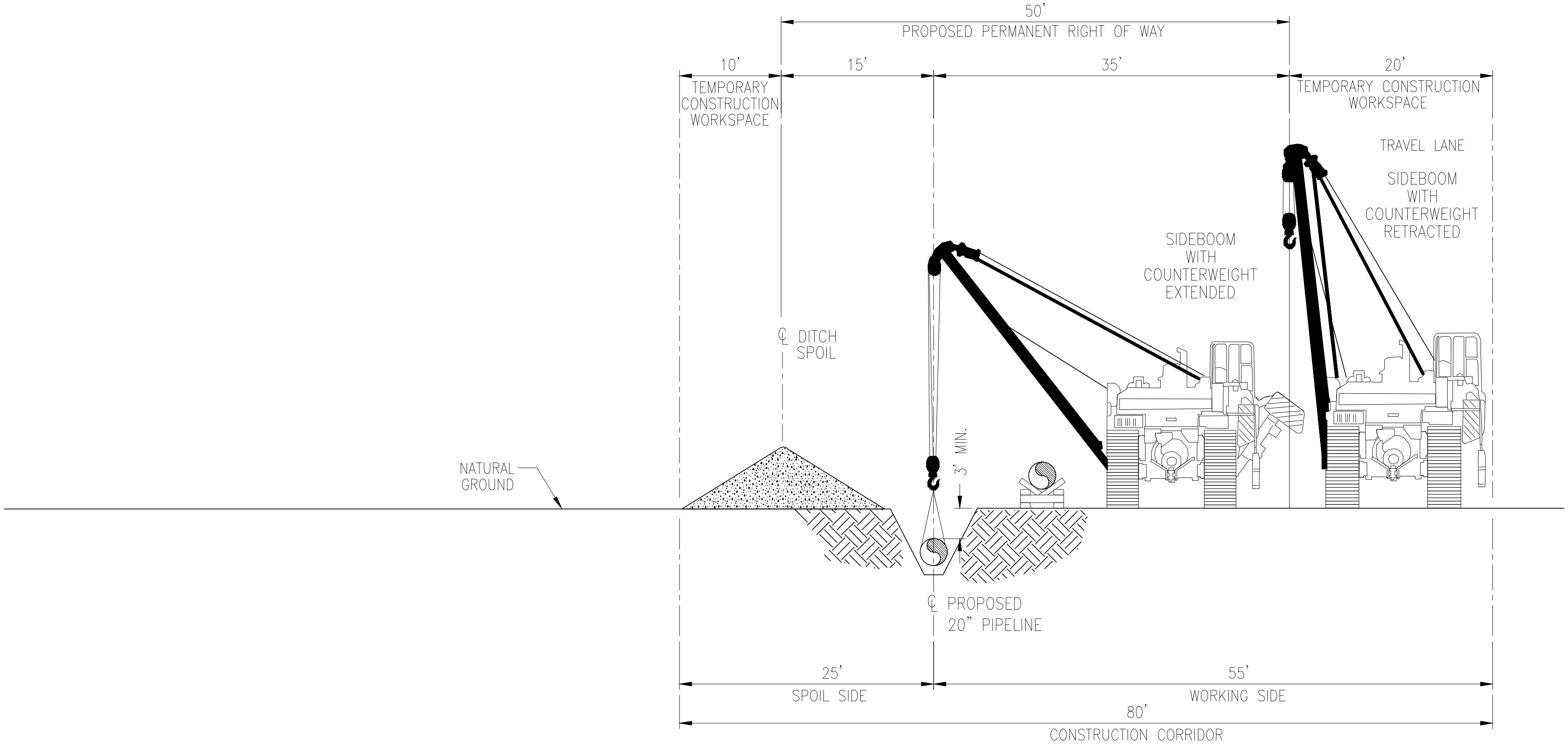
DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 24" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_02	SHEET 02
WO: 1113191		8:44:34 AM 9/23/2015	OF 24



TYPICAL CROSS SECTION NO. 3

STANDARD WORK CORRIDOR

BEGIN M.P.	END M.P.
56.5	59.6R
60.1R	64.1R
65.5	65.8
70.1R	70.2R
73.2	74.0
74.9	75.5
76.7	77.4
77.5	78.4R
79.5	80.0
83.7	85.0
83.9R	85.0
86.9R	87.1R
87.6	87.9
89.9	90.9
90.9	91.8R
93.1	93.3
93.4	95.6
95.6	105.9
106.4	109.3

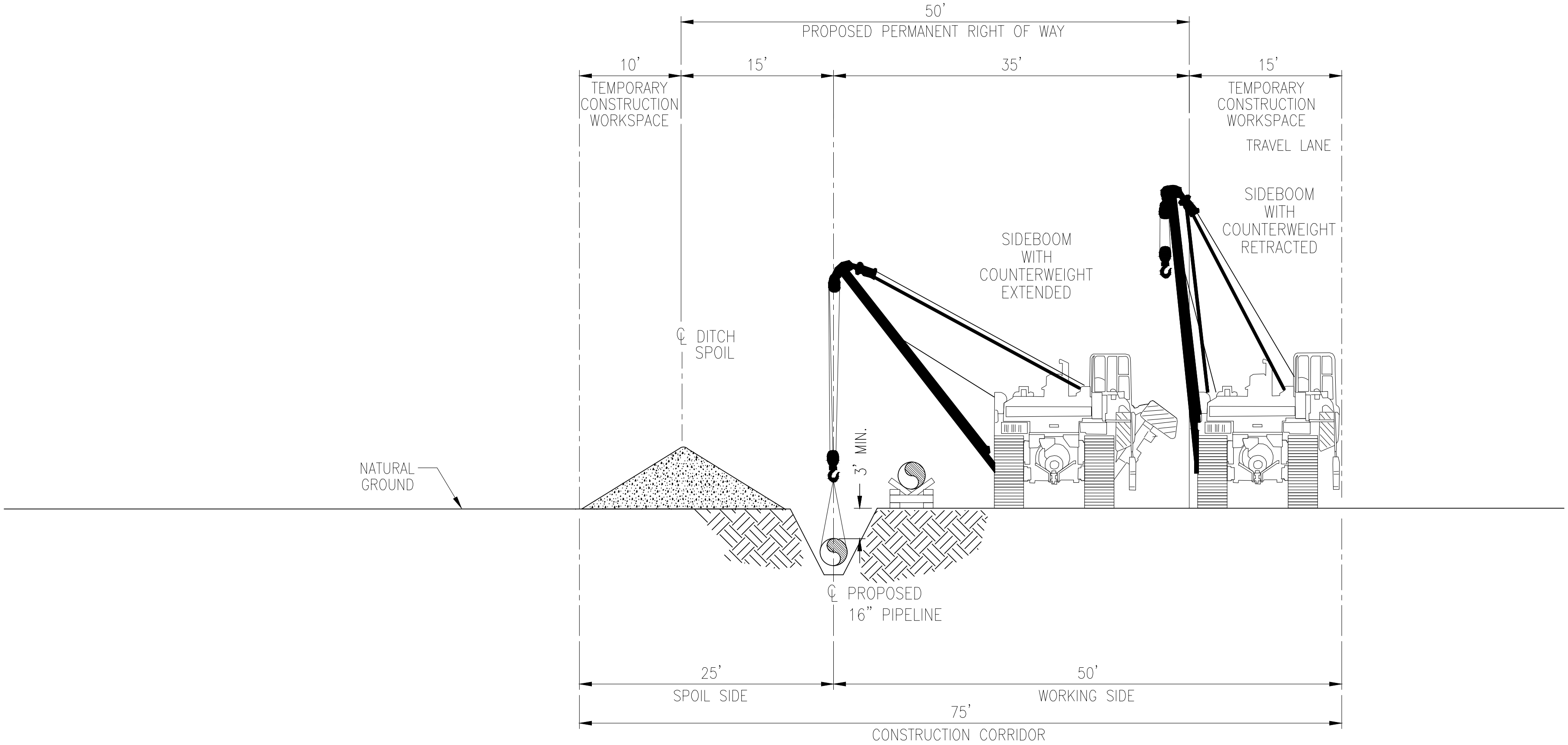
DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 20" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_03 9:22:06 AM 9/23/2015	SHEET 03 OF 24
WO: 1113191			



TYPICAL CROSS SECTION NO. 4

STANDARD WORK CORRIDOR

BEGIN M.P.	END M.P.
AGL 0.0	AGL 0.3
AGL 1.7	AGL 2.0

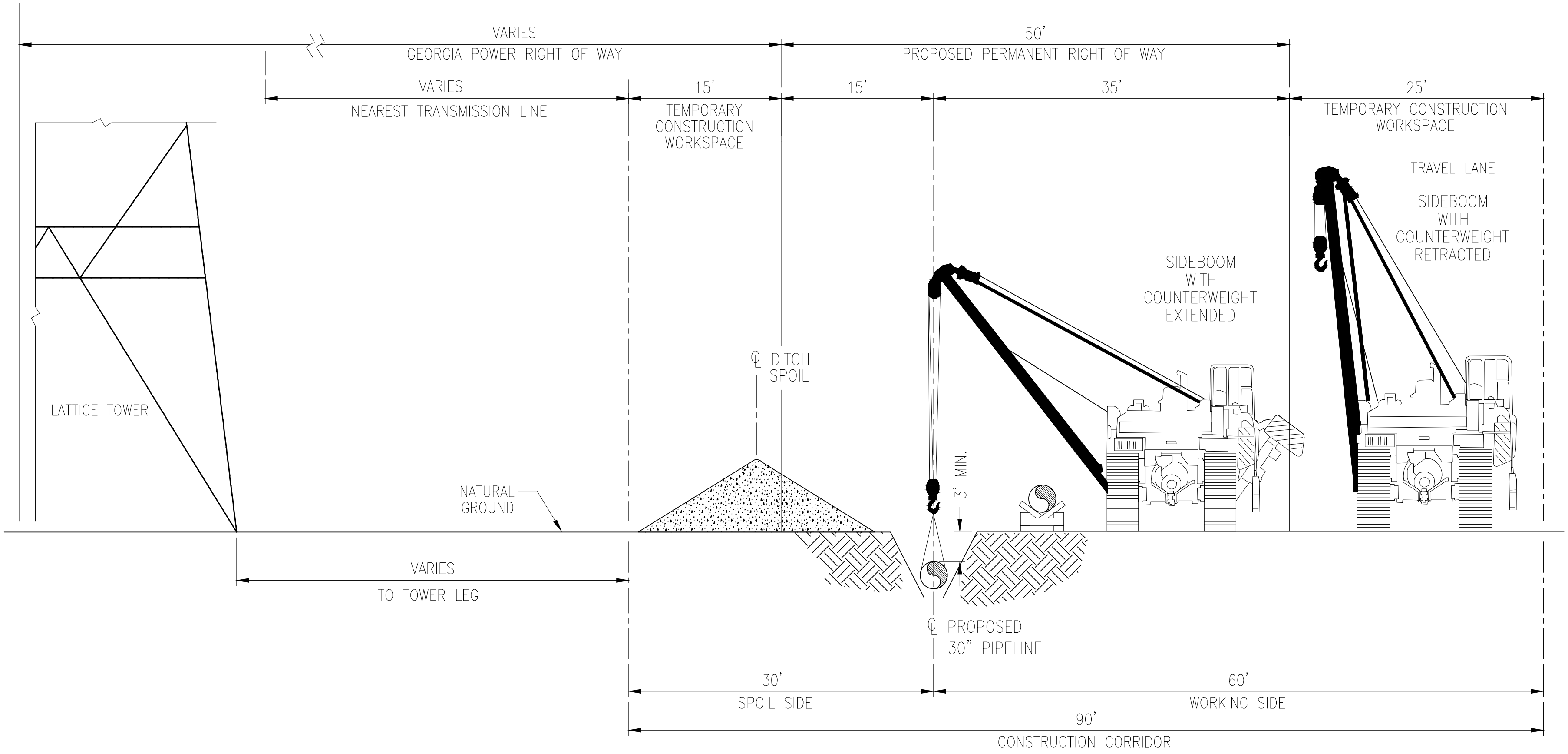
DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 16" AGL LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_04 9:26:53 AM 9/23/2015	SHEET 04 OF 24
WO: 1113191			



TYPICAL CROSS SECTION NO. 5

STANDARD WORK CORRIDOR
CO-LOCATED WITH POWER COMPANY RIGHT OF WAY

BEGIN M.P.	END M.P.
0.0	0.3
0.4	0.6
0.6	2.6
2.8	3.1
3.2	3.6
3.6	3.8
3.8	4.3
5.0	5.1
5.2	6.0
6.8	7.6R

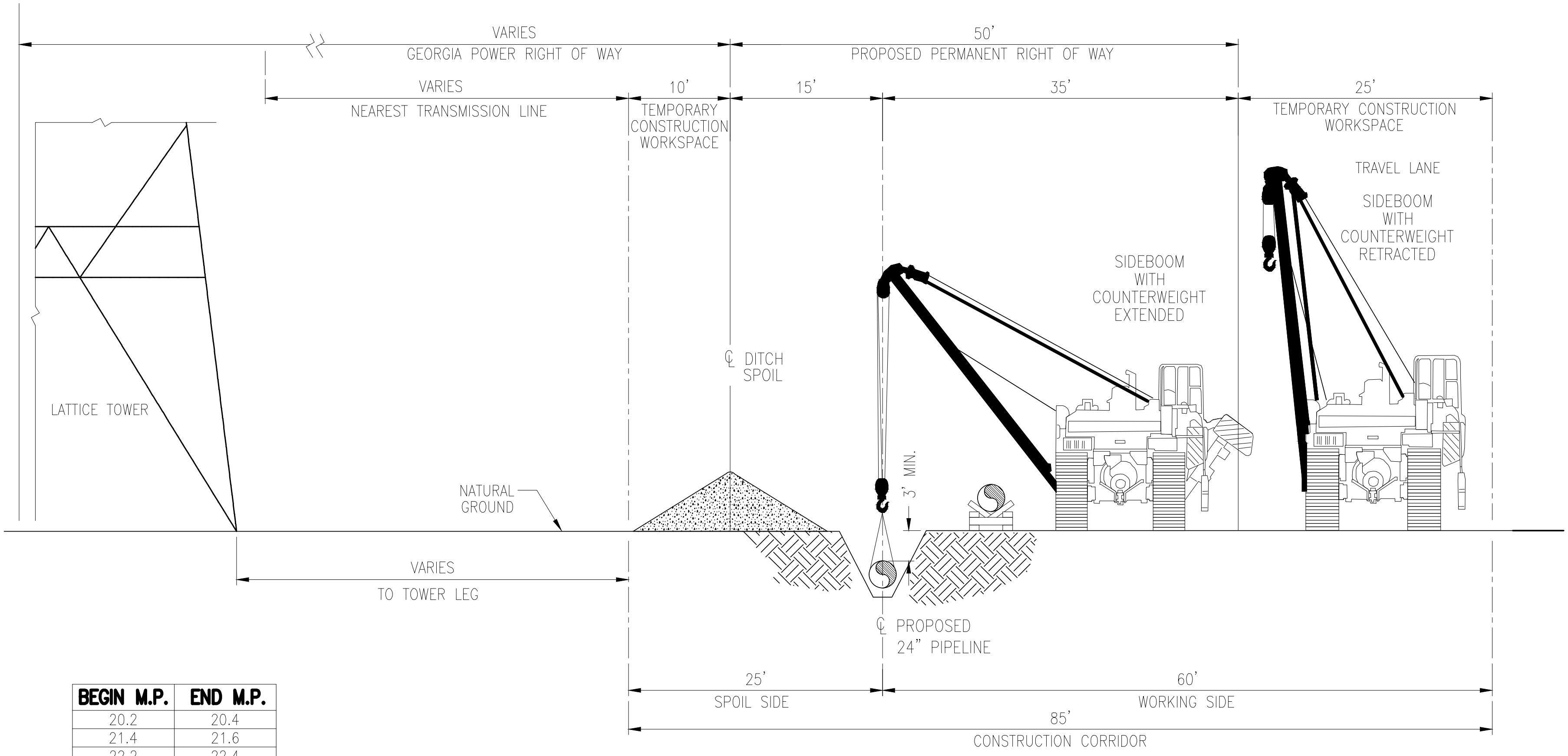
DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 30" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_05	SHEET 05
WO: 1113191		9:37:06 AM 9/23/2015	OF 24



BEGIN M.P.	**END M.P.**
20.2	20.4
21.4	21.6
22.2	22.4
25.3	25.9
26.5	26.7
26.9	27.0
27.1	28.2
28.3	30.0
30.1	30.3
30.5	30.8
31.7R	32.2
32.4	32.5
32.6	32.8
32.9	33.4
33.6	34.7R
34.7R	34.9R
34.9R	37.0
37.7	40.2
43.9R	44.2R
53.6R	54.0R
54.3R	54.7R
55.2R	55.3R
56.2	56.5

TYPICAL CROSS SECTION NO. 6

STANDARD WORK CORRIDOR
CO-LOCATED WITH POWER COMPANY RIGHT OF WAY

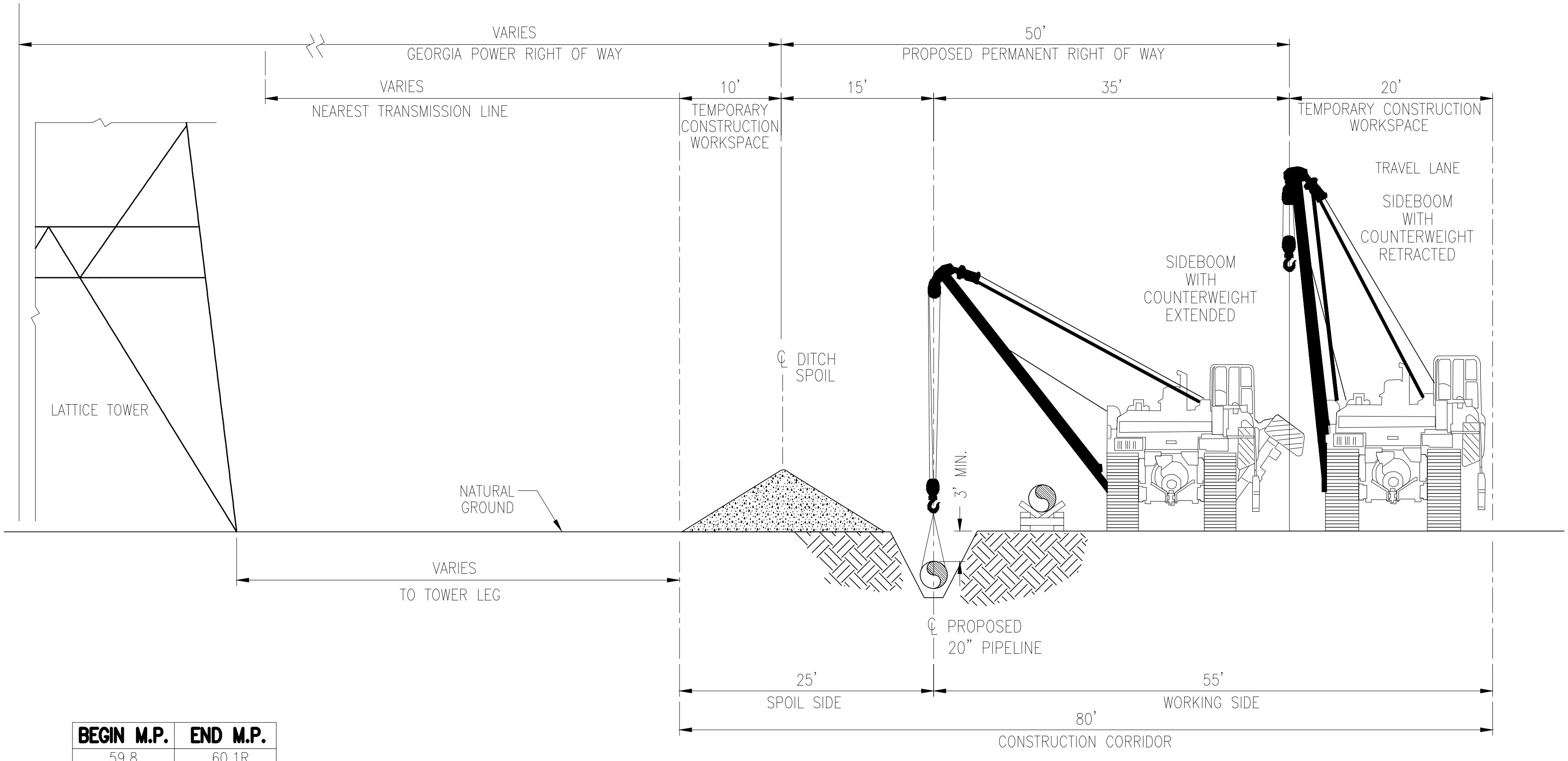
DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 24" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_06 9:54:59 AM 9/23/2015	SHEET 06 OF 24
WO: 1113191			



BEGIN M.P.	END M.P.
59.8	60.1R
64.1R	64.8
64.9	65.5
65.8	69.7
69.8R	70.0R
70.0R	70.1R
70.2R	72.9
73.0	73.2
74.0	74.9
75.5	76.6
77.4	77.5
78.1	79.1
79.1	79.5
80.0	83.7
85.0	86.5
86.6	86.9R
87.1R	87.5
87.9	89.6
89.7	89.9
91.8R	92.8
92.8	93.1
105.9	106.4

TYPICAL CROSS SECTION NO. 7

STANDARD WORK CORRIDOR
CO-LOCATED WITH POWER COMPANY RIGHT OF WAY

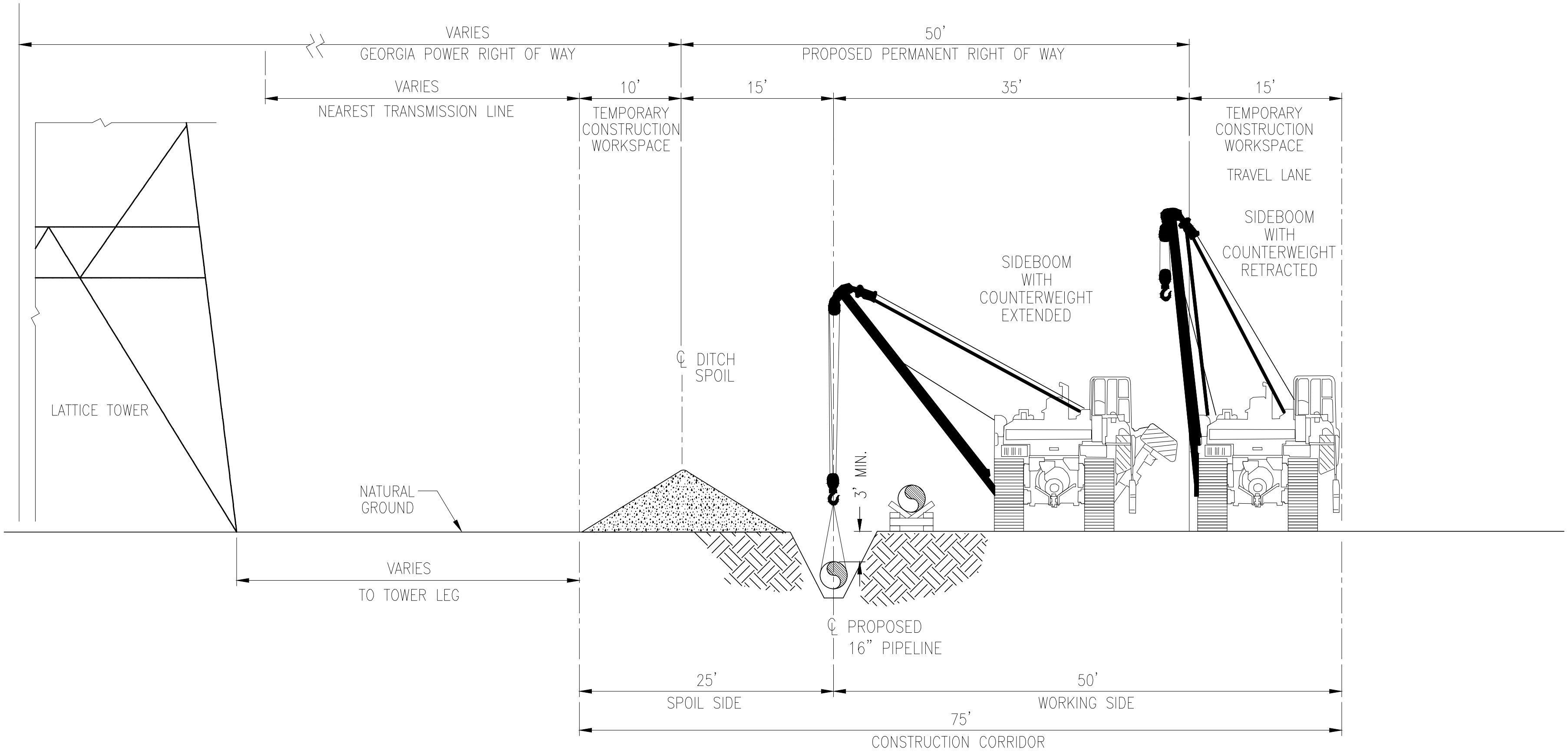
DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 20" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_07 10:22:01 AM 9/23/2015	SHEET 07 OF 24
WO: 1113191			



TYPICAL CROSS SECTION NO. 8

STANDARD WORK CORRIDOR
CO-LOCATED POWER COMPANY RIGHT OF WAY

BEGIN M.P.	END M.P.
AGL 0.3	AGL 0.4
AGL 0.4	AGL 1.7

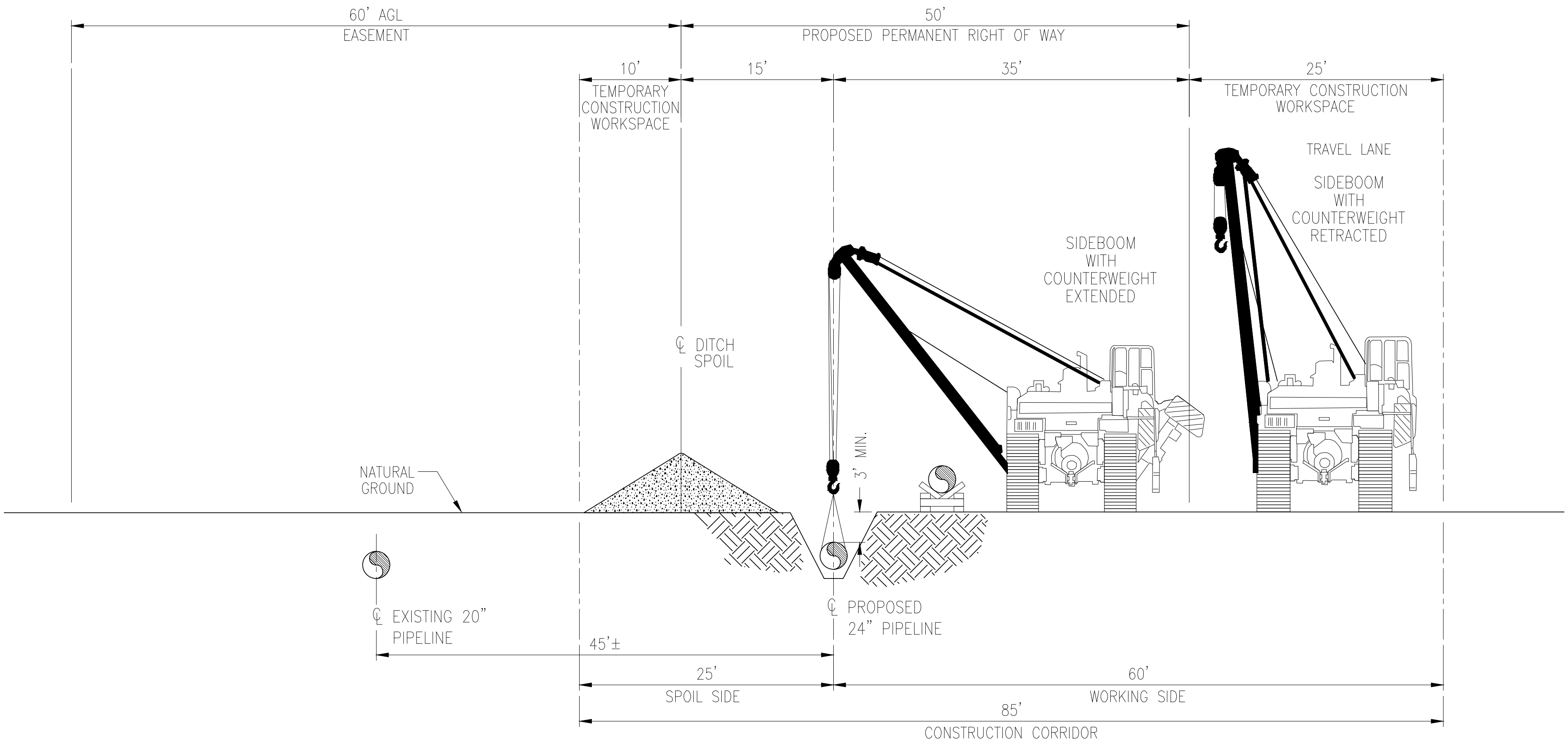
DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 16" AGL LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_08 10:25:33 AM 9/23/2015	SHEET 08 OF 24
WO: 1113191			



TYPICAL CROSS SECTION NO. 9

STANDARD WORK CORRIDOR
CO-LOCATED WITH AGL PIPELINE

BEGIN M.P.	END M.P.
8.9	9.0
9.1	9.8
9.8	9.9
10.5	10.8
11.0R	11.3R
12.3	12.5
12.5	14.8
14.9	15.0
15.4	17.4
19.2	19.8
20.0	20.1
20.5	21.3
21.6	22.1

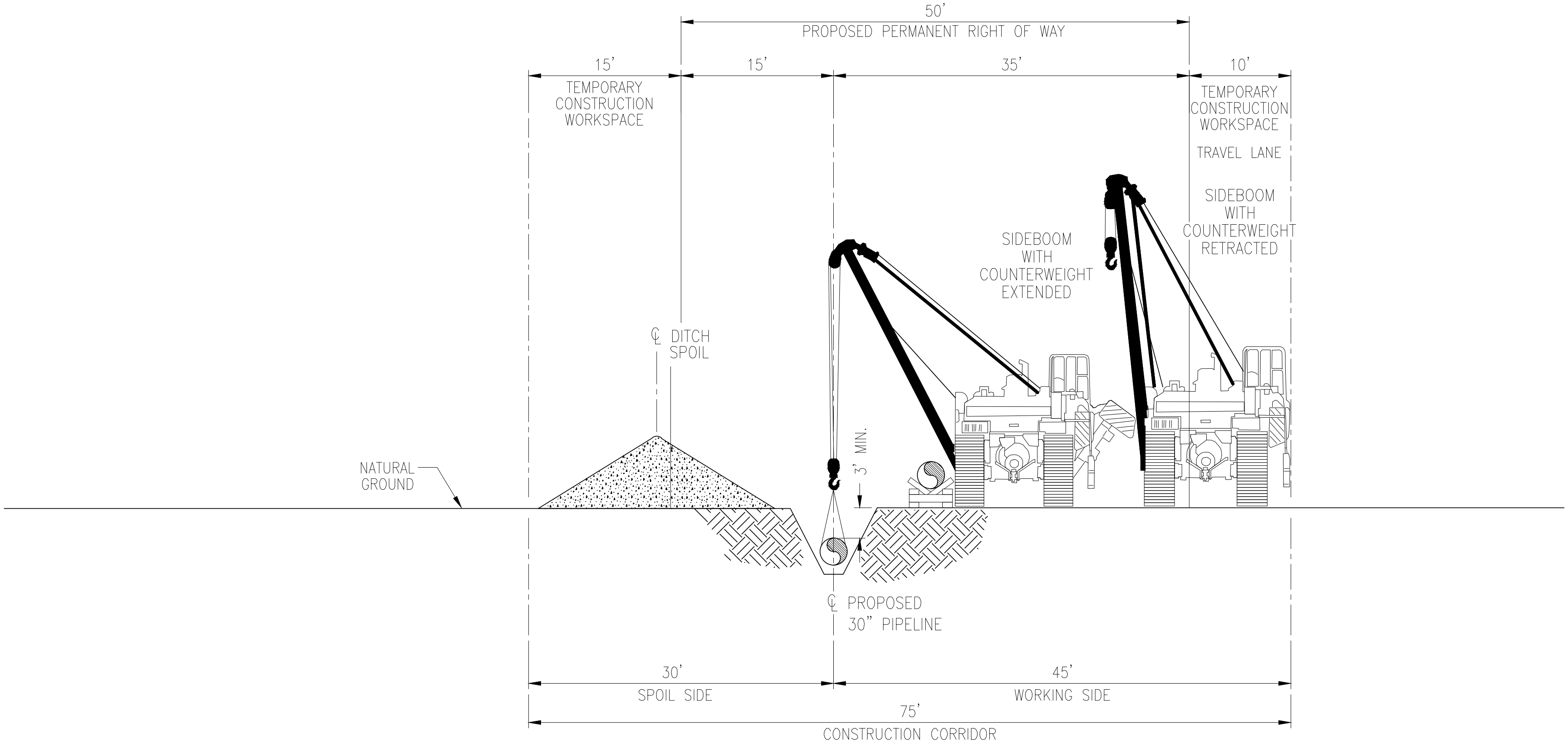
DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 24" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_09	SHEET 09
WO: 1113191		10:31:45 AM 9/23/2015	OF 24



TYPICAL CROSS SECTION NO. 10

REDUCED WORK CORRIDOR
WETLAND CROSSING

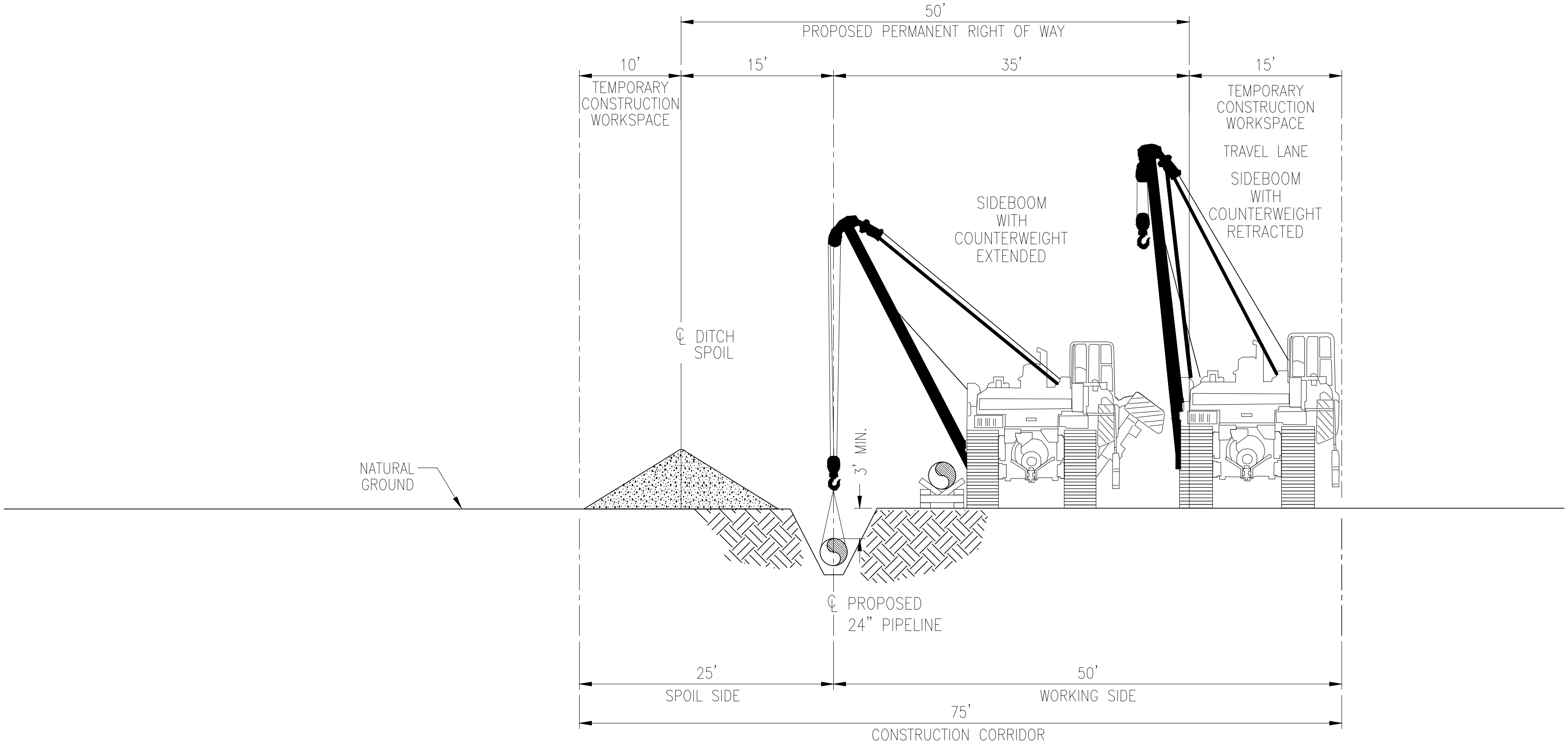
DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 30" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_10	SHEET 10
WO: 1113191		10:32:42 AM 9/23/2015	OF 24



TYPICAL CROSS SECTION NO. 11

REDUCED WORK CORRIDOR
WETLAND CROSSING

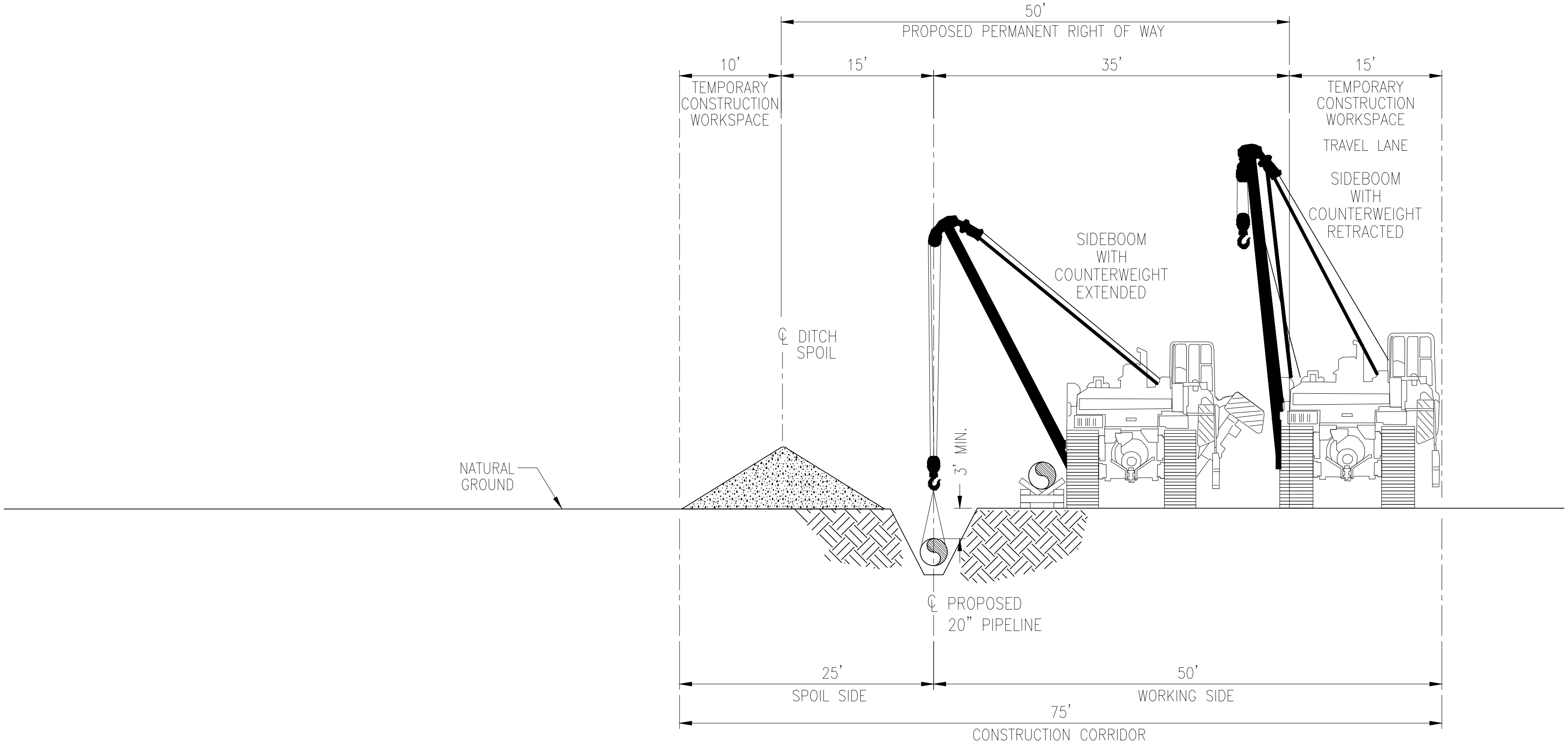
DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 24" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_11 10:33:10 AM 9/23/2015	SHEET 11 OF 24
WO: 1113191			



TYPICAL CROSS SECTION NO. 12

REDUCED WORK CORRIDOR
WETLAND CROSSING

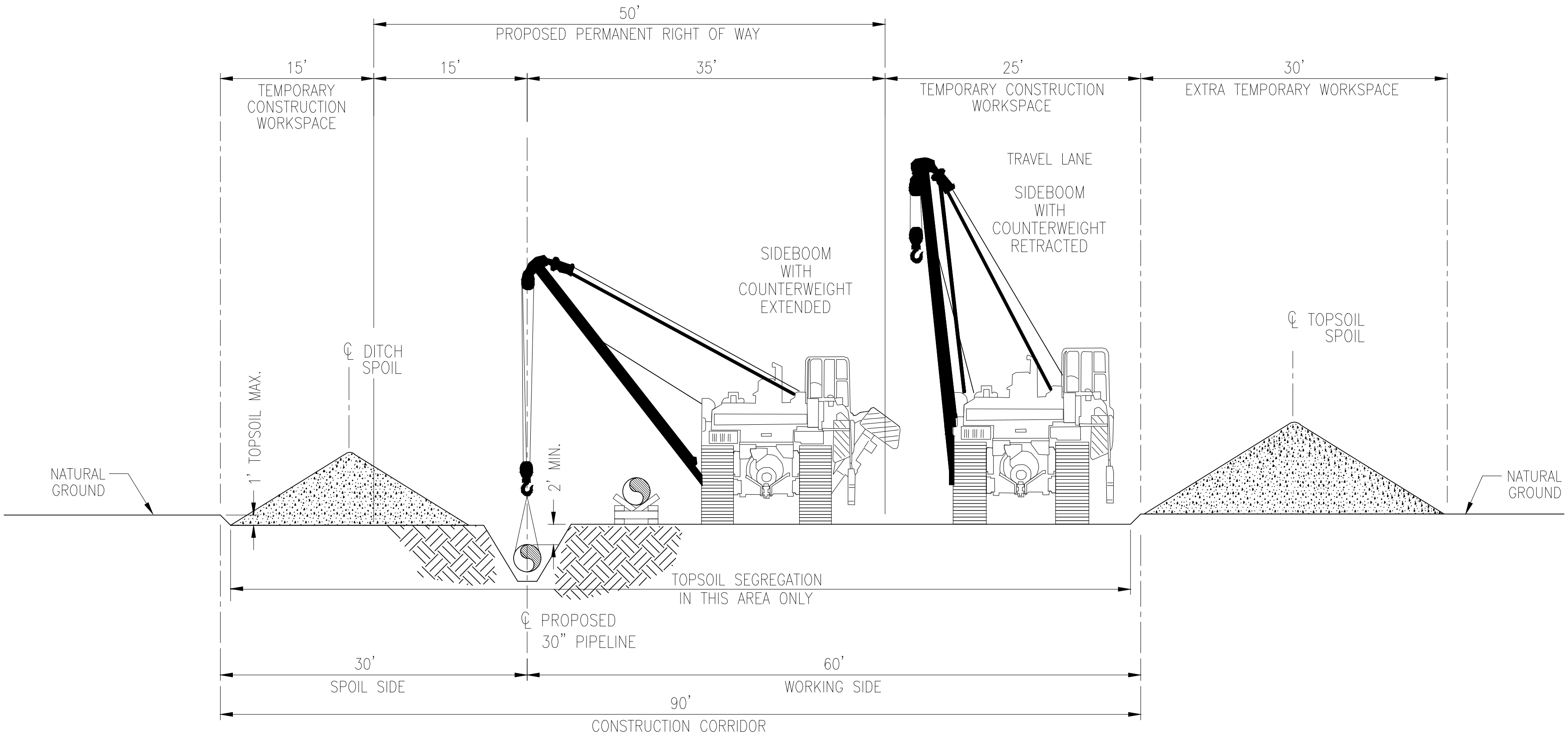
DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 20" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_12	SHEET 12
WO: 1113191		10:33:41 AM 9/23/2015	OF 24



TYPICAL CROSS SECTION NO. 13

STANDARD WORK CORRIDOR
FULL WIDTH TOPSOIL SEGREGATION

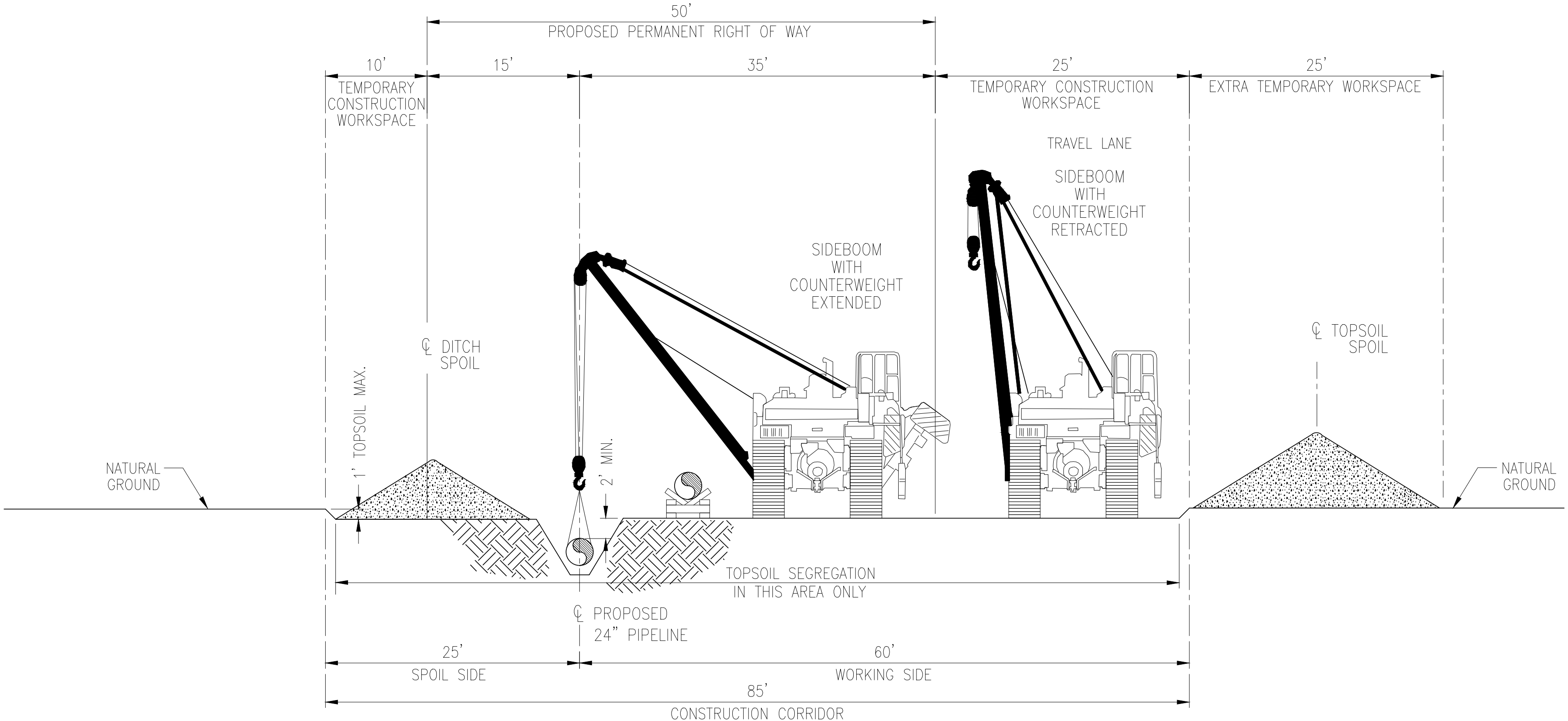
BEGIN M.P.	END M.P.
1.7	1.9
2.0	2.1
2.2	2.3
2.4	2.5
2.8	2.9
3.4	3.5

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 30" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CMO	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_13 4:40:59 PM 9/23/2015	SHEET 13 OF 24
WO: 1113191			



BEGIN M.P.	END M.P.
8.0	8.1
8.2	8.3
8.5	8.7
15.3	15.5
15.8	15.9
16.2	16.5
16.9	17.5
17.6	17.6
23.1	23.3
27.8	27.8
33.8	33.9
46.2R	46.3R
46.8R	46.9R
47.0R	47.0R
54.1	54.2
54.3	54.3
54.4	54.5
54.6	54.8
54.9	55.2
55.4	55.6
55.7	55.8
55.9	56.4

TYPICAL CROSS SECTION NO. 14

STANDARD WORK CORRIDOR
FULL WIDTH TOPSOIL SEGREGATION

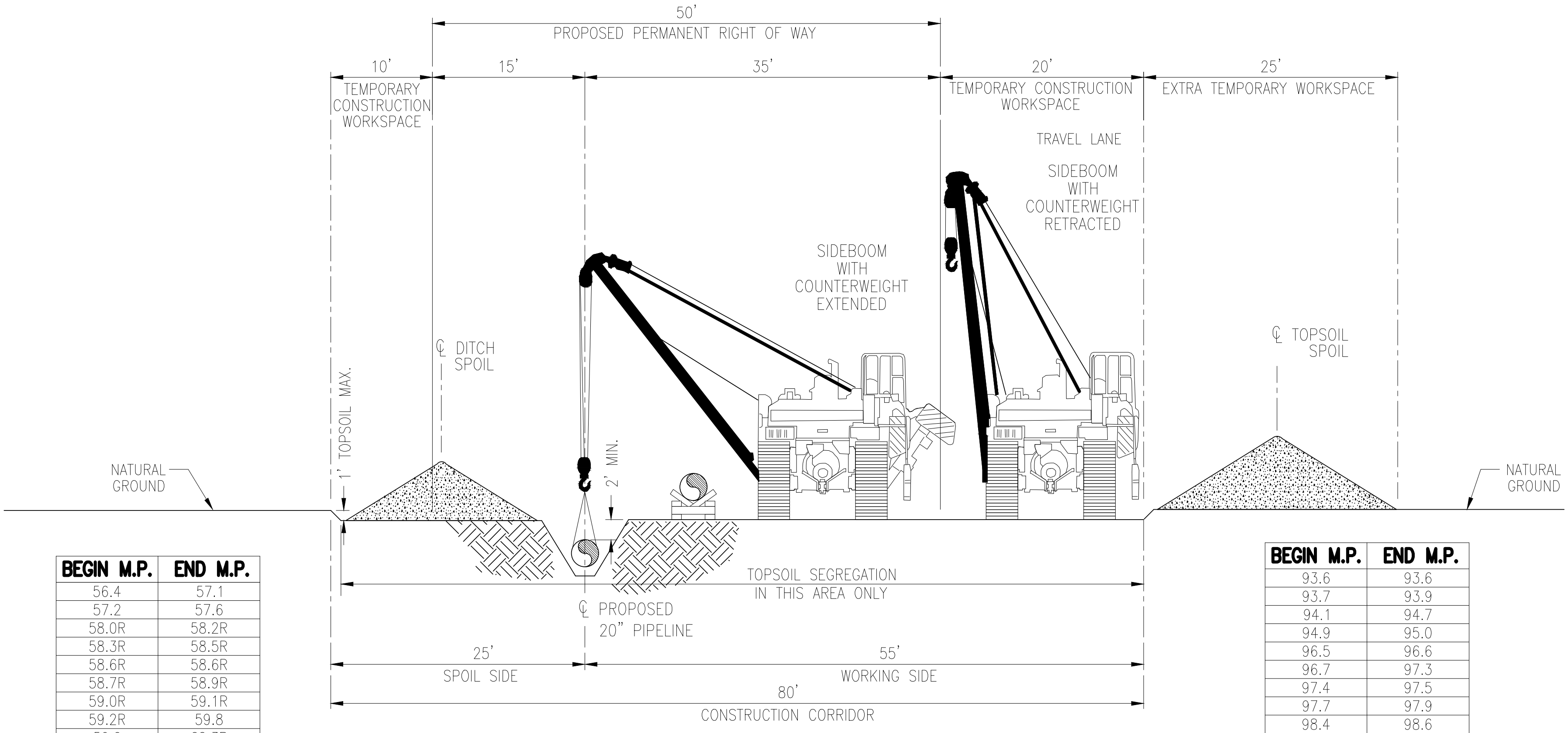
DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 24" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_14 4:41:55 PM 9/23/2015	SHEET 14 OF 24
WO: 1113191			



BEGIN M.P.	END M.P.
56.4	57.1
57.2	57.6
58.0R	58.2R
58.3R	58.5R
58.6R	58.6R
58.7R	58.9R
59.0R	59.1R
59.2R	59.8
59.9	60.3R
60.4R	60.4R
60.6R	60.7R
60.6	61.0
61.8	61.9
62.4	62.4
62.7	63.0
63.2	63.4
63.5	63.5
63.8	63.9
64.0	64.2
64.9	65.0
68.2	68.4
68.6	68.8
73.1	73.4
75.7	75.7
79.9	80.0
82.5	82.7
83.0	83.1
83.6	83.8
87.2	87.2
89.7	89.8
89.9	90.0
92.2R	92.4
93.5	93.5

TYPICAL CROSS SECTION NO. 15

STANDARD WORK CORRIDOR
FULL WIDTH TOPSOIL SEGREGATION

BEGIN M.P.	END M.P.
93.6	93.6
93.7	93.9
94.1	94.7
94.9	95.0
96.5	96.6
96.7	97.3
97.4	97.5
97.7	97.9
98.4	98.6
98.7	98.7
100.3	100.8
100.9	101.1
105.2	105.4
105.9	106.0
106.2	106.3
106.5	106.7
107.5	107.6
107.8	108.1

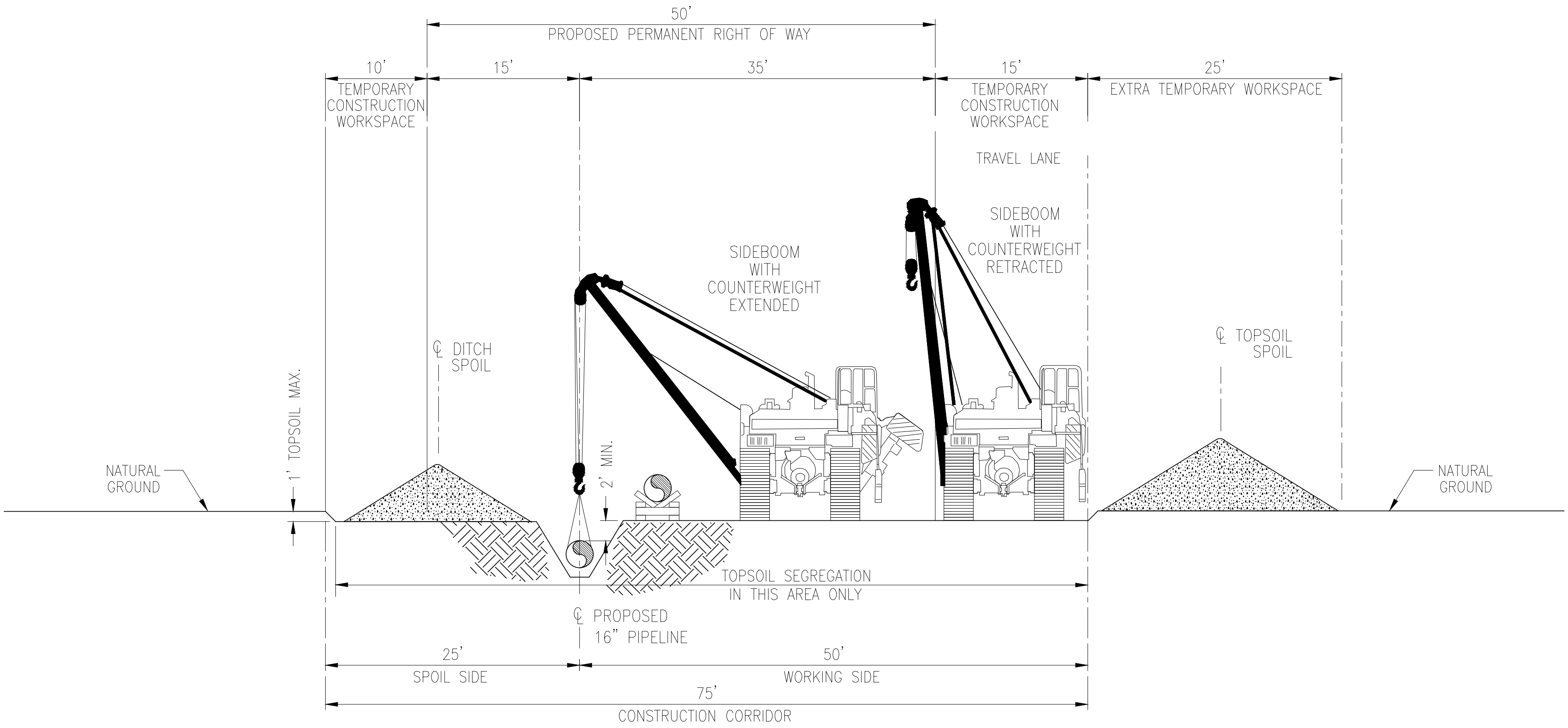
DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 20" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_15 4:45:52 PM 9/23/2015	SHEET 15 OF 24
WO: 1113191			



TYPICAL CROSS SECTION NO. 16

STANDARD WORK CORRIDOR
FULL WIDTH TOPSOIL SEGREGATION

BEGIN M.P.	END M.P.
0.7	0.9
1.0	1.3

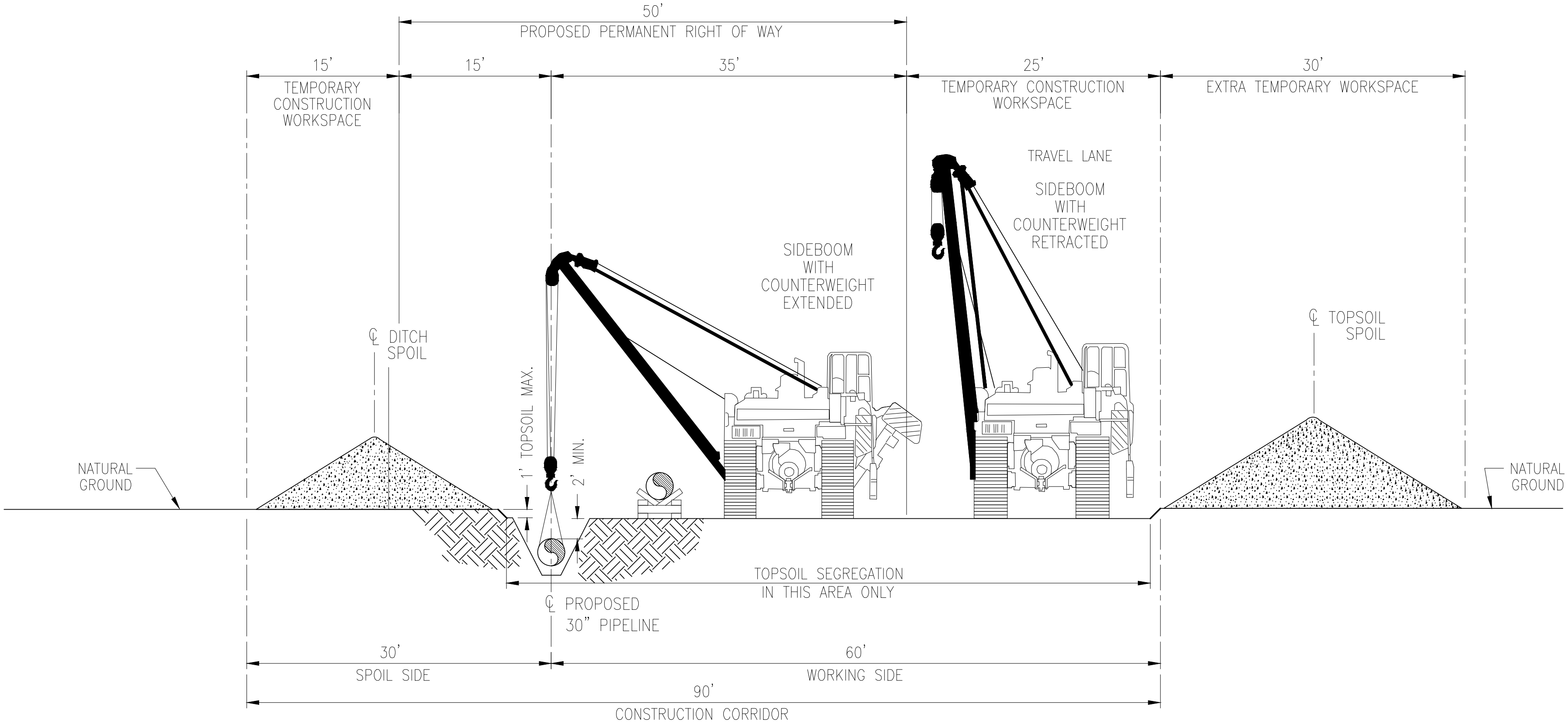
DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 16" AGL LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
APPROVED BY: WBF	DATE: 03/06/15	DRAWING NUMBER: F-D-00.00_16 4:46:49 PM 9/23/2015	SHEET 16 OF 24
WO: 1113191			



TYPICAL CROSS SECTION NO. 17

STANDARD WORK CORRIDOR
DITCH AND WORKING SIDE TOPSOIL SEGREGATION

BEGIN M.P.	END M.P.
3.0	3.0

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 30" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	
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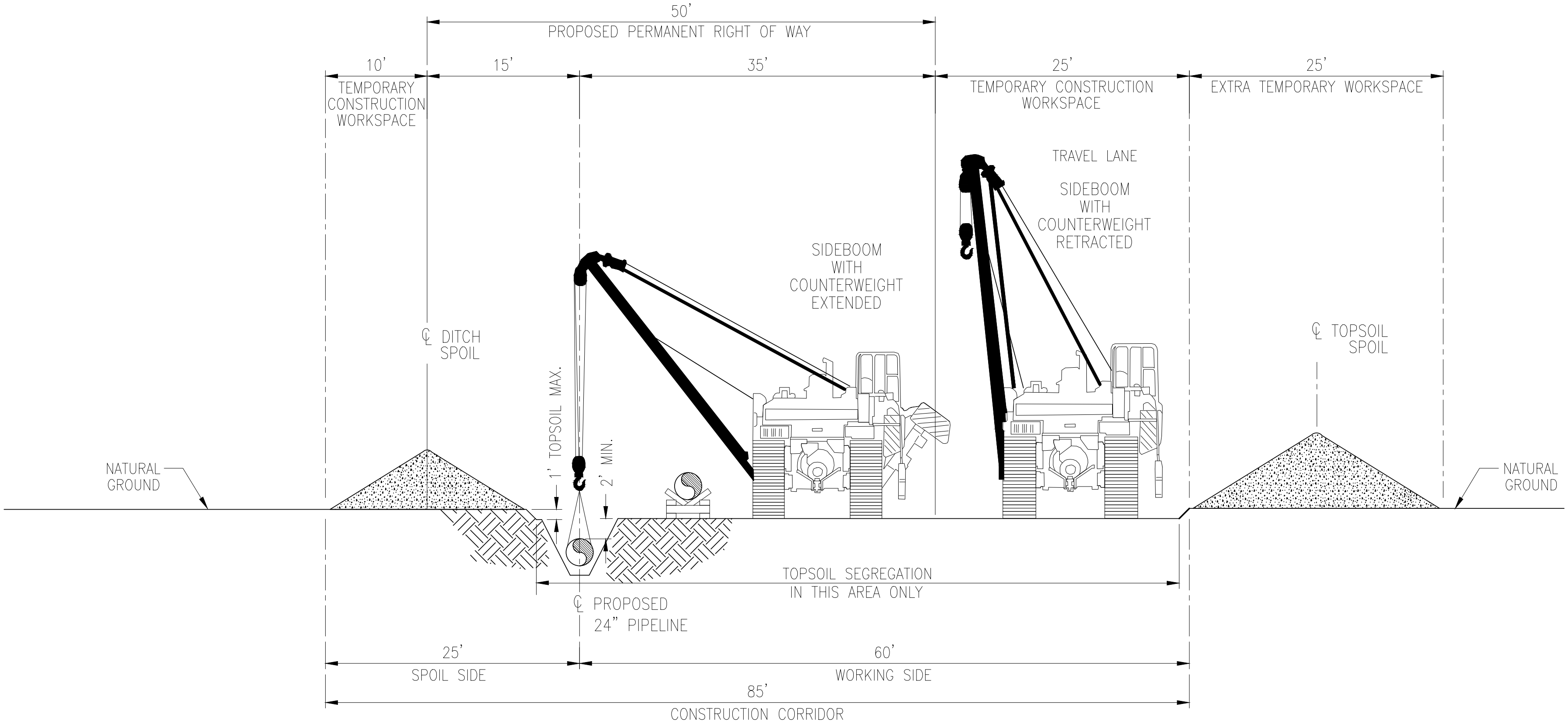
WO: 1113191			



TYPICAL CROSS SECTION NO. 18

STANDARD WORK CORRIDOR
DITCH AND WORKING SIDE TOPSOIL SEGREGATION

BEGIN M.P.	END M.P.
27.7	27.7

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 24" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

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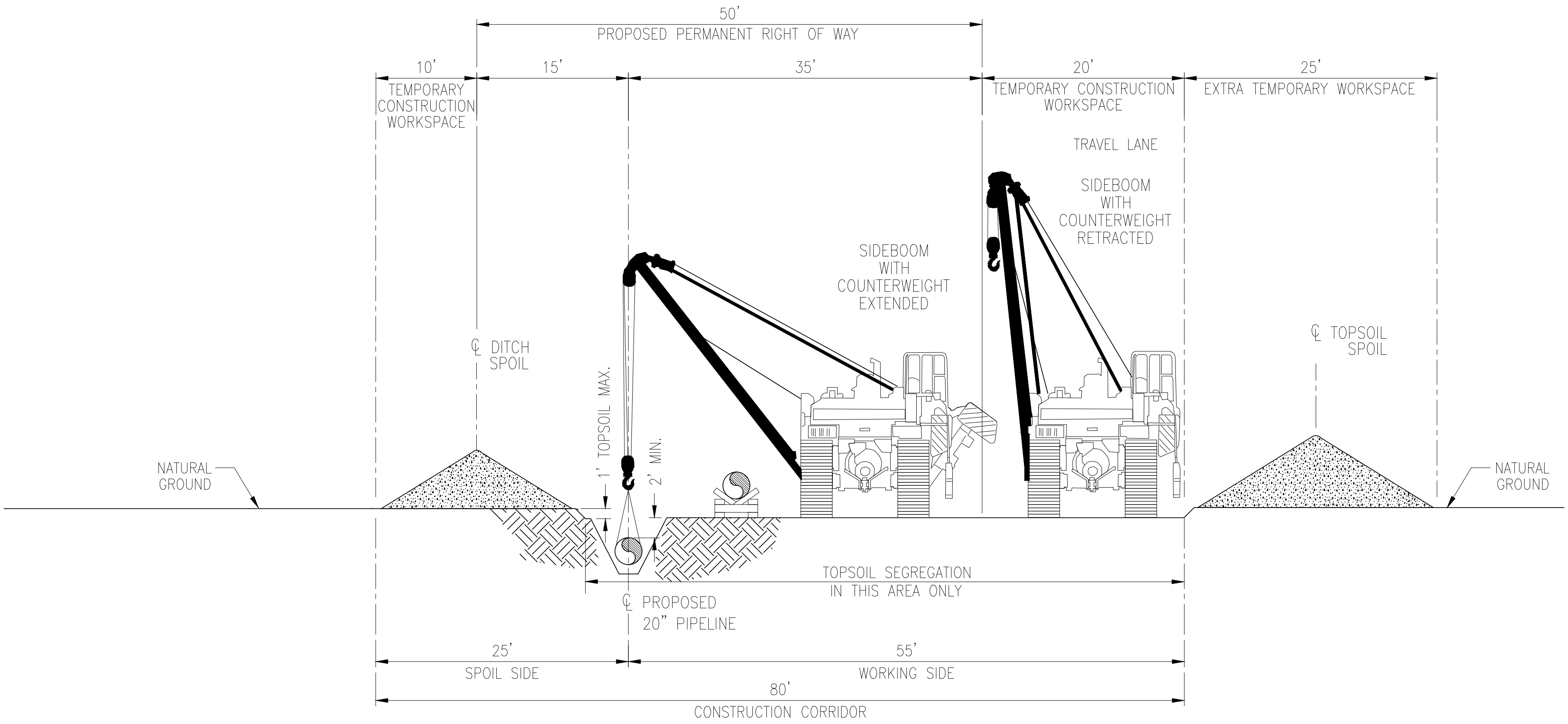
WO: 1113191			OF 24



TYPICAL CROSS SECTION NO. 19

STANDARD WORK CORRIDOR
DITCH AND WORKING SIDE TOPSOIL SEGREGATION

BEGIN M.P.	END M.P.
57.2	57.2
57.7	57.7
62.0	62.1
64.8	64.8
81.8	81.9
104.5	104.5

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 20" DALTON LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: CTR	DATE: 01/26/15	ISSUED FOR BID:	SCALE: NTS
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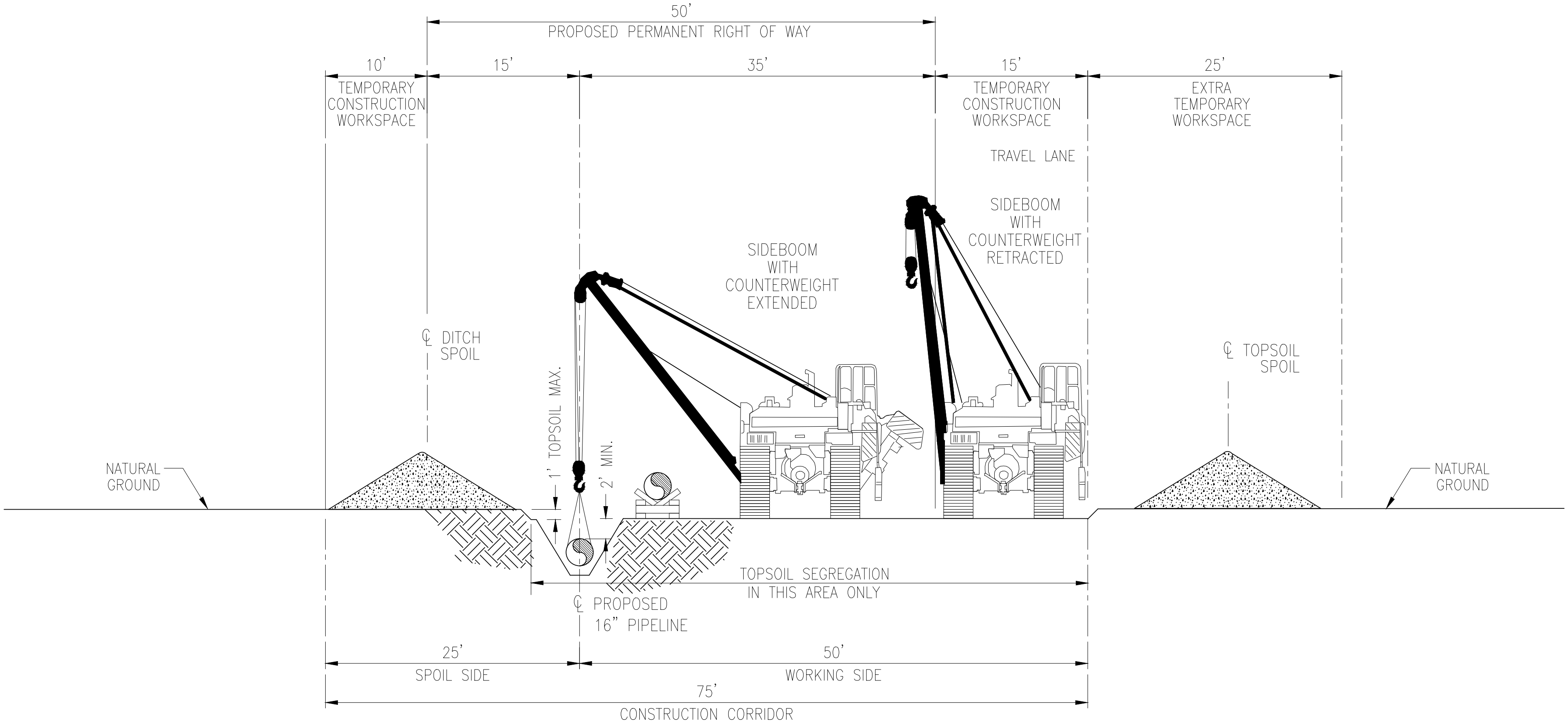
WO: 1113191			



TYPICAL CROSS SECTION NO. 20

STANDARD WORK CORRIDOR
DITCH AND WORKING SIDE TOPSOIL SEGREGATION

BEGIN M.P.	**END M.P.**
AGL 1.4	AGL 1.4

DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED 16" AGL LATERAL
TYPICAL RIGHT OF WAY CROSS SECTION

Williams.

