PUBLIC

ORIGINAL

Dominion

SUPPLEMENT NO. 1

FEDERAL ENERGY REGULATORY COMMISSION ENVIRONMENTAL REPORT

EXHIBIT F-1

COVE POINT EXPANSION PROJECT DOMINION TRANSMISSION, INC. DOCKET NO. CP05-131-000

Submitted By: Dominion Transmission, Inc.
445 West Main Street
Clarksburg, West Virginia 26301

Prepared By: GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

Project C040177.40

March 2005

Revised June 2005

PUBLIC

ORIGINAL

SUPPLEMENT NO. 1

FEDERAL ENERGY REGULATORY COMMISSION ENVIRONMENTAL REPORT

EXHIBIT F-1

COVE POINT EXPANSION PROJECT
DOMINION TRANSMISSION, INC. PIPELINES
DOCKET NO. CP05-131-000
JUNIATA, MIFFLIN, HUNTINGDON, CENTRE, CLINTON, GREENE AND POTTER COUNTIES, PENNSYLVANIA AND WETZEL COUNTY, WEST VIRGINIA

Submitted By: Dominion Transmission, Inc.
445 West Main Street
Clarksburg, West Virginia 26301

Prepared By: GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

Project C040177.40

March 2005

Revised June 2005

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Table 3.2.4-1

ESTIMATED CLEARING OF VEGETATION COVER TYPES FOR PL-1 EXT2

Habitat	Approximate Acres to be Cleared									
	Centerline[1]		New Access Roads[1,2]		Pipeyards[1,2]		Extra Work Spaces[1,2]		Totals	
	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.
Forest	332.61	221.74	0.00	0.00	0.00	0.00	13.24	0.00	345.85	221.74
Agricultural Cropland	***131.07***	***88.45***	0.42	0.42	32.39	0.00	58.55	0.00	***222.43***	***88.87***
Rangeland	9.93	6.62	0.00	0.00	0.00	0.00	2.10	0.00	12.03	6.62
Open Lands	***236.23***	***158.98***	0.42	0.42	0.00	0.00	5.94	0.00	***242.59***	***159.40***
Industrial/Commercial	***14.61***	***7.76***	0.00	0.00	32.30	0.00	0.10	0.00	***47.01***	***7.76***
Residential	5.91	3.94	0.00	0.00	0.00	0.00	0.20	0.00	6.11	3.94
Total Acres to be Cleared	***730.36***	***487.49***	**0.84**	**0.84**	**64.69**	**0.00**	**80.13**	**0.00**	***876.02***	***488.33***

Notes:

1 Centerline forest, open land, and agricultural cropland "Total Acres to be Cleared" values include wetland acreages.

2 The access roads and pipeyards "Total Acres to be Cleared" values include the individual wetland acreages.

Acreage Calculations: Centerline acreages are calculated by multiplying the length of the traverse by the respective ROW width (temporary is 100 feet'; permanent is 50 feet), and dividing the resulting area by 43,560. New access road acreages are calculated by multiplying the length of the traverse by 50 feet and dividing the resulting area by 43,560. Pipeyards, staging areas, and EWS acreages are calculated by dividing the respective area of the facility by 43,560.

Revised June 16, 2005

SUPPLEMENT NO. 1

COVE POINT EXPANSION PROJECT
DOMINION TRANSMISSION, INC. PIPELINES
EXHIBIT F-1
ENVIRONMENTAL REPORT
DOCKET NO. CP05-*131*-000

APPENDIX 3-A *(VOLUME I OF XIII)*

CORRESPONDENCE FOR THE PL-1 EXT2 PIPELINE

Revised June 16, 2005

gai consultants
transforming ideas into reality

May 3, 2005

Project C040177.61

Mr John Nichols
Habitat Conservation Division
904 South Morris Street
Oxford, Maryland 21654

Dominion Transmission, Inc.
Proposed PL1 EXT2 Pipeline
Cove Point Expansion
American Shad - Juniata River

Dear Mr. Nichols:
On behalf of Dominion Transmission, Inc. (DTI), GAI Consultants, Inc. (GAI) is submitting this letter in response to the request for information as discussed in your December 28, 2004 phone conversation with Ms. Kristy Flavin. The proposed PL1 EXT2 pipeline consists of approximately 81 miles of 24-inch diameter natural gas pipeline. As part of the project, the Juniata River will be used to complete hydrostatic testing. The withdrawal quantity is presented in Table 2.2.5-1 (attached). The quantity is approximately 1,155,000 gallons.

