Office of Energy Projects

August 2018

Dominion Energy Transmission, Inc. **Docket No. CP18-45-000**

Sweden Valley Project

Environmental Assessment

Cooperating Agency

US Army Corps of Engineers

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply, Refer To:
OEP/DG2E/Gas 3
Dominion Energy Transmission, Inc.
Sweden Valley Project
Docket No. CP18-45-000

TO THE INTERESTED PARTY:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the Sweden Valley Project (Project), proposed by Dominion Energy Transmission, Inc. (Dominion) in the above-referenced docket. The Project is designed to provide 120 million cubic feet per day of firm transportation service from an existing point of interconnection located on Dominion's Line TL-489 in Clinton County, Pennsylvania to a new point of interconnection between Dominion and Tennessee Gas Pipeline in Tuscarawas County, Ohio.

The EA assesses the potential environmental effects of constructing and operating the Project in accordance with the requirements of the National Environmental Policy Act (NEPA). The FERC staff concludes that approval of the Project, with appropriate mitigating measures, would not constitute a major federal action significantly affecting the quality of the human environment.

The U.S. Army Corps of Engineers (USACE) participated as cooperating agency in the preparation of the EA. Cooperating agencies have jurisdiction by law or special expertise with respect to resources potentially affected by the proposal and participate in the NEPA analysis. The USACE would adopt the EA to fulfill their agency's NEPA obligations and would use the EA and supporting documentation to consider the issuance of Clean Water Act Section 404 permit.

The Sweden Valley Project would consist of the following actions in Ohio:

- install approximately 1.7 miles of 20-inch-diameter pipeline lateral in Tuscarawas County;
- re-wheel the compressors on three-existing centrifugal compression sets at Dominion's existing Newark Compressor Station in Licking County;

- construct a new Metering and Regulation (M&R) site in Tuscarawas County; and
- install a new pig launcher/receiver on the TL-653 OH Pipeline Lateral in Tuscarawas County.

In Pennsylvania, the Project would include:

- installation of approximately 3.2 miles of 24-inch-diameter pipeline looping in Greene County;
- installation of regulation equipment at the South Bend Compressor Station in Armstrong County;
- installation of M&R equipment at a new interconnect in Clinton County; and
- installation of new mainline gate assemblies on the TL-654 Loop in Greene County.

The Commission mailed a copy of the *Notice of Availability* 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; other interested individuals and groups; and newspapers and libraries in the Project area. The EA is only available in electronic format. It may be viewed and downloaded from the FERC's website (www.ferc.gov), on the Environmental Documents page (https://www.ferc.gov/industries/gas/enviro/eis.asp). In addition, the EA can be accessed by using the eLibrary link on the FERC's website. Click on the eLibrary link (https://www.ferc.gov/docs-filing/elibrary.asp), click on General Search (https://elibrary.ferc.gov/idmws/search/fercgensearch.asp), and enter the docket number in the "Docket Number" field, excluding the last three digits (i.e. CP18-45). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659.

Any person wishing to comment on the EA may do so. Your comments should focus on the EA's disclosure and discussion of potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they would be. To ensure that the Commission has the opportunity to consider your comments prior to making its decision on these projects, it is important that we receive your comments in Washington, DC on or before 5:00pm Eastern Time on **October 1, 2018**.

For your convenience, there are three methods you can use to file your comments to the Commission. In all instances, please reference the project docket number (CP18-

45) with your submission. The Commission encourages electronic filing of comments and has staff available to assist you at (866) 208-3676 or FercOnlineSupport@ferc.gov.

(1) You can file your comments electronically using the eComment feature on the Commission's website (www.ferc.gov) under the link to Documents and Filings. Using eComment is an easy method for submitting brief, test-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. A comment on a particular project is considered a "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 (18 CFR 385.214). Only intervenors have the right to seek rehearing or judicial review of the Commission's decision. The Commission may grant 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 which no other party can adequately represent. **Simply filing environmental comments would 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. The eLibrary link also provides access to the texts of all 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.

SWEDEN VALLEY PROJECT
ENVIRONMENTAL ASSESSMENT
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TECHNICAL ABBREVIATIONS AND ACRONYMS

AQCR	Air Quality Control Region
amsl	above mean sea level
ATWS	additional temporary workspace
CAA	Clean Air Act
CEQ	Council on Environmental Quality
Certificate	Certificate of Public Convenience and Necessity
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalents
Commission	Federal Energy Regulatory Commission
dB	decibels
dBA	A-weighted decibels
DOT	United States Department of Transportation
Dth/d	dekatherms per day
E&SCP	Erosion and Sedimentation Control Plan
EA	environmental assessment
EI	environmental inspector
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FR	Federal Register
GHG	greenhouse gases
HAPs	hazardous air pollutants
hp	horsepower
L_{dn}	day-night sound level
L_{eq}	24-hour equivalent sound level
M&R	metering and regulating
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MP	milepost
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969 (as amended)
NGA	Natural Gas Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NO_2	nitrous dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conversation Service
NRHP	National Register of Historic Places
NSA	noise sensitive area
NSR	New Source Review
O_3	ozone

OEP	Office of Energy Projects
Plan	FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan*
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
Procedures	FERC's *Wetland and Waterbody Construction and Mitigation Procedures*
Project	Sweden Valley Project
PSD	Prevention of Significant Deterioration
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
tpy	tons per year
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compound

SECTION A – PROPOSED ACTION

A.1. Introduction

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) to assess the impacts of constructing and operating certain natural gas transmission pipeline and associated facilities proposed by Dominion Energy Transmission, Inc. (Dominion) in Docket No. CP18-45-000. Dominion filed an application on January 10, 2018, pursuant to section 7(c) of the Natural Gas Action (NGA), and Part 157 of the Commission's regulations for a Certificate of Public Convenience and Necessity (Certificate) to construct, install, operate, and maintain certain natural gas transmission facilities to be located in Licking and Tuscarawas Counties, Ohio (OH) and Armstrong, Clinton, and Greene Counties, Pennsylvania (PA). Specifically, Dominion is seeking authorization for the Sweden Valley Project (Project), which would enable Dominion to provide 120 million cubic feet per day of firm transportation service from Pennsylvania to an interconnect with the Tennessee Gas Pipeline Company, LLC in Ohio.

The FERC is the lead federal agency for the preparation of this EA. The USACE is a federal cooperating agency who assisted us in preparing this EA because they have jurisdiction by law or special expertise with respect to environmental impacts associated with Dominion's proposal.

We[1] prepared this EA in compliance with the requirements of the National Environmental Policy Act (NEPA); the Council on Environmental Quality's (CEQ) regulations for implementing the NEPA (Title 40 Code of Federal Regulations [CFR], Parts 1500-1508); and the Commission's regulations at 18 CFR 380. Our principal purposes in preparing this EA are to:

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

The EA is an integral part of the Commission's decision-making process in determining whether to authorize Dominion's proposal.

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

A.2. Purpose and Need

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.

The purpose of the Project is to transport natural gas from Pennsylvania to Ohio. Specifically, the primary receipt point for the customer would be at an existing point of interconnection located on Dominion's Line TL-489 in Clinton County, PA. The primary delivery point would be a new point of interconnection between Dominion and Tennessee Gas Pipeline in Tuscarawas County, OH. Dominion has executed a binding agreement to provide 120,000 dekatherms per day of firm transportation capacity that would be created by the Project.

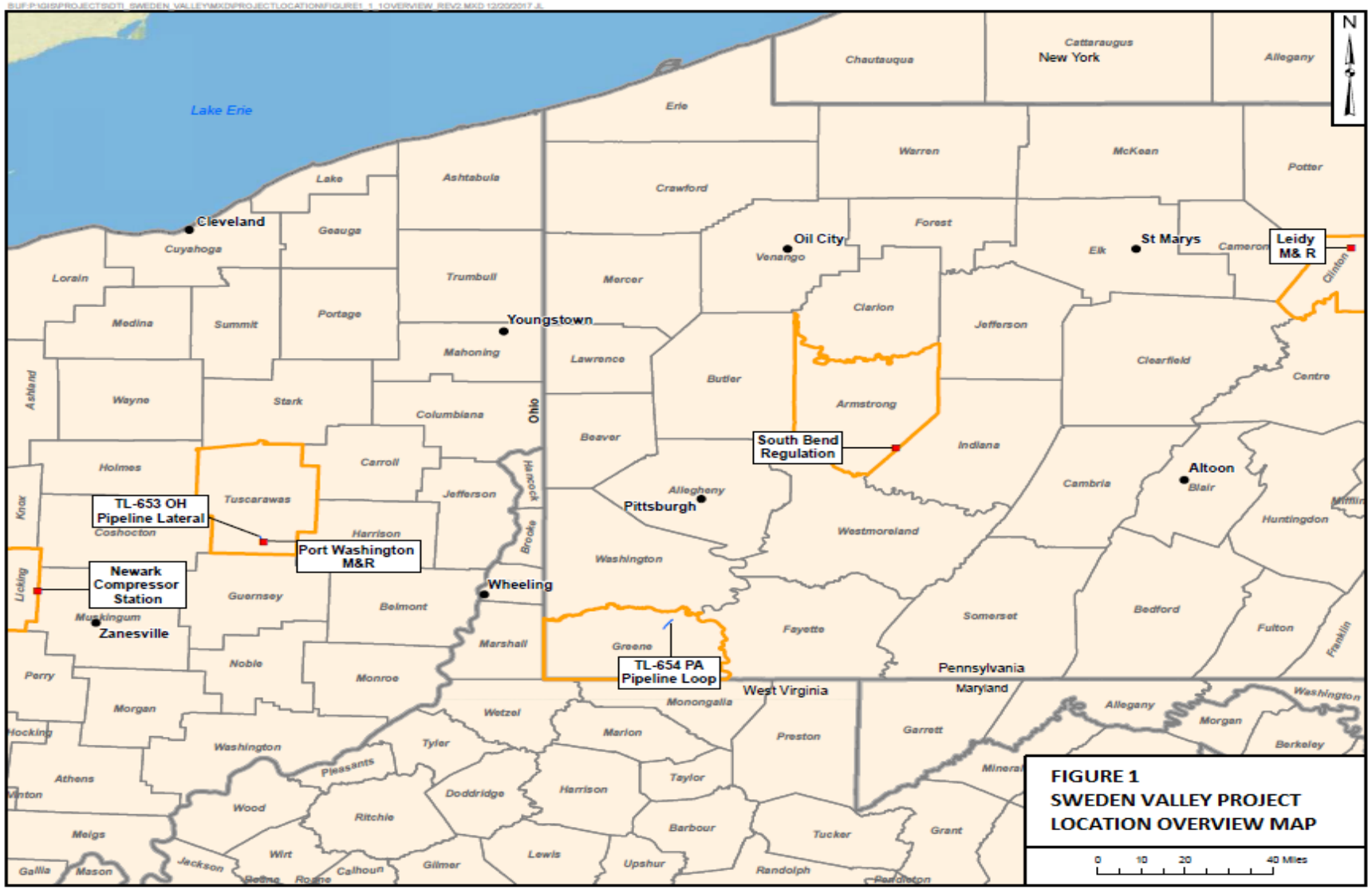
A.3. Proposed Facilities

Dominion proposes to construct, modify and operate the following facilities in OH and PA:

- approximately 1.7 miles (TL-653) of new 20-inch-diameter pipeline lateral south of Dominion's existing Gilmore Metering and Regulation (M&R) station in Tuscarawas County, OH.
- approximately 3.2 miles (TL-654) of new 24-inch-diameter pipeline looping north of Dominion's existing Crayne Compressor station and parallel to existing Dominion pipeline in Greene County, PA;
- re-wheel the compressors on three existing centrifugal compression sets at Dominion's Newark Compressor Station in Licking County OH;
- a new M&R site with associated equipment to measure gas and regulate pressure at the gas delivery point located at the end of the new TL-653 OH Pipeline Lateral in Tuscarawas County, OH (Port Washington M&R);
- regulation equipment at the south Bend Compressor Station to regulate pressure between existing Dominion pipelines in Armstrong County, PA (South Bend Regulation);
- M&R equipment to measure gas and regulate pressure at a new interconnect between TL-489 and Dominion existing pipeline TL-479 and Ln-50 within the existing Leidy Compressor Station facility in Clinton County, PA (Leidy M&R);
- a pig launcher and valve site at the northern terminus of TL-653 OH Lateral, south of the existing Gilmore M&R Station, and a pig receiver at the southern terminus TL-653 OH Lateral at the new Port Washington M&R;
- new mainline gate valves at the northern terminus of the proposed TL-654 PA Loop.

The general location of the facilities of the Project are shown in figure 1. In addition the photo alignment sheets showing of the Project facilities are show in appendix 2.

Figure 1. Sweden Valley Project – Location Overview Map



A.4. Public Review and Comment

FERC issued a *Notice of Intent to Prepare an Environmental Assessment for the Sweden Valley Project* (NOI) on March 13, 2018. The NOI was published in the Federal Register[2] and was mailed to interested parties including affected landowners; federal, state, and local governmental representatives and agencies; elected officials; environmental and public interest groups; potentially interested Indian tribes; and local libraries and newspapers. Written comments were requested from the public on specific concerns about the Project or issues that should be considered during the preparation of the EA. The public comment period was held from March 13, 2018 to April 13, 2018.

In response to the NOI, we received a total of 15 comments letters; eight of these were in support of the Project from state and local officials; one from Marcellus Shale Coalition supporting the Project; four from tribes and the Bureau of Indian Affairs requesting additional information, and the remaining two from the United States Fish and Wildlife Service (USFWS) and United States Environmental Protection Agency Region III (EPA). The comments addressed purpose and need, water resources and wetlands, geology, vegetation, wildlife, fisheries, and threatened and endangered species, land use and recreation, air quality/greenhouse gas emissions, alternative analysis, tribal cultural resources and national historic preservation act, and cumulative impacts. All substantive comments received have been addressed in this EA.

A.5. Construction and Operational Procedures

The facilities would be designed, constructed, tested, operated, and maintained to conform with or exceed federal, state, and local requirements, including the United States Department of Transportation's (DOT) Minimum Safety Standards in 49 CFR 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards".

Construction Procedures

Affected landowners would be notified before crews mobilize to being survey and staking activities. Survey crews would then stake the limits of construction along the right-of-way and access road, as well as the proposed centerline of the pipe. Resource boundaries would also be flagged at each identified site, which would include any environmental and archaeological resources, geologic and topographic features, other utility crossings, waterbodies, and other features as needed. Erosion and sedimentation controls would be established and maintained during construction. The Project construction work area would be cleared of vegetation. Prior to ground disturbance, the contractor would notify the state One Call systems. The construction work areas would then be graded where necessary to create a safe working platform to construct the Project

[2] 83 FR 12006 (March 19, 2018)

facilities and to allow safe passage of construction equipment and materials. In agricultural and residential lands, or where required by landowner agreements, segregation of topsoils (i.e. sensitive soils) from subsoils would be excavated by rotary trenching machines, track-mounted backhoes, or other similar equipment. Trench spoil would be deposited adjacent to the trench within the construction right-of-way. Pipeline would be lowered into the excavated trench. Once lowered in, the trench would be backfilled and restoration activities would begin.

To minimize the potential for erosion during construction, Dominion would implement numerous measures. Specifically, Dominion would implement the following guidelines:

- Dominion's Erosion and Sedimentation Control Plan (E&SCP)
- FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures);[3]
- United States Army Corps of Engineers (USACE);
- Ohio Environmental Protection Agency (OEPA);
- Ohio Department of Natural Resources (ODNR); and
- Pennsylvania Department of Environmental Protection (PADEP).

Environmental Compliance Inspection and Monitoring

To ensure that erosion and sediment controls are properly implemented and that the facilities would be constructed in compliance with all applicable environmental requirements, Dominion would employ at least one full-time Environmental Inspector (EI) during construction and restoration activities. The EI's duties would comply with those contained in paragraph III.B (Responsibilities of the EI) of the FERC's Plan. FERC staff would also conduct routine inspections during construction.

A.6. Land Requirements

The Project's total land requirements including both temporary and permanent rights-of-way, additional temporary workspace (ATWS), aboveground facilities, and access roads would be approximately 113.9 acres; of which 85.6 acres would be in

[3] The FERC Plan and Procedures are a set of construction and mitigation measures that were developed 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. Note: No variances were requested to the FERC Plan and Procedures.

Pennsylvania and 28.3 acres would be in Ohio. Following the completion of construction activities, areas temporarily affected would be restored to pre-construction conditions. Table 1 provides a summary of the Project land requirements in Ohio and table 2 provides a summary of the Project land requirements in Pennsylvania.

Existing land use along the proposed TL-653 OH Lateral consists of agriculture, forest, developed, and open land. TL-653 OH Lateral would cross three road right-of-ways and eight utility corridors. TL-654 PA Loop would cross six road right-of-ways and 33 utility right-of-ways.

In general, the pipeline facilities would require a permanent right-of-way width of 50 feet for each pipeline. An additional 25 feet of temporary workspace would be used during construction along the entire pipeline construction corridor and then an ATWS of 25 feet would be used in areas where topsoil segregation is required (agricultural and residential areas) or additional space is necessary to facilitate construction (i.e., road, wetland and stream crossing).

Construction of the pipelines associated with the existing facilities would require temporary workspace along the proposed right-of-ways for construction activities, as well as a new permanent operational right-of-way. The pipeline right-of-way would primarily consist of a 75-foot-wide corridor which includes a 50 feet of permanent right-of-way and an additional 25 feet of temporary workspace, collocated with an existing pipeline. On agricultural lands, a 50-foot-wide permanent right-of-way would be maintained.

New permanent right-of-way would be required for the Port Washington M&R, the pig launchers/receivers associated with the new TL-653 OH Lateral, and the TL-654 PA Loop mainline gate valve assemblies.

Dominion is proposing to acquire 50 feet of permanent right-of-way for TL-653. Of this, 30 feet would be shared with Blue Racer's existing 60-foot-wide right-of-way. Dominion would need to obtain an additional 20 feet of permanent right-of-way in addition to the 30 feet being shared.

Dominion indicates that 9 existing public and private roads would be used to access the Project areas. Access roads are shown in appendix 2. All are existing and would require temporary widening up to 25 feet and adding gravel as needed.

Dominion would utilize two pipe storage/contractor yards as part of the Project. Contractor areas and storage of construction materials and equipment would occur at these locations. Gilmore Pipe Yard, in Tuscarawas County, Ohio, located adjacent to the Gilmore Compressor Station and near milepost 0.0 of TL-653 OH Lateral, would utilize approximately 2.9 acres of developed land. Crayne Pipe Yard in Greene County located adjacent to the Crayne Compressor Station, would utilize approximately 2.8 acres of

developed, previously disturbed land, 33.5 acres of open fields, and 0.04 acre of palustrine wetland. The pipe yards would be prepared by stripping topsoil, laying down a geotextile fabric, and gravelling in high traffic areas. Pipe yards would be returned to pre-construction conditions following Project completion.

A.7. Construction Schedule

Dominion plans to begin constructing the Project in January 2019. The pipelines would then generally be constructed one after the other. Tree clearing is expected to occur prior to the end of March 2019 on both pipelines and as necessary at station sites. With the exception of tree clearing, the typical duration of pipeline construction on a parcel, beginning with grading activities and ending with final restoration, would typically be completed within six months. Construction activities would conclude by mid-August for the pipelines, with final tie-ins and restoration continuing to the anticipated in-service date of November 1, 2019.

On a day-to-day basis, construction activities would typically occur 10 hours per day, six days per week; generally between the hours of 6 a.m. and 6 p.m.; however, there may be situations where construction may occur on a 24-hour per day schedule (e.g., stream crossing, hydrostatic testing, and final tie-in welds).

A.8. Non-Jurisdictional Facilities

Occasionally, proposed projects have related facilities that do not come under the jurisdiction of the Commission. Non-jurisdictional facilities are those facilities that are related to the Project and are constructed, owned, and operated by others, but are not subject to FERC jurisdiction.

There is one non-jurisdictional facility that would be constructed in conjunction with this Project. There would need to be one electrical drop from an existing power line at the Port Washington M&R to power metering and regulation equipment. Dominion is consulting with the local electric company. At this time, it is expected that no upgrades would need to be made to that local utility's system to provide power to the facility. The power lines are already near the facility and the overheard line running to the drop would be less than 150 feet long. The new drop would be installed in the fence line of the new Port Washington M&R site (i.e. on property owned by Dominion). Due to the minimum power requirements, we do not anticipate that the local electric company would require other new infrastructure to support service to the station.

Table 1. Project Land Requirements in OH		
Project Component	**Land Affected During Construction (acres)**	**Land Affected During Operation (acres)**
Pipelines		
TL653 OH Lateral	15.3	10.2
Additional Temporary Workspace	2.9	0.00
Subtotal	18.2	10.2
Aboveground Facilities		
Newark Compressor Station	3.0	0.00
Port Washington M&R (includes pig receiver)	0.4	0.40
Additional Temporary Workspace (Port Washington M&R)	1.3	0.00
Subtotal	4.8	0.40
Associated Facilities		
Pig Launcher/Receiver on the TL-653 OH Lateral (north)	0.2	0.2
Additional Temporary Workspace	0.3	0.00
Subtotal	0.5	0.2
Pipe storage/contractor yard		
Gilmore Pipe Yard	2.9	0.00
Access Roads		
Permanent	1.2	1.2
Temporary	0.8	0.00
Subtotal	2.0	1.2
OH Project Totals	28.3	12.00

Table 2. Project Land Requirements in PA		
Project Component	**Land Affected During Construction (acres)**	**Land Affected During Operation (acres)**
Pipelines		
TL-654 PA Loop	28.5	18.9
Additional Temporary Workspace	4.9	0.00
Subtotal	33.4	18.9
Aboveground Facilities		
South Bend Regulation (within the South Bend Compressor Station)	2.7	2.7
Leidy M&R (within Leidy Compressor Station)	8.7	8.7
Subtotal	11.4	11.4
Associated Facilities		
Mainline Gate Valve Assemblies on the TL-654 PA Loop (north)	0.8	0.8
Additional Temporary Workspace	0.9	0.00
Subtotal	1.7	0.8
Pipe storage/contractor yard		
Crayne Pipe Yard	33.5	0.00
Crayne Pipe Yard Additional Temporary Workspace	2.8	0.00
Subtotal	36.3	0.00
Access Roads		
Permanent	2.1	2.1
Temporary	0.7	0.00
Subtotal	2.8	2.1
PA Project Total	85.6	33.2

A.9. Permits and Approvals

Dominion would construct the Project in accordance with all applicable federal, state, and local regulatory requirements. Table 3 provides federal, state, and local environmental permits and approvals associated with the Project.

Table 3. Permits and Approvals for the Project

Agency	Permit/Consultation	Status
Federal		
Federal Energy Regulatory Commission	Certificate of Public Convenience and Necessity	Pending
United States Army Corps of Engineers – Huntington District	Clean Water Act – Section 404 Permit (OH)	Issuance anticipated September 2018
United States Army Corps of Engineers – Pittsburg District	Clean Water Act – Section 404 Permit (PA)	Issuance anticipated December 2018
United States Fish and Wildlife Service – OH Field Office	Section 7 of the Endangered Species Act Consultation	Consultation is ongoing
United States Fish and Wildlife Service – Pa Field Office	Section 7 of the Endangered Species Act Consultation	Consultation is ongoing
Ohio		
Ohio History Connection – State Historic Preservation Office	Section 106 of the National Preservation Act (Cultural Resource Agency Consultation)	Concurrence received May 1, 2017
Ohio Environmental Protection Agency	Clean Air Act General Permit for Pigging Operations	Issuance anticipated December 31, 2018
Ohio Environmental Protection Agency	Clean Air Act – Modification to the Gilmore Compressor Station Title V air Permit	Issuance anticipated December 31, 2018
Ohio Environmental Protection Agency	Clean Water Act – Section 401 water quality – Director's Authorization	Issuance anticipated November 30, 2018
Ohio Department of Natural Resources	Hydrostatic Test Water Discharge Permit	Concurrence received April 19, 2017
Ohio Environmental Protection Agency	Hydrostatic Test Water Discharge Permit	Issuance anticipated February 1, 2019
Pennsylvania		
Pennsylvania Historical and Museum Commission	Section 106 of the National Historic Preservation Act (Cultural Resource Agency Consultation)	Issuances received July 11, 2017

Table 3. Permits and Approvals for the Project		
Agency	**Permit/Consultation**	**Status**
Pennsylvania Department of Environmental Protection	Clean Water Act – Section 401 Water quality (Joint Permit Application)	Issuances anticipated December 22, 2018
Pennsylvania Department of Environmental Protection	Clean air act – Request for Determination for mainline gate valve assemblies at northern terminus of TL-654, South bend Regulation, and Leidy M&R	Issuances anticipated December 31, 2018
Pennsylvania Department of Environmental Protection	ESCGP-2 for TL-654 PA Pipeline Loop, associated facilities, and Crayne Pipe Yard	Issuances anticipated December 31, 2018
Pennsylvania Department of Environmental Protection	Site Specific E&SCP for South Bend Regulation and Leidy M&R	Issuances anticipated December 31, 2018
Pennsylvania Game Commission	PA Threatened and Endangered Species Consultation	Concurrence received May 11, 2017
Pennsylvania Department of Conservation and Natural Resources	PA Threatened and Endangered Species Consultation	Concurrence received May 17, 2017
Pennsylvania Fish and Boat Commission	PA Threatened and Endangered Species Consultation	Concurrence received May 11, 2017
Pennsylvania Department of Transportation	Road Crossing Permit	Issuances anticipated October 1, 2018
Pennsylvania Department of Environmental Protection	Hydrostatic Test Water Discharge Permit	Issuance anticipated February 1, 2019

SECTION B – ENVIRONMENTAL ANALYSIS

Constructing and operating the Project would have temporary, short-term, long-term, and permanent impacts on the environment. 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 to five years. Long-term impacts would eventually recover, but require more than five years. Permanent impacts are defined as lasting throughout the life of the Project.

B.1. Geology

B.1.1. Geologic Setting

Project areas in Ohio are east of the glacial margin in the Muskingum-Pittsburgh Plateau physiographic region of the Allegheny Plateaus section in the Appalachian Plateaus province. This area is characterized by moderately high to high relief (300 to 600 feet above mean sea level [ft. amsl]) with broad valleys that contain outwash terraces (ODNR, 1998). The primary lithology includes Mississippian- and Pennsylvanian-age siltstones, shales, sandstones, and economically important coals and claystones as well as Wisconsinan-age sand, gravel, and lacustrine silt (ODNR, 1998).

Project areas in Pennsylvania are in three different sections of the Appalachian Plateaus province (Pennsylvania Department of Conservation and Natural Resources [PADCNR], 2000), described below.

The TL-654 PA Loop is in the Waynesburg Hills section, characterized by steep, narrow valleys surrounded by abundant hills with narrow hilltops and local relief ranging from 600 to 1,000 ft. amsl. The primary lithology of the Waynesburg Hills section is sandstone, shale, red beds, and limestone (PADCNR, 2000).

The South Bend Regulation site is in the Pittsburgh Low Plateaus section, a smooth to irregular, undulating upland surface cut by numerous narrow, shallow valleys. Local relief between the valley bottoms and upland surfaces may be as much as 600 feet. The primary lithology of the Pittsburgh Low Plateaus section is shale, siltstone, sandstone, limestone, and coal (PADCNR, 2000).

The Leidy M&R is in the Deep Valleys section, an area of very steep, angular valleys interspersed with broad to narrow uplands, with relief up to 1,000 ft. amsl. The primary lithology of the Deep Valleys section is sandstone, siltstone, shale, and conglomerate (PADCNR, 2000).

B.1.2. Mineral Resources

The Project is in a region that contains naturally occurring extractable resources including natural gas/oil, sand and gravel, and coal seams (the Pittsburgh Seam and the Upper Freeport Seam).

A search of oil and gas extraction utilizing the PADEP Oil and Gas Mapping system (2018a) and the ODNR's Oil and Gas Wells Map (2018a) showed that within 0.25 mile of Project facilities there are 40 active, inactive, and abandoned oil/gas wells, the majority of which (26) are in the vicinity of the proposed TL-654 PA Loop. Oil and gas exploration was not identified within 0.25 mile of the Leidy M&R, the Pig Launcher/Receiver on the TL-653 OH Lateral (north), or the Mainline Gate Valves on the TL-654 PA Loop (north). Oil/gas wells within 500 feet of Project facilities are tabulated in further detail in table 4.