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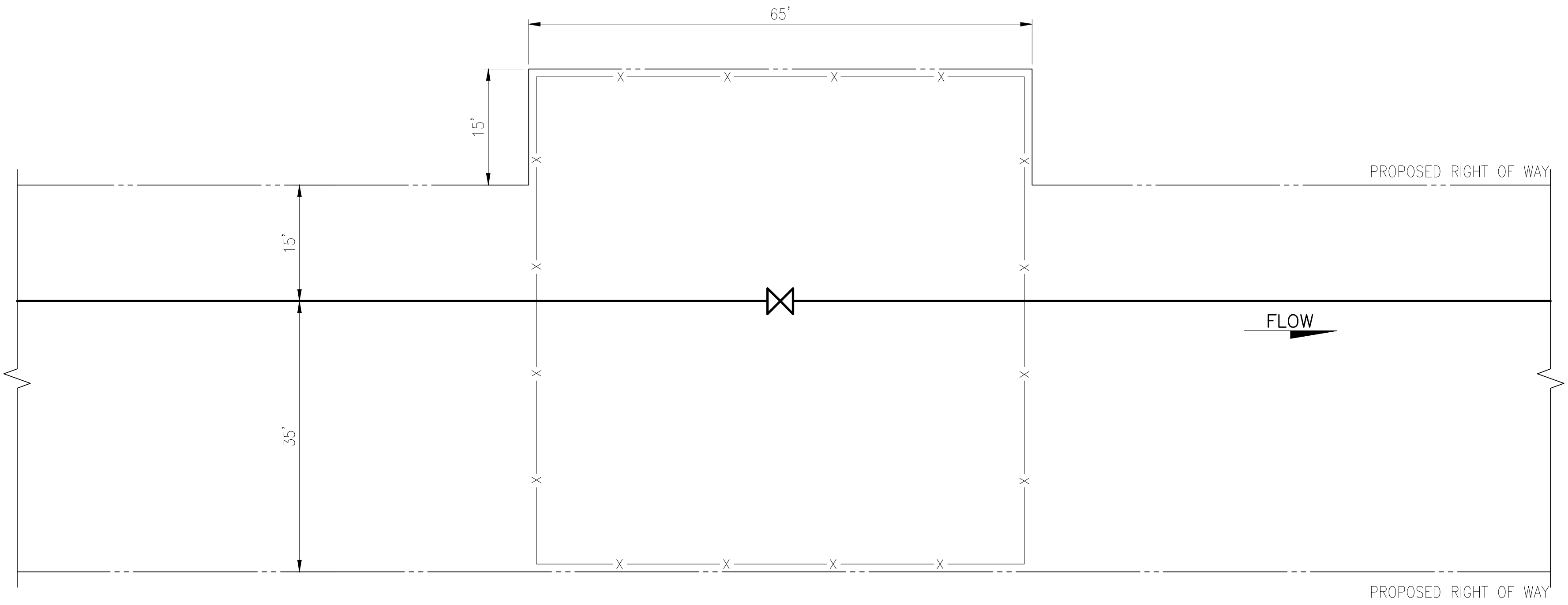

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
TYPICAL VALVE SITE LEFT CONFIGURATION

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-SSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

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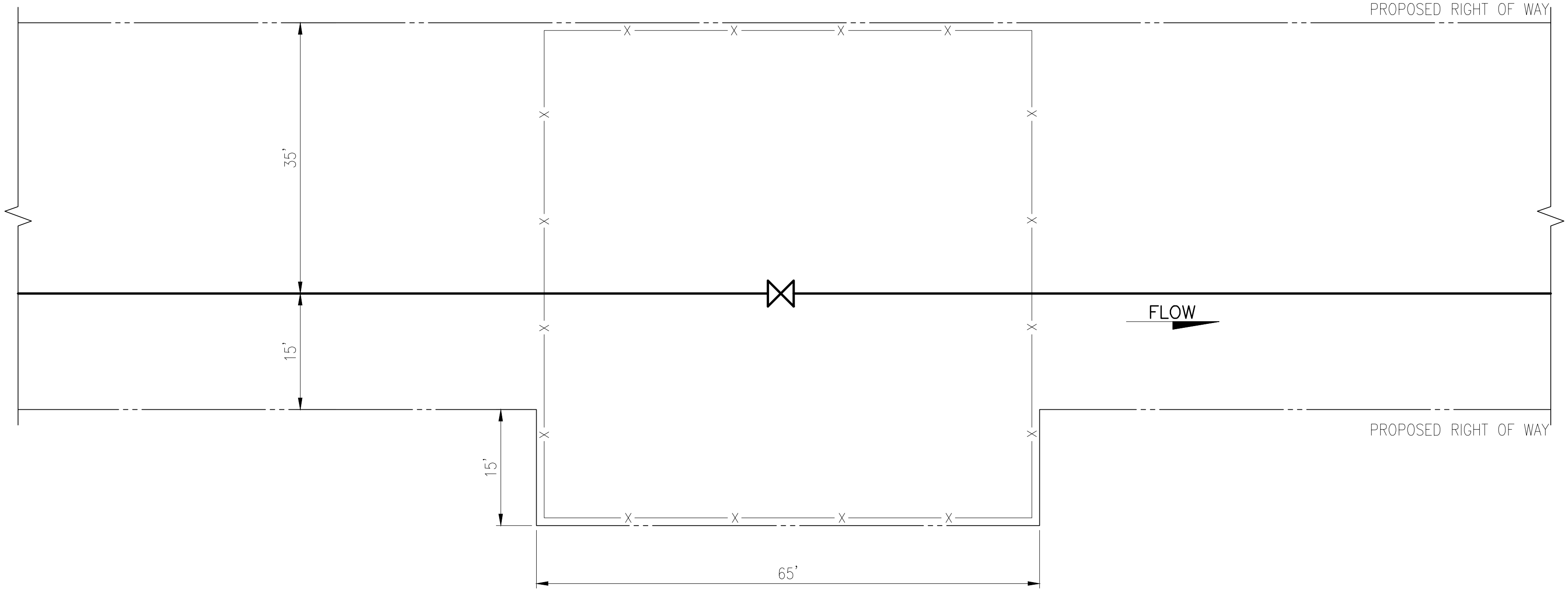

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
TYPICAL VALVE SITE RIGHT CONFIGURATION

Williams.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/14/15	RJB	RE-SSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

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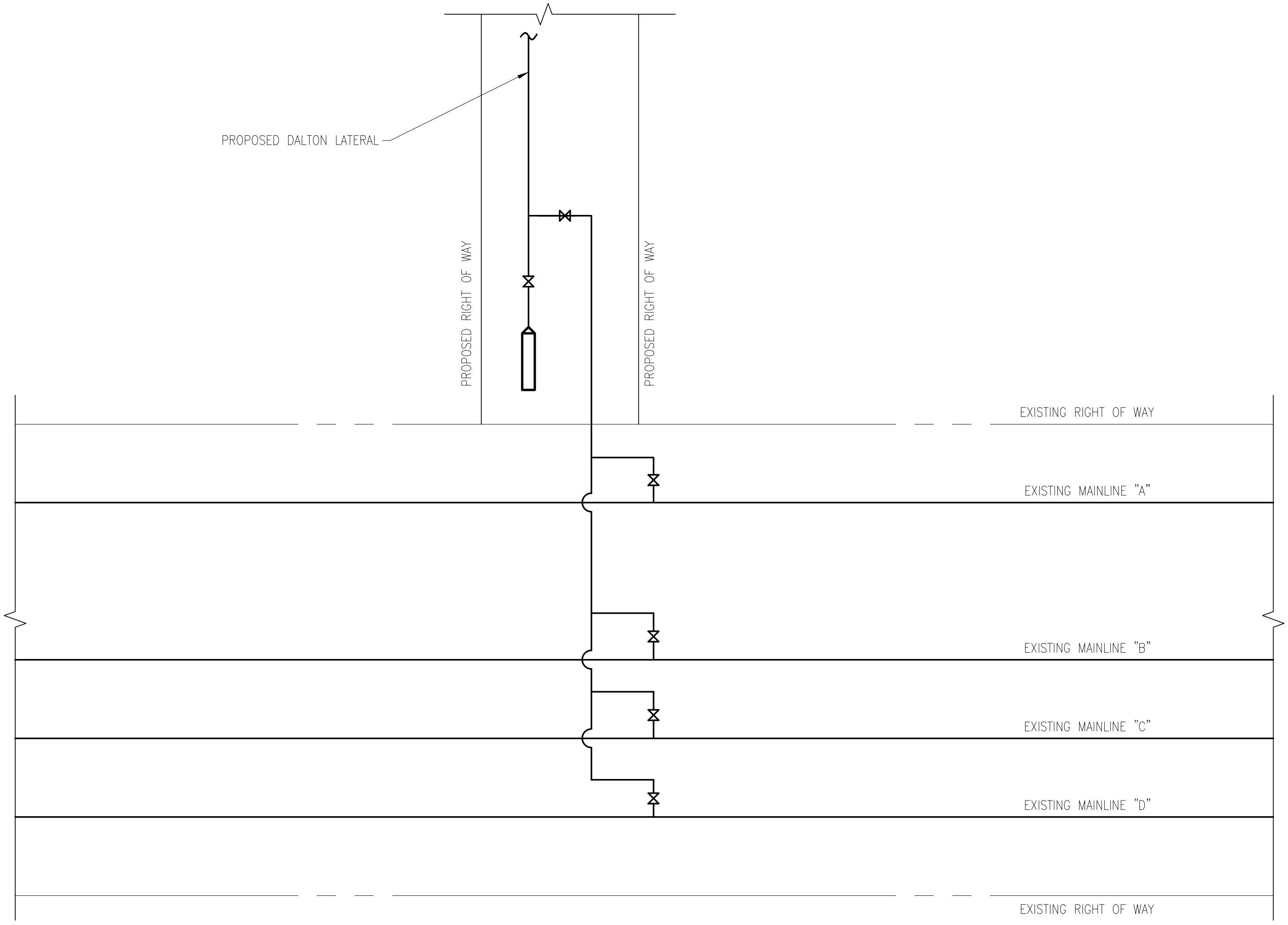

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B	07/14/15	RJB	RE-ISSUED FOR FERC			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
TIE-IN AT MAINLINE
M.P. 0.00

Williams.

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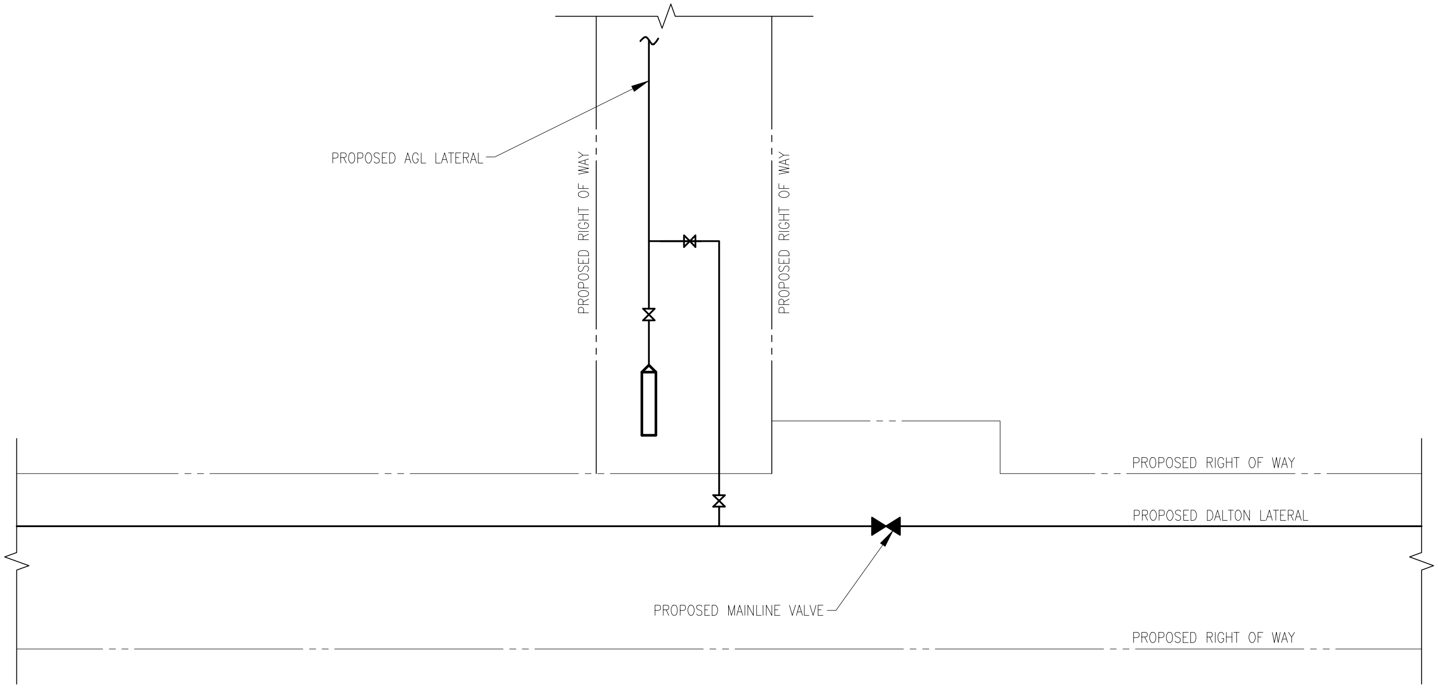
WO: 1113191		11:00:04 AM 9/23/2015	OF 24



DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
AGL LATERAL TIE-IN AT DALTON LATERAL
M.P. 0.00

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
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WO: 1113191			

APPENDIX E

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC'S UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN AND WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES

Transcontinental Gas Pipe Line Company, LLC

Upland Erosion Control, Revegetation, and Maintenance Plan

Dalton Expansion Project

Docket No. CP15-

March 2015

Table 1

Justifications for Transco's Proposed Modifications to the FERC Upland Erosion Control, Revegetation, and Maintenance Plan

Section	FERC Version [a]	Transco Version [b]	Transco Justification [c]
I	(Entire Section I has been replaced)	***As outlined below, Transcontinental Gas Pipe Line Company, LLC (Transco) is proposing modifications to the FERC Plan (May 2013 Version) for the Dalton Expansion Project. This section will apply to all non-wetland areas of the Project. Wetland and waterbody features are addressed in Transco's Wetland and Waterbody Construction and Mitigation Procedures (Transco's Procedures).*** ***Deviations that involve measures different from those contained in this Plan will only be permitted as certificated by the Commission or by written approval of the Director of the Office of Energy Projects (OEP) or designee.***	Provides an introduction to Transco's Plan.
II.A.4	(No existing text in FERC Version)	***Transco agrees to a FERC Third Party Compliance Monitoring Program for non-Federal and Federal land along the length of the Project.***	Commits Transco to a FERC Third Party Compliance Monitoring Program for non-Federal and Federal land along the length of the Project.
II.B.1	Ensuring compliance with the requirements of this Plan, the Procedures, the environmental conditions of the Certificate authorization, the mitigation measures proposed by the applicant (as approved and/or modified by the Certificate), other environmental permits and approvals, and environmental requirements in landowner easement agreements;	Ensuring compliance with the requirements of this Plan, ***Transco's*** Procedures, the environmental conditions of the Certificate authorization, the mitigation measures proposed by the applicant (as approved and/or modified by the Certificate), other environmental permits and approvals, and environmental requirements in landowner easement agreements;	Clarifies that Transco will implement modified FERC Wetland and Waterbody Construction and Mitigation Procedures (Transco's Procedures) for the Project.
III.A	The project sponsor must ensure that appropriate cultural resources and biological surveys have been conducted.	***Transco will ensure*** that appropriate cultural resources and biological surveys are conducted, as determined necessary by the appropriate federal and state agencies ***and that the extent of those surveys is sufficient to accommodate possible future need for activities outside certificated work areas (i.e., buffer areas).***	Clarifies that biological and cultural surveys have been conducted beyond the Project boundaries.

Table 1

Justifications for Transco's Proposed Modifications to the FERC Upland Erosion Control, Revegetation, and Maintenance Plan

Section	FERC Version [a]	Transco Version [b]	Transco Justification [c]
IV.A.1	Any project-related ground disturbing activities outside these Certificated areas, except those needed to comply with the Plan and Procedures (e.g., slope breakers, energy-dissipating devices, dewatering structures, drain tile system repairs) will require prior Director approval.	Any project-related ground disturbing activities outside these Certificated areas, except those needed to comply with ***this*** Plan and ***Transco's*** Procedures (e.g., ***diversion terraces,*** energy-dissipating devices, dewatering structures, drain tile system repairs) will require prior Director approval.	Clarifies that Transco will implement modified FERC Wetland and Waterbody Construction and Mitigation Procedures (Transco's Procedures) for the Project.
IV.A.2	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 Certificate condition. 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 (such as 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.	The construction right-of-way width for a project shall not exceed ***that described*** in the FERC application unless otherwise modified by a Certificate condition.	Removes the conditional 'or' statement. Transco proposes to use a nominal 90-foot-wide temporary construction ROW for Dalton Lateral - Segment 1 (30-inch OD pipeline), a nominal 85-foot-wide temporary construction ROW for Dalton Lateral - Segment 2 (24-inch OD pipeline), a nominal 80-foot-wide temporary construction ROW for Dalton Lateral - Segment 3 (20-inch OD pipeline), and a nominal 75-foot-wide Temporary Construction ROW for the Dalton Lateral - AGL Spur (16-inch OD pipeline) and a 75-foot-wide construction ROW in wetlands. Transco also proposes to use Extra work spaces (EWSs) in some upland and wetland areas, due to a variety of Project and site- specific considerations. The proposed increase in the nominal construction ROW will not impact or prevent the implementation of other measures to provide for upland erosion control and protection of waterbodies and wetlands. The proposed construction ROW will allow Transco to implement the FERC construction measures of Transco's Plan and Transco's Procedures while addressing site conditions and meeting OSHA regulations (29 CFR Part 1926.650-.652, Subpart P).

Table 1

Justifications for Transco's Proposed Modifications to the FERC Upland Erosion Control, Revegetation, and Maintenance Plan

Section	FERC Version [a]	Transco Version [b]	Transco Justification [c]
IV.F.1.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	Install temporary ***diversion terraces*** on all disturbed areas, as necessary to avoid excessive erosion. Temporary ***diversion terraces*** must be installed on slopes greater than ***1*** 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 ***1 400*** ***2-5 250*** ***5-10 125*** ***10-15 80*** ***15-20 60*** ***≥20 50***	Changed to be compliant with Georgia state standards. The revised Transco version results in closer spacing of the diversion terraces.
IV.F.4.a	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.	Spread mulch uniformly over the area to cover at least ***90*** 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.	Changed to be compliant with Georgia state standards. The revised Transco version results in a greater mulch coverage.
IV.F.4.c.(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;	Final grading and installation of permanent erosion control measures will not be completed in an area within **14** days after the trench in that area is backfilled (10 days in residential areas), as required in section V.A.1;	The Transco version replaces the FERC version with more conservative Georgia EPD requirements. Georgia EPD requires that disturbed areas are stabilized within 14 days of inactivity.
IV.F.4.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).	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). ***Netting of the appropriate size shall be used to anchor wood waste. Openings of the netting shall not be larger than the average size of the wood waste chips.***	Additional language to meet requirements per the GA EPD. The addition of netting improves the stability and performance of the wood chip mulch.

Table 1

Justifications for Transco's Proposed Modifications to the FERC Upland Erosion Control, Revegetation, and Maintenance Plan

Section	FERC Version [a]	Transco Version [b]	Transco Justification [c]
IV.F.4.f	Ensure that mulch is adequately anchored to minimize loss due to wind and water.	Ensure that mulch is adequately anchored ***immediately after application*** to minimize loss due to wind and water. ***Straw or hay mulch can be pressed into the soil with a disk harrow with the disk set straight or with a special packer disk. Disks may be smooth or serrated and should be 20 inches apart.***	The Transco version replaces the FERC version with more conservative Georgia EPD application and anchoring requirements.
V.A.1	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.	Complete final grading, topsoil replacement, and installation of permanent erosion control structures within ***14*** 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 diversion terraces, sediment barriers, and mulch) until conditions allow completion of cleanup.	The Transco version replaces the FERC version with more conservative Georgia EPD requirements. Georgia EPD requires that disturbed areas are stabilized within 14 days of inactivity.
V.D.3.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.	Seed disturbed areas in accordance with written recommendations for seed mixes, rates, and dates obtained from the **recommendations by the GSWCC included in the Manual for Erosion and Sediment Control in Georgia, Sixth Edition, 2014 .**	The Transco version replaces the FERC version with more conservative Georgia EPD requirements. These guidelines were created by the Georgia Soil and Water Conservation Commission and can be enforced by the EPD. EPD has authority over the local issuing authority.
V.D.3.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-c.	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-c***, or variances from this timing would be requested by Transco to FERC***.	Provides clarification for potential variance requests to complete seeding operations.

Table 1

Justifications for Transco's Proposed Modifications to the FERC Upland Erosion Control, Revegetation, and Maintenance Plan

Section	FERC Version [a]	Transco Version [b]	Transco Justification [c]
VII.A.2.	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.	Revegetation in non-agricultural areas shall be considered successful if ***100% of the soil surface is uniformly covered in permanent vegetation with a density of 70%, or greater.***	The Transco version replaces the FERC version with more specific Georgia EPD requirements. Additional requirements by the GA EPD in non-agricultural areas of the project quantifies the revegetation density.
VII.B.3.	(No existing text in FERC Version)	Water sampling and reporting will be submitted to the state agency when initiated at the beginning of the construction period until such time a notice of termination is submitted to the state.	Additional requirement by the GA EPD to minimize off-site sedimentation. The sampling process and procedures are required to be in accordance with the GAR10002 infrastructure permit section D.6. and section E
Entire Document	Slope Breaker	Diversion Terrace	Changed to be consistent with Georgia EPD terminology
Entire Document	Local soil conservation authority	Local Issuing Authority	Changed to be consistent with Georgia agency terminology

a – May 2013 FERC Upland Erosion Control, Revegetation, and Maintenance Plan

b – Changes indicated in ***bold italic*** text

c - Justification stating rationale for each proposed modification; Modifications are required to provide equal or greater measures than those provided in the FERC Plan

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I. Applicability

As outlined below, Transcontinental Gas Pipe Line Company, LLC (Transco) is proposing modifications to the FERC Plan (May 2013 Version) for the Dalton Expansion Project. This section will apply to all non-wetland areas of the Project. Wetland and waterbody features are addressed in Transco's Wetland and Waterbody Construction and Mitigation Procedures (Transco's Procedures).

Deviations that involve measures different from those contained in this Plan will only be permitted as certificated by the Commission or by written approval of the Director of the Office of Energy Projects (OEP) or designee.

A. The intent of this Plan is to assist project sponsors by identifying baseline mitigation measures for minimizing erosion and enhancing revegetation. Project sponsors shall specify in their applications for a new FERC authorization and in prior notice and advance notice filings, any individual measures in this Plan they consider unnecessary, technically infeasible, or unsuitable due to local conditions and fully describe any alternative measures they would use. Project sponsors shall also explain how those alternative measures would achieve a comparable level of mitigation.

Once a project is authorized, project sponsors can request further changes as variances to the measures in this Plan (or the applicant's approved plan). The Director of the Office of Energy Projects (Director) will consider approval of variances upon the project sponsor's written request, if the Director agrees that a variance:

1. provides equal or better environmental protection;
2. is necessary because a portion of this Plan is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.
4. ***Transco agrees to a FERC Third Party Compliance Monitoring Program for non-Federal and Federal land along the length of the Project.***

Sponsors of projects planned for construction under the automatic authorization provisions in the FERC's regulations must receive written approval for any variances in advance of construction.

Project-related impacts on wetland and waterbody systems are addressed in the staff's Wetland and Waterbody Construction and Mitigation Procedures (Procedures).

II. Supervision and Inspection

A. Environmental Inspection

1. 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.

2. Environmental Inspectors shall have peer status with all other activity inspectors.

3. 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.

B. Responsibilities of Environmental Inspectors

At a minimum, the Environmental Inspector(s) shall be responsible for:

1. Inspecting construction activities for compliance with the requirements of this Plan, ***Transco's*** 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.
2. Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;
3. Verifying that the limits of authorized construction work areas and locations of access roads are visibly marked before clearing, and maintained throughout construction;
4. 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;
5. Identifying erosion/sediment control and soil stabilization needs in all areas;
6. Ensuring that the design of ***diversion terraces*** will not cause erosion or direct water into sensitive environmental resource areas, including cultural resource sites, wetlands, waterbodies, and sensitive species habitats;
7. 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;
8. Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and determine the need for corrective action;
9. 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;

10. Ensuring restoration of contours and topsoil;
11. 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;
12. 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;
13. 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;
14. 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;
15. 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;
16. Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase; and
17. Verifying that locations for any disposal of excess construction materials for beneficial reuse comply with section III.E.

III. Preconstruction Planning

The project sponsor shall do the following before construction:

A. Construction Work Areas

1. 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. ***Transco will ensure*** that appropriate cultural resources and biological surveys are conducted, as determined necessary by the appropriate federal and state agencies ***and that the extent of those surveys is sufficient to accommodate possible future need for activities outside certificated work areas (i.e., buffer areas).***
2. 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.

3. 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.

B. Drain Tiles and Irrigation Systems

1. Attempt to locate existing drain tiles and irrigation systems.
2. Contact landowners and local ***issuing*** authorities to determine the locations of future drain tiles that are likely to be installed within 3 years of the authorized construction.
3. Develop procedures for constructing through drain-tiled areas, maintaining irrigation systems during construction, and repairing drain tiles and irrigation systems after construction.
4. 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.

C. Grazing Deferment

Develop grazing deferment plans with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.

D. Road Crossings and Access Points

Plan for safe and accessible conditions at all roadway crossings and access points during construction and restoration.

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.

F. Agency Coordination

The project sponsor must coordinate with the appropriate local, state, and federal agencies as outlined in this Plan and/or required by the FERC's Orders.

1. Obtain written recommendations from the local soil conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.
2. 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.
3. Develop specific procedures in coordination with the appropriate agencies and landowners, as necessary, to allow for livestock and wildlife movement and protection during construction.

4. 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.

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.

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.

I. Winter Construction Plan

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).

IV. Installation

A. Approved Areas of Disturbance

1. 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 Certified areas will require prior Director approval. This requirement does not apply to activities needed to comply with ***this*** Plan and ***Transco's*** Procedures (i.e., ***diversion terraces***, 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.

2. The construction right-of-way width for a project shall not exceed ***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.

   Prior written approval of the Director is required when the authorized construction right-of-way width would be expanded by more than 25 feet.

B. Topsoil Segregation

1. 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.

2. In residential areas, importation of topsoil is an acceptable alternative to topsoil segregation.
3. 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.
4. Maintain separation of salvaged topsoil and subsoil throughout all construction activities.
5. Segregated topsoil may not be used for padding the pipe, constructing temporary ***diversion terraces*** or trench plugs, improving or maintaining roads, or as a fill material.
6. 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.

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).

D. Irrigation

Maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties.

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.

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.

1. Temporary ***Diversion terraces***

   a. Temporary ***diversion terraces*** are intended to reduce runoff velocity and divert water off the construction right-of-way. Temporary ***diversion terraces*** may be constructed of materials such as soil, silt fence, staked hay or straw bales, or sand bags.

   b. Install temporary ***diversion terraces*** on all disturbed areas, as necessary to avoid excessive erosion. Temporary ***diversion terraces*** must be installed on slopes greater than ***1*** 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***
1	***400***
2-5	***250***
5-10	***125***
10-15	***80***
15-20	***60***
≥20	***50***

   c. Direct the outfall of each temporary ***diversion terrace*** to a stable, well vegetated area or construct an energy-dissipating device at the end of the ***diversion terrace*** and off the construction right-of-way.

   d. Position the outfall of each temporary ***diversion terrace*** to prevent sediment discharge into wetlands, waterbodies, or other sensitive environmental resource areas.

2. 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.

3. 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.

4. 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 ***90*** 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 ***14*** 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). ***Netting of the appropriate size shall be used to anchor wood waste. Openings of the netting shall not be larger than the average size of the wood waste chips.***

f. Ensure that mulch is adequately anchored ***immediately after application*** to minimize loss due to wind and water. ***Straw or hay mulch can be pressed into the soil with a***

disk harrow with the disk set straight or with a special packer disk. Disks may be smooth or serrated and should be 20 inches apart.

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.

V. Restoration

A. Cleanup

1. Commence cleanup operations immediately following backfill operations.

   Complete final grading, topsoil replacement, and installation of permanent erosion control structures within ***14*** 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 ***diversion terraces***, 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.

2. 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.

3. 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.

4. 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.

5. Grade the construction right-of-way to restore pre-construction contours and leave the soil in the proper condition for planting. ***Restore existing access road to predevelopment conditions.***
6. 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.
7. Remove temporary sediment barriers when replaced by permanent erosion control measures or when revegetation is successful.

B. 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 ***diversion terraces***.

    c. In agricultural fields and residential areas where ***diversion terraces*** are not typically required, install trench breakers at the same spacing as if permanent ***diversion terraces*** 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.
2. Permanent ***Diversion terraces***
    a. Permanent ***diversion terraces*** are intended to reduce runoff velocity, divert water off the construction right-of-way, and prevent sediment deposition into sensitive resources. Permanent ***diversion terraces*** may be constructed of materials such as soil, stone, or some functional equivalent.

    b. Construct and maintain permanent ***diversionterraces*** in all areas, except cultivated areas and lawns, unless requested by the landowner, using spacing recommendations obtained from the ***Manual for Erosion and Sediment Control in Georgia, Sixth Edition ,2014.***

    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)***
1	***400***
2	***250***
5	***125***
10	***80***
15	***60***
20	***50***

c. Construct ***diversion terraces*** 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. ***Diversion terraces*** may extend slightly (about 4 feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area. Where ***diversion terraces*** extend beyond the edge of the construction right-of-way, they are subject to compliance with all applicable survey requirements.

C. Soil Compaction Mitigation

1. 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.

2. 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.

3. Perform appropriate soil compaction mitigation in severely compacted residential areas.

D. Revegetation

1. 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.

2. 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.

3. 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 recommendations by the GSWCC included in the Manual for Erosion and Sediment Control in Georgia, Sixth Edition ,2014.*** 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 ***issuing*** 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***, or variances from this timing would be requested by Transco to FERC***.

   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 ***issuing*** 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.

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.

VII. Post-Construction Activities and Reporting

A. Monitoring and Maintenance

1. 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.

2. Revegetation in non-agricultural areas shall be considered successful if ***the soil surface is uniformly covered in permanent vegetation with a density of 70%, or greater.*** . 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.

3. Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in agricultural areas until restoration is successful.

4. 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.

5. 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.

6. 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.

B. 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.
2. 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.
3. ***Water sampling and reporting will be submitted to the state agency when initiated at the beginning of the construction period until such time a notice of termination is submitted to the state.***

Transcontinental Gas Pipe Line Company, LLC

Wetland and Waterbody Construction and Mitigation Procedures

Dalton Expansion Project

Docket No. CP15-

March 2015

Table 1

Justifications for Transco’s Proposed Modifications to the FERC Upland Erosion Control, Revegetation, and Maintenance Procedures

Section	FERC Version [a]	Transco Version [b]	Transco Justification [c]
I.A	(Entire Section I has been replaced)	***The intent of these Procedures is to minimize the extent and duration of Project-related disturbance of wetlands and waterbodies. Transcontinental Gas Pipe Line Company, LLC (Transco) has specified measures considered unnecessary, technically infeasible, or unsuitable due to local conditions, and has described any alternatives herein. Project-related impacts on non-wetland areas are addressed in Transco’s Upland Erosion Control, Revegetation, and Maintenance Plan (Transco’s Plan).***	Provides an introduction to Transco’s Procedures.
I.B.1	a. "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of construction; b. "intermediate waterbody" includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of construction; and c. "major waterbody" includes all waterbodies greater than 100 feet wide at the water's edge at the time of construction.	a. "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of ***crossing***; b. "intermediate waterbody" includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of ***crossing***; and c. "major waterbody" includes all waterbodies greater than 100 feet wide at the water's edge at the time of ***crossing***.	Clarifies that the width of a given crossing is determined at the time that the features is crossed rather than being determined for the duration of construction.
IV.A.1.c	Fuel trucks transporting fuel to on-site equipment travel only on approved access roads;	Fuel trucks transporting fuel to on-site equipment travel on approved access roads ***as well as on the construction right-of- way***;	Fuel trucks may need to travel along the construction ROW to deliver fuel due to the distance between access points for the Project. An SPCC plan has been developed for the Project and will be implemented during construction.
IV.A.1.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.	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 ***with the exception of proposed dry stream crossings using the dam and pump crossing method. Refueling of pumps will be necessary within 100 feet of the associated waterbody to be crossed***.	Refueling of pumps will be necessary within 100 feet of the associated waterbody to be crossed using the dam and pump crossing method. Secondary containment will be provided for overnight. An SPCC plan has been developed for the Project and will be implemented during construction.

Table 1

Justifications for Transco's Proposed Modifications to the FERC Upland Erosion Control, Revegetation, and Maintenance Procedures

Section	FERC Version [a]	Transco Version [b]	Transco Justification [c]
V.B.10	Temporary Erosion and Sediment Control	Temporary Erosion and Sediment Control **for Waterbodies**	Clarifying title in this section
V.B.2.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.	Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from water's edge. ***Water's edge shall be considered the location where vegetation has been wrested by normal stream flow or wave action from the banks.***	Clarifies definition of water's edge.
V.B.3.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.	Where pipelines parallel a waterbody, maintain at least ***25*** feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way. ***Where this general procedure is not possible, refer to the GA EPD buffer variance requirement.***	The Transco version replaces the FERC version with more conservative Georgia EPD requirements.
V.B.4.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.	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 ***50*** feet from the water's edge, or in additional extra work areas as described in section V.B.2. ***Water's edge shall be considered the location where vegetation has been wrested by normal stream flow or wave action from the banks.***	Clarifies definition of water's edge.
V.C.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.	Install a permanent slope breaker across the construction right-of-way ***at all waterbody crossings***. In addition, install sediment barriers as outlined in the Plan.	The Transco version replaces the FERC version with more conservative measure.

Table 1

Justifications for Transco's Proposed Modifications to the FERC Upland Erosion Control, Revegetation, and Maintenance Procedures

Section	**FERC Version** [a]	**Transco Version** [b]	**Transco Justification** [c]
V.D.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	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 (point where vegetation has been wrested by normal stream flow or wave action from the banks)***, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic corrosion/leak surveys, a corridor	Clarifies definition of water's edge.
VI.A.3	Limit the width of the construction right-of-way to 75 feet or less.	Limit the width of the construction right-of-way to 75 feet or less. ***Transco is proposing to use a 75-foot-wide corridor through wetlands plus ATWS along with normal workspace widths on the adjacent upland areas at wetland crossings provided in the table that follows. Soil structure and presence of water commonly found in wetlands along with the large surface loads of construction equipment and materials to construct the Project contribute to the need to have ATWS in certain wetlands. Additionally, in non-saturated wetlands, topsoil segregation is required and therefore ATWS is needed in certain areas to accommodate topsoil segregation***.	Provides proposed justification for additional workspace in specific wetlands listed in the accompanying table.
VI.B.3	Temporary Sediment Control	Temporary Sediment Control ***for Wetlands***	Clarifying title in this section

a – May 2013 FERC Wetland and Waterbody Construction and Mitigation Procedures

b – Changes indicated in ***bold italic*** text

c - Justification stating rationale for each proposed modification; Modifications are required to provide equal or greater measures than those provided in the FERC Procedures

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I. Applicability

A. ***The intent of these Procedures is to minimize the extent and duration of Project-related disturbance of wetlands and waterbodies. Transcontinental Gas Pipe Line Company, LLC (Transco) has specified measures considered unnecessary, technically infeasible, or unsuitable due to local conditions, and has described any alternatives herein. Project-related impacts on non-wetland areas are addressed in Transco's Upland Erosion Control, Revegetation, and Maintenance Plan (Transco's Plan).***

Once a project is authorized, project sponsors can request further changes as variances to the measures in these Procedures (or the applicant's approved procedures). The Director of the Office of Energy Projects (Director) will consider approval of variances upon the project sponsor's written request, if the Director agrees that a variance:

1. provides equal or better environmental protection;
2. is necessary because a portion of these Procedures is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Sponsors of projects planned for construction under the automatic authorization provisions in the FERC's regulations must receive written approval for any variances in advance of construction.

Project-related impacts on non-wetland areas are addressed in the staff's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

B. Definitions

1. "Waterbody" includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes:
    a. "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of ***crossing***;
    b. "intermediate waterbody" includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of ***crossing***; and
    c. "major waterbody" includes all waterbodies greater than 100 feet wide at the water's edge at the time of ***crossing***.
2. "Wetland" includes any area that is not in actively cultivated or rotated cropland and that satisfies the requirements of the current federal methodology for identifying and delineating wetlands.

II. Preconstruction Filing

A. The following information must be filed with the Secretary of the FERC (Secretary) prior to the beginning of construction, for the review and written approval by the Director:

   1. Site-specific justifications for extra work areas that would be closer than 50 feet from a waterbody or wetland; and

   2. Site-specific justifications for the use of a construction right-of-way greater than 75-feet-wide in wetlands.

B. The following information must be filed with the Secretary prior to the beginning of construction. These filing requirements do not apply to projects constructed under the automatic authorization provisions in the FERC's regulations:

   1. Spill Prevention and Response Procedures specified in section IV.A;

   2. A schedule identifying when trenching or blasting will occur within each waterbody greater than 10 feet wide, within any designated coldwater fishery, and within any waterbody identified as habitat for federally-listed threatened or endangered species. The project sponsor will revise the schedule as necessary to provide FERC staff at least 14 days advance notice. Changes within this last 14-day period must provide for at least 48 hours advance notice;

   3. Plans for horizontal directional drills (HDD) under wetlands or waterbodies, specified in section V.B.6.d;

   4. Site-specific plans for major waterbody crossings, described in section V.B.9;

   5. A wetland delineation report as described in section VI.A.1, if applicable; and

   6. The hydrostatic testing information specified in section VII.B.3.

III. Environmental Inspections

A. 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.

B. The Environmental Inspector's responsibilities are outlined in the Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

IV. Preconstruction Planning

A. 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.

1. 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 ***as well as on the construction right-of- way***;

    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 ***with the exception of proposed dry stream crossings using the dam and pump crossing method. Refueling of pumps will be necessary within 100 feet of the associated waterbody to be crossed***. 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.

2. 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.

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.

V. Waterbody Crossings

A. 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.

B. Installation

1. 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.

2. 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. ***Water's edge shall be considered the location where vegetation has been wrested by normal stream flow or wave action from the banks.***

   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.

3. 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 ***25*** feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way. ***Where this general procedure is not possible, refer to the GA EPD buffer variance requirement.***

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.

4. 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 ***50*** feet from the water’s edge,or in additional extra work areas as described in section V.B.2. ***Water’s edge shall be considered the location where vegetation has been wrested by normal stream flow or wave action from the banks.***

   b. Use sediment barriers to prevent the flow of spoil or silt-laden water into any waterbody

5. 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.

6. 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.

7. 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.

8. 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.

9. 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.

10. Temporary Erosion and Sediment Control ***for Waterbodies***

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.

11. 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.

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 all waterbody crossings***. 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.

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 (point where vegetation has been wrested by normal stream flow or wave action from the banks)***, 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.

VI. Wetland Crossings

A. General

1. 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.

2. 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.

3. Limit the width of the construction right-of-way to 75 feet or less.

Transco is proposing to use a 75-foot-wide corridor through wetlands plus ATWS along with normal workspace widths on the adjacent upland areas at wetland crossings provided in the table that follows. Soil structure and presence of water commonly found in wetlands along with the large surface loads of construction equipment and materials to construct the Project contribute to the need to have ATWS in certain wetlands. Additionally, in non-saturated wetlands, topsoil segregation is required and therefore ATWS is needed in certain areas to accommodate topsoil segregation. 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.

Feature ID	Wetland Type	MP	Comments
W3CDO003	PFO	21.3	Workspace greater than 75'
W3CDO004	PEM	21.5	Workspace greater than 75'
W3CDO004	PFO	21.5	Workspace greater than 75'
W1APA006	PEM	34.4	ATWS within wetland
W3CPA017	PEM	35.2	ATWS within wetland
W3CPA019	PEM	36.7	Workspace greater than 75'
W3CPA019	PFO	36.7	Workspace greater than 75'
W3CPA004	PEM	52.4	Workspace greater than 75'
W3CPA004	PFO	52.4	Workspace greater than 75'
W2BGO001	PFO	90.8	ATWS within wetland, HDD entry/exit point for Coosawattee crossing

4. 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.

5. 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.

6. No aboveground facilities will be constructed in any wetland, except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations.

B. Installation

1. 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.

2. 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

3. Temporary Sediment Control ***for Wetlands***

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.

4. 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.

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.

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.

VII. Hydrostatic Testing

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.

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.

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.

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.

APPENDIX F

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

Transcontinental Gas Pipe Line Company, LLC

Spill Prevention Control and Countermeasures Plan

Dalton Expansion Project

Docket No. CP15-

March 2015

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Abbreviations and Acronyms

CI	Chief Inspector
DM	District Manager
dt/day	dekatherms per day
EC	Emergency Coordinator
ECD	Environmental Compliance Department
LEPC	Local Emergency Planning Committee
Mdt/d	thousand dekatherms per day
MLV	mainline valve
OD	outside diameter
PPE	personal protection equipment
Project	Dalton Expansion Project
SPCC	Spill Prevention Control and Countermeasure
TBD	to be determined
Transco	Transcontinental Gas Pipeline Company, LLC

1 Spill Prevention Control and Countermeasures Plan

1.1 Introduction

Transcontinental Gas Pipe Line Company, LLC (Transco) is proposing to provide 448 thousand dekatherms per day (Mdt/d) of incremental firm transportation capacity from Transco's Station 210 Zone 6 Pooling Point in Mercer County, New Jersey to an interconnection with Gulf South Pipeline Company, LP in Pike County, Mississippi (Holmesville) and through a new pipeline lateral (Dalton Lateral) initiating at Transco's Compressor Station 115 in Coweta County, Georgia to interconnections on the Dalton Lateral in northwest Georgia. This project is referred to as the Dalton Expansion Project (Project). As detailed below, the Project will consist of 109.3 miles of new natural gas pipeline in three continuous segments (Dalton Lateral Segments 1, 2, and 3) and a new 1.9-mile natural gas lateral pipeline (Dalton Lateral - AGL Spur). A new compressor station and three new meter stations also will be constructed, and modifications and supplemental odorization equipment will be installed at existing facilities as part of the Project. The Project consists of the following components:

- Dalton Lateral Segment 1
    - Addition of approximately 7.6 miles of new 30-inch outside diameter (OD) pipeline in Coweta and Carroll Counties, Georgia from the discharge of Compressor Station 115 to the proposed Compressor Station 116
- Dalton Lateral Segment 2
    - Addition of approximately 48.9 miles of new 24-inch OD pipeline in Carroll, Douglas, Paulding, and Bartow Counties, Georgia from the discharge of the proposed Compressor Station 116 to the proposed Beasley Road Meter Station
- Dalton Lateral Segment 3
    - Addition of approximately 52.8 miles of new 20-inch OD pipeline in Bartow, Gordon, Murray, and Whitfield Counties, Georgia from the proposed Beasley Road Meter Station to the proposed Looper Bridge Road Meter Station
- Dalton Lateral - AGL Spur
    - Addition of approximately 1.9 miles of new 16-inch OD pipeline in Murray County, Georgia from milepost (MP) 105.2 of the Dalton Lateral to the proposed Murray Meter Station
- Compressor Station 116
    - Addition of a new 21,830-horsepower (HP) compressor station in Carroll County, Georgia
- Beasley Road Meter Station (formerly referred to as AGL-Bartow Meter Station)
    - Addition of a new 190 thousand dekatherms per day (Mdt/d) meter station in Bartow County, Georgia
- Looper Bridge Road Meter Station (formerly referred to as Oglethorpe-Smith Meter Station)
    - Addition of a new 208-Mdt/d meter station in Murray County, Georgia
- Murray Meter Station (formerly referred to as AGL-Murray Meter Station)
    - Addition of a new 50-Mdt/d meter station in Murray County, Georgia

- Mainline Facility Modifications to Accommodate Bi-Directional Flow
    - Addition of valves and yard piping for south flow compression in Pittsylvania County, Virginia at Compressor Station 165 and in Orange County, Virginia, at Compressor Station 180
    - Modifications to Compressor Station 167 in Mecklenburg County, Virginia to handle a partially odorized system
    - Modifications to mainline valve (MLV) settings at MLV 160-10 in Rockingham County, North Carolina and at MLV 160-15, the Hutson Road MLV, and MLV 160-20 in Pittsylvania County, Virginia to handle a partially odorized system
    - Modifications to 23 meter and regulator stations at 20 sites in Rockingham, Northampton, Hertford, and Greensville Counties, North Carolina, and Pittsylvania, Brunswick, Mecklenburg, and Halifax Counties, Virginia, on the South Virginia Lateral and between Compressor Stations 160 and 165 on the mainline to handle a partially odorized system.

The new pipeline will be installed primarily along existing transmission line or roadway corridors. Approximately 55.0 percent (60.1 miles) of the Dalton Lateral Segments 1, 2, and 3 and 73.7 percent (1.4 miles) of the Dalton Lateral - AGL Spur are co-located with existing utilities.

If the Project qualifies as a United States Environmental Protection Agency Tier I Facility, a Spill Prevention Control and Countermeasure (SPCC) Plan will be prepared by a contractor responsible for meeting United States Environmental Protection Agency Tier I Facility requirement thresholds.

1.2 Definitions

Oil is defined in the SPCC regulations as oil of any kind or in any form including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil and oily mixtures.

Hazardous Material as defined by the U.S. Department of Transportation includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 Code of Federal Regulations 172.101), and materials that meet the defining criteria for hazard classes and divisions in part 173 of subchapter C of this chapter. Hazardous materials typically found on construction projects include, but are not limited to, petroleum oils, hydraulic fluids, engine coolants (ethylene glycol), x-ray film developer, chemical additives, pipe coatings, and used abrasive blasting media.

1.3 Contractor Responsibility

The Contractor will be familiar with this Spill Plan and its contents prior to commencing any construction-related activities. This SPCC Plan will be followed to prevent any spills that may occur during the project and to mitigate any spills that do occur.

Company representatives assigned to this project include:

District Manager (DM): *TBD*

Chief Inspector (CI): *TBD*

Environmental Compliance: *TBD*

Environmental Permitting *TBD*

2 Drainage Patterns and Spill Prevention Practices

2.1 Drainage Patterns

Responsibility: Chief Inspector/District Manager

Construction and operations personnel will be familiar with drainage patterns for the Project and be prepared to implement measures to control any release.

2.2 Spill Prevention Practices

The Contractor will take the following precautions to ensure that an oil or hazardous materials spill does not occur:

2.2.1 Containers

1. All containers will be stored on level ground at least 100 feet from any waterbody, or as prescribed by a Project-specific permit. All containers should be located within temporary containment.
2. Temporary containment will include, but not be limited to, temporary hay bale berms with plastic sheets underlining the entire contained area.
3. Containment areas will be capable of containing 110 percent of the volume of the single largest container of hazardous material being stored.
4. All container storage areas will be routinely inspected for integrity purposes.
5. Leaking and/or deteriorated containers will be replaced as soon as the condition is first detected with clean-up measures immediately taking place.
6. No incompatible materials will be stored in the same containment area.
7. No container storage areas will be left unsecured during non-work hours.
8. Accumulated rainwater in the containment areas must be inspected prior to release to the ground; it must be free of sheens or other hazardous materials.

2.2.2 Tanks

1. The Contractor will operate only those tanks that meet the requirements and specifications of applicable regulations and that are surrounded with temporary containment as described above.
2. Self-supporting tanks will be constructed of materials compatible with its contents.
3. All tanks will be routinely inspected for integrity purposes.
4. Vehicle-mounted tanks will be equipped with flame/spark arrestors on vents to ensure that self-ignition does not occur.
5. Tanks will not be used to store incompatible materials in sequence unless first thoroughly decontaminated.

6. Any tank utilized for storing different products between construction locations will be thoroughly decontaminated prior to refilling.

2.2.3 Unloading/Loading Areas

1. If it is necessary during Project construction, re-fueling and transferring of liquids will only occur in pre-designated locations that are on level ground and at least 100 feet from waterbodies. Where conditions require construction equipment (e.g., Bobcat/front-end loader/excavator) to be re-fueled within 100 feet of any waterbody, or as prescribed by a project-specific permit, this activity must be continuously manned to ensure that overfilling, leaks, or spills do not occur.
2. All service vehicles used to transport fuel must be equipped with an appropriate number of fire extinguishers and an oil spill response kit. At a minimum, this kit must include:
    - Ten, 48-inch by 3-inch oil socks;
    - Five, 18-inch by 18-inch oil pillows ;
    - One, 10-foot by 3-inch oil boom;
    - Twenty-five, 24-inch by 24-inch oil mats/pads;
    - One box garden-size, 6-mil, disposable polyethylene bags (w/ ties);
    - Four pairs of oil-proof gloves;
    - One, 55-gallon PE open-head drum;
    - Blank drum labels; and
    - Two shovels

3 Emergency Response Procedures

This section provides a generic description of emergency response procedures to be performed to address oil and hazardous materials spills for the Project. Each response will vary depending upon the nature and extent of the incident. However, the general procedures outlined below will be followed.

3.1 Contractor Responsibilities

1. The Contractor must designate both an Emergency Coordinator (EC) and an Alternate EC for the project.
2. The Contractor is responsible for appropriately addressing all spills that occur directly as a result of construction-related activities.
3. For spills that take less than a shovel-full of dirt to clean-up, no internal notification requirements of this SPCC Plan need to be followed. However, this does not relieve the Contractor from appropriately remediating the area and reporting the spill in the daily report.
4. The Contractor will supply the necessary manpower, personal protective equipment (PPE), and spill response equipment to appropriately address all spills that directly occur as a result of construction-related activities.
5. Ensure that all emergency spill response equipment and PPE is well-stocked and in good condition. Replace used materials when necessary.
6. If the situation warrants, the Contractor will immediately notify any local emergency spill response contractors for assistance.
7. The Contractor will be responsible for hiring an emergency spill response contractor if the nature of the incident requires.
8. The Contractor is responsible for immediately notifying the CI (or the DM) of any reportable spills.

3.2 Transco Responsibilities

1. Transco will be responsible for ensuring that the Contractor adequately follows the procedures outlined in this SPCC Plan at all times.
2. Transco will be responsible for all verbal and written external notifications made to any regulatory agency or any local emergency responders.

3.3 Emergency contacts

Appendix 1.B provides a list of Company and Contractor emergency contacts.

3.4 Duties of Chief Inspector or District Manager

The duties of the CI (or DM) for reportable spills include the following:

1. Determine the source, character, amount, and extent of the spill.

2. Assess the potential hazards to the Project site, environment, and surrounding community and contact the Safety Representative if any hazards are detected.
3. Evacuate the area if necessary.
4. Report the spill in accordance with the internal notification procedures outlined in Section 5.1 and the external notification procedures outlined in Section 5.2.
5. Commit manpower and equipment for minor incidents that can be reasonably remediated by the Contractor.
6. Oversee Contractor’s spill response efforts to contain and control all spills to ensure they adequately follow the procedures outlined in this SPCC Plan.
7. Document the Contractor’s response effort, including taking photographs wherever possible.
8. Generate an Emergency Incident Report (form WGP-0187).

4 Emergency Spill Response and Personnel Protection Equipment

Appendix 1.C provides a list of the minimally required emergency spill response equipment and PPE for this Project. This is in addition to the minimally required spill response equipment previously specified in Section 2.2.

5 Spill Notification Procedures

5.1 Internal Notifications

1. All spills are to be immediately reported to the CI (or DM) who will immediately contact the Gas Control and the Environmental Compliance Department. Appendix 1.B includes a list of emergency contacts.
2. Transco Gas Control staff are responsible for notifying the Environmental Compliance Department, as specified in the “Significant Event Notification Plan” and the Spill Plan.
3. The CI (or DM) is responsible for completing form WGP-0187, “Emergency Incident Report,” and forwarding it to the Environmental Compliance Department in a timely manner.

5.2 External Notifications

1. Transco Gas Control staff will make all required “Immediate Notifications” to regulatory agencies.
2. The CI (or DM) is responsible for any necessary first-response notifications to an emergency spill response team to help contain the spill.
3. After all required immediate notifications are made by Gas Control, the Environmental Compliance Department will use the information from the completed form WGP-0187 to make any necessary subsequent verbal and written notifications to regulatory agencies.
4. If a spill poses a threat to human health or the environment, Gas Control will immediately contact the appropriate Local Emergency Planning Committees (LEPC). When determining if a LEPC should be contacted or not, any gas release to the atmosphere must be taken into consideration. Note: Linear Projects may extend through multiple LEPC jurisdictions. As a result, all appropriate jurisdictional LEPCs are identified in **Table 1**.

5.3 Emergency Spill Response Contractors

Transco has arrangements with several emergency spill response contractors to address emergency responses beyond the capabilities of the Contractor. If necessary, the following firms could be utilized for the Project:

Company:	PSC Emergency Response
Location:	*24-hour Nationwide*
Phone Number:	(877) 577-2669

5.4 Local Emergency Responders

The Contractor or the CI (or DM) may call the local emergency responders provided in **Table 2** should their assistance be required.

6 Clean Up Procedures

The following section outlines specific procedures to be followed when addressing spills.

6.1 Spills

1. Small spills and leaks must be remediated as soon as feasible. Use adsorbent pads wherever possible.
2. Restrict spills to the containment area if possible by stopping or diverting flow.
3. If the spill exceeds the containment structure's capacity, immediately construct additional containment using sandbags or fill material. Every effort must be made to prevent the spills from entering a water body.
4. If a spill reaches a waterbody, immediately place oil booms downstream in order to contain the material. As soon as possible, remove the floating layer with absorbent pads.
5. After all recoverable oil has been collected and drummed, place all contaminated PPE, spill clean-up equipment, and any impacted soil into appropriate containers.
6. For significant quantities of impacted soils, construct temporary waste piles using plastic sheets. This material should subsequently be transferred into lined roll-off boxes as soon as feasible.
7. The Transco Environmental Compliance Department will coordinate all waste characterization, profiling, and disposal activities.

6.2 Equipment Cleaning/Storage

1. Upon completion of remedial activities, the Contractor will be responsible for decontaminating the used emergency response equipment as well as the PPE.
2. The Contractor will be responsible for replacing any spent emergency response equipment and PPE prior to resuming construction-related activities.
3. Decontamination rinse fluids will be collected and containerized. The Environmental Compliance Department (ECD) will coordinate waste characterization and disposal activities.
4. Reusable PPE will be tested and inventoried prior to being placed back into service.

6.3 Waste Disposal

The Contractor is responsible for waste management and waste disposal; however, the ECD will coordinate all waste characterization, profiling, and disposal activities. All waste management and disposal activities will conform to the procedures outlined in the Transco Operations and Maintenance Manual.

The Contractor is permitted to manage routine garbage and construction debris without oversight of the ECD.