As identified in your August 8, 2004 e-mail to Mr. Kent Cockley, the Juniata River is a spawning ground and migratory corridor for American Shad. As requested, this letter intends to give more details about the hydrostatic test water withdrawal process for your review and comment.

- A 2 millimeter wedge wire screening device will be used to limit impact on eggs and larvae;
- Velocity of the intake can be limited to 5 feet per second by using a larger diameter intake or multiple smaller diameter intakes;
- Orientation of the suction lines will be placed in a recess if available. If not available, the line will be placed with the flow of the water; and
- The withdraw will occur at different times lasting up to four days each due to flow restrictions.
- Construction of the Horizontal Directional Drill (HDD) under the Juniata River will be in the Summer/Fall 2006. Construction of the pipeline will begin in spring 2007 and last until the winter of 2007. Testing is usually near the end of the project however, due to the length of the project, and multiple numbers of required tests, testing for the pipeline could begin in late summer 2007. A smaller quantity will be withdrawn in 2006 for the HDD testing and a larger portion will be withdrawn in 2007 for the pipeline testing.

If you have any questions or concerns please contact Mr. Kent Cockley or me at (412) 476-2000. We look forward to receiving your concurrence letter for this project.

Sincerely,
GAI Consultants, Inc.

Prezha Yodnane

Prezha Yodnane, Ph.D., P.E.
Project Manager

PY: KF/mlm
0417761-ltr-cpx-kf/mlmD-1

Attachments

cc: Mr. Randall Russell, Dominion Transmission, Inc. - Clarksburg
Mr. John L. Lattea, Dominion Transmission, Inc. - Clarksburg
Mr. David Mordan, Dominion Transmission, Inc. - Clarksburg

Table 2.2.5-1

HYDROSTATIC TEST INFORMATION FOR THE PL-1 EXT2 PIPELINE

Pipeline Project	Segment	Pipe Size	Water Source	Test Site (milepost)	Initial Fill (approx. gallons)
Section 1	1	24-Inch Mainline PL-1 EXT2	Test Segment 1	Fill 5.62 (Section 1) Empty 0.0 (Section 1)	667,960
	2		Juniata River	Fill 12.24(Section 1) Empty 5.62 (Section 1)	789,535
	3		Juniata River	Fill 12.24 (Section 1) Empty 15.31 (Section 1)	365,592
	4		Test Segment 3	Fill 15.31 (Section 1) Empty 17.44 (Section 1)	253,180
	5		Kishacoquillas Creek or Test Segment 4	Fill 17.44 (Section 1) Empty 17.44 (Section 1)	235,636
	6		Kishacoquillas Creek or. Test Segments 1, 2, 3, and 4 from Section 2	Fill 26.87 (Section 2) Empty 26.87 (Section 2)	1,201,441
Section 2	1		Bald Eagle Creek and Test Segments 2 and 3	Fill 6.82 (Section 2) Empty 26.87 (Section 2)	495,493
	2		Test Segments 3 and 4	Fill 9.77 (Section 2) Empty 6.82 (Section 2)	350,620
	3		Test Segment 4	Fill 12.23 (Section 2) Empty 9.77 (Section 2)	293,168
	4		Bald Eagle Creek and Test Segments 5 and 6	Fill 15.68 (Section 2) Empty 12.23 (Section 2)	410,840
	5		Test Segment 6	Fill 15.82 (Section 2) Empty 16.68 (Section 2)	16,695
	6		Bald Eagle Creek	Fill 19.05 (Section 2) Empty 15.82 (Section 2)	384,266
	7		Bald Eagle Creek	Fill 19.05 (Section 2) Empty 19.65 (Section 2)	71,550
	8		Bald Eagle Creek and Test Segment 7	Fill 19.65 (Section 2) Empty 24.26 (Section 2)	549,202
	9		Test Segment 8	Fill 24.26 (Section 2) Empty 27.26	358,218
Section 3	1		Test Segment 2 and 3	Fill 5.95 (Section 3) Empty 27.26	869,860
	2		West Branch Susquehanna River and Test Segment 3	Fill 12.02 (Section 3) Empty 5.95 (Section 3)	721,608
	3		West Branch Susquehanna River	Fill 14.55 (Section 3) Empty 12.02 (Section 3)	287,824
	4		West Branch Susquehanna River	Fill 14.55 (Section 3) Empty 20.33 (Section 3)	687,841
	5		Test Segment 4	Fill 20.33 (Section 3) Empty 22.51 (Section 3)	259,285
	6		Test Segment 5	Fill 22.51 (Section 3) Empty 25.62 (Section 3)	370,030