Table 4. Oil/Gas Wells within 500 feet of Project Facilities

Nearest Milepost	Distance from Centerline (Feet)	Status
TL-653 OH Lateral		
1.4	225	Active
0.2	376	Inactive
0.6	383	Active
0.8	423	Inactive
0.5	435	Active
1.7	475	Active
TL-654 PA Loop		
0.01	100	Inactive
0.05	223	Active
2.6	271	Active
2.9	476	Active
2.9	476	Active
0.08	480	Active
References: PADEP 2018a, ODNR 2018a		

A search of fuel and non-fuel mineral resources in the Project vicinity utilizing Pennsylvania State University's Mine Map Atlas (2018), the ODNR Mines of Ohio database (2018b), and the PADEP Oil and Gas Mapping system (2018a), showed that the South Bend Regulation site is approximately 0.13 mile south of a historic subsurface coal mine. Furthermore, throughout nearly all of its alignment the TL-654 PA Loop crosses over completely mined out portions of the Pittsburgh Seam, found about 400 to 500 feet below drainage. This coal was mined via room and pillar mining. From approximate MP 2.4 to 3.2, TL-654 PA Loop crosses a permitted area for mining of the Upper Freeport

Seam (positioned approximately 600 feet below the Pittsburgh seam); however, Dominion has confirmed that mining operations were never started.

Underground or surface mining could be permitted near, beneath, or within the permanent right-of-way of pipeline facilities (with coordination between the PADEP Bureau of Mine Safety, Dominion, and the mining company). Based on the location of the aforementioned extractable resources, their operational status, and the coordination that would be required to mine them, we conclude that Project construction and/or operational impacts on fuel and non-fuel mineral resources would not occur, and that facilities would not significantly preclude future mineral extraction.

B.1.3. Geologic and Seismic Hazards

Geologic hazards are natural, physical conditions that can result in damage to land and structures or injury to people. Such hazards typically are seismic-related including earthquakes, surface faulting, and soil liquefaction; landslides, flooding, and karst terrain or ground subsidence hazards.

The shaking during an earthquake can be expressed in terms of the acceleration as a percent of gravity (g). A review of U.S. Geological Survey (USGS) National Seismic Hazard Probability Mapping (2014a) indicates the Project facilities would be in an area with relatively low seismic activity. Additionally, the main risk to pipelines and aboveground facilities would be a slip fault that displaces laterally during an earthquake. Project facilities are not underlain by this type of land feature (USGS, 2006). Given these conditions, we conclude that there is a low potential for damage due to prolonged ground shaking or ground rupture to occur within the Project area.

Soil Liquefaction

Soil liquefaction is a phenomena associated with seismic activity in which saturated, non-cohesive soils temporarily lose their strength and liquefy (i.e., behave like a viscous liquid) when subjected to forces such as intense and prolonged ground shaking. All three of these conditions (non-cohesive soils, near surface saturation, and seismicity) are necessary for soil liquefaction to occur. The Project is in an area with low seismicity and, as such, the potential for soil liquefaction to occur is negligible.

Slope Instability

The EPA expressed concerns regarding the Project crossing areas of steep terrain. USGS landslide incidence and susceptibility mapping shows that the TL-653 OH Lateral and the TL-654 PA Loop pipelines and associated facilities would be in areas of high landslide susceptibility or incidence (USGS, 2014b). Other Project facilities are existing and generally flat from previous grading.

Approximately 37 percent of the proposed pipeline (1.82 miles) would cross slopes greater than 22 percent. Of this, 11 percent of pipeline (0.57 mile) would cross

slopes greater than 30 percent. While the majority of pipeline construction would be collocated with existing pipeline easements, and Dominion has reported that historic pipeline construction with collocated lines has not resulted in slope stability issues, the clearing of vegetative cover and disruption of soils could result slope instability.

Dominion would install erosion and sedimentation controls and follow best management practices to minimize the risks and potential impacts of landslides in susceptible areas. Dominion would implement measures and monitoring programs in areas where slopes equal or exceed 22 percent. Specifically, Dominion would install temporary and permanent slope breakers, trench plugs, French drains, and sediment barriers (silt fence, haybales, or compost-filter sock) to control moisture, reduce off right-of-way transport of sediment, and reduce water velocity. However, Dominion has not conducted assessments of slope stability in the Project area or developed site-specific plans for mitigation of potential slope failure. Therefore, we recommend that:

- **Prior to construction of the TL-653 OH Lateral and TL-654 PA Loop pipelines, Dominion should file with the Secretary of the Commission (Secretary) a slope stability assessment and mitigation plan, for review and written approval by the Director of the Office of Energy Projects (OEP). The assessment should be completed by a licensed or qualified geotechnical engineer to identify specific locations along the pipeline alignments with the potential for slope failure, and site-specific measures to mitigate the potential hazard during construction and operation.**

Based on Dominion's proposed mitigation measures, and our recommendation, we conclude that Project construction and operation would not adversely impact or be adversely impacted by slope instability.

Ground Subsidence

Ground subsidence may be caused by karst formation due to limestone or gypsum bedrock dissolution or subsurface resource extraction (e.g. groundwater pumping, oil/gas extraction, underground mining). Oil and gas extraction occurs in the Project vicinity; however, there have been no reported incidences of subsidence as a result of these activities. Project areas do not overlie unconsolidated aquifers susceptible to subsidence from excessive pumping and no karst terrain is present in the Project vicinity. While the TL-654 PA Loop crosses areas that have been extensively mined, this facility would be collocated with existing pipelines that have not encountered subsidence due to the presence of historic mining. Furthermore, given the depth of cover over the mined Pittsburgh coal seam (approximately 400-500 feet), future significant subsidence is unlikely (GAI Consultants, Inc., 1977). As such, the Project is not likely to be affected by subsidence hazards.

Flood and Scour

The Project could be affected by flash flooding due to its proximity to waterbodies and because portions of the Project area would be within the 100-year floodplain (AE Zone) as determined by the Federal Emergency Management Agency. AE Zones are subject to inundation by the 1-percent-annual-chance flood event. Installation of the pipelines would not affect the floodplain, as they would be installed subsurface and all contours would be restored following the completion of construction activities. The existing South Bend Regulation site is located within a floodplain; however, the new aboveground facilities proposed at the South Bend Regulation site would be inside of the existing station fence line and would result in negligible or no loss of floodplain storage.

Dominion requires that pipeline stream crossings be installed at a depth of 5 feet to top of pipe to prevent scour. Furthermore, all Dominion facilities are designed in accordance with 49 CFR 192 which requires the pipeline to have a design safety factor that includes additional wall thickness or strength requirement and provides additional conservatism to the design, should an emergency event occur, such as debris hitting a pipe during a flood. Above-ground facilities are stabilized and supported by foundations, pipe stands, and pipe clamps.

In addition, Dominion designs in accordance with the Pipeline and Hazardous Materials Safety Administration (PHMSA) Advisory Bulletin (ADB-2015-01) to address Potential for Damage to Pipeline Facilities Caused by Flooding, River Scour, and River Channel Migration. Therefore, we do not anticipate that Project facilities would adversely affect or be affected by flood and scour hazards.

Mine Hazards

While the TL-654 PA Loop crosses areas that have been extensively mined, this facility would be collocated with existing pipelines that have not encountered hazards due to the presence of mines. Therefore, it is not anticipated that Project facilities would be affected by mine hazards, including subsidence and encountering mine waste, during construction. In the event of unanticipated discovery of contaminated environmental media, Dominion would stop all work in the affected area and the EI and Project Supervisor would be notified. Dominion's waste team would conduct sampling efforts, as needed, to characterize the nature of the waste and the extent of the contaminated area. Once the contaminated area is identified, it would be properly disposed of in accordance with all state and federal regulations.

Acid-Producing Rock

The EPA also expressed concerns regarding the exposure of acid-producing rock during pipeline construction. Pyrite, the mineral that produces acidic runoff when exposed to rainfall, does not typically occur in the upper 25 to 35 feet of bedrock (Commonwealth of Pennsylvania, 2016). Excavations for the Project would be shallow

(generally 5 feet deep); therefore, the risk of excavating a pyrite deposit and exposing it to rainfall during Project construction activities would be minimal. Additionally, Dominion has not encountered acid runoff or acidic drainage from other collocated pipelines.

Because of the Project's potential impacts on drinking water supplies, wells, wetlands, and surface water in light of local geology, EPA recommended FERC consult with USGS district staff. Dominion does not anticipate the need for blasting, and Project areas do not overlie karst terrain. Furthermore, as detailed in sections B.3, we believe that Dominion's proposed mitigation measures would avoid or minimize significant impacts on water resources. Therefore, consultation with the USGS is not warranted.

Based on the construction methods and mitigation measures, and our recommended condition above, we conclude that the impact of geologic hazards on the Project facilities during construction and operation would be minimal and that the Project would not have significant impacts on geologic resources.

B.2. Soils

B.2.1. Existing Soil Characteristics and Limitations

Soil characteristics in the Project area were assessed using the Natural Resources Conservation Service (NRCS) Soil Survey geographic database (NRCS, 2017).

Project area soils consist predominantly of well- and moderately well-drained silt loams with slopes ranging from 0 to 70 percent. Soil limitations for each Project area are tabulated in table 5.

Table 5. Soil Characteristics and Limitations (Construction Impacts)

Facility Name	Important Farmland[1]	Hydric[2]	Low Revegetation Potential[3]	High Compaction Potential [4]	Shallow Bedrock[5]	Highly Water Erodible[6]
Ohio						
Newark Compressor Station and Access Road (acres)	3.13	0.05	0.00	0.46	0.29	0.31
TL-653 OH Lateral (acres)	14.02	0.80	14.13	18.14	17.36	7.36
Pig Launcher and ATWS	0.49	0.00	0.49	0.49	0.49	0.49
Port Washington M&R and ATWS (acres)	1.72	0.00	1.72	1.72	1.72	1.72
Gilmore Pipe Yard (acres)	1.09	0.00	1.09	2.86	2.86	1.09
PAR-1 and PAR-2	0.72	0.00	0.42	0.72	0.72	0.36

Table 5. Soil Characteristics and Limitations (Construction Impacts)						
Facility Name	**Important Farmland[1]**	**Hydric[2]**	**Low Revegetation Potential[3]**	**High Compaction Potential [4]**	**Shallow Bedrock[5]**	**Highly Water Erodible[6]**
TAR-Pipe Yard	0.07	0.00	0.07	0.83	0.83	0.07
Pennsylvania						
South Bend Regulation	2.57	1.40	0.00	2.57	0.00	0.00
Leidy M&R	8.69	0.00	0.00	8.69	8.69	0.00
TL-654 PA Loop	14.18	21.45	28.63	33.34	21.35	18.22
Crayne Pipe Yard and ATWS	22.36	4.19	29.81	36.28	23.21	13.92
Mainline Gate Valve (TL-654) and ATWS	0.93	1.70	0.78	1.70	1.70	0.78
AR-1A, AR-1, AR-2A, AR-3, AR-4A	2.04	1.42	1.96	2.79	1.97	0.84
Total (acres)	72.01	31.01	79.10	110.59	81.19	45.16
Percent of Total Project Area[6]	63.22	27.23	69.44	97.10	71.28	39.65

[1] As designated by the NRCS, includes prime farmland, farmland of statewide importance, and farmland of local importance
[2] As designated by the NRCS, includes soils with partially hydric components
[3] Includes coarse-textured soils (sandy loams and coarser) that are moderately well to excessively drained and soils with an average slope greater than or equal to 9 percent
[4] Includes soils with low to high, high to medium, and high compaction potential. Potential for soil compaction based on clay content. Soils with 1 to 10 percent clay content are considered to have a low potential; soils with 10 to 18 percent clay content are considered to have a moderate potential; and soils with 18 to 35 percent content are considered to have a high potential for soil compaction
[4] Includes soils with a depth to bedrock of less than 60 inches
[5] Includes soils with an average slope greater than or equal to 9 percent and land in capability subclasses 4E through 8E
[6] Totals do not equal 100 percent as not all soils are classified with limitations and certain soils are classified as having multiple limitations

Typical soil impacts that may occur during construction include mixing of topsoil and subsoil layers, compaction, rutting, erosion, and alteration of drainage characteristics. Construction activities such as clearing, grading, trench excavation, backfilling, heavy equipment traffic, and restoration along the construction right-of-way have the potential to adversely affect natural soil characteristics such as water infiltration, storage and routing, and soil nutrient levels, thus reducing soil productivity.

Important Farmland

Approximately 72 acres of land that would be disturbed by Project construction is classified as important farmland (prime farmland, and farmland of statewide or local importance). The U.S. Department of Agriculture defines prime farmland as land that has the best combination of physical and chemical characteristics for growing food, feed,

forage, fiber, and oilseed crops. In addition, soils may be considered of statewide or local importance if those soils are capable of producing a high yield of crops when managed according to accepted farming methods. Construction in agricultural areas and pasture areas would temporarily disrupt ongoing agricultural activities and eliminate use of the land for the duration of construction, and permanently impact areas converted to industrial use. New and permanent impacts on important farmland would be limited to soils within the footprints of new aboveground facilities, which collectively total approximately 1.05 acres. Following construction, farming would be allowed to continue within the permanent right-of-way, outside of the fence line of aboveground facilities.

Potential impacts on agricultural soils would be minimized and mitigated in accordance with FERC's Plan. Measures that would be implemented aim to conserve and segregate the upper 12 inches of topsoil, alleviate soil compaction, protect and maintain existing drainage tile and irrigation systems, prevent the introduction of weeds, and retain existing soil productivity. Implementation of these measures would help ensure post-construction revegetation success and productivity, thereby minimizing the potential for long term impacts on agricultural lands. Therefore, we conclude that the majority of impacts on important farmland would be temporary and minor.

Shallow Bedrock and Blasting

Approximately 71 percent of Project area soils are underlain by shallow bedrock (bedrock 60 inches or less from the ground surface). The introduction of stones or rocks into surface soil layers may reduce soil moisture-holding capacity, resulting in a reduction of soil productivity. To minimize this potential impact, FERC's Plan requires that the size, density, and distribution of rock in the construction work area be similar to adjacent areas not disturbed by construction and requires that excess rock is removed from at least the top 12 inches of soil in agricultural areas or in compliance with landowner agreements. Through adherence to these measures, no significant increase to the rock content of the topsoil is anticipated.

The EPA commented that Dominion should report any areas where blasting may be needed. Dominion does not anticipate the need for blasting during trench excavation and would use hydraulic hammers, tractor-mounted mechanical rippers or rock trenchers for breaking up the rock prior to excavation. If necessary, a site-specific Blasting Plan would be filed and variance sought for affected area(s).

Based on the implementation of measures contained in FERC's Plan and Procedures, we conclude that potential impacts from shallow bedrock and the introduction of rock into surface soils would be appropriately mitigated.

B.2.2. Soil Rutting and Compaction

Dominion would take steps to mitigate the potential for soil compaction, such as segregating topsoil from subsoil in agricultural and residential areas, and other measures

outlined in FERC's Plan. Soils underlying aboveground facility foundations would be permanently affected by compaction, and alteration of soil drainage characteristics may occur; however, these effects would be highly localized and minor. Therefore, we conclude impacts from soil rutting and compaction would be minimal and most impacts would be temporary.

B.2.3. Soil Erosion and Revegetation Potential

Soil erosion is the wearing away of physical soil properties by wind and water, and could result in a loss of soil structure, organic matter, and nutrients, all of which, when present, contribute to healthy plant growth and ecosystem stability. Approximately 45 acres of the Project area overlie soils considered highly water erodible. Project area soils are not classified as highly wind erodible. However, clearing, grading, and equipment movement can accelerate the erosion process and, without adequate protection, result in discharge of sediment to waterbodies and wetlands.

To minimize or avoid potential soil erosion, Dominion would implement measures outlined in FERC's Plan. Temporary erosion controls would be installed immediately following land disturbing activities and maintained until restoration is complete. These devices would be inspected on a regular basis and after each rainfall event of 0.5 inch or greater to ensure proper function. Dominion would also utilize dust-control measures, including spraying water to dampen the surfaces of dry work areas and/or by the application of other dust suppressants as needed.

Approximately 69 percent of the Project area overlies soil with low revegetation potential. Dominion would prepare a restoration plan that addresses seed mixes, application rates for fertilizer and lime, and noxious weed controls, and would coordinate to gain approvals from permitting agencies related to erosion and sediment control permit requirements and site development and restoration requirements.

Given Dominion's proposed mitigation measures and that disturbed areas would be returned to pre-construction conditions, maintained in an herbaceous state, or stabilized with gravel cover, permanent impacts due to soil erosion or poor revegetation potential are not anticipated.

B.2.4. Inadvertent Spills or Discovery of Contaminants

A review of state and federal regulatory databases was conducted to identify recent or historic areas of contamination within 0.25 mile of the Project facilities. Based on this review, Dominion identified three contaminated sites located within 0.25 mile of the Project. Two active Land Recycling Cleanup sites are associated with the Leidy Compressor Station (under the names Dominion Former CNG Leidy and Dominion Transmission Leidy Comp. Sta. Release), and one Land Recycling Cleanup site (Dominion Trans. Inc. South Bend Compressor Sta.) was identified approximately 50 feet from the Project area for the South Bend Regulation. Based on the distance from the

Project area and media impacted (soil only), contamination at the Dominion Trans. Inc. South Bend Compressor Sta. is not anticipated to impact or be impacted by the Project. With regard to active Land Recycling Cleanup listings at the Leidy Compressor Station, Dominion states that all known contamination and spills have been remediated and/or cleaned up and that state databases have not been updated to reflect current site conditions. In the event that contaminated soils or other environmental media are identified during construction, all work in the affected area would be stopped, and the EI and Project Supervisor would be notified. Dominion's waste team would conduct sampling, as needed, to characterize the nature of the waste and the extent of the contaminated area. Once the contaminated area is identified, it would be properly disposed of in accordance would all state and federal regulations.

During construction, contamination from inadvertent spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely impact soils. To minimize impacts, and in accordance with FERC's Plan, Dominion would develop, prior to construction, Project-specific spill prevention and response procedures that meet applicable requirements of state and federal agencies. Based on these measures, we conclude that the Project's impacts on soils would be minor and not significant.

B.3. Water Resources and Wetlands

B.3.1. Groundwater Resources

The OEPA divides the state's aquifers into three major types: sand and gravel, sandstone, and carbonate. Project components within Ohio are situated in areas designated as having sandstone aquifers. Sandstone aquifers generally provide sufficient production for water wells except where dominated by shale, as in southwest and southeast Ohio.

There are no official state-designated classifications for aquifers in Pennsylvania. Most aquifers in Pennsylvania are local. A particular rock layer may serve as an aquifer in one location but not in another. Unconsolidated sediments having significant porosity and permeability, mainly sand and gravel, can produce large amounts of water.

Impacts and Mitigation for Groundwater

Shallow aquifers could sustain minor impacts from changes in overland water flow and recharge caused by clearing and grading of the right-of-way. In forested areas, water infiltration, would be temporarily affected until vegetation is reestablished. In addition, near-surface soil compaction caused by heavy construction vehicles could reduce the soil's ability to absorb water. These minor impacts would be temporary and would not significantly affect groundwater resources or change groundwater flow patterns.

Dewatering of the pipeline trench may be necessary in areas where there is a high water table. However, pipeline construction activities within a particular location are typically completed within several days, and any lowering of localized groundwater is expected to be temporary. To recharge the aquifer and prevent silt laden waters from flowing into streams and wetlands, Dominion would discharge all water from dewatering activities into well-vegetated upland areas, or into hay bale structures if vegetation is insufficient.

Impacts on groundwater (including springs) near the Project area could include increases in turbidity and flow fluctuations; however, we anticipate that any impact would be temporary and localized. Although Dominion did not identify groundwater wells within 150 feet of the construction workspaces, it has committed to conducting pre-construction testing of any water supplies, with the well-owner's permission, should any be identified prior to or during construction. Dominion would also test the spring identified near the TL-654 PA Loop near milepost 2.03, prior to construction. Test results would be used to compare to post-construction sampling, if requested by the owner. In the unlikely event that construction activities adversely affect a water supply, Dominion would make the necessary repairs and/or replacements to restore the water supply system to its pre-construction capacity by re-working the existing well or installing a comparable replacement.

Dominion stated that it would conduct post-construction testing if requested by the owner. However, we believe that such testing should be offered to the owner, rather than upon request. Therefore we recommend that:

- **<u>Prior to construction</u>, Dominion should verify that it would offer post-construction testing for water yield and quality for all water-supply wells or springs identified within 150 feet of Project workspaces.**

There are no EPA-designated sole-source aquifers located in the vicinity of the Project. Potential Project-related groundwater contamination sources could include heavy equipment fuel, lubrication oil, or hydraulic oil spills. During construction, preventative measures would be implemented to avoid such spills. Dominion would utilize the industry-approved spill prevention control and countermeasures to avoid impacts on groundwater resources during construction.

Dominion would minimize impacts on groundwater resources by using the construction techniques detailed in FERC's Plan and Procedures concerning excavation dewatering, equipment refueling, and hazardous materials storage. Because the majority of construction would involve shallow, temporary, and localized excavation, we conclude that pipeline construction activities are not likely to result in significant impacts on groundwater resources.

B.3.2. Surface Water Resources

A total of 18 streams would be crossed by the Project. Five streams would be crossed in Ohio. Based on correspondence with ODNR, Dominion would not conduct any in-water work between April 15 and June 30, due to ODNR timing restrictions for crossing of perennial streams. A total of 13 streams would be crossed in Pennsylvania. There are no crossing restrictions in Pennsylvania. Dominion would follow FERC's Procedures for crossings of warmwater fisheries.

A total of 10 perennial streams would be crossed by the Project. No major or sensitive waterbodies would be crossed. Three impaired waterbodies are crossed by the Project in Ohio. These waterbodies are tributaries of Dunlap Creek (MPs, 0.3, 0.7, and 1.1). The streams are listed as impaired because they are located in an impaired watershed listed for the following contaminants: fecal coliform, phosphorous, habitat alterations, metals (other than mercury), organic enrichment/low dissolved oxygen, pathogens, and siltation. Table 6 lists information on all waterbodies that would crossed by the Project including, width, flow regime, crossing method, and special designations timing restrictions for crossing. Crossing methods are described further in the following sections.

Table 6. Waterbodies Crossed by the Project

Milepost	Waterbody Name	Flow Regime	Width (feet)	Crossing Method
TL-654 Pipeline Loop				
0.3	UNT to Ruff Creek	Perennial	7	Dam and Pump/Flume
0.5	UNT to Ruff Creek	Perennial	22	Dam and Pump/Flume
0.9	UNT to Ruff Creek	Ephemeral	12	Mats for Access
0.9	UNT to Ruff Creek	Ephemeral	15	Mats for Access
1.3	Ruff Creek	Perennial	55	Dam and Pump/Flume
1.6	UNT to Ruff Creek	Intermittent	5	Dam and Pump/Flume
1.9	UNT to Ruff Creek	Perennial	12	Dam and Pump/Flume
2.2	UNT to Ruff Creek	Ephemeral	5	Dam and Pump/Flume
2.3	UNT to Ruff Creek	Intermittent	5	Mats for Access
2.6	UNT to Browns Run	Perennial	6	Dam and Pump/Flume
2.8	UNT to Browns Run	Perennial	5	Dam and Pump/Flume

Table 6. Waterbodies Crossed by the Project				
Milepost	**Waterbody Name**	**Flow Regime**	**Width (feet)**	**Crossing Method**
2.9	Browns Run	Perennial	12	Dam and Pump/Flume
Crayne Pipeyard				
N/A	UNT to Ruff Creek	Intermittent	5	Mats for Access
TL-653 OH Lateral				
0.3	UNT to Dunlap Creek **b/**	Ephemeral	12	Mats for Access
0.3	UNT to Dunlap Creek **c/ d/**	Perennial	14	Dam and Pump/Flume
0.7	UNT to Dunlap Creek **b/ d/**	Perennial	8	Dam and Pump/Flume
1.1	UNT to Dunlap Creek **b/**	Intermittent	12	Dam and Pump/Flume
1.6	UNT to Dunlap Creek **a/ d/**	Perennial	6	Dam and Pump/Flume

a/ OEPA stream designation – Class II Primary Headwater Habitat: Provides an environment that can support a moderate diversity of aquatic benthic macroinvertebrates. This class has a lower diversity of benthic macroinvertebrate taxa than Class III Streams.
b/ OEPA stream designation – Modified Class II Primary Headwater Habitat
c/ OEPA stream designation – Class III Primary Headwater Habitat (PHWH): The most biologically diverse PHWH streams with a heterogeneous physical habitat are spring-fed with continuous water flowing on an annual basis, and support cold to cool water adapted vertebrates and/or benthic macroinvertebrates.
d/ Crossing restriction from ODNR – April 15-June 30

Public Surface Water Intakes

In Pennsylvania there is one surface water withdrawal located within 3 miles of a waterbody crossing. This irrigation withdrawal belongs to the Greene County Country Club, and is located along Ruff Creek about 0.8 mile downstream from the TL-654 crossing. Dominion would notify Greene County Country Club prior to construction through Ruff Creek. Because Ruff Creek would be crossed using a dry crossing method, downstream sedimentation impacts would be minor.

Water Use for Hydrostatic Testing and Dust Suppression

Project facilities would be hydrostatically tested to ensure they conform to both Dominion and the DOT specifications before placing them into service. Water may also be required for dust suppression during construction. Other commercial dust suppressants

may be utilized on roads in lieu of water at times during the Project, under the adherence of specific local municipal guidelines.

Water for hydrostatic testing and dust suppression would be obtained from an approved municipal source. No chemicals would be added to the test water during hydrostatic testing. The water would be trucked to the site in water trucks and staged in a number of storage tanks placed within containment structures. Hydrostatic testing of the pipelines would require about 500,000 gallons of water. Once the hydrostatic test is complete, the water would be discharged in compliance with FERC's Procedures or collected and properly disposed of at an approved disposal facility. Dominion would typically try to reuse hydrostatic test water, where practical.

Dominion would obtain National Pollutant Discharge Elimination System permits for hydrostatic test water discharged from TL-653 OH Lateral and TL-654 PA Loop and would comply with conditions and performance requirements for the discharge of the hydrostatic test water after completion of the test.

Floodplains

The TL-654 PA Loop passes through the National Flood Hazard Layer 100-year floodplain surrounding Ruff Creek (FEMA 2017). As all workspace areas would be restored to current contours, no impact on flood storage capacity is anticipated. The South Bend Regulation construction limit of disturbance is located partially within the 100-year floodplain surrounding Crooked Creek. Minor above-ground station pipe, valves, and fittings associated with a regulation run would be installed at the South Bend Regulation Facility. This installation would occur within the station's existing fence line. No new buildings would be constructed for this work, and existing contours would be restored after installation is complete. The above-ground installed facilities would result in negligible impact on flood zone storage. Impacts on floodplains and flood hazards are also discussed in section B.1.3.

Impacts and Mitigation for Surface Water Resources

Dominion would complete waterbody crossings using one of three methods (described below); dry-flumed stream, dam-and-pump, and open-cut. Selection of the crossing method would be determined in the field at the time of crossing by the construction contractor and Dominion's Environmental Inspector.

- **Dry Flumed Stream Crossing Method** – A dry flumed crossing involves directing stream flow through a culvert or flume across the trench line work area. This allows for the trenching, pipe installation, and initial restoration to occur in dry conditions, under the flume setup, while maintaining continuous downstream flow.

- **Dry Dam-and-Pump Crossing Method** – A dry dam-and-pump crossing involves constructing a dam on the upstream end of the trench work area from which a pump and pipe or hose are used to convey stream flow around the work area, discharging the water downstream of the work area. Similar to the dry-flumed crossing, the dam and-pump allows for a dry trench workspace area and is often used in streams with curved or meandering channels where effective placement of a straight flume pipe is not feasible.

- **Open-Cut Crossing Method** – If any stream is dry or has no perceptible flow at the time of construction, an open-cut crossing method would likely be used. For open-cut crossings, a backhoe or similar equipment would be used for trench excavation. The completion of all construction activities should not exceed 24 hours at minor stream crossings (less than 10 feet wide) and 48 hours at intermediate stream crossings (10-30 feet wide).

Construction 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.

Less sediment would be generated where dry crossing methods (e.g., dam and pump) are used. At the stream crossings where the 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.

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.