APPENDIX A

Tables

TABLE 1
LEPCs for the Dalton Expansion Project

Coweta County, Georgia	
Name:	Jay Jones, Director
Organization:	Coweta County Emergency Management Agency
Address:	195 Walt Sanders Memorial Drive Newnan, GA 30265
Phone Number:	(770) 254-2650
Carroll County, Georgia	
Name:	Tim Padgett, Director
Organization:	Carroll County Emergency Management
Address:	1000 Newnan Road Carrollton, GA 30116
Phone Number:	(770) 830-5882
Douglas County, Georgia	
Name:	Jason Milhollen, Director
Organization:	Douglas County Emergency Management
Address:	E-911/Emergency Operations Center Douglasville, GA 30134
Phone Number:	(770) 949-3007
Paulding County, Georgia	
Name:	Joey Pelfrey, Director
Organization:	Paulding County Emergency Management
Address:	535 Seaboard Ave. Hiram, GA 30141
Phone Number:	(770) 222-1160
Bartow County, Georgia	
Name:	Paul Cuprowski, Director
Organization:	Bartow County Emergency Management Agency
Address:	10 Elizabeth Street Cartersville, GA 30120
Phone Number:	(770) 387-5089
Gordon County, Georgia	
Name:	Richard Cooper, Director
Organization:	Gordon County Emergency Management
Address:	4543 Fairmount Highway Calhoun, GA 30701
Phone Number:	(706) 602-2905

TABLE 1
LEPCs for the Dalton Expansion Project

Murray County, Georgia	
Name:	Dewayne Bain, Director
Organization:	Murray County Emergency Management Agency
Address:	810 G.I. Maddox Pkwy. Chatsworth, GA 30705
Phone Number:	(706) 695-2088
Whitfield County, Georgia	
Name:	Claude Craig, Director
Organization:	Whitfield County Emergency Management
Address:	804 Professional Blvd Dalton, GA 30720
Phone Number:	(706) 259-3730

TABLE 2
Local Emergency Responders

Service	Contact Information
Coweta County, Georgia	
Emergency Medical Services	American Medical Response- Coweta County 75 Newnan South Industrial Drive Newnan, GA 30263 (770) 252-3369
Hospital	Piedmont Newnan Hospital 745 Poplar Road Newnan, GA 30265 (770) 400-1000
Fire	Coweta County Fire Department 483 Turkey Creek Road Newnan, Georgia 30263 (770) 254-3900
Police	Coweta County Sheriff's Office 560 Greison Trail Newnan, Georgia 30264 (770) 253-1502
Carroll County, Georgia	
Emergency Medical Services	Carroll County Emergency Management Agency 1000 Newnan Road Carrollton, GA 30116 (770) 254-2650
Hospital	Tanner Medical Center 705 Dixie St Carrollton, GA (770) 836-9666
Fire	Carroll County Fire Rescue & EMA 501 Old Newnan Road Carrollton, Georgia 30117 (770) 830-5880
Police	Carroll County Sheriff's Office 1000 Newnan Road Carrollton, Georgia 30116 (770) 830-5935
Douglas County, Georgia	
Emergency Medical Services	Douglas County Emergency Medical Services Department 6856 West Broad Street (Bankhead Highway) Memorial Building Douglasville, Georgia 30134 770.942.8626
Hospital	Wellstar Douglas Hospital 8954 Hospital Dr. Douglasville, GA 30134 (770) 949-1500

TABLE 2
Local Emergency Responders

Service	Contact Information
Fire	Douglas County Fire Department 6856 Broad St Douglasville, GA 30134 (770) 942-8626 770.942.8626
Police	Douglas County Sheriff's Office 8470 Earl D Lee Blvd Douglasville, GA 30134 (770) 942-2121
Paulding County, Georgia	
Emergency Medical Services	Paulding County E-911 Center 25 Industrial Way North Suite 10 Dallas, GA 30132 (770) 443-7629
Hospital	Wellstar Paulding Hospital 2518 Jimmy Lee Smith Parkway Hiram, GA 30141 470-644-7000
Fire	Paulding County Fire Station 406 Dallas Nebo Rd Dallas, GA 30157 (770) 445-8956
Police	Paulding County Sheriff’s Office 247 Industrial Way N Dallas, GA 30132 (770) 443-3010
Bartow County, Georgia	
Emergency Medical Services	Cartersville Medical Center 960 Joe Frank Harris Pkwy SE Cartersville, GA 30120 (770) 382-1530
Hospital	Cartersville Medical Center 960 Joe Frank Harris Pkwy SE Cartersville, GA 30120 (770) 382-1530
Fire	Bartow County Fire Department 5435 Georgia 20 Cartersville, GA 30120 (770) 387-5151
Police	Bartow County Sheriff’s Office 104 Zena Drive Cartersville, GA 30121 (770) 382-5050

TABLE 2
Local Emergency Responders

Service	Contact Information
Gordon County, Georgia	
Emergency Medical Services	Gordon County Ambulance Service 201 North Wall Street Calhoun, Georgia 30701 (706) 629-3795
Hospital	Gordon Hospital 1035 Red Bud Rd NE Calhoun, GA 30701 (706) 629-2895
Fire	Gordon County Fire Department 400 Belwood Rd SE Calhoun, GA 30701 (706) 629-8851
Police	Gordon County Sheriff's Office 2700 US Hwy. 41 NW Calhoun, GA 30701 (706) 629-1244
Murray County, Georgia	
Emergency Medical Services	Murray EMS – Murray Medical Center 707 Old Dalton Ellijay Rd Chatsworth, GA 30705 (706) 695-4564
Hospital	Murray Medical Center 707 Old Dalton Ellijay Rd Chatsworth, GA 30705 (706) 695-4564
Fire	Murray County Fire Department 810 G.I. Maddox Pkwy. Chatsworth, GA 30705 (706) 695-2088
Police	Murray County Sheriff's Office 810 G.I. Maddox Pkwy Chatsworth, GA 30705 (706) 695-4592
Whitfield County, Georgia	
Emergency Medical Services	Hamilton Emergency Medical Services 1105 Memorial Drive Dalton, GA 30720 (706) 278-9211
Hospital	Hamilton Medical Center 1200 Memorial Drive Dalton, GA 30720 (706) 259-4435
Fire	Whitfield County Fire Department 804 Professional Blvd Dalton, GA 30720 (706) 259-7433

TABLE 2
Local Emergency Responders

Service	Contact Information
Police	Whitfield County Sherriff Department 805 Professional Blvd Dalton, GA 30720 (706) 278-1233

APPENDIX 1.B

List of Emergency Contacts

Names	**Job Description**	**Phone Number**
Transco Gas Control	NA	800-440-8475 (24-hrs)
TBD	Chief Inspector	TBD
TBD	District Manager	TBD
TBD	Environmental Compliance	TBD
Contractor	**Job Description**	**Phone Number**
PSC Emergency Response	Emergency Coordinator	1-877-577-2669
TBD		TBD
Regulatory Agencies		**Phone Number**
National Response Center		800-424-8802
Georgia Environmental Protection Division		1-800-241-4113

APPENDIX 1.C

Emergency Spill Response and Personnel Protection Equipment

Equipment	**Quantity**	**Location**
(1) Chemical Spill Kit	1	Adjacent to work space
(2) Oil Spill Kit	1	Adjacent to work space
Spill Response Equipment:		
(1)	One bag loose chemical pulp	Three chemical pillows (18-inch by 18-inch)
	Three chemical socks (48-inch by 3-inch)	Ten chemical mats/pads (24-inch by 24-inch)
	One box garden-sized, 6-mil, disposal polyethylene bags (w/ ties)	Blank drum labels
	One 30-gallon PE open-head drum	Two shovels
(2)	One oil boom (100-foot by 3-inch)	Ten oil pillows (18-inch by 18-inch)
	Ten oil socks (48-inch by 3-inch)	25 oil mats/pads (24-inch by 24-inch)
	One box garden-sized, 6-mil, disposal polyethylene bags (w/ ties)	Blank drum labels
	Three, 55-gallon PE open-head drums	Four shovels
Personnel Protection Equipment:		
The inventory of PPE should include enough for at least four responders reacting to a significant leak/spill.		
Splash goggles, half-face respirators (w/cartridges for benzene)		
Tyvek suits, nitrile gloves, waterproof/chemical resistant hip-waders		

APPENDIX G

WATERBODIES CROSSED OR OTHERWISE AFFECTED BY THE DALTON EXPANSION PROJECT

APPENDIX G

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility/Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
Dalton Lateral							
0.4	S1ACO002	UNT to David Branch	Minor	Intermittent	2	Warmwater	Dam-and-Pump/Flume
0.8	S1ACO008	UNT to David Branch	Minor	Ephemeral	8	Warmwater	Dam-and-Pump/Flume
1.6	S3CCO002	UNT to Thomas Creek	Minor	Ephemeral	0	Warmwater	Dam-and-Pump/Flume
2.0	S1ACO010	UNT to Thomas Creek	Intermediate	Perennial	27	Warmwater	Dam-and-Pump/Flume
2.4	S1ACO012	UNT to Cavender Creek	Minor	Ephemeral	0	Warmwater	N/A
2.8	S1ACO014	UNT to Cavender Creek	Minor	Ephemeral	2	Warmwater	Dam-and-Pump/Flume
2.9	S1ACO015	UNT to Cavender Creek	Minor	Intermittent	1	Warmwater	Dam-and-Pump/Flume
3.2	S2BCO002	UNT to Cavender Creek	Minor	Ephemeral	0	Warmwater	N/A
3.3	S2BCO001	UNT to Cavender Creek	Intermediate	Perennial	50	Warmwater	Dam-and-Pump/Flume
3.3	S2BCO003	UNT to Cavender Creek	Minor	Ephemeral	7	Warmwater	Dam-and-Pump/Flume
3.6	S2BCO004	UNT to Cavender Creek	Minor	Perennial	7	Warmwater	Dam-and-Pump/Flume
3.9	S2BCO005	UNT to Cavender Creek	Minor	Intermittent	1	Warmwater	Dam-and-Pump/Flume
4.0	S2BCO006	UNT to Cavender Creek	Minor	Perennial	2	Warmwater	Dam-and-Pump/Flume
4.4 REROUTE	S2BCO007	UNT to Cavender Creek	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume
4.6 REROUTE	S2BCO008	Wahoo Creek	Intermediate	Perennial	68	Warmwater	Wet Open Cut
4.8 REROUTE	S2BCO010	UNT to Wahoo Creek	Minor	Perennial	7	Warmwater	Dam-and-Pump/Flume
5.1	S2BCO011	UNT to Wahoo Creek	Minor	Ephemeral	6	Warmwater	Dam-and-Pump/Flume
5.4	S2BCO013	UNT to Chattahoochee River	Minor	Perennial	1	Warmwater	Dam-and-Pump/Flume
5.5	S2BCO014	UNT to Chattahoochee River	Minor	Perennial	1	Warmwater	Dam-and-Pump/Flume
5.6	S2BCO015	UNT to Chattahoochee River	Minor	Intermittent	2	Warmwater	Dam-and-Pump/Flume
5.7	S2BCO016	UNT to Chattahoochee River	Minor	Perennial	1	Warmwater	Dam-and-Pump/Flume
6.2	S2BCO017	UNT to Chattahoochee River	Minor	Perennial	0	Warmwater	N/A
6.2	S2BCO018	UNT to Chattahoochee River	Minor	Ephemeral	2	Warmwater	HDD
6.3	S3CCA001	Chattahoochee River	Major	Perennial	268	Warmwater	HDD
6.8	S3CCA003	UNT to Chattahoochee River	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume
6.9	S3CCA004	UNT to Chattahoochee River	Minor	Perennial	4	Warmwater	Dam-and-Pump/Flume
6.9	S3CCA005	UNT to Chattahoochee River	Minor	Perennial	2	Warmwater	Dam-and-Pump/Flume

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
7.2	S3CCA006	UNT to Chattahoochee River	Minor	Ephemeral	3	Warmwater	Dam-and-Pump/Flume
7.2	S3CCA007	UNT to Chattahoochee River	Minor	Perennial	2	Warmwater	Dam-and-Pump/Flume
7.6 REROUTE	S3CCA008	UNT to Chattahoochee River	Intermediate	Perennial	10	Warmwater	Dam-and-Pump/Flume
7.8 REROUTE	S3CCA037	UNT to Chattahoochee River	Minor	Intermittent	0	Warmwater	N/A
8.0	S3CCA011	UNT to Chattahoochee River	Intermediate	Perennial	32	Warmwater	Dam-and-Pump/Flume
8.1	S3CCA012	UNT to Chattahoochee River	Minor	Perennial	2	Warmwater	Dam-and-Pump/Flume
8.3	S2BCA002	UNT to Chattahoochee River	Minor	Perennial	2	Warmwater	Dam-and-Pump/Flume
8.5	S2BCA003	UNT to Chattahoochee River	Minor	Intermittent	4	Warmwater	Dam-and-Pump/Flume
8.8	S2BCA004	UNT to Chattahoochee River	Intermediate	Perennial	26	Warmwater	Dam-and-Pump/Flume
9.3	S1ACA001	UNT to Chattahoochee River	Minor	Perennial	3	Warmwater	Dam-and-Pump/Flume
9.3	S1ACA003	UNT to Chattahoochee River	Minor	Ephemeral	3	Warmwater	Dam-and-Pump/Flume
9.4	S1ACA004	UNT to Chattahoochee River	Minor	Ephemeral	1	Warmwater	Dam-and-Pump/Flume
9.9	S3CCA017	UNT to Snake Creek	Minor	Ephemeral	0	Warmwater	N/A
10.3	S3CCA018	Snake Creek	Intermediate	Perennial	52	Warmwater	Wet Open Cut
10.7	S3CCA020	UNT to Snake Creek	Intermediate	Ephemeral	20	Warmwater	Dam-and-Pump/Flume
10.9 REROUTE	S3CCA021	UNT to Snake Creek	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume
11.1 REROUTE	S3CCA024	UNT to Snake Creek	Minor	Ephemeral	0	Warmwater	N/A
11.2 REROUTE	S3CCA025	UNT to Snake Creek	Minor	Ephemeral	8	Warmwater	Dam-and-Pump/Flume
11.6 REROUTE	S3CCA040	UNT to Snake Creek	Minor	Perennial	9	Warmwater	Dam-and-Pump/Flume
11.6 REROUTE	S3CCA041	UNT to Snake Creek	Minor	Ephemeral	3	Warmwater	Dam-and-Pump/Flume
12.1 REROUTE	S3CCA043	UNT to Snake Creek	Minor	Intermittent	3	Warmwater	Dam-and-Pump/Flume
12.5	S3CCA026	UNT to Snake Creek	Intermediate	Ephemeral	11	Warmwater	Dam-and-Pump/Flume
12.5	S3CCA027	UNT to Snake Creek	Minor	Ephemeral	9	Warmwater	Dam-and-Pump/Flume
12.7	S3CCA030	UNT to Snake Creek	Minor	Perennial	4	Warmwater	Dam-and-Pump/Flume
13.5	S3CCA032	UNT to Wolf Creek	Minor	Intermittent	4	Warmwater	Dam-and-Pump/Flume
13.6	S3CCA033	UNT to Wolf Creek	Minor	Perennial	6	Warmwater	Dam-and-Pump/Flume
13.9	S3CCA034	Wolf Creek	Intermediate	Perennial	23	Warmwater	Wet Open Cut

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
14.4	S1ACA008	Wolf Creek	Intermediate	Perennial	27	Warmwater	Dam-and-Pump/Flume
15.1	S1ADO001	UNT to Jacks Creek	Intermediate	Intermittent	17	Warmwater	Dam-and-Pump/Flume
16.0	S2BDO003	UNT to Wolf Creek	Minor	Perennial	5	Warmwater	Dam-and-Pump/Flume
16.1	S2BDO001	Wolf Creek	Intermediate	Perennial	33	Warmwater	Dam-and-Pump/Flume
16.6	S2BDO005	UNT to Wolf Creek	Intermediate	Perennial	10	Warmwater	Dam-and-Pump/Flume
17.8	S3CDO023	UNT to Crawfish Creek	Minor	Perennial	6	Warmwater	Dam-and-Pump/Flume
18.0	S2BDO008	UNT to Crawfish Creek	Intermediate	Perennial	15	Warmwater	Dam-and-Pump/Flume
18.1	S3CDO035	UNT to Crawfish Creek	Minor	Intermittent	3	Warmwater	Dam-and-Pump/Flume
18.2	S2BDO010	UNT to Crawfish Creek	Minor	Ephemeral	1	Warmwater	Dam-and-Pump/Flume
18.6	S2BDO012	UNT to Crawfish Creek	Minor	Ephemeral	9	Warmwater	Dam-and-Pump/Flume
18.7	S2BDO011	UNT to Crawfish Creek	Minor	Ephemeral	3	Warmwater	Dam-and-Pump/Flume
18.8	S2BDO014	UNT to Crawfish Creek	Minor	Ephemeral	1	Warmwater	Dam-and-Pump/Flume
18.9	S2BDO015	UNT to Crawfish Creek	Minor	Perennial	1	Warmwater	Dam-and-Pump/Flume
19.1	S2BDO017	UNT to Crawfish Creek	Minor	Ephemeral	0	Warmwater	N/A
19.3	S2BDO018	UNT to Crawfish Creek	Intermediate	Perennial	29	Warmwater	Dam-and-Pump/Flume
19.4	S3CDO001	UNT to Crawfish Creek	Intermediate	Perennial	18	Warmwater	Dam-and-Pump/Flume
19.5	S3CDO002	UNT to Crawfish Creek	Minor	Ephemeral	3	Warmwater	Dam-and-Pump/Flume
19.8	S3CDO003	UNT to Crawfish Creek	Intermediate	Perennial	16	Warmwater	Dam-and-Pump/Flume
20.0	S3CDO006	UNT to Crawfish Creek	Minor	Perennial	0	Warmwater	N/A
20.0	S3CDO005	UNT to Crawfish Creek	Minor	Perennial	3	Warmwater	Dam-and-Pump/Flume
20.3	S3CDO007	UNT to Crawfish Creek	Minor	Perennial	2	Warmwater	Dam-and-Pump/Flume
21.4	S3CDO001	UNT to Crawfish Creek	Intermediate	Perennial	36	Warmwater	Dam-and-Pump/Flume
21.5	S3CDO010	UNT to Crawfish Creek	Minor	Perennial	4	Warmwater	Dam-and-Pump/Flume
21.8	S3CDO015	UNT to Crawfish Creek	Minor	Ephemeral	2	Warmwater	Dam-and-Pump/Flume
21.9	S3CDO017	UNT to Dog River	Minor	Ephemeral	0	Warmwater	N/A
22.1	S3CDO013	UNT to Dog River	Minor	Ephemeral	7	Warmwater	Dam-and-Pump/Flume
22.1	S3CDO014	UNT to Dog River	Minor	Ephemeral	1	Warmwater	Dam-and-Pump/Flume

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
22.3	S3CDO012	Crawfish Creek	Intermediate	Perennial	50	Warmwater	Dam-and-Pump/Flume
22.5	S3CDO018	Dog River	Intermediate	Perennial	21	Warmwater	Dam-and-Pump/Flume
23.5	S1ADO012	Keaton Creek	Intermediate	Perennial	81	Warmwater	Dam-and-Pump/Flume
23.5	S3CDO031	UNT to Keaton Creek	Minor	Perennial	0	Warmwater	N/A
23.9	S1ADO003	UNT to Keaton Creek	Minor	Ephemeral	0	Warmwater	N/A
24.1	S1ADO005	UNT to Keaton Creek	Minor	Perennial	4	Warmwater	Dam-and-Pump/Flume
24.1	S1ADO004	UNT to Keaton Creek	Minor	Ephemeral	2	Warmwater	Dam-and-Pump/Flume
24.3	S3CDO036	UNT to Keaton Creek	Minor	Intermittent	3	Warmwater	Dam-and-Pump/Flume
24.5	S3CDO040	UNT to Keaton Creek	Minor	Ephemeral	8	Warmwater	Dam-and-Pump/Flume
24.6 REROUTE	S3CDO037	UNT to Keaton Creek	Minor	Intermittent	7	Warmwater	Dam-and-Pump/Flume
24.7 REROUTE	S3CDO032	Keaton Creek	Intermediate	Perennial	55	Warmwater	Dam-and-Pump/Flume
24.7 REROUTE	S3CDO038	UNT to Keaton Creek	Intermediate	Perennial	13	Warmwater	Dam-and-Pump/Flume
25.2 REROUTE	S1ADO007_INT	UNT to Keaton Creek	Minor	Intermittent	2	Warmwater	Dam-and-Pump/Flume
25.6	S1ADO010	Keaton Creek	Intermediate	Perennial	26	Warmwater	Dam-and-Pump/Flume
25.9	S1ADO009	UNT to Keaton Creek	Minor	Perennial	4	Warmwater	Dam-and-Pump/Flume
25.9	S1ADO008	UNT to Keaton Creek	Minor	Intermittent	0	Warmwater	Dam-and-Pump/Flume
26.1	S3CDO019	UNT to Keaton Creek	Minor	Perennial	0	Warmwater	N/A
26.1	S3CDO020	UNT to Keaton Creek	Minor	Ephemeral	8	Warmwater	HDD
26.2	S3CDO027	UNT to Keaton Creek	Minor	Ephemeral	6	Warmwater	HDD
26.3	S3CDO026_PER	UNT to Keaton Creek	Minor	Perennial	5	Warmwater	HDD
26.4	S3CDO021	UNT to Keaton Creek	Minor	Ephemeral	3	Warmwater	Dam-and-Pump/Flume
26.5	S3CDO022	UNT to Keaton Creek	Minor	Perennial	0	Warmwater	N/A
26.5	S1ADO013	UNT to Keaton Creek	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume
26.8 REROUTE	XSDO008	Keaton Creek	Minor	Perennial	5	Warmwater	Dam-and-Pump/Flume
26.9 REROUTE	S2BDO021	UNT to Keaton Creek	Minor	Intermittent	5	Warmwater	Dam-and-Pump/Flume
27.2	S2BDO024	UNT to Keaton Creek	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume
28.1	S2BDO030	UNT to Town Branch	Intermediate	Ephemeral	0	Warmwater	N/A
28.1	S2BDO031	UNT to Town Branch	Minor	Ephemeral	0	Warmwater	N/A
28.2	S2BDO034	UNT to Town Branch	Minor	Intermittent	3	Warmwater	Dam-and-Pump/Flume
28.2	S2BDO033	UNT to Town Branch	Intermediate	Perennial	12	Warmwater	Dam-and-Pump/Flume

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
28.6	S2BDO033	UNT to Town Branch	Intermediate	Perennial	10	Warmwater	Dam-and-Pump/Flume
29.0	S2BDO029	Town Branch	Intermediate	Perennial	20	Warmwater	Dam-and-Pump/Flume
29.4	S3CDO034	UNT to Mud Creek	Minor	Intermittent	5	Warmwater	Dam-and-Pump/Flume
29.6	S2BDO035	UNT to Mud Creek	Minor	Intermittent	0	Warmwater	N/A
29.7	S2BDO036	UNT to Mud Creek	Minor	Ephemeral	0	Warmwater	N/A
30.2	S2BDO038	UNT to Mud Creek	Minor	Ephemeral	0	Warmwater	N/A
30.7	S2BPA023	Sweetwater Creek	Intermediate	Perennial	35	Warmwater	Dam-and-Pump/Flume
30.7	S2BPA025	UNT to Sweetwater Creek	Minor	Perennial	0	Warmwater	N/A
31.7 REROUTE	S2BPA028	UNT to Little Creek	Minor	Ephemeral	2	Warmwater	Dam-and-Pump/Flume
31.8	S2BPA029	Little Creek	Intermediate	Perennial	0	Warmwater	N/A
32.1	S1APA022	UNT to Little Creek	Minor	Ephemeral	3	Warmwater	Dam-and-Pump/Flume
32.2	S1APA023	UNT to Little Creek	Intermediate	Perennial	40	Warmwater	Dam-and-Pump/Flume
32.8	S1APA024	UNT to Little Creek	Minor	Perennial	6	Warmwater	Dam-and-Pump/Flume
33.1	XSPA003	UNT to Lick Log Creek	Minor	Intermittent	5	Warmwater	Dam-and-Pump/Flume
33.7	S3CPA001	UNT to Lick Log Creek	Intermediate	Ephemeral	38	Warmwater	Dam-and-Pump/Flume
34.1	S1APA003	Lick Log Creek	Minor	Perennial	2	Warmwater	Dam-and-Pump/Flume
34.1	S1APA002	UNT to Lick Log Creek	Minor	Perennial	2	Warmwater	Dam-and-Pump/Flume
34.4	S1APA006	Shed Creek	Minor	Perennial	3	Coldwater	Dam-and-Pump/Flume
34.4	XSPA006	Shed Creek	Minor	Perennial	0	Coldwater	N/A
34.4	XSPA005	Shed Creek	Minor	Perennial	0	Coldwater	N/A
34.5	S1APA007	UNT to Shed Creek	Minor	Ephemeral	0	Coldwater	N/A
34.5	S1APA005	UNT to Shed Creek	Minor	Ephemeral	0	Coldwater	N/A
34.9 REROUTE	S3CPA004	Shed Creek	Minor	Perennial	5	Coldwater	Dam-and-Pump/Flume
35	S1APA011	UNT to Shed Creek	Minor	Perennial	0	Coldwater	N/A
35.4	S3CPA005	UNT to Shed Creek	Minor	Ephemeral	5	Coldwater	Dam-and-Pump/Flume
36.0	S3CPA030	Little Pumpkinvine Creek	Intermediate	Perennial	34	Coldwater	Dam-and-Pump/Flume
36.2	S3CPA007	UNT to Little Pumpkinvine Creek	Minor	Perennial	4	Coldwater	Dam-and-Pump/Flume
36.6	S3CPA049	UNT to Little Pumpkinvine Creek	Minor	Perennial	0	Coldwater	N/A
36.6	S3CPA047	UNT to Little Pumpkinvine Creek	Minor	Perennial	0	Coldwater	N/A
36.9	S3CPA050	UNT to Little Pumpkinvine Creek	Intermediate	Ephemeral	15	Coldwater	Dam-and-Pump/Flume
37.3	S3CPA009	UNT to Little Pumpkinvine Creek	Intermediate	Intermittent	10	Coldwater	HDD

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
37.5	S3CPA008	Little Pumpkinvine Creek	Intermediate	Perennial	0	Coldwater	N/A
38.1	S3CPA024	UNT to Little Pumpkinvine Creek	Minor	Intermittent	0	Coldwater	N/A
38.3	S3CPA025	Pumpkinvine Creek	Intermediate	Perennial	57	Coldwater	Dam-and-Pump/Flume
38.3	S3CPA192	UNT to Pumpkinvine Creek	Minor	Ephemeral	0	Coldwater	N/A
38.6	S3CPA193	UNT to Pumpkinvine Creek	Intermediate	Ephemeral	12	Coldwater	Dam-and-Pump/Flume
39.1	S3CPA194	UNT to Pumpkinvine Creek	Minor	Intermittent	4	Coldwater	Dam-and-Pump/Flume
39.1	S3CPA026	UNT to Pumpkinvine Creek	Minor	Perennial	6	Coldwater	Dam-and-Pump/Flume
39.5	S3CPA027	UNT to Pumpkinvine Creek	Minor	Perennial	3	Warmwater	Dam-and-Pump/Flume
39.5	S3CPA197	UNT to Pumpkinvine Creek	Minor	Intermittent	6	Warmwater	Dam-and-Pump/Flume
39.9	S3CPA198	UNT to Pumpkinvine Creek	Minor	Ephemeral	0	Warmwater	N/A
40.2	S3CPA028	UNT to Pumpkinvine Creek	Intermediate	Perennial	11	Warmwater	Dam-and-Pump/Flume
40.4	S3CPA201	UNT to Pumpkinvine Creek	Minor	Intermittent	6	Warmwater	Dam-and-Pump/Flume
40.7	S3CPA055	UNT to Pumpkinvine Creek	Minor	Intermittent	3	Warmwater	Dam-and-Pump/Flume
40.9	S3CPA054	UNT to Pumpkinvine Creek	Minor	Perennial	6	Warmwater	Dam-and-Pump/Flume
41.5	S3CPA057	UNT to Pumpkinvine Creek	Intermediate	Perennial	14	Warmwater	Dam-and-Pump/Flume
41.7	S3CPA164	UNT to Pumpkinvine Creek	Minor	Intermittent	5	Warmwater	Dam-and-Pump/Flume
41.9	S3CPA069	UNT to Pumpkinvine Creek	Minor	Intermittent	1	Warmwater	Dam-and-Pump/Flume
41.9	S3CPA059	UNT to Pumpkinvine Creek	Minor	Intermittent	1	Warmwater	Dam-and-Pump/Flume
42.0	S3CPA060	UNT to Pumpkinvine Creek	Minor	Intermittent	0	Warmwater	N/A
42.0	S3CPA058	UNT to Pumpkinvine Creek	Intermediate	Perennial	37	Warmwater	Dam-and-Pump/Flume
42.6 REROUTE	S3CPA062	UNT to Little Raccoon Creek	Minor	Perennial	3	Coldwater	Dam-and-Pump/Flume
43.0	S3CPA066	UNT to Little Raccoon Creek	Minor	Perennial	3	Coldwater	Dam-and-Pump/Flume
43.4 REROUTE	S1APA025	UNT to Little Raccoon Creek	Minor	Perennial	8	Coldwater	Dam-and-Pump/Flume
43.5	S1APA028	UNT to Little Raccoon Creek	Minor	Perennial	0	Coldwater	N/A
43.5	S1APA027	UNT to Little Raccoon Creek	Minor	Ephemeral	3	Coldwater	Dam-and-Pump/Flume
43.7	S1APA031	UNT to Pumpkinvine Creek	Minor	Perennial	2	Warmwater	Dam-and-Pump/Flume
44.0 REROUTE	S3CPA081	UNT to Pumpkinvine Creek	Minor	Ephemeral	3	Warmwater	Dam-and-Pump/Flume

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
44.1 REROUTE	S3CPA080	UNT to Pumpkinvine Creek	Minor	Intermittent	6	Warmwater	Dam-and-Pump/Flume
46.1 REROUTE	S3CPA096	UNT to Raccoon Creek	Intermediate	Perennial	54	Coldwater	Dam-and-Pump/Flume
46.2 REROUTE	S3CPA094_INT	UNT to Raccoon Creek	Minor	Intermittent	0	Coldwater	N/A
46.2 REROUTE	S3CPA094_EPH	UNT to Raccoon Creek	Intermediate	Ephemeral	11	Coldwater	Dam-and-Pump/Flume
46.6 REROUTE	S3CPA169	UNT to Pumpkinvine Creek	Minor	Perennial	5	Warmwater	Dam-and-Pump/Flume
46.6 REROUTE	S3CPA168	UNT to Pumpkinvine Creek	Minor	Ephemeral	6	Warmwater	Dam-and-Pump/Flume
46.9 REROUTE	S3CPA170	UNT to Pumpkinvine Creek	Minor	Ephemeral	0	Warmwater	N/A
47.3 REROUTE	S3CPA101_INT	UNT to Raccoon Creek	Minor	Intermittent	7	Coldwater	Dam-and-Pump/Flume
47.3 REROUTE	S3CPA102	UNT to Raccoon Creek	Minor	Intermittent	7	Coldwater	Dam-and-Pump/Flume
47.3 REROUTE	S3CPA171	UNT to Raccoon Creek	Minor	Intermittent	3	Coldwater	Dam-and-Pump/Flume
47.5 REROUTE	S3CPA103	UNT to Raccoon Creek	Minor	Intermittent	5	Coldwater	Dam-and-Pump/Flume
47.6 REROUTE	S3CPA104	UNT to Raccoon Creek	Minor	Intermittent	5	Coldwater	Dam-and-Pump/Flume
47.7 REROUTE	S3CPA105	UNT to Raccoon Creek	Minor	Intermittent	4	Coldwater	Dam-and-Pump/Flume
47.8 REROUTE	S3CPA106	UNT to Raccoon Creek	Intermediate	Perennial	13	Coldwater	Dam-and-Pump/Flume
47.9 REROUTE	S3CPA172	UNT to Raccoon Creek	Minor	Ephemeral	0	Coldwater	N/A
48.1 REROUTE	S3CPA173	UNT to Raccoon Creek	Minor	Intermittent	8	Coldwater	Dam-and-Pump/Flume
48.3 REROUTE	S3CPA181	UNT to Raccoon Creek	Minor	Intermittent	4	Coldwater	Dam-and-Pump/Flume
48.5 REROUTE	S3CPA175	UNT to Raccoon Creek	Intermediate	Perennial	10	Coldwater	Dam-and-Pump/Flume
48.6 REROUTE	S3CPA184	UNT to Raccoon Creek	Minor	Ephemeral	4	Coldwater	Dam-and-Pump/Flume
48.7 REROUTE	S3CPA185	UNT to Raccoon Creek	Intermediate	Intermittent	10	Coldwater	Dam-and-Pump/Flume
49.1 REROUTE	S3CPA111	UNT to Raccoon Creek	Intermediate	Perennial	21	Coldwater	Dam-and-Pump/Flume
49.2 REROUTE	S3CPA108	UNT to Raccoon Creek	Minor	Intermittent	4	Coldwater	Dam-and-Pump/Flume
49.5 REROUTE	S3CPA107_EPH	UNT to Raccoon Creek	Minor	Ephemeral	4	Coldwater	Dam-and-Pump/Flume
49.7 REROUTE	S3CPA113	UNT to Raccoon Creek	Intermediate	Intermittent	24	Warmwater	Dam-and-Pump/Flume
49.9 REROUTE	S3CPA115	UNT to Raccoon Creek	Minor	Perennial	6	Warmwater	Dam-and-Pump/Flume
50.0 REROUTE	S3CPA116	UNT to Raccoon Creek	Minor	Intermittent	3	Warmwater	Dam-and-Pump/Flume
50.2 REROUTE	S3CPA188	UNT to Raccoon Creek	Minor	Intermittent	0	Warmwater	N/A

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
50.3 REROUTE	S3CPA122	UNT to Raccoon Creek	Minor	Intermittent	5	Warmwater	Dam-and-Pump/Flume
50.5 REROUTE	S3CPA120	UNT to Murray Creek	Intermediate	Perennial	25	Warmwater	Dam-and-Pump/Flume
50.8 REROUTE	S3CPA119	UNT to Murray Creek	Minor	Perennial	9	Warmwater	Dam-and-Pump/Flume
51.1 REROUTE	S3CPA0126	UNT to Murray Creek	Minor	Intermittent	0	Warmwater	N/A
51.3 REROUTE	S3CPA189	UNT to Murray Creek	Minor	Perennial	9	Warmwater	Dam-and-Pump/Flume
51.4 REROUTE	S3CPA190_INT	UNT to Murray Creek	Minor	Intermittent	4	Warmwater	Dam-and-Pump/Flume
51.4 REROUTE	S3CPA190_PER	UNT to Murray Creek	Minor	Perennial	0	Warmwater	N/A
51.6 REROUTE	S3CPA0132	Murray Creek	Intermediate	Perennial	15	Warmwater	Dam-and-Pump/Flume
51.6 REROUTE	S3CPA0133	UNT to Murray Creek	Minor	Intermittent	4	Warmwater	Dam-and-Pump/Flume
51.8 REROUTE	S3CPA0129	UNT to Murray Creek	Minor	Perennial	6	Warmwater	Dam-and-Pump/Flume
51.8 REROUTE	S3CPA0130	UNT to Murray Creek	Minor	Intermittent	5	Warmwater	Dam-and-Pump/Flume
52.1 REROUTE	S3CPA140	UNT to Marable Creek	Intermediate	Ephemeral	10	Warmwater	Dam-and-Pump/Flume
52.4 REROUTE	S3CPA137	Marable Creek	Intermediate	Perennial	22	Warmwater	Dam-and-Pump/Flume
52.6 REROUTE	S3CPA136	UNT to Marable Creek	Minor	Intermittent	3	Warmwater	Dam-and-Pump/Flume
52.7 REROUTE	S3CPA134	UNT to Marable Creek	Minor	Intermittent	0	Warmwater	N/A
53.1 REROUTE	S3CPA143	UNT to Marable Creek	Minor	Ephemeral	5	Warmwater	Dam-and-Pump/Flume
53.5 REROUTE	S3CPA146	UNT to Marable Creek	Minor	Perennial	4	Warmwater	Dam-and-Pump/Flume
53.7 REROUTE	S3CPA158_INT	UNT to Marable Creek	Minor	Intermittent	0	Warmwater	N/A
53.7 REROUTE	S3CPA158_EPH	UNT to Marable Creek	Minor	Ephemeral	6	Warmwater	Dam-and-Pump/Flume
54.2 REROUTE	S3CPA162	UNT to Marable Creek	Minor	Intermittent	2	Warmwater	Dam-and-Pump/Flume
54.2 REROUTE	S3CPA161	UNT to Marable Creek	Minor	Perennial	8	Warmwater	Dam-and-Pump/Flume
54.5	S2BBA007	Raccoon Creek	Intermediate	Perennial	68	Warmwater	Dam-and-Pump/Flume
54.5 REROUTE	S3CPA149	UNT to Marable Creek	Minor	Intermittent	4	Warmwater	Dam-and-Pump/Flume
54.6 REROUTE	S3CPA150	UNT to Marable Creek	Minor	Perennial	4	Warmwater	Dam-and-Pump/Flume
54.7 REROUTE	S3CPA152	UNT to Marable Creek	Minor	Intermittent	3	Warmwater	Dam-and-Pump/Flume
54.9 REROUTE	S3CPA021_PER	UNT to Marable Creek	Intermediate	Perennial	21	Warmwater	Dam-and-Pump/Flume
55.2 REROUTE	S3CPA153	UNT to Jackson Creek	Minor	Perennial	6	Warmwater	Dam-and-Pump/Flume

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
55.3 REROUTE	S3CPA154	Jackson Creek	Intermediate	Perennial	32	Warmwater	Dam-and-Pump/Flume
55.3	S3CBA023	UNT to Raccoon Creek	Intermediate	Perennial	22	Warmwater	Dam-and-Pump/Flume
55.4 REROUTE	S3CPA156	UNT to Jackson Creek	Minor	Intermittent	5	Warmwater	Dam-and-Pump/Flume
55.4 REROUTE	S3CPA157	UNT to Jackson Creek	Minor	Perennial	7	Warmwater	Dam-and-Pump/Flume
55.5	S3CBA025	UNT to Raccoon Creek	Intermediate	Ephemeral	13	Warmwater	Dam-and-Pump/Flume
55.7 REROUTE	S3CBA026	UNT to Jackson Creek	Minor	Intermittent	0	Warmwater	N/A
55.7 REROUTE	S3CBA027	UNT to Jackson Creek	Minor	Perennial	3	Warmwater	Dam-and-Pump/Flume
58.0 REROUTE	S3CBA022	UNT to Euharlee Creek	Minor	Intermittent	6	Warmwater	Dam-and-Pump/Flume
59.3	S1ABA002	Euharlee Creek	Intermediate	Perennial	85	Warmwater	Dam-and-Pump/Flume
60.5 REROUTE	S3CBA028	UNT to Jones Branch	Major	Intermittent	123	Warmwater	Dam-and-Pump/Flume
61.2	S3CBA005	UNT to Euharlee Creek	Intermediate	Ephemeral	12	Warmwater	Dam-and-Pump/Flume
62.3	S3CBA015	UNT to Etowah River	Intermediate	Perennial	16	Warmwater	Dam-and-Pump/Flume
62.6	S3CBA018	UNT to Etowah River	Intermediate	Ephemeral	12	Warmwater	Dam-and-Pump/Flume
63.7	S3CBA006	UNT to Etowah River	Intermediate	Ephemeral	14	Warmwater	Dam-and-Pump/Flume
65.6	S2BBA001	Etowah River	Major	Perennial	513	Warmwater	Wet Open Cut
66.4	S1ABA011	UNT to Etowah River	Intermediate	Ephemeral	10	Warmwater	Dam-and-Pump/Flume
68.0	S2BBA002	UNT to Two Run Creek	Minor	Intermittent	6	Coldwater	Dam-and-Pump/Flume
68.1	S2BBA003	UNT to Two Run Creek	Minor	Ephemeral	5	Coldwater	Dam-and-Pump/Flume
68.5	S2BBA006	UNT to Two Run Creek	Minor	Ephemeral	1	Coldwater	Dam-and-Pump/Flume
68.8	S2BBA010	Two Run Creek	Intermediate	Perennial	58	Coldwater	Dam-and-Pump/Flume
68.9	S2BBA050	UNT to Two Run Creek	Minor	Ephemeral	4	Coldwater	Dam-and-Pump/Flume
69.4	S1ABA024	Shanty Branch	Intermediate	Ephemeral	92	Coldwater	Dam-and-Pump/Flume
69.8 REROUTE	S1ABA004	Shanty Branch	Minor	Ephemeral	4	Coldwater	Dam-and-Pump/Flume
70.0 REROUTE	S1ABA005	Shanty Branch	Minor	Ephemeral	7	Coldwater	Dam-and-Pump/Flume
72.2	S2BBA013	UNT to Big Branch	Minor	Ephemeral	4	Coldwater	Dam-and-Pump/Flume
73.1	S2BBA016	Big Branch	Minor	Ephemeral	5	Coldwater	Dam-and-Pump/Flume
73.6	S2BBA020	Oothkalooga Creek	Minor	Ephemeral	0	Warmwater	N/A

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
75.3 REROUTE	S2BBA023	UNT to Manning Creek	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume
75.4	S2BBA028	UNT to Manning Creek	Intermediate	Ephemeral	10	Warmwater	Dam-and-Pump/Flume
75.5	S2BBA024	UNT to Manning Creek	Intermediate	Ephemeral	12	Warmwater	Dam-and-Pump/Flume
75.9	S2BBA032	Manning Creek	Minor	Perennial	3	Warmwater	Dam-and-Pump/Flume
75.9	S2BBA033	UNT to Manning Creek	Minor	Ephemeral	0	Warmwater	N/A
75.9	S2BBA044	UNT to Manning Creek	Minor	Ephemeral	3	Warmwater	Dam-and-Pump/Flume
76.9	S2BBA037	UNT to Oothkalooga Creek	Minor	Intermittent	5	Warmwater	Dam-and-Pump/Flume
77.2	S2BBA038	UNT to Oothkalooga Creek	Minor	Intermittent	3	Warmwater	Dam-and-Pump/Flume
78.2	S1ABA017	UNT to Oothkalooga Creek	Intermediate	Ephemeral	10	Warmwater	Dam-and-Pump/Flume
78.2	S1ABA018	UNT to Oothkalooga Creek	Minor	Ephemeral	0	Warmwater	N/A
78.5	S1ABA021	UNT to Dry Creek	Minor	Ephemeral	0	Warmwater	N/A
78.5	S1ABA020	UNT to Dry Creek	Minor	Ephemeral	0	Warmwater	N/A
79.5	S1ABA022	UNT to Oothkalooga Creek	Minor	Ephemeral	5	Warmwater	Dam-and-Pump/Flume
80.7	S3CBA009_EPH	Beaman Branch	Minor	Ephemeral	8	Warmwater	Dam-and-Pump/Flume
80.7	S3CBA021	UNT to Beaman Branch	Minor	Ephemeral	0	Warmwater	N/A
82.4	S3CGO001	Lynn Creek	Minor	Perennial	6	Warmwater	Dam-and-Pump/Flume
82.9	S3CGO004	UNT to Lynn Creek	Minor	Perennial	4	Warmwater	Dam-and-Pump/Flume
83.7	S3CGO005	UNT to Jacks Creek	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume
84.8	S3CGO029	UNT to Blackwood Creek	Minor	Ephemeral	6	Warmwater	Dam-and-Pump/Flume
85.5	S3CGO008	UNT to Spring Creek	Minor	Ephemeral	7	Warmwater	Dam-and-Pump/Flume
86.8	S3CGO010	UNT to Spring Creek	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume
87.1 REROUTE	S3CGO011	UNT to Town Creek	Minor	Ephemeral	5	Warmwater	Dam-and-Pump/Flume
87.7	S3CGO016	UNT to Town Creek	Minor	Ephemeral	0	Warmwater	N/A
88.5	S3CGO027	UNT to Town Branch	Minor	Ephemeral	0	Warmwater	N/A
88.6	S2BGO004	UNT to Crane Eater Creek	Minor	Ephemeral	0	Warmwater	N/A
88.7	S2BGO002	UNT to Crane Eater Creek	Minor	Ephemeral	0	Warmwater	N/A
88.8	S2BGO007	UNT to Crane Eater Creek	Minor	Ephemeral	0	Warmwater	N/A
89.4	S1AGO002	UNT to Crane Eater Creek	Minor	Perennial	2	Warmwater	Dam-and-Pump/Flume
89.6	S1AGO001	UNT to Crane Eater Creek	Minor	Perennial	4	Warmwater	Dam-and-Pump/Flume

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
89.6	S1AGO006	UNT to Crane Eater Creek	Intermediate	Perennial	0	Warmwater	N/A
89.6	S1AGO007	UNT to Crane Eater Creek	Minor	Intermittent	7	Warmwater	Dam-and-Pump/Flume
89.9	S1AGO008	UNT to Crane Eater Creek	Major	Perennial	275	Warmwater	Dam-and-Pump/Flume
90.1	S1AGO012	Crane Eater Creek	Intermediate	Perennial	23	Warmwater	HDD
90.4	S2BGO008	Coosawattee River	Major	Perennial	183	Warmwater	HDD
90.6	S2BGO009	UNT to Coosawattee River	Intermediate	Ephemeral	10	Warmwater	Dam-and-Pump/Flume
91.0	S3CGO028	UNT to Coosawattee River	Minor	Intermittent	3	Warmwater	Dam-and-Pump/Flume
91.5 REROUTE	S3CGO026	UNT to Coosawattee River	Minor	Intermittent	1	Warmwater	Dam-and-Pump/Flume
91.7	S3CGO032	UNT to Conasauga River	Minor	Intermittent	7	Warmwater	Dam-and-Pump/Flume
92.0 REROUTE	S3CGO032	UNT to Conasauga River	Intermediate	Intermittent	17	Warmwater	Dam-and-Pump/Flume
92.0 REROUTE	S2BGO016	UNT to Conasauga River	Minor	Ephemeral	2	Warmwater	Dam-and-Pump/Flume
92.1 REROUTE	S3CGO031	UNT to Conasauga River	Minor	Perennial	8	Warmwater	Dam-and-Pump/Flume
92.5	S2BGO015	UNT to Conasauga River	Minor	Intermittent	5	Warmwater	Dam-and-Pump/Flume
92.5	S2BGO020	UNT to Conasauga River	Minor	Ephemeral	2	Warmwater	Dam-and-Pump/Flume
92.7	S2BGO029	UNT to Conasauga River	Minor	Ephemeral	3	Warmwater	Dam-and-Pump/Flume
92.7	S2BGO028	UNT to Conasauga River	Minor	Ephemeral	0	Warmwater	N/A
92.8	S2BGO024	UNT to Conasauga River	Intermediate	Ephemeral	0	Warmwater	N/A
92.9	S2BGO023	UNT to Conasauga River	Minor	Ephemeral	3	Warmwater	Dam-and-Pump/Flume
92.9	S3CGO034	UNT to Conasauga River	Minor	Ephemeral	9	Warmwater	Dam-and-Pump/Flume
93.0	S3CGO033	UNT to Conasauga River	Minor	Intermittent	6	Warmwater	Dam-and-Pump/Flume
93.1	S2BGO031	UNT to Polecat Creek	Minor	Intermittent	4	Warmwater	Dam-and-Pump/Flume
93.1	S2BGO032	UNT to Polecat Creek	Minor	Ephemeral	6	Warmwater	Dam-and-Pump/Flume
93.2	S2BGO034	UNT to Polecat Creek	Minor	Intermittent	9	Warmwater	Dam-and-Pump/Flume
93.4	S2BGO030	Polecat Creek	Intermediate	Perennial	36	Warmwater	Dam-and-Pump/Flume
93.5	S2BGO035	UNT to Polecat Creek	Intermediate	Ephemeral	21	Warmwater	Dam-and-Pump/Flume
93.9	S2BGO038	UNT to Polecat Creek	Intermediate	Ephemeral	11	Warmwater	Dam-and-Pump/Flume
94.2	S2BGO039	UNT to Polecat Creek	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume
94.8	S3CGO035	UNT to Polecat Creek	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
95.0	S2BGO042	UNT to Polecat Creek	Minor	Ephemeral	5	Warmwater	Dam-and-Pump/Flume
95.1	S2BGO041	UNT to Polecat Creek	Minor	Ephemeral	6	Warmwater	Dam-and-Pump/Flume
95.2	S3CGO015	UNT to Polecat Creek	Minor	Ephemeral	5	Warmwater	Dam-and-Pump/Flume
95.5	S3CGO019	UNT to Polecat Creek	Minor	Ephemeral	0	Warmwater	N/A
95.6	S3CGO020	UNT to Polecat Creek	Intermediate	Perennial	13	Warmwater	Dam-and-Pump/Flume
96.1	S1AGO015	Polecat Creek	Intermediate	Perennial	32	Warmwater	Dam-and-Pump/Flume
96.1	S1AGO016	UNT to Polecat Creek	Minor	Ephemeral	8	Warmwater	Dam-and-Pump/Flume
96.3	XSGO009	Polecat Creek	Major	Perennial	180	Warmwater	Dam-and-Pump/Flume
96.4	XSGO010	UNT to Polecat Creek	Minor	Intermittent	6	Warmwater	Dam-and-Pump/Flume
96.8	S3CGO013	UNT to Polecat Creek	Minor	Intermittent	5	Warmwater	Dam-and-Pump/Flume
96.9	S3CGO014	UNT to Polecat Creek	Minor	Ephemeral	5	Warmwater	Dam-and-Pump/Flume
97.1	S1AGO014	UNT to Polecat Creek	Minor	Ephemeral	7	Warmwater	Dam-and-Pump/Flume
97.3	S1AMU001	UNT to Polecat Creek	Minor	Perennial	3	Warmwater	Dam-and-Pump/Flume
97.6	S1AMU004	Polecat Creek	Intermediate	Perennial	0	Warmwater	N/A
97.8	S1AMU008	UNT to Polecat Creek	Minor	Perennial	3	Warmwater	Dam-and-Pump/Flume
97.8	S1AMU010	UNT to Polecat Creek	Minor	Ephemeral	1	Warmwater	Dam-and-Pump/Flume
97.9	S1AMU012	UNT to Polecat Creek	Minor	Ephemeral	5	Warmwater	Dam-and-Pump/Flume
98.1	S1AMU042	UNT to Polecat Creek	Intermediate	Intermittent	10	Warmwater	Dam-and-Pump/Flume
98.7	S1AMU015	UNT to Polecat Creek	Minor	Ephemeral	0	Warmwater	N/A
99.0	S1AMU045	UNT to Beamer Creek	Intermediate	Perennial	24	Warmwater	Dam-and-Pump/Flume
99.4	S1AMU047	Beamer Creek	Intermediate	Perennial	11	Warmwater	Dam-and-Pump/Flume
99.8	S1AMU017	UNT to Beamer Creek	Minor	Ephemeral	6	Warmwater	Dam-and-Pump/Flume
100.2	S1AMU018	UNT to Polecat Creek	Intermediate	Ephemeral	2	Warmwater	Dam-and-Pump/Flume
100.3	S1AMU019	Polecat Creek	Intermediate	Perennial	29	Warmwater	Dam-and-Pump/Flume
101.6	S1AMU023	Casey Springs Branch	Intermediate	Ephemeral	15	Warmwater	Dam-and-Pump/Flume
101.7	S1AMU025	UNT to Casey Springs Branch	Minor	Intermittent	2	Warmwater	Dam-and-Pump/Flume
101.8	S1AMU026	UNT to Casey Springs Branch	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume
102.0	S1AMU030	Casey Springs Branch	Intermediate	Perennial	6	Warmwater	Dam-and-Pump/Flume

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
102.0	S1AMU028	UNT to Casey Springs Branch	Minor	Ephemeral	4	Warmwater	Dam-and-Pump/Flume
102.3	S3CMU028	UNT to Casey Springs Branch	Minor	Intermittent	0	Warmwater	N/A
102.6	S3CMU029	UNT to Casey Springs Branch	Minor	Intermittent	3	Warmwater	Dam-and-Pump/Flume
102.9 REROUTE	S1AMU032	Holly Creek	Intermediate	Perennial	40	Warmwater	HDD
103.0 REROUTE	S1AMU032	Holly Creek	Major	Perennial	113	Warmwater	HDD
103.0 REROUTE	S1AMU032	Holly Creek	Intermediate	Perennial	57	Warmwater	HDD
103.5	S3CMU003	Bullpen Branch	Intermediate	Perennial	25	Warmwater	Dam-and-Pump/Flume
103.8	S3CMU006	UNT to Bullpen Branch	Minor	Perennial	8	Warmwater	Dam-and-Pump/Flume
104.4 REROUTE	S3CMU008b	UNT to Bullpen Branch	Minor	Perennial	0	Warmwater	N/A
104.4 REROUTE	S3CMU008_PER	UNT to Bullpen Branch	Minor	Perennial	8	Warmwater	Dam-and-Pump/Flume
104.7	S3CMU009	UNT to Holly Creek	Minor	Intermittent	4	Warmwater	Dam-and-Pump/Flume
104.9	S1AMU050	UNT to Holly Creek	Minor	Intermittent	4	Warmwater	Dam-and-Pump/Flume
104.9	S1AMU051	UNT to Holly Creek	Minor	Perennial	0	Warmwater	N/A
105.1	S1AMU053	UNT to Holly Creek	Minor	Ephemeral	5	Warmwater	Dam-and-Pump/Flume
105.7	S3CMU037	UNT to Holly Creek	Minor	Perennial	8	Warmwater	Dam-and-Pump/Flume
105.7	S3CMU018_PER	UNT to Holly Creek	Minor	Perennial	6	Warmwater	Dam-and-Pump/Flume
105.8	S3CMU038	UNT to Holly Creek	Minor	Perennial	3	Warmwater	Dam-and-Pump/Flume
106.1	S3CMU020	UNT to Holly Creek	Minor	Perennial	8	Warmwater	Dam-and-Pump/Flume
106.1	S3CMU039	UNT to Holly Creek	Intermediate	Perennial	11	Warmwater	Dam-and-Pump/Flume
106.2	S3CMU041	UNT to Holly Creek	Minor	Ephemeral	0	Warmwater	N/A
106.3	S3CMU024	UNT to Holly Creek	Minor	Ephemeral	8	Warmwater	Dam-and-Pump/Flume
107.0	S3CMU026	UNT to Holly Creek	Minor	Intermittent	9	Warmwater	Dam-and-Pump/Flume
107.1	S3CMU025	UNT to Holly Creek	Intermediate	Intermittent	14	Warmwater	Dam-and-Pump/Flume
107.3	S3CMU027	Conasauga River	Major	Perennial	168	Warmwater	HDD
107.4	S3CWH002	UNT to Conasauga River	Minor	Perennial	0	Warmwater	HDD
107.8	S3CWH005	UNT to Conasauga River	Minor	Intermittent	8	Warmwater	Dam-and-Pump/Flume
108.0	S1AWH002	UNT to Conasauga River	Minor	Ephemeral	5	Warmwater	Dam-and-Pump/Flume
108.0	S1AWH001	UNT to Conasauga River	Minor	Perennial	8	Warmwater	Dam-and-Pump/Flume

APPENDIX G (cont'd)

Waterbodies Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility / Milepost	Feature ID	Waterbody Name	FERC Classification [b]	Flow Regime	Crossing Width (feet) [c]	Fishery Classification	Proposed Crossing Method [d]
108.1	S1AWH003	UNT to Conasauga River	Minor	Ephemeral	0	Warmwater	N/A
108.2	S1AWH004	UNT to Conasauga River	Intermediate	Ephemeral	18	Warmwater	Dam-and-Pump/Flume
108.3	S1AWH006	UNT to Conasauga River	Intermediate	Intermittent	43	Warmwater	HDD
108.3	S1AWH005	UNT to Conasauga River	Minor	Ephemeral	0	Warmwater	N/A
108.5	S1AWH008	Conasauga River	Major	Perennial	671	Warmwater	HDD
108.5	S1AWH011	UNT to Conasauga River	Minor	Intermittent	0	Warmwater	HDD
108.7	S1AWH012	UNT to Conasauga River	Minor	Intermittent	5	Warmwater	Dam-and-Pump/Flume
108.8	S1AWH009	UNT to Conasauga River	Intermediate	Perennial	12	Warmwater	Dam-and-Pump/Flume
108.8	S1AWH010	UNT to Conasauga River	Minor	Perennial	6	Warmwater	Dam-and-Pump/Flume
AGL Spur							
0.1	S3CMU030	UNT to Holly Creek	Intermediate	Perennial	28	Warmwater	Dam-and-Pump/Flume
0.4	S3CMU036	UNT to Holly Creek	Minor	Intermittent	2	Warmwater	Dam-and-Pump/Flume
0.7	S1AMU035	UNT to Holly Creek	Minor	Ephemeral	0	Warmwater	N/A
0.7	S1AMU034	UNT to Holly Creek	Minor	Perennial	4	Warmwater	Dam-and-Pump/Flume
1.8	S1AMU037	Rocky Ford Branch	Intermediate	Perennial	36	Warmwater	Dam-and-Pump/Flume

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[a] Based on field delineations conducted to date, which encompass the majority of the pipeline route, staging/contractor yards, compressor stations, and aboveground facilities. Features documented using desktop analysis, due to a lack of survey access, are notated with an "X" at the beginning of the Feature ID.

[b] Classifications include: Major (greater than 100 feet wide); Intermediate (between 10 and 100 feet wide); and Minor (up to 10 feet wide).

[c] Based on the width at the pipeline centerline.

[d] Crossing methods for the pipeline include the horizontal directional drill (HDD), dam-and-pump/flume, and the wet open-cut crossing methods, which are discussed in section A.7.a. N/A indicates the waterbody is not crossed by the pipeline but occurs within the construction workspace.

Notes: FERC = Federal Energy Regulatory Commission; UNT = unnamed tributary

APPENDIX H

HORIZONTAL DIRECTIONAL DRILL CONTINGENCY PLAN

Transcontinental Gas Pipe Line Company, LLC

Horizontal Directional Drill Contingency Plan

Dalton Expansion Project

Docket No. PF-14-10-000

September 2015

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Abbreviations and Acronyms

dt/day	dekatherms per day
FERC	Federal Energy Regulatory Commission
GDNR EPD	Georgia Department of Natural Resources, Environmental Protection Division
HDD	horizontal directional drill
Mdt/d	thousand dekatherms per day
MLV	mainline valve
MP	milepost
NTU	nephelometric turbidity units
OD	outside diameter
Project	Dalton Expansion Project
Transco	Transcontinental Gas Pipe Line Company, LLC

1. HDD CONTINGENCY PLAN

1.1 Introduction

Transcontinental Gas Pipe Line Company, LLC (Transco) is proposing to provide 448 thousand dekatherms per day (Mdt/d) of incremental firm transportation capacity from Transco's Station 210 Zone 6 Pooling Point in Mercer County, New Jersey to an interconnection with Gulf South Pipeline Company, LP in Pike County, Mississippi (Holmesville) and through a new pipeline lateral (Dalton Lateral) initiating at Transco's Compressor Station 115 in Coweta County, Georgia to interconnections on the Dalton Lateral in northwest Georgia. This project is referred to as the Dalton Expansion Project (Project). As detailed below, the Project will consist of 112.9 miles of new natural gas pipeline in three continuous segments (Dalton Lateral Segments 1, 2, and 3) and a new 2.0-mile natural gas lateral pipeline (Dalton Lateral - AGL Spur). A new compressor station and three new meter stations also will be constructed, and modifications and supplemental odorization equipment will be installed at existing facilities as part of the Project. The Project consists of the following components:

- Dalton Lateral Segment 1
  - Addition of approximately 7.8 miles of new 30-inch outside diameter (OD) pipeline in Coweta and Carroll Counties, Georgia from the discharge of Compressor Station 115 to the proposed Compressor Station 116
- Dalton Lateral Segment 2
  - Addition of approximately 51.3 miles of new 24-inch OD pipeline in Carroll, Douglas, Paulding, and Bartow Counties, Georgia from the discharge of the proposed Compressor Station 116 to the proposed Beasley Road Meter Station
- Dalton Lateral Segment 3
  - Addition of approximately 53.8 miles of new 20-inch OD pipeline in Bartow, Gordon, Murray, and Whitfield Counties, Georgia from the proposed Beasley Road Meter Station to the proposed Looper Bridge Road Meter Station
- Dalton Lateral - AGL Spur
  - Addition of approximately 2.0 miles of new 16-inch OD pipeline in Murray County, Georgia from milepost (MP) 105.2 of the Dalton Lateral to the proposed Murray Meter Station
- Compressor Station 116
  - Addition of a new 21,830-horsepower (HP) compressor station in Carroll County, Georgia
- Beasley Road Meter Station (formerly referred to as AGL-Bartow Meter Station)
  - Addition of a new 190 thousand dekatherms per day (Mdt/d) meter station in Bartow County, Georgia
- Looper Bridge Road Meter Station (formerly referred to as Oglethorpe-Smith Meter Station)
  - Addition of a new 208-Mdt/d meter station in Murray County, Georgia

- Murray Meter Station (formerly referred to as AGL-Murray Meter Station)
    - Addition of a new 50-Mdt/d meter station in Murray County, Georgia
- Mainline Facility Modifications to Accommodate Bi-Directional Flow
    - Addition of valves and yard piping for south flow compression in Pittsylvania County, Virginia at Compressor Station 165 and in Orange County, Virginia, at Compressor Station 180
    - Modifications to Compressor Station 167 in Mecklenburg County, Virginia to handle a partially odorized system
    - Modifications to mainline valve (MLV) settings at MLV 160-10 in Rockingham County, North Carolina and at MLV 160-15, the Hutson Road MLV, and MLV 160-20 in Pittsylvania County, Virginia to handle a partially odorized system
    - Modifications to 23 meter and regulator stations at 20 sites in Rockingham, Northampton, and Hertford Counties, North Carolina, and Pittsylvania, Brunswick, Mecklenburg, Greensville, and Halifax Counties, Virginia, on the South Virginia Lateral and between Compressor Stations 160 and 165 on the mainline to handle a partially odorized system.

The new pipeline will be installed primarily along existing transmission line or roadway corridors. Approximately 48.6 percent (54.9 miles) of the Dalton Lateral Segments 1, 2, and 3 and 60.0 percent (1.2 miles) of the Dalton Lateral - AGL Spur are co-located with existing utilities.

Transco is proposing to utilize a horizontal directional drill (HDD) to install the Project pipeline at the HDD locations provided in **Table 1** (Appendix A). Crossing plans showing the proposed HDD alignments in plan and profile views are provided in Appendix B.

Transco intends to protect public health and safety, as well as natural resources, in the event of an inadvertent release of drilling fluid during the HDD. The HDD method was chosen to avoid impacts to sensitive resources in these three areas and has been proven to be a safe and efficient method of pipeline installation. The purpose of this document is to aid Transco's construction team in developing and executing a program designed to eliminate or minimize adverse effects from HDD fluid seepage.

2. DRILLING FLUID AND DRILLING FLUID SYSTEM

The HDD process utilizes a drilling fluid made up primarily of water and bentonite, with pH values between 8 and 9. Bentonite is a naturally occurring, non-toxic, inert drilling fluid additive (the Material Safety Data Sheet for bentonite is provided as Appendix C). This ensures that if an inadvertent release of drilling fluid were to occur, there would be minimal environmental impacts. Even if an inadvertent release occurred in a waterbody, the environmental impact would be a temporary increase in local turbidity until the drilling fluid settled or dissipated with the current.

The primary purposes of this drilling fluid are to remove the cuttings from the borehole, to stabilize the borehole and to act as a coolant and lubricant during the drilling process. The water and clay drilling fluid consists of one to five percent active clays and from zero to 40 percent inert solids with the rest being water. The primary active clay component is bentonite.

The drilling fluid is first prepared in the mixing tank with both new and clean recycled drilling fluid. The fluid is pumped at 100 to 1,000 gallons per minute rates through the center of the drill pipe to the jets located in the downhole drilling tool. Return flow is through the annulus created between the wall of the boring and the drill pipe. The cuttings are then carried back to either the entry or exit pit, depending on a combination of elevation difference and drilling / hole-opening direction. Once in the entry pit, the fluid is pumped to the fluid processing equipment. Typically, shaker screens, desanders, and desilters remove increasingly finer cuttings from the drilling fluid. The cleaned and recycled fluid is returned to the mixing tank and pumps for reuse in the borehole. The cuttings will be disposed of at an approved disposal site.

3. DRILLING FLUID SEEPAGE

HDD is an increasingly popular method of installation whereby surface disturbance is minimized. HDD installation does however present a potential for surface disturbance through a drilling fluid seepage. Drilling fluid seepage can be caused by pressurization of the drill hole beyond the containment capability of the overburden soil material. Providing adequate depth of cover for the installation can substantially reduce this potential. In some cases, a drilling fluid seepage can also be caused by preexisting conditions in the geotechnical strata even if the downhole pressures are low.

3.1 Suitable Material and Adequate Overburden

In the contingency planning for the Transco HDD crossings, prevention of a drilling fluid seepage has been a major consideration in determining the profile of the crossings. The primary factor in selecting the pipeline crossing profiles is the type of subsurface material. Cohesive soils, such as clays, dense sands and competent rock are considered ideal materials for HDD. The second factor to be considered in developing a profile is adequate overburden material. A minimum depth of cover of 25 feet in competent soils should be maintained to provide a margin of safety against drilling fluid seepage.

As the drill and hole-opening assembly enters the ground and nears the ground surface on the other side of the waterbody, it passes through the area that presents some potential for drilling fluid seepage. Since prevention is the best and most effective contingency plan, steps (see Corrective Action section below) have been taken to reduce the potential for seepage in these areas. At the exit point, an exit pit can be constructed. If seepage does occur, detection will be enhanced as the seepage is on land rather than under water. Subsequent containment of the drilling fluid can therefore be planned and managed. Containment dikes in the form of berms and hay bales will contain any seepage and minimize any migration of the drilling fluid from the work area.

3.2 Pipeline Geometry

The geometry of the pipeline profile can also affect the potential for drilling fluid seepage. In a profile which forces the pipe to make compound or excessively tight radii turns, downhole pressures can build up, thereby, increasing the potential for drilling fluid seepage. The typical profile for a HDD crossing minimizes this potential, with very smooth and gradual vertical curves.

3.3 Responsibility of Drilling Contractor

The drilling contractor is responsible for execution of the HDD operation, including actions for detecting and controlling drilling fluid seepage. Transco will closely supervise the progress and actions of the drilling contractor.

4. RESPONSE EQUIPMENT

From the day-to-day operation and maintenance routine, the HDD personnel will be aware of what materials are critical during a drilling fluid seepage and have these items on hand. Since drilling fluid seepage can be easily controlled on land where it has the greatest potential of occurring, containment items will be stored within the drilling sites. The drilling contractor will also have heavy equipment such as backhoes that may be utilized to control and clean up drilling fluid seepage.

The following materials and equipment will be maintained at the HDD site in sufficient quantities to ensure containment of any inadvertent releases of drilling fluid:

- Lumber for temporary shoring
- Straw or hay bales
- Stakes to secure bales
- Silt fence
- Sand bags
- Sledge hammers
- Shovels
- Leak-free hose(s) and pump(s)
- Water sampling equipment (including sampling bottles, labels, waterproof pens / markers, and a large cooler with ice, if necessary)

The following materials and equipment will be maintained at a nearby location in sufficient quantities to ensure containment of any inadvertent releases of drilling fluid:

- Light tower(s) will be available if necessary
- A boat with appropriate personal safety equipment
- On-call vacuum truck(s) and agreement(s) with an approved drilling fluid disposal site(s)

5. DETECTION

HDD is a technically advanced process involving skilled operators. Each drilling situation is unique in that the behavior of the subsurface material is highly variable and difficult to predict. There is no in-hole monitoring equipment that can detect drilling fluid seepage. It is a combination of factors, which must be properly interpreted, that may indicate conditions that can have the potential of causing drilling fluid seepage.

Seepage occurs when there is a failure to maintain pressure in the hole. The most obvious signs of a drilling fluid seepage are surface seepage or loss of circulation of the drilling fluid. One of the functions of the drilling fluid is to seal the hole, thus maintaining downhole pressure. The loss of returning drilling fluid is a sign that pressure is not being contained in the drilled hole and seepage is occurring outside of the hole. If there is a reduction in the quantity of drilling fluid returning to the drilling site (loss of circulation), this could be a warning sign. However, some loss of drilling fluid is also normal in the drilling process. There can be instances in the drilling process that a loose sand, gravel layer or rock fracture is encountered. These occurrences will require additional drilling fluid to fill in the voids. Consequently, drilling fluid loss in and of itself is not an indication of a potential seepage condition. It is the loss of drilling fluid in combination with other factors that may indicate a potential seepage condition. For example, if there is a loss of drilling fluid and the return cuttings do not show a large quantity of gravel then this could indicate a loss of containment pressure within the hole.

The detection of a potential seep prior to it actually occurring is dependent upon the skill and experience of the HDD crew. It is for this reason that Transco will be using firms that specialize in HDD to perform the proposed crossing. The selection and supervision of this drilling contractor will be the responsibility of Transco.

6. CORRECTIVE ACTION

If drilling fluid seepage should occur, the HDD operation will be stopped temporarily. Once the clean-up response has started, the drilling activities will immediately resume. After the drilling fluid seepage has been contained, the HDD contractor and Transco will make every effort to determine why the seepage occurred. Once Transco has determined the cause of the seepage, measures will be enacted to control the factors causing the seepage and to minimize the chance of recurrence. Enacting the corrective measures will be a joint effort of Transco and the HDD contractor, and will be site- and problem-specific.

In some cases, the corrective measure may involve a determination that the existing hole encountered a void, which could be bypassed with a slight change in the profile. In other cases, it may be determined that the existing hole encountered a zone of unsatisfactory soil material and the hole may have to be abandoned. If the hole is abandoned, it will be filled with cuttings and drilling fluid. The following sections discuss the steps the HDD contractor shall take if there is an aboveground release, in-stream release, and / or an HDD failure.

6.1 Aboveground Release

If an inadvertent release of drilling fluid is observed aboveground, the following measures will be implemented:

1. Immediately notify Transco’s inspector and HDD contractor.
2. Attempt to regain returns.
    a. Trip drill pipe and downhole tools back toward the direction of flow until returns through the drilled hole return to the entry / exit pit.
    b. Then correct the bentonite properties, if necessary, and start drilling back in the same hole to see if the seepage continues. By swabbing the tool through the hole, this may remove any buildup of cuttings that created the inadvertent release.
    c. If the fracture is eliminated, resume HDD activities.
3. Evaluate the release to determine if containment structures are necessary.
    a. If containment structures are necessary, they will be installed under the direction of the environmental inspector.
    b. If the volume of the release is too small for containment measures to be practical, the area will be diluted with fresh water and the fluid will be allowed to dry and dissipate naturally.
4. The containment structures (i.e., hay or straw bales, silt fence, sandbags, or berms) will be placed around the affected area to prevent flow of the drilling fluid.
    a. If the inadvertent release exceeds the amount that can be contained with the above-mentioned barriers, then a small (generally less than 4 cubic yards) collection sump pit will be excavated at the release location.

   b. If the inadvertent release exceeds the amount that can be readily contained, HDD activities will be suspended until surface volumes can be controlled.

5. If there is a threat to public health and safety, HDD activities will be suspended immediately.

6.2 In-Stream Release

The hydrostatic pressure of the waterbody is likely to negate the pressure of the drilling fluid at the release site and will naturally limit the duration of the release. However, if an inadvertent release is observed in a waterbody, the following measures will be implemented:

1. Immediately notify the environmental inspector, Transco inspector, and HDD contractor. The environmental inspector will monitor the extent of the drilling fluid plume. The following entities will be contacted by phone immediately, but no later than 24 hours; United States Army Corp of Engineers, Georgia Department of Natural Resources, Environmental Protection Division (GDNR EPD), and the Federal Energy Regulatory Commission (FERC).
2. Water samples will be collected at both upstream and downstream locations from any plume associated with an inadvertent release of drilling fluid per federal, state, and local regulations. The samples will be tested for turbidity analysis. Proper storage and shipping methods will be followed. Agency staff and other experts will be consulted to the extent practicable to develop ad hoc clean up techniques as required:
   a. If bentonite material flows overland prior to entering the stream, installation of sit fencing or sandbag dams at the point of entry will be used to reduce or stop the flow; if the vent is directly into the stream, other means to isolate the vent site from the flowing stream will be used.
   b. Using a vacuum truck or pump(s), with sufficient hose, personnel will remove the bentonite, working from downstream to upstream, to allow maximum visibility. Hand tools may be used to scarify the sediments and ensure removal to the maximum extent practicable.
   c. If necessary, water may be diverted using a coffer dam to isolate the impact area. Only a portion of the stream will be diverted to minimize dewatering impacts. Water will be able to pass through the site in its natural condition.
   d. Any disturbed soils will be stabilized immediately.
   e. Disturbance of vegetation will be kept to a minimum and all disturbed vegetation will be restored and/or replanted with native species, to eventually recreate the functional values of the lost vegetation.
   f. Damaged riffle and pool sediment strata will be re-contoured to the extent practicable under the direction of Agency personnel.
3. Attempt to regain returns.
   a. Trip drill pipe and downhole tools back toward the direction of flow until returns through the drilled hole return to the entry / exit pit.

   b. Then correct the bentonite properties, if necessary, and start drilling back in the same hole to see if the seepage continues. By swabbing the tool through the hole, this may remove any buildup of cuttings that created the inadvertent release.
   c. If the fracture is eliminated, resume HDD activities.
4. If an inadvertent release continues to enter the waterbody for more than four hours, HDD activities will be suspended until a new plan of action is determined and approved by Transco.
5. Upon completion of HDD activities, Transco will prepare a report that summarizes:
   a. The events leading up to the inadvertent release
   b. The measures taken to minimize the impacts following the release
   c. Any impacts from the release
   d. Mitigation for the impacts from the release
   e. Agency contacts

6.3 HDD Failure

In the event the inadvertent release of drilling fluid exceeds that which can be contained and controlled either because of volume or rate, HDD activities will cease and the following measures will be implemented:

1. Attempt to regain returns.
   a. Trip drill pipe and downhole tools back toward the direction of flow until returns through the drilled hole return to the entry / exit pit.
   b. Then correct the bentonite properties, if necessary, and start drilling back in the same hole to see if the seepage continues. By swabbing the tool through the hole, this may remove any buildup of cuttings that created the inadvertent release.
   c. If the fracture is eliminated, resume HDD activities.

Depending on the current stage of the installation, the contractor may then choose to plug the hole near the fracture with heavyweight material (i.e. sawdust, nut shells, bentonite pellets, or other commercially available non-toxic product). If the inadvertent release of drilling fluids occurs while drilling the pilot hole, the contractor may choose to back out of the hole a predetermined distance and drill out of the original hole. Therefore, procedures two or three listed below could occur in either order.

2. Plug the fissures/fracture.
   a. Pump sealers such as saw dust, nutshells, bentonite pellets, or other commercially available non-toxic products into the drill hole.
   b. Let set for an appropriate period of time (dependent upon sealant used).
   c. Resume HDD activities.

3. If a fissure/fracture cannot be plugged, then, if practical,
    a. Remove drill pipe from the existing drill hole to a point where a new drill path can be attempted by drilling out of the existing hole and creating a new hole. The old hole will be abandoned and filled with bentonite and cuttings.
    b. Resume HDD activities.
4. If the original drill path cannot be utilized:
    a. Abandon the original drill hole by pumping bentonite and cuttings downhole. Then seal the top five vertical feet with grout.
    b. Move the drill rig to a new, adjacent location.
    c. Verify that the new, adjacent location meets the requirements of all applicable project permits and approvals. If the new, adjacent location does not meet the requirements of all applicable project permits and approvals, operations will cease until new permits and approvals are received.
    d. Design an alternative alignment for the re-drill.
    e. Begin HDD re-drill activities.
5. If the condition evaluations indicate that an HDD installation cannot be successfully completed, Transco will coordinate alternative crossing methods (e.g., open cut) with the applicable regulatory agencies.

7. WATER QUALITY MONITORING PROCEDURES

The GNDR EPD has requirements for monitoring during HDD operations in the event of an inadvertent release of drilling fluid and if increased turbidity is observed downstream of the crossing.

HDD crossing will be visually inspected for inadvertent release of drilling fluid. If there is an inadvertent release of drilling fluid, turbidity monitoring using a turbidimeter that is properly calibrated according to the operator's manual will be initiated.

At a minimum and dependent upon the individual state regulatory agencies standards, turbidity samples would be taken both upstream and downstream of the release. Samples will be taken immediately after the release, 1 hour after the release, and 2 hours after the release. If visual monitoring or water quality samples show an increase of more than 5 nephelometric turbidity units (NTU) (or 10 percent of background if background is greater than 50 NTU), at the sampling location downstream, the following actions may be taken:

- The environmental inspector will immediately assess the efficacy of the site environmental Best Management Practices (BMPs) and add, update, or improve the BMPs as required to reduce the rate of activity.
- Sampling at the point of compliance will commence and continue as scheduled to provide an early warning of potential turbidity exceedances.

If the inadvertent release creates noncompliance at the point of compliance, drilling activities will be suspended and sampling will continue every 2 hours. Sampling will continue until samples show that downstream turbidity at the point of compliance is not greater than 5 NTU over background (10 percent for streams with background over 50 NTU).

Drilling operations may resume when all measures have been taken to stop the inadvertent release of drilling fluid. If, at any time, visual monitoring indicates an increase in turbidity, sampling will commence according to the schedule provided above.

8. REPORTING

The HDD contractor or the on-site Environmental Inspector will immediately inform Transco's Environmental Chief of any unplanned release of drilling fluids. The Environmental Chief will then report the release (by both e-mail and telephone) as appropriate to the GDNR EPD, and FERC's on-site third party inspector, and will direct the cleanup response as outlined in this report and will direct the subsequent restoration to pre-existing conditions or as directed or approved by GDNR EPD and FERC after consultation. Appropriate parties to be notified are provided in **Table 2** (Appendix 1).