From: "Brauning, Daniel" <dbrauning@state.pa.us>
To: "George Reese" <g.reese@gaiconsultants.com>
Date: 4/23/2005 1:21:15 PM
Subject: RE: Peregrine Falcon Observation - Clinton County

George,

Thanks for this observation. It is very suggestive that nesting is occurring somewhere nearby.

Dan Brauning

-----Original Message-----
From: George Reese [mailto:g.reese@gaiconsultants.com]
Sent: Fri 4/22/2005 4:57 PM
To: dbrauning@state.pa.us
Cc: Kent Cockley; Stephen Gould
Subject: Peregrine Falcon Observation - Clinton County

Dan,

Jennifer Dombroskie of the USFWS suggested that I contact you with information concerning a recent Peregrine Falcon observation in Clinton County.

While conducting aerial surveys for Bald Eagle nests for a Dominion Transmission natural gas pipeline on March 30, 2005, I observed a Peregrine Falcon about 8 miles southwest of Renovo (about 2 miles south of the West Branch of the Susquehanna near the community of Cooks Run). This would place it approximately on boundary of the Snow Shoe NE and Renovo West USGS quads. The bird appeared to deliberately approach the aircraft from the southwest, came within about 100-200 feet (close enough to see the sideburns with the naked eye), paralleled it for about 10 seconds, and then flew off to the northwest. No cliffs were located within our 1/2 mile wide survey corridor in this area. I did note some stepped outcroppings on the north side of the river above State Route 120. These are about 4000 feet west of the pipeline. These individually did not appear to be more than 25-50 feet high.

We would be happy to additional information if this is of further interest to you.

Thanks
George

George T. Reese
Environmental Manager
GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, PA 15120-5005

Phone: 412.476.2000 x1411
Fax: 412.476.2020

Certified Ecologist, Ecological Society of America

g.reese@gaiconsultants.com
www.gaiconsultants.com

CC: "Kent Cockley" <k.cockley@gaiconsultants.com>, "Stephen Gould" <s.gould@gaiconsultants.com>, <mcmorris@mac.com>

SUPPLEMENT NO. 1

COVE POINT EXPANSION PROJECT
DOMINION TRANSMISSION, INC. PIPELINES
EXHIBIT F-1
ENVIRONMENTAL REPORT
DOCKET NO. CP05-*131*-000

APPENDIX 3-A *(VOLUME I OF XIII)*

CORRESPONDENCE FOR THE TL-453 EXT1 PIPELINE

Revised June 16, 2005

Pennsylvania Fish & Boat Commission

established 1866

Division of Environmental Services
Natural Diversity Section
450 Robinson Lane
Bellefonte, PA 16823-9620
(814) 359-5237 Fax: (814) 359-5175

May 6, 2005

IN REPLY REFER TO
SIR# 15780

GAI Consultants
Precha Yodnane
385 East Waterfront Drive
Homestead, PA 15120-5005

RE: Tertiary Species Impact Review (SIR) #15780
Dominion Transmission—Proposed TL-453 Extension 1
Potter County, Pennsylvania

Dear Dr. Yodnane:

I have reviewed your correspondence regarding the above-referenced project and its potential to impact the American brook lamprey, (*Lampetra appendix*, PA candidate) on the Middle Branch of the Genesee River.

In response to a prior correspondence from us, you sent a detailed characterization of the stream in the vicinity of the proposed crossing. Based on our evaluation of this information, there is potential for this portion of the stream to support spawning American brook lamprey. Although the mobile adults of these protected fish species may be capable of moving from the project area, their spawning grounds (including eggs, fry, and immature fish) are vulnerable to burial, crushing by equipment, and siltation from in-stream construction projects. We are concerned about potential impacts to the fish, eggs and the hatching fry from any instream activity associated with this bridge replacement. Therefore, we request that **all in-stream activity be avoided from April 1 to May 31 in order to avoid adverse impacts during the spawning season for this species.** Provided that this recommendation is followed, as well as best management practices and an approved strict erosion and sedimentation control plan is maintained, then I do not anticipate the proposed activity to have any significant adverse impacts to the species of special concern or any other rare or protected species under Pennsylvania Fish & Boat Commission jurisdiction.