Impaired Waterbodies

As noted above, three impaired waterbodies would be crossed. These streams are part of an assessment area that includes the Tuscarawas River watershed from downstream of Stillwater Creek to Upstream of Evans Creek, excluding the Tuscarawas River mainstem. Construction across these waterbodies would result in minor, short-term impacts due to in-stream construction activities or construction on slopes adjacent to stream channels; resulting in temporary localized increases to turbidity levels and

downstream sediment deposition. In slowly moving waters, increases in suspended sediment may increase the biochemical oxygen demand and reduce levels of dissolved oxygen in localized areas during construction. On a short-term basis, suspended sediments would also alter the chemical and physical characteristics of the water column (e.g., color and clarity). However, no foreign sediments would be introduced as all dredged or fill material would consist of onsite sediments. Impacts on waterbodies crossed during construction would be temporary in nature, and all waterbody crossings would be restored to their preconstruction condition and water quality. Based on the limited expected duration of impacts on waterbodies crossed by the project, no impacts are expected on Section 303(d)-listed streams' Total Maximum Daily Load status.

Conclusion

Based on Dominion'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 surface water resources and waterbodies.

B.3.3. Wetlands

Wetlands are defined by the USACE as an area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation. Wetlands protect and improve water quality, reduce flood and storm damage, provide important fish and wildlife habitat, provide flood water retention, and support outdoor recreational activities such as hunting and fishing.

Two types of wetlands are present in the Project area: palustrine forested (PFO) and palustrine emergent (PEM). 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. Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes not including mosses and lichens. Wetland vegetation is further addressed in section B.3.

Impacts and Mitigation for Wetlands

A total of 1.5 acres of wetlands would be affected by the Project. About 0.22 acre would occur in the permanent right-of-way. Most of the wetlands in the permanent right-of-way are PEM and therefore would be allowed to revegetate as a PEM wetland community. Less than 0.01 acre of forested wetland would occur in the permanent right-of-way and would be permanently converted to PEM wetland. Table 7 summarizes wetlands affected by the Project.

Table 7. Summary of Wetlands Affected by the Project			
Wetland Type	**Approximate Crossing Length (feet)[a]**	**Acreage Affected During Construction**	**Acreage Affected During Operation**
TL-653 OH Lateral			
PEM	200	0.30	0.05
PFO	0	0.04	0.002
Subtotal	200	0.34	0.05
TL-654 PA Loop			
PEM	762	1.0	0.16
PFO	0	0.06	0.004
Subtotal	762	1.06	0.16
Crayne Pipe Yard			
PEM	0	0.02	0
Project Total	**962**	**1.5**	**0.22**

Notes:

[a] Zeros indicate wetlands not crossed by the Project centerline, but still located within the construction workspace.

Constructing the Project would temporarily and permanently affect wetlands including wetland vegetation, hydrology, and soils characteristics. 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 forested wetlands, impacts would be long-term as forested wetland vegetation would likely take decades to regenerate to its preconstruction condition.

Dominion would ensure that construction-related impacts on wetlands are kept to a minimum and would adhere to the following wetland crossing procedures:

- Wetlands within the study/construction area that are planned for avoidance would be encircled by silt fence and/or orange safety fence to avoid accidental entry/disturbance during construction.
- Sediment barriers would be installed and maintained at the edge of all wetlands until upslope right-of-way revegetation is completed. Where a pipeline/station piping crosses a wetland, permanent slope breakers would be installed at the base of all slopes adjacent to wetlands.

During operation of the Project, Dominion would maintain a 10-foot-wide corridor centered on the pipeline 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. Dominion would restore and revegetate wetlands in accordance with FERC's Procedures and applicable permits.

The EPA expressed concerns regarding excess spoil being placed in valleys, directly and permanently impacting streams and wetlands and recommended that fills associated with the pipeline and associated infrastructure be included and effects analyzed. FERC's Procedures does not allow spoil to be placed in wetlands. Following construction, temporary workspace would be returned to pre-existing contours. Dominion has specified that all excess construction debris would be hauled to an existing off-site PADEP-permitted commercial disposal facility (with the exception of clean gravel which may be reused/recycled), and that all fill material brought onto the site would be clean fill. Therefore, we do not anticipate significant impacts from management of excess spoil or imported fill.

Based on the implementation of mitigation measures, which would minimize impacts on wetlands and help ensure the successful restoration of wetlands, we conclude that construction and operation of the Project would not significantly impact wetlands.

B.4. Vegetation, Wildlife, and Special Status Species

B.4.1. Fisheries

There are no fisheries of special concern or essential fish habitat designated by the National Marine Fisheries Service in the Project area. Common fish species found in the Project area include blue gill, common carp, largemouth bass, smallmouth bass, fathead minnow, green sunfish, and creek chub. All waterbodies crossed in Pennsylvania are classified as warm water fisheries. Special fishery and aquatic state designations for each waterbody crossed by the Project in Ohio are described in table 6 above. Special status species are discussed in B.4.3 of this EA.

Constructing the Project could affect fisheries and aquatic organisms. The implementation of waterbody construction methods could increase rates of stress, injury and mortality experienced by fish. Dominion would conduct waterbody crossings in accordance with USACE regulations, ODNR and FERC timing restrictions, and FERC's Procedures. Because impacts on waterbodies would be temporary, we conclude that the Project would not significantly impact fisheries or aquatic species.

B.4.2. Vegetation and Terrestrial Wildlife

All components of the proposed Project are located within the Western Allegheny Plateau ecoregion, a temperate broadleaf and mixed forest biome that encompasses 26 million acres across the plateau of the Allegheny Mountains in eastern Ohio, western Pennsylvania, northwestern West Virginia, and parts of Kentucky and New York.

Upland Forest

Upland forest typically consists of at least 20 foot tall trees having at least 25 percent aerial cover. Upland forest communities in the Project area are predominately a mix of mature deciduous hardwoods and coniferous trees. Mature deciduous hardwood forests in this area typically consist of sugar maple, red oak, white oak, black cherry, white ash, and hickory species. Understory trees and shrubs include hawthorn, witch-hazel, and ironwood. Immature hardwood forest consists of smaller trees of the same species found in mature hardwood forest. Mature conifer species observed during field surveys include white pine and eastern hemlock.

Mature hardwood forest in the Project area provides habitat for a number of wildlife species, particularly for species adapted to live in fragmented woodlands. The different vegetation layers present from the canopy, understory, herbaceous, and the leaf litter layers provide a variety of habitats. Mature hardwood forests typically support mammals such as the white-tailed deer, coyote, gray squirrel, eastern chipmunk, various bat species, red fox, raccoon, Virginia opossum, white-footed mouse; birds such as ruffed grouse, pileated woodpecker, wild turkey, blue jay, and American crow; and amphibians such as the wood frog.

Scrub-shrub

Scrub-shrub habitat is characterized by having at least 50 percent cover of low, multi-stemmed woody vegetation in young or stunted stages of growth. Shrubland species in the Project areas include flowering dogwood, multiflora rose, meadowsweet, and olive.

Scrub-shrub uplands support a variety of such as eastern cottontail, white-tailed deer, and birds such as the song sparrow, savannah sparrow, woodchuck, ruffed grouse, and wild turkey. Scrub shrub uplands also provide habitat for reptiles such as the garter snake and milk snake and amphibians such as American toad.

Open Fields

This cover type category covers all non-forested vegetated areas that are not in agricultural production or landscaped. It includes grasslands, successional old fields, and

mowed/maintained utility right-of-ways. Open lands are typically previously disturbed lands that have been cleared for farming, utility construction or other developments and then abandoned. Grasslands are meadows dominated by grasses, such as reed canary grass, poverty grass, orchard grass, and switchgrass. Wildlife species in these areas are similar to those found in scrub shrub communities.

Agricultural Land

Agricultural areas consist of active cropland, orchards, vineyards, or hayfields. This type of landscape supports wildlife generalists and those with high tolerances for disturbance. Wildlife found in these areas are similar to the species described above for open fields and scrub-scrub habitat.

Wetland Vegetation

PEM wetlands are dominated by narrow-leaved and common cattail, soft rush, elderberry, various rush and sedge species, reed canary grass, phragmites, purple loosestrife, sensitive fern, woolgrass and other wetland grasses, New York aster, Pennsylvania smartweed, and boneset. Common PFO species identified during field surveys included red maple, green ash, and American sycamore. Wildlife species present in wetlands include typical species found in upland vegetation communities. Species more commonly found in wetlands include the red-winged blackbird, wood frog, and other amphibians.

Vegetation Communities of Special Concern

One state-designated natural area - the Tamarack Swamp Natural Area is located within the Leidy M&R site; however, construction activities would not affect this natural area because disturbance and construction activities would be limited to the existing facility site. Dominion consulted with the PA Department of Conservation of Natural Resources (PADCNR) regarding potential impacts on protected resources at this site. PADCNR determined that due to the limited scope of the Project activities, there would be no impact on sensitive resources at the Leidy M&R site.

Impacts and Mitigation for Vegetation and Wildlife

The amount of vegetation (acres) affected by the Project is summarized in table 8 below. The primary impact on vegetation would be the temporary and permanent alteration of vegetative cover. Temporary workspace and ATWS outside of the permanent right-of-way would revert to preconstruction vegetative communities.

Vegetation removal can increase wind and water erosion of exposed soil. It also can also increase soil temperature and allow greater light penetration into adjacent areas.

Changes in light and temperature regimes may influence the species profile of plant communities within and adjacent to the right-of-way.

Most impacts on vegetation are expected to be minor and short-term. In open areas with herbaceous cover, recolonization of disturbed ground by annual and perennial species is characteristically rapid and occurs within one growing season. Where necessary, Dominion would develop area-specific revegetation and restoration plans in consultation with the USACE, the various County Soil and Water Conservation Districts, and private landowners. These plans would provide specifications for appropriate seed mixes. They would also include measures to prevent the introduction of nuisance, exotic, or invasive plant species.

Table 8. Acreages of Vegetation Categories Affected by the Project

Facility	Agriculture		Open Field		Upland Forest		Scrub-Shrub	
	C	O	C	O	C	O	C	O
TL-653 OH Lateral	11.7	6.3	0.51	0.39	5.0	3.0	0.39	0.22
TL-654 PA Loop	5.2	1.1	20.3	15.2	3.3	0.67	1.8	0.26
Aboveground/ Associated Facilities	0.05	0.02	3.6	0.86	0.85	0.34	-	-
Crayne Pipeyard	-	-	33.5	0	-	-	-	-
Access Roads	-	-	1.3	1.3	0.49	0.49	1.3	1.3
Project Total	**17.0**	**7.4**	**59.2**	**17.8**	**9.6**	**4.5**	**3.5**	**1.8**

C – Construction
O - Operation

Forested areas would experience the greatest impact due to the long time it takes to regenerate mature forest communities. Clearing of woody shrubs and trees would have longer-term impacts because shrubs and trees take more time to re-establish than herbaceous vegetation. During recolonization, a shrub- or tree dominated community would evolve through several successional stages before assuming its original profile. Woody shrubs and trees would be allowed to revegetate in the temporary construction right-of-way. The permanent pipeline right-of-way corridor would be maintained in an herbaceous state. Dominion states that small brush and trees would be chipped and

evenly broadcasted into the wooded areas off the right-of-way where applicable, per landowner approval. However, the FERC Plan in Section V.A. indicates that disposal of cut material can only be conducted under certain conditions.[4] Consequently, if Dominion proposes to broadcast small brush and trees off the right-of-way, it must provide a justification and request approval from the Director of the Office of Energy Project. Larger trees would be cut and stacked off the right-of-way or removed from the property, per landowner preference.

In agricultural land, vegetation removal would entail crop harvesting if construction commences when crops are present. If construction takes place when crops are absent, vegetation removal would be limited to post-harvest stubble and/or ruderal weeds. Dominion would segregate topsoil from underlying subsoil, store it separately along the right-of-way during construction, then replace it following installation of the pipeline.

As recommended by the USFWS to enhance habitat for pollinators, Dominion would evaluate and potentially implement revegetation efforts to include native plant species including species of nectar producing plants and milkweed endemic to the area where the mix is applied.

Once the pipeline is installed and operational, mechanical methods would be used in upland areas to keep the permanent right-of-way clear of excessive woody vegetation. Routine vegetation maintenance clearing shall not be done more frequently than every three years. However, to facilitate periodic corrosion and leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be maintained in an herbaceous state. Dominion would not conduct vegetation clearing for maintenance of the right-of-way during the migratory bird nesting season (April 15-August 1).

Noxious Weeds

A number of invasive species commonly associated with open right-of-way/edge habitats were observed within the Project area: multiflora rose, reed canary grass, common reed, cattails, Autumn olive, crow vetch, Japanese barberry, Japanese knotweed, Japanese stiltgrass, and purple loosestrife. The density of these species was variable along the right-of-way and ranged from insignificant to moderately significant in terms of species dominance. During construction and operation/maintenance activities, Dominion would implement best management practices (BMPs) (i.e., cleaning soils, seeds, plant parts, or invertebrates from equipment prior to coming onsite, use of certified weed free,

[4] Dominion would only stack brush along the right-of-way if the landowner approves leaving materials onsite for beneficial reuse, stabilization, or habitat restoration.

non-invasive cover crops or native seed for revegetation) to minimize the establishment of any additional noxious or invasive weeds, as well as the spread of existing invasive species populations along the right-of-way.

Wildlife

Constructing and operating the Project would result in temporary and permanent alteration of wildlife habitat, as well as direct impact on wildlife species including disturbance, displacement, and mortality of smaller less mobile species. The clearing of vegetation would reduce cover, nesting, and foraging habitat for some wildlife. During construction, the more mobile species would be temporarily displaced from the Project and surrounding areas to similar habitats nearby. Some wildlife displaced during construction would return to the newly disturbed area and adjacent, undisturbed habitats soon after completion of construction. Less mobile species, such as small mammals, reptiles, and amphibians, as well as bird nests located in the construction area, may be killed during construction activities.

Noise from construction could temporarily affect wildlife behavior, including foraging, mating, nesting, etc. Noise may also cause individuals to temporarily relocate from the area. Because construction noise would be short-term and generally diminishes in a relatively short distance from the source of the project sites, wildlife would not likely experience significant effects due to noise disruption.

Routine maintenance activities on the permanent right-of-way would not significantly affect wildlife due to the minor extent of those activities. The impact of the proposed Project on agricultural and open land habitats and associated wildlife species would be minor and short term because these habitats would regenerate within 1-2 growing seasons after construction. Impacts on forested habitat would be longer term as these areas would require decades to regenerate and some forested areas would be permanently converted to herbaceous communities for pipeline operations. Overall, we concluded that due to the limited amount of permanent loss of vegetation communities and wildlife habitat and Dominion's implementation of restoration procedures and mitigation measures, the Project would not have significant impacts on vegetation and wildlife.

B.4.3. Special Status Species

Special status species are those species for which state or federal agencies provide an additional level of protection by law, regulation, or policy. Included in this category are federally listed and federally proposed species that are protected under the Endangered Species Act (ESA), or are considered as candidates for such listing by the USFWS, and those species that are state-listed as threatened or endangered.

The Commission is required by Section 7 of the ESA to ensure that the construction and operation of any 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.

Through consultation with the USFWS and the ODNR and Pennsylvania Natural Diversity Index (PNDI) system, Dominion identified special status and protected species that have the potential to occur in the Project area. Additionally, as our federally designated representative for the purposes of Section 7 consultation, Dominion consulted with the USFWS Ohio and Pennsylvania Field Offices. The USFWS Field Offices stated in correspondence that the proposed Project has the potential to affect the federally endangered Indiana bat (*Myotis sodalist*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*). Table 9 below lists state-listed and federally listed species that could occur in the Project area.

Table 9. Federally Listed and State-Listed Species Potentially Affected by the Project

Species		Status		Suitable Habitat In Project Area	Effect determination
Common Name	Scientific Name	Federal	State		
Black bear	*Ursus americanus*	NL	SE	Project wide	Not likely to impact due to mobility of species
Indiana bat	*Myotis sodalis*	FE	SE	Possibly forest covered locations along TL-653 OH Lateral and TL654 PA Loop	Not likely to adversely affect
Northern long-eared bat	*Myotis septentrionalis*	FT	ST	Possibly forest covered locations along TL-653 OH Lateral and TL654 PA Loop	Not likely to adversely affect
Sheepnose	*Plethobasus cyphyus*	FE	SE	None	No effect
Fanshell	*Cyprogenia stegaria*	FE	SE	None	No effect
Clubshell	*Pleurobema clava*	FE	SE	None	No effect
Long-solid	*Fusconaia maculata maculate*	NL	SE	None	No impact
Sharo-ridged	*Lampsilis ovate*	NL	SE	None	No impact
Banded killifish	*Fundulus*	NL	SE	None	No impact
Northern madtom	*Noturus stigmosus*	NL	SE	None	No impact
Mountain madtom	*Noturus eleutherus*	NL	SE	None	No impact
Eastern massasaugua	*Sistrurus catenatus*	FT	SE	None	No effect

Table 9. Federally Listed and State-Listed Species Potentially Affected by the Project					
Species		**Status**		**Suitable Habitat In Project Area**	**Effect determination**
Common Name	Scientific Name	Federal	State		
Eastern hellbender	*Cryptobranchus alleganiensis*	FC	SE	None	No impact
Eastern spadefoot	*Scaphiopus*	NL	SE	None	No impact
Northern harrier	*Circus cyaneus*	NL	SE	None	No impact
Northeastern bulrush	*Scirpus ancistrochaetus*	FE	SE	None	No effect

Notes:
FE = Federally listed as threatened
FC = Federal Species of Concern
NL = Not listed
SC = Candidate for State Listing
SE = State-listed as endangered
ST = State-listed as threatened
ODNR = Ohio Department of Natural Resources

Indiana Bat

The Indiana bat is federally- and state-listed endangered species known to occur in in Ohio and Pennsylvania. Indiana bats are primarily associated with second growth deciduous forests, living in wooded or semi-wooded areas during the summer months, and spending the winter months hibernating in caves. Winter hibernacula are located underground, in caves, or occur occasionally in abandoned mines. Indiana bats roost and hibernate in colonies, with female bats forming maternity colonies in the spring to bear young during June or early July in crevices of trees or under loose tree bark. Male Indiana bats roost singly or in small numbers primarily in dead snags and large diameter trees with sloughing bark, often on ridge tops. Dead trees located in sunny openings are preferred for roosting, which feature warm air spaces and crevices under the bark. Indiana bats occasionally roost in human-made structures, including bridges, sheds, houses and abandoned buildings.

Indiana bats feed nocturnally on flying insects, capturing them during flight. Foraging areas include shorelines of rivers and lakes, the vicinity of tree crowns located in floodplains, upland forest areas, and within edge habitats. Foraging by the Indiana bat is generally concentrated in riparian habitat, although there is growing evidence that their habitat selection is more diverse.

The proposed Project is not located within close proximity of a known Indiana bat hibernaculum, or within an area occupied by an Indiana bat maternity colony (i.e., known summer habitat). In, Pennsylvania, the USFWS concluded that the Project would have

insignificant or discountable effects on the Indiana bat due to the size of the Project and the lack of suitable habitat in the Project area (USFWS 2017).

In Ohio, there could be effects to Indiana bat summer roosting and foraging habitat because some tree clearing would occur in potentially suitable habitat. The USFWS Ohio Field Office recommended that tree clearing occur between October 1 and March 31 and if implementation of this seasonal tree cutting recommendation is not possible, summer surveys may be conducted to document the presence or probable absence of Indiana bats within the Project area during the summer (between June 1 and August 15). Dominion conducted surveys for Indiana bats in the Project area during the summer of 2018 and did not capture any Indiana bats. USFWS reviewed the results of the surveys and concluded that Indiana bats are not likely inhabiting the Project area (USFWS 2018).

Based on the probable absence of Indiana bat in the Project area and the limited amount of suitable bat habitat affected by the Project, we have determined that the Project is not likely to adversely affect the Indiana bat. We submitted a letter to USFWS requesting concurrence with our determination of effect for the Indiana bat on August 17, 2018. We have not yet received concurrence from USFWS, and therefore, Section 7 requirements under the ESA are not complete (see recommendation below).

Northern Long-Eared Bat

The Northern long-eared bat occurs from Maine to North Carolina on the Atlantic Coast, westward to eastern Oklahoma and north through the Dakotas, even reaching into eastern Montana and Wyoming.

During the winter, this species hibernates in caves and underground mines and individuals may travel up to 35 miles from their summer habitat to their winter hibernacula. Summer roosting habitat, including maternity roosts, includes tree cavities and exfoliating bark/snags of dead or dying trees of mature deciduous/mixed forests, along with some man-made structures (i.e., barns). Northern long-eared bats forage for flying insects along rivers, lakes, and streams, in forest clearings, at tree top level and along forest edges.

The USFWS completed a nationwide Biological Opinion that fulfills the requirement for consultation of potential impacts on northern long-eared bats under Section 7 of the ESA, provided the conditions of the 4(d) rule are met. Dominion completed the streamlined consultation form required by the 4(d) rule established by the USFWS. The Project area is not located within 0.25 mile of a known northern long-eared bat hibernaculum or within 150 feet from a known, occupied maternity roost tree, which satisfies the conditions required for the Project to be covered by the 4(d) rule. Because the Project meets the 4(d) rule conditions, we conclude that Project may affect the

northern long-eared bat, but that any resulting incidental take of the northern long-eared bat is not prohibited by the final 4(d) rule.

FERC staff submitted the streamlined consultation form to the USFWS on August 17, 2018. The form states, that if the USFWS does not respond within 30 days from submittal of the form, the action agency may presume that its determination is informed by the best available information and that its project responsibilities under Section 7 of the ESA with respect to the northern long-eared bat are fulfilled through the USFWS January 5, 2016, Programmatic Biological Opinion.

Because we have not received concurrence for our determinations of effect for federally listed species, consultation with the USFWS under Section 7 of the ESA is not complete. Therefore**, we recommend that:**

- **Dominion <u>should not begin construction activities until</u>:**

    a. The FERC staff completes ESA Section 7 consultation with the USFWS; and
    b. Dominion has received written notification from the Director of OEP that construction or use of mitigation may begin.

State-listed Species

Dominion submitted letters to Ohio state agencies requesting information on rare, threatened or endangered species in or near the Project area. Dominion received a response from ODNR, Division of Wildlife on March 1, 2017 that indicated that the Project is in range of state threatened or endangered species however, impacts on these species are unlikely due to the nature of the Project.

Three agencies are responsible for protecting Pennsylvania threatened and endangered species. Pennsylvania state-listed birds and mammals are within the jurisdiction of the Pennsylvania Game Commission (PGC). The Pennsylvania Fish and Boat Commission (PFBC) monitors state-listed fish, reptiles, amphibians and aquatic organisms, and the PADCNR has jurisdiction over Pennsylvania state-listed plants, natural communities, terrestrial invertebrates, and geological features. Dominion consulted with these agencies and it was determined that the Project would not impact state-listed species. We agree.

B.4.4. Migratory Birds and Birds of Conservation Concern

A variety of migratory birds and birds of conservation concern use or could use the habitats affected by the Project. The greatest risks for impacts on migratory birds are associated with loss of forest and scrub-shrub habitat. Direct effects due to construction

activities include destruction of nests and eggs, mortality of young, loss of habitat, and construction-related disturbance causing reduced nest attendance and foraging time of adults. Indirect effects include reduced nest success due to reduced nest attendance and foraging time, noise and construction activity disturbance causing fleeing behavior resulting in increased vulnerability to predators, and reduction of interior forest habitat area causing increased vulnerability and habitat unsuitability for interior forest dependent species. Cumulative effects include loss of habitat alteration on a landscape scale potentially affecting local bird populations.

On March 30, 2011, the FERC and the USFWS entered into a Memorandum of Understanding that focuses on migratory birds and strengthening conservation through enhanced collaboration between the agencies. To protect migratory birds, USFWS recommends numerous measures designed to minimize land and vegetation disturbance. Dominion would avoid fragmenting large, contiguous tracts of forest and the Project would require a small amount of forest and vegetation clearing overall. Dominion would also attempt to clear during the September 1-March 31 window.

Due to the limited amount of forest and vegetation clearing that would be required for the Project, we conclude that the Project would not significantly affect migratory birds.

B.5. Land Use, Recreation, and Visual Resources

B.5.1. Land Use

The predominant land uses within the Project areas are open, developed, agriculture, and forested. Table 10 provides a summary of the Project component and land use of the Project for construction and operation.

Pipeline Facilities

There are three parcels within the Project workspaces that are enrolled in Pennsylvania's Clean and Green Program by the current landowners, two of which are dedicated as forest reserve and one which is agricultural use. Clean and Green is a farmland preservation program in Pennsylvania that results in tax savings for landowners dedicating their land to agricultural use (Pennsylvania Department of Agriculture, Bureau of Farmland Protection 2017). The Clean and Green Program is implemented at the county level, but in order to further clarify its stipulations on a state-wide level, the Pennsylvania Legislature amended the program in 2010 to include a provision that states that land devoted to subsurface transmission or gathering lines is excluded from any roll back taxes under the Clean and Green Program (Pepe and Kortlandt 2010). As such, Dominion does not anticipate any construction or operation of the Project to adversely impact a property's eligibility for Clean and Green. However, in the unlikely event that Dominion confirms Project activities would result in a disqualification of a property from

the Clean and Green Program or result in roll-back taxes, Dominion would compensate the affected landowner for the financial impact resulting from any such disqualification.

A portion of the TL-654 PA Loop is located within the Federal Aviation Administration (FAA) designated Surface Area for the Greene County Airport. This is a boundary established by the FAA to direct land use planning in the vicinity of the airport. The nearest proposed construction for the Project is located at the existing Crayne Compressor Station, which is located approximately 6,800 feet from the airport runway. Based on the Part 77 Notice Criteria, Dominion is not required to consult with the FAA because the construction at Crayne Compressor Station would be well below the 50 to 1 Above Ground Level (AGL) limit for development between 5,000 and 10,000 feet from the nearest runway.

B.5.2. Natural, Recreational, or Scenic Areas

Newark Compressor Station

The Newark Compressor Station is located adjacent to Dillion State Park. At 2,285 acres in size, the park offers a large selection of activities including boating, fishing and hunting, hiking, and picnicking. The park is also home to a diverse natural community of wildlife and vegetation (ODNR 2017b). Although this land is located adjacent to the construction limits of the Newark Compressor Station, we anticipate no impacts as a result of Project construction and operations because all work would occur on existing Dominion property.

Leidy M&R

The Sproul State Forest abuts the existing Leidy Compressor Station property boundary. Additionally, the Leidy Compressor Station falls within the Kettle/Young Women's Recreation region, per Pennsylvania Wilds (Pennsylvania Spatial Data Access [PASDA] 2006). This recreational region refers to Kettle Creek and Young Women's Creek, both of which are utilized for fishing. Construction at the Leidy M&R would not impact these streams, and any increase in construction traffic would be minimal and would not impact visitors to this region because the traffic would be temporary.

B.5.3. Visual Resources

Construction of the Project would result in temporary visual impacts including increased numbers of company personnel, presence/storage of additional equipment and materials, removal of vegetative and woody cover, and disturbance of soils. These impacts would generally cease following the completion of construction and successful restoration. No designated scenic or visually sensitive land uses or resources occur in the vicinity of the pipeline facilities. Due to the fact that both the TL-654 PA Loop and TL-653 OH Lateral are collocated in existing right-of-way, there would be minimal impact of any designated scenic or visually sensitive land uses or resources in the vicinity of the

Project. Facilities would not affect the view of the general public because the new aboveground facilities would either be near other existing facilities, like Port Washington M&R, or of a relatively small size, like the TL-654 North Tie-in.

All aboveground facilities for Newark, Leidy, and South Bend are within the existing properties of the respective compressor stations. The Project modifications at the existing stations would result in minimal to negligible visual changes, because various other facilities are already visible and the visual impact of the proposed modifications would be considered minor.