The following information is to be reported to the various agencies in the event of a release:

- Location;
- time of day;
- extent of area affected;
- timing and methodology for removal;
- clean up
- restoration of the site

APPENDIX A

Tables

TABLE 1
Proposed HDD Locations for the Dalton Expansion Project

Begin MP	End MP	County	HDD Length (feet)	HDD Crossing
6.2	6.6	Coweta / Carroll	2,230	Chattahoochee River
25.9	26.3	Douglas	2,275	Interstate 20
37.0	37.4	Paulding	1,980	Highway 120
75.5	75.8	Bartow	1,685	Joe Frank Harris Parkway
77.9	78.1	Bartow	675	Interstate 75
90.1	90.6	Gordon	2,625	Coosawattee River
102.6 REROUTE	103.2 REROUTE	Murray	2,794	Holly Creek
107.2	107.5	Murray/Whitfield	1,345	Conasauga River No. 1
108.2	108.7	Murray/Whitfield	2,262	Conasauga River No. 2

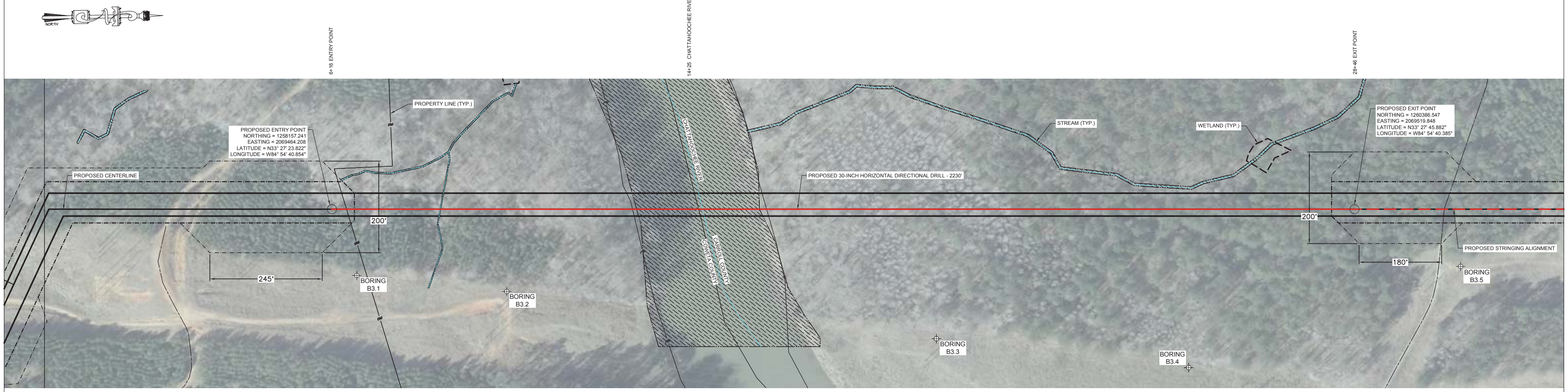
TABLE 2
Transco Agency Contact List

Contact	Agency	Phone	Email
James Capp	GDNR EPD – Watershed Protection Branch	(404) 463-4911	james.capp@dnr.state.ga.us
Kelley Muñoz	Federal Energy Regulatory Commission	(202) 502-6739	kelley.munoz@ferc.gov

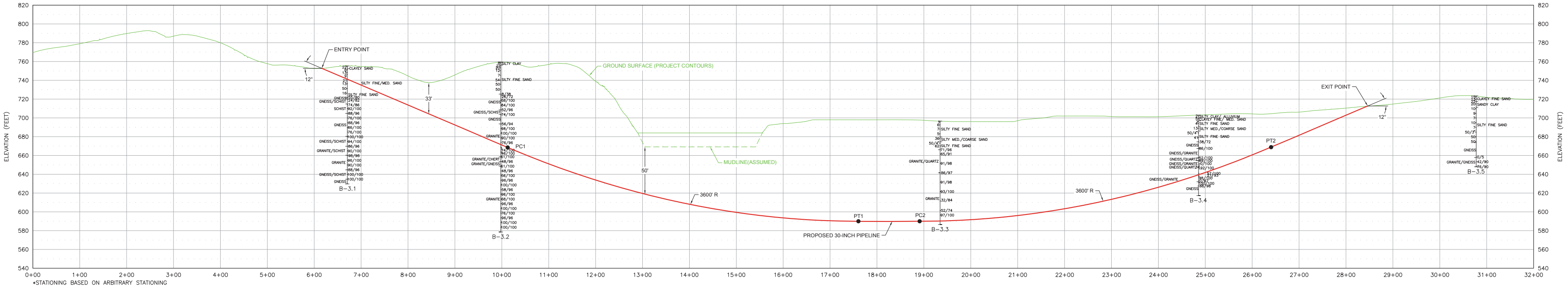
APPENDIX B

HDD Crossing Plans

CARROLL AND COWETA COUNTIES, GEORGIA



PLAN VIEW

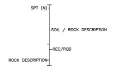


PROFILE VIEW

PIPE SPECIFICATIONS:

1. PRODUCT PIPE WILL CONSIST OF 30" O.D. X 0.625 W.T., API-5L X-70 PIPE
2. MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP) = 800 psi

BORING LEGEND



HORIZONTAL DIRECTIONAL DRILL DATA CHATTAHOOCHEE XING		
DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY @ 12°	6+16.10	752.78
PC1 = 3600' RADIUS	10+11.81	668.67
PT1 =	17+60.29	590.00
PC2 = 3600' RADIUS	18+90.75	590.00
PT2 =	26+39.23	668.67
EXIT @ 12°	28+46.10	712.64
HORIZONTAL DISTANCE (ft) = 2230.00		
DIRECTIONAL DRILL PIPE LENGTH (ft) = 2254.46		

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83-WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS		REVISIONS						
DRAWING NO.	TITLE	NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
		A	4/08/15	AM	PRELIMINARY			
		B	6/17/15	LY	ISSUED FOR FERC FILING JULY 2015 SUPPLEMENTAL FILING		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
CHATTAHOOCHEE RIVER
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 30 INCH PIPELINE
CARROLL AND COWETA COUNTY, GEORGIA

Williams.

DRAWN BY: AM	DATE: 11/18/2014		SCALE: AS NOTED
CHECKED BY: RDH	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: CHATTAHOOCHEE RIVER	SHEET 1
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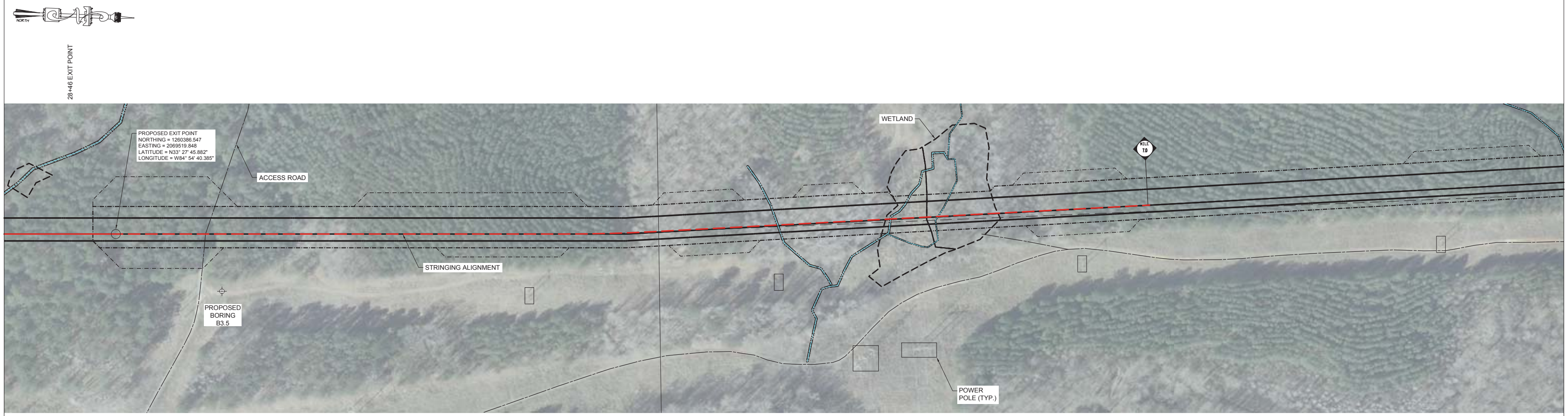
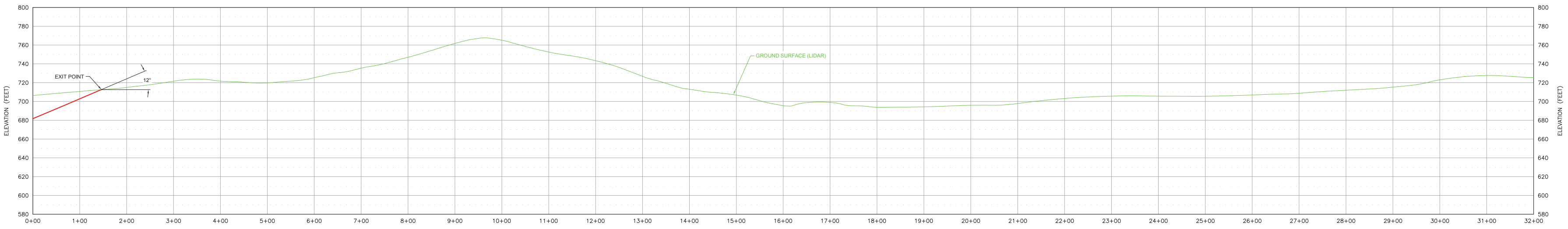
CARROLL COUNTY, GEORGIA



PLAN VIEW

100 0 100 200

GRAPHIC SCALE IN FEET



PROFILE VIEW

100 0 100 200

GRAPHIC HORIZONTAL SCALE IN FEET

50 0 50 100

GRAPHIC VERTICAL SCALE IN FEET

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS		REVISIONS						
DRAWING NO.	TITLE	NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
		A	4/08/15	AM	PRELIMINARY			
		B	6/17/15	LY	ISSUED FOR FERC JULY 2015 SUPPLEMENTAL FILING		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
CHATTAHOOCHEE RIVER STRINGING
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 30 INCH PIPELINE
CARROLL COUNTY, GEORGIA

Williams.

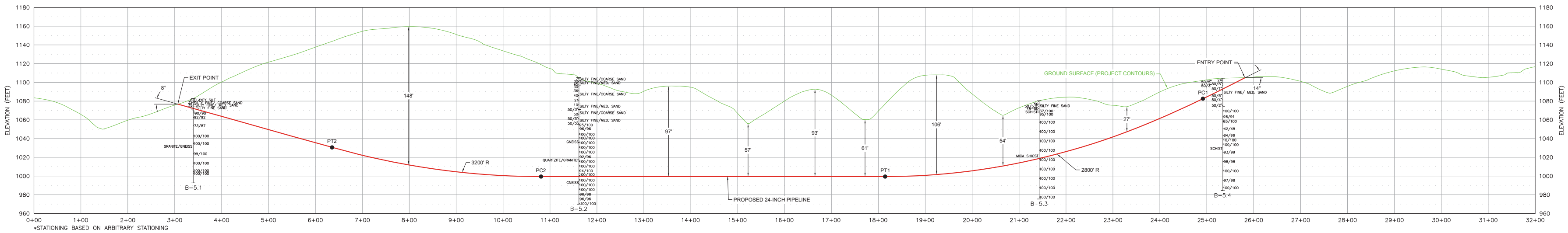
DRAWN BY: AM	DATE: 11/18/2014		SCALE: AS NOTED
CHECKED BY: RDH	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: CHATTAHOOCHEE RIVER	SHEET 2
WO: 10097	REV B	2:56:40 PM 6/19/2015 W:\ACTIVE PROJECTS\10091 - Williams - Dalton Exp\Drawings\Chattahoochee Crossing.dwg	OF 2

DOUGLAS COUNTY, GEORGIA

PLAN VIEW

100 0 100 200

GRAPHIC SCALE IN FEET



*STATIONING BASED ON ARBITRARY STATIONING

PROFILE VIEW

100 0 100 200

GRAPHIC HORIZONTAL SCALE IN FEET

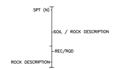
50 0 50 100

GRAPHIC VERTICAL SCALE IN FEET

PIPE SPECIFICATIONS:

1. PRODUCT PIPE WILL CONSIST OF 24" O.D. X 0.562" W.T., API–5L X–70 PIPE
2. MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP) = 1440 psi

BORING LEGEND



BORING NAME

HORIZONTAL DIRECTIONAL DRILL DATA INTERSTATE 20		
DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY @ 14°	25+81.74	1105.06
PC1 = 2800' RADIUS	24+91.74	1082.62
PT1 =	18+14.36	999.45
PC2 = 3200' RADIUS	10+80.96	999.45
PT2 =	6+35.61	1030.59
EXIT @ 8°	3+06.74	1076.81
HORIZONTAL DISTANCE (ft) = 2275.00		
DIRECTIONAL DRILL PIPE LENGTH (ft) = 2289.23		

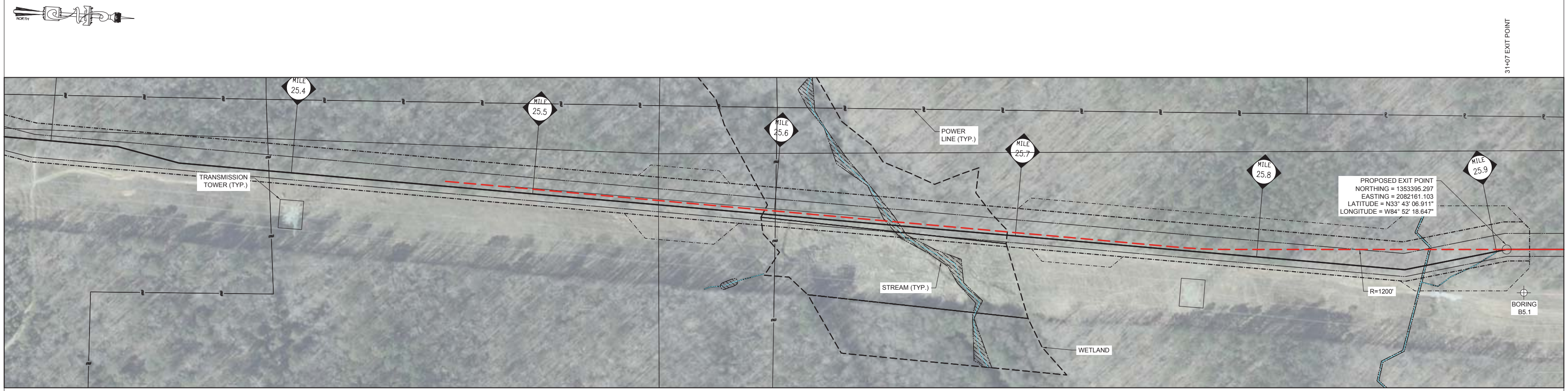
DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS		REVISIONS						
DRAWING NO.	TITLE	NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
		A	4/08/15	AM	PRELIMINARY			
		B	6/17/15	LY	ISSUED FOR FERC FILING JULY 2015 SUPPLEMENTAL FILING		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
INTERSTATE 20
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 24 INCH PIPELINE
DOUGLAS COUNTY, GEORGIA

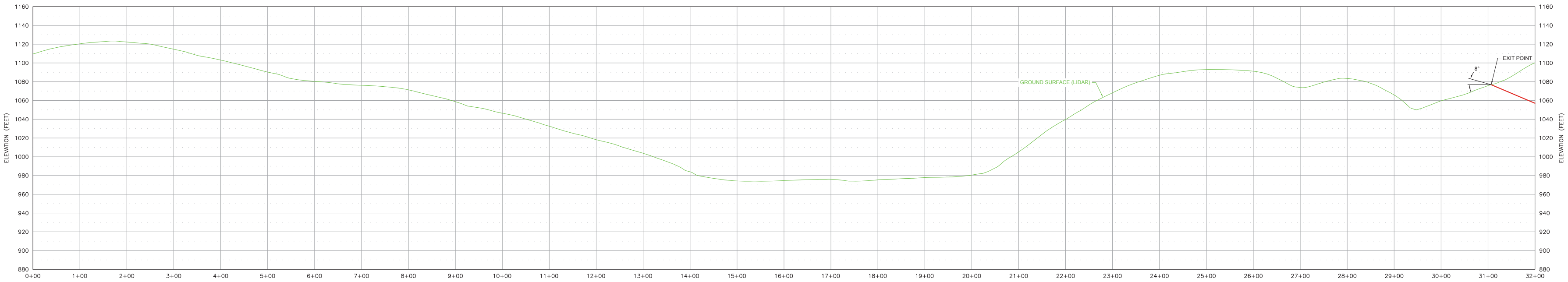
DRAWN BY: AM	DATE: 11/18/2014		SCALE: AS NOTED
CHECKED BY: KBP	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: INTERSTATE 20	SHEET 1
WO: 10098	REV B	3:09:35 PM 6/19/2015 W:\ACTIVE PROJECTS\10091 - Williams - Dalton Exp\Drawings\Interstate-20 Crossing.dwg	OF 2

DOUGLAS COUNTY, GEORGIA



PLAN VIEW

100 0 100 200
GRAPHIC SCALE IN FEET



PROFILE VIEW

100 0 100 200
GRAPHIC HORIZONTAL SCALE IN FEET

50 0 50 100
GRAPHIC VERTICAL SCALE IN FEET

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

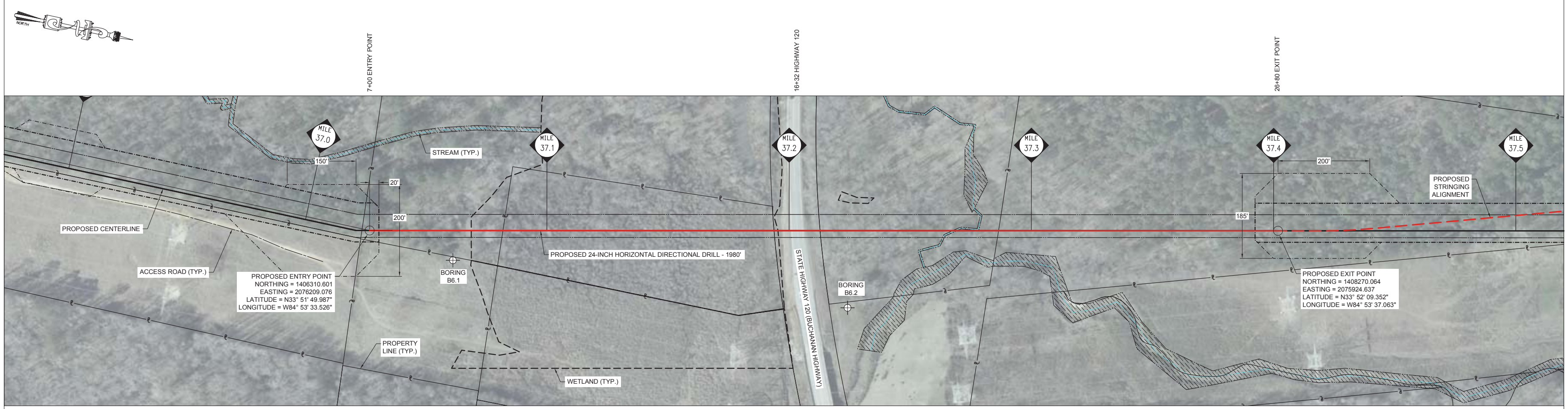
REFERENCE DRAWINGS		REVISIONS						
DRAWING NO.	TITLE	NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
		A	4/08/15	AM	PRELIMINARY			
		B	6/17/15	LY	ISSUED FOR FERC FILING		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
INTERSTATE 20 STRINGING
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 24 INCH PIPELINE
DOUGLAS COUNTY, GEORGIA

Williams.

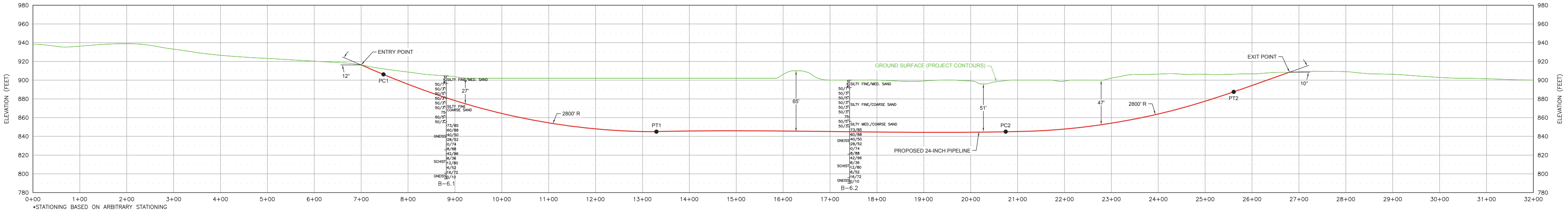
DRAWN BY: AM	DATE: 11/18/2014		SCALE: AS NOTED
CHECKED BY: KBP	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: INTERSTATE 20	SHEET 2
WO: 10098	REV B	3:09:11 PM 6/19/2015 W:\ACTIVE PROJECTS\10091 - Williams - Dalton Exp\Drawings\Interstate-20 Crossing.dwg	OF 2

PAULDING COUNTY, GEORGIA



PLAN VIEW

100 0 100 200
GRAPHIC SCALE IN FEET



PROFILE VIEW

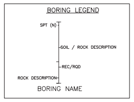
100 0 100 200
GRAPHIC HORIZONTAL SCALE IN FEET

20 0 50 100
GRAPHIC VERTICAL SCALE IN FEET

PIPE SPECIFICATIONS:

1. PRODUCT PIPE WILL CONSIST OF 24" O.D. X 0.562 W.T., API-5L X-70 PIPE
2. MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP) = 1440 psi

BORING LEGEND



HORIZONTAL DIRECTIONAL DRILL DATA HIGHWAY 120		
DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY @ 12°	7+00.00	916.32
PC1 = 2800' RADIUS	7+47.65	906.19
PT1 =	13+29.80	845.00
PC2 = 2800' RADIUS	20+74.75	845.00
PT2 =	25+60.96	887.54
EXIT @ 10°	26+80.00	908.53
HORIZONTAL DISTANCE (ft) = 1980.00		
DIRECTIONAL DRILL PIPE LENGTH (ft) = 1989.66		

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS

DRAWING NO.	TITLE

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
A	4/08/15	AM	PRELIMINARY			
B	6/17/15	LY	ISSUED FOR FERC JULY 2015 SUPPLEMENTAL FILING		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
HWY 120
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 24 INCH PIPELINE
PAULDING COUNTY, GEORGIA

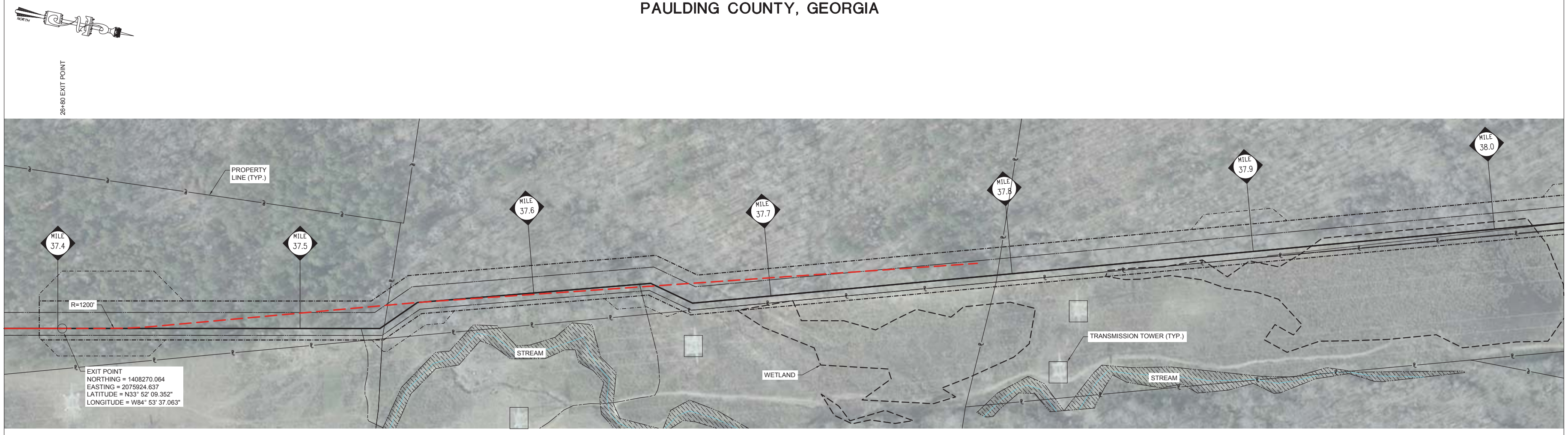
Williams.

DRAWN BY: AM
DATE: 12/01/2014
SCALE: AS NOTED
CHECKED BY: KBP
DATE: 04/01/15
APPROVED BY: RDH
DATE: 04/01/15
DRAWING NUMBER: HWY 120
SHEET 1 OF 2
WO: 10098
REV B
3:05:13 PM 6/19/2015
W:\ACTIVE PROJECTS\10091 - Williams - Dalton Exp\Drawings\HWY 120 HDD.dwg

Scale valid for 24" x 36" print

20160331-4007 FERC PDF (Unofficial) 03/31/2016

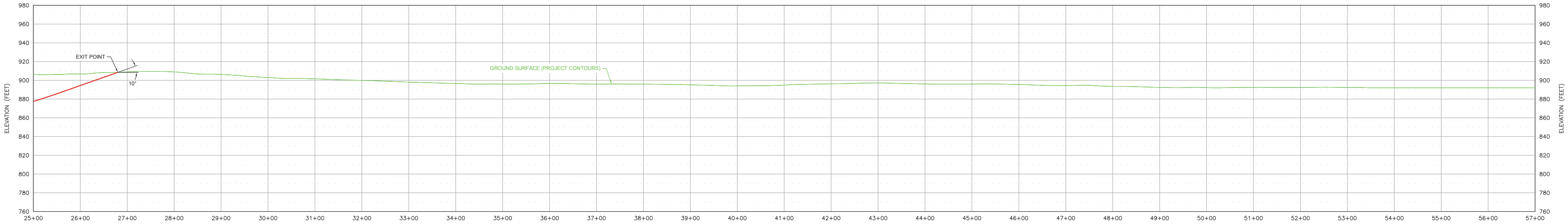
PAULDING COUNTY, GEORGIA



PLAN VIEW

100 0 100 200

GRAPHIC SCALE IN FEET



DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS		REVISIONS						
DRAWING NO.	TITLE	NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
		A	4/08/15	AM	PRELIMINARY			
		B	6/17/15	LY	ISSUED FOR FERC JULY 2015 SUPPLEMENTAL FILING		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
HWY 120 STRINGING
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 24 INCH PIPELINE
PAULDING COUNTY, GEORGIA

Williams.

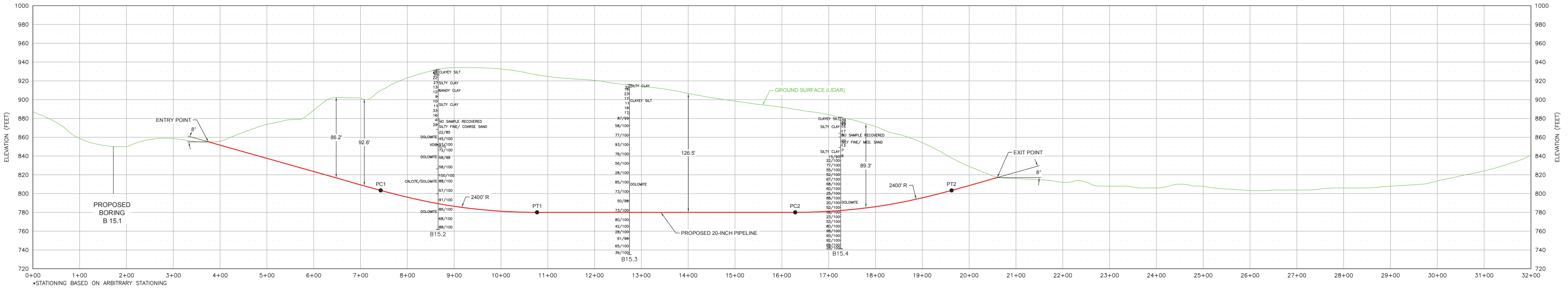
DRAWN BY: AM	DATE: 12/01/2014		SCALE: AS NOTED
CHECKED BY: KBP	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: HWY 120 3:05:56 PM 6/19/2015 W:\ACTIVE PROJECTS\10091 - Williams - Dalton Exp\Drawings\HWY 120 HDD.dwg	SHEET 2 OF 2
WO: 10098	REV B		

Scale valid for 24" x 36" print

BARTOW COUNTY, GEORGIA

PLAN VIEW

100 0 100 200
GRAPHIC SCALE IN FEET



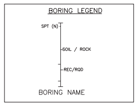
*STATIONING BASED ON ARBITRARY STATIONING

PROFILE VIEW

100 0 100 200
GRAPHIC HORIZONTAL SCALE IN FEET

50 0 50 100
GRAPHIC VERTICAL SCALE IN FEET

BORING LEGEND



PIPE SPECIFICATIONS:

1. PRODUCT PIPE WILL CONSIST OF 20" O.D. X 0.500 W.T., API-5L X-70 PIPE WITH 8-10 MILS OF FUSION BONDED EPOXY (FBE) AND 40 MILS ARO, 1.5 MILS FLOWLINER I.D. COATING
2. MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP) = 1440 psi

HORIZONTAL DIRECTIONAL DRILL DATA MP 75		
DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY @ 8°	3+75.00	855.84
PC1 = 2400' RADIUS	7+48.44	803.36
PT1 =	10+82.45	780.00
PC2 = 2400' RADIUS	16+22.15	780.00
PT2 =	19+56.16	803.36
EXIT @ 8°	20+60.00	817.95
HORIZONTAL DISTANCE (ft) = 1685.00		
DIRECTIONAL DRILL PIPE LENGTH (ft) = 1691.87		

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS - GA83-WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

NOTES:

1. ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY OR FROM APPROVED ACCESS ROADS.
2. WORK SPACE: MAXIMUM WORK SPACE LIMITS ARE DEPICTED. RESTRICT CLEARING TO THE WORK SPACE INDICATED AT THE ENTRY AND EXIT POINTS AND PRODUCT PIPE STRINGING AND FABRICATION AREA ALONG THE CONSTRUCTION RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS REQUIRES PRIOR COMPANY APPROVAL AND IS LIMITED TO THE AMOUNT NECESSARY TO STRING SURVEY WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
3. WATER SOURCE: DRILL WATER AND HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM COMPANY APPROVED SOURCE.
4. HYDROSTATIC TEST: PRE-INSTALLATION AND POST-INSTALLATION HYDROSTATIC TESTS SHALL BE CONDUCTED IN ACCORDANCE WITH THE HYDROSTATIC TEST PLAN. TEST WATER SHALL BE ACQUIRED FROM AN APPROVED SOURCE. THE TEST WATER SHALL BE DISCHARGED IN AN UPLAND AREA INTO AN EROSION CONTROL STRUCTURE OF STRAW BALES AND/OR SILT FENCES, GEOTEXTILE FILTER BAG, OR COLLECTED IN A TRUCK AND HAULED TO AN APPROVED DISPOSAL SITE. UPON COMPLETION OF DEWATERING AND DRYING, A CALIPER PIG SURVEY SHALL BE COMPLETED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
5. SPILL-PREVENTION: REFUELING OF ALL EQUIPMENT SHALL BE COMPLETED IN ACCORDANCE WITH THE SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN.
6. EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
7. INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE APPROVED CONSTRUCTION RIGHT-OF-WAY AS SHOWN. AFTER THE PILOT HOLE IS COMPLETE, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED FOR COMPANY APPROVAL. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULL BACK.
8. DRILLING FLUID DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING FLUID IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING FLUID WHICH INADVERTENTLY SURFACES AT POINTS OTHER THAN THE ENTRY OR EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF IN ACCORDANCE WITH PERMIT CONDITIONS.
9. CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN THE CLEAN-UP AND RESTORATION REQUIREMENTS.
10. IF THE TERRAIN ALLOWS AND ACCESS IS PERMITTED, CONTRACTOR SHALL UTILIZE LOW GROUND PRESSURE EQUIPMENT OR OTHER EQUIPMENT APPROVED BY COMPANY, TO FACILITATE CONTAINMENT AND CLEAN-UP OF ANY INADVERTENT RETURNS THAT OCCUR DURING THE HDD INSTALLATION PROCESS.
11. THE MINIMUM ALLOWABLE THREE JOINT RADIUS SHALL NOT BE LESS THAN 1400 FEET.
12. GROUND SURFACE SURVEY DATA PROVIDED BY LIDAR.
13. CONTRACTOR IS RESPONSIBLE FOR PHYSICALLY LOCATING ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION. IF ANY UTILITY IS LOCATED WITHIN 15 FEET OF THE DESIGNED HDD PROFILE AND ALIGNMENT, CONTRACTOR SHALL OBTAIN APPROVAL FROM COMPANY REPRESENTATIVE PRIOR TO INITIATING HDD OPERATIONS.
14. THE PIPELINE INFORMATION SHOWN ON THIS DRAWING IS A COMPILATION OF DATA OBTAINED FROM VARIOUS SOURCES, LANEY DIRECTIONAL DRILLING DOES NOT GUARANTEE THE ACCURACY OF THE INFORMATION SHOWN.
15. GEOTECHNICAL DATA: BORE HOLES ARE OFFSET FROM THE PIPELINE CENTERLINE AS SHOWN ON THE PLAN VIEW. THE GEOTECHNICAL INFORMATION PROVIDED ON THIS DRAWING IS A GENERAL SUMMARY. REFER TO THE APPLICABLE GEOTECHNICAL DOCUMENTATION / REPORT FOR MORE DETAILED INFORMATION.
16. GEOTECHNICAL INFORMATION HAS NOT BEEN PROVIDED.

REFERENCE DRAWINGS

DRAWING NO.	TITLE

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
A	05/12/15	AM	CONCEPTUAL			
B	07/16/15	AM	PRELIMINARY		KBP	KBP
C	9/04/15	TTH	ISSUED FOR REVIEW		KBP	KBP
D	9/18/15	LY	ISSUED FOR SEPT 2015 SUPPLEMENTARY FILING		KBP	KBP

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
HIGHWAY 41 (JOHN FRANK HARRIS ROAD)
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 20 INCH PIPELINE
BARTOW COUNTY, GEORGIA

Williams.

DRAWN BY: AM	DATE: 04/07/15		SCALE: AS NOTED
CHECKED BY: KBP	DATE: 04/08/15		
APPROVED BY: KBP	DATE: 04/08/15	DRAWING NUMBER: HIGHWAY 41	SHEET 1 OF 2
WO: 10099	REV C	3:52:47 PM 9/18/2015 W:\ACTIVE PROJECTS\10091 - Williams - Dalton Exp\Drawings\Highway 41 (John Frank Harris Road) Crossing.dwg	

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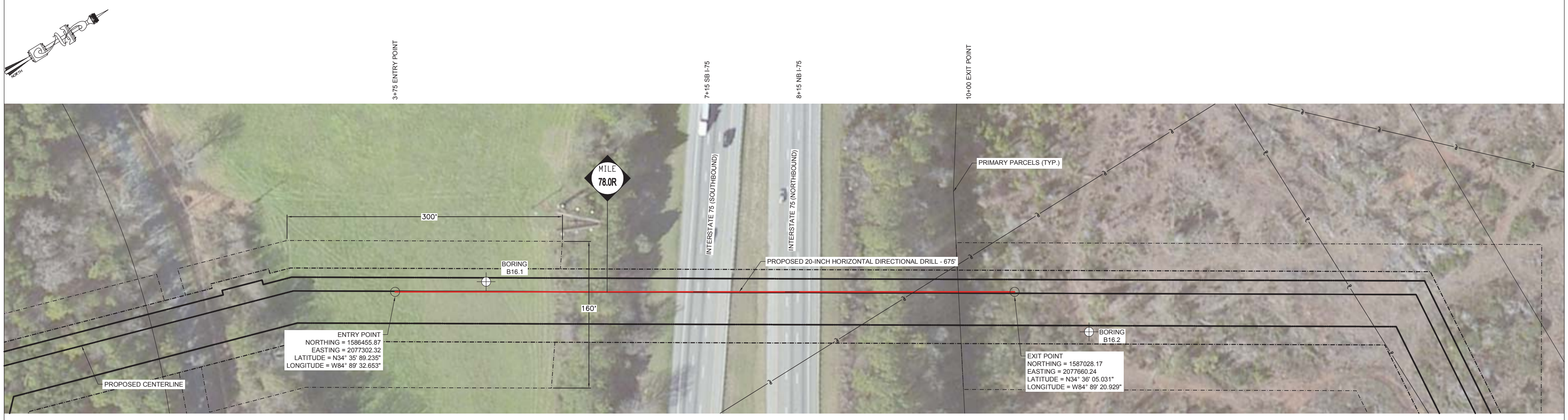
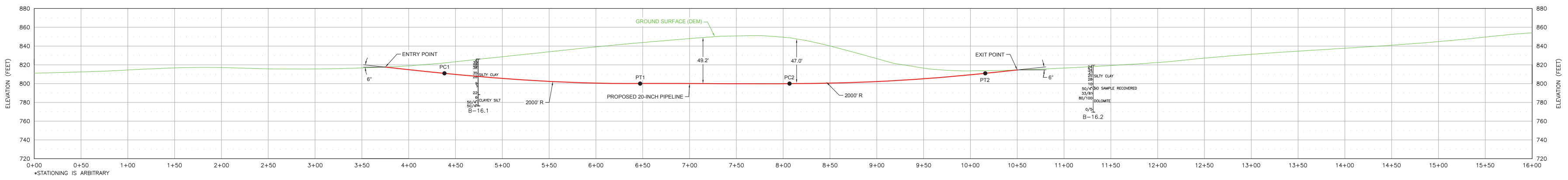
Scale valid for 24" x 36" print



PLAN VIEW

50 0 50 100
GRAPHIC SCALE IN FEET



•STATIONING IS ARBITRARY

PROFILE VIEW

50 0 50 100
GRAPHIC HORIZONTAL SCALE IN FEET

50 0 50 100
GRAPHIC VERTICAL SCALE IN FEET

NOTES:

1. ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT–OF–WAY OR FROM APPROVED ACCESS ROADS.
2. WORK SPACE: MAXIMUM WORK SPACE LIMITS ARE DEPICTED. RESTRICT CLEARING TO THE WORK SPACE INDICATED AT THE ENTRY AND EXIT POINTS AND PRODUCT PIPE STRINGING AND FABRICATION AREA ALONG THE CONSTRUCTION RIGHT–OF–WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS REQUIRES PRIOR COMPANY APPROVAL AND IS LIMITED TO THE AMOUNT NECESSARY TO STRING SURVEY WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
3. WATER SOURCE: DRILL WATER AND HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM COMPANY APPROVED SOURCE.
4. HYDROSTATIC TEST: PRE–INSTALLATION AND POST–INSTALLATION HYDROSTATIC TESTS SHALL BE CONDUCTED IN ACCORDANCE WITH THE HYDROSTATIC TEST PLAN. TEST WATER SHALL BE ACQUIRED FROM AN APPROVED SOURCE. THE TEST WATER SHALL BE DISCHARGED IN AN UPLAND AREA INTO AN EROSION CONTROL STRUCTURE OF STRAW BALES AND/OR SILT FENCES, GEOTEXTILE FILTER BAG, OR COLLECTED IN A TRUCK AND HAULED TO AN APPROVED DISPOSAL SITE. UPON COMPLETION OF DEWATERING AND DRYING, A CALIPER PIG SURVEY SHALL BE COMPLETED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
5. SPILL–PREVENTION: REFUELING OF ALL EQUIPMENT SHALL BE COMPLETED IN ACCORDANCE WITH THE SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN.
6. EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
7. INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE APPROVED CONSTRUCTION RIGHT–OF–WAY AS SHOWN. AFTER THE PILOT HOLE IS COMPLETE, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED FOR COMPANY APPROVAL. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULL BACK.
8. DRILLING FLUID DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING FLUID IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING FLUID WHICH INADVERTENTLY SURFACES AT POINTS OTHER THAN THE ENTRY OR EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF IN ACCORDANCE WITH PERMIT CONDITIONS.
9. CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN THE CLEAN–UP AND RESTORATION REQUIREMENTS.
10. IF THE TERRAIN ALLOWS AND ACCESS IS PERMITTED, CONTRACTOR SHALL UTILIZE LOW GROUND PRESSURE EQUIPMENT OR OTHER EQUIPMENT APPROVED BY COMPANY, TO FACILITATE CONTAINMENT AND CLEAN–UP OF ANY INADVERTENT RETURNS THAT OCCUR DURING THE HDD INSTALLATION PROCESS.
11. THE MINIMUM ALLOWABLE THREE JOINT RADIUS SHALL NOT BE LESS THAN 1400 FEET.
12. GROUND SURFACE SURVEY DATA PROVIDED BY NATIONAL DATABASE.
13. CONTRACTOR IS RESPONSIBLE FOR PHYSICALLY LOCATING ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION. IF ANY UTILITY IS LOCATED WITHIN 15 FEET OF THE DESIGNED HDD PROFILE AND ALIGNMENT, CONTRACTOR SHALL OBTAIN APPROVAL FROM COMPANY REPRESENTATIVE PRIOR TO INITIATING HDD OPERATIONS.
14. THE PIPELINE INFORMATION SHOWN ON THIS DRAWING IS A COMPILATION OF DATA OBTAINED FROM VARIOUS SOURCES, LANEY DIRECTIONAL DRILLING DOES NOT GUARANTEE THE ACCURACY OF THE INFORMATION SHOWN.
15. GEOTECHNICAL DATA: BORE HOLES ARE OFFSET FROM THE PIPELINE CENTERLINE AS SHOWN ON THE PLAN VIEW. THE GEOTECHNICAL INFORMATION PROVIDED ON THIS DRAWING IS A GENERAL SUMMARY. REFER TO THE APPLICABLE GEOTECHNICAL DOCUMENTATION / REPORT FOR MORE DETAILED INFORMATION.
16. GEOTECHNICAL INFORMATION HAS NOT BEEN PROVIDED.

PIPE SPECIFICATIONS:

1. PRODUCT PIPE WILL CONSIST OF 20" O.D. X 0.500 W.T., API–5L X–70 PIPE WITH 8–10 MILS OF FUSION BONDED EPOXY (FBE) AND 40 MILS ARO.
2. MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP) = 1440 psi

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

HORIZONTAL DIRECTIONAL DRILL DATA
MODIFIED I–75 CONCEPT

DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY @ 6°	3+75.00	817.59
PC1 = 2000' RADIUS	4+38.12	810.96
PT1 =	6+47.18	800.00
PC2 = 2000' RADIUS	8+06.74	800.00
PT2 =	10+15.79	810.96
EXIT @ 6°	10+50.00	814.55

HORIZONTAL DISTANCE (ft) = 675.00
DIRECTIONAL DRILL PIPE LENGTH (ft) = 676.30

REFERENCE DRAWINGS

DRAWING NO.	TITLE

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
A	09/18/15	AM	CONCEPTUAL		KBP	KBP

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
MODIFIED INTERSTATE 75
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 20 INCH PIPELINE
BARTOW COUNTY, GEORGIA

Williams.

DRAWN BY: AM — DATE: 09/18/15 — SCALE: AS NOTED
CHECKED BY: KBP — DATE: 09/18/15
APPROVED BY: KBP — DATE: 09/18/15 — DRAWING NUMBER: MODIFIED INTERSTATE 75 — SHEET 1 OF 1
WO: 10099 — REV A
3:28:54 PM 9/18/2015
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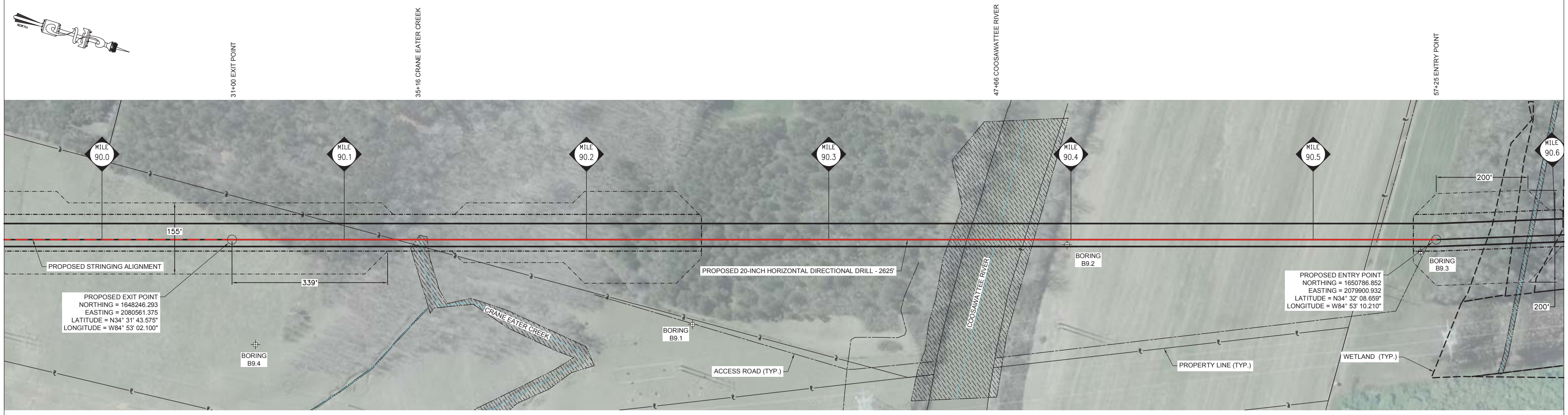
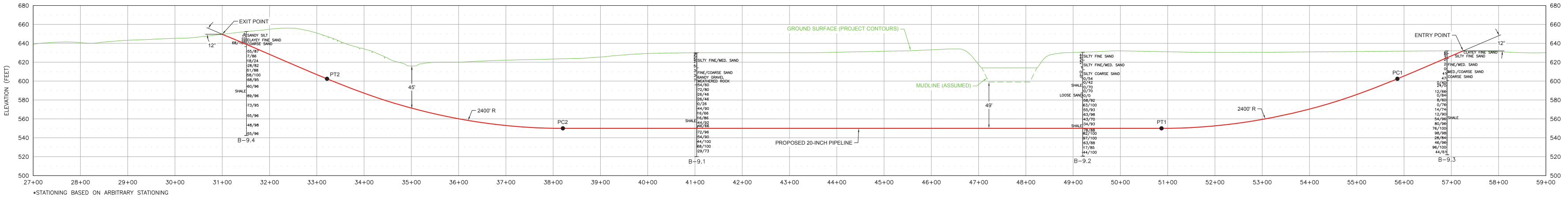
Scale valid for 24" x 36" print

GORDON COUNTY, GEORGIA



PLAN VIEW

100 0 100 200
GRAPHIC SCALE IN FEET



*STATIONING BASED ON ARBITRARY STATIONING

PROFILE VIEW

100 0 100 200
GRAPHIC HORIZONTAL SCALE IN FEET

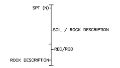
50 0 50 100
GRAPHIC VERTICAL SCALE IN FEET

PIPE SPECIFICATIONS:

1. PRODUCT PIPE WILL CONSIST OF 20" O.D. X 0.500 W.T., API-5L X-70 PIPE

2. MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP) = 1440 psi

BORING LEGEND



HORIZONTAL DIRECTIONAL DRILL DATA COOSAWATTEE RIVER		
DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY @ 12°	31+00.00	632.00
PC1 = 2400' RADIUS	32+39.04	602.45
PT1 =	37+38.03	550.00
PC2 = 2400' RADIUS	50+04.36	550.00
PT2 =	55+03.34	602.45
EXIT @ 12°	57+25.00	649.56
HORIZONTAL DISTANCE (ft) = 2625.00		
DIRECTIONAL DRILL PIPE LENGTH (ft) = 2640.39		

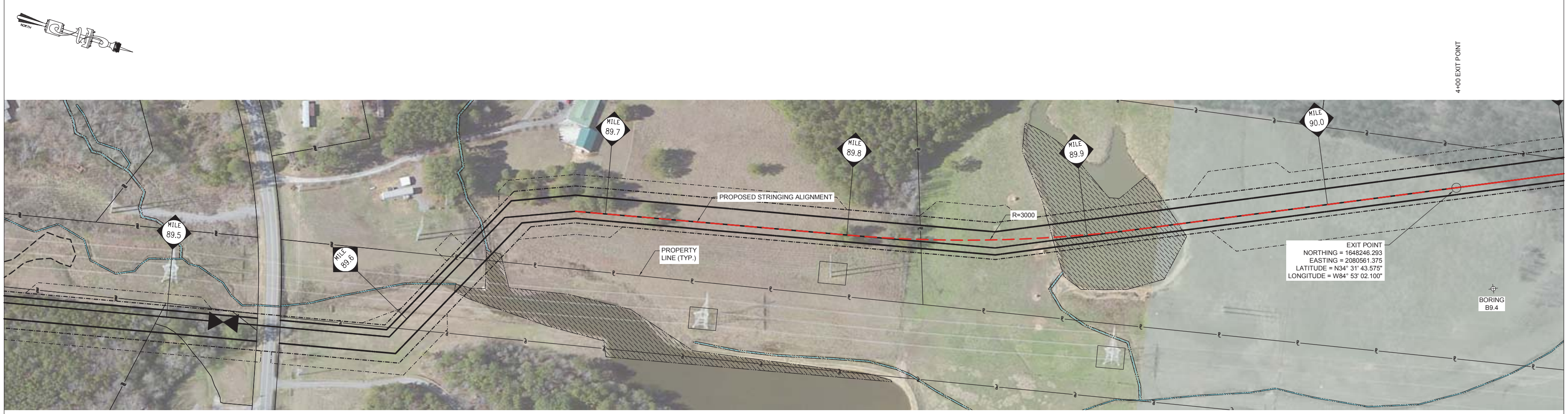
DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS		REVISIONS						
DRAWING NO.	TITLE	NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
		A	4/08/15	AM	PRELIMINARY			
		B	6/17/15	LY	ISSUED FOR FERC JULY 2015 SUPPLEMENTAL FILING		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
COOSAWATTEE RIVER & CRANE EATER CREEK
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 20 INCH PIPELINE
GORDON COUNTY, GEORGIA

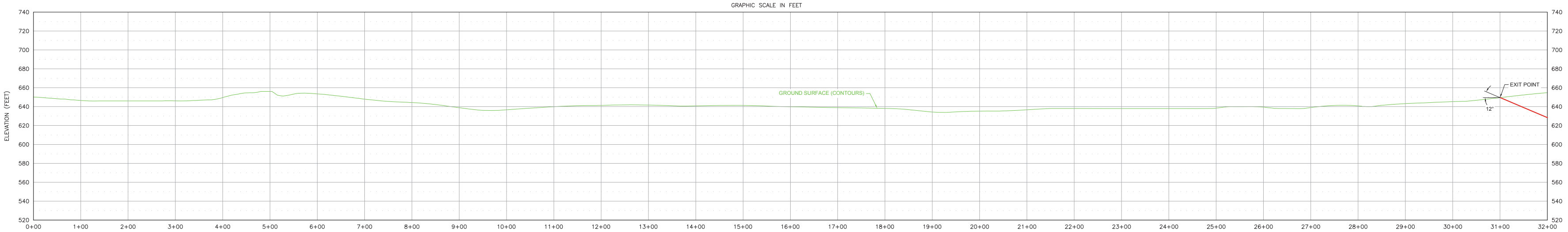
DRAWN BY: AM	DATE: 12/01/2014		SCALE: AS NOTED
CHECKED BY: KBP	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: COOSAWATTEE RIVER/CRANE EATER CREEK	SHEET 1 OF 2
WO: 10099	REV B	3:30:31 PM 6/19/2015 W:\ACTIVE PROJECTS\10091 - Williams - Dalton Exp\Drawings\Coosawattee River Crossing &Crane Eater Creek.dwg	

GORDON COUNTY, GEORGIA



PLAN VIEW

100 0 100 200
GRAPHIC SCALE IN FEET



PROFILE VIEW

100 0 100 200
GRAPHIC HORIZONTAL SCALE IN FEET

50 0 50 100
GRAPHIC VERTICAL SCALE IN FEET

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS

DRAWING NO.	TITLE

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
A	4/08/15	AM	PRELIMINARY			
B	6/17/15	LY	ISSUED FOR FERC JULY 2015 SUPPLEMENTAL FILING		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
COOSAWATTEE RIVER & CRANE EATER CREEK
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 20 INCH PIPELINE
GORDON COUNTY, GEORGIA

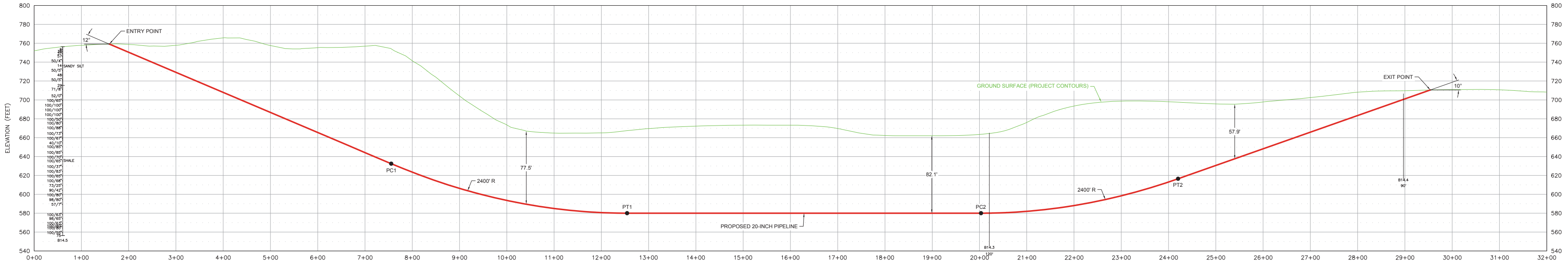
Williams.

DRAWN BY: AM	DATE: 12/01/2014		SCALE: AS NOTED
CHECKED BY: KBP	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: COOSAWATTEE RIVER/CRANE EATER CREEK	SHEET 2
WO: 10099	REV B	3:29:49 PM 6/19/2015 W:\ACTIVE PROJECTS\10091 - Williams - Dalton Exp\Drawings\Coosawattee River Crossing &Crane Eater Creek.dwg	OF 2

MURRAY COUNTY, GEORGIA

PLAN VIEW

100 0 100 200
GRAPHIC SCALE IN FEET



PROFILE VIEW

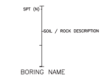
100 0 100 200
GRAPHIC HORIZONTAL SCALE IN FEET

50 0 50 100
GRAPHIC VERTICAL SCALE IN FEET

PIPE SPECIFICATIONS:

1. PRODUCT PIPE WILL CONSIST OF 20" O.D. X 0.500 W.T., API-5L X-70 PIPE
2. MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP) = 1440 psi

BORING LEGEND



HORIZONTAL DIRECTIONAL DRILL DATA HOLLY CREEK		
DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY @ 12°	1+59.12	759.18
PC1 = 2400' RADIUS	7+55.35	632.45
PT1 =	12+54.34	580.00
PC2 = 2400' RADIUS	20+03.12	580.00
PT2 =	24+19.88	616.46
EXIT @ 10°	29+53.55	710.56
HORIZONTAL DISTANCE (ft) = 2794.43		
DIRECTIONAL DRILL PIPE LENGTH (ft) = 2821.77		

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS	
DRAWING NO.	TITLE

REVISIONS						
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
A	4/08/15	AM	PRELIMINARY			
B	6/17/15	LY	ISSUED FOR FERC FILING		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
HOLLY CREEK
HORIZONTAL DIRECTIONAL DRILL
DALTON EXAPNSION
PROPOSED 20 INCH PIPELINE
MURRAY COUNTY, GEORGIA

Williams.

DRAWN BY: JES	DATE: 04/04/15		SCALE: AS NOTED
CHECKED BY: RDH	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: HOLLY CREEK 4:19:00 PM 6/19/2015 W:\ACTIVE PROJECTS\10091 - Williams - Dalton Exp\Drawings\Holly Creek.dwg	SHEET 1
WO: 10099	REV B		OF 2

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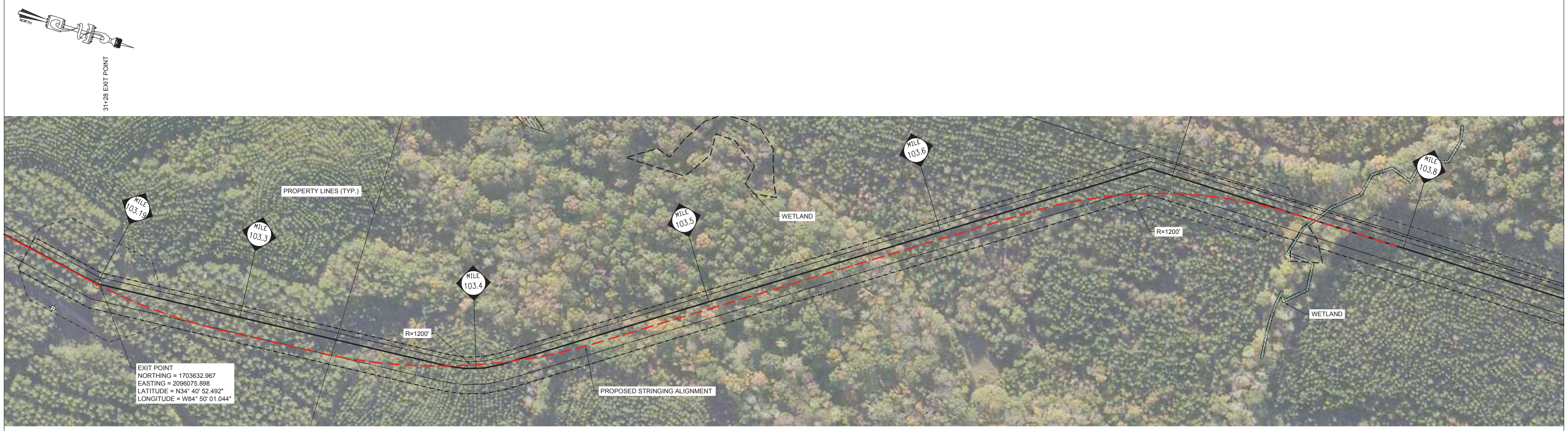
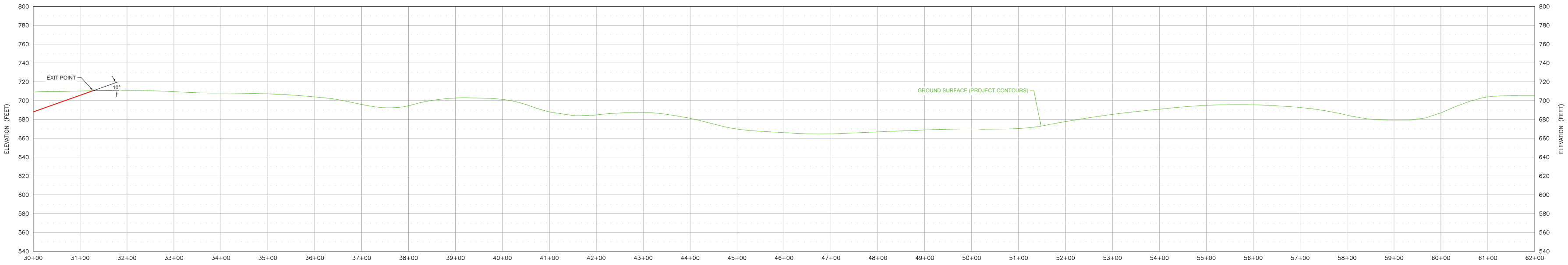
Scale valid for 24" x 36" print

MURRAY COUNTY, GEORGIA



PLAN VIEW



PROFILE VIEW

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS		REVISIONS						
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		A	4/08/15	AM	PRELIMINARY			
		B	6/17/15	LY	ISSUED FOR FERC JULY 2015 SUPPLEMENTAL FILING		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
HOLLY CREEK
HORIZONTAL DIRECTIONAL DRILL STRINGING AREA
DALTON EXPANSION
PROPOSED 20 INCH PIPELINE
MURRAY COUNTY, GEORGIA

Williams.

DRAWN BY: JES	DATE: 04/04/15		SCALE: AS NOTED
CHECKED BY: KBP	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: HOLLY CREEK 1:54:33 PM 6/19/2015 W:\ACTIVE PROJECTS\10091 - Williams - Dalton Exp\Drawings\Holly Creek-06-17-15.dwg	SHEET 2 OF 2
WO: 10097	REV B		

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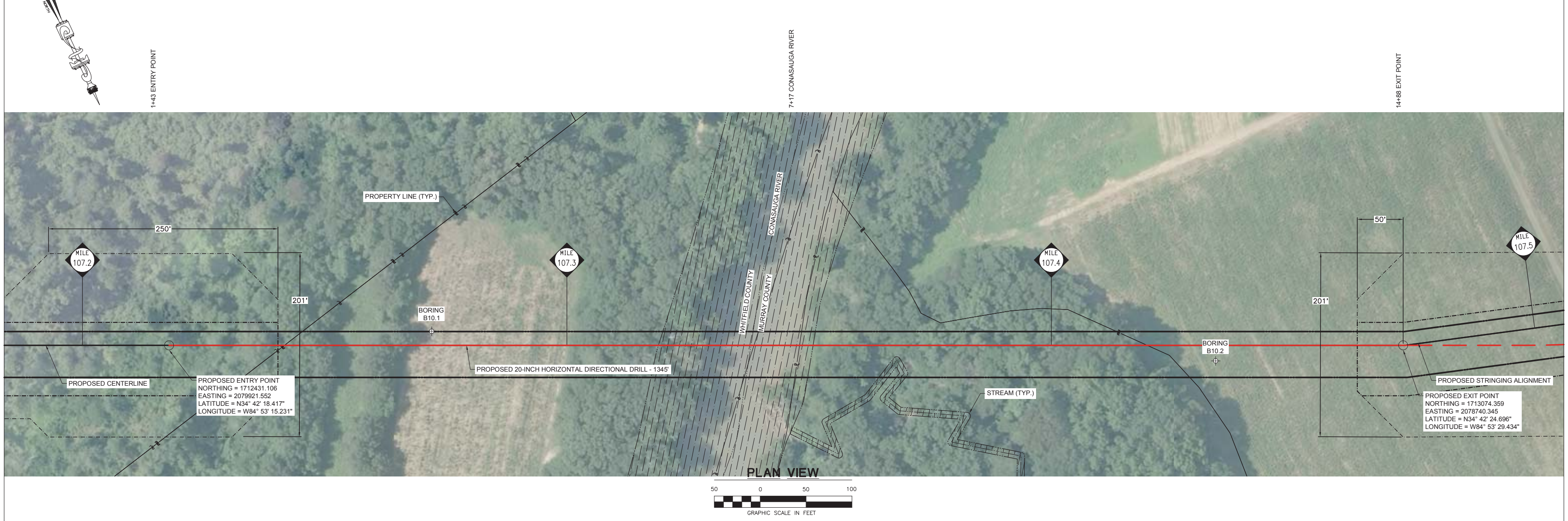
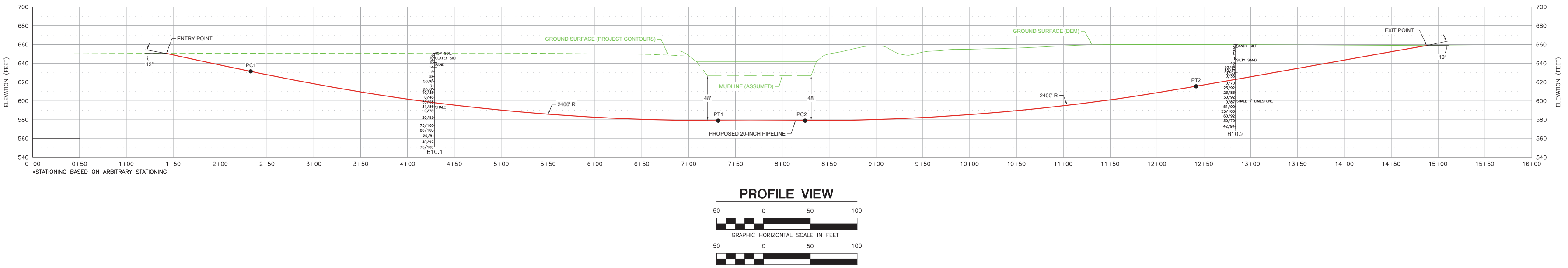
Scale valid for 24" x 36" print

WHITFIELD AND MURRAY COUNTIES, GEORGIA



PLAN VIEW

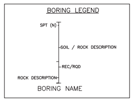


PROFILE VIEW

PIPE SPECIFICATIONS:

1. PRODUCT PIPE WILL CONSIST OF 20" O.D. X 0.500 W.T., API-5L X-70 PIPE
2. MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP) = 1440 psi

BORING LEGEND



HORIZONTAL DIRECTIONAL DRILL DATA
CONASAUGA RIVER EAST

DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY @ 12°	1+42.64	650.59
PC1 = 2400' RADIUS	2+32.64	631.46
PT1 =	7+31.62	579.01
PC2 = 2400' RADIUS	8+24.36	579.01
PT2 =	12+41.12	615.47
EXIT @ 10°	14+87.64	658.94

HORIZONTAL DISTANCE (ft) = 1345.00
DIRECTIONAL DRILL PIPE LENGTH (ft) = 1356.60

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS

DRAWING NO.	TITLE

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
A	04/01/15	AM	PRELIMINARY		KBP	RDH
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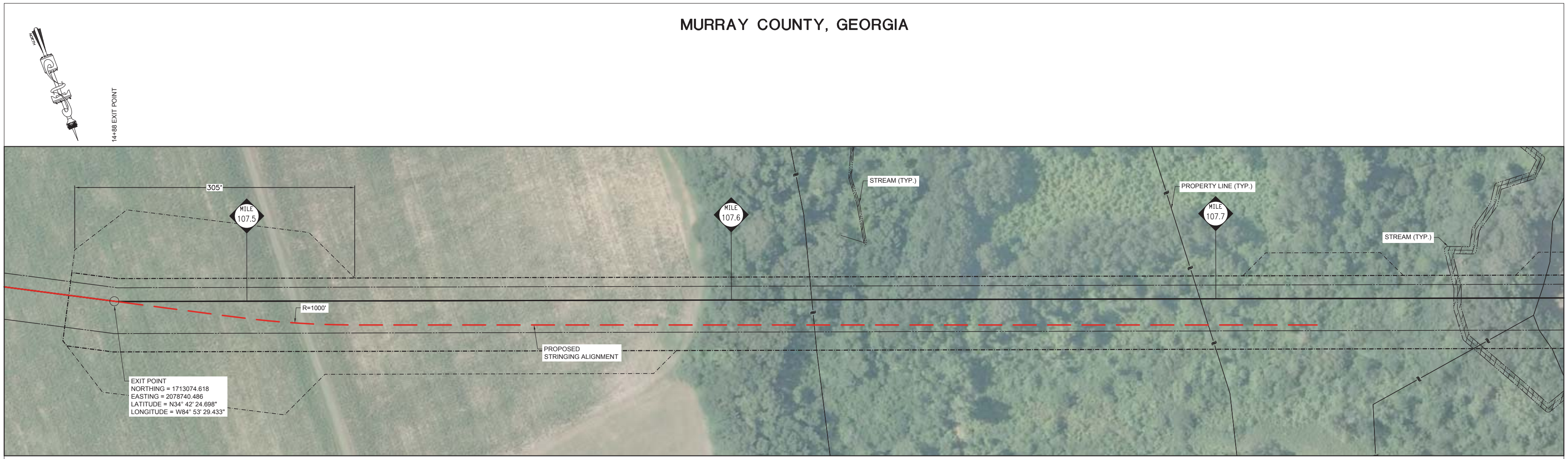
TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
CONASAUGA RIVER EAST
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 20 INCH PIPELINE
WHITFIELD AND MURRAY COUNTIES, GEORGIA

Williams.

DRAWN BY: AM	DATE: 10/14/2014		SCALE: AS NOTED
CHECKED BY: KBP	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: CONASAUGA RIVER EAST 4:17:20 PM 6/19/2015 W:\ACTIVE PROJECTS\10091 - Williams - Dalton Exp\Drawings\Conasauga East HDD B.dwg	SHEET 1 OF 2
WO: 10099			

Scale valid for 24" x 36" print

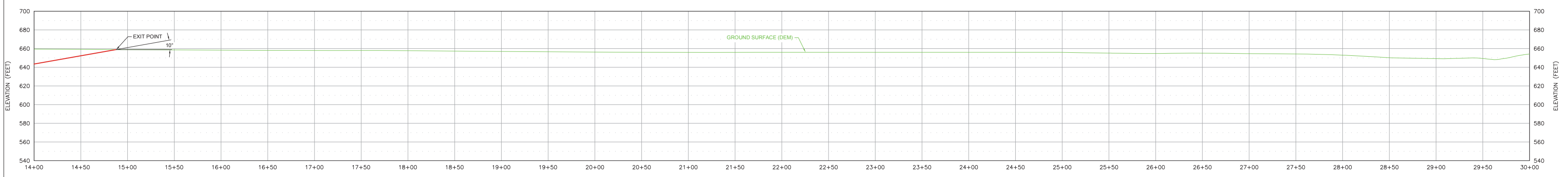
MURRAY COUNTY, GEORGIA



PLAN VIEW

50 0 50 100

GRAPHIC SCALE IN FEET



PROFILE VIEW

50 0 50 100

GRAPHIC HORIZONTAL SCALE IN FEET

50 0 50 100

GRAPHIC VERTICAL SCALE IN FEET

REFERENCE DRAWINGS

DRAWING NO.	TITLE

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NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
A	04/01/15	AM	PRELIMINARY		KBP	RDH
	06/17/15	LY	ISSUED FOR FERC FILING JULY 2015 SUPPLEMENTAL		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
CONASAUGA RIVER EAST STRINGING
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 20 INCH PIPELINE
WHITFIELD AND MURRAY COUNTIES, GEORGIA

Williams.