In addition to addressing the avoidance of potential impacts to the American brook lamprey, I am including in this letter the recommended restrictions associated with wild trout. Based on inhouse discussion of both the stocked and wild trout resources at or near all three Genesee basin locations, any crossing that for some reason cannot be directionally drilled should be completed outside of the periods 3/1 - 6/15 and 10/1 - 12/31.

Please contact Kathy Derge of my staff at (814) 359-5186 if you have questions regarding this response. Thank you for your cooperation and attention to this matter of rare, threatened, and endangered species conservation.

Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

KLD/

cc: Ron Tibbott, PFBC
DEP-NC Region

gai consultants
transforming ideas into reality

April 8, 2005

Project C040177.62

Mr. Christopher A. Urban, Chief
Natural Diversity Section
Pennsylvania Fish and Boat Commission
450 Robinson Lane
Bellefonte, Pennsylvania 16823-9685

Dominion Transmission, Inc.
Proposed TL-453 EXT1
Cove Pont Expansion
Threatened and Endangered Species
SIR No. 15780

Dear Mr. Urban:
On behalf of Dominion Transmission, Inc. (DTI), GAI Consultants, Inc. (GAI) is submitting this letter in response to the request for information as received in the January 10, 2005 Species Impact Review (SIR) No. 15780 from the Pennsylvania Fish and Boat Commission (PAF&BC), which has been attached for you reference. The proposed TL-453 EXT1 pipeline consists of approximately 12 mile of 24-inch diameter natural gas pipeline, extending from the Ellisburg Station to Harrison Station in Potter County, Pennsylvania.

As identified in the above-referenced PAF&BC SIR the American brook lamprey (*Lampetra appendix*) was identified as being potentially impacted by the construction of the proposed TL-453 EXT1 gas pipeline. Due to the varying types of habitat that is utilized by the lamprey at different life stages, the PAF&BC requested a detailed stream characterization be conducted to allow a determination if a survey should be conducted for the lamprey or if seasonal restrictions will address the potential conflict. The detailed stream characterization was performed on March 22, 2005, and is provided as follows:

- Stream width: At the point of crossing, the distance from top to bank to top of bank is 25 feet. Please refer to the overview pictures (Photograph 1 through 3).
- Stream depth: The depth of flow at the point of crossing is approximately 24 to 36 inches.
- Velocity: The approximate velocity of flow at the time of characterization was 3.50 feet per second. The stream exhibited characteristics of riffle and run flow. Photographs 4 and 5 have been provided indicating the upstream and downstream views the proposed centerline, respectively.
- Bottom type: The substrate of the Middle Branch of the Genesee River consists primarily of gravel and cobble. Silt and algae were observed on the substrate in portions of the stream that exhibit pool or riffle flow, although the point of crossing primarily exhibits riffle and run flow. Photographs of the substrate have been attached as Photographs 6 and 7.

- Aquatic Vegetation: The presence of aquatic vegetation was limited to algae present on the substrate. Please refer to Photographs 6 and 7 for more information.
- pH: At the time of characterization, the pH of the Middle Branch of the Genesee River was 7.30.
- Specific Conductance: The specific conductance of the Middle Branch of the Genesee was measured at 120 µs/cm at the time of the characterization.
- Shoreline Description: The shoreline of the Middle Branch of the Genesee River, identified in Photographs 8, 9, and 10, were moderately-eroded, mud banks. This characteristic was observed throughout.

In addition to the above-referenced concern regarding the American brook lamprey, the PAFBC requested information on the location and methods of withdrawl and discharge of hydrostatic test water. Hydrostatic testing procedures, including intake and discharge procedures, are outlined in Section VII of the "Wetland and Waterbody Construction and Mitigation Procedures" (attached). The location by milepost of intake and discharge, as well as rates for the intakes and discharge are provided in the attached Table 2.2.5-4.

If you have any questions or concerns please contact Mr. Kent Cockley or me at (412) 476-2000.

Sincerely,
GAI Consultants, Inc.