Table 10. Land Use Affected by Construction and Operation of the Project (acres)										
Project Component	**Agriculture**		**Forest**		**Developed Land**		**Open Land**		**Total**	
	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation
Pipelines TL-653 OH Lateral; Additional Temporary Workspace – OH; TL-654 PA Loop; Additional Temporary Workspace - PA	15.9	7.9	11.00	4.7	1.8	0.9	22.3	15.5	51.6	29.0
Aboveground Facilities Newark Compressor Station - OH; Port Washington M&R - OH; Additional Temporary Workspace (Port Washington M&R – OH); South Bend Regulation – PA	0.00	0.00	0.9	0.3	14.5	14.5	0.9	0.1	16.2	14.9
Associated Facilities Pig Launcher/Receiver on the TL-653 OH Lateral (north)	0.00	0.00	0.00	0.00	0.4	0.2	1.7	0.8	2.2	0.9
Pipe Storage/Contractor Yards Gilmore Pipe Yard – OH; Crayne Pipe Yard – PA; Crayne Pipe Yard Additional Temporary Workspace – PA	0.00	0.00	0.00	0.00	0.00	2.8	0.00	0.00	2.8	0.00
Access Roads Permanent – OH; Temporary – OH; Permanent – PA; Temporary - PA	0.00	0.00	0.5	0.5	3.0	1.5	1.3	1.3	4.8	3.3
Project Totals	15.9	7.9	12.3	5.5	25.4	17.1	60.2	17.6	113.9	48.2

B.6. Cultural Resources

Section 106 of the National Historic Preservation Act, as amended, requires the FERC to take into account the effects of its undertakings on properties listed in or eligible for listing in the National Register of Historic Places (NRHP) and afford the Advisory Council on Historic Preservation an opportunity to comment on the undertaking. Dominion, as a non-federal party, is assisting the Commission in meeting these obligations under Section 106 and the implementing regulations at 36 CFR 800 by preparing the necessary information, analyses, and recommendations, as authorized by 36 CFR Part 800.2(a)(3).

Pennsylvania

Dominion conducted cultural resources surveys of 3.2 miles of the TL654 loop with a 300-foot-wide corridor, 5 access roads and the approximately 33.6 acre Crayne contractor/storage yard. The archaeological survey identified one historic trash bottle dump, one isolated find and one historic field scatter. Dominion recommended these not eligible for the NRHP. The architectural survey identified two farmsteads and one cemetery, all recommended not eligible for the NRHP, but project has potential to affect Braden cemetery because the boundaries to the cemetery are indefinite. Dominion recommend buffer fence and monitoring. The Pennsylvania State Historic Preservation Officer (SHPO) concurred with these recommendations in letters dated May 18 and July11, 2017. However, FERC staff requested non-destructive testing to further define boundaries and reduce possibility of unanticipated human remains during construction. Dominion indicated they would conduct ground penetrating radar and frequency-domain electromagnetic terrain conductivity survey to further delineate the cemetery boundaries and file the results when complete.

The South Bend regulation station and the Leidy M&R new interconnect are both within existing disturbed compressor station properties and did not require a survey.

Ohio

Dominion conducted a cultural resources survey of 1.7 miles of the TL-632 lateral within a 300-foot-wide survey corridor, the Port Washington M& R Station at the end of TL-632 lateral, and one access road. The survey identified two prehistoric archaeological sites. One site is recommended not eligible and one recommended potentially eligible for the NRHP. The site recommended potentially eligible is located along the proposed access road. Dominion has eliminated this road from the Project area thus avoided any effects to the site.

Modifications at the Newark Compressor Station will take place within the existing disturbed facility and do not require survey. Portions of the existing Gilmore

Compressor Station will be used as a pipe yard, since these areas are previously disturbed they do not require survey. In a May 1, 2017 letter the Ohio SHPO recommended that the portion of the Project in Ohio would have no effect on any properties listed in or eligible for listing in the NRHP, however, one extra work space at the end of the pipeline segment has not yet been surveyed.

On February 13, 2017 Dominion wrote to 34 tribes with traditional ties to the area to request their comments on the Project. We sent our NOI (March 13, 2018) to the same tribes and on April 5, 2018 wrote letters to the same tribes plus three others, recommended to us by the BIA, to request their comments on the Project. The Stockbridge-Munsee Band of Indians and the Little Traverse Bay Bands of Odawa Indians responded that the Project was outside their area of interest. The Miami Tribe of Oklahoma responded that they had no objection to the Project but requested to be notified in the event of any unanticipated discovery. The Delaware Nation responded that they concurred with the proposed plan but requested to be notified in the event of any unanticipated discovery. The Forest County Potawatomi Community requested a copy of the cultural resources report for the Ohio portion of the Project. We provided them with the report but have not received any comments to date. The Cherokee Nation requested copies of the cultural resources reports for the Project. We provided them with copies of the reports but no comments have been received to date. The Osage Nation requested a copy of the cultural resources reports. Dominion provided the requested reports on May 24, 2017. No comments on the report have been received to date.

Dominion has prepared a plan for each state in the event any unanticipated historic properties or human remains are encountered during construction. We requested revisions to the plans which Dominion made. We find the revised plans to be acceptable.

Since survey and consultation is not complete for the Project, to ensure our responsibilities under the NHPA and its implementing regulations are met, **we recommend:**

- **Dominion should <u>not begin</u> construction of facilities and/or use of all staging, storage, or temporary work areas and new or to-be-improved access roads <u>until</u>:**

  a. **Dominion files with the Secretary:**
  (1) remaining cultural resources survey report(s);
  (2) site evaluation report(s) and avoidance/treatment plan(s), as required;
  (3) and comments on the cultural resources reports and plans from the Pennsylvania State Historic Preservation Office

b. **the Advisory Council on Historic Preservation is afforded an opportunity to comment if historic properties would be adversely affected; and**

c. **the FERC staff reviews and the Director of OEP approves the cultural resources reports and plans, and notifies Dominion in writing that treatment plans/mitigation measures (including archaeological data recovery) may be implemented and/or construction may proceed.**

All materials filed with the Commission containing location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CUI//PRIV- DO NOT RELEASE."

B.7. Air Quality and Noise

B.7.1. Air Quality

Federal and state air quality standards are designed to protect human health. The EPA has developed National Ambient Air Quality Standards (NAAQS) for criteria air pollutants such as oxides of nitrogen (NO_x) and carbon monoxide (CO), sulfur dioxide (SO_2), and inhalable particulate matter ($PM_{2.5}$ and PM_{10}). $PM_{2.5}$ includes particles with an aerodynamic diameter less than or equal to 2.5 micrometers, and PM_{10} includes particles with an aerodynamic diameter less than or equal to 10 micrometers. The NAAQS were set at levels the EPA believes are necessary to protect human health and welfare. Volatile organic compounds (VOC) and hazardous air pollutants (HAP) are also emitted during fossil fuel combustion.

Greenhouse Gases (GHG) produced by fossil-fuel combustion are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). GHGs status as a pollutant is not related to toxicity. GHGs are non-toxic and non-hazardous at normal ambient concentrations, and there are no applicable ambient standards or emission limits for GHG under the Clean Air Act. GHGs emissions due to human activity are the primary cause of increased levels of all GHG since the industrial age. These elevated levels of GHGs are the primary cause of warming of the climate system since the 1950s. These existing and future emissions of GHGs, unless significantly curtailed, would cause further warming and changes to the local, regional and global climate systems. During construction and operation of the Projects, these GHGs are emitted from construction equipment and fossil fuel combustion equipment like turbines and engines. Emissions of GHGs are typically expressed in terms of CO_2 equivalents (CO_{2e}).

The operating emissions from the Project would include venting emissions during pigging operations and fugitive emissions from equipment leaks.

Existing Environment

Air Quality Control Regions and Attainment Status

If measured ambient air pollutant concentrations for a subject area remain below the NAAQS criteria, the area is considered to be in attainment with the NAAQS. Areas that do not meet the NAAQS are termed "nonattainment areas." Areas for which insufficient data are available to determine attainment status are termed "unclassified areas"; areas designated as "unclassified" are treated as "attainment areas" for air permitting purposes. Areas formerly designated as nonattainment areas that have subsequently reached attainment are termed "maintenance areas."

An air-quality control region (AQCR), as defined in Section 107 of the Clean Air Act (CAA), is a federally-designated area in which federal ambient air quality standards must be met. An implementation plan id developed for each AQCR describing how ambient air quality standards would be achieved and maintained. Activities associated with the Project are located in the following AQCRs:

- Licking County, OH – Metropolitan Columbus Intrastate AQCR
- Tuscarawas County, OH – Zanesville-Cambridge Intrastate AQCR
- Armstrong County and Greene County, PA – Southwest Pennsylvania Intrastate AQCR
- Clinton County, PA - Central Pennsylvania Intrastate AQCR

Table 11 defines the attainment status of the Project facilities.

Table 11. Attainment Status of Project Facilities					
Facility	County, State	AQCR	Unclassifiable/ Attainment	Non-attainment	Maintenance
TL-653 OH Pipeline Lateral	Tuscarawas, OH	AWCR 183	SO_2, CO, O_3, $PM_{2.5}$, PM_{10},NO_2, P_b	N/A	N/A
Newark Compressor Station	Licking, OH	AQCR 176	SO_2, CO, O_3, $PM_{2.5}$, PM_{10},NO_2, P_b	N/A	O_3, $PM_{2.5}$
Port Washington M&R	Tuscarawas, OH	AQCR 183	SO_2, CO, O_3, $PM_{2.5}$, PM_{10},NO_2, P_b	N/A	N/A
TL-654 PA Pipeline Loop	Greene, PA	AQCR 197	SO_2, CO, O_3, $PM_{2.5}$, PM_{10},NO_2, P_b	O_3	O_3, $PM_{2.5}$
South Bend Regulation	Armstrong, PA	AQCR 197	SO_2, CO, O_3, $PM_{2.5}$, PM_{10},NO_2, P_b	SO_2 1-hour (moderate) O_3 (marginal)	N/A
Leidy M&R	Clinton, PA	AQCR 195	SO_2, CO, O_3, $PM_{2.5}$, PM_{10},NO_2, P_b	O_3	N/A

As shown in Table 11 above, all Project facilities in Ohio would be located in areas designated as unclassified or attainment for all criteria pollutants. South Bend Regulation would be located Bend, Armstrong County, PA, which is designated as moderate nonattainment for the 1-hour SO_2 standard and marginal nonattainment for O_3. Additionally, all of Pennsylvania is located in the Ozone Transport Region (OTR), which is designated as a moderate non-attainment area for Ozone in the CAA. Therefore, the Project facilities located in Greene County and Clinton County, PA (TL-654 PA Pipeline Loop and Leidy M&R, respectively), would be regulated as moderate nonattainment for ozone per the requirements for the OTR.

Federal Air Quality Requirements

The CAA (42 U.S.C 7401 et seq., as amended in 1977 and 1990), and 40 CFR Parts 50 through 99 is the basic federal statute governing air pollution in the United States. We have reviewed the following requirements and determined that they are not applicable to the proposed Project:

- New Source Review;
- Title V;
- National Emissions Standards for Hazardous Air Pollutants;
- New Source Performance Standards; and
- General Conformity of Federal Actions

Greenhouse Gas Reporting

On November 8, 2010, EPA signed a rule that finalizes reporting requirements for the petroleum and natural gas industry under 40 CFR Part 98. Subpart W of 40 CFR Part 98 requires petroleum and natural gas facilities that have actual greenhouse gas (GHG) emissions of 25,000 metric tons or more of carbon dioxide equivalent (CO_2e) per year to report annual emissions of specified GHGs from various processes within the facility and conduct associated monitoring. Natural gas transmission compressor stations are included in the Petroleum and Natural Gas Systems category regulated by Subpart W. Actual GHG emissions from the Newark Compressor Station and Gilmore Station have historically exceeded the 25,000 metric ton per year threshold and these facilities have reported their GHG emissions in accordance with 40 CFR Part 98, Subpart W. The other facilities associated with the Project would have actual GHG emissions well below the 25,000 metric ton per year threshold and would therefore be exempt from 40 CFR Part 98, Subpart W reporting.

Construction Emissions

During construction, a temporary increase in ambient air quality may result from emissions and fugitive dust generated by construction equipment. Air pollutants from construction equipment would be limited to the immediate vicinity of the construction area and would be temporary. There also would be some emissions attributable to vehicles driven by construction workers commuting to and from each Project's work site during construction. 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. Dominion proposes to address fugitive dust generation on a site-by-site and time-specific basis during periods where wind erosion and dust generation occur or are probable.

Additionally, fugitive natural gas emissions would be generated from the venting of the gas contained in system areas prior to connecting/installing the new pipeline segments, valves and regulators. These emissions would be vented directly to the atmosphere and purged from the system areas in order to provide safe work environment for construction proceed.

The fugitive dust emissions would be controlled primarily by limiting the area of earth to be disturbed and would be mitigated by spraying water to dampen the surfaces of dry work areas and/or by the application of other dust suppressants as needed. Air quality effects of emissions from fugitive dust, construction vehicles and equipment, and vented natural gas would be temporary because they would only occur during construction.

Emissions of NO_x, CO, $PM/PM_{10}/PM_{2.5}$, SO_2, VOC, and GHGs from construction non-road vehicle and equipment engines have been estimated for the Project construction activities. The GHG emissions from the Project's non-road construction equipment are a result of the combustion of diesel fuel that produces emissions of CO_2, CH_4, and N_2O. Air emissions associated with the venting of natural gas would also be associated with the construction activities. Prior to connecting the new pipeline into the system and installing the new valves and regulators, the natural gas contained within the specific location of the system would need to be vented prior to installing system components and commencing operations. These emissions would be vented directly to the atmosphere and would consist of VOCs and GHGs (CO_2 and CH_4).

Table 12 provides a summary of the total projected construction emissions for the Project.

Table 12. Construction Emissions Summary (tpy)

Location	CO	NO_x	SO_2	VOC	PM_{10}	$PM_{2.5}$	CO_2e
Newark CS	0.0	0.0	0.0	0.0	0.3	0.0	10
TL-653 OH Pipeline Lateral	1.2	0.9	0.1	0.3	2.6	0.3	594
Port Washington M&R	0.1	0.0	0.0	0.0	0.2	0.0	26
TL-654 PA Pipeline Loop	0.6	1.1	0.0	1.9	8.2	0.9	3,996
South Bend Regulation	0.0	0.0	0.0	0.0	0.3	0.0	69
Leidy M&R	0.0	0.0	0.1	0.0	0.9	0.1	181

Criteria pollutant and GHG emissions during construction equipment would result from combustion of gasoline and diesel fuels, primarily NO_2, CO, volatile organic compounds (VOCs), $PM_{10/2.5}$, and CO_{2e} as well as small amounts of SO2. Emissions would occur over the duration of the construction activity. As stated, impacts from construction equipment would be temporary and would not result in a significant impact on regional air quality or result in any violation of applicable ambient air quality standard. Furthermore, current EPA fuel sulfur standards would also minimize emissions from construction equipment.

General Conformity

The requirements outlined in the CAA's general conformity regulations (40 CFR 93, Subpart B) apply to areas designated as "nonattainment" or "maintenance" areas with respect to the NAAQS. Armstrong County in PA is designated as nonattainment for ozone and SO_2. Greene County, PA and Licking County, OH are maintenance areas for ozone and $PM_{2.5}$. The remaining Project areas are designated as "unclassifiable/attainment" with respect to all criteria pollutants. A Project located in a nonattainment area is subject to conformity requirements if potential emissions exceed a pollutant specific threshold as specified in §93.153. Table 13 identifies the conformity thresholds for the Project that are designated as nonattainment for one or more pollutants.

Table 13. Conformity Thresholds (tpy)							
Project Location	AQCR	Nonattainment Pollutants	NO_x	VOC	SO_2	PM_{10}	$PM_{2.5}$
Newark CS	176	O_3, $PM_{2.5}$ (maintenance)	100	100	N/A	100	100
TL-654 PA Pipeline Loop	197	O_3 OTR) $PM_{2.5}$ (maintenance)	100	50	N/A	100	100
South Bend Regulation	197	9_3 (marginal) SO_2 (moderate)	100	100	100	N/A	N/A
Leidy M&R	195	O_3 (OTR)	100	50	N/A	N/A	N/A

For moderate and marginal ozone nonattainment areas in the OTR and ozone maintenance areas in the OTR, the NO_x and VOC emission thresholds are 100 tpy and 50 tpy, respectively. For areas designated as moderate nonattainment for $PM_{2.5}$ or SO_2, the major source threshold for each pollutant is 100 tpy. For ozone maintenance areas outside of the OTR, the NO_x and VOC emission thresholds are 100 tpy.

As part of the general conformity applicability determination process, the sum of non-exempt direct and indirect emissions of nonattainment pollutants and designated precursors is compared to the general conformity applicability emissions thresholds. If an applicability threshold is exceeded, then general conformity applies and a conformity determination is required.

Under the general conformity regulations, emissions from stationary sources that are covered by an NSR permit (major or minor) are exempt from general conformity. The VOC emissions associated with the operation of proposed new pigging operations at the TL-653 OH Pipeline Lateral would be covered under a minor source General Permit and therefore, are exempt from general conformity. Non-exempt emissions from other Project activities, including emissions from construction, must be evaluated to determine if general conformity applies. In accordance with EPA guidance, if emissions from a Project subject to federal action occur in more than one nonattainment or maintenance area, then each area would be evaluated separately.

The construction emissions presented in table 12 and the operating emissions presented in table 14 are below the general conformity thresholds for all project sites and therefore, the Project would be exempt from general conformity requirements.

Operational Emissions

The Project would include the following new operational stationary emission sources:

- Pig Launcher/Receivers on the TL-653 OH Pipeline
  - Install pig launcher on the TL-400 right-of-way, along with valve site, just south of Gilmore M&R (northern terminus).
  - Install new pig receiver at the southern terminus of TL-653 OH Lateral at the new Port Washington M&R.
- Mainline Gate Valve Assemblies on the TL-654 PA Loop
  - Install mainline gate valve assemblies on the TL-591 pipeline and the new TL-654 PA Loop.
- Fugitive Emissions
  - Minor emissions due to fugitive gas losses from valves, flanges, connectors, and pneumatic actuators associated with the new piping, mainline gate valve assemblies, and pig launcher/receivers.

Table 14 provides a summary of the total projected operational emissions for the Project which are minor VOC and GHGs.

Table 14. Operational Emissions Summary (tpy)

Location	CO	NO_x	SO_2	VOC	PM/PM_{10}	$PM_{2.5}$	CO_2e
TL-653 OH Pipeline Lateral	N/A	N/A	N/A	0.0	N/A	N/A	129
Port Washington M&R	N/A	N/A	N/A	0.1	N/A	N/A	274
151	N/A	N/A	N/A	0.0	N/A	N/A	151
South Bend Regulation	N/A	N/A	N/A	0.0	N/A	N/A	7
Leidy M&R	N/A	N/A	N/A	0.0	N/A	N/A	28

Operational impacts would be mitigated by complying with all applicable air quality standards and performing vendor recommended operational and maintenance activities on the operational emission sources. We conclude that impacts from construction and operation would be temporary and would not result in a significant impact on regional air quality or result in any violation of applicable ambient air quality standard.

B.7.2. Noise

Regulatory Noise and Vibration Requirements

Noise quality can be affected both during construction and operation of the Projects. The magnitude and frequency of environmental noise may vary considerably over the course of the day, throughout the week, and across seasons, in part due to changing weather conditions and the effects of seasonal vegetative cover. Two measures to relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level (L_{eq}) and day-night sound level (L_{dn}). The L_{dn} is an energy average of the daytime L_{eq} (i.e., L_d) and nighttime L_{eq} (i.e., L_n) plus 10 decibel (dB). The A-weighted scale is used because human hearing is less sensitive to low and high frequencies than mid-range frequencies. The human ear's threshold of perception for noise change is considered to be 3 A-weighted decibel (dBA); 6 dBA is clearly noticeable to the human ear, and 10 dBA is perceived as a doubling of noise.

The EPA has determined that an L_{dn} of 55 dBA adequately protects the public from indoor and outdoor activity noise interference. FERC's regulations require that the noise attributable to any compressor station, compression added to an existing station, or any modification, upgrade or update of an existing station, must not exceed an L_{dn} of 55 dBA at noise sensitive areas (NSAs). NSAs include residences, schools and daycare facilities, hospitals, long-term care facilities, places of worship, libraries, and parks and recreational areas especially known for their solitude and tranquility, such as certain wilderness areas. An L_{dn} of 55 dBA is equivalent to a continuous noise level of 48.6 dBA.

In addition to noise requirements, FERC, under 18 CFR 380.12(k)(v)(B) requires that operation of compressor stations not result in any perceptible increase in vibration. There are no state or county noise ordinances applicable to the Projects' components.

Neither OH nor PA have established noise standards reflected as numerical dB limits applicable to the Project.

There are no other known county or local regulations that would directly be applicable to the Project.

Construction Noise

Noise would be generated during construction of the Project' facilities. While individuals in the immediate vicinity of the construction activities would experience an increase in noise, this effect would be temporary and localized. The changing number and type of construction equipment at these sites would result in varying levels of noise. Construction activities associated with the Projects would be performed with standard heavy equipment. The most prevalent sound source during construction would be the

internal combustion engines used to power the construction equipment, such as backhoes, track-excavators, and cement trucks. Construction noise, while varying according to equipment in use, would be mitigated by the attenuating effect of distance and the intermittent and short-lived character of the noise.

The short-term nature and small expected magnitude of the potential construction noise impacts do not warrant any special mitigation measures. However, as a general good construction practice to reduce construction noise, functional mufflers would be maintained on all construction equipment. No adverse or long-term noise impacts from construction noise are therefore anticipated.

Operational Noise

Operational Noise would be limited to Port Washington and Leidy M&R stations since these include installation of ultrasonic meters with regulator valves located in an acoustically insulated meter and regulation buildings.

Operation of the Port Washington and Leidy M&R stations may result in long-term increases noise levels in the vicinity of each station. NSA sound surveys were conducted to document the existing ambient sound levels at the two M&R station sites. The purpose of the noise analyses was to predict the sound levels due to the M&R stations at the NSAs and specify the noise mitigation measures required to reduce the M&R station sound levels to meet the FERC limit of a maximum L_{dn} sound levels at the NSAs.

The site of the Port Washington M&R Station is located west of Pleasant Valley Road in Port Washington, Ohio. The land uses surrounding this site are residential, agricultural, and forested areas. The nearest NSAs are approximately 2100 feet south, 1700 feet southeast, 700 feet east-southeast, 1200 feet northeast, and 2600 feet west.

The site of the Leidy M&R Station is located west of Steward Hill Road in Renovo. The land uses surrounding this site are residential, industrial, and forested areas. The nearest NSAs are approximately 2,000 and 2,400 feet southwest, 1,900 feet south-southwest, 1,150 feet southeast, 1,150 feet southeast, 1,300 feet east, and 2,600 feet north.

Table 15 presents a comparison of the calculated levels with existing levels, the combined future levels, and the expected net increase at NSAs for the Port Washington M&R. The expected increases in noise levels at the NSAs in the vicinity of the Port Washington M&R are shown to be comparatively small, less than 1 dBA. At the nearest NSAs, the predicted total L_{dn} sound levels range from 40.8 to 44.6 dBA. These total L_{dn} are below the 55 dBA criteria.

Table 15. Operational Noise Impacts Results for Port Washington M&R (dBA)				
NSA/Receptor	Existing Measured L_{dn}	L_{dn} for Proposed Port Washington Station	Total L_{dn} (Existing plus the Port Washington Station)	Expected Increase
NSA-1 – Residence	42.8	24.4	42.9	0.1
NSA-2 – Residence	40.7	26.4	40.8	0.1
NSA-3 – Residence	42.4	35.4	43.2	0.8
NSA-4 – Residence	41.2	30.4	41.5	0.3
NSA-5 – Residence	44.6	22.4	44.6	0.0

Table 16 presents a comparison of the calculated levels with existing levels, the combined future levels, and the expected net increase at NSAs for the Leidy M&R. The expected increases in noise levels at the NSAs in the vicinity of the Leidy M&R are shown to be comparatively small, less than 1 dBA. At the nearest NSAs, the predicted total L_{dn} sound levels range from 42.8 to 56.2 dBA. These total L_{dn} sound levels are below 55 dBA at NSa-1 and NSa-3 through NsA-6. At NSA-2, where the total L_{dn} sound level is over 55 DBA, the predicted L_{dn} sound level from the M&R statin equipment is lower than the ambient L_{dn} sound level and three is no resulting increase to the existing ambient L_{dn} sound level.

Table 16. Operational Noise Impacts Results for Leidy M&R (dBA)				
NSA/Receptor	Existing Measured L_{dn}	L_{dn} for Proposed Leidy Station	Total L_{dn} (Existing plus the Leidy Station) Station)	Expected Increase
NSA-1 – Residence	51.9	23.4	51.9	0.0
NSA-2 – Residence	56.2	25.4	56.2	0.0
NSA-3 – Residence	48.0	25.4	48.0	0.0
NSA-4 – Residence	45.6	30.4	45.7	0.1
NSA-5 – Residence	42.6	29.4	42.8	0.2
NSA-6 – residence	42.8	22.4	42.8	0.0

Based on the analyses conducted, we conclude that the construction and operation of the Project would result in no significant noise impacts.

Vibration

In addition to noise requirements, the Commission, under 18 CFR 380.12(k)(v)(B), requires that operation of the Port Washington and Leidy M&R Stations not result in any perceptible increase in vibration.

Because noise sources that could cause ground borne vibration would be adequately mitigated, there should not be a perceptible increase in vibration at existing NSAs during operation of the M&R stations.

Based on the analyses conducted and mitigation measures proposed, we conclude that the construction and operation of the Project would result in no significant vibration impacts.

B.8. Reliability and Safety

The transportation of natural gas by pipeline involves some incremental risk to the public due to the potential for 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, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death. The natural gas for the Dominion pipeline would contain a chemical odorant that produces the familiar "natural gas smell".

Methane has an auto-ignition temperature of 1,000 degrees Fahrenheit and is flammable at concentrations between 5.0 percent and 15.0 percent in air. An unconfined mixture of methane and air is not explosive, however it may ignite and burn if there is an ignition source. A flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

The proposed facilities for the Project would be designed, operated and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. The DOT specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion.

The facilities would be within a secured, fenced area without access to the public. Based on Dominion's commitment to comply with DOT's regulations, construction and operation of the Project would represent a minimal increase in risk to the public, and we are confident that the Projects' facilities would be constructed and operated safely.

B.9. Cumulative Impacts

In accordance with NEPA and FERC policy, we evaluated the cumulative impacts of the Project and other projects in the area. 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 region 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 considered projects within geographic boundaries/scopes as described below and listed in table 17. Actions/projects located outside the geographic scopes are generally not evaluated because their potential to contribute to a cumulative impact diminishes with increasing distance from the Projects.

Actions/projects with the potential to contribute to cumulative impacts within the same geographic scope and timeframe as the Project are provided in Appendix 1 which specifically provides a brief description of these actions, identifies the locations and distances of the actions from the Project, and characterizes timeframe for this actions (e.g., past, present, and future).

Table 17. Geographic Scope for Resources Affected by the Project

Resource	Geographic Scope	Rationale
Water Resources and Water Quality, Vegetation and Wildlife, Special-Status Species.	Watershed Boundary (HUC 12)	The HUC 12 sub-watershed boundary was chosen to analyze cumulative impacts on wildlife and vegetation as impacts on vegetation, wetlands, wildlife, would largely be contained within or adjacent to the proposed workspaces. Surface water impacts could extend outside of the proposed workspaces, but would be contained to a relatively small area.
Land Use, and Aesthetics	Area of disturbance associated with the Project and within 1 mile of the Project for viewshed	Impacts on land uses, recreation, and aesthetics generally occur within and adjacent to Project areas. Accordingly, the geographic scope for the Project - related impacts on land use, recreation, and aesthetics is defined as a 1-mile buffer surrounding the Project facilities.
Geology and Soils	Area of disturbance associated with the Project and within 0.5 mile of the Project	To assess potential cumulative impacts, the geographic scope is defined as the area encompassed by a 0.5-mile buffer on either side of the pipeline ROW and around the construction work areas. Because direct effects are highly localized and limited primarily to the period of construction, cumulative impacts on geologic and soil resources and conditions are more likely to occur if other projects are constructed at the same time and in the same geographic footprint as the Project.
Cultural Resources	Area of disturbance associated with the Project and 1 mile for aboveground resources	Project-related direct impacts are confined to those areas within the Project LOD and directly adjacent. The geographic scope for Project-related direct impacts are therefore confined to those areas potentially affected by the pipeline looping, access roads, staging areas, pipe/contractor yard, and ATWS. Indirect effects encompasses historic structures buildings, or districts within view of modifications at existing aboveground Project facilities or in view of landscape changes (e.g., hedge or tree clearing) and the area encompassed by a 1-mile buffer around the construction work areas.
Soils	Area of disturbance associated with the Project and within 0.5 mile of the Project	Soil resources are generally not affected by activities occurring outside the designated work area. A cumulative impact analysis would identify the impacts on soils within the area of disturbance. The cumulative impact analysis would present the potential impacts on soils of the Project and other actions, up to 0.5 mile to take into account wind erosion and transport of soil particulates, as well as effective mitigation measures.
Air Quality	Within 0.25 mile of construction workspaces and 10-kilometer (km) radius from Project site center	Air quality would be associated with the operation of the new aboveground facilities as well as with construction activities for the Project. The air emissions associated with the operation of the new aboveground facilities would either be exempt from air permitting requirements or consist of minor permitting actions.