DRAWN BY: AM	DATE: 10/14/2014		SCALE: AS NOTED
CHECKED BY: KBP	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: CONASAUGA RIVER EAST	SHEET 2
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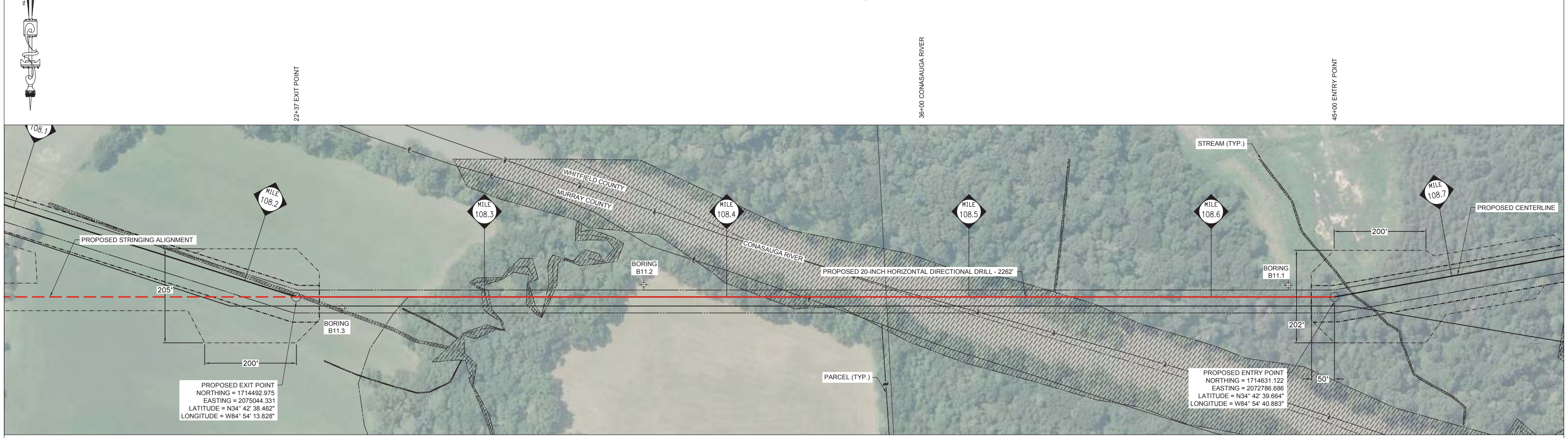
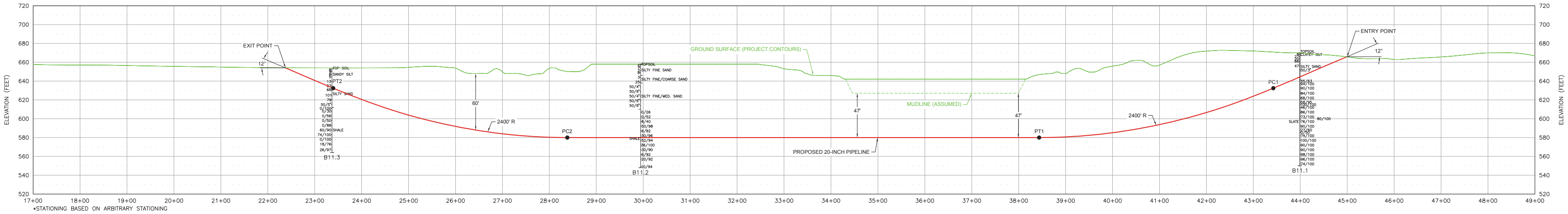
Scale valid for 24" x 36" print

MURRAY AND WHITFIELD COUNTIES, GEORGIA



PLAN VIEW

100 0 100 200
GRAPHIC SCALE IN FEET



PROFILE VIEW

100 0 100 200
GRAPHIC HORIZONTAL SCALE IN FEET

50 0 50 100
GRAPHIC VERTICAL SCALE IN FEET

PIPE SPECIFICATIONS:

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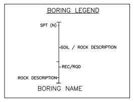
2. MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP) = 1440 psi



HORIZONTAL DIRECTIONAL DRILL DATA
CONASAUGA RIVER WEST

DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY @ 12°	45+00.00	665.91
PC1 = 2400' RADIUS	43+42.58	632.45
PT1 =	38+43.59	580.00
PC2 = 2400' RADIUS	28+38.19	580.00
PT2 =	23+39.21	632.45
EXIT @ 12°	22+37.80	654.00

HORIZONTAL DISTANCE (ft) = 2262.20

DIRECTIONAL DRILL PIPE LENGTH (ft) = 2275.32

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS

DRAWING NO.	TITLE

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
A	04/01/15	AM	PRELIMINARY		KBP	RDH
B	06/17/15	LY	ISSUED FOR FERC FILING JULY 2015 SUPPLEMENTAL		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
CONASAUGA RIVER WEST
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 20 INCH PIPELINE
MURRAY AND WHITFIELD COUNTIES, GEORGIA

Williams.

DRAWN BY: AM	DATE: 10/01/2014		SCALE: AS NOTED
CHECKED BY: KBP	DATE: 04/01/15		
APPROVED BY: RDH	DATE: 04/01/15	DRAWING NUMBER: CONASAUGA RIVER WEST	SHEET 1
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Scale valid for 24" x 36" print

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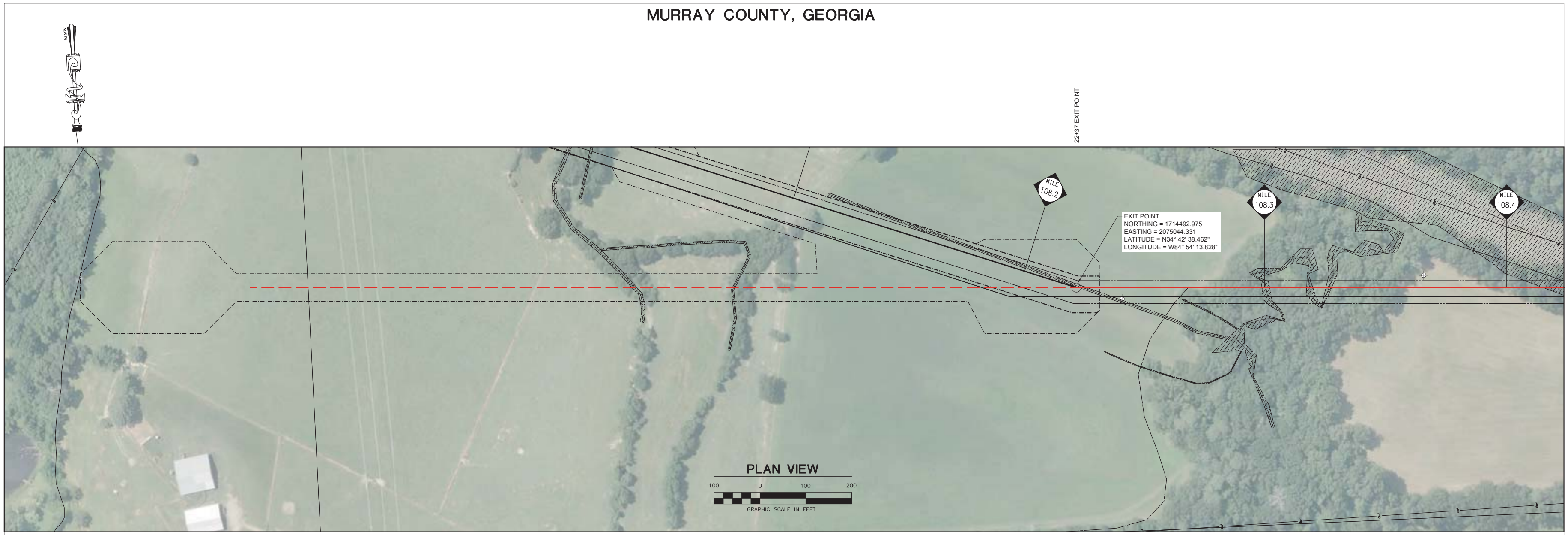
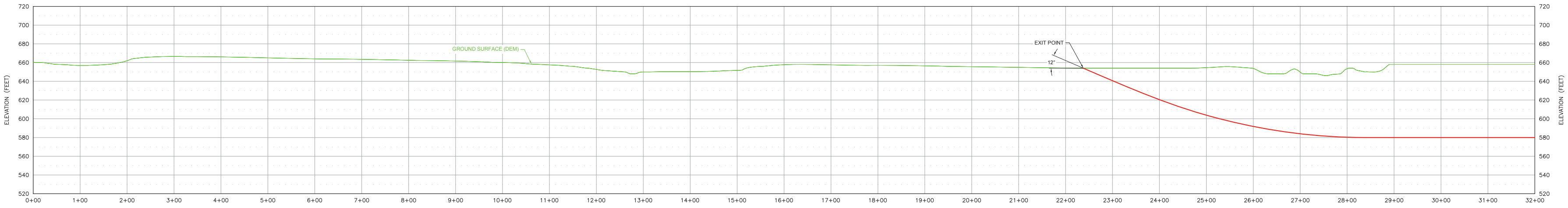
MURRAY COUNTY, GEORGIA



PLAN VIEW



PROFILE VIEW

100 0 100 200
GRAPHIC HORIZONTAL SCALE IN FEET

50 0 50 100
GRAPHIC VERTICAL SCALE IN FEET

DRAWING COORDINATE SYSTEM
HORIZONTAL DATUM: SPCS – GA83–WF NAD83 AND GEOGRAPHIC NAD83
VERTICAL DATUM: NAVD 88

REFERENCE DRAWINGS		REVISIONS						
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		A	04/01/15	AM	PRELIMINARY		KBP	RDH
		B	06/17/15	LY	ISSUED FOR FERC FILING JULY 2015 SUPPLEMENTAL		KBP	RDH

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
CONASAUGA RIVER WEST STRINGING
HORIZONTAL DIRECTIONAL DRILL
DALTON EXPANSION
PROPOSED 20 INCH PIPELINE
MURRAY COUNTY, GEORGIA

Williams.

DRAWN BY: AM	DATE: 10/01/2014		SCALE: AS NOTED
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APPROVED BY: KBP	DATE: 04/01/15	DRAWING NUMBER: CONASAUGA RIVER WEST	SHEET 2
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Scale valid for 24" x 36" print

APPENDIX C

Bentonite Material Safety Data Sheet

Brenntag Canada Inc. BRENNTAG

MATERIAL SAFETY DATA SHEET

BENTONITE / VOLCLAY, SOLID

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Brenntag Canada Inc.
43 Jutland Rd.
Toronto, ON
M8Z 2G6
(416) 259-8231

Website: http:\\www.brenntag.ca

WHMIS#:	00062692
Index:	HCI1551/11C
Effective Date:	2011 August 16
Date of Revision:	2011 August 16

EMERGENCY TELEPHONE NUMBER (For Emergencies Involving Chemical Spills or Releases)

1 855 273 6824

PRODUCT IDENTIFICATION

Product Name:	Bentonite / Volclay, Solid.
Chemical Name:	Montmorillonite.
Synonyms:	Accugel; Accugel F; Activated Clay (ET-1) "B"; Activated Clay (ET-1) "C"; AEG 325; Bentonite Cleartreat 1000; Volclay 325 Mesh; Bentonite 325 Mesh; Volclay HPM-20; Volclay KWK Krystal Klear; Volclay SPV 200; Volclay NF-BC;; Natural Gel; Hydrated Aluminium Silicate; Aluminium III Silicate; Cleartreat 1000; Bentonite ET1; Modified Bentonite Clay; Modified Natural Mineral; Wyoming Gel; Wyoming (Western) Bentonite; Organotrol (All Grades).
Chemical Family:	Naturally occurring mineral.
Molecular Formula:	Not available.
Product Use:	Waste water treatment. Adsorbent. Oil well treating compound. Oilfield chemical. Filtration media. Chemical intermediate.

WHMIS Classification / Symbol:

D-2A: Very Toxic (carcinogen, chronic effects)

READ THE ENTIRE MSDS FOR THE COMPLETE HAZARD EVALUATION OF THIS PRODUCT.

2. COMPOSITION, INFORMATION ON INGREDIENTS (Not Intended As Specifications)

Ingredient	*CAS#*	*ACGIH TLV (TWA)*	*% Concentration*
Montmorillonite Clay / Bentonite	1302-78-9	---	90 - 100
Silica, Crystalline, Quartz	14808-60-7	0.025 mg/m³ *A2	1 - 10

A2 = Suspected Human Carcinogen (ACGIH-A2).

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:	Harmful if inhaled. Dust may cause mechanical irritation to skin, eyes and respiratory tract. Severe exposure may cause lung damage. Cancer hazard. See "Other Health Effects" Section. Can decompose at high temperatures forming toxic gases.

POTENTIAL HEALTH EFFECTS

Inhalation:	Product is irritating to the nose, throat and respiratory tract. Excessive contact with powder may cause drying of mucous membranes of nose and throat due to absorption of moisture and oils. See "Other Health Effects" Section.
Skin Contact:	This product may cause irritation due to abrasive action. Excessive contact with powder may cause drying of the skin due to absorption of moisture and oils. May cause defatting, drying and cracking of the skin.
Skin Absorption:	Not applicable.
Eye Contact:	This product may cause irritation, redness and possible damage due to abrasiveness. Excessive contact with powder may cause drying of mucous membranes of the eyes due to absorption of moisture and oils. May cause lachrymation (excessive tears).
Ingestion:	This product may cause mild gastrointestinal discomfort. Ingestion of large amounts may cause intestinal obstruction.
Other Health Effects:	Effects (irritancy) on the skin and eyes may be delayed. Strict adherence to first aid measures following any exposure is essential. In general, long-term exposure to high concentrations of dust may cause increased mucous flow in the nose and respiratory system airways. This condition usually disappears after exposure stops. Controversy exists as to the role exposure to dust has in the development of chronic bronchitis (inflammation of the air passages into the lungs). Other factors such as smoking and general air pollution are more important, but dust exposure may contribute. (4) May cause silicosis and pneumoconiosis. Silicosis develops gradually over a period of 20 years or more. Silicosis is characterized by cough, production of sputum, dyspnea, wheeze, silicotic nodules on lungs, and impaired pulmonary function. In advanced stages: fever, weight loss, cyanosis, clubbing of fingers, bacterial infections and death due to complications involving tuberculosis may occur. Early symptoms of silicosis are non-specific, so the development of silicosis may not be detected in its early stages. Silicosis can continue to develop even after exposure has stopped. Evidence of silicosis can be seen on X-rays. (4) Silicosis can vary in severity from minimal to severe. Mild silicosis typically has no impairment of respiratory function, however there is X-ray evidence of lung injury. Severe cases have significant and increasingly severe respiratory impairment. There is no proven treatment for the disease. Life expectancy is reduced, depending on the severity. Death is not due to a direct result of silicosis, but cor pulmonale (cardiac failure) may occur as it becomes increasingly difficult for the heart to pump blood through the lungs. Silicosis may be complicated by the development of bacterial infections, including tuberculosis. (4) "Accelerated" silicosis results from exposure to high concentrations of crystalline silica over 5 to 10 years. The disease continues to develops after exposure has stopped and is associated with autoimmune diseases such as scleroderma. (4) "Acute" silicosis (also known as "silicotic alveolar proteinosis") is rare in humans, but can develop if very high concentrations of crystalline silica dusts are inhaled over 1 - 2 years. Acute silicosis may result in death within a few years, often with tuberculosis as a complication. (4) Inhalation of quartz has been associated with a number of other harmful effects. These effects include: kidney damage (glomerulonephritis), changes to the liver, effects on the spleen and immune system disorders. (4) Pneumoconiosis is the deposition of dust in the lungs and the tissue's reaction to its presence. When exposure to the dust is severe or prolonged, the lungs' defenses are overwhelmed.

4. FIRST AID MEASURES

FIRST AID PROCEDURES

Inhalation:	If respiratory problems arise, move the victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.
Skin Contact:	Start flushing while removing contaminated clothing. Wash affected areas thoroughly with soap and water. If irritation, redness, or a burning sensation develops and persists, obtain medical advice.
Eye Contact:	Immediately flush eyes thoroughly for 15 minutes with running water. Hold eyelids open during flushing. If irritation persists, repeat flushing.
Ingestion:	Do not attempt to give anything by mouth to an unconscious person. If victim is alert and not convulsing, rinse mouth out and give 1/2 to 1 glass of water to dilute material. DO NOT induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Obtain medical attention IMMEDIATELY.

Note to Physicians:	Treat symptomatically. Medical conditions that may be aggravated by exposure to this product include neurological and cardiovascular disorders, diseases of the skin, eyes or respiratory tract, preexisting liver and kidney disorders.

5. FIRE-FIGHTING MEASURES

Flashpoint (°C)	*AutoIgnition Temperature (°C)*	Flammability Limits in Air (%): *LEL*	*UEL*
Non-combustible (does not burn).	Not applicable.	Not applicable.	Not applicable.

Flammability Class (WHMIS):	Not regulated.
Hazardous Combustion Products:	Thermal decomposition products are toxic and may include silicon, oxides of carbon and irritating gases.
Unusual Fire or Explosion Hazards:	Minimize air borne spreading of dust. Spilled material may cause floors and contact surfaces to become slippery. Ignites on contact with fluorine. Do not flush with water as aqueous solutions or powders that become wet render surfaces extremely slippery.
Sensitivity to Mechanical Impact:	Not expected to be sensitive to mechanical impact.
Rate of Burning:	Not available.
Explosive Power:	Not available.
Sensitivity to Static Discharge:	Not expected to be sensitive to static discharge.
EXTINGUISHING MEDIA	
Fire Extinguishing Media:	Use media appropriate for surrounding fire and/or materials: Foam. Dry chemical, carbon dioxide or water spray.
FIRE FIGHTING INSTRUCTIONS	
Instructions to the Fire Fighters:	Fire-exposed containers should be kept cool by spraying with water to reduce pressure. Spilled material may cause floors and contact surfaces to become slippery. Do not flush with water as aqueous solutions or powders that become wet render surfaces extremely slippery.
Fire Fighting Protective Equipment:	Use self-contained breathing apparatus and protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Information in this section is for responding to spills, leaks or releases in order to prevent or minimize the adverse effects on persons, property and the environment. There may be specific reporting requirements associated with spills, leaks or releases, which change from region to region.

Containment and Clean-Up Procedures:	In all cases of leak or spill contact vendor at Emergency Number shown on the front page of this MSDS. Minimize air borne spreading of dust. Wear respirator, protective clothing and gloves. Avoid dry sweeping. Do not use compressed air to clean surfaces. Vacuuming or wet sweeping is preferred. Return all material possible to container for proper disposal. Do not allow to enter sewers or watercourses. Collect product for recovery or disposal. Ventilate enclosed spaces. Notify applicable government authority if release is reportable or could adversely affect the environment. Where a package (drum or bag) is damaged and / or leaking, repair it, or place it into an over-pack drum immediately so as to avoid or minimize material loss and contamination of surrounding environment. Any recovered product can be used for the usual purpose, depending on the extent and kind of contamination.

7. HANDLING AND STORAGE

HANDLING	
Handling Practices:	Use normal "good" industrial hygiene and housekeeping practices. Minimize air borne spreading of dust. Clean up immediately to eliminate slipping hazard.
Ventilation Requirements:	See Section 8, "Engineering Controls".
Other Precautions:	Use only with adequate ventilation and avoid breathing dusts. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use.

STORAGE

Storage Temperature (°C):	See below.
Ventilation Requirements:	General exhaust is acceptable.
Storage Requirements:	Store in a cool, dry and well-ventilated area. Keep away from heat, sparks and flames. Keep containers closed. Avoid moisture contamination. Prolonged storage may result in lumping or caking. Protect from direct sunlight. Protect against physical damage.
Special Materials to be Used for Packaging or Containers:	Materials of construction for storing the product include: polyethylene, paper bags or sacks. Confirm suitability of any material before using.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Recommendations listed in this section indicate the type of equipment, which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

ENGINEERING CONTROLS

Engineering Controls:	Local exhaust ventilation required. Make up air should be supplied to balance air that is removed by local or general exhaust ventilation. Ventilate low lying areas such as sumps or pits where dense dust may collect.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye Protection:	Safety glasses with side shields are recommended to prevent eye contact. Use chemical safety goggles when there is potential for eye contact. Contact lenses should not be worn when working with this material.
Skin Protection:	Gloves and protective clothing made from neoprene, PVC or rubber should be impervious under conditions of use. Prior to use, user should confirm impermeability. Discard contaminated gloves.
Respiratory Protection:	No specific guidelines available. A NIOSH/MSHA-approved air-purifying respirator equipped with dust, mist, fume cartridges for concentrations up to 0. 5 mg/m³ Silica, Crystalline Quartz. An air-supplied respirator if concentrations are higher or unknown.
Other Personal Protective Equipment:	Wear regular work clothing. The use of coveralls is recommended. Locate safety shower and eyewash station close to chemical handling area. Take all precautions to avoid personal contact.

EXPOSURE GUIDELINES

SUBSTANCE	***ACGIH TLV***	***OSHA PEL***		***NIOSH REL***	
	(STEL)	***(TWA)***	***(STEL)***	***(TWA)***	***(STEL)***
Silica, Crystalline, Quartz	—	30 mg/m³ / (% SiO2 + 2) (Total Dust)	10 mg/m³ / (% SiO2 + 2) (Respirable dust)	0.05 mg/m³ (Respirable dust)	---

9. PHYSICAL AND CHEMICAL PROPERTIES (Not intended as Specifications)

Physical State:	Solid.
Appearance:	Pale grey to buff powder or granules.
Odour:	Odourless.
Odour Threshold (ppm):	Not available.
Boiling Range (°C):	Not applicable.
Melting/Freezing Point (°C):	1 450 - 1 580. (3)
Vapour Pressure (mm Hg at 20° C):	Not applicable.
Vapour Density (Air = 1.0):	Not applicable.
Relative Density (g/cc):	2.4 - 2.6. (3)
Bulk Density:	55 - 58 lbs / cu.ft.; 883 kg/m3. (3)
Viscosity:	Not applicable.
Evaporation Rate (Butyl Acetate = 1.0):	Not applicable.
Solubility:	Practically insoluble in water.
% Volatile by Volume:	0 %.
pH:	8.0 - 10.0 (5 % suspension).
Coefficient of Water/Oil Distribution:	Not applicable.

Volatile Organic Compounds (VOC):	Not applicable.
Flashpoint (°C):	Non-combustible (does not burn).

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY

Under Normal Conditions:	Stable.
Under Fire Conditions:	Not flammable.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	High temperatures, sparks, open flames and all other sources of ignition. Minimize air borne spreading of dust. Moisture. Keep tightly closed to protect quality.
Materials to Avoid:	None known. (3)
Decomposition or Combustion Products:	Thermal decomposition products are toxic and may include silicon, oxides of carbon and irritating gases.

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:

Meaningful toxicological test data could not be found for this product.

Carcinogenicity Data:	Silica, Crystalline Quartz is classified as carcinogenic by IARC (International Agency for Research on Cancer) (IARC-1), NTP (National Toxicology Program) (NTP-K), ACGIH (American Conference of Governmental Industrial Hygienists) (ACGIH-A2.) and NIOSH (National Institute for Occupational Safety and Health) (NIOSH-Ca).
Reproductive Data:	No adverse reproductive effects are anticipated.
Mutagenicity Data:	No adverse mutagenic effects are anticipated.
Teratogenicity Data:	No adverse teratogenic effects are anticipated.
Respiratory / Skin Sensitization Data:	None known.
Synergistic Materials:	Silica, Crystalline Quartz: Although there is a disagreement about whether tobacco smoke increases the severity of silica dust on respiratory impairment, it is known that carcinogens such as benzo(a)pyrene can increase the carcinogenicity of silica dust. A synergistic effect between smoking and crystalline silica and/or silicosis on risk of lung cancer is likely. (4)
Other Studies Relevant to Material:	Silica, Crystalline Quartz: Foreign body reactions (granulomas) have been observed after crystalline silica was accidentally introduced under the skin as a result of injury. The effects were often delayed for periods ranging from weeks to more than 50 years. (4) Silicosis and alveolar proteinosis have been observed in several different species following exposures from one week to 27 months. (4) Rats exposed for 28 days to 38 and 50 mg/Kg of pure alpha-quartz developed silicosis and alveolar proteinosis after 34 weeks. Silicosis similar to that seen in humans was observed in rats exposed to 30,000 particles/mL quartz dust for up to 420 days. Alveolar proteinosis was observed following exposure of rats to 40 mg/M3 pure quartz for 12 weeks. (4) Studies have shown an increased incidence of lung tumours in rats following exposure to quartz by inhalation for up to 2 years. Female mice exposed to quartz for up to 570 days had no increased incidence in lung tumors. The International Agency for Research on Cancer has determined that there is sufficient evidence that crystalline silica is carcinogenic to experimental animals. (4) The frequency of chromosomal aberrations and sister chromatid exchange was elevated in a group of 50 employees exposed to stone dust. The stone dust was mainly composed of silica (50 - 60 %) and other metal oxides. These observations could not be explained by the consumption of alcohol and/or smoking, and other confounding factors were not studied. (4)

12. ECOLOGICAL INFORMATION

Ecotoxicity:	Not available. May be harmful to aquatic life.

Environmental Fate:	Not available. Product has an unaesthetic appearance and can be a nuisance. May be hazardous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

13. DISPOSAL CONSIDERATIONS

Deactivating Chemicals:	None required.
Waste Disposal Methods:	This information applies to the material as manufactured. Reevaluation of the product may be required by the user at the time of disposal since the product uses, transformations, mixtures and processes may influence waste classification. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations. Do not dispose of waste with normal garbage, or to sewer systems.
Safe Handling of Residues:	See "Waste Disposal Methods".
Disposal of Packaging:	Empty containers retain product residue and can be hazardous. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations.

14. TRANSPORTATION INFORMATION

CANADIAN TDG ACT SHIPPING DESCRIPTION:

This product is not regulated by TDG.

Label(s): Not applicable. Placard: Not applicable.

ERAP Index: -----. Exemptions: None known.

US DOT CLASSIFICATION (49CFR 172.101, 172.102):

This product is not regulated by DOT.

Label(s): Not applicable. Placard: Not applicable.

CERCLA-RQ: Not available. Exemptions: None known.

15. REGULATORY INFORMATION

CANADA

CEPA - NSNR:	All components of this product are included on the DSL.
CEPA - NPRI:	Not included.

Controlled Products Regulations Classification (WHMIS):

D-2A: Very Toxic (carcinogen, chronic effects)

USA

Environmental Protection Act:	All components of this product are included on the TSCA inventory.
OSHA HCS (29CFR 1910.1200):	Chronic Effects, Carcinogenic.

NFPA: 1 Health, 0 Fire, 0 Reactivity (3)

HMIS: 1 Health, 0 Fire, 0 Reactivity (3)

INTERNATIONAL

Not available.

16. OTHER INFORMATION

REFERENCES

1. RTECS-Registry of Toxic Effects of Chemical Substances, Canadian Centre for Occupational Health and Safety RTECS database.
2. Clayton, G.D. and Clayton, F.E., Eds., Patty's Industrial Hygiene and Toxicology, 3rd ed., Vol. IIA,B,C, John Wiley and Sons, New York, 1981.

3. Supplier's Material Safety Data Sheet(s).
4. CHEMINFO chemical profile, Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada.
5. Guide to Occupational Exposure Values, 2011, American Conference of Governmental Industrial Hygienists, Cincinnati, 2011.
6. Regulatory Affairs Group, Brenntag Canada Inc.
7. The British Columbia Drug and Poison Information Centre, Poison Managements Manual, Canadian Pharmaceutical Association, Ottawa, 1981.

The information contained herein is offered only as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Brenntag Canada Inc. will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein. This Material Safety Data Sheet is valid for three years.

To obtain revised copies of this or other Material Safety Data Sheets, contact your nearest Brenntag Canada Regional office.

British Columbia: 20333-102B Avenue, Langley, BC, V1M 3H1
Phone: (604) 513-9009 Facsimile: (604) 513-9010

Alberta: 6628 - 45 th. Street, Leduc, AB, T9E 7C9
Phone: (780) 986-4544 Facsimile: (780) 986-1070

Manitoba: 681 Plinquet Street, Winnipeg, MB, R2J 2X2
Phone: (204) 233-3416 Facsimile: (204) 233-7005

Ontario: 43 Jutland Road, Toronto, ON, M8Z 2G6
Phone: (416) 259-8231 Facsimile: (416) 259-5333

Quebec: 2900 Jean Baptiste Des., Lachine, PQ, H8T 1C8
Phone: (514) 636-9230 Facsimile: (514) 636-0877

Atlantic: A-105 Akerley Boulevard, Dartmouth, NS, B3B 1R7
Phone: (902) 468-9690 Facsimile: (902) 468-3085

Prepared By: Regulatory Affairs Group, Brenntag Canada Inc., (416) 259-8231.

APPENDIX I

RESIDENTIAL CONSTRUCTION PLANS

NOTES:

1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.

2. OTHER KNOWN UTILITIES ARE ALSO DEPICTED ON THE SITE PLANS. PRIOR TO CONSTRUCTION, THE STATE ONE CALL CENTER WILL BE NOTIFIED TO VERIFY THE LOCATION OF THESE UTILITIES AND IDENTIFY ANY UNKNOWN UTILITIES WHICH MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. TRANSCO WILL ALSO CONTACT INDIVIDUAL PROPERTY OWNER(S) TO IDENTIFY AND LOCATE ANY OTHER UTILITIES THAT MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. THESE UTILITIES WILL BE IDENTIFIED AND MARKED BY THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

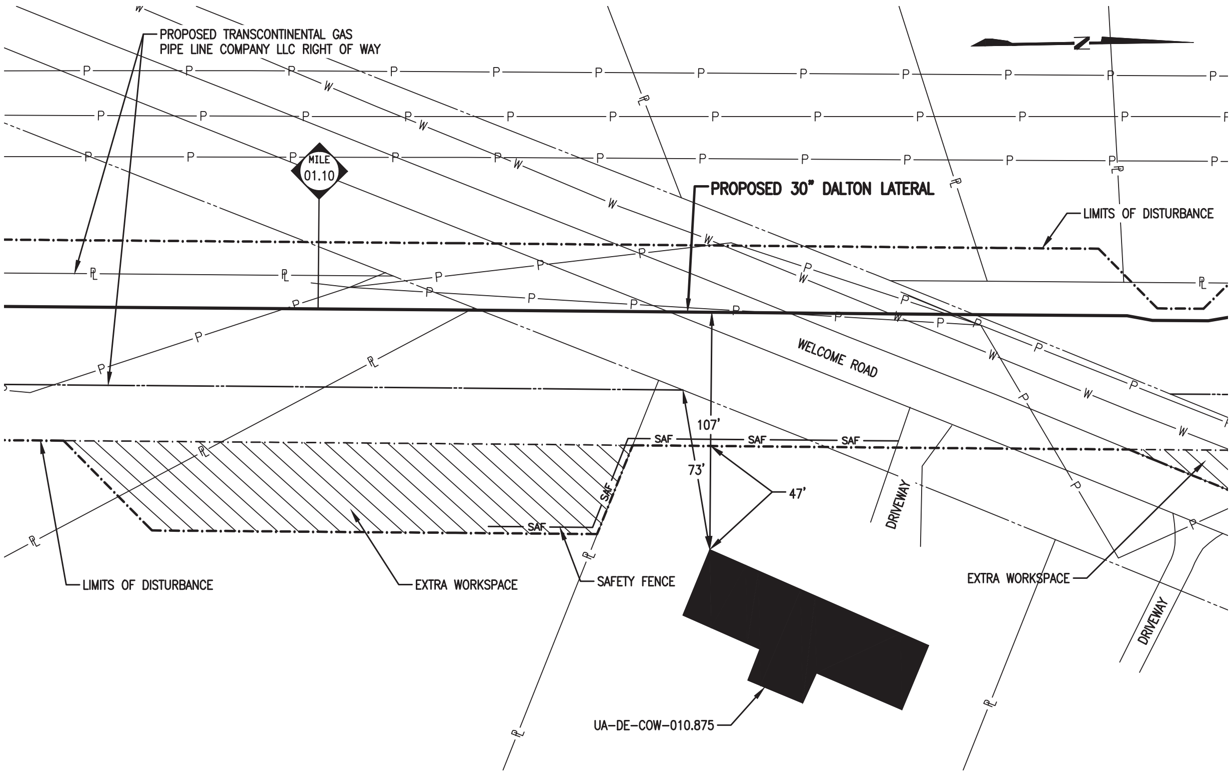
3. ANY NEARBY STRUCTURES, RESIDENTIAL FEATURES AND TREES LOCATED WITHIN THE CONSTRUCTION WORK AREAS WHICH WILL NOT BE REMOVED DURING CONSTRUCTION ARE NOTED ON THE SITE PLAN.

4. TO MINIMIZE IMPACTS TO RESIDENCES, THE FOLLOWING CONSTRUCTION TECHNIQUES SHALL BE UTILIZED: DRAG SECTION OR STOVE PIPE (IF NEEDED). EXCAVATION OF THE TRENCH WILL NOT BE INITIATED UNTIL THE PIPE IS READY FOR INSTALLATION. THE PIPE TRENCH SHALL BE BACKFILLED IMMEDIATELY UPON COMPLETION OF THE PIPELINE INSTALLATION. DETAILS OF THESE CONSTRUCTION TECHNIQUES ARE DESCRIBED BELOW.
   a. DRAG SECTION: THE DRAG SECTION TECHNIQUE INVOLVES THE INSTALLATION OF SHORT SECTIONS (TWO OR MORE JOINTS) OF PIPE CALLED DRAG SECTIONS. THE CONTRACTOR WILL BEGIN THE DRAG SECTION INSTALLATION BY CLEARING AND GRADING A SHORT SECTION OF THE RIGHT OF WAY. INDIVIDUAL JOINTS OF PIPE WILL THEN BE HAULED TO THE WORK AREA AND LAID OUT FOR FABRICATION. THE CONTRACTOR WILL THEN FABRICATE THE DRAG SECTION BY WELDING TOGETHER TWO OR MORE PIPE JOINTS. THE CONTRACTOR WILL EXCAVATE THE TRENCH. THE AMOUNT OR LENGTH OF TRENCH EXCAVATED AT ANY GIVEN TIME WILL BE LIMITED TO THE MINIMUM NECESSARY TO INSTALL THE DRAG SECTION. THE PIPE SECTION WILL THEN BE LOWERED INTO THE TRENCH, THE TIE-IN WELD WILL BE PERFORMED, X-RAYED AND COATED, AND THEN THE PIPE SECTION IS BACKFILLED.
   b. STOVE PIPE (IF NEEDED): THE STOVE PIPE INSTALLATION TECHNIQUE IS SIMILAR TO THE DRAG SECTION TECHNIQUE DESCRIBED ABOVE, EXCEPT IT IS LIMITED TO THE INSTALLATION OF ONE JOINT OF PIPE AT A TIME. THE TYPICAL SEQUENCE OF ACTIVITIES FOR STOVE PIPE INSTALLATION IS AS FOLLOWS: THE RIGHT OF WAY IS CLEARED AND GRADED, THE PIPE JOINT IS HAULED TO THE WORK AREA, THE TRENCH IS EXCAVATED, THE PIPE JOINT IS INSTALLED, WELDED (TIED-IN), X-RAYED, COATED, AND THEN THE TRENCH IS BACKFILLED. THIS PROCESS WILL BE REPEATED UNTIL THE WORK HAS BEEN COMPLETED IN THE AREA OF CONCERN.

5. TRANSCO WILL NOTIFY LANDOWNERS, IN WRITING, AT LEAST TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION. TRANSCO'S LAND AGENT WILL THEN FOLLOW-UP WITH EACH LANDOWNER AT LEAST ONE (1) WEEK PRIOR TO THE START OF CONSTRUCTION.

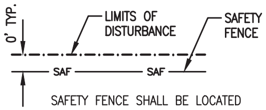
6. AFTER COMPLETION THE CONSTRUCTION WORK AREAS WILL BE RESTORED IN ACCORDANCE WITH APPLICABLE PERMIT REQUIREMENTS, THE PROJECT-SPECIFIC VERSION OF FERC'S UPLAND EROSION CONTROL REVEGETATION AND MAINTENANCE PLAN AND THE SOIL EROSION AND SEDIMENT CONTROL PLAN.

7. LAND REPRESENTATIVE WILL DISCUSS ACCESS TO RESIDENCES PRIOR TO CONSTRUCTION AND INCLUDE THAT INFORMATION IN THE CONSTRUCTION LINE LIST. THE CONSTRUCTION LINE LIST WILL BE INCLUDED IN THE CONSTRUCTION CONTRACT. ADDITIONALLY, INSPECTORS ASSIGNED TO THE PROJECT WILL ENSURE THAT THE REQUIREMENTS IN THE LINE LIST ARE FOLLOWED.



8. AT A MINIMUM, CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA AS SHOWN ON THE SITE PLAN.

9. UTILIZE CONTROLS AS NECESSARY TO MITIGATE DUST, NOISE, AND VIBRATIONS DURING CONSTRUCTION.



SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104108
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO. UA-DE-COW-010.875
COWETA COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP	DATE: 01/06/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 03/06/15	DRAWING NUMBER: 24-0410-40-26-A/1.13 11:37am 9/17/2015 phumphrey K:\LP116883\Mapping\RCP\24_0410_40_26_A_1_13.dwg	SHEET 1 OF 1
WO: 1113191			

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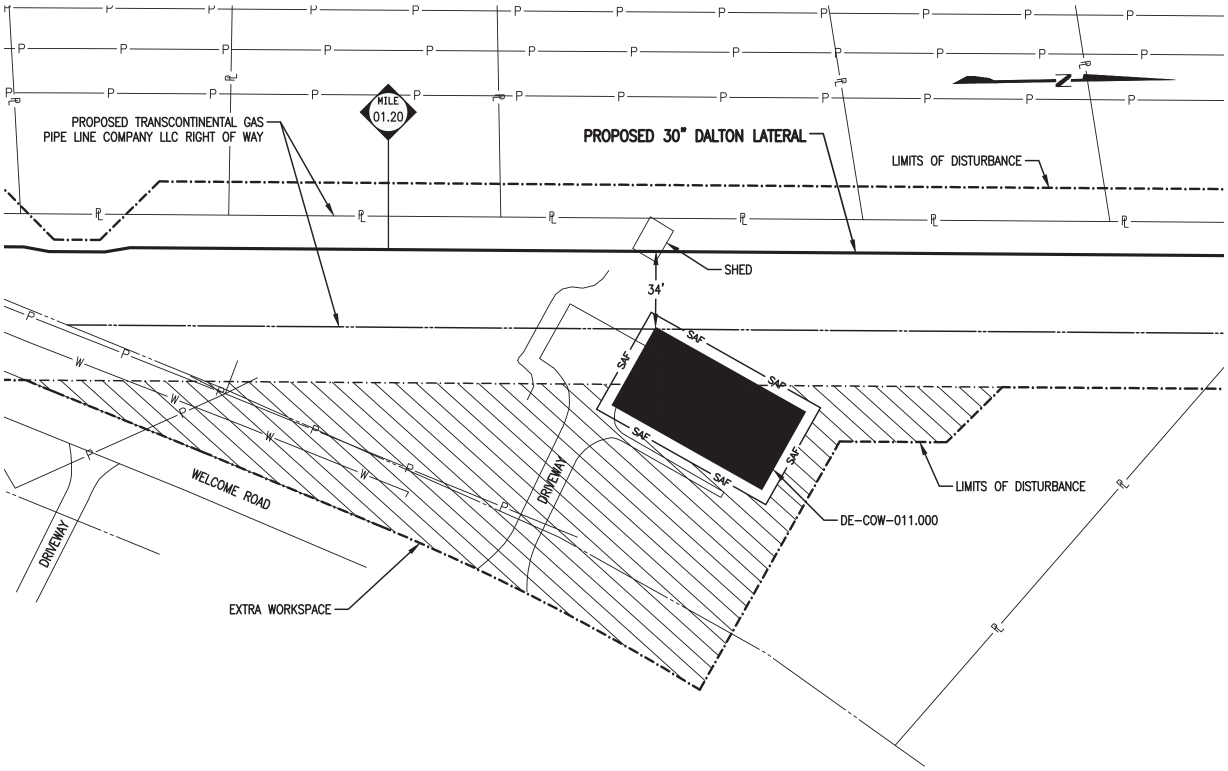

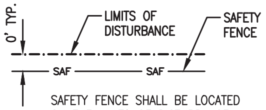

SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

0 50 100 150
SCALE IN FEET

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104108
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO DE-COW-011.000
COWETA COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
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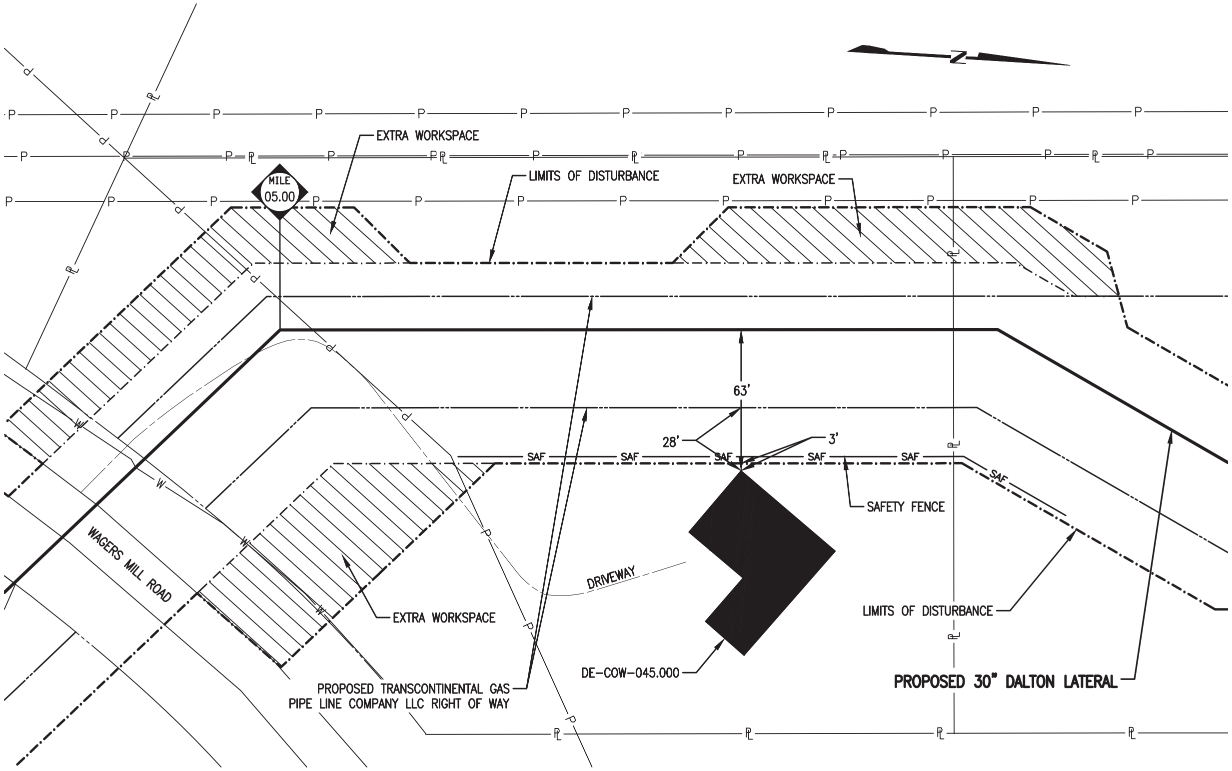
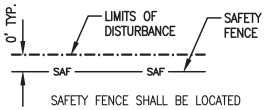


8. AT A MINIMUM, CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA AS SHOWN ON THE SITE PLAN.

9. UTILIZE CONTROLS AS NECESSARY TO MITIGATE DUST, NOISE, AND VIBRATIONS DURING CONSTRUCTION.



SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104108
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO DE-COW-045.000
COWETA COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP — DATE: 01/13/15
CHECKED BY: MEH — DATE: 03/06/15
APPROVED BY: RLA — DATE: 03/06/15
WO: 1113191
ISSUED FOR BID:
ISSUED FOR CONSTRUCTION:
SCALE: 1" = 50'
REVISION:
DRAWING NUMBER: 24-0410-40-26-A/5.04
SHEET 1 OF 1
4:39pm 9/16/2015 phumphrey
K:\LP116883\Mapping\RCP\24_0410_40_26_A_5_04.dwg

NOTES:

1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.

2. OTHER KNOWN UTILITIES ARE ALSO DEPICTED ON THE SITE PLANS. PRIOR TO CONSTRUCTION, THE STATE ONE CALL CENTER WILL BE NOTIFIED TO VERIFY THE LOCATION OF THESE UTILITIES AND IDENTIFY ANY UNKNOWN UTILITIES WHICH MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. TRANSCO WILL ALSO CONTACT INDIVIDUAL PROPERTY OWNER(S) TO IDENTIFY AND LOCATE ANY OTHER UTILITIES THAT MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. THESE UTILITIES WILL BE IDENTIFIED AND MARKED BY THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

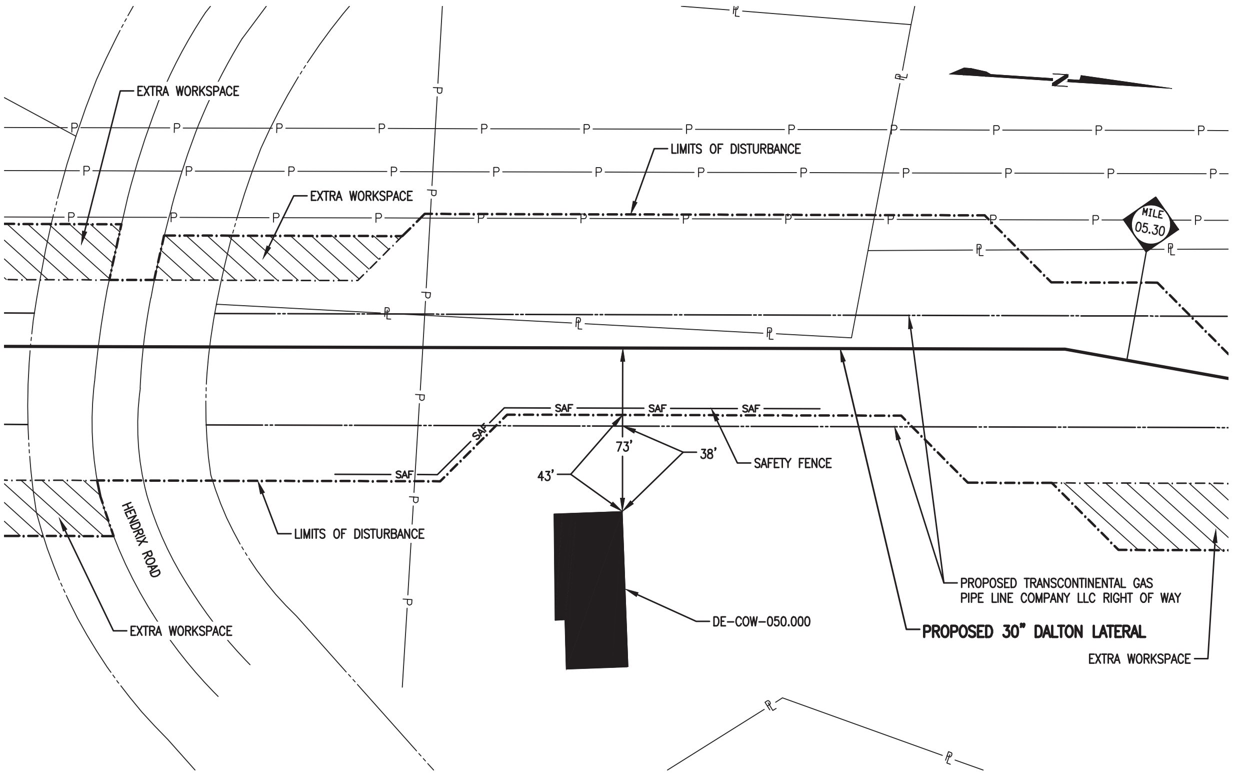
3. ANY NEARBY STRUCTURES, RESIDENTIAL FEATURES AND TREES LOCATED WITHIN THE CONSTRUCTION WORK AREAS WHICH WILL NOT BE REMOVED DURING CONSTRUCTION ARE NOTED ON THE SITE PLAN.

4. TO MINIMIZE IMPACTS TO RESIDENCES, THE FOLLOWING CONSTRUCTION TECHNIQUES SHALL BE UTILIZED: DRAG SECTION OR STOVE PIPE (IF NEEDED). EXCAVATION OF THE TRENCH WILL NOT BE INITIATED UNTIL THE PIPE IS READY FOR INSTALLATION. THE PIPE TRENCH SHALL BE BACKFILLED IMMEDIATELY UPON COMPLETION OF THE PIPELINE INSTALLATION. DETAILS OF THESE CONSTRUCTION TECHNIQUES ARE DESCRIBED BELOW.
   a. DRAG SECTION: THE DRAG SECTION TECHNIQUE INVOLVES THE INSTALLATION OF SHORT SECTIONS (TWO OR MORE JOINTS) OF PIPE CALLED DRAG SECTIONS. THE CONTRACTOR WILL BEGIN THE DRAG SECTION INSTALLATION BY CLEARING AND GRADING A SHORT SECTION OF THE RIGHT OF WAY. INDIVIDUAL JOINTS OF PIPE WILL THEN BE HAULED TO THE WORK AREA AND LAID OUT FOR FABRICATION. THE CONTRACTOR WILL THEN FABRICATE THE DRAG SECTION BY WELDING TOGETHER TWO OR MORE PIPE JOINTS. THE CONTRACTOR WILL EXCAVATE THE TRENCH. THE AMOUNT OR LENGTH OF TRENCH EXCAVATED AT ANY GIVEN TIME WILL BE LIMITED TO THE MINIMUM NECESSARY TO INSTALL THE DRAG SECTION. THE PIPE SECTION WILL THEN BE LOWERED INTO THE TRENCH, THE TIE-IN WELD WILL BE PERFORMED, X-RAYED AND COATED, AND THEN THE PIPE SECTION IS BACKFILLED.
   b. STOVE PIPE (IF NEEDED): THE STOVE PIPE INSTALLATION TECHNIQUE IS SIMILAR TO THE DRAG SECTION TECHNIQUE DESCRIBED ABOVE, EXCEPT IT IS LIMITED TO THE INSTALLATION OF ONE JOINT OF PIPE AT A TIME. THE TYPICAL SEQUENCE OF ACTIVITIES FOR STOVE PIPE INSTALLATION IS AS FOLLOWS: THE RIGHT OF WAY IS CLEARED AND GRADED, THE PIPE JOINT IS HAULED TO THE WORK AREA, THE TRENCH IS EXCAVATED, THE PIPE JOINT IS INSTALLED, WELDED (TIED-IN), X-RAYED, COATED, AND THEN THE TRENCH IS BACKFILLED. THIS PROCESS WILL BE REPEATED UNTIL THE WORK HAS BEEN COMPLETED IN THE AREA OF CONCERN.

5. TRANSCO WILL NOTIFY LANDOWNERS, IN WRITING, AT LEAST TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION. TRANSCO'S LAND AGENT WILL THEN FOLLOW-UP WITH EACH LANDOWNER AT LEAST ONE (1) WEEK PRIOR TO THE START OF CONSTRUCTION.

6. AFTER COMPLETION THE CONSTRUCTION WORK AREAS WILL BE RESTORED IN ACCORDANCE WITH APPLICABLE PERMIT REQUIREMENTS, THE PROJECT-SPECIFIC VERSION OF FERC'S UPLAND EROSION CONTROL REVEGETATION AND MAINTENANCE PLAN AND THE SOIL EROSION AND SEDIMENT CONTROL PLAN.

7. LAND REPRESENTATIVE WILL DISCUSS ACCESS TO RESIDENCES PRIOR TO CONSTRUCTION AND INCLUDE THAT INFORMATION IN THE CONSTRUCTION LINE LIST. THE CONSTRUCTION LINE LIST WILL BE INCLUDED IN THE CONSTRUCTION CONTRACT. ADDITIONALLY, INSPECTORS ASSIGNED TO THE PROJECT WILL ENSURE THAT THE REQUIREMENTS IN THE LINE LIST ARE FOLLOWED.



8. AT A MINIMUM, CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA AS SHOWN ON THE SITE PLAN.

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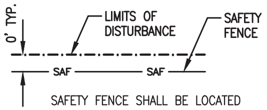

SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104108
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO DE-COW-050.000
COWETA COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP — DATE: 01/13/15
CHECKED BY: MEH — DATE: 03/06/15
APPROVED BY: RLA — DATE: 03/06/15
WO: 1113191
ISSUED FOR BID:
ISSUED FOR CONSTRUCTION:
SCALE: 1" = 50'
REVISION:
DRAWING NUMBER: 24-0410-40-26-A/5.26
SHEET 1 OF 1
4:42pm 9/16/2015 phumphrey
K:\LP116883\Mapping\RCP\24_0410_40_26_A_5_26.dwg

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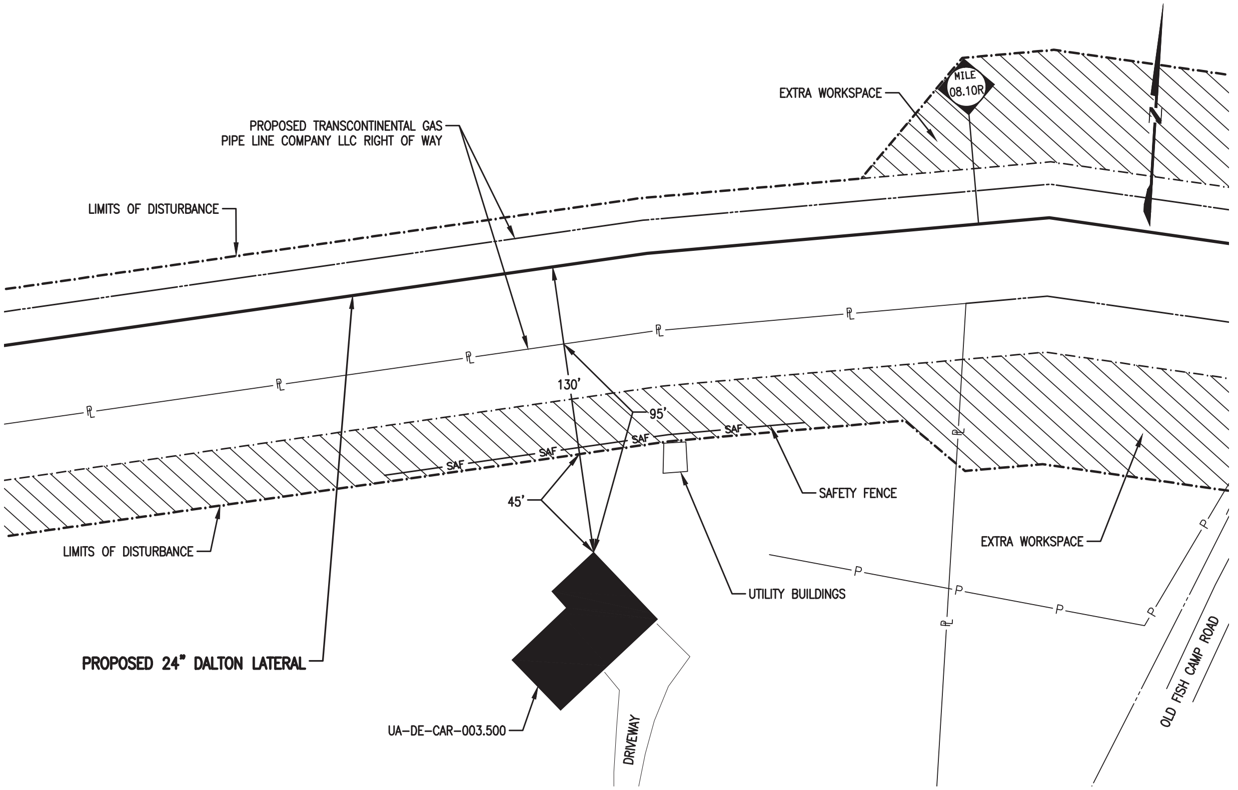

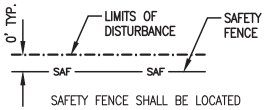

SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104109
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO UA-DE-CAR-003.500
CARROLL COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP	DATE: 01/14/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 03/06/15	DRAWING NUMBER: 24-0410-40-26-A/8.06R 4:54pm 9/16/2015 phumphrey K:\LP116883\Mapping\RCP\24_0410_40_26_A_8_06R.dwg	SHEET 1 OF 1
WO: 1113191			

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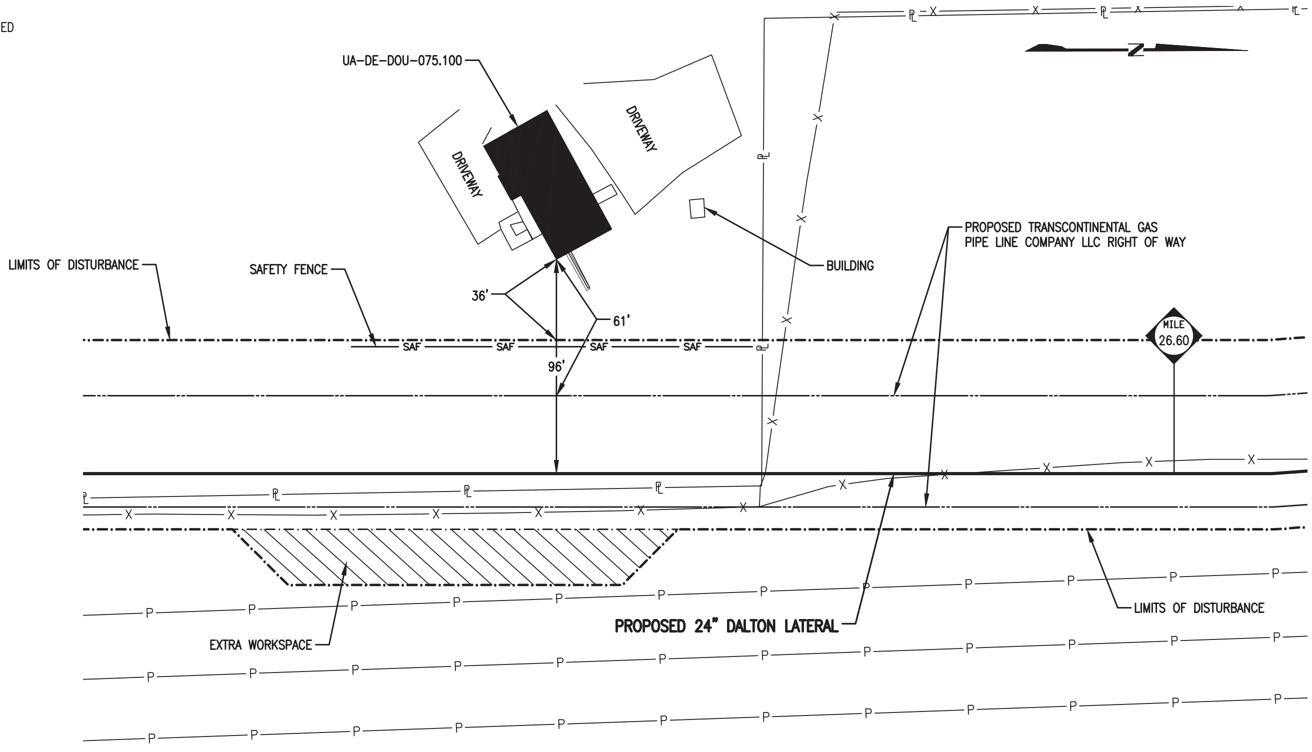

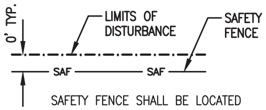

SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104109
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO UA-DE-DOU-075.100
DOUGLAS COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
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SHEET 1 OF 1
11:40am 9/17/2015 phumphrey
K:\LP116883\Mapping\RCP\24_0410_40_26_A_26_55.dwg

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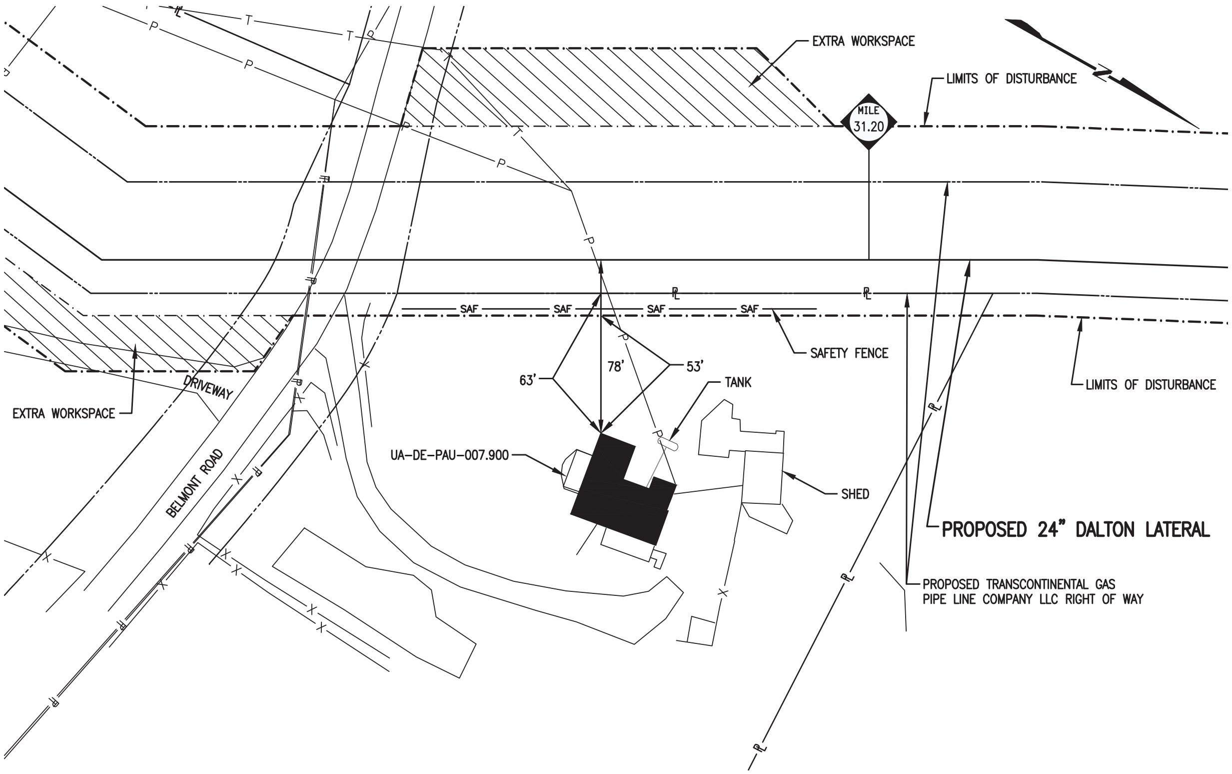

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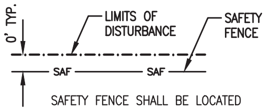

SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

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PROJECT NO: 104109
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO UA-DE-PAU-007.900
PAULDING COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP	DATE: 01/15/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 03/06/15	DRAWING NUMBER: 24-0410-40-26-A/31.18	SHEET 1
WO: 1113191		3:09pm 9/22/2015 rbenz K:\LP116883\Mapping\RCP\24_0410_40_26_A_31_18.dwg	OF 1

NOTES:

1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.

2. OTHER KNOWN UTILITIES ARE ALSO DEPICTED ON THE SITE PLANS. PRIOR TO CONSTRUCTION, THE STATE ONE CALL CENTER WILL BE NOTIFIED TO VERIFY THE LOCATION OF THESE UTILITIES AND IDENTIFY ANY UNKNOWN UTILITIES WHICH MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. TRANSCO WILL ALSO CONTACT INDIVIDUAL PROPERTY OWNER(S) TO IDENTIFY AND LOCATE ANY OTHER UTILITIES THAT MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. THESE UTILITIES WILL BE IDENTIFIED AND MARKED BY THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

3. ANY NEARBY STRUCTURES, RESIDENTIAL FEATURES AND TREES LOCATED WITHIN THE CONSTRUCTION WORK AREAS WHICH WILL NOT BE REMOVED DURING CONSTRUCTION ARE NOTED ON THE SITE PLAN.

4. TO MINIMIZE IMPACTS TO RESIDENCES, THE FOLLOWING CONSTRUCTION TECHNIQUES SHALL BE UTILIZED: DRAG SECTION OR STOVE PIPE (IF NEEDED). EXCAVATION OF THE TRENCH WILL NOT BE INITIATED UNTIL THE PIPE IS READY FOR INSTALLATION. THE PIPE TRENCH SHALL BE BACKFILLED IMMEDIATELY UPON COMPLETION OF THE PIPELINE INSTALLATION. DETAILS OF THESE CONSTRUCTION TECHNIQUES ARE DESCRIBED BELOW.
   a. DRAG SECTION: THE DRAG SECTION TECHNIQUE INVOLVES THE INSTALLATION OF SHORT SECTIONS (TWO OR MORE JOINTS) OF PIPE CALLED DRAG SECTIONS. THE CONTRACTOR WILL BEGIN THE DRAG SECTION BY CLEARING AND GRADING A SHORT SECTION OF THE RIGHT OF WAY. INDIVIDUAL JOINTS OF PIPE WILL THEN BE HAULED TO THE WORK AREA AND LAID OUT FOR FABRICATION. THE CONTRACTOR WILL THEN FABRICATE THE DRAG SECTION BY WELDING TOGETHER TWO OR MORE PIPE JOINTS. THE CONTRACTOR WILL EXCAVATE THE TRENCH. THE AMOUNT OR LENGTH OF TRENCH EXCAVATED AT ANY GIVEN TIME WILL BE LIMITED TO THE MINIMUM NECESSARY TO INSTALL THE DRAG SECTION. THE PIPE SECTION WILL THEN BE LOWERED INTO THE TRENCH, THE TIE-IN WELD WILL BE PERFORMED, X-RAYED AND COATED, AND THEN THE PIPE SECTION IS BACKFILLED.
   b. STOVE PIPE (IF NEEDED): THE STOVE PIPE INSTALLATION TECHNIQUE IS SIMILAR TO THE DRAG SECTION TECHNIQUE DESCRIBED ABOVE, EXCEPT IT IS LIMITED TO THE INSTALLATION OF ONE JOINT OF PIPE AT A TIME. THE TYPICAL SEQUENCE OF ACTIVITIES FOR STOVE PIPE INSTALLATION IS AS FOLLOWS: THE RIGHT OF WAY IS CLEARED AND GRADED, THE PIPE JOINT IS HAULED TO THE WORK AREA, THE TRENCH IS EXCAVATED, THE PIPE JOINT IS INSTALLED, WELDED (TIED-IN), X-RAYED, COATED, AND THEN THE TRENCH IS BACKFILLED. THIS PROCESS WILL BE REPEATED UNTIL THE WORK HAS BEEN COMPLETED IN THE AREA OF CONCERN.

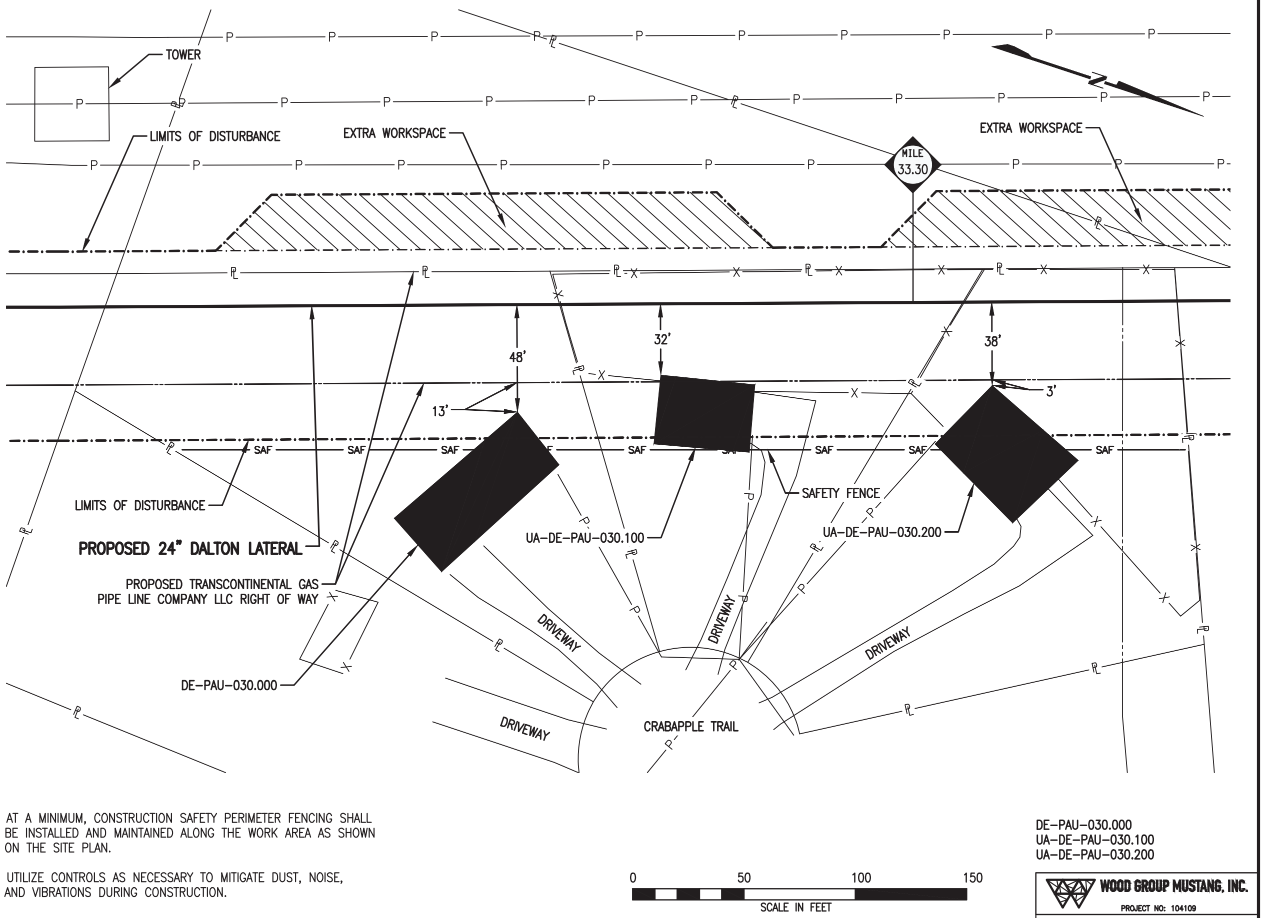
5. TRANSCO WILL NOTIFY LANDOWNERS, IN WRITING, AT LEAST TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION. TRANSCO'S LAND AGENT WILL THEN FOLLOW-UP WITH EACH LANDOWNER AT LEAST ONE (1) WEEK PRIOR TO THE START OF CONSTRUCTION.