Precha Yodnane

Precha Yodnane, Ph.D., P.E.
Project Manager

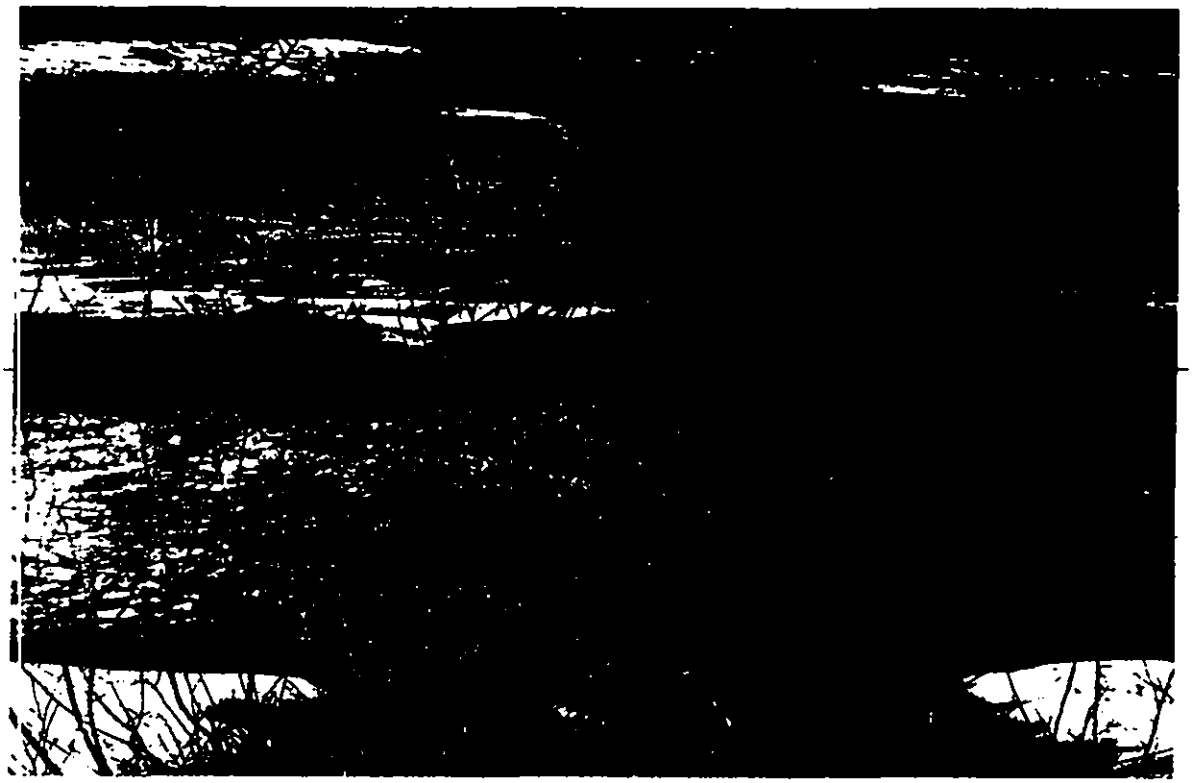
PY:KCC:SRC/jco
0417762-ltr-src/jcoD1

Attachments

cc: Mr. Randall Russell, Dominion Resources Services, Inc.
Mr. J. Randall McClung, Dominion Transmission, Inc.
Mr. David Mordan, Dominion Transmission, Inc.
Mr. Ronni Tibbott, Pennsylvania Fish and Boat Commission

Photograph 1. Middle Branch of the Genesee River, overview, facing east (station ahead).