Table 17. Geographic Scope for Resources Affected by the Project

Resource	Geographic Scope	Rationale
		The 10 km radius is considered to be a conservative estimate for a sufficient geographic scope for minor permitting changes included in the scope of the Project at the various stations.
Noise and Vibration	Up to 0.5 mile from Project area	The geographic Scope used to evaluate the cumulative impacts for noise was defined as the area encompassed by a 0.5-mile buffer around the construction work areas. For aboveground facilities, the furthest noise sensitive area (NSA) identifies was approximately 0.5 mile of a Project facility. This geographic area is appropriate because if other noise-generating actions are occurring within 0.5 mile of the Project it is expected that NSAs could experience cumulative noise impacts due to the nature of sound propagation. For the pipeline loop, lateral, and extension, direct effects are highly localized and limited primarily to the period of construction. As a result, cumulative impacts due to noise are more likely to occur if other projects are constructed at the same time.

Geology and Soils

Concurrent or consecutive construction schedules could prolong the duration that soils are disturbed and thus susceptible to erosion and invasive species establishment. There are three projects that have the potential for spatial and temporal overlap with construction of the TL-654 PA Loop and the Newark Compressor Station: the Supply Header Project (construction 2017-2019), the Lebanon West II Project (in service 2016, restoration not complete), and the Penndot 98380 Project (resurfacing of PA 221 from PA 188 to US 19; intersects TL-654 PA Loop at MP 1.28 with construction planned to begin in 2018). Because the permanent impacts on soils associated with the Project are relatively small, the Project would not significantly contribute to any potential cumulative impacts on soils. Further, due to the limited extent of overlapping footprints as well as soil conservation and restoration measures that would be implemented by all projects to prevent erosion and stabilize disturbed areas, cumulative impacts on soils are anticipated to be negligible.

Due to the limited extent of overlapping footprints and limited depth of disturbance in areas of overlap, cumulative impacts on geologic resources are anticipated to be negligible.

Water Resources

There are several other past/ongoing, present, and reasonably foreseeable projects within the watershed affected by the Project. Several FERC jurisdictional projects are located in the same watersheds affected by the Project and would or could cross, or have crossed (if construction has already been completed) waterbodies using similar open cut methods which could cause turbidity and sedimentation of downstream resources. The following FERC jurisdictional projects have crossed waterbodies in the watersheds affected:

- Supply Header Project (construction in progress)
- Appalachian Gateway Project (construction compete)
- Tioga Area Expansion Project (construction complete)
- Lebanon West II (construction complete)
- Leidy South Project (construction complete)
- Equitrans Expansion Project (construction in progress)

In addition, several non FERC jurisdictional projects would cross waterbodies in the same watersheds affected by the Project within a similar time period as the Project. The following transportation projects would involve waterbody crossings in the affected watersheds:

- PENNDOT 98380 resurfacing of PA 221 (construction to begin 2018)

- PENNDOT105393 SR 1014 over Castile Run (replacement of structure)
- PENNDOT 89073 over Bridge Ten Mile Creek (rehabilitation of structure)

Upland construction has the potential to cause runoff into nearby waterbodies and contribute indirectly to sedimentation, turbidity, and fuel/chemical contamination in streams. Due to Dominion's proposed erosion control and spill prevention and control measures, we conclude that the Project is not likely to contribute indirectly to cumulative impacts on waterbodies. Additionally, due to the limited number of perennial waterbodies crossed and Dominion's mitigation measures to protect waterbodies and downstream resources, we conclude that the Project would not significantly contribute to cumulative impacts on waterbodies or surrounding watersheds when considered with other projects in the geographic scope.

Because the Project would have a minimal impact on wetlands (total of 1.5 acre and 0.2 acre of permanent impact), we conclude that the Project would not contribute significantly to cumulative wetland impacts in the geographic scope of impacts defined for the Project.

Vegetation and Wildlife

Clearing of vegetation can result in changes in vegetation communities over the long term and introduce the spread of invasive species. Multiple projects occurring in the same area can cumulatively increase the chance for introduction and spread of invasive or noxious plants. To prevent further spread of noxious weeds that may occur in Project work areas, Dominion would implement BMPs to limit the spread and invasive species during construction and operation of the Project. There are four HUC-12 watersheds affected by the Project. Appendix 1 identifies other projects in the affected watersheds that are affected or would affect similar vegetation communities.

Restoration for some of the projects would be complete before the construction of the Project commences; however, forested areas may take decades to return to pre-construction conditions. Due to the limited amount of forest clearing that would occur as a result of the Project, and Dominion's commitment to restore temporary workspace areas to pre-construction vegetation communities, we conclude that the Project would not significantly contribute to cumulative impacts on vegetation when considered with other projects in the geographic scope.

Loss of forested areas, vegetation communities, and wetlands can result in cumulative impacts on habitat for wildlife and sensitive species. Additionally, sedimentation and turbidity caused by in-water work from multiple projects could result in cumulative impacts on fish and aquatic species through alteration of habitat and changes to the aquatic environment.

Protection of threatened, endangered, and special status species is part of the federal and state permitting process, so cumulative impacts on those species would be minimized through conservation and mitigation measures identified through the individual consultations. Therefore, the other projects identified in combination with the Project are anticipated to have only minor impacts on protected species.

The Project would contribute long-term cumulative impacts on forested habitats used by wildlife. However, due to the limited amount of forest clearing that would occur as a result of the Project, the prevalence of similar habitat in close proximity, and Dominion's commitment to restore temporary workspace areas, the Project would not significantly contribute to cumulative impacts on wildlife when considered with other projects in the geographic scope.

Cultural Resources

The geographic scope for Project-related direct impacts on NRHP-eligible cultural resources are confined to those areas within and directly adjacent to the Project limit of disturbance (LOD). The geographic scope for indirect effects encompasses NRHP-eligible historic structures/buildings or districts within view of modifications at existing aboveground Project facilities or in view of landscape changes (e.g., hedge or tree clearing). However, no NRHP-eligible sites, structures or districts were identified within the area of potential effect for the project, therefore the project would not contribute to or cumulatively result in effects to cultural resources when combined with other projects.

Land Use, Recreation, and Aesthetics

As discussed previously, no significant changes in land use would occur as a result of the Project. Land within the construction work areas that would be temporarily affected by the Project would be allowed to convert to its previous use. Because the Project involves replacement activities and modifications at existing facilities, the impacts on visual resources are anticipated to be minimal. Other projects in the geographic scope, such as increase agricultural activities and development (i.e., urban, industrial, and commercial) could involve impacts on land use, recreation, and visual resources. However, we expect that these impacts would also be minor. Therefore, we conclude that constructing and operating the Project would not result in a significant cumulative impact.

Air Quality and Noise

The geographic scope for air quality is based on the concept of "significant concentration gradient" in which impacts from a given facility are reviewed to determine how quickly concentrations diminish out from the site. The 10 km radius is considered to be a conservative estimate for a sufficient geographic scope for minor permitting changes

included in the scope of the Project at the various stations. Projects considered for cumulative impact analysis with respect to air resources are identified in Appendix 1.

Twelve projects were identified within one mile of the Project's new emission sources and seven (19 total) projects were identified within 10 kilometer (km) of them. Construction of some of these projects is either i) already complete, ii) would occur in phases over many years which reduces their impact at a given location during a given time period, or iii) would occur at varying distances from the Project such that construction of many of the other projects would result in a minimal, if any, cumulative impact with Project construction activities. Because construction activities for the Project, along with the other projects, would be localized, temporary, and of short duration in a particular area, the cumulative effect of construction activities would not cause or significantly contribute to a violation of the NAAQS, and the cumulative impact on air quality during Project operation is not expected to result in significant adverse air quality impacts.

Fugitive dust may result from land clearing, grading, excavation, and vehicle traffic on paved and unpaved roads. The operation of construction vehicles and equipment would also generate air emissions during the construction period because construction vehicles and equipment would burn diesel fuel or gasoline. The air quality effects of emissions from fugitive dust, construction vehicles and equipment would be temporary because they would only occur during the construction period. Generally, construction projects with overlapping construction schedules may contribute to a cumulative air emissions impact. Construction cumulative impacts are highly variable and can only be estimated due to several factors that vary spatially and temporally for the group of projects. These factors include timing of construction, intensity and type of activities underway at any given time, quantity and size of emission producing equipment in operation, weather conditions, and distance separating construction activities. When construction is complete for a project, it would no longer contribute to cumulative effects with other projects.

New operational emissions are predominantly *de minimis* amounts of VOC and GHG emissions associated with fugitives from pipeline connections and venting from pigging operations. Due to the minor nature of these emissions, all of these activities are exempt from air permitting requirements with the exception of the emissions associated with the pigging operations at Port Washington M&R and Gilmore M&R. These two facilities would comply with Ohio's General Permit 21.1 (GP21.1) governing pigging operations. Dominion would complete the permitting process for the proposed new emission sources and would operate in compliance with air quality guidelines. Successful completion of the applicable air permitting process and compliance with the provisions of the air permits would ensure that the Project does not create or significantly contribute to any exceedances of applicable air quality standards or other adverse impacts on air quality.

In general, operation of the projects listed above would have air emissions associated with them; however, the other sources of air emissions from operation of these recent or planned projects are or would be controlled in accordance with state and federal air pollution laws and regulations. Thus, the long-term cumulative impacts associated with operation are not anticipated to be significant.

Construction activities can produce an increase in noise levels. However, the impact of noise is highly localized and attenuates quickly as the distance from the noise source increases; therefore, cumulative impacts are unlikely unless one or more projects are constructed at the same time in the same location. Moreover, since the majority of noise impacts associated with the Project would be limited to the period of construction, its contribution to cumulative noise impacts would primarily be for only a short duration. Cumulative construction noise impacts are mostly likely to occur when two or more projects are being constructed simultaneously within 0.5 mile of each other. The construction of the TL-654 PA Loop and PENNDOT Project No. 98380 (i.e, crosses T<654-PA Loop at MP 1.28) are both anticipated to occur in 2018. However, the construction of these two projects occurring at the same time within 0.5 mile is highly unlikely. Also pending oil/gas well projects could be under construction within the region of influence of the project facilities at the same time that Dominion's proposed construction would take place. However, the cumulative effect is expected to be minor and temporary. Implementing BMPs, such as reducing the time machinery idles, can minimize potential noise impacts during construction-related clearing and grading, and the associated vehicular traffic and noise from both vehicles and the operation of equipment and the cumulative effect is expected to be minor and temporary.

Potential noise effects from the Project could be caused by short-term increases in noise during construction and long-term increases in noise due to operation of the Project. Construction of the Project facilities would involve general construction equipment and noise would occur during the installation of the Project components. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of the day and throughout the week. Construction noise is highly variable, as the types of equipment in use at a construction site change with the construction phase and the type of activities. Noise impacts from construction of the Project are expected to be minor to moderate, and temporary (i.e., limited to the construction phase). Following construction, there would be noise impacts associated with the M&Rs and compressor station operations. Potential noise impacts would be below local town and county noise ordinances, as well as FERC noise limit criterion. Other projects in the Project area, such as increased agricultural activities and development (i.e., urban, industrial, and commercial) could also involve impacts on noise quality. However, no adverse or long-term noise impacts from construction noise are anticipated.

SECTION C – ALTERNATIVES

In accordance with NEPA and Commission policy, we considered and evaluated alternatives to the proposed action, including the no-action alternative and system alternatives. Due to the collocation of the aboveground facilities and the proposed pipelines and the impacts of these facilities, we did not identify or consider aboveground facility location alternatives or alternative pipeline routes. The evaluation criteria applied to each alternative include a determination whether the alternative:

- meets the objective of the proposed Project:
- is technically and economically feasible and practical; and
- offers a significant environmental advantage over the proposed Project.

Through environmental comparison and application of our professional judgment, 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. The impacts associated with the Project 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.

The alternatives were reviewed against the evaluation criteria in the sequence presented above. The first consideration for including an alternative in our analysis is whether or not it could satisfy the stated purpose of the Project or project component. An alternative that cannot achieve the purpose for the Project cannot be considered as an acceptable replacement for the Project. All of the alternatives considered here are able to meet the Project purpose stated in section A.2 of this EA.

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 is 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.

Alternatives that would not meet the Projects' objective or were not feasible were not brought forward to the next level of review (i.e., the third evaluation criterion). 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 Projects 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.

C.1. **No** Action **Alternative**

Implementing the No-Action Alternative would result in the proposed Project not being constructed. Although the no action alternative would eliminate the short and long-term environmental impacts associated with the Project, the customer and end use markets would not receive the necessary natural gas service. This would likely result in a shortfall of gas to meet the demand. Furthermore, given the constrained natural gas pipeline transportation situation in the Midwest region of the United States, without the proposed Project, other natural gas transmission companies would likely be required to increase their capacity and construct new facilities to meet the demand. Any subsequent projects would result in their own set of specific environmental impacts that could be equal to or greater

than those described for the current proposal. Therefore, we conclude that the no-action alternative would not meet the objectives of the proposed Project.

C.2. System Alternatives

System alternatives are alternatives to the proposed action that would make use of other existing, modified, or proposed natural gas systems that would meet the stated objective of the proposed Project. The objective of identifying and evaluating system alternatives is to determine if potential environmental impacts could be avoided or reduced by using a different pipeline system or configuration. We considered system alternatives involving various combinations of looping and compression to accommodate the desired levels of firm transportation.

System Alternative to Re-wheeling Three Existing Compressor at Newark Compressor Station

In lieu of re-wheeling three existing compressors at the Newark Compressor Station approximately 5.6 miles of 24-inch looping pipeline would need to be installed just upstream (east) of the station to maintain all existing contract obligation capacities and pressures on Dominion's TL-400 line. Figure 2 identifies the System Alternative to Re-Wheeling Existing Driven Compressors at Newark Compressor Station. This alternative would meet the Project purpose and need, however it would not represent an significant environmental advantage over the proposed re-wheeling at the Newark Compressor Station. This looping alternative would require pipeline construction and the disturbance to a minimum of 50 acres of land (i.e. 5.5 mile-long by 75-foot-wide corridor), resulting in a significantly greater environmental impacts. As proposed, re-wheeling the three existing compressors at the Newark Compressor Station would be within the station's existing building and minimal disturbance would take place to install new station piping within the station's property. Given the significant environmental impacts associated with the system alternative to re-wheeling three existing compressor at Newark Compressor, this alternative was eliminated from further consideration.

System Alternative to TL-654 PA Pipeline Loop

As an alternative to the TL-654 PA Loop which provides additional capacity for the TL-591 pipeline, an analysis was performed for a loop at the north end of the TL-591 pipeline. Approximately 8.0 miles of 24-inch-diameter pipeline looping would need to be installed upstream (north) of the JB Tonkin Compressor Station in Westmoreland County, PA. Figures 3 and 4 (Sheet 1 & 2) identifies the System Alternative to TL-654 Loop. Although such an alternative would meet the Project purpose and need, it would not have a significant environmental advantage

over the TL-654 Loop. Instead, this alternative would result in greater environmental impacts given the additional length of the alternative corridor and would also result in an increased number of waterbody and wetland crossings and greater clearance of forested land. Because of the more extensive environmental impacts associated with this alternative, this alternative was eliminated from further consideration.

Our review of the proposed Project found no significant environmental impacts that would drive an evaluation of additional major route alternatives or minor route variations. In addition, we received no comments during scoping that suggested we consider route alternatives to the proposed Project.

In conclusion, we have determined that the proposed Project, as modified by our recommended mitigation measures in Section D below, is the preferred alternative that can meet the Project objectives.

Figure 2. System Alternative to Re-Wheeling Existing Driven Compressors at Newark Compressor Station

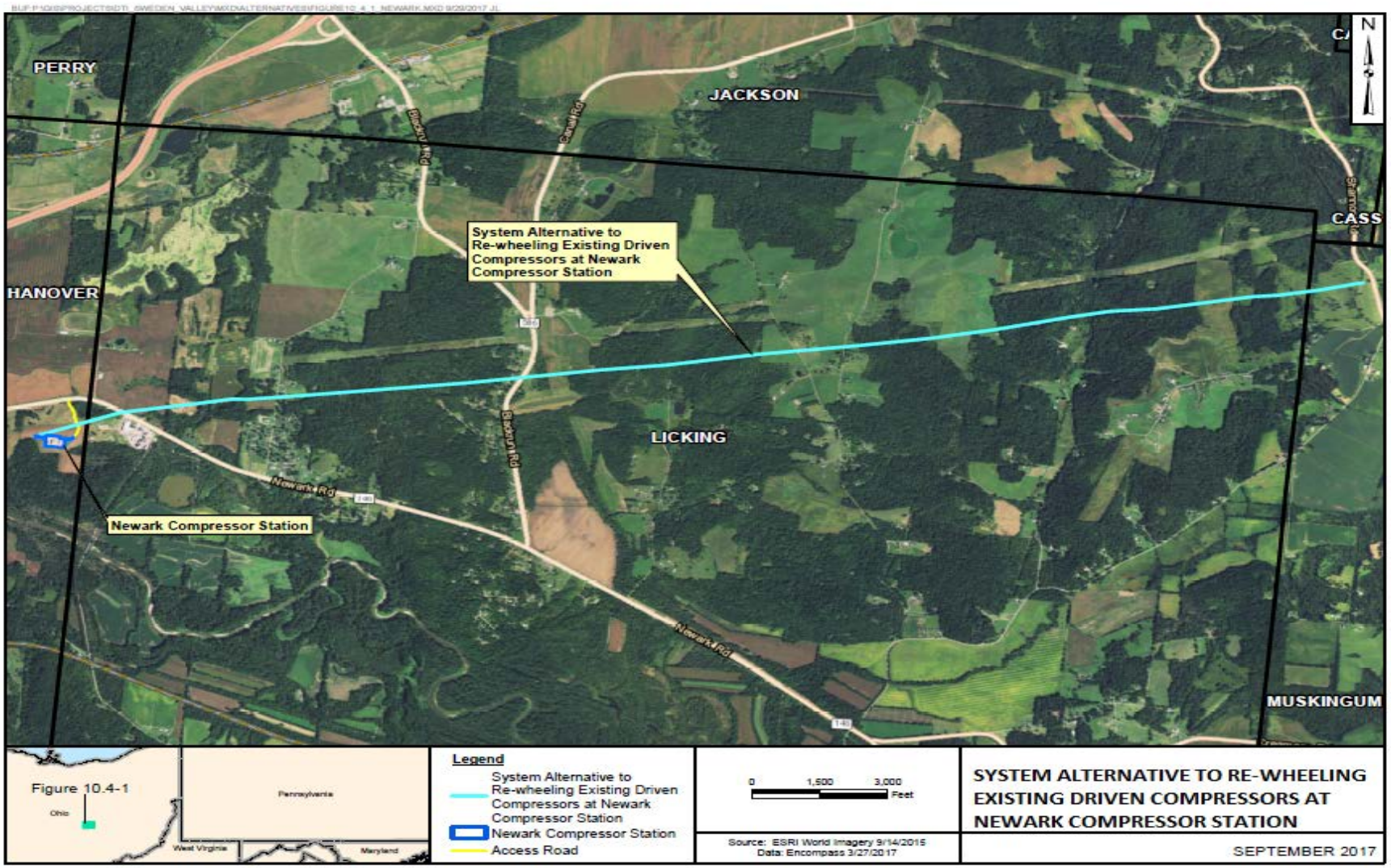


Figure 3. System Alternative to TL-654 PA Pipeline Loop (Sheet 1)

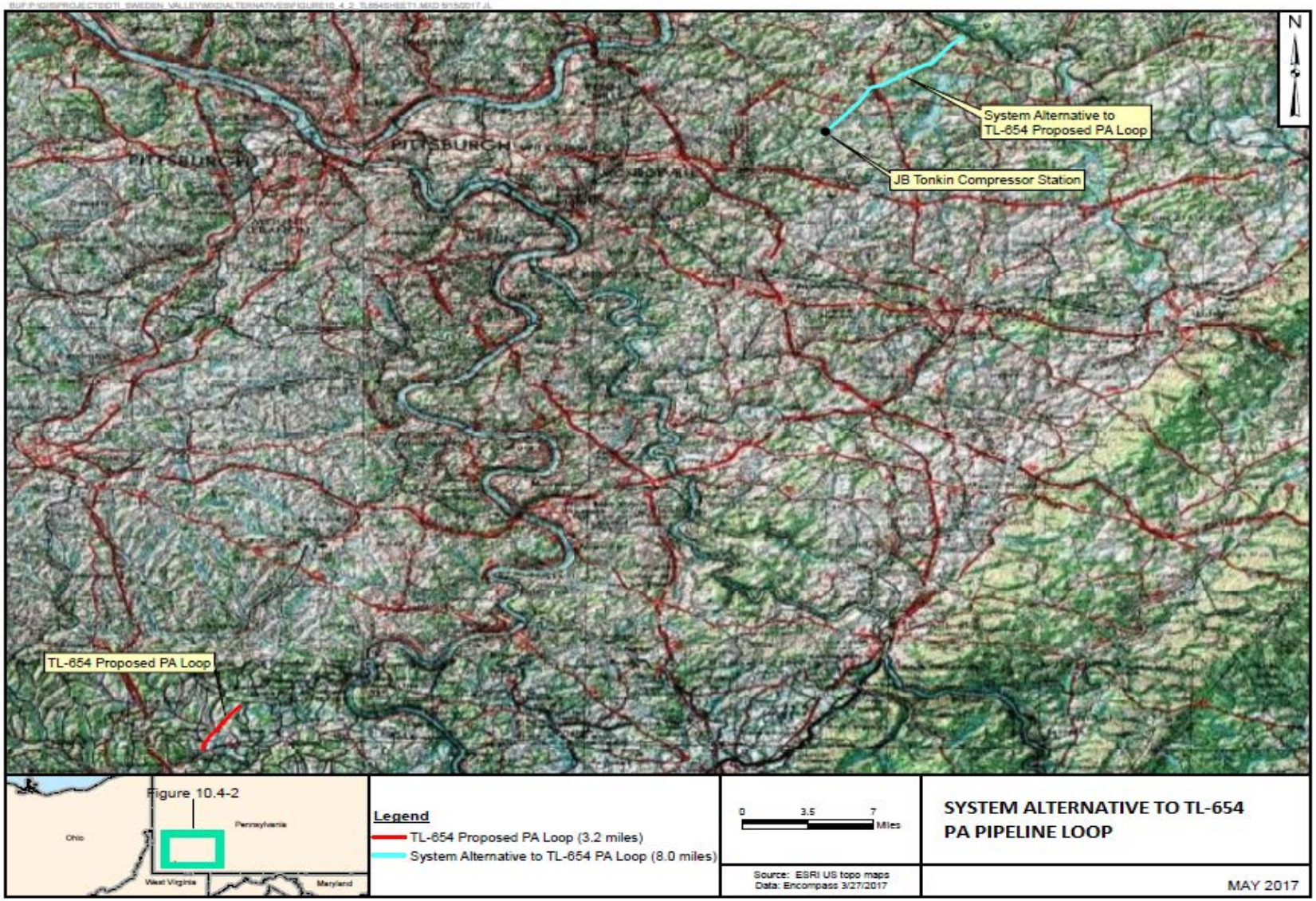
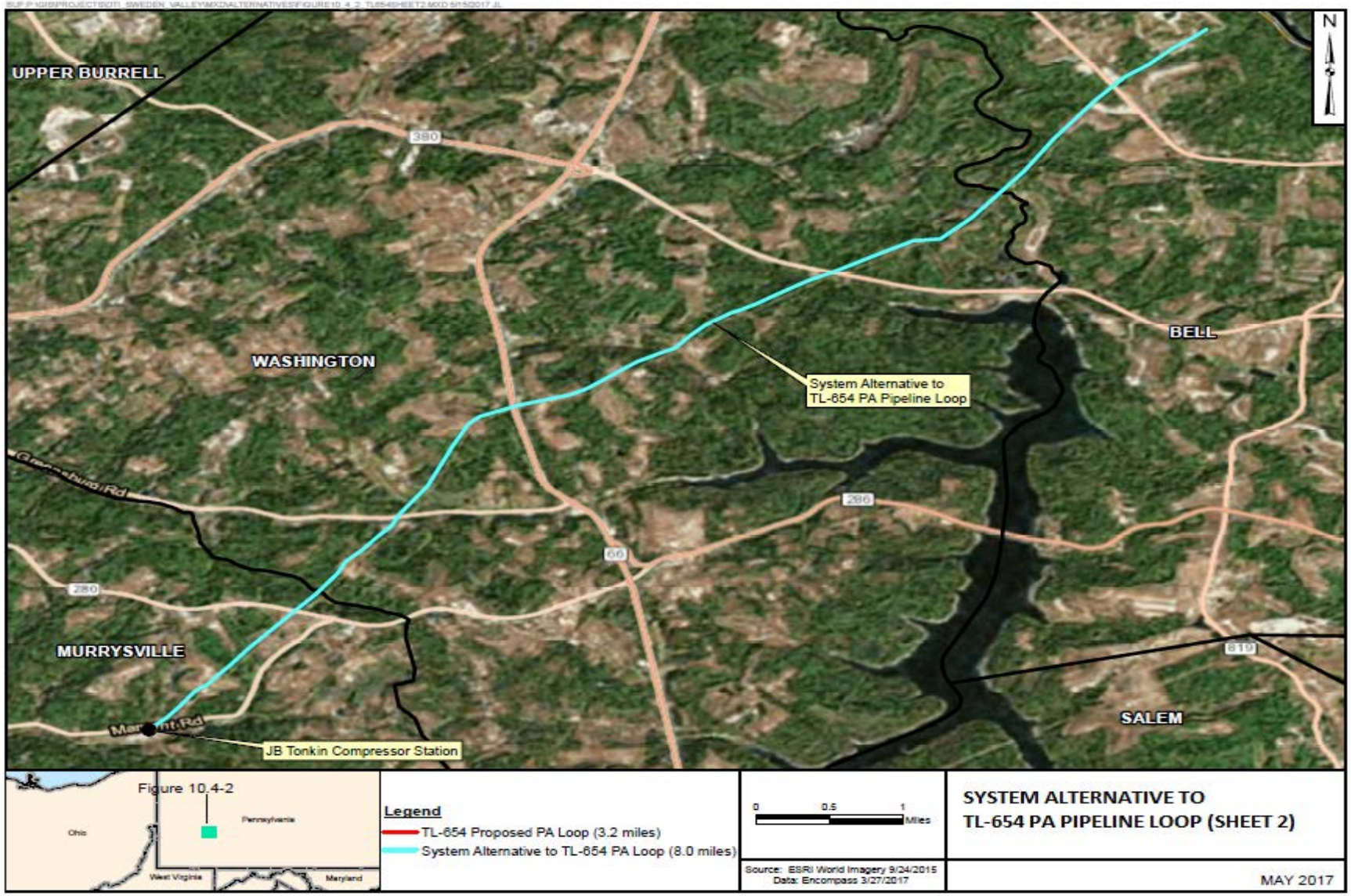


Figure 4. System Alternative to TL-654 PA Pipeline Loop (Sheet 2)



SECTION D – STAFF'S CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis in this EA, we have determined that if Dominion constructs and operates the proposed facilities in accordance with its application and supplements, 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. We recommend that the Commission Order contain a finding of no significant impact and include the measures listed below as conditions in any authorization the Commission may issue to Dominion.

1. Dominion shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EA, unless modified by the Order. Dominion 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 the OEP **before using that modification.**

2. The Director of OEP, or the Director's designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of environmental resources during construction and operation of the Project. This authority shall allow:

   a. the modification of conditions of the Order;
   b. stop-work authority; and
   a. the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from Project construction and operation activities.

3. **Prior to any construction**, Dominion 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 EI's 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.

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**, Dominion shall file with the Secretary any revised detailed survey maps/sheets at a scale not smaller than 1:6,000 with station positions for the 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.

   Dominion'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. Dominion's right of eminent domain granted under NGA section 7(h) does not authorize it to increase the size of its natural gas pipeline facilities to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. Dominion 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 yards, new access roads, and other areas 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, and 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 the OEP **before construction in or near that area**.

   This requirement does not apply to extra workspaces allowed by the Commission's Plan and/or minor field realignments per landowner needs and requirements which 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 resource mitigation measures;
   b. implementation of endangered, threatened, or special concern species mitigation measures;
   c. recommendations by state regulatory authorities; and
   d. agreements with individual's landowners that affect other landowners or could affect sensitive environmental areas.