6. AFTER COMPLETION THE CONSTRUCTION WORK AREAS WILL BE RESTORED IN ACCORDANCE WITH APPLICABLE PERMIT REQUIREMENTS, THE PROJECT-SPECIFIC VERSION OF FERC'S UPLAND EROSION CONTROL REVEGETATION AND MAINTENANCE PLAN AND THE SOIL EROSION AND SEDIMENT CONTROL PLAN.

7. LAND REPRESENTATIVE WILL DISCUSS ACCESS TO RESIDENCES PRIOR TO CONSTRUCTION AND INCLUDE THAT INFORMATION IN THE CONSTRUCTION LINE LIST. THE CONSTRUCTION LINE LIST WILL BE INCLUDED IN THE CONSTRUCTION CONTRACT. ADDITIONALLY, INSPECTORS ASSIGNED TO THE PROJECT WILL ENSURE THAT THE REQUIREMENTS IN THE LINE LIST ARE FOLLOWED.

8. AT A MINIMUM, CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA AS SHOWN ON THE SITE PLAN.

9. UTILIZE CONTROLS AS NECESSARY TO MITIGATE DUST, NOISE, AND VIBRATIONS DURING CONSTRUCTION.



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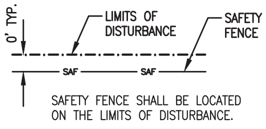

SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104109
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
SEE ABOVE LIST
PAULDING COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP	DATE: 01/15/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 03/06/15	DRAWING NUMBER: 24-0410-40-26-A/33.27	SHEET 1
WO: 1113191		3:12pm 9/22/2015 rbenz K:\LP116883\Mapping\RCP\24_0410_40_26_A_33_27.dwg	OF 1

NOTES:

1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.
2. OTHER KNOWN UTILITIES ARE ALSO DEPICTED ON THE SITE PLANS. PRIOR TO CONSTRUCTION, THE STATE ONE CALL CENTER WILL BE NOTIFIED TO VERIFY THE LOCATION OF THESE UTILITIES AND IDENTIFY ANY UNKNOWN UTILITIES WHICH MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. TRANSCO WILL ALSO CONTACT INDIVIDUAL PROPERTY OWNER(S) TO IDENTIFY AND LOCATE ANY OTHER UTILITIES THAT MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. THESE UTILITIES WILL BE IDENTIFIED AND MARKED BY THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION.
3. ANY NEARBY STRUCTURES, RESIDENTIAL FEATURES AND TREES LOCATED WITHIN THE CONSTRUCTION WORK AREAS WHICH WILL NOT BE REMOVED DURING CONSTRUCTION ARE NOTED ON THE SITE PLAN.
4. TO MINIMIZE IMPACTS TO RESIDENCES, THE FOLLOWING CONSTRUCTION TECHNIQUES SHALL BE UTILIZED: DRAG SECTION OR STOVE PIPE (IF NEEDED). EXCAVATION OF THE TRENCH WILL NOT BE INITIATED UNTIL THE PIPE IS READY FOR INSTALLATION. THE PIPE TRENCH SHALL BE BACKFILLED IMMEDIATELY UPON COMPLETION OF THE PIPELINE INSTALLATION. DETAILS OF THESE CONSTRUCTION TECHNIQUES ARE DESCRIBED BELOW.
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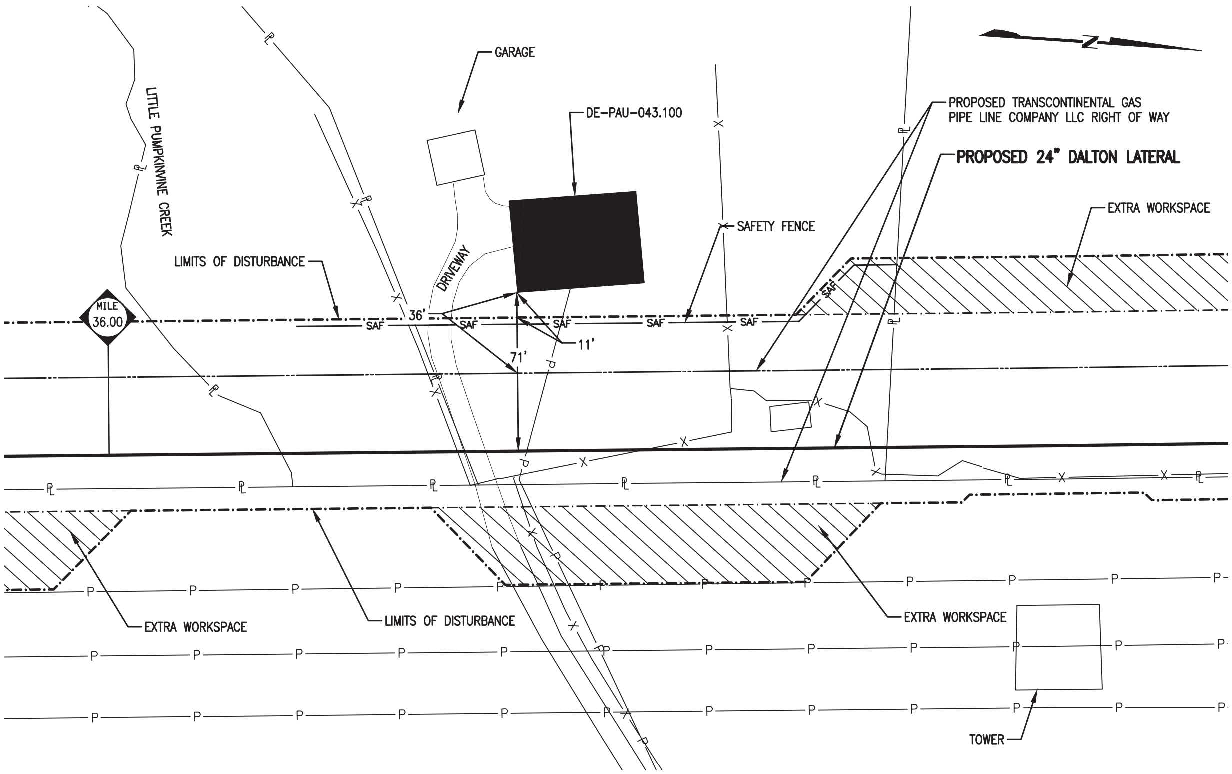
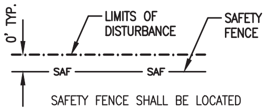
5. TRANSCO WILL NOTIFY LANDOWNERS, IN WRITING, AT LEAST TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION. TRANSCO'S LAND AGENT WILL THEN FOLLOW-UP WITH EACH LANDOWNER AT LEAST ONE (1) WEEK PRIOR TO THE START OF CONSTRUCTION.
6. AFTER COMPLETION THE CONSTRUCTION WORK AREAS WILL BE RESTORED IN ACCORDANCE WITH APPLICABLE PERMIT REQUIREMENTS, THE PROJECT-SPECIFIC VERSION OF FERC'S UPLAND EROSION CONTROL REVEGETATION AND MAINTENANCE PLAN AND THE SOIL EROSION AND SEDIMENT CONTROL PLAN.
7. LAND REPRESENTATIVE WILL DISCUSS ACCESS TO RESIDENCES PRIOR TO CONSTRUCTION AND INCLUDE THAT INFORMATION IN THE CONSTRUCTION LINE LIST. THE CONSTRUCTION LINE LIST WILL BE INCLUDED IN THE CONSTRUCTION CONTRACT. ADDITIONALLY, INSPECTORS ASSIGNED TO THE PROJECT WILL ENSURE THAT THE REQUIREMENTS IN THE LINE LIST ARE FOLLOWED.



8. AT A MINIMUM, CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA AS SHOWN ON THE SITE PLAN.
9. UTILIZE CONTROLS AS NECESSARY TO MITIGATE DUST, NOISE, AND VIBRATIONS DURING CONSTRUCTION.



SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104109
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO DE-PAU-043.100
PAULDING COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP	DATE: 01/19/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 03/06/15	DRAWING NUMBER: 24-0410-40-26-A/36.03	SHEET 1
WO: 1113191		8:33am 9/17/2015 phumphrey K:\LP116883\Mapping\RCP\24_0410_40_26_A_36_03.dwg	OF 1

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1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.

2. OTHER KNOWN UTILITIES ARE ALSO DEPICTED ON THE SITE PLANS. PRIOR TO CONSTRUCTION, THE STATE ONE CALL CENTER WILL BE NOTIFIED TO VERIFY THE LOCATION OF THESE UTILITIES AND IDENTIFY ANY UNKNOWN UTILITIES WHICH MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. TRANSCO WILL ALSO CONTACT INDIVIDUAL PROPERTY OWNER(S) TO IDENTIFY AND LOCATE ANY OTHER UTILITIES THAT MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. THESE UTILITIES WILL BE IDENTIFIED AND MARKED BY THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

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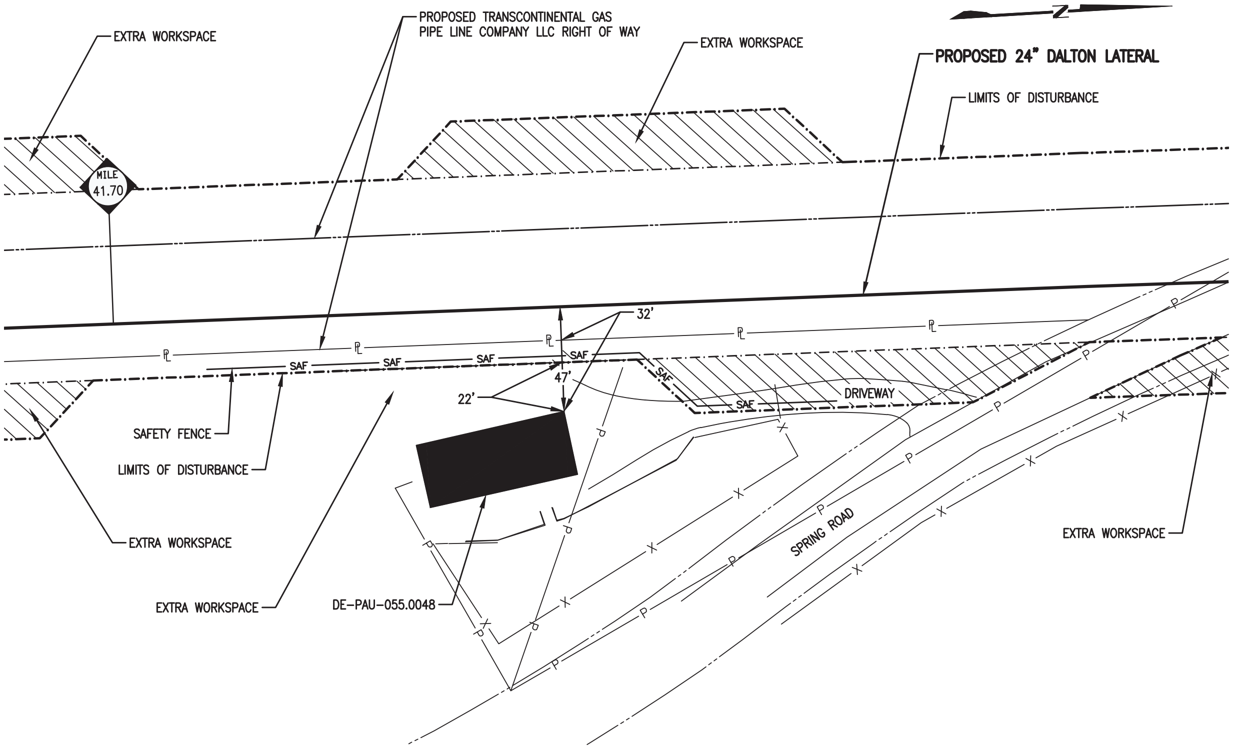
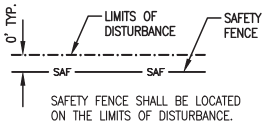


8. AT A MINIMUM, CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA AS SHOWN ON THE SITE PLAN.

9. UTILIZE CONTROLS AS NECESSARY TO MITIGATE DUST, NOISE, AND VIBRATIONS DURING CONSTRUCTION.



SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104109
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO DE-PAU-055.0048
PAULDING COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP	DATE: 01/19/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 03/06/15	DRAWING NUMBER: 24-0410-40-26-A/41.74	SHEET 1
WO: 1113191		3:25pm 9/22/2015 rbenz K:\LP116883\Mapping\RCP\24_0410_40_26_A_41_74.dwg	OF 1

NOTES:

1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.

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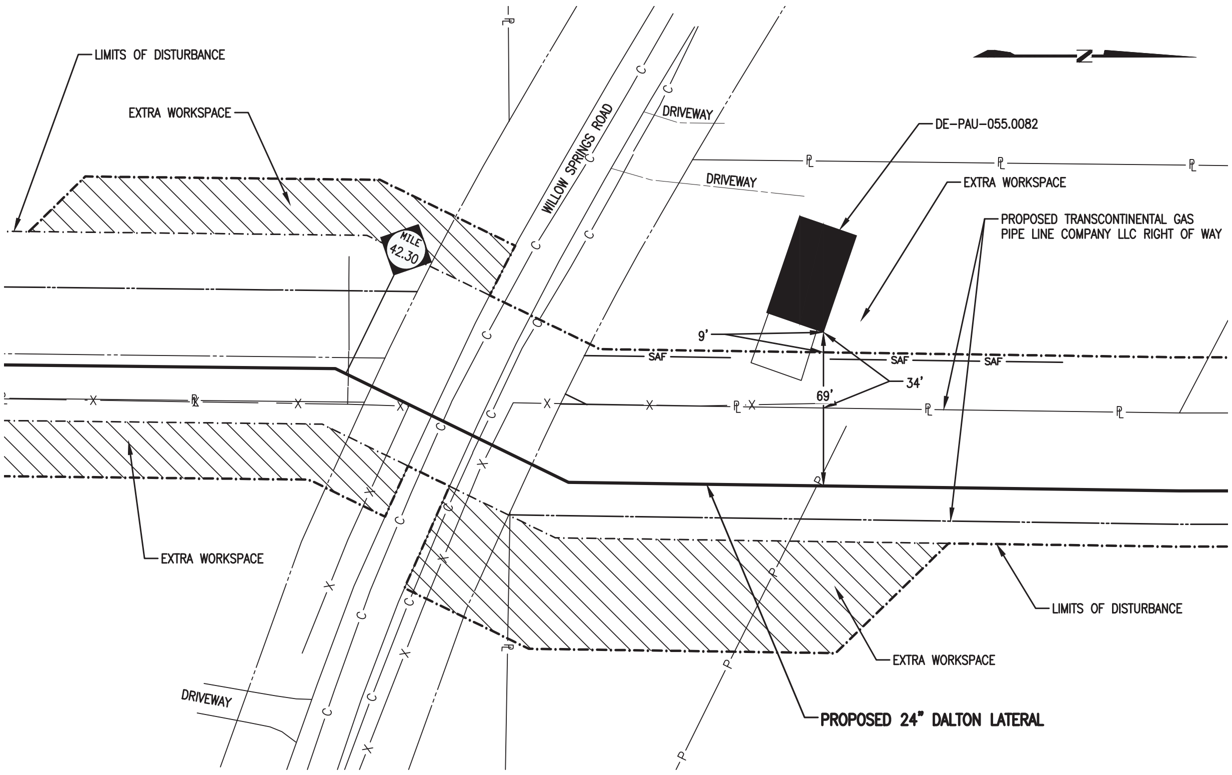

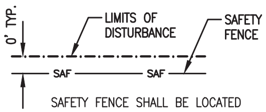

SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104109
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO DE-PAU-055.0082
PAULDING COUNTY, GEORGIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
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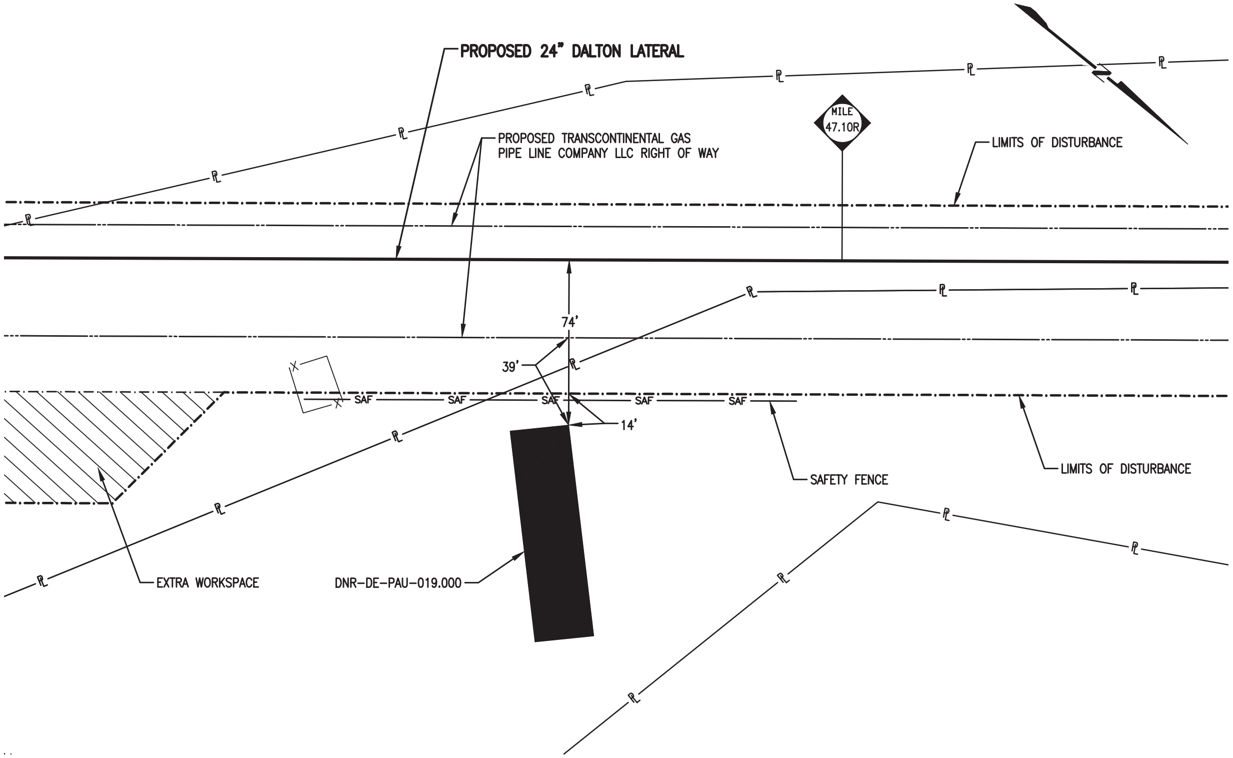
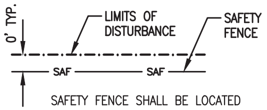
WO: 1113191		3:28pm 9/22/2015 rbenz K:\LP116883\Mapping\RCP\24_0410_40_26_A_42_32.dwg	OF 1

NOTES:

1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.
2. OTHER KNOWN UTILITIES ARE ALSO DEPICTED ON THE SITE PLANS. PRIOR TO CONSTRUCTION, THE STATE ONE CALL CENTER WILL BE NOTIFIED TO VERIFY THE LOCATION OF THESE UTILITIES AND IDENTIFY ANY UNKNOWN UTILITIES WHICH MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. TRANSCO WILL ALSO CONTACT INDIVIDUAL PROPERTY OWNER(S) TO IDENTIFY AND LOCATE ANY OTHER UTILITIES THAT MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. THESE UTILITIES WILL BE IDENTIFIED AND MARKED BY THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION.
3. ANY NEARBY STRUCTURES, RESIDENTIAL FEATURES AND TREES LOCATED WITHIN THE CONSTRUCTION WORK AREAS WHICH WILL NOT BE REMOVED DURING CONSTRUCTION ARE NOTED ON THE SITE PLAN.
4. TO MINIMIZE IMPACTS TO RESIDENCES, THE FOLLOWING CONSTRUCTION TECHNIQUES SHALL BE UTILIZED: DRAG SECTION OR STOVE PIPE (IF NEEDED). EXCAVATION OF THE TRENCH WILL NOT BE INITIATED UNTIL THE PIPE IS READY FOR INSTALLATION. THE PIPE TRENCH SHALL BE BACKFILLED IMMEDIATELY UPON COMPLETION OF THE PIPELINE INSTALLATION. DETAILS OF THESE CONSTRUCTION TECHNIQUES ARE DESCRIBED BELOW.
   a. DRAG SECTION: THE DRAG SECTION TECHNIQUE INVOLVES THE INSTALLATION OF SHORT SECTIONS (TWO OR MORE JOINTS) OF PIPE CALLED DRAG SECTIONS. THE CONTRACTOR WILL BEGIN THE DRAG SECTION INSTALLATION BY CLEARING AND GRADING A SHORT SECTION OF THE RIGHT OF WAY. INDIVIDUAL JOINTS OF PIPE WILL THEN BE HAULED TO THE WORK AREA AND LAID OUT FOR FABRICATION. THE CONTRACTOR WILL THEN FABRICATE THE DRAG SECTION BY WELDING TOGETHER TWO OR MORE PIPE JOINTS. THE CONTRACTOR WILL EXCAVATE THE TRENCH. THE AMOUNT OR LENGTH OF TRENCH EXCAVATED AT ANY GIVEN TIME WILL BE LIMITED TO THE MINIMUM NECESSARY TO INSTALL THE DRAG SECTION. THE PIPE SECTION WILL THEN BE LOWERED INTO THE TRENCH, THE TIE-IN WELD WILL BE PERFORMED, X-RAYED AND COATED, AND THEN THE PIPE SECTION IS BACKFILLED.
   b. STOVE PIPE (IF NEEDED): THE STOVE PIPE INSTALLATION TECHNIQUE IS SIMILAR TO THE DRAG SECTION TECHNIQUE DESCRIBED ABOVE, EXCEPT IT IS LIMITED TO THE INSTALLATION OF ONE JOINT OF PIPE AT A TIME. THE TYPICAL SEQUENCE OF ACTIVITIES FOR STOVE PIPE INSTALLATION IS AS FOLLOWS: THE RIGHT OF WAY IS CLEARED AND GRADED, THE PIPE JOINT IS HAULED TO THE WORK AREA, THE TRENCH IS EXCAVATED, THE PIPE JOINT IS INSTALLED, WELDED (TIED-IN), X-RAYED, COATED, AND THEN THE TRENCH IS BACKFILLED. THIS PROCESS WILL BE REPEATED UNTIL THE WORK HAS BEEN COMPLETED IN THE AREA OF CONCERN.
5. TRANSCO WILL NOTIFY LANDOWNERS, IN WRITING, AT LEAST TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION. TRANSCO'S LAND AGENT WILL THEN FOLLOW-UP WITH EACH LANDOWNER AT LEAST ONE (1) WEEK PRIOR TO THE START OF CONSTRUCTION.
6. AFTER COMPLETION THE CONSTRUCTION WORK AREAS WILL BE RESTORED IN ACCORDANCE WITH APPLICABLE PERMIT REQUIREMENTS, THE PROJECT-SPECIFIC VERSION OF FERC'S UPLAND EROSION CONTROL REVEGETATION AND MAINTENANCE PLAN AND THE SOIL EROSION AND SEDIMENT CONTROL PLAN.
7. LAND REPRESENTATIVE WILL DISCUSS ACCESS TO RESIDENCES PRIOR TO CONSTRUCTION AND INCLUDE THAT INFORMATION IN THE CONSTRUCTION LINE LIST. THE CONSTRUCTION LINE LIST WILL BE INCLUDED IN THE CONSTRUCTION CONTRACT. ADDITIONALLY, INSPECTORS ASSIGNED TO THE PROJECT WILL ENSURE THAT THE REQUIREMENTS IN THE LINE LIST ARE FOLLOWED.



8. AT A MINIMUM, CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA AS SHOWN ON THE SITE PLAN.
9. UTILIZE CONTROLS AS NECESSARY TO MITIGATE DUST, NOISE, AND VIBRATIONS DURING CONSTRUCTION.



SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104109
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO. DNR-DE-PAU-019.000
PAULDING COUNTY, GEORGIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: PLH	DATE: 06/22/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 06/23/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 06/23/15	DRAWING NUMBER: 24-0410-40-26-A/47.10	SHEET 1
WO: 1113191		9:08am 9/17/2015 phumphrey K:\LP116883\Mapping\RCP\24_0410_40_26_A_47_10.dwg	OF 1

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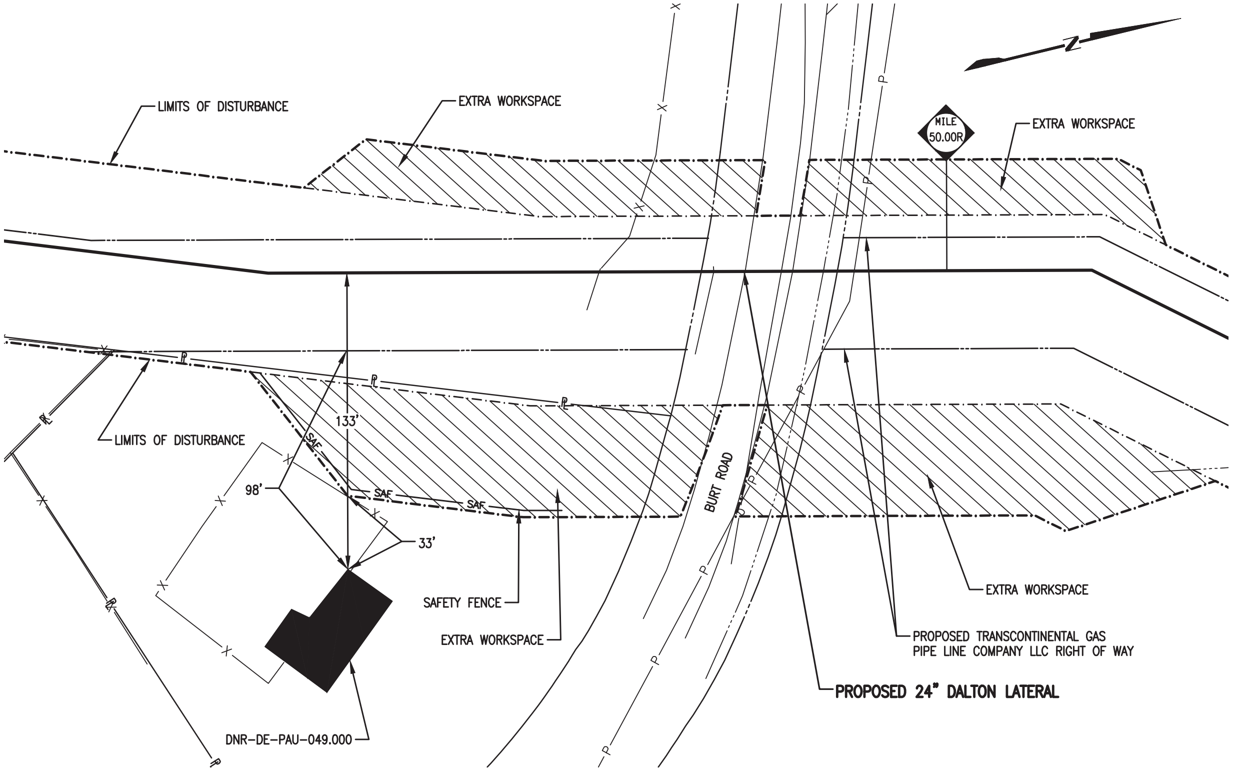

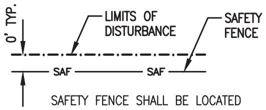

SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104109
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO. DNR-DE-PAU-049.000
PAULDING COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: PLH	DATE: 06/22/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 06/23/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 06/23/15	DRAWING NUMBER: 24-0410-40-26-A/50.00	SHEET 1
WO: 1113191		1:39pm 9/17/2015 phumphrey K:\LP116883\Mapping\RCP\24_0410_40_26_A_50_00.dwg	OF 1

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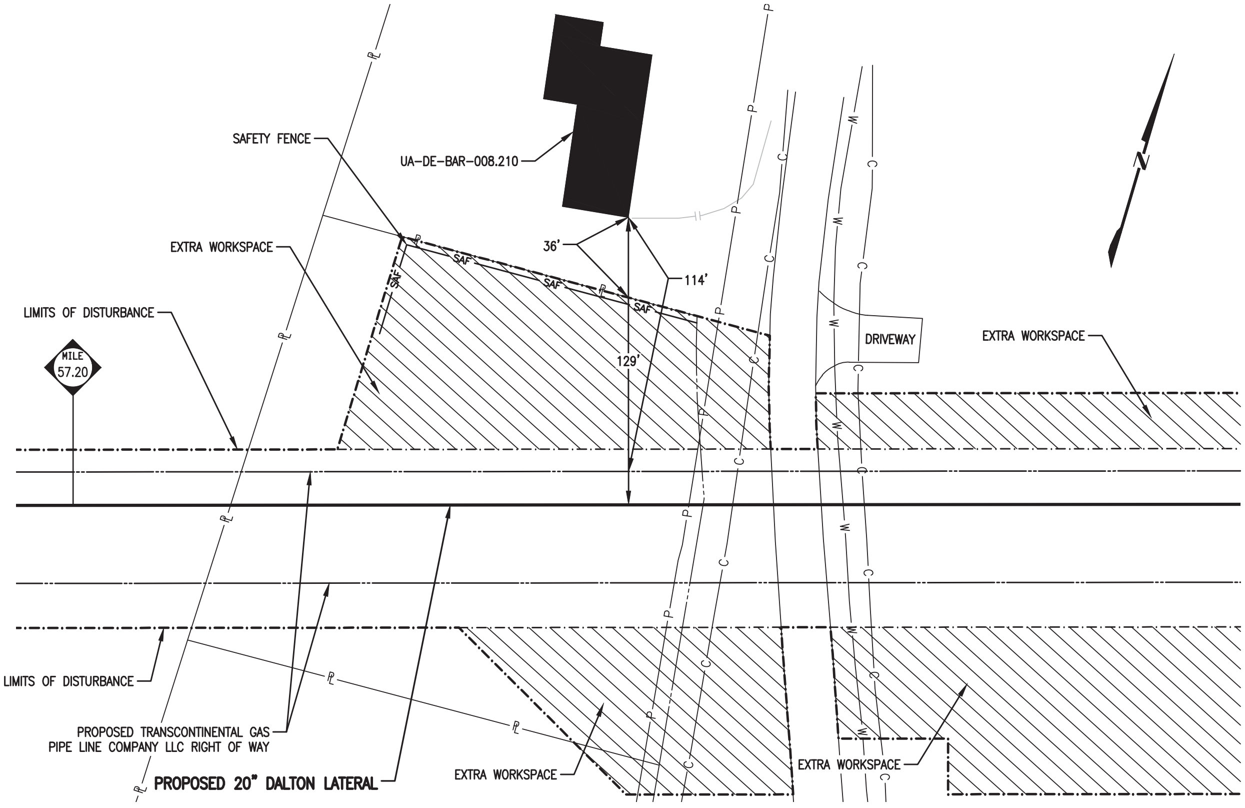

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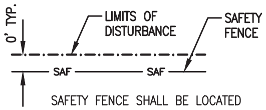

SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104110
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO. UA-DE-BAR-008.210
BARTOW COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: PLH	DATE: 06/22/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 06/23/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 06/23/15	DRAWING NUMBER: 24-0410-40-26-A/57.20	SHEET 1
WO: 1113191		1:42pm 9/17/2015 phumphrey K:\LP116883\Mapping\RCP\24_0410_40_26_A_57_20.dwg	OF 1

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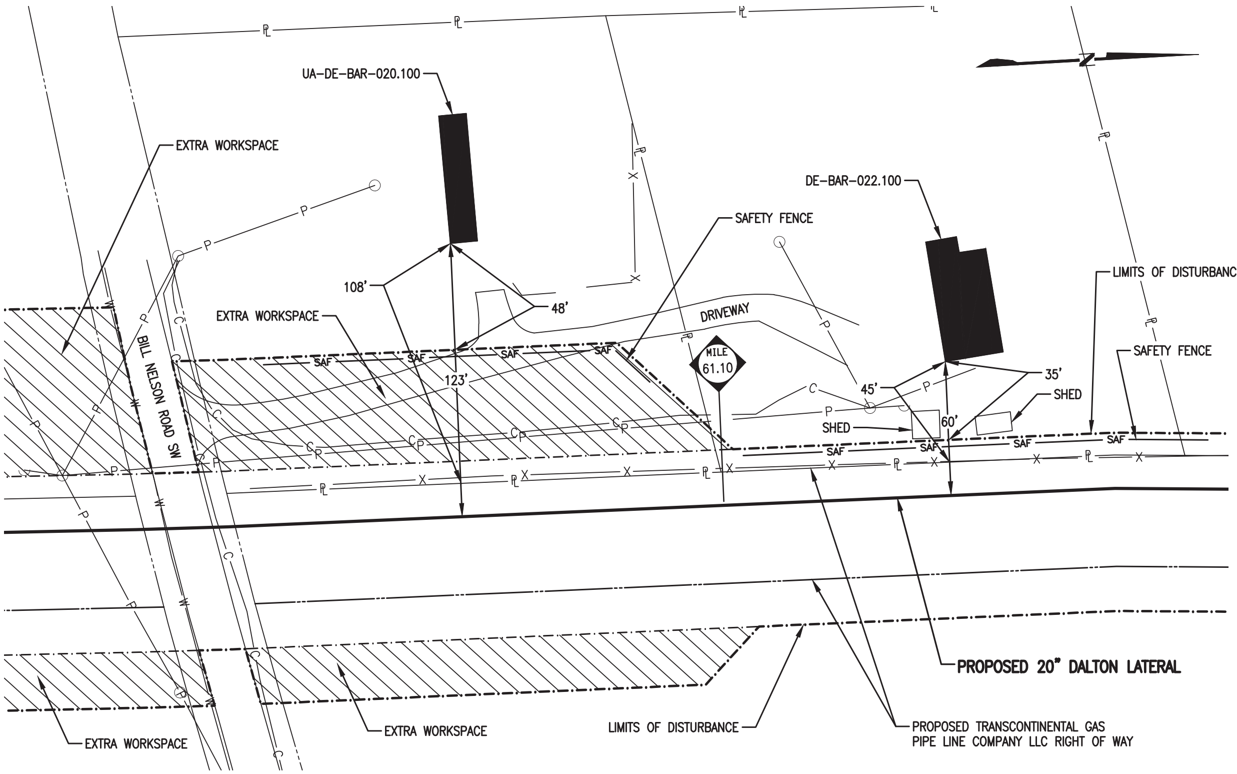

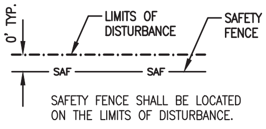

SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

UA-DE-BAR-020.100
UA-DE-BAR-022.100

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104110
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
SEE ABOVE LIST
BARTOW COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
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DRAWN BY: JWP
DATE: 01/21/15
CHECKED BY: MEH
DATE: 03/06/15
APPROVED BY: RLA
DATE: 03/06/15
WO: 1113191
ISSUED FOR BID:
ISSUED FOR CONSTRUCTION:
SCALE: 1" = 50'
REVISION:
DRAWING NUMBER: 24-0410-40-26-A/61.08
SHEET 1 OF 1
1:46pm 9/17/2015 phumphrey
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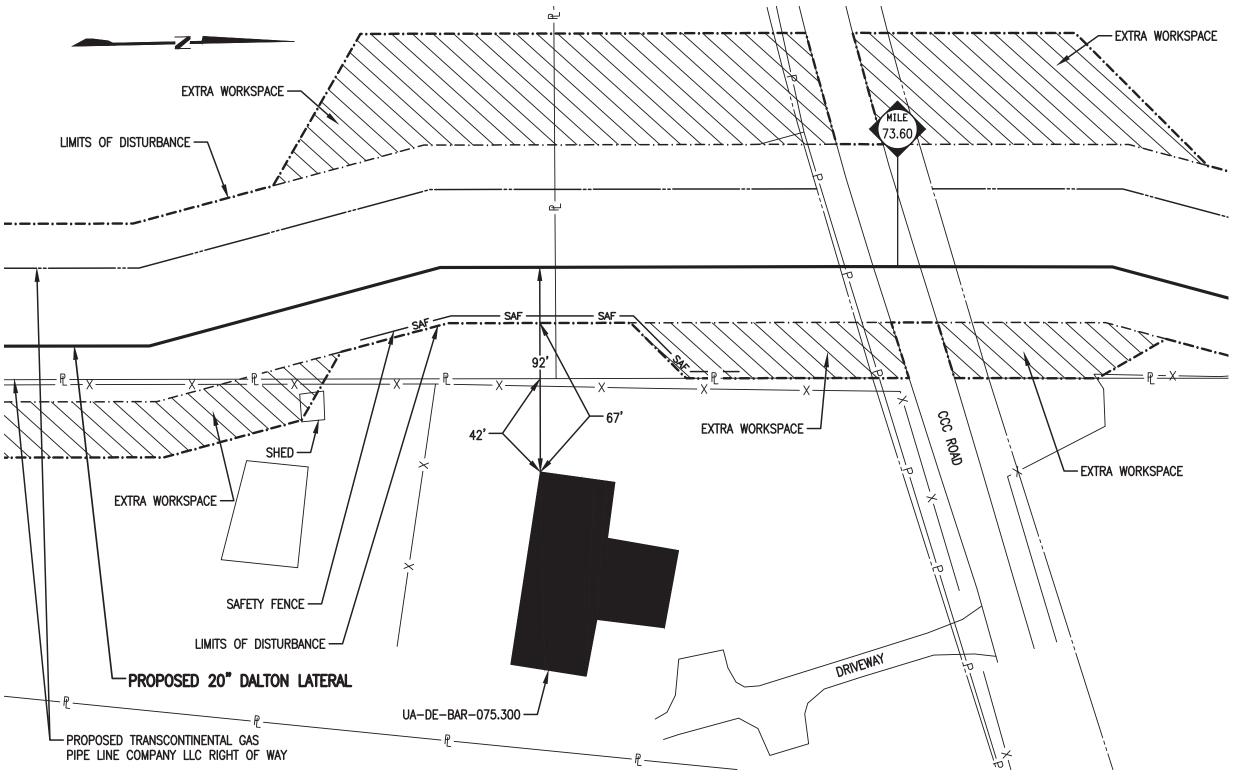
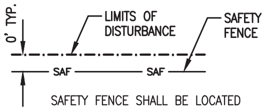
   a. DRAG SECTION: THE DRAG SECTION TECHNIQUE INVOLVES THE INSTALLATION OF SHORT SECTIONS (TWO OR MORE JOINTS) OF PIPE CALLED DRAG SECTIONS. THE CONTRACTOR WILL BEGIN THE DRAG SECTION INSTALLATION BY CLEARING AND GRADING A SHORT SECTION OF THE RIGHT OF WAY. INDIVIDUAL JOINTS OF PIPE WILL THEN BE HAULED TO THE WORK AREA AND LAID OUT FOR FABRICATION. THE CONTRACTOR WILL THEN FABRICATE THE DRAG SECTION BY WELDING TOGETHER TWO OR MORE PIPE JOINTS. THE CONTRACTOR WILL EXCAVATE THE TRENCH. THE AMOUNT OR LENGTH OF TRENCH EXCAVATED AT ANY GIVEN TIME WILL BE LIMITED TO THE MINIMUM NECESSARY TO INSTALL THE DRAG SECTION. THE PIPE SECTION WILL THEN BE LOWERED INTO THE TRENCH, THE TIE-IN WELD WILL BE PERFORMED, X-RAYED AND COATED, AND THEN THE PIPE SECTION IS BACKFILLED.
   b. STOVE PIPE (IF NEEDED): THE STOVE PIPE INSTALLATION TECHNIQUE IS SIMILAR TO THE DRAG SECTION TECHNIQUE DESCRIBED ABOVE, EXCEPT IT IS LIMITED TO THE INSTALLATION OF ONE JOINT OF PIPE AT A TIME. THE TYPICAL SEQUENCE OF ACTIVITIES FOR STOVE PIPE INSTALLATION IS AS FOLLOWS: THE RIGHT OF WAY IS CLEARED AND GRADED, THE PIPE JOINT IS HAULED TO THE WORK AREA, THE TRENCH IS EXCAVATED, THE PIPE JOINT IS INSTALLED, WELDED (TIED-IN), X-RAYED, COATED, AND THEN THE TRENCH IS BACKFILLED. THIS PROCESS WILL BE REPEATED UNTIL THE WORK HAS BEEN COMPLETED IN THE AREA OF CONCERN.
5. TRANSCO WILL NOTIFY LANDOWNERS, IN WRITING, AT LEAST TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION. TRANSCO'S LAND AGENT WILL THEN FOLLOW-UP WITH EACH LANDOWNER AT LEAST ONE (1) WEEK PRIOR TO THE START OF CONSTRUCTION.
6. AFTER COMPLETION THE CONSTRUCTION WORK AREAS WILL BE RESTORED IN ACCORDANCE WITH APPLICABLE PERMIT REQUIREMENTS, THE PROJECT-SPECIFIC VERSION OF FERC'S UPLAND EROSION CONTROL REVEGETATION AND MAINTENANCE PLAN AND THE SOIL EROSION AND SEDIMENT CONTROL PLAN.
7. LAND REPRESENTATIVE WILL DISCUSS ACCESS TO RESIDENCES PRIOR TO CONSTRUCTION AND INCLUDE THAT INFORMATION IN THE CONSTRUCTION LINE LIST. THE CONSTRUCTION LINE LIST WILL BE INCLUDED IN THE CONSTRUCTION CONTRACT. ADDITIONALLY, INSPECTORS ASSIGNED TO THE PROJECT WILL ENSURE THAT THE REQUIREMENTS IN THE LINE LIST ARE FOLLOWED.
8. AT A MINIMUM, CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA AS SHOWN ON THE SITE PLAN.
9. UTILIZE CONTROLS AS NECESSARY TO MITIGATE DUST, NOISE, AND VIBRATIONS DURING CONSTRUCTION.





SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104110
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO UA-DE-BAR-075.300
BARTOW COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP	DATE: 01/21/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 03/06/15	DRAWING NUMBER: 24-0410-40-26-A/73.57	SHEET 1
WO: 1113191		1:50pm 9/17/2015 phumphrey K:\LP116883\Mapping\RCP\24_0410_40_26_A_73_57.dwg	OF 1

NOTES:

1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.

2. OTHER KNOWN UTILITIES ARE ALSO DEPICTED ON THE SITE PLANS. PRIOR TO CONSTRUCTION, THE STATE ONE CALL CENTER WILL BE NOTIFIED TO VERIFY THE LOCATION OF THESE UTILITIES AND IDENTIFY ANY UNKNOWN UTILITIES WHICH MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. TRANSCO WILL ALSO CONTACT INDIVIDUAL PROPERTY OWNER(S) TO IDENTIFY AND LOCATE ANY OTHER UTILITIES THAT MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. THESE UTILITIES WILL BE IDENTIFIED AND MARKED BY THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

3. ANY NEARBY STRUCTURES, RESIDENTIAL FEATURES AND TREES LOCATED WITHIN THE CONSTRUCTION WORK AREAS WHICH WILL NOT BE REMOVED DURING CONSTRUCTION ARE NOTED ON THE SITE PLAN.

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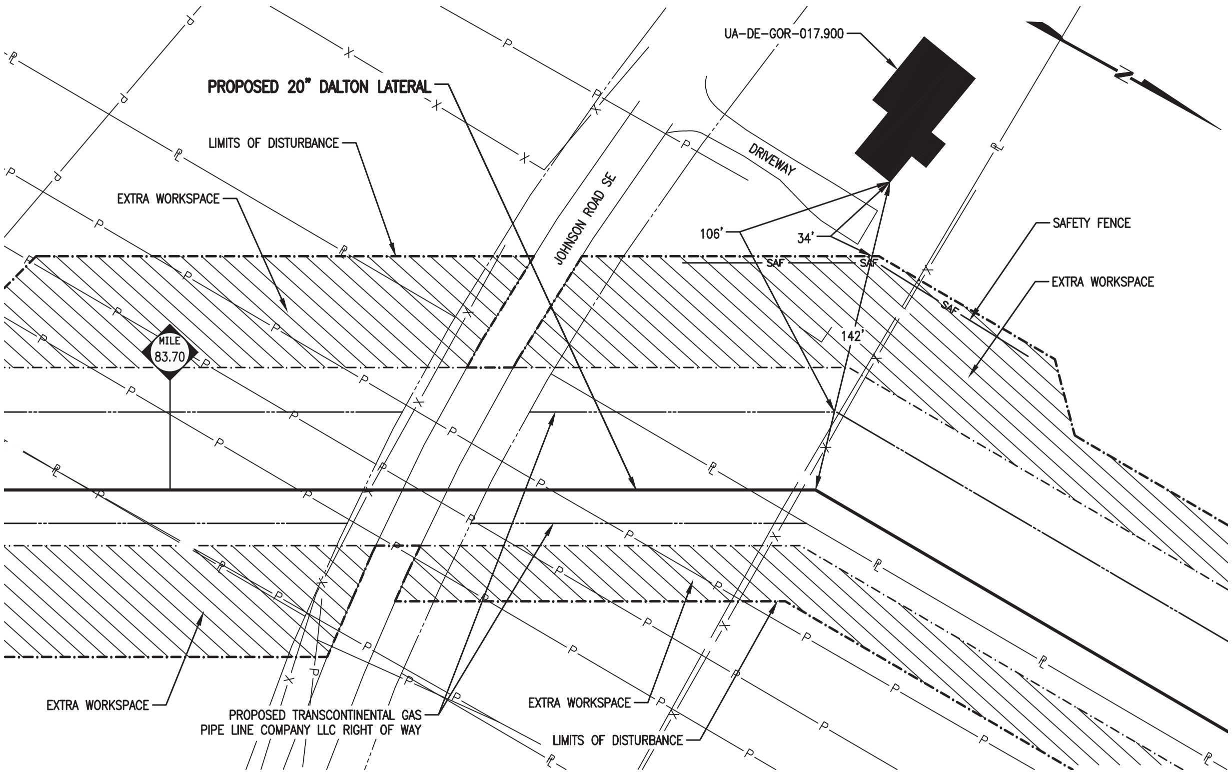
5. TRANSCO WILL NOTIFY LANDOWNERS, IN WRITING, AT LEAST TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION. TRANSCO'S LAND AGENT WILL THEN FOLLOW-UP WITH EACH LANDOWNER AT LEAST ONE (1) WEEK PRIOR TO THE START OF CONSTRUCTION.

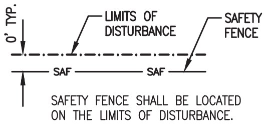
6. AFTER COMPLETION THE CONSTRUCTION WORK AREAS WILL BE RESTORED IN ACCORDANCE WITH APPLICABLE PERMIT REQUIREMENTS, THE PROJECT-SPECIFIC VERSION OF FERC'S UPLAND EROSION CONTROL REVEGETATION AND MAINTENANCE PLAN AND THE SOIL EROSION AND SEDIMENT CONTROL PLAN.

7. LAND REPRESENTATIVE WILL DISCUSS ACCESS TO RESIDENCES PRIOR TO CONSTRUCTION AND INCLUDE THAT INFORMATION IN THE CONSTRUCTION LINE LIST. THE CONSTRUCTION LINE LIST WILL BE INCLUDED IN THE CONSTRUCTION CONTRACT. ADDITIONALLY, INSPECTORS ASSIGNED TO THE PROJECT WILL ENSURE THAT THE REQUIREMENTS IN THE LINE LIST ARE FOLLOWED.



8. AT A MINIMUM, CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA AS SHOWN ON THE SITE PLAN.

9. UTILIZE CONTROLS AS NECESSARY TO MITIGATE DUST, NOISE, AND VIBRATIONS DURING CONSTRUCTION.



SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104110
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO UA-DE-GOR-017.900
GORDON COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP	DATE: 01/22/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 03/06/15	DRAWING NUMBER: 24-0410-40-26-A/83.75	SHEET 1
WO: 1113191		3:29pm 9/22/2015 rbenz K:\LP116883\Mapping\RCP\24_0410_40_26_A_83_75.dwg	OF 1

NOTES:

1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.

2. OTHER KNOWN UTILITIES ARE ALSO DEPICTED ON THE SITE PLANS. PRIOR TO CONSTRUCTION, THE STATE ONE CALL CENTER WILL BE NOTIFIED TO VERIFY THE LOCATION OF THESE UTILITIES AND IDENTIFY ANY UNKNOWN UTILITIES WHICH MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. TRANSCO WILL ALSO CONTACT INDIVIDUAL PROPERTY OWNER(S) TO IDENTIFY AND LOCATE ANY OTHER UTILITIES THAT MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. THESE UTILITIES WILL BE IDENTIFIED AND MARKED BY THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

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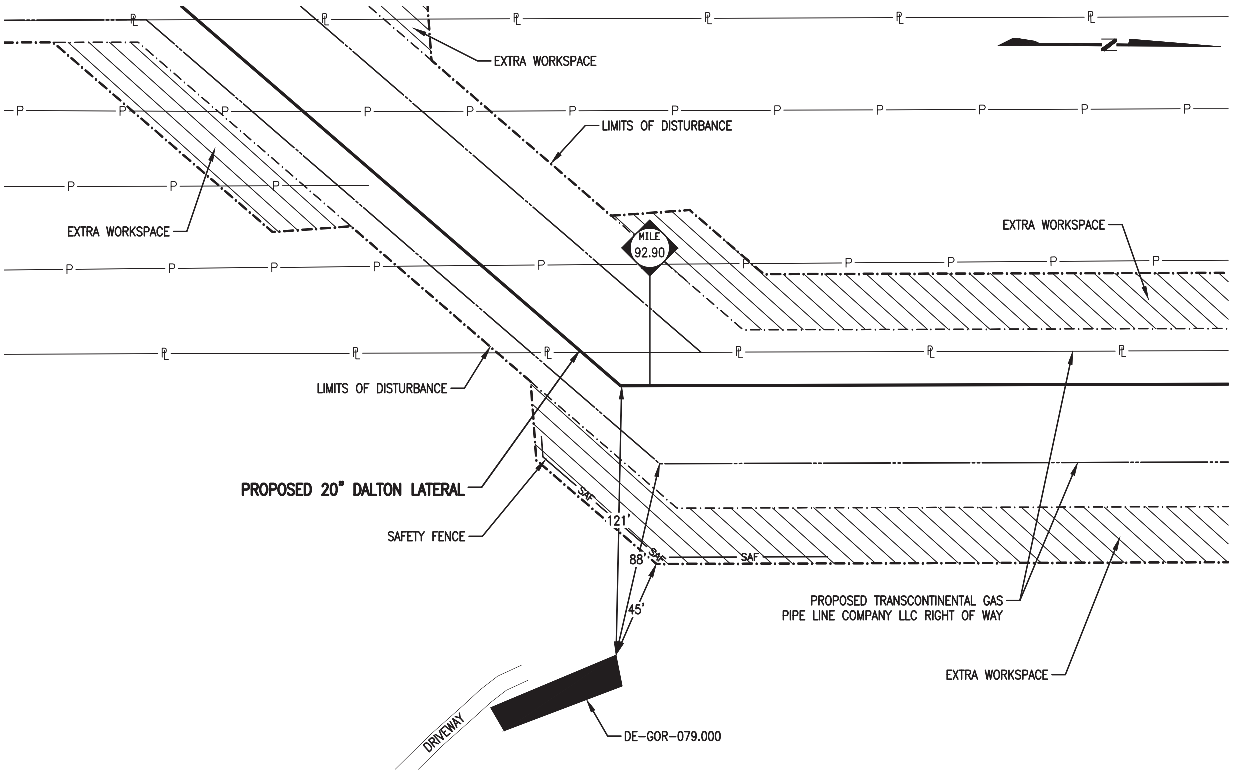
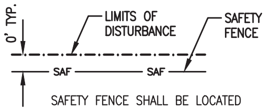


8. AT A MINIMUM, CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA AS SHOWN ON THE SITE PLAN.

9. UTILIZE CONTROLS AS NECESSARY TO MITIGATE DUST, NOISE, AND VIBRATIONS DURING CONSTRUCTION.



SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

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SCALE IN FEET

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104110
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO DE-GOR-079.000
GORDON COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP	DATE: 01/22/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 03/06/15	DRAWING NUMBER: 24-0410-40-26-A/92.90	SHEET 1
WO: 1113191		9:54am 9/17/2015 phumphrey K:\LP116883\Mapping\RCP\24_0410_40_26_A_92_90.dwg	OF 1

NOTES:

1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.

2. OTHER KNOWN UTILITIES ARE ALSO DEPICTED ON THE SITE PLANS. PRIOR TO CONSTRUCTION, THE STATE ONE CALL CENTER WILL BE NOTIFIED TO VERIFY THE LOCATION OF THESE UTILITIES AND IDENTIFY ANY UNKNOWN UTILITIES WHICH MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. TRANSCO WILL ALSO CONTACT INDIVIDUAL PROPERTY OWNER(S) TO IDENTIFY AND LOCATE ANY OTHER UTILITIES THAT MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. THESE UTILITIES WILL BE IDENTIFIED AND MARKED BY THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

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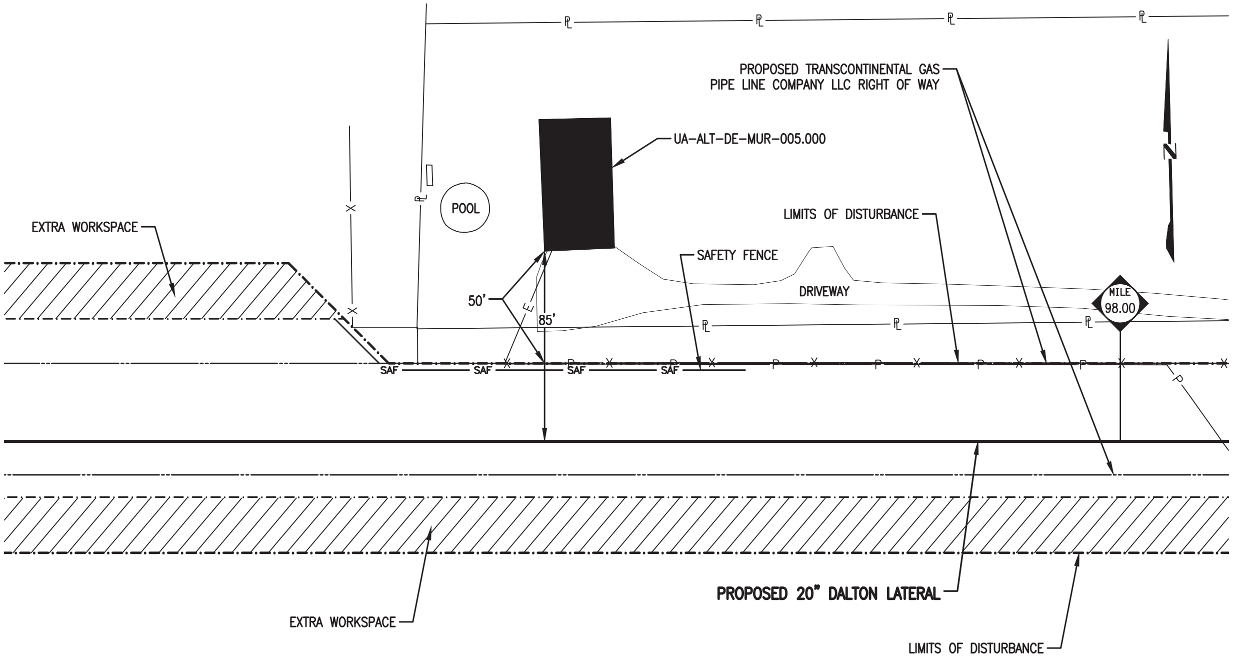

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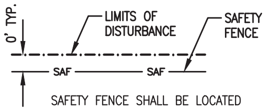

SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104110
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO UA-ALT-DE-MUR-005.000
MURRAY COUNTY, GEORGIA

DRAWN BY: JWP	DATE: 01/23/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 03/06/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 03/06/15	DRAWING NUMBER: 24-0410-40-26-A/97.95 10:30am 9/17/2015 phumphrey K:\LP116883\Mapping\RCP\24_0410_40_26_A_97_95.dwg	SHEET 1 OF 1
WO: 1113191			

NOTES:

1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.

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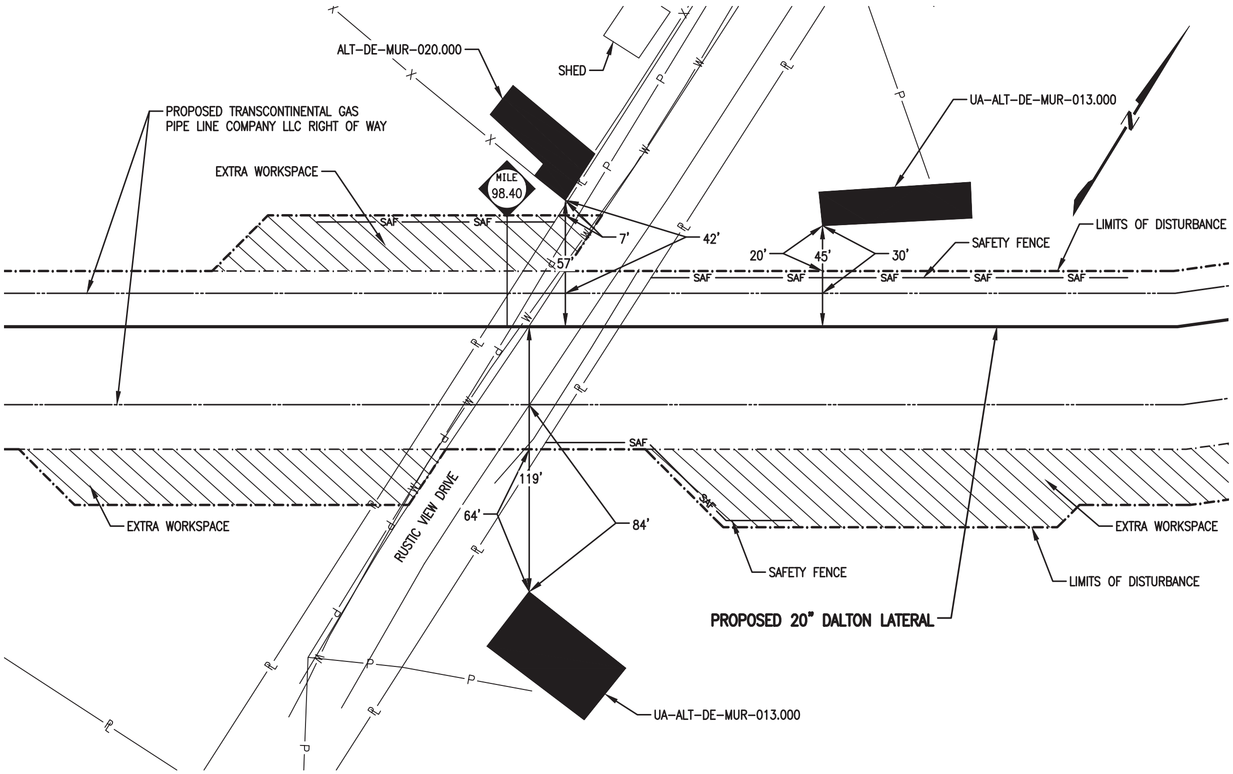
5. TRANSCO WILL NOTIFY LANDOWNERS, IN WRITING, AT LEAST TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION. TRANSCO'S LAND AGENT WILL THEN FOLLOW-UP WITH EACH LANDOWNER AT LEAST ONE (1) WEEK PRIOR TO THE START OF CONSTRUCTION.

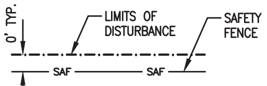
6. AFTER COMPLETION THE CONSTRUCTION WORK AREAS WILL BE RESTORED IN ACCORDANCE WITH APPLICABLE PERMIT REQUIREMENTS, THE PROJECT-SPECIFIC VERSION OF FERC'S UPLAND EROSION CONTROL REVEGETATION AND MAINTENANCE PLAN AND THE SOIL EROSION AND SEDIMENT CONTROL PLAN.

7. LAND REPRESENTATIVE WILL DISCUSS ACCESS TO RESIDENCES PRIOR TO CONSTRUCTION AND INCLUDE THAT INFORMATION IN THE CONSTRUCTION LINE LIST. THE CONSTRUCTION LINE LIST WILL BE INCLUDED IN THE CONSTRUCTION CONTRACT. ADDITIONALLY, INSPECTORS ASSIGNED TO THE PROJECT WILL ENSURE THAT THE REQUIREMENTS IN THE LINE LIST ARE FOLLOWED.



8. AT A MINIMUM, CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA AS SHOWN ON THE SITE PLAN.

9. UTILIZE CONTROLS AS NECESSARY TO MITIGATE DUST, NOISE, AND VIBRATIONS DURING CONSTRUCTION.



SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

UA-ALT-DE-MUR-013.000
ALT-DE-MUR-020.000
UA-ALT-DE-MUR-013.000

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SCALE IN FEET

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104110
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
SEE ABOVE LIST
MURRAY COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: JWP
DATE: 01/26/15
CHECKED BY: MEH
DATE: 03/06/15
APPROVED BY: RLA
DATE: 03/06/15
WO: 1113191
ISSUED FOR BID:
ISSUED FOR CONSTRUCTION:
SCALE: 1" = 50'
REVISION:
DRAWING NUMBER: 24-0410-40-26-A/98.40
SHEET 1 OF 1
1:52pm 9/17/2015 phumphrey
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NOTES:

1. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO) HAS PREPARED THIS RESIDENTIAL CONSTRUCTION PLAN TO INCLUDE DIMENSIONED SITE PLANS FOR EACH RESIDENCE LOCATED WITHIN 50 FEET OF CONSTRUCTION WORK AREAS. THE SITE PLANS SHOW THE LOCATION OF EACH OF THESE RESIDENCES IN RELATION TO THE NEW PIPELINE AND CONSTRUCTION WORK AREAS PROPOSED FOR THE DALTON EXPANSION PROJECT.

2. OTHER KNOWN UTILITIES ARE ALSO DEPICTED ON THE SITE PLANS. PRIOR TO CONSTRUCTION, THE STATE ONE CALL CENTER WILL BE NOTIFIED TO VERIFY THE LOCATION OF THESE UTILITIES AND IDENTIFY ANY UNKNOWN UTILITIES WHICH MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. TRANSCO WILL ALSO CONTACT INDIVIDUAL PROPERTY OWNER(S) TO IDENTIFY AND LOCATE ANY OTHER UTILITIES THAT MIGHT EXIST WITHIN THE CONSTRUCTION RIGHT OF WAY. THESE UTILITIES WILL BE IDENTIFIED AND MARKED BY THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

3. ANY NEARBY STRUCTURES, RESIDENTIAL FEATURES AND TREES LOCATED WITHIN THE CONSTRUCTION WORK AREAS WHICH WILL NOT BE REMOVED DURING CONSTRUCTION ARE NOTED ON THE SITE PLAN.

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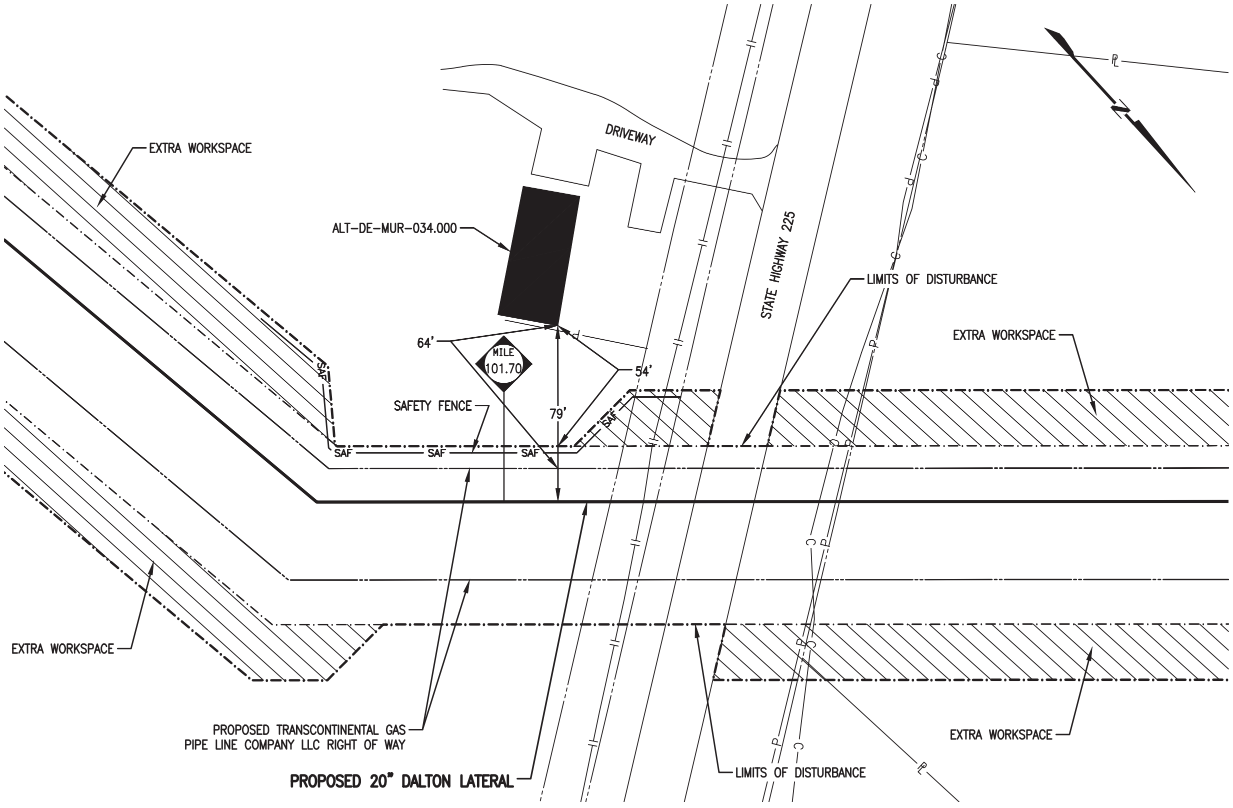

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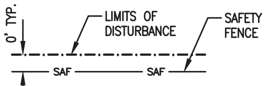
SCALE IN FEET



SAFETY FENCE SHALL BE LOCATED ON THE LIMITS OF DISTURBANCE.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 104110
ONE METROPLEX DRIVE, SUITE 100
BIRMINGHAM, ALABAMA 35209

DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
DALTON EXPANSION PROJECT
PROPOSED DALTON LATERAL
RESIDENTIAL CONSTRUCTION PLAN
ON THE PROPERTY OF
TRACT NO. ALT-DE-MUR-034.000
MURRAY COUNTY, GEORGIA

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	03/06/15	RJB	ISSUED FOR FERC			
B	07/24/15	RJB	MODIFIED FOR SURVEY BOUNDARY			
C	09/25/15	RJB	RE-ISSUED FOR FERC			

DRAWN BY: PLH	DATE: 06/22/15	ISSUED FOR BID:	SCALE: 1" = 50'
CHECKED BY: MEH	DATE: 06/23/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: RLA	DATE: 06/23/15	DRAWING NUMBER: 24-0410-40-26-A/101.70	SHEET 1
WO: 1113191		1:58pm 9/17/2015 phumphrey K:\LP116883\Mapping\RCP\24_0410_40_26_A_101_70.dwg	OF 1

APPENDIX J

BLASTING PLAN

Transcontinental Gas Pipe Line Company, LLC

Blasting Plan

Dalton Expansion Project

Docket No. CP15-

March 2015

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Attachment

A Table
  Table 1 Limits on Charges in Accordance with OSMRE for the Project

Abbreviations and Acronyms

dt/day	dekatherms per day
Mdt/d	thousand dekatherms per day
MLV	mainline valve
OD	outside diameter
OSMRE	Office of Surface Mining Reclamation and Enforcement
PPV	peak particle velocity
Project	Dalton Expansion Project
SD	scaled distance factor
Transco	Transcontinental Gas Pipe Line Company, LLC

1. BLASTING PLAN

1.1 Introduction

Transcontinental Gas Pipe Line Company, LLC (Transco) is proposing to provide 448 thousand dekatherms per day (Mdt/d) of incremental firm transportation capacity from Transco's Station 210 Zone 6 Pooling Point in Mercer County, New Jersey to an interconnection with Gulf South Pipeline Company, LP in Pike County, Mississippi (Holmesville) and through a new pipeline lateral (Dalton Lateral) initiating at Transco's Compressor Station 115 in Coweta County, Georgia to interconnections on the Dalton Lateral in northwest Georgia. This project is referred to as the Dalton Expansion Project (Project). As detailed below, the Project will consist of 109.3 miles of new natural gas pipeline in three continuous segments (Dalton Lateral Segments 1, 2, and 3) and a new 1.9-mile natural gas lateral pipeline (Dalton Lateral - AGL Spur). A new compressor station and three new meter stations also will be constructed, and modifications and supplemental odorization equipment will be installed at existing facilities as part of the Project. The Project consists of the following components:

- Dalton Lateral Segment 1
    - Addition of approximately 7.6 miles of new 30-inch outside diameter (OD) pipeline in Coweta and Carroll Counties, Georgia from the discharge of Compressor Station 115 to the proposed Compressor Station 116
- Dalton Lateral Segment 2
    - Addition of approximately 48.9 miles of new 24-inch OD pipeline in Carroll, Douglas, Paulding, and Bartow Counties, Georgia from the discharge of the proposed Compressor Station 116 to the proposed Beasley Road Meter Station
- Dalton Lateral Segment 3
    - Addition of approximately 52.8 miles of new 20-inch OD pipeline in Bartow, Gordon, Murray, and Whitfield Counties, Georgia from the proposed Beasley Road Meter Station to the proposed Looper Bridge Road Meter Station
- Dalton Lateral - AGL Spur
    - Addition of approximately 1.9 miles of new 16-inch OD pipeline in Murray County, Georgia from milepost (MP) 105.2 of the Dalton Lateral to the proposed Murray Meter Station
- Compressor Station 116
    - Addition of a new 21,830-horsepower (HP) compressor station in Carroll County, Georgia
- Beasley Road Meter Station (formerly referred to as AGL-Bartow Meter Station)
    - Addition of a new 190 thousand dekatherms per day (Mdt/d) meter station in Bartow County, Georgia
- Looper Bridge Road Meter Station (formerly referred to as Oglethorpe-Smith Meter Station)
    - Addition of a new 208-Mdt/d meter station in Murray County, Georgia
- Murray Meter Station (formerly referred to as AGL-Murray Meter Station)
    - Addition of a new 50-Mdt/d meter station in Murray County, Georgia

- Mainline Facility Modifications to Accommodate Bi-Directional Flow
  - Addition of valves and yard piping for south flow compression in Pittsylvania County, Virginia at Compressor Station 165 and in Orange County, Virginia, at Compressor Station 180
  - Modifications to Compressor Station 167 in Mecklenburg County, Virginia to handle a partially odorized system
  - Modifications to mainline valve (MLV) settings at MLV 160-10 in Rockingham County, North Carolina and at MLV 160-15, the Hutson Road MLV, and MLV 160-20 in Pittsylvania County, Virginia to handle a partially odorized system
  - Modifications to 23 meter and regulator stations at 20 sites in Rockingham, Northampton, Hertford, and Greensville Counties, North Carolina, and Pittsylvania, Brunswick, Mecklenburg, and Halifax Counties, Virginia, on the South Virginia Lateral and between Compressor Stations 160 and 165 on the mainline to handle a partially odorized system.