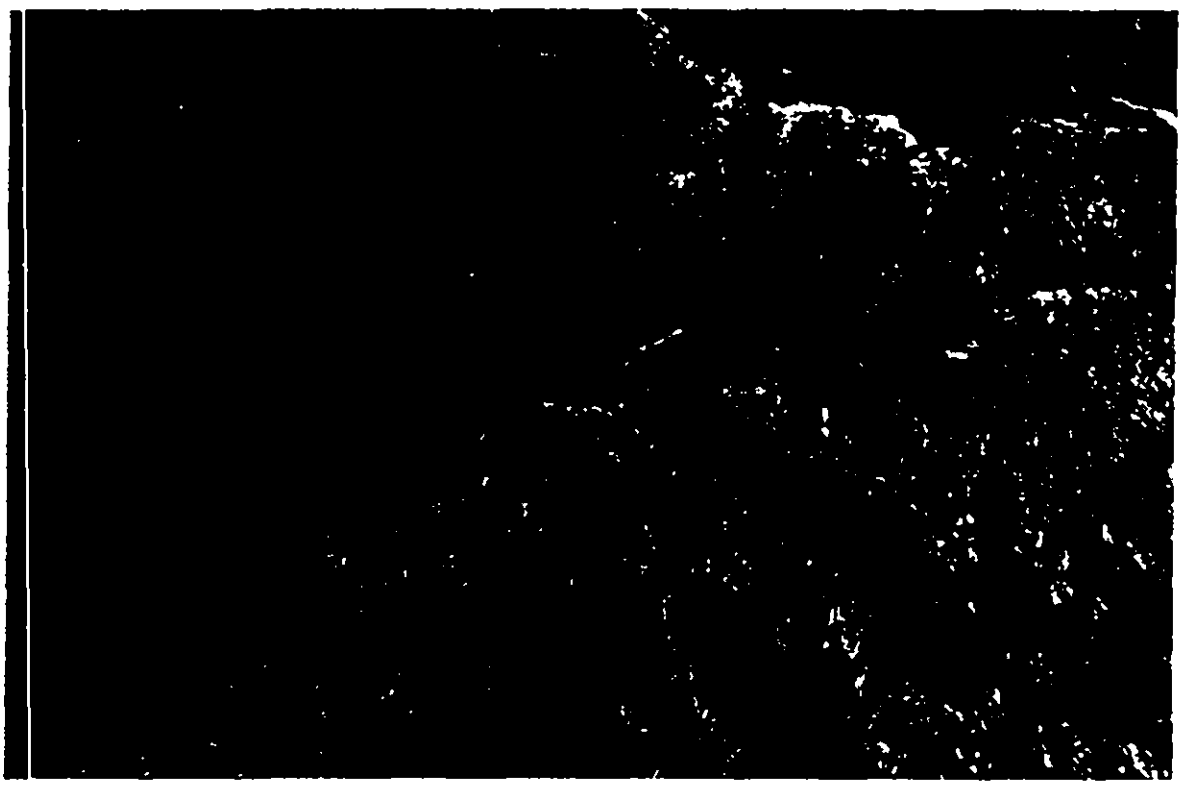
Photograph 2. Middle Branch of the Genesee River, facing east on TL-453 EXT1 centerline (station ahead).



Photograph 3. Middle Branch of the Genesee River, facing west on TL-453 EXT1 centerline (station back).

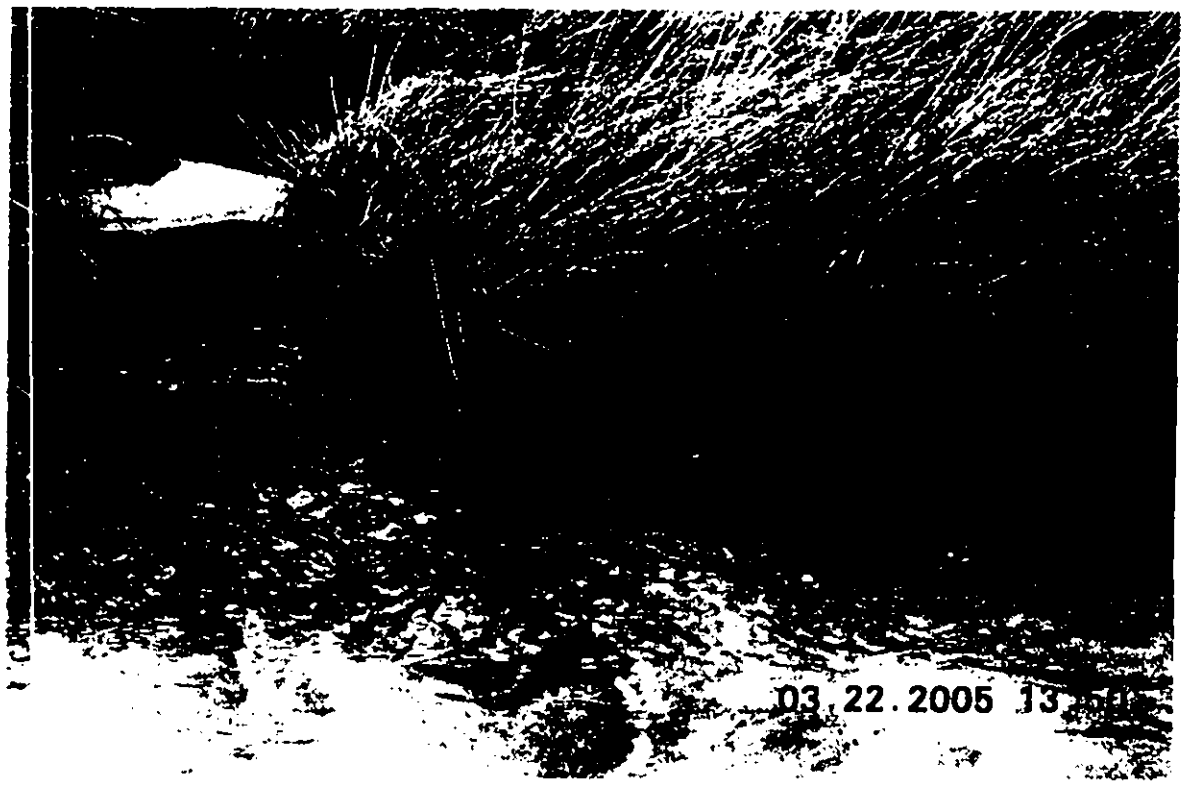
Photograph 4. Middle Branch of the Genesee River, facing upstream on TL-453 EXT1 centerline.