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

   a. how Dominion would 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 Dominion would 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 onsite construction and inspection personnel;
   c. the number of EIs assigned per spread, and how the company would ensure that sufficient personnel are available to implement the environmental mitigation;
   d. company personnel, including EIs and contractors, who would receive copies of the appropriate material;
   e. the location and dates of the environmental compliance training and instruction Dominion would give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change);
   f. the company personnel (if known) and specific portion of Dominion's organizations having responsibility for compliance;
   g. the procedures (including use of contract penalties) Dominion would follow if noncompliance occurs; and
   h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:
      (1) the completion of all required surveys and reports;
      (2) the environmental compliance training of onsite personnel;
      (3) the start of construction; and
      (4) the start and completion of restoration.

7. Dominion shall employ at least one EI per Project. The EI(s) 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, Dominion shall file updated status reports with the Secretary on a **biweekly** basis until all construction and restoration activities are complete. On request, these status reports would also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

a. an update on Dominion's efforts to obtain the necessary federal authorizations;
b. the construction status 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 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;
e. the effectiveness of all corrective actions implemented;
f. a description of any landowner/resident complaints which 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 Dominion from other federal, state, or local permitting agencies concerning instances of noncompliance, and Dominion's response.

9. Dominion must receive written authorization from the Director of OEP **before commencing construction of any project facilities**. To obtain such authorization, Dominion must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

10. Dominion must receive written authorization from the Director of OEP **before placing the Project into service.** Such authorization would only be granted following a determination that rehabilitation and restoration of the areas affected by the Project are proceeding satisfactorily.

11. **Within 30 days of placing the authorized facilities in service**, Dominion shall file an affirmative statement with the Secretary, certified by a senior company official:
    a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities would be consistent with all applicable conditions; or
    b. identifying which of the Certificate conditions Dominion have complied with or would 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 of the TL-653 OH Lateral and TL-654 PA Loop pipelines,** Dominion shall file with the Secretary a slope stability assessment and mitigation plan, for review and written approval by the Director of OEP. The assessment shall be completed by a licensed or qualified geotechnical engineer to identify specific locations along the pipeline alignments with the potential for slope failure, and site-specific measures to mitigate the potential hazard during construction and operation.

13. **Prior to construction**, Dominion shall verify that it will offer post-construction testing for water yield and quality for all water-supply wells or springs identified within 150 feet of Project workspaces.

14. Dominion **shall not begin construction activities until**:

    a. The FERC staff completes ESA Section 7 consultation with the USFWS; and
    b. Dominion has received written notification from the Director of OEP that construction or use of mitigation may begin.

15. Dominion shall **not begin construction** of facilities and/or use of all staging, storage, or temporary work areas and new or to-be-improved access roads **until**:

    a. Dominion files with the Secretary:
        (1) remaining cultural resources survey report(s);
        (2) site evaluation report(s) and avoidance/treatment plan(s), as required;
        (3) and comments on the cultural resources reports and plans from the Pennsylvania State Historic Preservation Office
    b. the Advisory Council on Historic Preservation is afforded an opportunity to comment if historic properties would be adversely affected; and

c. the FERC staff reviews and the Director of OEP approves the cultural resources reports and plans, and notifies Dominion in writing that treatment plans/mitigation measures (including archaeological data recovery) may be implemented and/or construction may proceed.

All materials filed with the Commission containing location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "**CUI//PRIV- DO NOT RELEASE**."

SECTION E – REFERENCES

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USFWS 2018. Letter dated July 16, 2018 from Scott Pruitt of the U.S. Fish and Wildlife Service to Frank Cannetto of Dominion Energy.

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APPENDIX 1. PROJECTS EVALUATED FOR POTENTIAL CUMMULATIVE IMPACTS

Appendix 1. Projects Evaluated for Potential Cumulative Impacts

Project Name and Sponsor/Proponent	Primary Elements/Description	Location (County, State)	Closest Distance and Direction from Project (miles)	Closest MP or Project Facility	Current Status and Schedule
FERC Jurisdictional Projects[a]					
Appalachian Gateway Project (CP10-448) Dominion Transmission, Inc.[c]	Constructed approximately 109 miles of pipeline, four new compressor stations, and upgraded two existing compressor stations. Project included the construction of TL-492 EXT5 in Greene County and M&R Station at Crayne Station.	Allegheny, Greene, Washington, and Westmoreland Counties, PA; Barbour, Doddridge, Harrison, Kanawha, Marshall, Wetzel, and Wyoming Counties, WV	0.0	TL-654 PA Loop; Crayne Pipe Yard	Past In service – 2012 (restoration complete)
Natrium to Market Project (CP13-13) Dominion Transmission, Inc.[c]	Installation of new gas turbine and upgraded regulation at Crayne Compressor Station, and modification of regulators, installation of a jumper line, regulation at J.B. Tonkin Compressor Station.	Greene and Westmoreland Counties, PA;	0.0	TL-654 PA Loop; Crayne Pipe Yard	Past In service – 2014 (restoration complete)
Tioga Area Expansion Project (CP12-19) Dominion Transmission, Inc.	Constructed 15 miles of new 24-inch-diamenter pipeline, 800-foot jumper line, new station firegate, new M&R Station at Crayne Station, minor modifications at Finnefrock Station in Clinton County, Boom Station and Lindley Gate.	Tioga, Potter, Greene, Clinton, PA; Steuben County, NY	0.0	TL-654 PA Loop; Crayne Pipe Yard, Leidy M&R	Past In service – 2013 (restoration complete)

Project Name and Sponsor/Proponent	Primary Elements/Description	Location (County, State)	Closest Distance and Direction from Project (miles)	Closest MP or Project Facility	Current Status and Schedule
Supply Header Project (CP15-555) Dominion Transmission, Inc.[c]	Construct and operate approximately 37.5 miles of pipeline loop and modify existing compression facilities in PA and WV, including modifications at existing Crayne Compressor Station in Greene County, PA.	Armstrong, Greene and Westmoreland Counties, PA; Lewis, Marshall, Harrison, Doddridge, and Wetzel Counties, WV	0.0	TL-654 PA Loop; Crayne Pipe Yard	Present Certificate October 13, 2017 Construction 2017 – 2019 In service - Late 2019
Lebanon West II Project (CP14-555) Dominion Transmission, Inc. [c]	Replacement of 11 natural gas pipeline segments totaling about 10.1 miles; modifications at four compressor facilities, including additional regulation at Newark Compressor Station; and installation of additional valves and piping at Coxcomb Gate Assembly.	Tuscarawas, Muskingum, Licking, Harrison, Coshocton, Columbiana, and Fayette, Carroll Counties, OH; Allegheny, Armstrong, Beaver, Counties, PA	0.0	Newark Compressor Station	Past In service – 2016
Leidy South Project (CP15-492) Dominion Transmission, Inc. [c]	Expanded compression and new metering and regulation along Dominion Energy Transmission, Inc.'s existing transmission pipeline, including modifications at Finnefrock Compressor Station, Clinton County, PA.	Clinton, Franklin, and Centre Counties PA; Frederick County, Maryland; Loudoun, Fauquier County, Virginia	0.4 SW	Leidy M&R	Past In service – October 1, 2017
Equitrans Expansion Project (Athens) Equitrans, L.P.	Construct approximately 7.87 miles of pipeline in multiple locations in PA and WV; new 31,300 nominal horsepower compressor station, Redhook Compressor Station; new interconnect with Mountain Valley Pipeline, LLC's planned pipeline system; and ancillary facilities. Also	Allegheny, Washington, Greene Counties, PA; Wetzel County, WV	0.4 SW	TL-654 PA Loop; Crayne Pipe Yard	In service –2017 (anticipated)

Project Name and Sponsor/Proponent	Primary Elements/Description	Location (County, State)	Closest Distance and Direction from Project (miles)	Closest MP or Project Facility	Current Status and Schedule
	plan to abandon existing 4,800 horsepower Pratt Compressor Station.				
TP-371 Pipeline Replacement Project (CP15-528) Equitrans, L.P.	Construct 21 miles of 20-inch-diameter pipeline and abandon in place approximately 21 miles of existing 12-inch-diameter pipeline and associated ancillary facilities in Indiana and Armstrong Counties, PA.	Armstrong, Indiana, and Westmoreland Counties, PA	3.0	South Bend Regulation	Present FERC Certificate April 2016
Atlantic Sunrise (CP15-138) Transcontinental Gas Pipe Line Company, LLC's (Transco)	Construction and operation of approximately 183.7 miles of new natural gas greenfield pipelines in PA and VA. Two new compressor stations in PA, two new meter stations and ancillary facilities. Including the Chapman Loop: 2.9 miles of 36-inch-diameter pipeline with a MAOP of 1,200 psig co-located with the existing Transco Leidy Line system in Clinton County, PA.	Clinton, Columbia, Susquehanna, Lancaster, Lebanon, Lycoming, Luzerne, Wyoming County, Schuylkill, Northumberland Counties, PA; Howard County, MD; Prince Appomattox, William County, VA; Cleveland County, Rockingham, Davidson, Iredell Counties, Gaston, Forsyth, Guilford, Lincoln, Counties, NC; Cherokee, SC; GA; AL	9.5 SE	Leidy M&R	Present Construction in progress In service – February or March 2018 (anticipated)
Rover Pipeline Project (CP15-93) Rover Pipeline, LLC	The Rover Pipeline consists of approximately 711 miles of pipeline, 10 compressor stations and associated meter stations and	Carroll, Tuscarawas, Stark, Wayne, Ashland, Richland, Crawford, Seneca, Hancock, Wood, Henry, Monroe, Noble, Harrison,	16 NE	TL-653 OH Lateral	Present Construction in progress

Project Name and Sponsor/Proponent	Primary Elements/Description	Location (County, State)	Closest Distance and Direction from Project (miles)	Closest MP or Project Facility	Current Status and Schedule
	other aboveground facilities located in WV, PA, OH, and MI.	Carroll, Jefferson, Belmont, and Defiance Counties, OH; Washington County, PA; Lenawee, Washtenaw, and Livingston Counties, MI; Doddridge, Marshall, Tyler, and Wetzel Counties, WV			In service – 2017 (anticipated/ subject to current construction schedule)
Access South Pipeline Texas Eastern Access South, Adair Southwest and Lebanon Extension Projects (CP16-3) Texas Eastern	Modifications at 12 existing compressor station sites including piping modifications to accommodate bidirectional flow, installation of new impellers, and installation of increased capacity gas cooling systems along Texas Eastern's existing mainline. Modifications are proposed at Holbrook Compressor Station in Greene County, PA	Athens, Meigs, Monroe, Noble, Perry, Warren Counties, OH; Greene County, PA; Bath, Lincoln, Monroe, Counties, KY; Wilson, County TN; Colbert County, AL; Monroe and Attala Counties, MS	17.5	TL-654 PA Loop; Crayne Pipe Yard	Present FERC Certificate December 2016 Construction in progress In service - date unknown
Leach XPress Project (CP15-514) Columbia Gas Transmission, LLC	Construct two new greenfield natural gas pipeline segments, two new natural gas pipeline loops, three greenfield compressor stations, three compressor units at existing stations, and various appurtenant and auxiliary facilities, located in WV, PA, and OH.	Greene County, PA; Monroe, Noble, Muskingum, Morgan, Perry, and Hocking, and Fairfield Counties, OH; Marshall County, WV	22 NW	TL-654 PA Loop; Crayne Pipe Yard	Present FERC Certificate January 2017 Construction in progress In service – November 2017 (anticipated)

Project Name and Sponsor/Proponent	Primary Elements/Description	Location (County, State)	Closest Distance and Direction from Project (miles)	Closest MP or Project Facility	Current Status and Schedule
Meter Expansion National Fuel	National Fuel to expand an existing meter site off TL-489	Potter County, PA	19.7 N	Leidy M&R	Future In service November 2019 (anticipated)
Other Major Oil and Gas Projects					
Utopia Project, Kinder Morgan Utopia, LLC	Construct approximately 215-mile, 12-inch-diameter pipeline within Ohio extending from Harrison County to Kinder Morgan's Cochin Pipeline near Riga, MI. The pipeline would transport natural gas liquids, including ethane and propane.	Fulton, Henry, Lucas, Wood, Sandusky, Seneca, Huron, Richland, Ashland, Wayne, Stark, Tuscarawas, Carroll, and Harrison Counties, OH	17 NE	TL-653 OH Lateral	Present Permits, approvals pending In service – January 2018 (anticipated)

Project Name and Sponsor/Proponent	Primary Elements/Description	Location (County, State)	Closest Distance and Direction from Project (miles)	Closest MP or Project Facility	Current Status and Schedule
Unrelated Projects (Energy & Utility)					
Jupiter Compressor Station EQM Gathering, LLC Project No. 1147103	New Facility (Air Quality General Permit GP5-30-00183A) Natural Gas Compressor (2,370-BHP)	Greene County, PA	0.95 NW	TL-654 PA Loop	Past Air Quality General Permit In-service - date unknown Air Permit issued April 2017
Armstrong South Bend Facility, Armstrong Power LLC Project No. 1063070	Major Facility Air Quality Permit issued 10/1/2015	Armstrong County, PA	0–1.14 NE	South Bend Regulation	Past Air Quality Permit issued October 1, 2015
Renovo Energy Center, LLC	Construction of dual fuel (natural gas and ultra-low sulfur diesel) combined-cycle electric generating plant. Project's expected net output of about 950 megawatts. The limit of disturbance for the project is 169 acres.	Clinton County, PA	8.3 SE	Leidy M&R	Present In service – October 2017 (anticipated)
Laurel Mountain Midstream Opr. Cantaral Compressor Station Project No. 1069608	Compressor Station	Greene County, PA	5.2 W	TL-654 PA Loop	Permit issued May 26, 2015 In service – 1st quarter of 2016 (expected/not confirmed)

Project Name and Sponsor/Proponent	Primary Elements/Description	Location (County, State)	Closest Distance and Direction from Project (miles)	Closest MP or Project Facility	Current Status and Schedule
EQM Gathering NIJUS039 & NIJUD004 Pipeline/Conduit 1067873, 1067876, 1067876	Gathering Pipeline/ Conduit	Greene County, PA	1.5 NW	TL-654 PA Loop	Permit issued April 9, 2015 In service – date unknown
EQT Production Co. ALPHA 1 Well Line 1069391, 1069392	Well Line	Greene County, PA	1.47 NW	TL-654 PA Loop	Permit issued May 12, 2015 In service – date unknown
EQT Production Co. ALPHA 1 Well Line 1153439, 1153440	Well Line	Greene County, PA	1.7 NW	TL-654 PA Loop	Permit issued May 17, 2016 In service – date unknown
EQT Production Co. BEAZER Well Line 1069666, 1069669, 1069673, 1069674, 1070222	Well Line	Greene County, PA	0.7 SE	TL-654 PA Loop	Permit issued June 22, 2015 In service – date unknown
EQT Production Co. STROPE Well Line 1163335, 1163342	New Pipeline/Conduit Stream and temporary roadway crossing	Greene County, PA	0.94 mile NW	TL-654 PA Loop	Permit issued April 6, 2-017
Transportation Projects					
Ohio DOT District 11 TUS IR 77 3.780"; 98742	Bridge Replacement	Tuscarawas County, OH	4.3	TL-653 OH Lateral	Future Construction in 2019

Project Name and Sponsor/Proponent	Primary Elements/Description	Location (County, State)	Closest Distance and Direction from Project (miles)	Closest MP or Project Facility	Current Status and Schedule
ODOT "MUS SR 146 01.97 Resurfacing 95963	Resurfacing Project, Undivided System	Muskingum County, OH	2 SE	Newark Compressor Station	Future Construction in 2019
ODOT LIC/MUS SR 146/586 Var. 93002	Perform concrete pavement repairs at SR 146/SR 586.	Licking County, OH	0.19 N	Newark Compressor Station	Construction is estimated to begin May 8, 2017
PENNDOT 98380 PA 221:PA 188 to US 19	Resurfacing of PA 221 from PA 188 to US 19.	Greene County, PA	0.0 intersects at MP 1.28	TL-654 PA Loop	Future Construction is estimated to begin in 2018
PENNDOT 99928 PA 56 to Elderton Resurface	Resurfacing to include milling of existing bituminous wearing courses, bituminous patching, paving, leveling, binder and wearing courses and minor drainage and guiderail upgrades along PA 210 from the PA 56 intersection to the Ben Franklin Road.	Armstrong County, PA	0.23 NE	South Bend Regulation	Future Construction is estimated to begin in 2025
PENNDOT 79347 SR 1009 over Castile Run	Replacement of the structure carrying SR 1009 (Center School Road) over Castile Run.	Greene County, PA	0.62 NE	TL-654 PA Loop	Construction is estimated to begin 2025
PENNDOT 76038 SR 1009 over Bacon Run-DF	Replacement of the structure carrying SR 1009 (Center School Road) over Bacon Run.	Greene County, PA	0.89 NE	TL-654 PA Loop	Construction is estimated to begin 2023

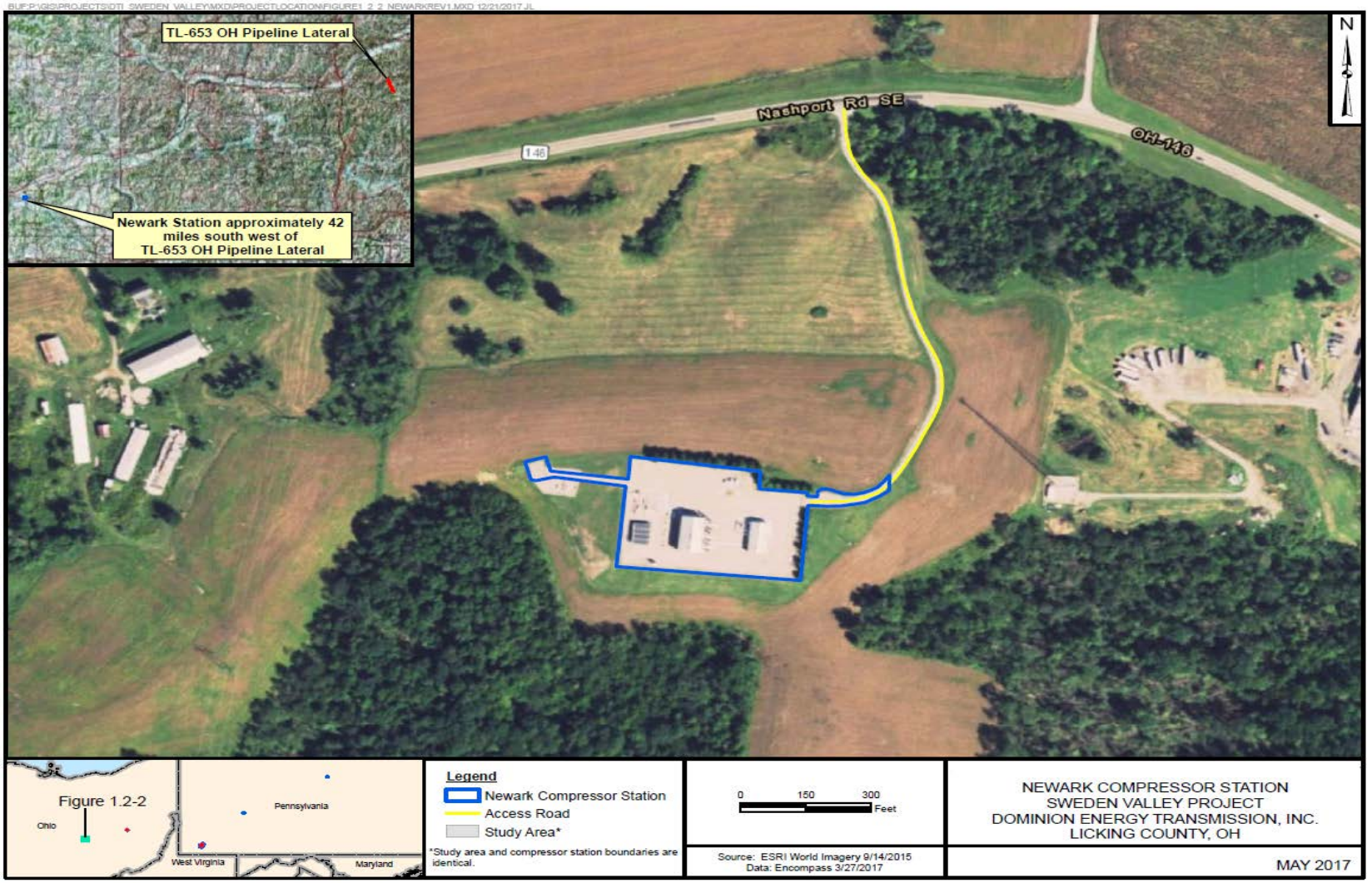
Project Name and Sponsor/Proponent	Primary Elements/Description	Location (County, State)	Closest Distance and Direction from Project (miles)	Closest MP or Project Facility	Current Status and Schedule
PENNDOT 105424 PA 21: US 19 to Rolling Meadows Road	Reconstruct/resurface PA 21 from US 19 (East High Street) to SR 2026 (Rolling Meadows Road).	Greene County, PA	1.42 SW	TL-654 PA Loop	Future Construction is estimated to begin in 2027
PENNDOT 105393 SR 1014 over Castile Run	Replacement of the structure carrying SR 1017 (Castile Run Road) over Castile Run.	Greene County, PA	1.44 NW	TL-654 PA Loop	Construction is estimated to begin January 1, 2018
PENNDOT 89073 PA 188 over Bridge Ten Mile Creek	Rehabilitation of the structure carrying PA 188 (Greene Street) over a Branch of Ten Mile Creek.	Greene County, PA	2.55 SE	TL-654 PA Loop	Construction is estimated to begin August 6, 2018
Residential/Commercial Development					
Britt Energies South Bend Mine	New IM Underground Mineral Mining/Blasting	Armstrong County, PA	2.82 W	South Bend Regulation	Permit issued December 12, 2016; Blasting Permit Pending
Western Allegheny Energy Parkwood Mine Coal Preparation Plant 1165792; Various IDs.	Underground Mining – Air Permit	Armstrong County, PA	2. 2 NE	South Bend Regulation	Permits issued various dates including March 31, 2017
Rosebud Mining Co. DUTCH RUN/CRDA#2 1171689	Underground Mining– Air Permit	Indiana County, PA	4.41	South Bend Regulation	Permits issued various dates including

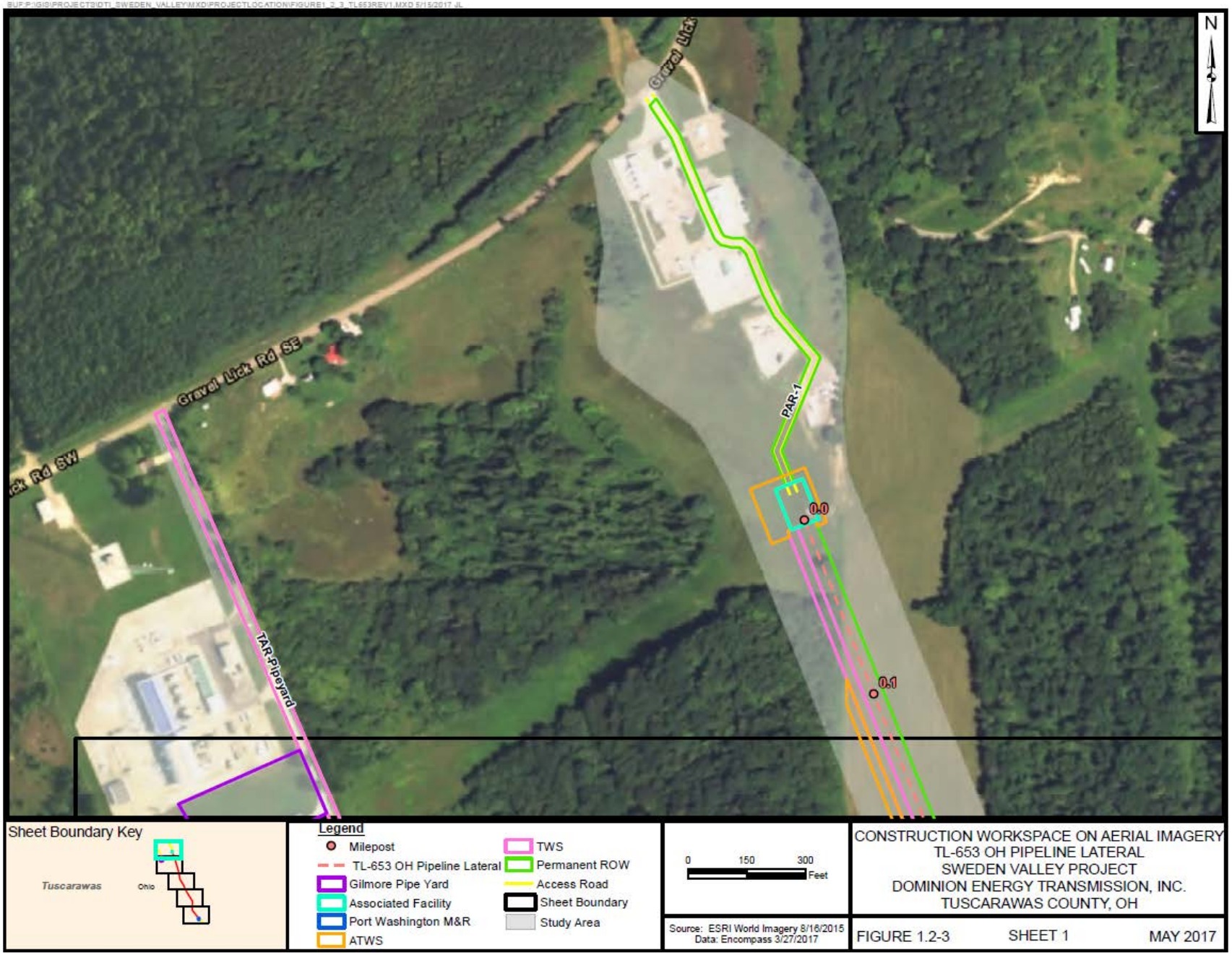
Project Name and Sponsor/Proponent	Primary Elements/Description	Location (County, State)	Closest Distance and Direction from Project (miles)	Closest MP or Project Facility	Current Status and Schedule
					February 13, 2017
Oil and Gas Exploration and Production[b]					
Natural Gas Production Wells					
Wells, 0.5-mile CIAA in Tuscarawas County, OH	There are 26 wells located within 0.5 mile	Tuscarawas County, OH	Varies	Port Washington M&R, TL653 Lateral	Past, Present, and Future
Wells, 0.5-mile CIAA in Licking County, OH	There are 24 wells located within 0.5 mile	Licking County, OH	Varies	Newark Compressor Station	Past, Present, and Future
Wells, 0.5-mile CIAA in Greene County, PA	There are 80 wells located within 0.5 mile	Greene County, PA	Varies	TL-654 Loop,	Past, Present, and Future
Wells, 0.5-mile CIAA in Armstrong County, PA	There are 7 wells located within 0.5 mile	Armstrong County, PA	Varies	South Bend Regulation	Past, Present, and Future
Wells, 0.5-mile CIAA in Clinton County, PA	There are 8 wells located within 0.5 mile	Clinton County, PA	Varies	Leidy M&R	Past, Present, and Future

Project Name and Sponsor/Proponent	Primary Elements/Description	Location (County, State)	Closest Distance and Direction from Project (miles)	Closest MP or Project Facility	Current Status and Schedule
[a] Projects recently completed, under construction, or expected to be under construction in the same timeframe as, and located within the CIAA of Sweden Valley Project. [b] Well drilling activity within the same counties as the Sweden Valley Project. The wells represent both active and inactive. Public data has not been located to assign dates wells were drilled or whether these are permitted and in the planning stage. [c] On May 12, 2017, Dominion Transmission, Inc. changed its name to Dominion Energy Transmission, Inc. The Sweden Valley Project is independent and unrelated to the other listed Dominion projects. The Dominion projects have independent utility and serve different customers.					