The new pipeline will be installed primarily along existing transmission line or roadway corridors. Approximately 55.0 percent (60.1 miles) of the Dalton Lateral Segments 1, 2, and 3 and 73.7 percent (1.4 miles) of the Dalton Lateral - AGL Spur are co-located with existing utilities.

Blasting may be required to excavate the trench in areas where bedrock is encountered at depths that interfere with conventional excavation or rock-trenching methods. Transco only allows blasting if other reasonable means of excavation (e.g. rock trenchers, rock saws, and jack hammers) are unsuccessful. Potential blasting areas are considered those areas with shallow depth to bedrock (less than 5 feet).

Potential blasting locations were identified using available mapping and soils data as well as input from Transco. These locations will be field-verified prior to construction. Locations of shallow bedrock that could potentially be encountered along the Project are identified in Resource Report 6 – *Geological Resources*.

The purpose of this Blasting Plan is to provide guidelines for the safe use and storage of blasting materials for the Project. This Blasting Plan is intended to ensure safety of personnel and nearby facilities. This Blasting Plan does not relieve the Construction Contractor of the responsibility for developing Site-specific Blasting Plans (see Section 5). A Site-specific Blasting Plan must be prepared by the Construction Contractor and submitted to Transco for review prior to any blasting. Transco approval or adherence to this Blasting Plan does not limit, reduce, or release the Construction Contractor or Contractor’s agent(s) from any liability to Transco or any other affected party for any damages or other harmful effects resulting from the blasting activities.

2. GENERAL BLASTING INFORMATION

Blasting-related operations including obtaining, transporting, storing, handling, loading, detonating, and disposing of blasting material, drilling, and ground-motion monitoring will comply with applicable federal, state, and local regulations, permit conditions, and the construction contract.

Blasting for grade or trench excavation will be utilized only after all other reasonable means of excavation have been used and are unsuccessful in achieving the required results. Transco's Construction Contractor will be required to demonstrate that blasting is required by attempting to rip a test section (20 to 50 feet long) with a D-9 dozer (with ripper). Transco reserves the right to not require the D-9 test; such testing may be eliminated based on Transco's review of conditions. Transco may specify locations (such as foreign line crossings and near-by structures) where consolidated rock will be removed by approved mechanical equipment, such as rock-trenching machines, rock saws, hydraulic rams, or jack hammers, in lieu of blasting.

Before blasting, a Site-specific Blasting Plan will be developed. No blasting will commence until Transco's Project Engineer has determined that the combined stress level of the affected pipeline and will make recommendations and/or forward approval to Transco before blasting commences.

Full-scale blast tests on representative sections of rock may be conducted to prevent the need for Engineering approval prior to every blast. Blast tests would confirm that peak-particle velocities are below maximum permissible levels for a given charge per hole, hole pattern, distance from the existing mainline, and rock conditions. If any of these variables change, either new test results will be conducted or engineering calculations will be performed before blasting occurs. Transco will provide a geologist to inspect the rock and determine if previous blast tests are applicable to the proposed blasts. Seismograph equipment would be used to determine the peak particle velocity at the pipe (excavate to depth and record adjacent to the existing mainline) during testing. If full-scale blast tests are conducted, a complete blasting plan will be developed and approved by Transco prior to conducting tests.

Before any blasting (regardless of testing), a complete WGP-0142 (Pre-Blasting Data Sheet Form) will be reviewed by Transco. Transco will compare the completed form to full-scale tests, if completed. If there are differences (such as in geology, shot pattern, and distance from the mainline), Transco will require that new tests be conducted or calculations be performed by Transco's Project Engineer.

If no blast tests are completed, Transco will confirm that expected stresses are acceptable prior to blasting. Seismograph equipment will be used on every blast until Transco determines it is not necessary (based on similarity of rock and other conditions with previously successful blasts). Continued use of the seismograph equipment will be at Transco's discretion.

Drilling and blasting will be performed in the presence of a Transco inspector. Transco's inspector's approval is required to proceed prior to each blast.

When blasting near other in-service pipelines and other underground facilities, the requirements of the third-party operating company take precedence over Transco requirements, if third-party limitations are more strict (specifically, peak-particle velocity limits).

3. BLASTING CONTRACTOR QUALIFICATIONS

Blasting operations will be conducted by or under the direct and constant supervision of experienced personnel legally licensed and certified to perform such activity in the jurisdiction where blasting occurs. The Construction Contractor will provide Transco with evidence of experience and such licenses and permits prior to any blasting activities.

4. PRE-BLASTING REQUIREMENTS

The Construction Contractor will place all necessary utility locate requests no less than 72 hours prior to construction or as required by one-call system(s). The contractor will be responsible for protection of existing underground facilities. Before performing blasting, the Construction Contractor will verify with Transco that all property owners have been notified of the construction schedule. The Construction Contractor will acquire all required federal, state, and local permits relating to transportation, storage, handling, loading, and detonation of explosives. The Construction Contractor will provide a Site-specific Blasting Plan (including completion of the WGP Pre-Blasting Data Sheet Form – WGP-0142) to Transco at least 5 working days prior to any proposed blasting-related activity and will obtain Transco approval in writing prior to drilling. Any changes to the Site-specific Blasting Plan that could increase the particle velocity or ground movement will require prior written approval by Transco.

All required federal, state, and local permits relating to transportation, storage, handling, loading, and detonation of explosives will be acquired.

5. SITE-SPECIFIC BLASTING PLAN

Site-specific Blasting Plans will include the following:

- Explosive type, product name and size, weight per unit, and density
- Delay type, sequence, and delay (ms)
- Initiation method (non-electric [shock tube] detonator is the only approved initiation system)
- Stemming material and tamping method
- Hole depth, diameter, and pattern
- Explosive depth, distribution, and maximum weight per delay
- Number of holes per delay
- Distance and orientation to nearest aboveground structure
- Distance and orientation to nearest underground structure, including pipelines
- Procedures for storing, handling, transporting, loading, and firing explosives; fire prevention; inspections after each blast; misfires; flyrock and noise prevention; stray current accidental detonation prevention; signs and flagmen; warning signals prior to each blast; notification prior to blasting; and disposal of waste blasting material
- Seismograph company, names, equipment and sensor location
- Copies of all required federal, state, and local permits
- Blasting Contractor name, company, copy of license, and statement of qualifications
- Magazine type and locations for explosives and detonating caps
- Typical rock type and geology structure (solid, layered, or fractured)
- Pipeline location (milepost and stationing)
- Applicable alignment sheet numbers

6. BLASTING METHODS RESTRICTIONS

Approval of Site-Sspecific Blasting Plans by Transco does not limit or reduce the Construction Contractor responsibility for safety, damages, compliance with permits and regulations, and the accuracy and adequacy of the Site-specific Blasting Plans for achieving adequate rock breakage.

Restrictions on blasting methods/techniques to be considered when developing the Site-specific Blasting Plans include:

- The blasting agent Ammonium Nitrate and Fuel Oil will not be allowed.
- Emulsion-type explosive will not be allowed.
- The frequency caused by the detonation of the explosive charge will not drop below a frequency of 25 Hertz.
- The minimum time delay between the detonation of charges will not be less than 25 milliseconds.
- There will be no more than one shot/delay.
- Neither electric blasting caps nor electric initiation systems may be used; only non-electric initiation systems are allowed.

7. BLASTING MONITORING

The Blasting Contractor will provide seismograph equipment to measure the peak particle velocity (PPV) of all blasts in the vertical, horizontal, and longitudinal directions. Seismic monitoring can only be discontinued if the blasting schedule and blasting performance consistently produce PPVs at the pipeline that are lower than the maximum allowable limit or if Transco authorizes.

The Blasting Contractor will measure the PPV at adjacent pipelines, water wells, potable springs, and at aboveground structure within 150 feet of the blasting. The Blasting Contractor will complete the WGP Blasting Log Record (Form WGP 0143) immediately after each blast and submit a copy to Transco.

8. LIMITS ON PEAK PARTICLE VELOCITY

The PPV will not exceed 4 inches per second measured adjacent to an underground pipeline, unless Transco approves otherwise. For any aboveground structure or water wells, the PPV will not exceed 2 inches per second. For all aboveground facilities within 150 feet of the blasting, additional seismograph equipment will be used to determine the PPV at the aboveground facility. If the measured PPV at an existing pipeline or other structure exceeds the above limits, blasting activities will stop immediately and Transco will be notified. The Site-specific Blasting Plan will be modified to reduce the PPV prior to any further blasting. Transco will inspect aboveground facilities within 25 feet before and after all blasting.

9. SAFETY

9.1 Protection of Aboveground and Underground Structures

Where blasting occurs within 150 feet of aboveground structures, the structures will be inspected before and after blasting. In the unlikely event that damage occurs to an aboveground structure, the owner will be compensated.

Where blasting occurs within 150 feet of identified water well or potable springs, water flow performance and water quality testing will be conducted before blasting. If the water well is damaged, the well owner will either be compensated for damages or a new well will be provided.

The size of charges will be limited in accordance with the scaled distance factor (SD) guidelines provided by the Office of Surface Mining Reclamation and Enforcement (OSMRE). For distances less than 300 feet, OSMRE states that the SD will exceed 50. SD is equal to the distance from the blast to the aboveground structure divided by the square root of the charge (pounds/delay). The limits on charges as a function of distance in accordance with OSMRE are provided in **Table 1** (Attachment A).

Blasting will not occur within 10 feet of existing pipelines unless authorized by Transco.

Holes will not be re-drilled that have contained explosive material. Holes will not be drilled where risk exists of intersecting another hole containing explosive material.

Blasting mats or padding will be used on all shots where necessary to prevent scattering of loose rock onto adjacent property and to prevent damage to nearby structures and overhead utilities.

Blasting will not begin until occupants of nearby buildings, stores, residences, places of business, places of public gathering, and farmers have been notified sufficiently in advance to protect personnel, property, and livestock. Occupants will be notified at least 72 hours prior to blasting.

Blasting in or near environmentally sensitive areas, such as streams and wildlife areas may include additional restrictions, which will be included in the Site-specific Blasting Plans.

9.2 Protection of Personnel

Only authorized, qualified, and experienced personnel will handle explosives. Smoking, firearms, matches, open flames, and heat-and-spark-producing devices will be prohibited in or near explosive magazines or while explosives are being handled, transported, or used. No explosive material will be located where they may be exposed to flame, excessive heat, sparks, or impact.

A code of blasting signals will be established and posted in conspicuous places. Employees will learn and use this code.

Every reasonable precaution including, but not limited to, visual and audible warning signals, warning signs, flag person, and barricades will be used to ensure personnel safety.

Warning signs, with lettering a minimum of 4 inches in height on a contrasting background, will be erected and maintained at all approaches to the blast area.

Flaggers will be stationed on all roadways passing within 1,000 feet of the blast area to stop all traffic during blasting operations.

All personnel not involved in the actual detonation will remain at least 1,000 feet and workers involved in the actual detonation will remain at least 650 feet from the time the blast signal is given until the “All Clear” has been sounded.

An audible blasting signal (air horn or siren) will be sounded 5 minutes before and after each blast.

Blasting operations will be conducted during daylight hours.

No loaded holes will be left unattended or unprotected. No explosives will be abandoned. No loaded holes will be left overnight.

In the case of a misfire, the blaster will provide proper safeguards for personnel until the misfire has been re-blasted or safely removed.

All loading and blasting activity will cease and personnel in and around the blast area will retreat to a position of safety, during the approach and progress of an electrical storm irrespective of the type of explosives or initiation system used. This is a major safety precaution and will always be observed. All explosive materials and all non-electric initiation systems are susceptible to premature initiation by lightning.

No drilling will commence near a previous blast area until such blast area has been inspected to verify the absence of misfires. If a misfire occurs adjacent to a hole to be drilled, the misfire is cleared by the blaster using whatever techniques are called for by the situation prior to commencement of drilling. Should a misfire occur at some distance from the drilling area, drilling may be stopped while clearing preparations are underway. When the misfire is to be cleared by re-shooting, drilling will be shut down and personnel evacuated to a place of safety prior to detonation.

All transportation of explosives will be in accordance with applicable federal, state, and local laws and regulations. Any vehicle used to transport explosives will be in proper working condition and equipped with tight wooden or non-sparking metal floor and sides. If explosives are carried in an open-bodied truck, they will be covered with a waterproof and flame-resistant tarpaulin. Wiring will be fully insulated to prevent short-circuiting, and at least two fire extinguishers will be carried. The truck will be plainly marked as to its cargo so that the public may be adequately warned. Metal, flammable or corrosive substances will not be transported in the same vehicle with explosives. There will be no smoking, and unauthorized or unnecessary personnel will not be allowed in the vehicle. Loading and unloading of explosives will be done carefully by competent, qualified personnel.

Metallic slitters will be used to open fiberboard cases, provided the metallic slitter does not come in contact with the metallic fasteners of the case. There will be no smoking, no matches, no open lights, or other fire or flame nearby while handling or using explosives. Explosives will not be placed where they are subject to flame, excessive heat, sparks or impact. Partial cases or packages of explosives will be re-closed after use. No explosives will be carried in the pockets or clothing of personnel.

No blast will be fired without a positive signal from the person in charge. This person will have made certain that all surplus explosives are in a safe place; all persons, vehicles, and/or boats are at a safe distance; and adequate warning has been given. Adequate warning of a blast will consist of, but not be limited to, the following:

- Notification of day and time given to railroads, highway departments, city engineer, etc. Notification must be given at least 72 hours prior to blasting;
- Notification of homeowners nearby;
- Stopping vehicular and/or pedestrian traffic near the blast site;
- Signal given by an air horn, whistle or similar device using standard warning signals; and
- Only authorized and necessary personnel will be present where explosives are being handled or used.

The condition of the hole will be checked with a wooden tamping pole prior to loading. Surplus explosives will not be stacked near working areas during loading. Detonating fans will be cut from spool before loading the balance of charge into the hole. No explosives will be forced into a bore hole past an obstruction. Loading will be done by a blaster holding a valid license or by personnel under his direct supervision.

10. IN-WATER BLASTING

The following minimum requirements will apply in the event that blasting is required in waterbodies crossed by the Project. The Construction Contractor will develop a Site-specific Blasting Plan for in-water blasting.

Blast holes will be held open by wooden plugs, sleeves, or casings extending above the water surface, or other suitable methods submitted to and approved by Transco. All holes to be shot at the same time will be loaded immediately prior to blasting. Loading will be by means of a non-sparking metal loading tube or similar device.

Explosives used under water will have waterproof paper shells or otherwise will be protected from the effects of water. The type of explosive, size of charges, and sequence of firing will be selected to minimize shock wave stresses on aquatic life adjacent to the blasting area. All appropriate resource agency notifications will be made.

11. STORAGE REQUIREMENTS

All explosives and initiation devices will be stored in locked magazines that have been located, constructed, approved, and licensed in accordance with local, state, and federal regulations. Magazines will be dry, well ventilated, reasonably cool (the exterior should be painted with a reflective color), bullet and fire-resistant, and kept clean.

Initiation devices will not be stored in the same box, container, or magazine with other explosives. Explosives and initiation devices will not be stored in wet or damp areas; near oil, gasoline, cleaning solvents; near sources of heat radiators, or steam pipes. No metal or metal tools will be stored in the magazine. There will be no smoking, matches, open lights, or other fire or flame inside or within 50 feet of storage magazines or explosive materials. The loading and unloading of explosive materials into or out of the magazine will be done in a business-like manner with no loitering, horseplay, or prank-playing.

Magazines will be kept locked at all times unless explosives are being delivered or removed by authorized personnel. Admittance will be restricted to the magazine keeper, blasting supervisor, or licensed blaster. Magazine construction will meet the requirements of the Bureau of Alcohol, Tobacco and Fire Arms P5400.7 “Explosives Law and Regulations” and be in accordance with local, state, or federal regulations and the Blasters Handbook.

Accurate and current records will be kept of the explosive material inventory to ensure that oldest stocks are utilized first, satisfy regulatory requirements, and for immediate notification of any loss or theft. Magazine records will reflect the quantity of explosions removed, the amount returned, and the net quantity used at the blasting site.

When explosive materials are taken from the storage magazine they will be kept in the original containers until used. Small quantities of explosive materials may be placed in day boxes, powder chests, or detonator boxes. Any explosive material not used at the blast site will be returned to the storage magazine and replaced in the original container as soon as possible.

Magazine location will be in accordance with local, state, or federal regulations. Where no regulations apply, magazines will be located in accordance with the latest edition of the 175th anniversary edition of the Blaster’s Handbook and the Bureau of Alcohol, Tobacco and Fire Arms P5400-7 “Explosives Law and Regulations.”

Magazines will be marked in minimum 3-inch-high letters with “Danger – Explosives.” Signs will be staked 10 feet away from and at a 45-degree angle to the magazine.

Placement and angle should ensure that a bullet fired perpendicular to the face of the sign does not penetrate the magazine.

12. GENERAL BLASTING PROCEDURES

The following list of steps will be performed in all cases. These steps represent a minimum requirement and give a general order to the blasting procedure:

- A safety meeting will be held prior to any blasting activities. All staff involved with the blasting in any form must attend. Safety rules and signaling should be reviewed.
- Warning signs will be erected.
- Lightning detectors will be set up.
- Drilled holes will be measured accurately for depth and location.
- Seismic equipment will be set up to measure velocities near the pipeline and any structures 150 feet or less from blast.
- Distances to any nearby structure (aboveground or belowground) suspected of being less than 300 feet from the blast will be measured.
- Clear the blasting affected zone
- Give the warning signal.
- Give the blast signal.
- Detonate the blast.
- After blaster has checked for misfires and given the “All Clear” signal, inspectors will inspect any aboveground or underground facilities for damage.
- The WGP Blasting Log Record (WGP 0143) will be completed.

ATTACHMENT A

TABLES

TABLE 1
Limits on Charges in Accordance with OSMRE for the Project

Distance from Blast to Structure (feet)	**Maximum Charge (pound/delay)**
50	1.0
60	1.4
70	2.0
80	2.6
90	3.2
100	4.0
110	4.8
120	5.8
130	6.8
140	7.8
150	9.0

APPENDIX K

KARST MITIGATION PLAN

Transcontinental Gas Pipe Line Company LLC

Karst Mitigation Plan

Dalton Expansion Project
Docket No. PF-14-10-000

September 2015

INTRODUCTION

Transcontinental Gas Pipe Line Company, LLC (Transco) is proposing to provide 448 thousand dekatherms per day (Mdt/d) of incremental firm transportation capacity from Transco's Station 210 Zone 6 Pooling Point in Mercer County, New Jersey to an interconnection with Gulf South Pipeline Company, LP in Pike County, Mississippi (Holmesville) and through a new pipeline lateral (Dalton Lateral) initiating at Transco's Compressor Station 115 in Coweta County, Georgia to interconnections on the Dalton Lateral in northwest Georgia. This project is referred to as the Dalton Expansion Project (Project). As detailed below, the Project will consist of 112.9 miles of new natural gas pipeline in three continuous segments (Dalton Lateral Segments 1, 2, and 3) and a new 2.0-mile natural gas lateral pipeline (Dalton Lateral - AGL Spur). A new compressor station and three new meter stations also will be constructed, and modifications and supplemental odorization equipment will be installed at existing facilities as part of the Project. The Project consists of the following components:

- Dalton Lateral Segment 1
    - Addition of approximately 7.8 miles of new 30-inch outside diameter (OD) pipeline in Coweta and Carroll Counties, Georgia from the discharge of Compressor Station 115 to the proposed Compressor Station 116
- Dalton Lateral Segment 2
    - Addition of approximately 51.3 miles of new 24-inch OD pipeline in Carroll, Douglas, Paulding, and Bartow Counties, Georgia from the discharge of the proposed Compressor Station 116 to the proposed Beasley Road Meter Station
- Dalton Lateral Segment 3
    - Addition of approximately 53.8 miles of new 20-inch OD pipeline in Bartow, Gordon, Murray, and Whitfield Counties, Georgia from the proposed Beasley Road Meter Station to the proposed Looper Bridge Road Meter Station
- Dalton Lateral - AGL Spur
    - Addition of approximately 2.0 miles of new 16-inch OD pipeline in Murray County, Georgia from milepost (MP) 105.2 of the Dalton Lateral to the proposed Murray Meter Station
- Compressor Station 116
    - Addition of a new 21,830-horsepower (HP) compressor station in Carroll County, Georgia
- Beasley Road Meter Station (formerly referred to as AGL-Bartow Meter Station)
    - Addition of a new 190 thousand dekatherms per day (Mdt/d) meter station in Bartow County, Georgia
- Looper Bridge Road Meter Station (formerly referred to as Oglethorpe-Smith Meter Station)
    - Addition of a new 208-Mdt/d meter station in Murray County, Georgia
- Murray Meter Station (formerly referred to as AGL-Murray Meter Station)
    - Addition of a new 50-Mdt/d meter station in Murray County, Georgia
- Mainline Facility Modifications to Accommodate Bi-Directional Flow

- Addition of valves and yard piping for south flow compression in Pittsylvania County, Virginia at Compressor Station 165 and in Orange County, Virginia, at Compressor Station 180
- Modifications to Compressor Station 167 in Mecklenburg County, Virginia to handle a partially odorized system
- Modifications to mainline valve (MLV) settings at MLV 160-10 in Rockingham County, North Carolina and at MLV 160-15, the Hutson Road MLV, and MLV 160-20 in Pittsylvania County, Virginia to handle a partially odorized system
- Modifications to 23 meter and regulator stations at 20 sites in Rockingham, Northampton, and Hertford Counties, North Carolina, and Pittsylvania, Brunswick, Mecklenburg, Greensville, and Halifax Counties, Virginia, on the South Virginia Lateral and between Compressor Stations 160 and 165 on the mainline to handle a partially odorized system.

The new pipeline will be installed primarily along existing transmission line or roadway corridors. Approximately 48.6 percent (54.9 miles) of the Dalton Lateral Segments 1, 2, and 3 and 60.0 percent (1.2 miles) of the Dalton Lateral - AGL Spur are co-located with existing utilities.

KARST GEOLOGIC FORMATIONS

Karst is a topography that frequently develops in regions underlain by geologic formations consisting primarily of limestone, dolomite, or calcareous shale and siltstone. Karst is characterized by closed depressions, termed sinkholes, and by caves, cave systems, and underground drainage. The agent of erosion is a solution of soluble minerals from one or all of the rock types mentioned above in combination with slightly acidic ground water.

Rainwater falling onto the surface and percolating downward through the soil and into cracks and fissures gradually dissolves the rock, producing insoluble impurities such as chert and clay. Since bedrock such as limestone and dolomite vary greatly in their resistance to weathering, the soil/bedrock contact may be extremely irregular. More soluble bedrock develops a thicker soil cover and a more irregular bedrock surface with pinnacles and slots, and less soluble bedrock usually develops a thinner soil cover and a less irregular soil-bedrock surface.

These large variations in bedrock depth are greatly enhanced by the presence of fractures, bedding planes, and faults, which provide an increased opportunity for a greater influx of percolating water. The weaknesses may form clay-filled cavities or enlarge into caves and may be connected by a network of passageways. If a cave forms close to the bedrock surface, its roof may collapse and the overlying soils may erode into the cave. Once the weight of the overlying soil exceeds the soil's arching strength, the soil collapses and an open hole or depression may appear at the ground surface. Such a feature is termed a sinkhole. In north Georgia, sinkholes occur primarily due to differential weathering of the bedrock and “flushing” or “raveling” of overburden soils into the cavities in the bedrock.

The northern portion of the pipeline is underlain by known Karst geologic formations of the Ridge and Valley Physiographic Province. The Ridge and Valley begins around MP 53.5 and is bounded on the northwest by the Cumberland Plateau and Lookout Mountain and on the southeast by the Great Smoky Fault. Elongated ridges that trend in a northeast-southwest direction characterize this province. The ridges are typically formed on highly resistant sandstones and shales, while the valleys and rolling hills are formed on less resistant limestone, dolomite, and shales. The rocks have weathered in place to form overburden residual soils including sands, silts, and clays, some of which contain chert fragments ranging from gravel to boulder sizes.

Based on our review of the 1976 Geologic Map of Georgia, the karst geologic formations that underlay each proposed section of pipeline is summarized in Table 1 below.

Begin MP	**End MP**	**Mapped Geology**
55.5	56.5	Knox Group; Newala Limestone
56.5	58.3	Knox Group; Undifferentiated
58.3	59.3	Knox Group; Newala Limestone
59.3	74.4	Knox Group Undifferentiated
74.4	75.0	Conasauga Group; Maynardville Limestone
75.0	76.7	Conasauga Group; Upper Unit – Shale and Limestone
76.7	76.8	Conasauga Group; Maynardville Limestone
76.5	77.3	Knox Group Undifferentiated
77.3	77.6	Conasauga Group; Maynardville Limestone
77.6	78.1	Conasauga Group; Upper Unit – Shale and Limestone
78.1	78.2	Conasauga Group; Maynardville Limestone
78.2	79.1	Knox Group Undifferentiated
79.1	79.3	Conasauga Group; Maynardville Limestone
79.3	79.8	Conasauga Group; Upper Unit – Shale and Limestone
79.8	80.1	Conasauga Group; Maynardville Limestone
80.1	87.0	Knox Group Undifferentiated
87.0	87.8	Conasauga Group; Maynardville Limestone
87.8	87.9	Conasauga Group; Upper Unit – Shale and Limestone
87.9	88.9	Conasauga Group; Maynardville Limestone
88.9	98.1	Conasauga Group; Upper Unit – Shale and Limestone
98.1	98.3	Conasauga Group; Maynardville Limestone
98.3	98.6	Knox Group Undifferentiated
98.6	98.8	Conasauga Group; Maynardville Limestone
98.8	99.9	Conasauga Group; Upper Unit – Shale and Limestone
99.9	100.4	Conasauga Group; Middle Unit – Limestone
100.4	109.3	Conasauga Group; Lower Unit – Shale and Siltstone
Dalton Lateral AGL Spur		Conasauga Group; Upper Unit – Shale and Limestone

TABLE 1 Karst Geology Along the Proposed Alignment of Dalton Expansion Project

The Knox Group is composed of various dolomite and siliceous limestone members. The rock is generally medium to dark gray, very hard, fine to coarsely crystalline rock. Residual soils derived from the Knox Group are typically red-brown to yellow-brown clays with locally heavy amounts of chert fragments. The strata of the Knox formations weather to form an overburden typically in excess of 40 feet thick. The predominate rock types in the Knox Group are limestone and dolomite. Limestone, and to a lesser degree dolomite, have an affinity for solutioning, sometimes resulting in the formation of sinkholes. The Knox Group contains major solution features that occur in dolomite as well as limestone. Solution cavity development in the Knox Group is closely associated with structural features such as joint patterns and faults.

The Newala formation is made up of the Mascot Dolomite and the Kingsport formation and generally consists of siliceous dolomite with minor limestone. The silica is in the form of nodules and lenses of gray to white chert and varies greatly in quantity. The bedrock weathers to a reddish or orange brown clay soil with variable quantities of chert gravel. Since the Newala formation consists of carbonate rock, the site is susceptible to the typical carbonate hazards of irregular weathering, cave and cavern conditions, and overburden sinkholes.

The Conasauga Group is divided into upper, lower, and middle units. The upper and middle units are comprised of dolomitic limestone and shale. The upper unit is composed of the Maynardville Limestone and Nolichucky Shale. The Maynardville Limestone is a transitional layer from the overlying Knox group formations and the underlying Nolichucky Shale formation. The Maynardville Limestone formation is primarily composed of siliceous limestone with an overburden thickness of typically less than 30 feet. The Nolichucky Shale formation consists of gray to brown thin shale with interbedded limestone and calcareous siltstone with an overburden thickness of typically less than 20 feet. The middle unit consists of rocks from the Maryville Limestone, Rogersville Shale, and Rutledge Limestone. The Maryville and Rutledge Limestones are massive and contain thin to irregular silty and dolomitic layers. Both formations have overburden thicknesses typically less than 30 feet. The Rogersville Shale consists of a light green, olive green, and purple shale and typically weathers to a thin acidic soil containing shale chips with typical overburden thicknesses of less than 20 feet. The limestone in this area typically weathers to a red, deep soil containing no chert. The lower unit is comprised of shale and siltstone. Soils derived from the Conasauga are typically brown to yellow-brown clayey silts and silty clays. Non-calcareous shale and siltstone are not carbonate rock formations and are generally at a low risk for sinkhole formation. Limestone, and to a lesser degree dolomite, have an affinity for solutioning, sometimes resulting in the formation of sinkholes.

CONSTRUCTION AND OPERATIONS IMPACTS

Karst solutioning occurs over geologic time periods and solution features in the bedrock are frequently hidden from the surface until a change in the vicinity of the solution feature causes a sinkhole to be exposed. A variety of natural and man-made activities can accelerate ground collapse to expose naturally dissolved voids in rock. Construction activities and the building of new structures can be a catalyst for exposing sinkholes through the disturbance of the ground surface, the introduction of surface water to excavations, and the addition of heavy loads.

The pipeline has been routed to avoid suspected sinkholes and topographic features indicative of possible solution activity. However, it is possible that localized karst features may be encountered in pipeline trenches during or after completion of construction operations. The primary risk to project pipeline components associated with karst conditions is the potential for loss of pipe support.

BMP OF KARST FEATURES

Where open cavities are encountered at the ground surface in areas that are outside the construction area but within the influence of construction activities, best management practices (BMPs) will be implemented to divert surface runoff away from the identified Karst feature and prevent sediment from entering. This will be achieved by installing barriers such as silt fence, straw bales, and constructing berms where necessary as part of the grading plan. Springs, streams, and wells that are located within the construction zone will also be protected using BMP's and tested for turbidity in accordance with State of Georgia regulations.

MITIGATION OF KARST FEATURES DURING CONSTRUCTION

The following guidelines are provided for assessment and mitigation of karst features that may be encountered during construction of the pipeline:

- In the event that suspected karst features are encountered during construction of the pipeline, a professional geotechnical engineer will be retained to assess suspected karst conditions and provide guidance recommendations through the mitigation process. Examples of karst features include open holes in the ground surface that do not appear to be of human or animal origin, closed depressions at the ground surface, and zones of very soft soil or highly weathered rock adjacent to relatively hard, competent bed rock.
- The geotechnical engineer will visit the site to observe the suspected karst feature. Based on the observed field conditions, an appropriate exploration and mitigation plan will be developed for each situation encountered.
- Geophysical methods may be employed to identify potential karst features below the ground surface and the depth of the bedrock surface. The primary geophysical method utilized will likely be electrical resistivity testing. Shear wave velocity testing may also be used in special situations as an alternate method.
- If a karst solution feature is identified, either by the visual observation or geophysical testing, the pipeline may be rerouted to avoid the feature or the feature may be mitigated.
- If the solution feature is to be mitigated and the soil overburden is relatively thin, exploration and repair of the karst feature may be done by excavating overburden soils from the potential karst area in an effort to expose the throat of the bedrock solution feature.
- Once the throat of a karst solution feature is identified in the bedrock, mitigation options, such as plugging the cavity using cement grout, low-strength concrete, controlled density fill (also known as flowable fill), or a graded aggregate filter, may be implemented. The decision as to the specific mitigation method and which materials may be used to plug the solution feature will be based on the project conditions and the recommendations of the geotechnical engineer.

- A graded aggregate filter may be a karst mitigation option. Construction of a graded aggregate filter commonly consists of lining the excavation with a stiff geogrid, then placing large aggregate in the bottom of the excavation, followed by interval layers of successively smaller open graded aggregate. A non-woven needle punched filter fabric is placed over the stone, followed by about a cap of compacted clay. The advantage of an inverted graded filter is that it allows water infiltration to occur along its natural path while mitigating against loss of overburden material.
- If the soil overburden is determined to be thicker than can feasibly be reached with standard size excavating equipment, a series of exploratory boreholes may be drilled to evaluate the subsurface soil and rock conditions within the vicinity of the karst feature.
- If the exploratory drilling confirms the presence of karst solution features, a cap and compaction-grouting program may be implemented near the rock surface to plug potential solution features at the rock/soil interface and to densify the soft soils above bedrock. Compaction-grouting is conducted by drilling casing down to the rock surface where a fluid grout is then pumped to cap the bedrock. The casing is then withdrawn, in short intervals, and a stiff grout is then pumped to densify the soft soils surrounding the casing. The grout is pumped until a pre-specified line pressure is developed or until a pre-specified volume is pumped. The grout pipe is then pulled-up to the next interval and the process is repeated. A series of grout holes are drilled in a grid pattern around the affected area. Depending on the conditions encountered during grouting, additional grout holes may be added within the grout pattern.
- If further risk mitigation is apparent based on the performance requirements of individual pipeline components, underpinning or other structural modifications to affected structures may be conducted. The decision to underpin or structurally modify specific pipeline components will be based on the performance criteria of each particular structure at the time of assessment of karst activity and contingent on the assessment of the geotechnical engineer.
- The remedial measures that are implemented will be documented in the Project construction records.

MITIGATION OF KARST FEATURES DURING OPERATIONS

The following guidelines are provided for assessment and mitigation of karst features that may be encountered during operation of the pipeline:

- The Dalton Pipeline will be visually surveyed during regularly scheduled pipeline patrols or at least once annually for ground surface subsidence or sinkhole formation.
- In the event that suspected karst features are encountered and are a potential hazard to pipeline safety, a professional geotechnical engineer will be retained to assess suspected karst conditions and provide guidance recommendations relative to a mitigation process.
- In general, mitigation options will be similar to those available during construction of the pipeline.

APPENDIX L

WORKSPACE REQUIRING SITE-SPECIFIC EXCEPTIONS TO THE FEDERAL ENERGY REGULATORY COMMISSION WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES FOR THE DALTON EXPANSION PROJECT

APPENDIX L

Workspace Requiring Site-Specific Exceptions to the Federal Energy Regulatory Commission Wetland and Waterbody Construction and Mitigation Procedures for the Dalton Expansion Project

Facility/ Milepost	Feature ID	Section of Procedures	Exception to FERC Procedures	Workspace Justification	FERC Staff Recommendations
Dalton Lateral					
0.3	S1ACO001	V.B.2.a	ATWS within 50 feet of a waterbody	Congested area	Deny; shift workspace to opposite side of right-of-way
0.5	W1ACO002	VI.B.1.a	ATWS within 50 feet of a wetland	Wetland and road crossing	Approve
0.9	S1ACO008	V.B.2.a	ATWS within 50 feet of a waterbody	Corridor interior	Approve
2.4	S1ACO012	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing	Approve
2.8	W1ACO005	VI.A.3	Limit construction right-of-way to 75 feet	Waterbody crossing	Approve
3.7	S2BCO004	V.B.2.a	ATWS within 50 feet of a waterbody	Corridor interior	Deny; shift workspace north
4.0	W2BCO002	VI.B.1.a	ATWS within 50 feet of a wetland	Road crossing	Approve
5.3	S2BCO013	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and conjected area	Deny; shift workspace south or to opposite side of right-of-way
6.1	S2BCO017	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Deny; shift HDD entry site south
6.9	W3CCA002	VI.A.3	Limit construction right-of-way to 75 feet	Waterbody crossing	Approve
9.3	W1ACA002	VI.B.1.a	ATWS within 50 feet of a wetland	Stream crossing	Approve
9.5	S1ACA007	V.B.2.a	ATWS within 50 feet of a waterbody	Crossover and side slope	Approve
12.1	S3CCA043	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing	Approve
19.4	S2BDO018	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody spoil and road crossing	Approve
19.8	S3CDO001	V.B.2.a	ATWS within 50 feet of a waterbody	Congested area	Approve
20.3	S3CDO007	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing and congested area	Approve
20.3	S3CDO007	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing and congested area	Deny; shift workspace north
20.3	W3CDO002	VI.B.1.a	ATWS within 50 feet of a wetland	Waterbody and road crossing	Approve
20.3	W3CDO002	VI.B.1.a	ATWS within 50 feet of a wetland	Waterbody and road crossing	Approve
22.0	S3CDO013	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody spoil and side slope	Approve
22.1	S3CDO014	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and congested area	Approve
23.6	W3CDO007	VI.A.3	Limit construction right-of-way to 75 feet	Waterbody crossing	Approve
24.7	S3CDO038	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and congested area	Approve
24.8	W1ADO002	VI.B.1.a	ATWS within 50 feet of a wetland	Waterbody spoil	Approve
24.8	W1ADO002	VI.B.1.a	ATWS within 50 feet of a wetland	Congested area	Approve
25.9	S1ADO009	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Deny; shift HDD entry site north
25.9	S1ADO009	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Deny; shift HDD entry site north
26.4	S3CDO021	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Approve
26.4	S3CDO021	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Approve

APPENDIX L (cont'd)

Workspace Requiring Site-Specific Exceptions to the Federal Energy Regulatory Commission Wetland and Waterbody Construction and Mitigation Procedures for the Dalton Expansion Project

Facility/ Milepost	Feature ID	Section of Procedures	Exception to FERC Procedures	Workspace Justification	FERC Staff Recommendations
26.4	S3CDO021	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing and HDD pullback	Approve
26.5	S3CDO022	V.B.2.a	ATWS within 50 feet of a waterbody	Corridor interior	Approve
26.8	XSDO008	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Deny; provide survey data
26.9	S2BDO021	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Approve
27.2	XSDO009	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Approve
27.4	W3CDO008	VI.A.3	Limit construction right-of-way to 75 feet	Waterbody and wetland crossing and side slope	Approve
29.4	S3CDO034	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing, corridor interior	Approve
29.8	XSDO010	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Approve
30.8	S3CPA178	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and congested area	Approve
30.8	W2BPA006	VI.B.1.a	ATWS within 50 feet of a wetland	Waterbody crossing	Approve
31.0	W2BPA007	VI.B.1.a	ATWS within 50 feet of a wetland	Wetland crossing	Approve
31.6	S3CPA180	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing	Approve
32.8	W3CPA032	VI.A.3	Limit construction right-of-way to 75 feet	Waterbody and wetland crossing	Approve
32.9	S3CPA045	V.B.2.a	ATWS within 50 feet of a waterbody	Corridor interior	Approve
32.9	W3CPA032	VI.B.1.a	ATWS within 50 feet of a wetland	Waterbody and wetland crossing	Approve
33.9	S3CPA001	V.B.2.a	ATWS within 50 feet of a waterbody	Congested area	Approve
34.5	W1APA005	VI.B.1.a	ATWS within 50 feet of a wetland	Road crossing and valve	Approve
36.6	W3CPA019	VI.A.3	Limit construction right-of-way to 75 feet	Waterbody and wetland crossing	Approve
37.0	S3CPA052	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Approve
40.2	S3CPA028	V.B.2.a	ATWS within 50 feet of a waterbody	Stream crossing	Deny
42.1	S3CPA060	V.B.2.a	ATWS within 50 feet of a waterbody	Congested area	Approve
43.6	S1APA028	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing and corridor interior	Approve
46.3	S3CPA094_EPH	V.B.2.a	ATWS within 50 feet of a waterbody	Corridor interior	Approve
46.6	S3CPA167_INT	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing	Approve
46.7	S3CPA169	V.B.2.a	ATWS within 50 feet of a waterbody	Point of inflection and waterbody spoil	Approve
49.5	S3CPA107_EPH	V.B.2.a	ATWS within 50 feet of a waterbody	Corridor interior	Deny; shift workspace north
49.5	S3CPA107_EPH	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Deny; shift workspace north
51.0	S3CPA0125_EPH	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Approve
52.1	S3CPA139	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Approve
59.3	S1ABA002	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and topsoil segregation	Approve
65.6	S2BBA001	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and topsoil segregation	Approve
66.5	S1ABA011	V.B.2.a	ATWS within 50 feet of a waterbody	Corridor interior	Approve

APPENDIX L (cont'd)

Workspace Requiring Site-Specific Exceptions to the Federal Energy Regulatory Commission Wetland and Waterbody Construction and Mitigation Procedures for the Dalton Expansion Project

Facility/ Milepost	Feature ID	Section of Procedures	Exception to FERC Procedures	Workspace Justification	FERC Staff Recommendations
68.0	S2BBA002	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing and side slope	Approve
68.5	S2BBA006	V.B.2.a	ATWS within 50 feet of a waterbody	Steep slope/side slope	Approve
72.0	W2BBA014	VI.B.1.a	ATWS within 50 feet of a wetland	Wetland crossing and side slope	Approve
75.4	S2BBA024	V.B.2.a	ATWS within 50 feet of a waterbody	Corridor interior	Approve
75.4	S2BBA024	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Deny; shift HDD entry site north
75.4	S2BBA024	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Deny; shift HDD entry site north
75.4	S2BBA024	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Deny; shift HDD entry site north
79.5	S1ABA022	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and side slope	Approve
83.7	S3CGO005	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Approve
88.6	S2BGO004	V.B.2.a	ATWS within 50 feet of a waterbody	Corridor Interior	Approve
89.5	S1AGO001	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Approve
89.6	S1AGO007	V.B.2.a	ATWS within 50 feet of a waterbody	Congested Area	Approve
89.7	S1AGO007	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and topsoil segregation	Approve
90.6	S2BGO009	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Deny; shift HDD entry site south to avoid palustrine forested wetland
90.6	S2BGO009	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Deny; shift HDD entry site south to avoid palustrine forested wetland
90.6	W2BGO001	VI.B.1.a	ATWS within 50 feet of a wetland	HDD	Deny; shift HDD entry site south to avoid palustrine forested wetland
90.6	W2BGO001	VI.B.1.a	ATWS within 50 feet of a wetland	HDD	Deny; shift HDD entry site south to avoid palustrine forested wetland
90.7	W2BGO001	VI.A.3	Limit construction right-of-way to 75 feet	Waterbody crossing/ HDD	Approve
94.9	S2BGO042	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Approve
95.0	S2BGO042	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and road crossing	Approve
95.0	S2BGO042	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and road crossing	Approve
95.3	W3CGO004	VI.B.1.a	ATWS within 50 feet of a wetland	Wetland crossing	Approve
95.6	S3CGO020	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and congested area	Deny; consider shifting workspace west
95.6	W3CGO005	VI.B.1.a	ATWS within 50 feet of a wetland	Waterbody crossing	Deny
96.1	S1AGO015	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody spoil	Deny; modify workspace to reduce encroachment into waterbody buffer
96.1	S1AGO015	V.B.2.a	ATWS within 50 feet of a waterbody	Corridor interior	Deny; modify workspace to avoid direct impacts on waterbody

APPENDIX L (cont'd)

Workspace Requiring Site-Specific Exceptions to the Federal Energy Regulatory Commission Wetland and Waterbody Construction and Mitigation Procedures for the Dalton Expansion Project

Facility/ Milepost	Feature ID	Section of Procedures	Exception to FERC Procedures	Workspace Justification	FERC Staff Recommendations
96.1	XWGO002	V.B.2.a	ATWS within 50 feet of a waterbody	Corridor interior	Deny; see above.
96.4	XWGO005	VI.A.3	Limit construction right-of-way to 75 feet	Waterbody crossing	Approve
97.3	S1AMU001	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Approve
97.8	S1AMU012	V.B.2.a	ATWS within 50 feet of a waterbody	Congested area	Approve
97.9	S1AMU012	V.B.2.a	ATWS within 50 feet of a waterbody	Congested area	Approve
98.0	S1AMU008	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing	Approve
102.0	S1AMU030	V.B.2.a	ATWS within 50 feet of a waterbody	Steep slope/side slope and waterbody crossing	Approve
102.6	W3CMU012	VI.A.3	Limit construction right-of-way to 75 feet	HDD	Approve
104.4	W3CMU004	VI.B.1.a	ATWS within 50 feet of a wetland	Side slope	Approve
108.1	S1AWH003	V.B.2.a	ATWS within 50 feet of a waterbody	Waterbody crossing and congested area	Approve
108.1	S1AWH001	V.B.2.a	ATWS within 50 feet of a waterbody	HDD pullback area	Approve
108.1	S1AWH003	V.B.2.a	ATWS within 50 feet of a waterbody	HDD pullback area	Approve
108.2	S1AWH004	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace	Approve
108.2	S1AWH004	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace and corridor interior	Approve
108.3	S1AWH008	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace and corridor interior	Approve
108.7	S1AWH012	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace and corridor interior	Deny; shift or modify HDD entry site to avoid stream
108.7	S1AWH012	V.B.2.a	ATWS within 50 feet of a waterbody	HDD workspace and corridor interior	Deny; shift or modify HDD entry site to avoid stream
109.3	W1AWH001	VI.B.1.a	ATWS within 50 feet of a wetland	Congested area	Approve
AGL Spur					
0.7	W1AMU003	VI.B.1.a	ATWS within 50 feet of a wetland	Road crossing	Approve
0.7	S1AMU034	V.B.2.a	ATWS within 50 feet of a waterbody	Road crossing and congested area	Deny; modify workspace to reduce encroachment into waterbody buffer

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Notes: ATWS = additional temporary workspace; FERC = Federal Energy Regulatory Commission; HDD = horizontal directional drill

APPENDIX M

WETLANDS CROSSED OR OTHERWISE AFFECTED BY THE DALTON EXPANSION PROJECT

APPENDIX M

Wetlands Crossed or Otherwise Affected by the Dalton Expansion Project[a]

Facility/Milepost	Feature ID	Wetland Type[b]	Crossing Length (feet)[c]	Construction Impacts (acres)[d]	Operational Impacts[e]
Dalton Lateral					
0.5	W1ACO002	PFO	95	0.19	0.12
0.5	W1ACO002	PEM	0	0.01	0.00
2.8	W1ACO005	PFO	28	0.05	0.03
3.6	W2BCO001	PEM	0	<0.01	0.00
5.4	W2BCO003	PEM	0	<0.01	0.00
5.5	W2BCO004	PEM	0	<0.01	0.00
5.7	W2BCO005	PEM	0	0.02	0.00
6.9	W3CCA002	PFO	156	0.27	0.17
6.9	W3CCA002	PEM	90	0.15	0.00
7.2	W3CCA003	PFO	0	<0.01	0.00
8.0	W3CCA004	PFO	0	0.04	0.02
9.4	W1ACA003	PEM	0	0.01	0.00
16.1	W2BDO001	PEM	0	0.01	0.00
21.3	W3CDO003	PFO	54	0.08	0.06
21.3	W3CDO003	PEM	0	<0.01	0.00
21.5	W3CDO004	PEM	0	0.02	0.00
21.5	W3CDO004	PFO	63	0.07	0.06
23.1	W1ADO004	PFO	539	0.91	0.61
23.6	W3CDO007	PSS	593	1.12	0.67
24.7 REROUTE	W1ADO002	PSS	0	0.03	0.01
25.6	W1ADO003	PFO	535	0.75	0.57
25.6	W1ADO003	PEM	0	0.15	0.00
26.9 REROUTE	W2BDO006	PEM	0	0.01	0.00
27.0	W2BDO006	PFO	156	0.26	0.17
27.4	W3CDO008	PEM	70	0.13	0.00
28.8	W2BDO008	PFO	788	1.37	0.94
28.8	W2BDO008	PEM	0	0.05	0.00
29.0	W2BDO009	PFO	89	0.16	0.11
29.8	XWDO002	PSS	545	1.01	0.64
29.9	W2BDO012	PFO	437	0.71	0.52
29.9	W2BDO011	PSS	0	0.14	0.00
30.0	W2BDO012	PEM	0	0.02	0.00
30.9	W2BPA007	PFO	308	0.35	0.25
31.8	W2BPA009	PSS	34	0.06	0.04
31.9	W2BPA010	PFO	106	0.21	0.14
32.5	W1APA019	PEM	129	0.19	0.00
32.6	W1APA020	PEM	0	<0.01	0.00
32.8	W1APA021	PEM	71	0.12	0.00
32.8	W3CPA032	PSS	154	0.33	0.22
34.1	W1APA001	PEM	123	0.23	0.00
34.4	W1APA003	PEM	0	0.01	0.00
34.4	W1APA006	PEM	0	<0.01	0.00
34.5	W1APA005	PEM	0	0.01	0.00
35.2	W3CPA017	PEM	1	0.01	0.00
35.4	W3CPA018	PEM	12	0.01	0.00
36.6	W3CPA019	PEM	127	0.21	0.00
36.6	W3CPA019	PFO	0	0.04	0.04

APPENDIX M (cont'd)

Wetlands Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility/Milepost	Feature ID	Wetland Type [b]	Crossing Length (feet) [c]	Construction Impacts (acres) [d]	Operational Impacts [e]
36.9	W3CPA020	PEM	2	0.02	0.00
37.1	W3CPA001	PSS	669	0.76	0.76
37.7	W3CPA007	PFO	570	1.01	0.71
37.7	W3CPA007	PEM	0	0.02	0.00
38.0	W3CPA008	PEM	484	0.53	0.00
38.2	W3CPA009	PEM	0	0.03	0.00
38.6	W3CPA011	PEM	15	0.02	0.00
38.9	W3CPA012	PEM	32	0.04	0.00
39.0	W3CPA013	PEM	0	0.02	0.00
39.5	W3CPA014	PEM	0	0.04	0.00
40.1	W3CPA015	PSS	54	0.09	0.06
44.1 REROUTE	W1APA009	PEM	0	<0.01	0.00
46.0 REROUTE	W3CPA036	PFO	0	<0.01	0.00
46.6 REROUTE	W3CPA042	PFO	33	0.03	0.02
54.5 REROUTE	W3CPA040	PEM	0	<0.01	0.00
62.2	W3CBA002	PEM	553	0.96	0.00
66.7	W1ABA001	PFO	59	0.11	0.07
66.8	W1ABA002	PFO	0	0.07	0.03
67.3	W2BBA001	PEM	50	0.07	0.00
67.4	W2BBA003	PEM	0	0.04	0.00
67.9	W2BBA005	PEM	0	<0.01	0.00
68.9	W2BBA010	PFO	100	0.22	0.16
68.9	W2BBA010	PEM	0	0.02	0.00
70.6	W2BBA011	PEM	0	0.02	0.00
70.6	W2BBA011	PFO	59	0.07	0.06
71.3	W2BBA012	PFO	90	0.15	0.11
71.3	W2BBA012	PEM	0	0.01	0.00
71.6	W2BBA013	PEM	192	0.19	0.00
71.6	W2BBA013	PFO	0	0.08	0.05
72.0	W2BBA014	PEM	0	0.01	0.00
74.6	W2BBA009	PEM	0	0.03	0.00
74.6	W2BBA009	PFO	72	0.06	0.06
86.7	W3CGO003	PEM	0	<0.01	0.00
90.7	W2BGO001	PFO	659	0.56	0.00
92.1 REROUTE	W3CGO008	PFO	0	<0.01	0.00
92.1 REROUTE	W3CGO007	PEM	0	<0.01	0.00
93.0	W3CGO009	PEM	0	0.01	0.00
93.4	W2BGO009	PFO	32	0.08	0.05
93.4	W2BGO009	PEM	17	0.04	0.00
93.5	W2BGO010	PEM	27	0.04	0.00
93.6	W2BGO015	PEM	31	0.06	0.00
93.6	W2BGO014	PEM	0	<0.01	0.00
93.7	W2BGO017	PFO	43	0.09	0.06
93.7	W2BGO016	PEM	42	0.07	0.00
95.0	W3CGO010	PSS	81	0.26	0.09
95.1	W2BGO018	PEM	9	0.05	0.00
95.1	W2BGO018	PFO	49	0.08	0.05
95.2	W3CGO004	PSS	191	0.33	0.22

APPENDIX M (cont'd)

Wetlands Crossed or Otherwise Affected by the Dalton Expansion Project [a]

Facility/Milepost	Feature ID	Wetland Type [b]	Crossing Length (feet) [c]	Construction Impacts (acres) [d]	Operational Impacts [e]
95.4	W3CGO004	PEM	504	0.91	0.00
95.6	W3CGO005	PEM	25	0.03	0.00
95.8	XWGO001	PFO	120	0.28	0.16
96.2	XWGO003	PFO	265	0.36	0.25
96.4	XWGO005	PFO	286	0.40	0.27
96.7	W3CMU020	PFO	168	0.33	0.19
99.6	W1AMU004	PFO	0	<0.01	0.00
100.3	W1AMU001	PEM	128	0.25	0.00
102.6	W3CMU012	PFO	47	0.09	0.06
103.5	W3CMU019	PFO	22	0.07	0.03
103.6	W3CMU018	PFO	4	0.05	0.02
103.8	W3CMU003	PFO	0	0.03	0.01
104.7	W3CMU005	PSS	0	<0.01	0.00
105.5	W3CMU013	PFO	706	1.09	0.79
105.6	W3CMU013	PSS	481	0.75	0.54
106.1	W3CMU015	PSS	56	0.07	0.05
106.2	W3CMU016	PSS	27	0.03	0.02
106.2	W3CMU017	PEM	91	0.16	0.00
AGL Spur					
0.7	W1AMU003	PEM	0	0.06	0.00

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[a] Based on field delineations conducted to date, which encompass the majority of the pipeline route, access roads, staging/contractor yards, compressor stations, and aboveground facilities. Features documented using desktop analysis, due to a lack of survey access, are notated with an "X" at the beginning of the Feature ID.

[b] Wetland types based on Cowardin et al., 1979: PEM = palustrine emergent; PSS = palustrine scrub-shrub; and PFO = palustrine forested.

[c] Based on the crossing length along the pipeline centerline.

[d] Includes temporary workspaces, permanent easements, and additional temporary workspaces.

[e] Based on a 30-foot-wide corridor in PFO and a 10-foot-wide corridor in PSS wetlands that would be converted to other wetland types due to pipeline maintenance. Because PEM wetlands would be allowed to revert back to the same cover type following construction, there would be no operational impacts.

APPENDIX N

FEDERALLY AND STATE-LISTED THREATENED, ENDANGERED, AND PROTECTED SPECIES POTENTIALLY OCCURRING IN THE DALTON EXPANSION PROJECT AREA

APPENDIX N

Federally and State-Listed Threatened, Endangered, and Protected Species Potentially Occurring in the Dalton Expansion Project Area

Common Name	Scientific Name	Federal Status [a]	State Status [b]
Mammals			
Gray bat	*Myotis grisescens*	E	E
Northern long-eared bat	*Myotis septentrionalis*	T	T
Indiana bat	*Myotis sodalis*	E	E
Birds			
Bald eagle	*Haliaeetus leucocephalus*	DL[c]	T
Fish			
Blue shiner	*Cyprinella caerulea*	T	E
Bluestripe shiner	*Cyprinella callitaenia*	P	R
Holiday darter	*Etheostoma brevirostrum*	NL	E
Coldwater darter	*Etheostoma ditrema*	NL	E
Etowah darter	*Etheostoma etowahae*	E	E
Rock darter	*Etheostoma rupestre*	NL	R
Cherokee darter	*Etheostoma scotti*	T	T
Tallapoosa darter	*Etheostoma tallapoosae*	NL	R
Trispot darter	*Etheostoma trisella*	P	E
Flame chub	*Hemitremia flammea*	NL	E
Lined chub	*Hybopsis lineapunctata*	NL	R
Coosa chub	*Macrhybopsis sp.*	NL	E
River redhorse	*Moxostoma carinatum*	NL	R
Burrhead shiner	*Notropis asperifrons*	NL	T
Highscale shiner	*Notropis hypsilepis*	NL	R
Coosa madtom	*Noturus sp.*	NL	E
Amber darter	*Percina antesella*	E	E
Halloween darter	*Percina crypta*	P	T
Conasauga logperch	*Percina jenkinsi*	NL	E
Bridled darter	*Percina kusha*	NL	E
Freckled darter	*Percina lenticula*	NL	E
Dusky darter	*Percina sciera*	NL	R
River darter	*Percina shumardi*	NL	E
Muscadine darter	*Percina smithvanizi*	NL	R
Freshwater Mussels			
Southern elktoe	*Alasmidonta triangulata*	NL	E
Rayed creekshell	*Anodontoides radiatus*	NL	T
Delicate spike	*Elliptio arctata*	NL	E
Inflated spike	*Elliptio purpurella*	NL	T
Alabama spike	*Elliptio arca*	NL	E
Upland combshell	*Epioblasma metastriata*	NL	E
Southern acornshell	*Epioblasma othcaloogensis*	NL	E
Finelined pocketbook	*Hamiota altilis*	T	T
Alabama moccasinshell	*Medionidus acutissimus*	T	T
Coosa moccasinshell	*Medionidus parvulus*	E	E
Southern clubshell	*Pleurobema decisum*	E	E
Southern pigtoe	*Pleurobema georgianum*	E	E
Georgia pigtoe	*Pleurobema hanleyianum*	E	E
Rayed kidneyshell	*Ptychobranchus foremanianus*	E	E
Alabama creekmussel	*Strophitus connasaugaensis*	NL	E
Coosa creekshell	*Villosa umbrans*	P	NL

APPENDIX N (cont'd)

Federally and State-Listed Threatened, Endangered, and Protected Species Potentially Occurring in the Dalton Expansion Project Area

Common Name	Scientific Name	Federal Status [a]	State Status [b]
Plants			
Little amphianthus (pool sprite)	*Amphianthus pusillus*	T	T
Georgia rockcress	*Arabis georgiana*	T	T
Spreading yellow foxglove	*Aureolaria patula*	NL	T
American barberry	*Berberis canadensis*	NL	E
Broadleaf tickseed	*Coreopsis latifolia*	NL	R
Three-flowered hawthorne	*Crataegus trifora*	NL	T
Pink lady's-slipper	*Cypripedium acaule*	NL	U
Yellow lady's slipper	*Cypripedium parviflorum*	NL	R
Mountain witch-alder	*Fothergilla major*	NL	T
Goldenseal	*Hydrastis canadensis*	NL	E
Alabama warbonnet	*Jamesianthus alabamensis*	NL	E
Fraser's loosestrife	*Lysimachia fraseri*	NL	R
Monkeyface orchid	*Platanthera integrilabia*	C	T
Little River Black-eyed Susan	*Rudbeckia heliopsidis*	NL	T
Cumberland rose gentian	*Sabatia capitata*	NL	R
Bay star-vine	*Schisandra glabra*	NL	T
Large-flowered skullcap	*Scutellaria montana*	T	T
Georgia aster	*Symphyotrichum georgianum*	C	T
Trailing meadowrue	*Thalictrum debile*	NL	T
Starflower	*Trientalis borealis*	NL	E
Dwarf trillium	*Trillium pusillum*	NL	E
Ozark bunchflower	*Veratrum woodii*	NL	R
Piedmont barren strawberry	*Waldsteinia lobata*	P	R
Eastern turkeybeard	*Xerophyllum asphodeloides*	NL	R
Tennessee yellow-eyed grass	*Xyris tennesseensis*	E	E
Crayfish			
Conasauga blue burrower	*Cambarus cymatilis*	NL	E
Tallapoosa crayfish	*Cambarus englishi*	NL	R
Chickamauga crayfish	*Cambarus extraneus*	NL	T
Etowah crayfish	*Cambarus fasciatus*	NL	T
Chattahoochee crayfish	*Cambarus howardi*	NL	T
Beautiful crayfish	*Cambarus speciosus*	NL	E
Reptiles			
Common map turtle	*Graptemys geographica*	NL	R
Alabama map turtle	*Graptemys pulchra*	NL	R
Insects			
Cherokee clubtail	*Gomphus consanguis*	NL	T
Edmund's snaketail	*Ophiogomphus edmundo*	NL	E

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[a] Federal status listed includes: Endangered (E), Threatened (T), Candidate (C), Delisted (DL), Petitioned (P), and Not Listed (NL).

[b] State status listed includes: Endangered (E), Threatened (T), Rare (R), Unusual (U), and Not Listed (NL).

[c] Although the bald eagle is delisted, it is still federally protected under the Bald and Golden Eagle Act and the Migratory Bird Treaty Act.

APPENDIX O

HABITAT ASSESSMENT AND SURVEY REPORT

Transcontinental Gas Pipe Line Company, LLC

Habitat Assessment and Survey Report

Dalton Expansion Project
Docket No. CP15-117-000

December 2015

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Table 2-1	Hydrostatic Test Water Sources, Volumes, and Other Information
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Table 3-1	Federally- and State-listed Species Potentially Occurring within the Dalton Expansion Project Area
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Table 4-2	Aquatic Species Profiles

Table 4-3 Aquatic Species Presence/Absence Summary

Table 4-4 Project Bat Recording Result

C Dalton Expansion Project Waterbody Crossing, Restoration and Maintenance Procedures

D Survey Protocols and Methodologies

E Bat Photographs and Data Sheets

F Mitigation Documents

- F.1 - Memorandum of Understanding: Terrestrial Species Conservation Measures for The Dalton Expansion Pipeline Project (Docket #CP15-117-000)
- F.2 - Aquatic Species Conservation Mitigation Calculations for The Dalton Expansion Pipeline Project

Agency Comments on the Draft Habitat Assessment and Survey Report

Comment	Response / Updated Information Found in Section
FERC Comments	
The September 2015 Draft Habitat Assessment and Survey Report states that a more extensive list and description of survey locations and results will be provided in the final report. Provide a schedule for when the final Habitat Assessment and Survey Report will be provided to the Commission. The final report should include the following information for each of the federally and state listed species with the potential to occur in the Project area;	
a. counties where the species and/or designated critical habitat could occur;	Table 3-1
b. locations where suitable habitat has been identified including the locations of previously known populations and their proximity to the Project facilities (e.g., the little amphianthus population referenced in the draft report);	Attachment D Section 4.2
c. locations where surveys are required (e.g., specific waterbodies, milepost ranges), provide specific justification for each location where suitable habitat was identified but surveys are not proposed;	Attachment D
d. the status of the surveys at each location, including the detailed results of the surveys conducted to date and/or a schedule for when the surveys will be completed and the results will be provided to the FERC; and	Section 4 Table 3-2 Table 4-3
e. specific mitigation measures that Transco would implement at each location to avoid, or minimize impacts on the species and/or its habitat (e.g., measures to avoid impacts on the two populations of little-flowered skullcap that were observed in the proposed workspace)	Section 5 Attachment F
USFWS Comments	
The specific location at intake and discharge sites for hydrostatic testing and HDD (e.g., map/coordinates)	Section 2-1 [a]
The basic instream habitat at intake and discharge sites for hydrostatic testing and HDD (e.g., riffle/pool/run habitat)	Section 2-1 [a]
A short description of the equipment that will be used to uptake water for the hydrostatic test and HDD installations, as well as a description of any changes to the banks or riparian buffers that will be required to install and operate the pump at each location	Section 2-1 [a]

Agency Comments on the Draft Habitat Assessment and Survey Report	
Comment	**Response / Updated Information Found in Section**
The rate at which water will be pumped from each stream system for hydrostatic testing and HDD (given in a measure comparable with USGS gage flow data, so we can evaluate how water removal will affect instream water levels)	Table 2-1
A description of any restrictions on water uptake or release for hydrostatic testing or HDD when instream flows in the donor or receiving waters are below the monthly 7Q10	Section 2-1 [a]
Time of year when each hydrostatic test or HDD is proposed.	Table 2-1
Water discharge method (upland or surface water) proposed for hydrostatic test and HDD waters at Bartow Meter Station, MP 85.3, Looper Bridge Meter Station, AGL MP 0, Murray Meter Station, and MP 90.6. Each of these represents an interbasin transfer. If release is onto upland surfaces, provide design specifications for the flow-dissipating structure and coordinates for each discharge site.	Section 2-1 [a]
For those sites where hydrostatic test or HDD water will be discharged back into surface waters, the anticipated discharge rate (given in a measure comparable with USGS gage flow data, so we can evaluate how water release will affect instream water levels, particularly if municipal water is used)	Section 2-1 [a]
A description of additives that Transco mixes with hydrostatic test and HDD waters	Section 2.1 Section 2.2
Clarification on the fate of the HDD slurry water (4 million + gallons is a lot to transport)	Section 2.2
We recommend that Transco, at HDD sites in the Etowah, Coosawattee, Holly, and Conasauga basins:	
conduct work during low flow conditions	Section 2.2
locate the entrance and exit points for drilling at least 150 feet from top-of-bank to minimize the potential for a frac-out in aquatic habitat	Section 2.2
position a full-time biological monitor at each HDD site to look for observable frac-out conditions or lowered pressure readings on the drilling equipment.	Section 2.2
stop all work, including recycling of drilling mud/lubricant, when a frac-out in aquatic habitat is identified, and monitor for 4 hours to determine if the drilling mud congeals. If the mud congeals, minimize future actions that would potentially suspend sediments in the water column. If the mud does not congeal, erect underwater booms, curtains, or other isolation/containment measures, until the fracture can be sealed. If the fracture becomes excessively large, a spill response team would need to clean up excess drilling mud in the water.	Section 2.2
Information on how the pipe will be installed at crossings where rock is encountered (depth pipe will be installed, excavation methods). Will blasting be required, and if so, at which crossings is blasting most likely (water overpressures and ground vibrations from blasting may injure or kill fish and embryos)	Section 2.3.2.2
Description of conditions where placement of material excavated from the trench in uplands would not be practicable and a list of crossings where excavated material is likely to be stockpiled in the stream.	Section 2.3.2.3
The sentence regarding the Etowah River, Snake Creek, Wahoo Creek, and Wolf Creek should be completed	Section 2.3.2

Agency Comments on the Draft Habitat Assessment and Survey Report

Comment	Response / Updated Information Found in Section
More information on the proposed grading at approaches to waterbodies. At what crossings is this likely to occur and will the elevation change be permanent? A diagram would be helpful to understand how this could impact water quality and stream stability after pipe installation.	Section 2.3.2
A description of equipment that will be used to excavate the trench at larger waterbodies along the ROW and an estimate of how long construction at non-minor waterbodies will take.	Section 2.3.2.4
For each stream crossing, how heavy equipment will access both banks during ROW maintenance (e.g., equipment will drive through the stream, permanent culvert/ford, temporary bridges)	Attachment C
A description of temporary ROW BMPs that will be used to minimize erosion and stream sedimentation during ROW clearing and pipeline installation and an estimate of the time lag between ROW clearing and ROW final stabilization	Section 2.3.2
A description of permanent ROW design BMPs that will be used to minimize long-term erosion and stream sedimentation (e.g., water bars and other slope breakers, vegetation)	Section 2.3.2.5
A description of conditions under which returning the waterbody channel to the original contour would not be practicable and a list of crossings where this is likely to occur.	Section 2.3.2.5
A description of how streambanks at open cuts will be restored and stabilized, after the pipe is installed	Section 2.3.2.5 Attachment C
Proposed Transco monitoring at stream crossings to ensure the ROW, streambanks, and channel are stable and that head cuts or other detrimental geomorphic changes are not occurring at open cut crossing sites	Section 2.3.2.7
Measures Transco will employ to minimize ATV use of the ROW and subsequent degradation of the now-accessible streams	Section 2.3.2.6
GDNR Comments	
I see that withdrawals for hydrostatic testing in the Coosawattee will occur between August and March to protect spring spawning species. Can we get that same provision for the Conasauga River withdrawal?	Section 2.1
The aquatic survey plan looks good. However, I did not see any mention of the proposed winter time surveys for trispot darter.	Section 4.1

a - Specific information regarding hydrostatic test water intake and discharge locations, equipment and withdrawal rates will be identified when a Construction Contractor has been selected for the Project. This information has been communicated to and accepted by the USFWS.

Introduction

Transcontinental Gas Pipe Line Company, LLC (Transco) is seeking a Certificate of Public Convenience and Necessity from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7 (c) of the Natural Gas Act authorizing the construction and operation of the Dalton Expansion Project (Project), in Federal Energy Regulatory Commission (FERC) Docket Nos. PF14-10-000 and CP15-117-000.

1.1 Dalton Expansion Project

Transcontinental Gas Pipe Line Company, LLC (Transco) is proposing to provide 448 thousand dekatherms per day (Mdt/d) of incremental firm transportation capacity from Transco's Station 210 Zone 6 Pooling Point in Mercer County, New Jersey to an interconnection with Gulf South Pipeline Company, LP in Pike County, Mississippi (Holmesville) and through a new pipeline lateral (Dalton Lateral) initiating at Transco's Compressor Station 115 in Coweta County, Georgia to interconnections on the Dalton Lateral in northwest Georgia. This project is referred to as the Dalton Expansion Project (Project). As detailed below, the Project will consist of 112.9 miles of new natural gas pipeline in three continuous segments (Dalton Lateral Segments 1, 2, and 3) and a new 2.0-mile natural gas lateral pipeline (Dalton Lateral - AGL Spur). A new compressor station and three new meter stations also will be constructed, and modifications and supplemental odorization equipment will be installed at existing facilities as part of the Project. The Project consists of the following components:

- Dalton Lateral Segment 1
  - Addition of approximately 7.8 miles of new 30-inch outside diameter (OD) pipeline in Coweta and Carroll Counties, Georgia from the discharge of Compressor Station 115 to the proposed Compressor Station 116
- Dalton Lateral Segment 2
  - Addition of approximately 51.3 miles of new 24-inch OD pipeline in Carroll, Douglas, Paulding, and Bartow Counties, Georgia from the discharge of the proposed Compressor Station 116 to the proposed Beasley Road Meter Station
- Dalton Lateral Segment 3
  - Addition of approximately 53.8 miles of new 20-inch OD pipeline in Bartow, Gordon, Murray, and Whitfield Counties, Georgia from the proposed Beasley Road Meter Station to the proposed Looper Bridge Road Meter Station
- Dalton Lateral - AGL Spur
  - Addition of approximately 2.0 miles of new 16-inch OD pipeline in Murray County, Georgia from milepost (MP) 105.2 of the Dalton Lateral to the proposed Murray Meter Station
- Compressor Station 116
  - Addition of a new 21,830-horsepower compressor station in Carroll County, Georgia
- Beasley Road Meter Station (formerly referred to as AGL-Bartow Meter Station)
  - Addition of a new 190 Mdt/d meter station in Bartow County, Georgia
- Looper Bridge Road Meter Station (formerly referred to as Oglethorpe-Smith Meter Station)
  - Addition of a new 208-Mdt/d meter station in Murray County, Georgia

- Murray Meter Station (formerly referred to as AGL-Murray Meter Station)
  - Addition of a new 50-Mdt/d meter station in Murray County, Georgia
- Mainline Facility Modifications to Accommodate Bi-Directional Flow
  - Addition of valves and yard piping for south flow compression in Pittsylvania County, Virginia at Compressor Station 165 and in Orange County, Virginia, at Compressor Station 180
  - Modifications to Compressor Station 167 in Mecklenburg County, Virginia to handle a partially odorized system
  - Modifications to mainline valve (MLV) settings at MLV 160-10 in Rockingham County, North Carolina and at MLV 160-15, the Hutson Road MLV, and MLV 160-20 in Pittsylvania County, Virginia to handle a partially odorized system
  - Modifications to 23 meter and regulator stations at 20 sites in Rockingham, Northampton, and Hertford Counties, North Carolina, and Pittsylvania, Brunswick, Mecklenburg, Greensville, and Halifax Counties, Virginia, on the South Virginia Lateral and between Compressor Stations 160 and 165 on the mainline to handle a partially odorized system.

The new pipeline will be installed primarily along existing transmission line or roadway corridors. Approximately 48.6 percent (54.9 miles) of the Dalton Lateral Segments 1, 2, and 3 and 60.0 percent (1.2 miles) of the Dalton Lateral - AGL Spur are co-located with existing utilities. The proposed Project facility locations are depicted on **Figure 1** (Attachment A).

The purpose of this Habitat Assessment and Survey Report is to summarize the methodologies and protocols used for species surveys, tabulate the results of those surveys, and identify mitigation efforts that have been implemented or are proposed to be implemented by Transco for the Project. It is Transco's intent that this document be used to support the Biological Opinion (BO) that will be prepared for the Project by the U.S. Fish and Wildlife Service (USFWS). This document includes a detailed description of the Project's impacts to resources that are under the jurisdiction of the USFWS, in particular those impacts that are unique to pipeline projects.

It is not the intent of this document to summarize all of the previous correspondence with USFWS and the Georgia Department of Natural Resources (GDNR) regarding protected species. All prior correspondence can be found with the Project March 2015 FERC Application, FERC Supplemental Filing (July 2015), FERC Supplemental Filing No. 2 (September 2015) or on the FERC Docket (Docket Nos. PF14-10-000 and CP15-117-000).

SECTION 2

Pipeline Specific Impacts

According to the USFWS, many of the resource impacts associated with the Project are well understood by the USFWS. Forest clearing and surface/subsurface disturbance in particular are common to many projects reviewed by the USFWS and the impacts to biological resources associated with these activities have been addressed in many of the BOs previously prepared by USFWS. As a result, USFWS has not asked for additional information on these impacts, but rather has requested additional discussion about some of the pipeline-specific activities that might have impacts to protected species and habitat that may not be as common. These are described in this section.

2.1 Hydrostatic Test Water

The pipeline must be pressure-tested following construction to ensure that it is capable of safely operating at the design pressure and in compliance with U.S. Department of Transportation regulations in accordance with Code of Federal Regulations Part 192 requirements. This process involves isolating pipe segments (i.e., test sections) with test manifolds, filling each test section of the pipeline with water, pressurizing each test section to a level commensurate with the maximum allowable operating pressure and class location, and then maintaining that pressure for a period of up to 8 hours. The pipeline is hydrostatically tested after completing the backfilling and all construction work that would directly affect the pipe. If leaks are found, the leaks are repaired and that section of pipe retested until specifications are met (Argonne Labs 2007).

Depending on the location of the pipeline, the water used in a hydrostatic test is drawn from a local river, stream, or lake; taken from municipal supplies; or trucked to the site. Water for hydrostatic testing generally is obtained from surface water sources through specific agreements with landowners and in accordance with federal, state, and local regulations. Once hydrostatic testing is completed, hydrostatic test water is discharged according to permit conditions and agency requirements.

Typically, surface water sources are used where available and the remainder of this discussion related to withdrawal of water for use in hydrostatic testing is related to withdrawal of surface waters. In some cases the surface water may be used several times in different test sections (i.e., pushed from one test section to the next) by using gravity and or machines inside the pipeline, known as “pigs”, that can move the water along the pipeline. This process minimizes the amount of water that is needed for hydrostatic testing, but relatively large volumes are usually still needed – testing of an 8.3-mile-long test section of 24-inch diameter pipe would require approximately 1,000,000 gallons, and testing of a 5.3-mile long section of 30-inch diameter test section would require approximately 1,000,000 gallons.

Current proposed withdrawal volumes, sources, average annual flow in cubic feet per second (cfs), maximum withdrawal rates (in cfs), and estimated time of year of withdrawal/discharge are listed in **Table 2-1** in Attachment B. Transco does not currently propose to transfer water from one 8-digit hydrologic unit code (HUC) to another 8-digit HUC (i.e., complete an interbasin transfer, or IBT) or introduce any additives (biocides, drying agents) to water to be used for hydrostatic testing. Transco will utilize best management practices (BMPs) described below to minimize impacts to resources during withdrawal and discharge of hydrostatic test water.

Potential impacts to biological resources can occur during both withdrawal and discharge of hydrostatic test water. During withdrawal, small organisms and certain non-motile life stages of other organisms could be entrained or impinged on intake screens. If done improperly, discharge of hydrostatic test water in an upland area can result in turbid water entering a waterbody which can impact aquatic species in that or other downstream waterbodies. A brief discussion of the Project procedures for withdrawal and discharge of hydrostatic test water is provided below.

Withdrawal of Hydrostatic Test Water

During hydrostatic test water withdrawals, the Contractor will maintain adequate flow rates in the waterbody (no more than a one percent reduction in flow rate) to protect aquatic life and provide for downstream uses in compliance with regulatory and permit requirements. In the event that primary test water sources do not contain adequate flow rates to support the hydrostatic test water withdrawal without affecting downstream uses and resources, alternative water sources will be used.

At the request of GDNR and USFWS, withdrawal of water from the Conasauga and Coosawattee Rivers will be completed between August and March to avoid spring spawning species, if at all possible. If, for test sections proposed to be filled from the Conasauga and/or Coosawattee Rivers, a need for significant volumes of hydrostatic test water occurs outside of this time frame, Transco will consult with USFWS and GDNR to determine an acceptable strategy for completing this withdrawal, or will identify an alternate water source.

To obtain water from a surface waterbody, a fill pump will be placed at the waterbody's edge and connected to a hydrostatic test fill line (steel pipe or hose) placed along the ground and attached to the hydrostatic test header. The intake screen of the pump will have a surface area sufficient to maintain average withdrawal speed at or below the agency-requested intake velocity (measured at the screen) and will be screened with a 0.1-inch mesh to significantly reduce entrainment of debris and fish. The fill pump engine will be placed in a plastic-lined bermed or metal containment area to prevent potential spills or leaks from reaching the ground or the waterbody. The fill pump will be continuously monitored during operation. Transco's Environmental Inspector (EI) will regularly inspect the water intake screen for debris and entrained fish. Transco is proposing to use a flotation device on the intake end to pump water from several feet below the water surface. Withdrawing water from this depth will minimize stream bank disturbance and reduce uptake of sediment from the bed of the waterbody. Transco will move the intake and floatation device into and out of the water by an excavator boom and cable. No equipment will enter the water during water withdrawal.

Water withdrawn for hydrostatic testing will be allowed to remain in the pipeline for up to 30 days (or as permit conditions allow) before being discharged.

Protective measures, including those provided by the USFWS and GDNR, that will be implemented during hydrostatic test water filling and discharge operations include the following:

- Utilizing an intake screen with a screened slot opening of approximately 0.1 inch;
- Maintaining an agency-approved intake velocity, as measured/calculated at the intake screen;
- Withdrawing water from the Conasauga and Coosawattee Rivers between August and March, to avoid spring spawning species, if at all possible;
- Staging/work areas for filling the pipeline with water will be located a minimum of 100 feet from the waterbody or wetland boundary if topographic conditions permit. The Contractor will install temporary sediment filter devices adjacent to all streams to prevent sediments from leaving the construction site;
- The intake hose and screen will be kept off the bottom of the waterbody to prevent uptake of sediment;
- Refueling of construction equipment will be conducted a minimum distance of 100 feet from the stream or a wetland; and
- Pumps used for hydrostatic testing within 100 feet of any waterbody or wetland will be operated and refueled within secondary containment as detailed in the Project's Spill Prevention, Control, and Countermeasures Plan.

In addition, the pipe used for the Project is internally coated with an inert epoxy and would not be expected to leach any potential chemicals of concern into the hydrostatic test water.

Discharge of Hydrostatic Test Water

Prior to construction, Transco will obtain water withdrawal and discharge permits that may be required by local regulatory agencies. The Contractor will be required to follow all permit requirements for withdrawal and discharge of test waters. Upon completion of hydrostatic testing, the hydrostatic test water will be sampled, tested, and treated or filtered, as necessary to reduce pollutant levels or remove suspended particles from the water, as required by applicable discharge permit requirements. If required, additional water quality testing will be conducted throughout discharge operations in accordance with permit conditions.

After satisfactory sampling test results are confirmed, the water will be returned to the same watershed (8-digit HUC) from which it was originally withdrawn. Hydrostatic test water will be discharged either directly into a waterbody or in an upland area. At certain locations with specific approval from USFWS and GDNR, water used for hydrostatic testing may be discharged directly back into the waterbody from which it was removed. Negotiations to define the required equipment, discharge rates, time-of-year restrictions and BMPs to be utilized at these locations are currently underway with the USFWS and GDNR. For upland disposal, water used for hydrostatic testing will be released through an energy dissipater (e.g., welded steel baffling device) in vegetated upland areas within and adjacent to the existing Construction ROW. The rate of discharge flow will be controlled to prevent erosion. Additional practices, such as the use of plastic sheeting or other material to prevent scour, will be used, as necessary, to prevent erosion during dewatering. Water will be discharged to an upland area in the same watershed as the water was taken and at a sufficient distance to prevent the overland transport of aquatic nuisance species into a water feature. For these reasons, no treatment of hydrostatic test water for aquatic nuisance species is required.

If overland flow is likely to occur at the point of discharge, the pathway of the water will be armored. This armoring will be removed along with the energy dissipation structure after discharge is completed. Overland flow will be dissipated at upland discharge locations. The discharge operations will be regularly monitored to ensure compliance with Project permit requirements.

Although the discussion above focused solely on potential biological impacts related to withdrawal of surface waters, both surface water and municipal (i.e., chlorinated) water will be discharged during the Project. When municipal water is used for hydrostatic testing, it will be sampled for/treated for specific compounds (e.g., chlorine) prior to discharge if required. When surface water is used, Transco will not add any biocides to the water. Also, because the pipe to be tested includes only new pipe, testing of discharge water for oil and grease will not be required prior to disposal.

As a result of following these industry standard measures, and agency-recommended measures, Transco does not anticipate that withdrawal of water to be used for hydrostatic test water or discharge of water used for hydrostatic testing of new pipe and pipeline components will have significant, permanent or long-term effects on the biological (aquatic) resources in any of the waterbodies from which this water is withdrawn.

2.2 Horizontal Directional Drill

The HDD construction method is a process by which a pipeline is installed beneath a given feature. Typically, minimal surface disturbance occurs between the entry and exit points of the HDD. The feasibility of using HDD and the length of pipeline that can be installed using this method depends on factors such as access to entry and exit points, subsurface conditions (geology), entry and exit elevations, terrain, availability of workspace, and pipe diameter.

An HDD crossing is a multi-stage process consisting of establishing a small-diameter pilot hole along a crossing profile followed by enlargement of the pilot hole (reaming) to accommodate pullback of the pipeline. The pilot hole is drilled using rotation cutting and/or jetting with a jetting assembly attached to the drill pipe. The cutting action of the drill head is remotely operated to control its orientation and direction. Bentonite (a non-toxic, naturally occurring sedimentary clay composed of weathered and aged volcanic ash) is mixed with water (known as "slurry water") to form drilling fluid that is delivered to the cutting head through the drill string to provide the hydraulic cutting action, lubricate the drill bit, help stabilize the hole, and remove cutting spoil as the drilling fluid is returned to the entry point. While other compounds may also be added to the drilling fluid to improve its efficacy, the compounds are not considered toxic or hazardous. A drawing that illustrates the stages of a typical HDD crossing is provided in Attachment A.

Water used to create slurry water is typically withdrawn from a nearby surface waterbody, in many cases the waterbody that is being crossed via HDD. **Table 2-2** in Attachment B lists the proposed water sources and volumes to be used for the HDD activities under each of the waterbodies proposed to be crossed using HDD technology, as well as other information regarding the specific location of the withdrawal point, estimated time of year of withdrawal, and basic instream habitat at the withdrawal location. Municipal water will be used for slurry water for the HDD crossing of Holly Creek to avoid potential impacts to Holly Creek that could result from withdrawal of water from this waterbody.

Withdrawal procedures for water used to create slurry water will be the same as those described above for withdrawal of hydrostatic test water. As a result, Transco does not anticipate that withdrawal of water to be used for slurry water will have significant, permanent or long-term effects on the biological (aquatic) resources in any of the waterbodies from which this water is withdrawn.

Once the HDD effort is complete, the drilling fluid, which contains a mixture of bentonite, slurry water, and rock cuttings will be removed from the site and disposed. For the Project, this may be accomplished by registering the compound as a "Soil Amendment" with the Georgia Department of Agriculture, and either donating or selling the material to local farmers. Disposal of the drilling fluid in this way would have a net beneficial effect and no adverse impact on biological resources. If this disposal method is not feasible, the material will be taken to an approved landfill for disposal.

Transco proposes to initiate all HDD crossings as early as possible during construction, hopefully as early as August 2016, however that schedule could slip into winter and spring months due to unforeseen construction delays. Low flow conditions are possible during any time of year but typically consist of the summer and early fall months per USFWS (i.e., June to November). When practicable, HDD crossings in the Etowah, Coosawattee, Holly, and Conasauga basins will be completed between June and November. All HDD entry and exit points are located a minimum of 150 feet from the top-of-bank of any major waterbody (Chattahoochee River, Coosawattee River, Holly Creek, and Conasauga River).

In the case of a "frac-out", Transco will follow the procedures in the Project's HDD Contingency Plan, filed with FERC in March 2015. Although this Plan does not specify monitoring of drilling mud to observe if it has congealed, all work will be stopped on observance of such a release. Transco's response to a frac-out also includes notification of appropriate agencies, collection of water samples, appropriate containment measures, and removal of excess drilling mud in the waterbody. In addition, Transco will have appropriately trained personnel to oversee all HDD activities and monitor pressure gauges and drilling returns for loss of drilling fluid pressure or other indications of a frac-out. Regular inspections of the crossed waterbody(ies) by the Project's EIs will also be completed during all active drilling activities Please refer to the Project's Horizontal Directional Drill Contingency Plan for more information.

Transco proposes to clear vegetation within a 10-foot-wide line-of-sight corridor within the 50-foot Permanent ROW between the entry and exit points of each HDD during construction of the Project and will maintain this 10-foot-wide corridor within the 50-foot Permanent ROW in an herbaceous vegetation state during operation of the Project. The clearing and maintenance activities along the cleared corridor will be performed to facilitate aerial patrol surveys, leak surveys, and pipeline marker installations. The cleared corridor will also limit potential tree / shrub root damage to the pipeline and will provide for recognition of the pipeline presence for the public, excavators, and emergency responders.

Transco will not clear vegetation within wetlands or riparian vegetation between the entry and exit points of each HDD within the 50-foot Permanent ROW with the exception of limited riparian vegetation clearing to provide access to waterbodies that are proposed sources of hydrostatic test water.

2.3 Wetland and Waterbody Construction Procedures

Unlike linear transportation projects, construction of a natural gas pipeline will result in no filling of any wetland or waterbody. As a result the Project is anticipated to be authorized by the U.S. Army Corps of Engineers (USACE) under a Nationwide Permit 12. However, because the process for construction through wetlands and waterbodies is different for pipelines than many other linear projects, a brief description of the process for each is provided below.

2.3.1 Wetlands

Construction techniques within wetlands will be consistent with Transco's Wetland and Waterbody Construction and Mitigation Procedures (Procedures) and federal and state permits. Transco will obtain appropriate permits associated with crossing jurisdictional wetlands. Transco will install appropriate BMPs, as identified in Transco's Procedures to minimize the potential for impacts to wetlands.

Transco will generally utilize a typical 75-foot-wide construction ROW through wetlands. The methods of pipeline construction and the required construction work area (CWA) width in wetlands will depend upon the soil stability and the existing use and condition of the wetland. Transco's Procedures provide additional detail regarding construction activities within saturated wetlands. Where soils are unstable and saturated, stable temporary work surfaces within the wetlands may be constructed. Travel pads or wooden mats are possible methods of stabilization. Typically, extra work spaces (EWSs) are located a minimum of 50 feet from the edge of wetlands. If a riparian wetland is located adjacent to a waterbody, EWS may be requested and placed in the wetland. Vegetation will be cut to ground level within wetlands. Grading and stump removal will be performed only over the trench, except where safety conditions require additional removal on the working side of the right-of-way (ROW).

The construction procedures used to cross unsaturated wetlands will be similar to those used in dry land areas. Topsoil will be segregated in unsaturated wetlands in the same manner as previously described for agricultural lands. Trench plugs will remain in the trench prior to entering a wetland if the trench contains water. The trench plugs are designed to minimize sediment discharges into the wetland from the upland areas up-gradient and down-gradient of the wetland. Points at which the trench enters and exits the wetland will be sealed with trench sack breakers or foam breakers to maintain the hydrologic integrity of the wetland, where deemed necessary by an EI. State-required BMPs, as included in the Project National Pollutant Discharge Elimination System (NPDES) Permit, will be installed at edges of the CWA in wetlands where there is a possibility for spoil to flow into undisturbed areas of the wetlands. Backfill will be well compacted, especially near the edges of the wetlands. Excess backfill will be spread over adjacent upland areas and stabilized during cleanup. After completion of construction, topographic conditions and contours in wetlands will be restored as similar as practicable to the original topographic conditions and contours.

Wetland impacts from construction will be short-term and localized due to the nature of the Project. There will be no permanent fill in wetlands associated with the Project. Mitigation for permanent conversion of wetland vegetation cover will be determined through consultation with the USACE. Construction techniques will be used to minimize workspace requirements, preserve the seed bank (topsoil segregation), and promote germination (restore grades and avoid compaction) to facilitate recovery following construction.

2.3.2 Waterbodies

Construction techniques within waterbodies will be consistent with Transco's Procedures and federal and state permits. Transco also will utilize appropriate BMPs as identified in the Project NPDES

Permit to minimize the potential for impacts to waterbodies. Additional discussion about the agency review and oversight related to waterbody crossings is provided in the Dalton Expansion Project Waterbody Crossing, Restoration and Maintenance Procedures document provided in Attachment C. This document also includes a detailed discussion of potential waterbody impacts during each construction phase, and the Project’s water quality impacts.

Transco will generally require a typical 75-foot-wide construction ROW through waterbodies (where feasible) to allow for the installation of equipment crossings. Transco proposes to cross most waterbodies that have perceivable flow at the time of crossing using the dry-ditch method, which includes the flume method or the dam and pump method, described below. Certain waterbodies, including the Etowah River, Snake Creek, Wahoo Creek, and Wolf Creek are proposed to be crossed by a wet open-cut crossing method. Based on ongoing constructability analysis, other waterbodies may also be proposed for coffer-dam crossings or wet open-cut crossings. Upland construction techniques will be used to cross waterbodies when there is no perceivable flow at the time of crossing. Equipment to perform a dry-ditch crossing will be onsite as a contingency should perceptible flow in waterbodies and ditches begin during construction.

Waterbody crossings will be perpendicular to the flow where practicable. Grading at approaches to waterbodies may be required to create a safe work surface and to allow the necessary area for pipe bending. If grading is required, it will be directed away from the waterbody to reduce the possibility of disturbed soils being transported into the waterbody by wind or water erosion.

Transco will follow the requirements in the Project's Plan and Procedures, NPDES Permit and associated Erosion, Sedimentation, and Plan (ESPCP) during ROW clearing and pipeline construction. As described in the Project’s Plan and Procedures, typical temporary BMPs will be installed immediately after initial disturbance of the soil and will 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. Typical temporary BMPs followed or installed include: diversion terraces, sediment barriers, trench plugs, diversion trenches, slope breakers, driveable berms, application of mulch, seeding, use of equipment bridges across certain wetlands and waterbodies, and use of equipment mats in saturated areas. Drawings that illustrate the placement and general construction methods for these BMPs are provided in Attachment A.

At a given location, the time from clearing to trenching, pipe installation, backfilling and temporary revegetation will be less than 12 weeks. As required by the Project's Plan and Procedures, final grading, topsoil replacement, and installation of permanent erosion control structures will be completed within 14 days after backfilling the trench (10 days in residential areas). If seasonal or other weather conditions prevent compliance with these time frames, temporary erosion controls will be maintained until conditions allow completion of cleanup/restoration.

Temporary equipment crossings (bridges) will be placed across waterbodies to allow for construction equipment to cross the waterbodies with minimal impact during construction. Temporary equipment crossings will be used for construction equipment except clearing and trenching equipment. Equipment crossings may consist of prefabricated construction mats, rail flat cars, flexi-float or other temporary bridges (Bailey bridges), or flume installations. Flume installations include suitably sized flumes and a travel surface consisting of rock fill, sandbags, timber mats, or timber riprap. At equipment bridge locations, care will be taken to minimize disturbance of the waterbody bank and bottom. Equipment crossings are typically installed during the clearing and grading phases.

At waterbody crossings where rock is not encountered, Transco will place the pipeline deep enough to avoid the potential for scour to expose or uncover the pipe or a minimum of 5 feet below the bottom of the waterbody channel. Where practicable, material excavated from the trench will be stockpiled beyond or upland of the waterbody banks and generally used as backfill unless federal or state permits specify differently. Containment structures for removed material typically will include approved sediment barriers, compost filter socks, silt fences, or straw bales, and will serve to minimize the potential for soil to enter the waterbody.

A backhoe, clam dredge, dragline, or other similar equipment may be used to excavate the trench at small waterbodies along the ROW. Construction activities at a minor waterbody crossing will typically be completed within 1 to 2 days. The introduction of sediment into the waterbody from disturbed upland areas will be minimized by placing and maintaining sediment barriers (silt fences and/or straw bales) at the waterbody crossing.

The ROW will be prepared on either side of the waterbody prior to the construction of the actual crossing to limit the time required for construction of a waterbody crossing. Trees will be preserved to the extent practicable when crossing through forested waterbody banks. The waterbody channel will be returned to its original contour to the extent practicable following construction, unless requested otherwise by the agencies.

A description of the dam and pump and flume crossing methods is provided in the Dalton Expansion Project Waterbody Crossing, Restoration and Maintenance Procedures document provided in Attachment C. Please refer to Attachment A for a graphical depiction of these crossing methods.

2.3.2.1 Wet Open-Cut Crossing

Unlike the dry-crossing methods described above, wet open-cut crossings are completed without attempting to isolate the work space from the water. This type of crossing is typically a “last-resort”, used only where it is not feasible to complete a bore, HDD or other dry-type crossing. Special consideration for this type of crossing will be required from the USACE, and specially designed turbidity control measures will be required to minimize impacts to surface water quality. For the proposed open-cut crossing of the Etowah River, a detailed crossing plan has been prepared. Although wet, open-cut crossings can have the potential to generate more in-stream turbidity that dry-crossing methods, they are typically accomplished in a much shorter time frame, resulting in a shorter duration of turbidity-creating activities. Please refer to Attachment A for a graphical depiction of this crossing method.

2.3.2.2 Rock Substrates and Blasting in Water

Bedrock has been identified at a number of waterbodies crossed by the proposed Project, including the Etowah River. Shallow bedrock that cannot be excavated using mechanical means may be encountered during Project construction, and blasting would be required for ditch excavation in these areas. Based on geotechnical investigation completed at the Etowah River, blasting will likely be required to excavate the trench through this waterbody. At all other waterbodies, a decision about whether blasting will be required will be made in the field, based on actual field conditions. All of the Project’s blasting activities will be completed in accordance with the Project’s Blasting Plan.

Mitigation measures that would be implemented to minimize or avoid impacts on aquatic resources during blasting include:

- Consolidating blasting events into to the minimum number necessary to safely construct the waterbody crossing
- Implementing a delay between successive detonations to minimize instantaneous pressures
- Limiting the number of charges to the minimum number necessary to safely construct the waterbody crossing
- Burying charges to specific depths to minimize upwards blast pressure or directing blast pressure into the air to reduce water impacts (in areas of shallow water)
- Deploy the downstream silt curtain (included in the Etowah River Construction Plan) through all phases of work in the waterbody to serve as a partial physical barrier for fish entering the waterbody crossing area

At locations where bedrock is encountered at a waterbody crossing, it will be tested for rippability (i.e., removal using heavy equipment and not blasting) using an excavator. Rippable rock will be removed using heavy equipment, and rock that is not rippable will be loosened/fractured by blasting and then removed using an excavator. The pipe will be covered by a minimum of five feet of fill, so the trench will be seven to ten feet in depth, depending on the pipe diameter. The river bed will be restored as close as practicable to its original grade following backfilling of the trench.

2.3.2.3 Excavated Material Storage in Waterbodies

In accordance with Transco's Procedures, all spoil from minor and intermediate waterbody crossings, and upland spoil from waterbody crossings must be placed in the ROW at least 50 feet from water's edge or in additional work areas. At waterbody crossings that are too wide for material to be efficiently removed to an upland storage area (i.e., major waterbodies, and the Etowah River in particular) spoil removed from the trench may be temporarily stored in the waterbody. Other major waterbodies in which blasting is required might also meet these criteria.

2.3.2.4 Equipment Used for Large Waterbody Crossings

Excavation in the waterbodies will be done by an excavator except for those instances where blasting is required. In those instances drilling the rock will be required (typically with a drill attached to an excavator). Per Transco's Procedures, in-stream work at all minor waterbodies (water width of 10 feet or less at the time of crossing) will be completed in 24 hours. At intermediate waterbodies, those more than 10 feet in width and less than 100 feet in width at the time of crossing, all in-stream work will be completed in 48 hours, unless there is rock or site specific conditions that make completion within 48 hours infeasible. Major waterbody crossings (over 100 feet in width) can require several days to six weeks, depending on many factors, including the size of the waterbody, the water flow rate, which crossing method is utilized, rippability of the rock substrate, bank steepness, and proximity of upland workspace.

2.3.2.5 Waterbody and Waterbody Bank Restoration

Permanent BMPs that will be used to minimize long-term erosion and stream sedimentation in the ROW include: trench breakers, diversion terraces, and revegetation. During restoration, Transco will return all waterbody banks and channels as close as practicable to the original, preconstruction contours, unless requested otherwise by the Agencies. As specified in the Project's Procedures, for open-cut crossings, waterbody banks will be stabilized and temporary sediment barriers will be installed within 24 hours of completing instream construction activities. Erosion control fabric or a functional equivalent will be installed on waterbody banks at the time of final bank recontouring. Synthetic monofilament mesh/netted erosion control materials will not be used in areas designated as sensitive wildlife habitat unless the product is specifically designed to minimize harm to wildlife. Erosion control fabric will be anchored with staples or other appropriate devices. Disturbed areas will be replanted with native species of conservation grasses, legumes, and woody species, similar in density to adjacent undisturbed lands. A permanent slope breaker will be installed across the construction ROW at all waterbody crossings.

2.3.2.6 Minimizing ATV Use

To reduce the potential use of the ROW by unauthorized users, Transco would implement construction and restoration measures (e.g., replacing fences after construction) and work closely with land management agencies, local law enforcement, and private landowners to deter unauthorized access to and use of the ROW. To each owner or manager of forested lands, Transco will offer install and maintain measures to control unauthorized vehicle access to the right-of-way. These measures may include:

- signs;
- fences with locking gates;
- slash and timber barriers, pipe barriers, or a line of boulders across the ROW; and
- planting conifers or other appropriate trees or shrubs across the right-of-way.

2.3.2.7 Post-Construction Inspections and Maintenance

As required by the Project's Procedures, Transco will inspect all waterbody crossings quarterly for the first year to ensure that they are properly restored, that no unusual erosion is ongoing and that revegetation is proceeding as expected. Annual inspection will be performed thereafter. In the event that a waterbody bed and banks are not stable, Transco will undertake remedial efforts to correct the observed deficiencies.

In addition, Transco's standard operating procedure (SOP) requires annual, on the ground inspection of all waterbody crossings, weekly inspection (via aerial patrol) of all waterbody crossings in High Consequence Areas identified as Class 1 and 2, and semi-annual inspection (via aerial patrol) of all waterbody crossings in High Consequence Areas identified as Class 3. Remedial actions are completed as needed.

Transco is required to conduct post-construction maintenance (mowing/bush-hogging) of the ROW approximately once every three years. Equipment used for this maintenance effort typically comprises tractors towing mowing equipment. When possible and the crossing can be safely completed tractors will cross smaller waterbodies by simply driving across the waterbody or using crossings where available. For larger waterbodies tractors will navigate around the crossing using public roads. Because the ROW maintenance is only completed every three years or so, significant adverse impacts to aquatic species are not anticipated.

Survey Methodology

During the initial planning and environmental review of the Project, Transco completed consultations with the USFWS and GDNR to identify rare, threatened, or endangered wildlife species that could potentially be affected by Project construction activities. Beginning in July 2014, Transco has been completing environmental field surveys for the Project along a typical 600-foot-wide survey corridor centered on the proposed pipeline centerline. The purpose of these surveys is to identify and define the extent of waters of the United States, including wetlands and waterbodies, as well as general habitat and vegetation characteristics along the route. Although these environmental surveys were not intended to include survey for any particular species, results and habitat observations from these environmental surveys were used to inform the decision about where species-specific surveys would or would not be required. Description of individual species and the preferred habitat for these species is provided in Resource Report 3 – *Fish, Wildlife, and Vegetation*, provided as part of the Environmental Report filed with FERC in March 2015 (FERC Docket No. CP-15-117-000). This information is summarized in **Table 3-1**, in Attachment B.

Based on Transco's research and ongoing agency consultation, biological resources potentially affected by the Project can be subdivided into three categories: aquatic species, terrestrial species (plants), and mammal species (bats). Methodologies for survey for each of these groups are provided below. Results are provided in the following Section.

3.1 Aquatic Species

Using the final route alignment, Transco compiled a list of approximately 350 waterbodies proposed to be crossed by the Project and the 12-digit HUC associated with each. In consultation with USFWS (Dr. Robin Goodloe) and GNDR (Dr. Brett Albanese [fish] and Jason Wisniewski [mussels]), and using several GDNR geographic information systems databases, two lists of species were identified for each of the waterbodies. The first list is species known to be present in the waterbody, and the second is a list of species that are potentially present in the waterbody. Conservation measures were identified for each waterbody, including typical avoidance timeframes and construction methods. The resulting list was reviewed by USFWS, GDNR, and Transco. A total of 76 waterbodies was identified to be surveyed. Dinkins Biological Consulting provided additional input on the species to be surveyed. The final list of waterbodies to be surveyed, general survey methodology, and species for which particular survey was/will be completed is provided in Attachment D. The final list and Scope of Work for Survey of Rare and Protected Aquatic Species Along Path of Proposed Dalton Expansion Project, Georgia were approved by the USFWS and GDNR prior to initiation of any aquatic surveys. Further, the list has been revised and updated to incorporate recent minor changes in the Project route. These changes have also been reviewed and approved by USFWS and GDNR.

A copy of the agency-approved scope of work for surveys for aquatic species is provided in Attachment D. At all waterbodies except the Etowah River, surveys were completed using seine nets where all collected fish were counted and identified, with permanent collection of representative species at each waterbody. At the Etowah River, *Nothonotus* darters were collected using dip nets, but all other observations of aquatic species were visual only. Preserved specimens, placed in a 10 percent formalin solution at the time of capture, were identified to species, measured to the nearest millimeter (standard length), and permanently archived at the University of Tennessee Research Collection of Fishes in Knoxville.

3.2 Terrestrial Species

Using data provided by USFWS and GDNR, Transco prepared a list of terrestrial species known to occur in the general Project area, and a list of MP ranges where these species could or are known to occur. Transco utilized data provided in letters from the USFWS dated December 18, 2014 and April 23, 2015 for federal-listed species. GDNR Natural Heritage Database findings documented in letters dated June 4, 2014, April 15, 2015 and April 23, 2015 were used to identify terrestrial and state-listed species and their likely habitat locations. At a meeting at the USFWS office in Athens, GA, the list of terrestrial species was reviewed by the USFWS and GDNR species experts and Transco. Each terrestrial species of concern was individually discussed, including the required habitat, general MP/location range, survey season, and survey protocols. Following the discussion, the table was finalized and approved by the USFWS and GDNR for use during surveys. The final approved documents are provided in Attachment D.

In general, pedestrian surveys were completed within the approved MP range during the appropriate time of year to allow positive identification (i.e., flowering season or fruiting season) of each species. In a few cases, slightly out-of-season surveys were completed with approval of the USFWS and GDNR.

3.3 Bat Species

USFWS and GDNR provided bat survey requirements that were incorporated into the approved bat study plan provided in Attachment D. Surveys were required for northern long-eared bats and Indiana bats at nine mist net sites in seven core areas. Nine sites were sampled for a total of 36 net-nights (nine survey sites x two nights x two net sets per survey night) and 18 detector-nights (nine survey sites x two nights x one detector per survey night).

Acoustic detectors (Anabat, Titley Scientific) programmed to record from 30 minutes before sunset to 30 minutes after sunrise. Detector sensitivity was set with audio ratios at 16 and division ratios at 8. Detectors were placed in the general vicinity of mist-net sites and about one foot above ground level, with the microphone angled upwards at a 45° angle. Units were placed away from clutter that would reduce biologists' ability to record high-quality, search-phase calls of bats. Prior to each deployment and retrieval, a "scratch test" was performed to ensure the unit was properly detecting ultrasonic frequencies.

Calls were identified to species using both quantitative (automated identification programs) and qualitative (visual observation) methods. Recorded files were downloaded and analyzed using two automated-identification software programs: Kaleidoscope (version 3.1.4B, Wildlife Acoustics, Inc.) and EchoClass (version 3.1, Eric Britzke, ERDC Environmental Laboratory). For each program, the settings recommended by the developer were used, in accordance with the USFWS 2015 Range-Wide Indiana Bat Summer Survey Guidelines. If either program attributed calls to an endangered or threatened species (i.e., northern long-eared bats, Indiana bats, or gray bats [*M. grisescens*]), all recordings from the site and night of interest were visually vetted by a federally permitted biologist. Call sequences with fewer than five consecutive search-phase pulses or excessive noise interference were generally considered not suitable for species-specific identification.

Mist-net sites were surveyed starting at sunset for a minimum of five hours each night. Mist-nets were varying widths, contained four shelves, and were up to 9-meters above the ground. Nets were made from 75-denier, 2-ply polyester, with a 38-millimeter mesh, and obtained from the manufacturer, Avinet, Inc. (Dryden, New York). Custom-built net poles were used that allowed two or more nets to be stacked on top of each other.

If a northern long-eared bat or an Indiana bat was captured, a radio transmitter (Blackburn Transmitters) was attached to allow biologists to identify roost trees. If a bat met the minimum 2015 USFWS weight requirements, a transmitter was attached to the postscapular region of the animal using a non-toxic adhesive. Bats were tracked to roost trees starting the day after capture, and continuing for seven consecutive days. Roost trees were each monitored at dusk for two consecutive nights. Each emergence count began approximately one hour before dusk and ended when it was too dark to detect bat movements. The USFWS Georgia Field Office was notified by telephone in case of early cessation of telemetry.

SECTION 4

Results

4.1 Aquatic Species

Surveys for aquatic species were completed by Dinkins Biological Consulting and initiated in August 2015. As of November 1, 2015, a total of sixty-nine (69) of the seventy-six (76) waterbodies proposed for survey have been surveyed. The remaining seven waterbodies were either located on parcels without approved access or were closed for survey due to hunting season restrictions. Surveys on these parcels will be completed in late winter-early spring of 2016, and results provided to the USFWS, GDNR and FERC as soon as practicable following surveys.

Out of sixty-nine waterbodies surveyed, thirteen were dry, eight had no fish species present, and forty-eight had fish species present. Collection of representative fish species was performed at all of the waterbodies with fish present, except the Etowah River. Twenty-six of the waterbodies surveyed are in the Apalachicola-Chattahoochee-Flint River Basin (Sites 1- 27) and forty-three are in the Coosa-Mobile River Basin.

In total, 62 fish species were captured or collected during aquatic species surveys (See **Table 4-1** in Attachment B), and a total of 3,328 individual fish were collected, not including 20 *Nothonotus* darters that were captured and submitted for MtDNA analysis (see discussion below). Using these data, a species profile was completed at each of the waterbodies with fish species present. These profiles are presented as **Table 4-2** in Attachment B. Two Run Creek had the largest fish species diversity, with a total of 20 species recorded, and a total of more than 477 individuals collected. Snails and crayfish were also observed in Two Run Creek. A total of seventeen species were observed at Polecat Creek. Fourteen species were observed at Snake Creek, Crawfish Creek, and Pumpkinvine Creek. Survey (Site) locations are illustrated on **Figures 4.1a – 4.1g** in Attachment A.

Crayfish were observed at twenty-five waterbodies, and snails (no protected species) were observed at eleven waterbodies, all of which also had fish populations. Live mussels were observed at only four waterbodies, while fresh dead mussels were noted at three waterbodies and relict mussels were found at four waterbodies (see below).

Table 4-3 in Attachment B provides a presence/absence summary of the aquatic fauna identified during field surveys completed for the Project. This table also identifies waterbodies that have yet to be surveyed, waterbodies that were dry at the time of survey, waterbodies where Cherokee darter (*Etheostoma scotti* - federal- and state-threatened), highscale shiner (*Notropis hypsilepis* - state rare), bluestripe shiner (*Cyprinella callitaenia*), and lined chub (*Hybopsis lineapunctata* - state rare) were observed.

At three unnamed tributaries to Holly Creek, suitable spawning habitat for trispot darter (*Etheostoma trisella*) was identified during 2015 field surveys. Field surveys at these waterbodies will be completed in late winter-early spring to see if this species is using these areas for spawning. A separate report will be provided to USFWS and GDNR after these surveys are complete. These waterbodies are also denoted on **Table 4-3** in Attachment B.

Note that as part of a mitigation effort, Transco collected *Nothonotus* specimens at the Etowah River for mitochondrial DNA analysis. As of the date of this report, the results from this analysis have not been provided. When results of the DNA analysis are completed, they will be provided to the USFWS, GDNR and FERC.

The table below provides a list of waterbodies that have been surveyed as of November 1, 2015 that were found to contain Cherokee darter, the only confirmed federal-protected (federal threatened and state threatened) species identified to date, and highscale shiner, bluestripe shiner, and lined chub the only state-protected (state rare) species identified to date.

Protected Aquatic Species Identified in Surveys Completed up to November 1, 2015

Site Number	Feature ID	MP	Feature Name	Species Identified
1	S2BCO008	5.1	Wahoo Creek	highscale shiner (SR)
7	S3CCA018	10.3	Snake Creek	bluestripe shiner (SR)
17	S3CDO012	22.3	Crawfish Creek	highscale shiner (SR)
18	S3CDO018	22.5	Dog River	bluestripe shiner (SR)
20	S1ADO012	23.5	Keaton Creek	highscale shiner (SR)
22	S1ADO010	25.7	Keaton Creek	highscale shiner (SR)
29	S3CPA004	34.9	Shed Creek	Cherokee darter (FT, ST)
30	S3CPA030	36.0	Little Pumpkinvine Creek	Cherokee darter (FT, ST), lined chub (SR)
32	S3CPA025	38.3	Pumpkinvine Creek	Cherokee darter (FT, ST), lined chub (SR)
33	S3CPA028	40.2	UNT to Pumpkinvine Creek	Cherokee darter (FT, ST)
34	S3CPA058	42.0	UNT to Pumpkinvine Creek	Cherokee darter (FT, ST)
35	S3CPA137	52.3 Reroute	Marable Creek	Cherokee darter (FT, ST)
36	S3CPA154	55.2 Reroute	Jackson Creek	Cherokee darter (FT, ST)
36A	S3CPA156	55.3 Reroute	UNT to Jackson Creek	Cherokee darter (FT, ST)
37	S2BBA007	54.5	Raccoon Creek	*Etheostoma (Ulocentra)* darter [a]

FT – Federal threatened, ST – State threatened. SR – State rare

[a] The juvenile darter captured at this location was unable to be determined to species, but was identified as a snubnose darter *Etheostoma (Ulocentra)*. The capture site is located downstream of the generally accepted range of the Cherokee darter (outside the Talladega Upland subdivision of the Piedmont ecoregion) and in the contact zone between the Cherokee darter and Coosa darter. Analysis of mitochondrial DNA would be required to identify this specimen to species.

Five live mussels were observed including: southern rainbow (*Villosa vibex* – Site 18); little spectaclecase (*Villosa lienosa* – Site 25); pistolgrip (*Quadrula verrucosa* – Site 44); Etowah heelsplitter (*Lasmigona etowaensis* – Site 64); and Coosa creekshell (*Villosa umbrans* – Site 64). Fresh dead mussels that were collected included: southern rainbow (Site 7); southern pocketbook (*Lampsilis ornate* – Site 44); and fragile papershell (*Leptodea fragilis* – Site 44). Relict shells observed included: southern rainbow (Site 20); little spectaclecase (Site 25); fragile papershell (Site 44); Etowah heelsplitter (Site 64); and Coosa creekshell (Site 64). None of these mussels are federal- or state-listed protected species.

Burrowing crayfish chimneys were observed by the aquatic survey team from Dinkins Biological Consulting (DBC) at several locations along the stream corridors being crossed by the proposed pipeline. Personal communication from Gerry Dinkins of DBC and Dr. Chris Skelton of Georgia State College and University, a noted expert on Georgia crayfish, regarding the location of these crayfish chimneys revealed that these chimneys were unlikely to have been made by rare or protected species based on the location and river drainage where they were observed.

4.2 Terrestrial Species

Surveys for terrestrial species were initiated in March 2015 and were completed by CH2M biologists. Two populations of protected terrestrial species and one candidate species have been identified along the Project route to date. These include the state-rare piedmont barren strawberry (*Waldsteinia lobata*), the Federally-threatened large-flowered skullcap (*Scutellaria montana*), and state-threatened Georgia aster (*Symphyotrichum georgianum*). A population of approximately 100 individuals of piedmont barren strawberry was identified within the CWA at approximate MP 13.6 (**Figure 4.2a**). These individuals occurred within the mixed oak/hickory forest adjacent to an existing ROW, on the north facing slope of an unnamed tributary to Wolf Creek. The surrounding habitat was of moderate quality and included mature white oak (*Quercus alba*), southern red oak (*Quercus falcata*), and mockernut hickory (*Carya tomentosa*) canopy trees. The habitat exhibited some edge effects from the adjacent ROW including small erosional drainage features and moderate shrub species growth. The plants were spread over an area of approximately 2,100 square feet and appeared in good health. Individuals were easily identifiable due to the rosette leaf structure along with several individuals exhibiting the distinctive 5-petal flower structure.

Two populations totaling approximately 104 individuals of large-flowered skullcap were identified within the CWA between MP 92.4 and MP 92.8 (**Figure 4.2b**). These populations occurred within open wooded areas immediately east of the Conasauga River. The surrounding habitat was of moderate to high quality and included mature red maple (*Acer rubrum*), white oak, southern red oak, mockernut hickory, shagbark hickory (*Carya ovata*), and a small number of loblolly pine (*Pinus taeda*) canopy trees. A small amount of habitat was encroached upon by Japanese honeysuckle (*Lonicera japonica*), and Chinese privet (*Ligustrum sinense*).The plants were spread over an area of approximately 0.9 acre and included healthy, vigorous, flowering and non-flowering individuals. Individuals were easily identifiable due to the white and pale blue, hood-like flowers.

Although formal surveys were not proposed, approximately seven populations of the candidate species Georgia aster were identified within and adjacent to the CWA between MP 38.2 and MP 40.2 (**Figure 4.2c**). These populations occurred along the eastern edge of the existing ROW and generally on southern-facing slopes. The surrounding habitat included regularly-maintained herbaceous vegetation of New England aster (*Symphyotrichum novae-angliae*), white heath aster (*Symphyotrichum ericoides*), Canada goldenrod (*Solidago canadensis*), common blackberry (*Rubus argutus*), and common lespedeza (*Lespedeza cuneata*). Individuals appeared very healthy and vigorous, likely due to regularly-scheduled ROW maintenance, and since this area is managed under a Candidate Conservation Agreement between USFWS and Georgia Power. Individual plants were readily-identifiable due to the large purple ray flowers and reddish disk flowers.

In coordination with the USFWS and GDNR, formal surveys were proposed for 11 total species including five federal-listed and six state-listed. Aside from the piedmont barren strawberry, large-flowered skullcap, and Georgia aster, no other listed species have been identified as a result of terrestrial surveys. Additional federal-listed species under formal survey include Tennessee yellow-eyed grass (*Cypripedium parviflorum*) (98-percent complete), Georgia rockcress (*Arabis georgiana*) (89-percent complete), monkeyface orchid (*Platanthera integrilabia*) (100-percent complete), and little amphianthus (*Amphianthus pusillus*) (100-percent complete). Additional state-listed species under formal survey include Alabama warbonnet (*Jamesianthus alabamensis*) (97-percent complete), Ozark bunchflower (*Veratrum woodii*) (97-percent complete), spreading yellow foxglove (*Aureolaria patula*) (100-percent complete), bay star-vine (*Schisandra glabra*) (99-percent complete), and Cumberland rose gentian (*Sabatia capitata*) (100-percent complete). Of note one existing and previously documented population of little amphianthus was confirmed, within the Clinton Nature Preserve. This population is located more than 240 feet from the current Project route, near MP 25.3. Maps that illustrate the survey locations for these species are provided in Attachment A as **Figures 4.2d – 4.2l**, respectively.

A summary of the unique, sensitive, and protected vegetation crossed by the Current Project Route including details about the areas that were surveyed and areas that have yet to be surveyed (due to lack of survey access) is provided in **Table 4-4** in Attachment B.

4.3 Bat Species

Surveys occurred from July 22 to August 8, 2015 at nine sites along the Current Project Route, in accordance with the survey protocol provided by USFWS and GDNR. Surveys were completed by Civil & Environmental Consultants, Inc. (CEC). This section provides a detailed description of the mist-net sites and presents the results of the acoustic, netting, and telemetry efforts. General location maps that illustrate the locations of mist-net sites are provided as **Figure 4.3a** and **Figure 4.3b**, and aerial-photograph-based maps that illustrate placement of the detector and net at each site are provided as **Figures 4.3c-4.3k** in Attachment A. **Figure 4.3l** and **Figure 4.3m** identify the location of the roost tree identified during this study. Photographs of each site and field data sheets summarizing data collected at each site are provided in Attachment E. No adverse weather conditions were encountered during the study period.

Site 1 of the Project was located on private property near Georgia State Highway 5 (**Figure 4.3c**). The forested section of the property was dominated by black birch (*Betula nigra*) and tulip poplar (*Liriodendron tulipifera*). The understory was relatively uncluttered. The two mist-net sets extended across the pipeline right-of-way, between forest edges. Net A was 7.8-meters high by 12-meters wide, while Net B was 7.8-meters high by 12-meters wide. The acoustic detector was placed just west of the utility right-of-way, situated such that it would record across Snake Creek, which bisected the mist-netting corridor, but was too large to mist-net survey.

Site 2 of the Project was located on private property near East Carroll Road (**Figure 4.3d**). The forested section of the property was dominated by longleaf pine (*Pinus palustrus*), tulip poplar, American sycamore (*Platanus occidentalis*), and southern red oak (*Quercus falcata*). The understory of the woodlot was dense and cluttered. The flight corridors and foraging areas within this site included Wolf Creek and a forest corridor along the pipeline right-of-way. Both mist-nets were placed across corridors, with the edges of nets abutting the forest. Net A (6-meters high by 9- meters wide) was placed across the intersection of these two corridors. Net B (6-meters high by 12-meters wide) was placed across the right-of-way, as was the acoustic detector.

Site 3 of the Project was located on private property near North Helton Road (**Figure 4.3e**). The forested section of the property was dominated by southern red oak, blackjack oak (*Q. marilandica*), American sweetgum (*Liquidambar styraciflua*), longleaf pine, and tulip poplar. The understory of the woodlot was dense and cluttered near Net A, but open adjacent to Net B. The flight corridor within the forested area consisted of an extended driveway, across which both mist-net sets were extended. The acoustic detector was also set up along the driveway, opposite the mist nets. Net A and B were 6-meters high by 12 and 9-meters wide, respectively.

Site 4 of the Project was located on private property near Cole Road (**Figure 4.3f**). The forested section of the property was dominated by black oak (*Q. nigra*) and river birch. The understory of the forest was moderately cluttered. The flight corridors and foraging areas within this site included Cole Road and Keaton Creek. Both mist-net sets extended across the creek, while the acoustic unit was placed at the intersection of Keaton Creek and Cole Road. Net A was 7.8-meters high by 9- meters wide and Net B was 7.8-meters high by 6-meters wide.

Site 5 of the Project was located on private property near Highway 120 (**Figure 4.3g**). The forested section of the property was dominated by American sweetgum, black oak, and loblolly pine (*Pinus taeda*). The understory and subcanopy of the woodlot was dense and cluttered. Net A was 7.8-meters high, 6-meters wide, and extended across a dirt two-track road through the forest. Net B was 7.8-meters high, 9-meters wide, and located across a portion of Little Pumpkinvine Creek, which ran along a utility right-of-way. The acoustic detector was also placed in the right-of-way, and pointed toward Little Pumpkinvine Creek.

Site 6 of the Project was located on private property near Narroway Church Road (**Figure 4.3h**). The forested section of the property was dominated by longleaf pine, swamp white oak (*Q. bicolor*), blackjack oak, American sycamore, and American sweetgum. The understory and subcanopy of the woodlot was dense and cluttered. The flight corridors within the forested areas consisted of two-track dirt roads. Both nets were placed across one such trail, between the edged of the forest. Net A was 6-meters high by 9-meters wide, and Net B was 6-meters high by 12-meters wide. The acoustic detector was placed in an open area adjacent to the road, between the two nets.

Site 7 of the Project was located on private property along Lucas Lane (**Figure 4.3i**). The forested section of the property was a mixed upland forest dominated by Virginia pine (*P. virginiana*), loblolly pine, sourwood (*Oxydendrum arboretum*), and sassafras (*Sassafras albidum*). The understory and midstory of the forest were moderately cluttered, largely due to saplings of the dominant canopy tree species. The flight corridor within the forested areas consisted of dirt access roads, such as Lucas Lane. Nets A and B, both 7.8-meters high by 6-meters wide, were placed across portions of Lucas Lane. On the second night, Net B was replaced with Net C due to lack of captures the first night. Net C was also placed across Lucas Lane, and was 7.8-meters high by 12-meters wide. The acoustic detector was also placed along the road.

Site 8 of the Project was located on private property near Wellons Road (**Figure 4.3j**). The forested section of the property was dominated by a monoculture of loblolly pine. The subcanopy and understory of the forest was closed off by the branches of the trees. The flight corridors within the forested areas included access roads. Nets A and B were extended across a forested access road. Nets A and B were both 7.8-meters high by 9-meters wide. The acoustic detector was also placed on the access road, above the vehicle.

Site 9 of the Project was located on private property near Crazy Larry's Drive (**Figure 4.3k**). The forested section of the property was dominated by shagbark hickory (*Carya ovata*) and chestnut oak (*Q. montana*). The midstory and understory of the forest was cluttered with saplings and branches of dominant tree species. Flight corridors through the forest included a dirt, two-track road and a utility right-of-way. Nets A (7.8-meters high by 12-meters wide) and B (7-meters high by 9- meters wide) were extended across the dirt road. The acoustic detector was placed in the utility right-of-way.

Field biologists recorded a total of 2,991 calls made by bats of 10 different species according to Kaleidoscope, and 2,214 calls of 11 different species according to EchoClass (**Table 4-5**). Kaleidoscope and EchoClass attributed 145 and 44 calls, respectively, as belonging to gray bats. Qualitative identification re-assigned all of these calls as belonging to either eastern red bats (*Lasiurus borealis*), tri-colored bats (*Perimyotis subflavus*), or little brown bats. Some of these calls were also deemed not suitable for identification because they contained fewer than five consecutive echolocation pulses or noise interference. Each software also attributed some calls to Indiana bats—seven from Kaleidoscope and 10 from EchoClass. Visual inspection of these calls either reclassified them as little brown bats (*M. lucifugus*) or contained fewer than five echolocation pulses in the call. No calls of northern long-eared bats were identified by either software program or the visual observer.

A total of 92 bats representing five species were captured (See Table below). The most common species captured was the big brown bat (*Eptesicus fuscus*; 55 percent), followed by the eastern red bat (*Lasiurus borealis*; 35 percent), tri-colored bat (*Perimyotis subflavus*; 4.5 percent), evening bat (*Nycticeius humeralis*; 4.5 percent), and northern long-eared bat (Myotis septentrionalis; 1 percent). No Indiana bats were captured.

Bat Capture Results

Species	Adult						Juvenile		Escape [c]	Total
	Male [a]		Female [b]				Male	Female		
	TD	NR	P	L	PL	NR				
Big brown bat	2	6				33	2	7	1	51
Eastern red bat	1	6			1	5	8	7	4	32
Tri-colored bat						1	1	1	1	4
Evening Bat	1					1	1	1		4
Northern long-eared bat						1				1
Total	**4**	**12**	**0**	**0**	**1**	**41**	**12**	**16**	**6**	**92**

a - TD: Testes descended, NR: Non-reproductive

b - P: Pregnant, L: Lactating, PL: Post-lactating, NR: Non-reproductive

c - Escaped bats do not have age, sex, or reproductive information recorded

The single northern long-eared bat captured during the survey was an adult, non-reproductive female (right forearm length = 34 mm, mass = 6.4 grams), captured at 2126 on July 31, 2015 at Site 4. The bat was photographed (Appendix B), affixed with a transmitter, and released unharmed. The transmitter (172.664 MHz) weighed 0.4 grams.

Radio-tracking efforts began the day following release, on August 1, 2015. On the first day, the transmitter was found on the ground, suggesting the bat had shed it from its body possibly entering or exiting a roost. Biologists returned to the location that evening in an attempt to observe bats emerge from a nearby tree. Two bats emerged from a live American sweetgum (664-1) about 50 feet from where the transmitter was found. Another emergence count was conducted the following night (August 2), but no bats were observed emerging. The assumed roost tree had a diameter at breast height of 10 inches and was approximately 40 feet tall. No exfoliating bark or visible cavities were observed. The possible roost is located approximately 0.40 miles from the capture site, within a lowland woodlot containing mature canopy trees and a cluttered understory. An appropriate 1.5-mile radius buffer zone was placed around the assumed roost tree (see **Figure 4.3l** and **Figure 4.3m**).

SECTION 5

Mitigation

5.1 General Avoidance, Minimization and Mitigation Measures

Transco has committed to avoiding and minimizing impacts to sensitive biological resources to the extent practicable. Among the avoidance measures implemented to date for the Project include moving the proposed route to avoid Drummond Swamp, highly sensitive portions of Raccoon Creek (i.e., by incorporating Major Route Alternative H/Raccoon Creek Watershed Alternative), and Clinton Nature Preserve. In addition, Transco has proposed to cross the Conasauga River, Coosawattee River, Crane Eater Creek, and Holly Creek using HDD technology. Further, Transco will implement several design and construction measures that are intended to minimize impacts to resources, including wetlands and waterbodies. These measures include:

- Routing Project facilities to avoid sensitive resources where possible;
- Maximizing collocation with existing pipeline and utility ROWs;
- Limiting the construction and operation ROW widths to the minimum necessary to safely construct the Project;
- Adhering to the measures outlined in the Transco's Plan and Procedures, the Project's NPDES permit and the ESPCP prepared specifically for the Project;
- Adhering to the measures outlined in the Transco's Migratory Bird Conservation Plan, prepared specifically for the Project;
- Expediting construction through wetlands and waterbodies;
- Mitigating for impacts to wetlands and waterbodies, as required, in accordance with the requirements of the USACE, which will result in no net loss of waterbody function or value;
- Restoring impacted lands in accordance with Transco's Plan and Procedures, the GDNR Stream Buffer Variance permit conditions, USACE permit conditions, and other relevant permit conditions and requirements; and
- Implementing invasive species monitoring and control measures.

To ensure that the permit conditions and resource protection measures are appropriately followed and applied, Transco will utilize Environmental Inspectors (EIs) that will report directly to the lead federal agency for the Project (FERC). The EIs will be responsible for compliance with the requirements of Transco's Plan and Procedures, the environmental conditions of the FERC Order, mitigation measures proposed by Transco, other environmental permits and approvals, and environmental requirements in landowner easement agreements.

5.2 Specific Biological Mitigation Measures

During discussions with USFWS and GDNR regarding aquatic species, the focus was on identifying waterbodies that are crossed by the Project that either are known to support particular protected species or potentially support protected species. For each of these waterbodies, USFWS and GDNR provided a list of conservation measures that are specific to the known/potential species. As provided in Attachment D, typical conservation measures include avoidance during certain times of year, standard waterbody crossing procedures required by FERC, HDD, and negative survey. Because of the focus on implementation of conservation measures to protect aquatic species, USFWS and GDNR identified a very limited number of waterbodies for which survey was required. Following incorporation of Major Route Alternative H/Raccoon Creek Watershed Alternative and a few other reroutes, several waterbodies were avoided by the Project (and removed from the survey-required list) and one additional waterbody was identified by USFWS and GDNR for sampling for aquatic species. For the Current Project Route, USFWS and GDNR requested survey of ten waterbodies for a relatively small list of species, including fine lined pocketbook, coldwater darter, Coosa creekshell, lined chub, Cherokee darter, and highscale shiner. Survey for only a subset of these species was requested at each of the ten waterbodies.

Transco's approach to performing aquatic surveys was to collect as much data as practical. These data will be used during discussions with USFWS and GDNR to determine appropriate conservation measures for waterbodies affected by the Project. As a result and during subsequent consultation between USFWS, GDNR, Transco and Dinkins Biological Consulting, a total of 78 waterbodies (68 more waterbodies than requested by the agencies) were identified for survey for aquatic species. At the Etowah River, a species inventory for mussels and snails was completed (very few species found), targeted surveys for *Nothonotus* were completed (and samples were collected – see discussion below), and observational data for other fish species were collected. At the remaining 77 waterbodies with water at the time of survey, a complete species inventory (fish, snails and mussels) has been or will be compiled. All crayfish captured in seine nets to date have been confirmed to not be Etowah crayfish. Holly Creek is one of the waterbodies proposed for survey, though it is proposed to be crossed using HDD technology. At the request of USFWS, a species inventory will be developed for Holly Creek, since such data are rare in the area of the Project's crossing. These species inventories are provided in **Table 4-2** in Attachment B and are considered to represent a mitigation effort for the Project.

Early consultation with USFWS identified the need for mitochondrial DNA (MtDNA) analysis to allow differentiation between greenbreast darter (not protected) and Etowah darter (federal-endangered). Following several discussions with USFWS and GDNR, a *Nothonotus* MtDNA Sampling Protocol was developed and approved by the USFWS and GDNR. This protocol species collection of *Nothonotus* specimens and fin clips from the Etowah River. Although it was also proposed to collect Nothonotus darters from Raccoon Creek, none were observed during field survey. At the Etowah River, targeted surveys for *Nothonotus* darters have been completed and specimens collected have been forwarded to the laboratory for analysis of mitochondrial DNA. A copy of the *Nothonotus* MtDNA Sampling Protocol is provided in Attachment D.

Bat and Terrestrial Species Conservation Mitigation

Transco has signed a Memorandum of Understanding (MOU) with USFWS regarding conservation measures for bats and terrestrial species. A copy of the MOU is provided in Attachment F. By working closely with the USFWS, Transco has been able to identify priority projects and priority land purchases that will not only preserve and protect local species but also have potential to impact bat species across the country. For bat species, Transco will be contributing more than $1.8MM to offset potential losses to occupied summer bat habitat and potential summer bat habitat. Some of this money will be earmarked for a white-nose syndrome (WNS) study at a hibernaculum in northeast Georgia. Positive results from this study could lead to a treatment for WNS for many affected hibernacula. The remainder of the money will be used to purchase priority tracts of land that provide suitable bat habitat.

For impacts to large-flowered skullcap, Transco will adhere to the minimization measures in the MOU, and fund third-party salvage and relocation effort for this species. The costs for salvage, relocation, and monitoring of large-flowered skullcap are $6,000. USFWS will develop a salvage plan for piedmont barren strawberry (not a federal-listed species, but a state rare species) as the Project develops. For impacts to Georgia aster, which is also not a federal-listed species, but is a state threatened species, Transco agreed to minimize effects and fund a third-party protection plan, via the provision of in-lieu mitigation dollars. Georgia aster would be safeguarded during construction and the local aster population augmented after the completion of construction. The third-party costs associated with relocation, propagation of additional Georgia aster stems, and transplanting are $9,000. Additional details can be found in the Guidelines section of the MOU, provided in Appendix D.

Per an agreement with GDNR (Brent Womack), completing the above described conservation mitigation for bats and terrestrial species will satisfy GDNR's mitigation, damage and timber value requirements for the Project's proposed impacts to GDNR-owned land near Johnny Monk Road. In addition, Transco is currently finalizing an agreement with GDNR regarding revegetation of disturbed lands, restoration of impacted roads, and construction restrictions related to managed/scheduled hunts. A final version of the agreement will be provided to USFWS, GDNR and FERC when it is approved and signed.

Aquatic Species Conservation Mitigation

Transco is in the process of negotiating appropriate mitigation for potential impacts to aquatic species. USFWS proposed, and Transco agreed to use an impact credit generator to quantify the monetary amount of mitigation required for aquatic species. The impact credit generator provides total direct and indirect credits based on the attributes of certain waterbodies selected by USFWS, and, using estimated costs per credit from a local conservation bank, was used to calculate total dollars required to offset potential impacts to aquatic species. As detailed on the spreadsheet provided by USFWS and presented in Attachment F, total costs are slightly more than $930,000. A written agreement on the total aquatic species mitigation cost (via in-lieu fee contribution) is expected no later than mid-December 2015, and a resulting agreement specifying the terms of the agreement will be provided soon thereafter.

USFWS, GDNR and The Nature Conservancy (TNC) have provided a list of high priority projects and activities that might be funded by Transco's in-lieu fee contribution. High priority projects identified to date include: replacement of an existing bridge over Raccoon Creek with a bottomless culvert or other infrastructure that will allow unrestricted fish passage under Raccoon Creek Road; funding of constructed/restored wetlands in the Conasauga River basin that will be designed to treat certain point source and non-point-source pollution; mussel reintroduction into the upper Coosa basin; and renovation of a recently installed crossing over Dill Creek to allow better flow. Transco expects that the in-lieu fee contribution will be utilized to fund or subsidize many or most of these important projects.

SECTION 6

Conclusions

A total of three federal-listed (Cherokee darter, large-flowered skullcap, and northern long-eared bat - threatened) and five state-listed (Cherokee darter and Georgia aster – threatened; highscale shiner, bluestripe shiner, lined chub, and piedmont barren strawberry – rare) species were identified in areas to be impacted by the Project. These include four fish species, three plant species and one mammal.

Project activities are not expected to jeopardize the existence of any of the species identified during field surveys completed for the Project, or species not specifically observed during field surveys for the Project but presumed to be present in the Project area. Transco's avoidance efforts have resulted in elimination or significant reduction of potential impacts to particularly sensitive features, such as Raccoon Creek, Drummond Swamp, and Holly Creek. Where impacts are unavoidable, Transco's minimization efforts are expected to reduce potential impacts to protected species to the extent practicable. The Project's extensive oversight program, consisting of multiple Environmental Inspectors, regular site inspections by FERC, active water quality monitoring in selected areas while certain activities are underway, and Agency inspections, as well as adherence to all permit conditions and restrictions, will provide real-time data that will be used to ensure that resources are being adequately protected. Post-construction inspection of restored areas, including waterbodies and their banks and riparian areas will be completed for a minimum of five years, or until certain restoration milestones are met, and then at least semi-annually thereafter (via aerial patrol). Where required, remedial action will be taken where required to ensure that these resources are properly restored, which will minimize long-term impacts on aquatic habitat.

Although the Project will affect protected species, Transco has worked closely with USFWS and GDNR to identify mitigation opportunities that will offset these impacts and provide a direct and tangible benefit to the protected resources. With the USFWS alone, Transco will provide approximately $2,700,000 to offset impacts to bat, plant and aquatic species and fund high-priority conservation projects, including white-nose syndrome research, purchase of priority tracts of land for bat and other species habitat preservation, and stream channel manipulations to allow/increase fish passage and water flow. Transco has funded MtDNA sampling and analysis for darter species in the Etowah River, developed species profiles for more than 40 waterbodies crossed by the Project, documented several populations of protected plant and aquatic species, provided presence/absence data for protected plant species, and provided basic information on bat habitat within discrete sections of the Project route through bat surveys. At the request of USFWS, constructed riffle crossings will be established at certain waterbody crossings, which should not only decrease the potential for headward erosion at these crossings but also provide suitable habitat for aquatic species.

Considering the scope and extent of the proposed mitigation efforts, Transco believes that the Project will not have any significant adverse impact on protected species and may have a net positive impact.

SECTION 7

References

2007. Argonne National Laboratory. Natural Gas Pipeline Technology Overview. Document No. AML/EVS/TM/08-5. 68 pp.

The attachments to this appendix are too voluminous to include in this environmental assessment. They are available for viewing on the FERC website at http://www.ferc.gov. Using the "eLibrary" link, select "General Search" from the eLibrary menu, enter the selected date range and "Docket No." excluding the last three digits (i.e., CP15-117-000, PF14-10-000), and follow the instructions. For assistance please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, contact 202-502-8659. The category/accession number for this submittal is 20151203-5066.

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