APPENDIX 2. PHOTO ALIGNMENT SHEETS OF PROJECT FACILITIES

Appendix 2. Photo Alignment Sheets of Project facilities




BUF:P:\GIS\PROJECTS\DTI_SWEDEN_VALLEY\MXD\PROJECTLOCATION\FIGURE1_2_3_TL653REV1.MXD 5/15/2017 JL
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Gravel Lick Rd SE
Gravel Lick Rd SW
PAR-1
TAR-Pipeyard
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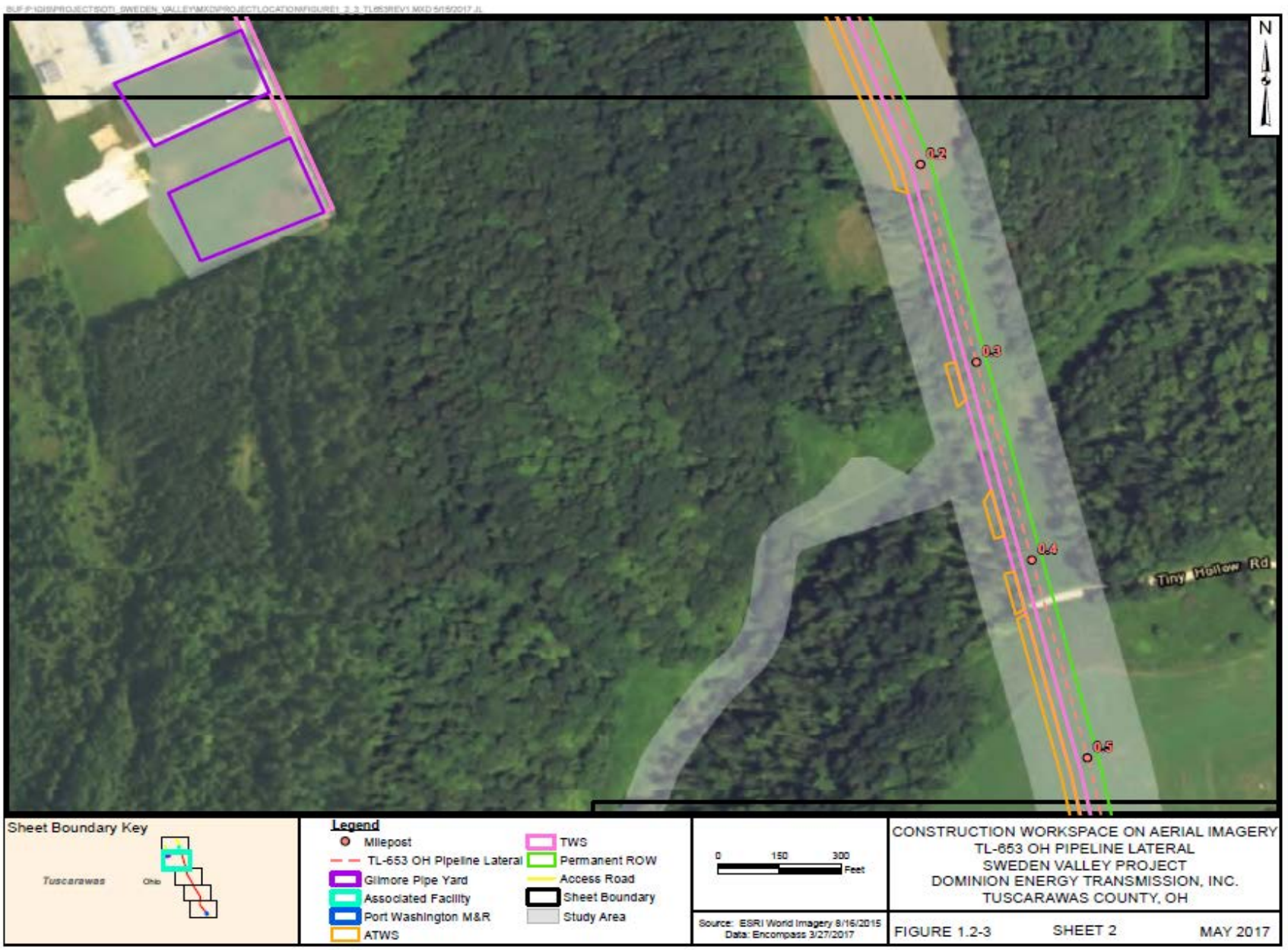
Sheet Boundary Key
Tuscarawas
Ohio
Legend
Milepost
TL-653 OH Pipeline Lateral
Gilmore Pipe Yard
Associated Facility
Port Washington M&R
ATWS
TWS
Permanent ROW
Access Road
Sheet Boundary
Study Area
0
150
300
Feet
Source: ESRI World Imagery 8/16/2015
Data: Encompass 3/27/2017
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-653 OH PIPELINE LATERAL
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
TUSCARAWAS COUNTY, OH
FIGURE 1.2-3
SHEET 1
MAY 2017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Tiny Hollow Rd
Sheet Boundary Key
Tuscarawas
Ohio
Legend
Milepost
TL-653 OH Pipeline Lateral
Gilmore Pipe Yard
Associated Facility
Port Washington M&R
ATWS
TWS
Permanent ROW
Access Road
Sheet Boundary
Study Area
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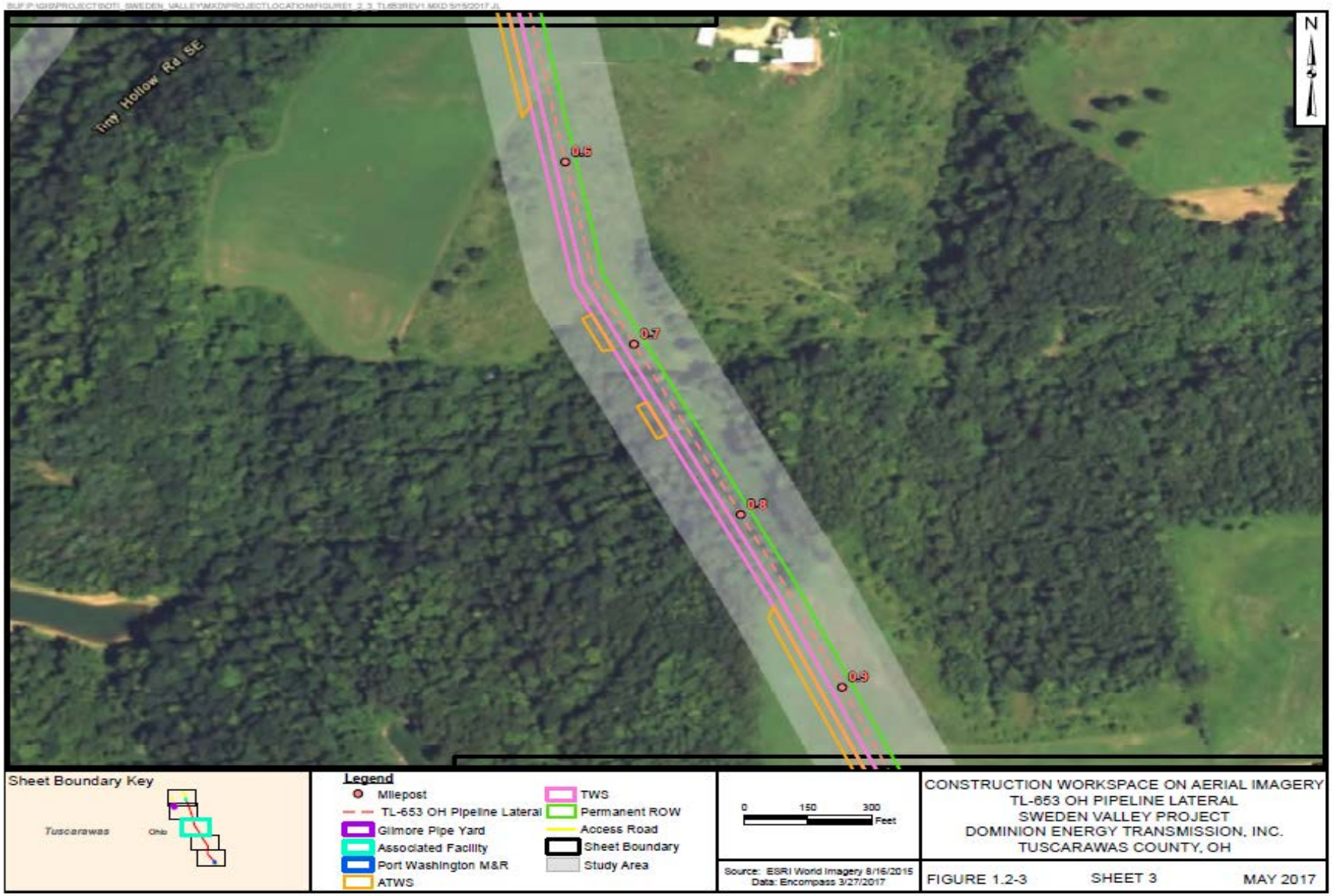
300
Feet
Source: ESRI World Imagery 8/16/2015
Data: Encompass 3/27/2017
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-653 OH PIPELINE LATERAL
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
TUSCARAWAS COUNTY, OH
FIGURE 1.2-3
SHEET 2
MAY 2017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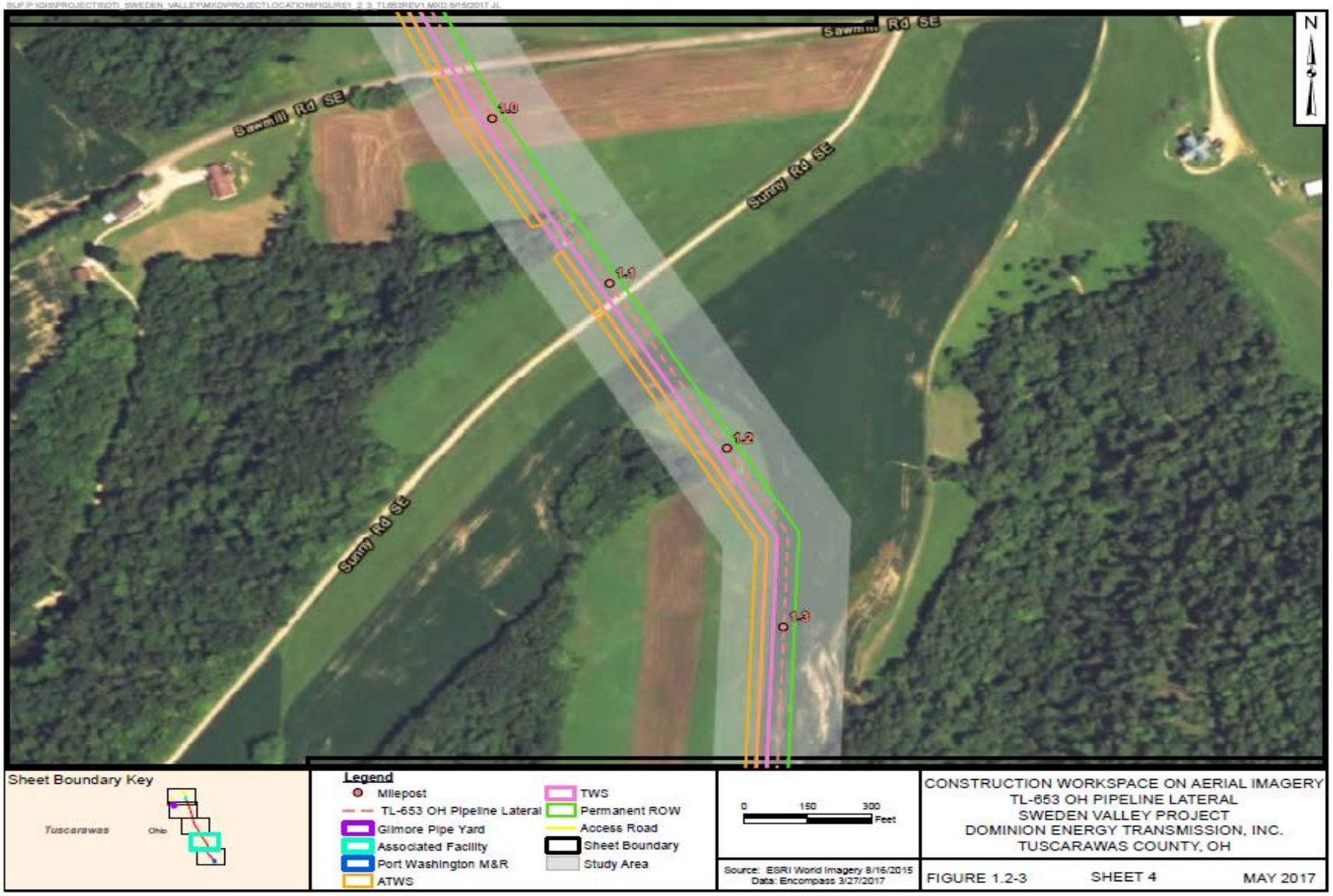
Sheet Boundary Key
Tuscarawas
Ohio
Legend
Milepost
TL-653 OH Pipeline Lateral
Gilmore Pipe Yard
Associated Facility
Port Washington M&R
ATWS
TWS
Permanent ROW
Access Road
Sheet Boundary
Study Area
0
150
300
Feet
Source: ESRI World Imagery 8/16/2015
Data: Encompass 3/27/2017
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-653 OH PIPELINE LATERAL
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
TUSCARAWAS COUNTY, OH
FIGURE 1.2-3
SHEET 3
MAY 2017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Sawmill Rd SE
Sunny Rd SE
Sunny Rd SE
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1.2
1.3
N
Sheet Boundary Key
Tuscarawas
Ohio
Legend
Milepost
TL-653 OH Pipeline Lateral
Gilmore Pipe Yard
Associated Facility
Port Washington M&R
ATWS
TWS
Permanent ROW
Access Road
Sheet Boundary
Study Area
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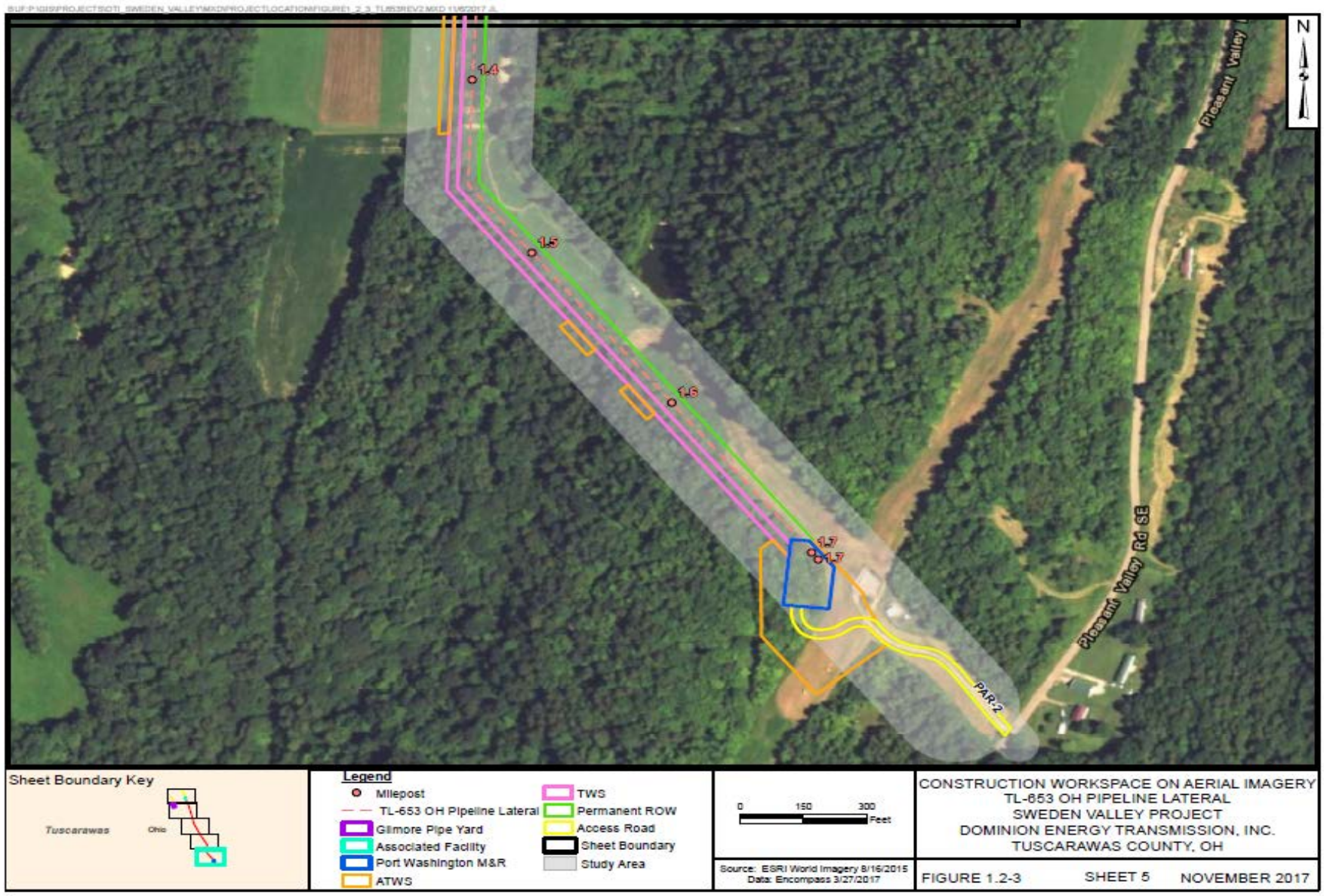
150
300
Feet
Source: ESRI World Imagery 8/16/2015
Data: Encompass 3/27/2017
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-653 OH PIPELINE LATERAL
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
TUSCARAWAS COUNTY, OH
FIGURE 1.2-3
SHEET 4
MAY 2017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Pleasant Valley
PAR-2
Sheet Boundary Key
Tuscarawas
Ohio
Legend
Milepost
TL-653 OH Pipeline Lateral
Gilmore Pipe Yard
Associated Facility
Port Washington M&R
ATWS
TWS
Permanent ROW
Access Road
Sheet Boundary
Study Area
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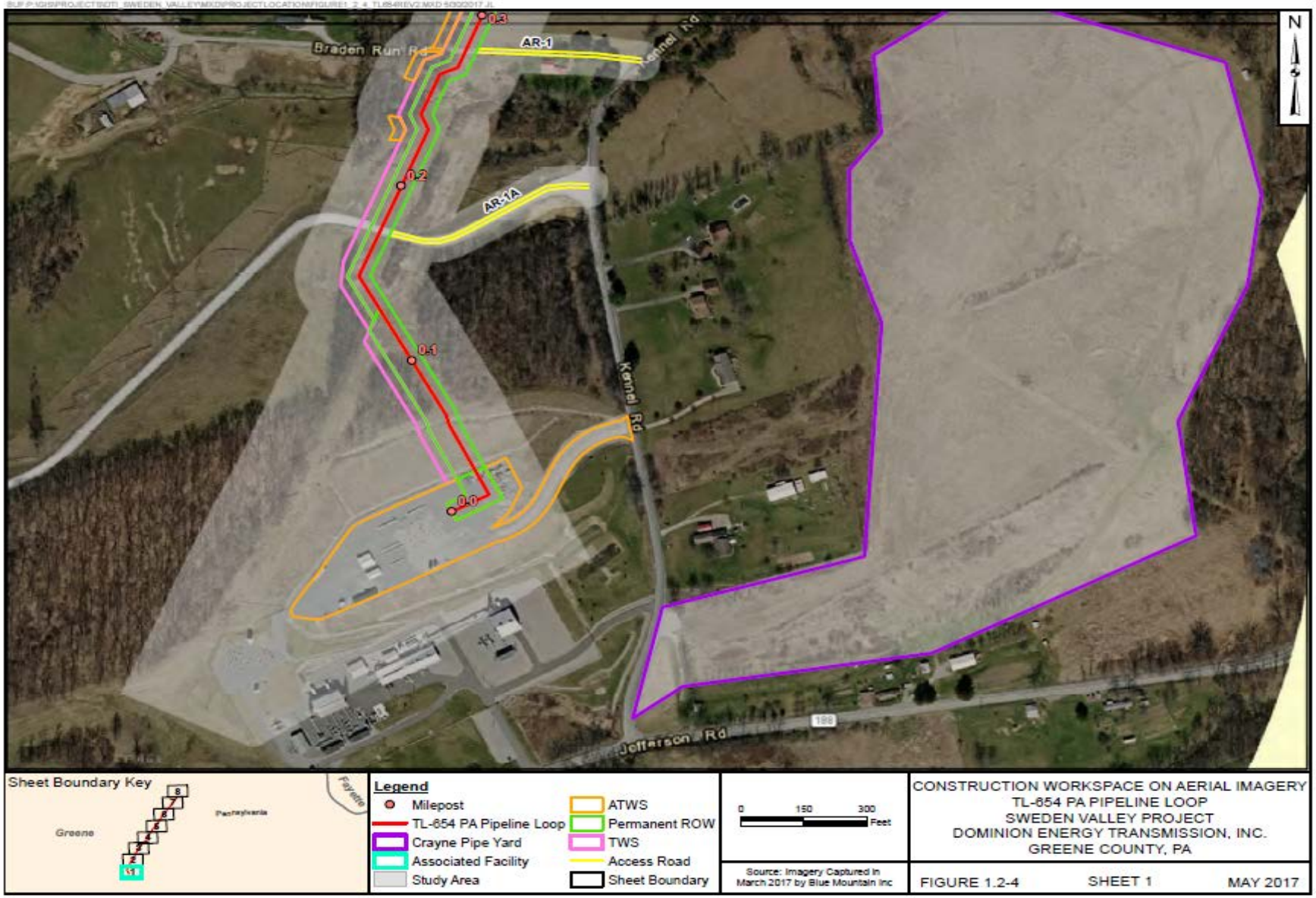
300
Feet
Source: ESRI World Imagery 8/16/2015
Data: Encompass 3/27/2017
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-653 OH PIPELINE LATERAL
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
TUSCARAWAS COUNTY, OH
FIGURE 1.2-3
SHEET 5
NOVEMBER 2017


Braden Run Rd
AR-1
Kennel Rd
AR-1A
Kennel Rd
Jefferson Rd
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0.2
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N
Sheet Boundary Key
Greene
Fayette
Legend
Milepost
TL-654 PA Pipeline Loop
Crayne Pipe Yard
Associated Facility
Study Area
ATWS
Permanent ROW
TWS
Access Road
Sheet Boundary
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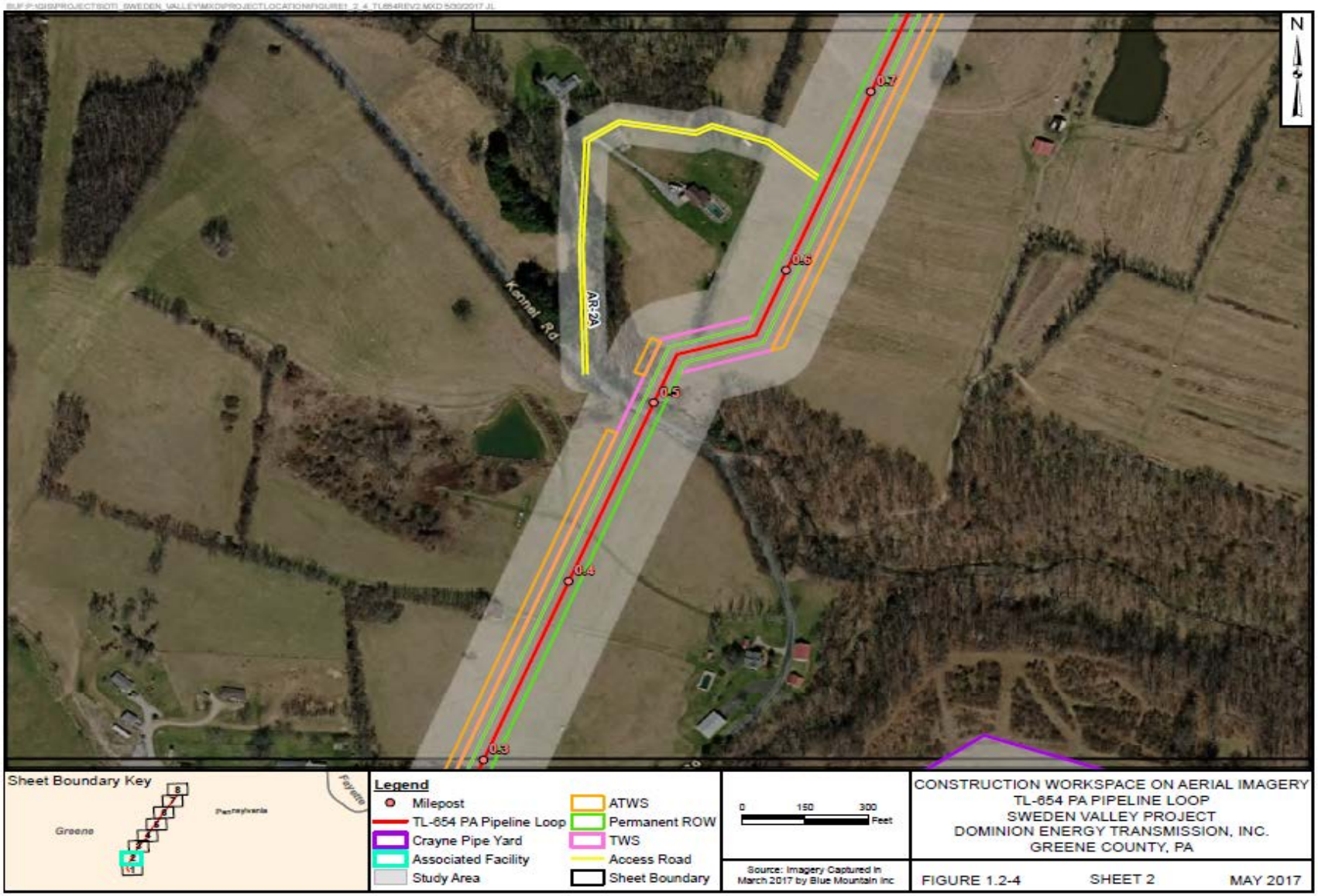
Feet
Source: Imagery Captured in March 2017 by Blue Mountain Inc
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-654 PA PIPELINE LOOP
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
GREENE COUNTY, PA
FIGURE 1.2-4
SHEET 1
MAY 2017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Kennel Rd
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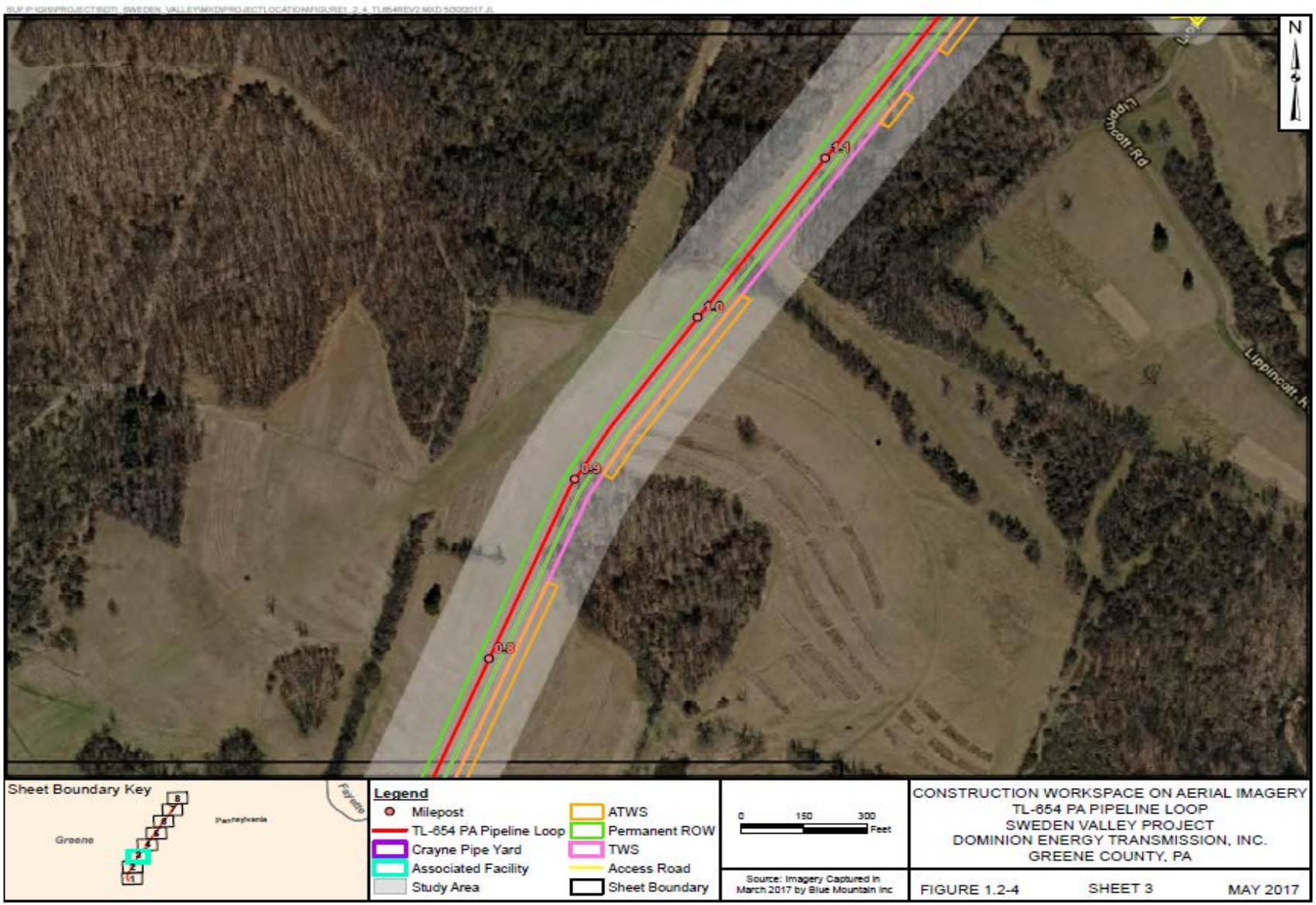
Greene
Fayette
Legend
Milepost
TL-654 PA Pipeline Loop
Crayne Pipe Yard
Associated Facility
Study Area
ATWS
Permanent ROW
TWS
Access Road
Sheet Boundary
0 150 300
Feet
Source: Imagery Captured in March 2017 by Blue Mountain Inc
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-654 PA PIPELINE LOOP
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
GREENE COUNTY, PA
FIGURE 1.2-4
SHEET 2
MAY 2017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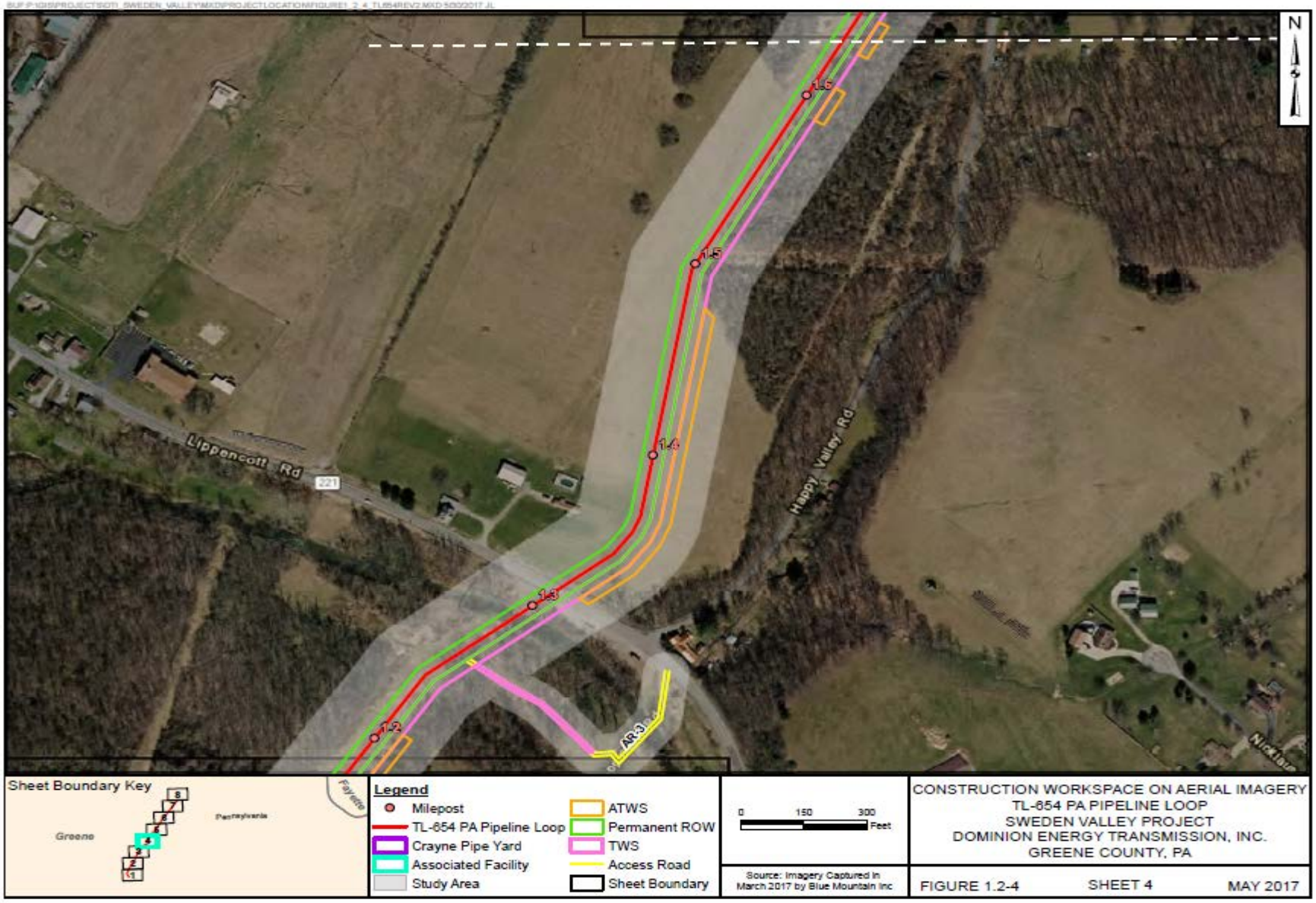
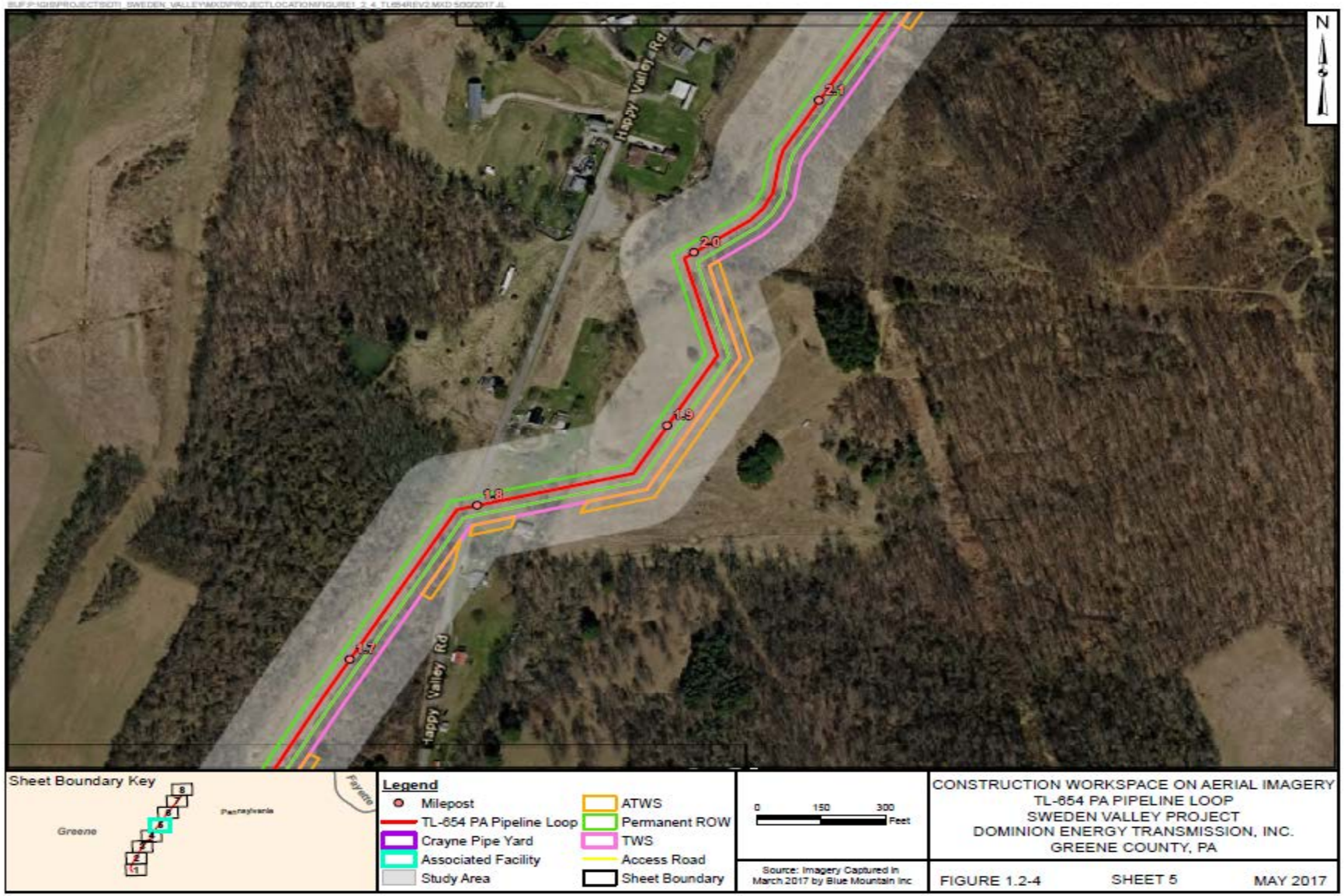
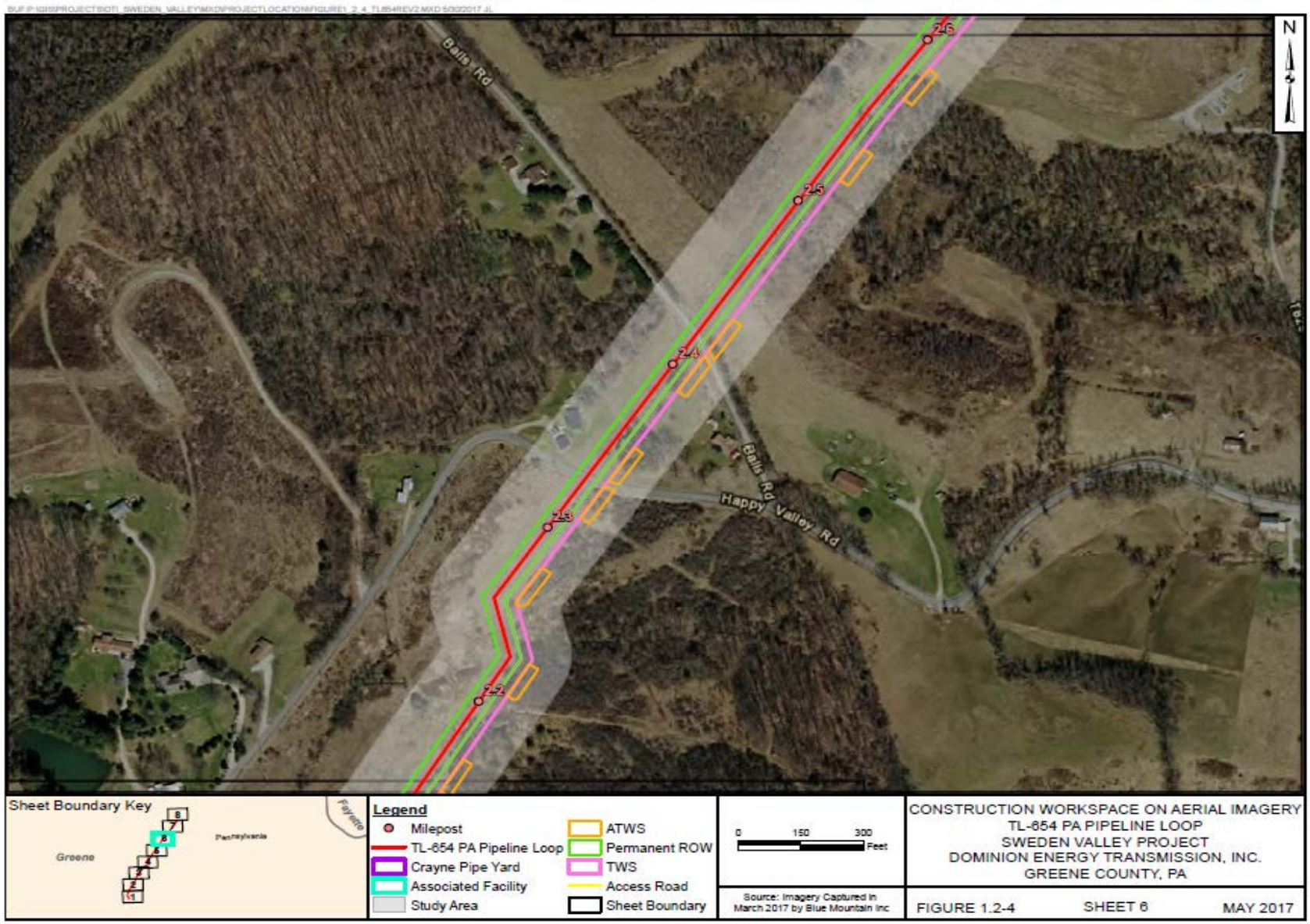
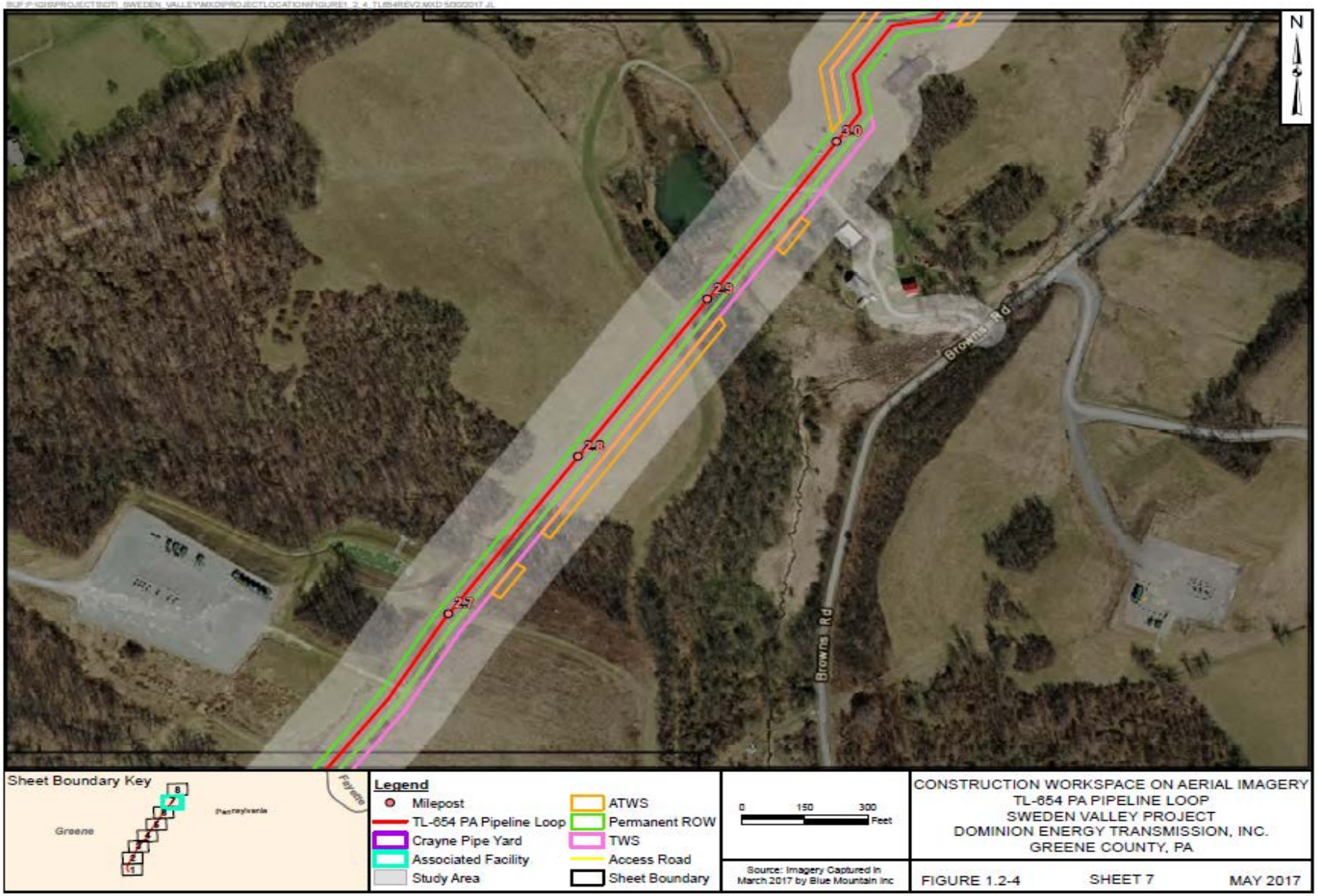
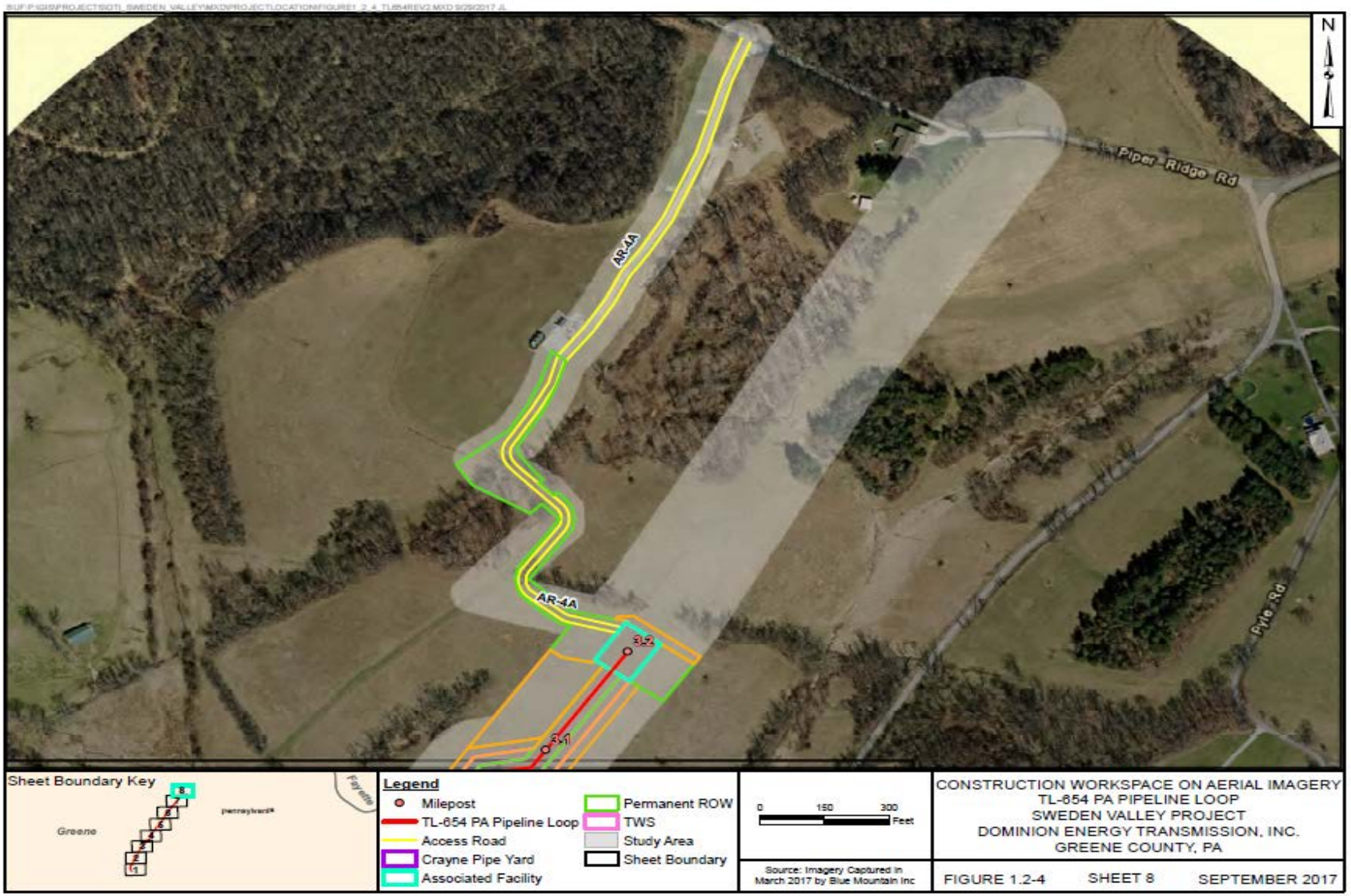
Greene
Fayette
Legend
Milepost
TL-654 PA Pipeline Loop
Crayne Pipe Yard
Associated Facility
Study Area
ATWS
Permanent ROW
TWS
Access Road
Sheet Boundary
0
150
300
Feet
Source: Imagery Captured in March 2017 by Blue Mountain Inc
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-654 PA PIPELINE LOOP
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
GREENE COUNTY, PA
FIGURE 1.2-4
SHEET 3
MAY 2017


N
1.6
1.5
1.4
1.3
1.2
Lippencott Rd
221
Happy Valley Rd
AR-3
Sheet Boundary Key
Greene
Fayette
Legend
Milepost
TL-654 PA Pipeline Loop
Crayne Pipe Yard
Associated Facility
Study Area
ATWS
Permanent ROW
TWS
Access Road
Sheet Boundary
0 150 300 Feet
Source: Imagery Captured in March 2017 by Blue Mountain Inc
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-654 PA PIPELINE LOOP
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
GREENE COUNTY, PA
FIGURE 1.2-4
SHEET 4
MAY 2017

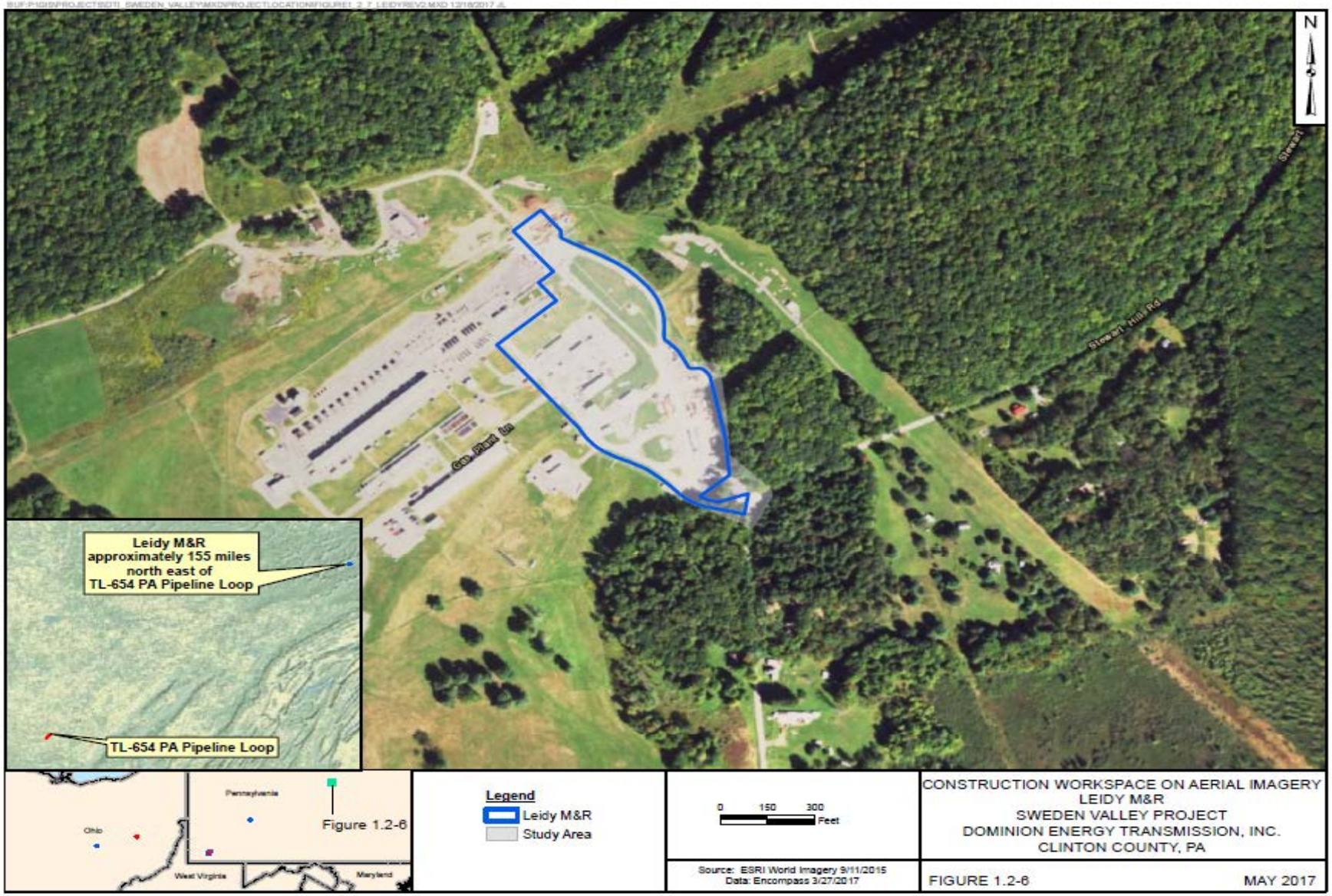

Happy Valley Rd
2.1
2.0
1.9
1.8
1.7
Happy Valley Rd
N
Sheet Boundary Key
Greene
Fayette
Pennsylvania
Legend
Milepost
TL-654 PA Pipeline Loop
Crayne Pipe Yard
Associated Facility
Study Area
ATWS
Permanent ROW
TWS
Access Road
Sheet Boundary
0 150 300
Feet
Source: Imagery Captured in March 2017 by Blue Mountain Inc
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-654 PA PIPELINE LOOP
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
GREENE COUNTY, PA
FIGURE 1.2-4
SHEET 5
MAY 2017


Balls Rd
Balls Rd
Happy Valley Rd
2.6
2.5
2.4
2.3
2.2
N
Sheet Boundary Key
Greene
Fayette
Pennsylvania
Legend
Milepost
TL-654 PA Pipeline Loop
Crayne Pipe Yard
Associated Facility
Study Area
ATWS
Permanent ROW
TWS
Access Road
Sheet Boundary
0
150
300
Feet
Source: Imagery Captured in March 2017 by Blue Mountain Inc
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-654 PA PIPELINE LOOP
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
GREENE COUNTY, PA
FIGURE 1.2-4
SHEET 6
MAY 2017


N
Browns Rd
Browns Rd
3.0
2.9
2.8
2.7
Sheet Boundary Key
Greene
Pennsylvania
Fayette
Legend
Milepost
TL-654 PA Pipeline Loop
Crayne Pipe Yard
Associated Facility
Study Area
ATWS
Permanent ROW
TWS
Access Road
Sheet Boundary
0
150
300
Feet
Source: Imagery Captured in March 2017 by Blue Mountain Inc
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-654 PA PIPELINE LOOP
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
GREENE COUNTY, PA
FIGURE 1.2-4
SHEET 7
MAY 2017


N
Piper Ridge Rd
AR-4A
AR-4A
Pyle Rd
3-2
3-1
Sheet Boundary Key
Greene
Fayette
Legend
Milepost
TL-654 PA Pipeline Loop
Access Road
Crayne Pipe Yard
Associated Facility
Permanent ROW
TWS
Study Area
Sheet Boundary
0
150
300
Feet
Source: Imagery Captured in March 2017 by Blue Mountain Inc
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
TL-654 PA PIPELINE LOOP
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
GREENE COUNTY, PA
FIGURE 1.2-4
SHEET 8
SEPTEMBER 2017


N
PA-156
56
PA-156
South Bend Station
approximately 60 miles
north east of
TL-654 PA Pipeline Loop
TL-654 PA Pipeline Loop
Figure 1.2-5
Ohio
Pennsylvania
West Virginia
Maryland
Legend
South Bend Regulation
Study Area
0
150
300
Feet
Source: ESRI World Imagery 9/24/2015
Data: Encompass 3/27/2017
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
SOUTH BEND REGULATION
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
ARMSTRONG COUNTY, PA
FIGURE 1.2-5
MAY 2017


N
Stewart
Stewart Hill Rd
Grib Plant Ln
Leidy M&R
approximately 155 miles
north east of
TL-654 PA Pipeline Loop
TL-654 PA Pipeline Loop
Pennsylvania
Ohio
West Virginia
Maryland
Figure 1.2-6
Legend
Leidy M&R
Study Area
0 150 300
Feet
Source: ESRI World Imagery 9/11/2015
Data: Encompass 3/27/2017
CONSTRUCTION WORKSPACE ON AERIAL IMAGERY
LEIDY M&R
SWEDEN VALLEY PROJECT
DOMINION ENERGY TRANSMISSION, INC.
CLINTON COUNTY, PA
FIGURE 1.2-6
MAY 2017