Photograph 5. Middle Branch of the Genesee River, facing downstream on TL-453 EXT1 centerline.



Photograph 6. Middle Branch of the Genesee River, substrate.

Photograph 7. Middle Branch of the Genesee River, substrate.



Photograph 8. Middle Branch of the Genesee River, bank conditions.

Photograph 9. Middle Branch of the Genesee River, bank conditions.

Photograph 10. Middle Branch of the Genesee River, bank conditions.

Pennsylvania Fish & Boat Commission

established 1866

Division of Environmental Services
Natural Diversity Section
450 Robinson Lane
Bellefonte, PA 16823-9620
(814) 359-5237 Fax: (814) 359-5175

January 10, 2005

IN REPLY REFER TO
SIR# 15780

GAI Consultants
Precha Yodnane
385 East Waterfront Drive
Homestead, PA 15120-5005

RE: **Secondary Species Impact Review (SIR) #15780**
Dominion Transmission—Proposed TL-453 Extension 1
Potter County, Pennsylvania

Dear Dr. Yodnane:

I have reviewed your correspondence regarding the above-referenced project and its potential to impact the American brook lamprey, (*Lampetra appendix*, PA candidate) on the Middle Branch of the Genesee River. The American brook lamprey is a rare non-parasitic form of the lamprey family. This species prefers gravel and rocky stream bottoms for spawning; however, the ammocoetes (young) form burrows in mud banks and in slow moving pools of streams that have silty or sandy bottoms. The American brook lamprey populations throughout the state have been restricted by limited migration due to the construction of dams, and are vulnerable to dredging and changes in water quality.

Because of the differences in habitat use between the adult and the larval stage, recommendation of a seasonal restriction to avoid the spawning season for this fish (April-May) is premature until we obtain more information about the habitat at the proposed crossing location. If you are unable to directionally drill the crossing of the Middle Branch of the Genesee River, then we will need to review detailed information about the crossing location in order to avoid impacts to the American brook lamprey. Initially, a habitat characterization could be performed of the areas that would be directly and indirectly impacted by the proposed crossing. A detailed stream characterization, including stream width, depth, velocity, bottom type, aquatic vegetation present, pH, specific conductance, shoreline description, and photographs of the substrates would allow us to determine if a survey for American brook lamprey should be conducted or if a spawning season restriction would be applicable. Please send the results of the characterization to this office for review.

In addition to addressing the avoidance of potential impacts to the American brook lamprey, you requested more information about restrictions associated with wild trout. Based on inhouse discussion of both the stocked and wild trout resources at or near all three Genesee basin locations, any crossing that for some reason cannot be directionally drilled should be completed outside of the periods 3/1 - 6/15 and 10/1 - 12/31.

Finally, you proposed withdrawal and disposal of up to 1,415,000 gallons of water from the Middle Branch and the mainstem Genesee Rivers for hydrostatic testing. These water withdrawals should not be conducted at rates sufficient to visually reduce instream flow, and stable discharge areas must be provided to avoid erosion or sedimentation impacts on the receiving waterways. Please provide us with information on locations and methods for both withdrawal and discharge, including the flow rates for each, so that these potential impacts can be assessed.

Please contact Kathy Derge of my staff at (814) 359-5186 if you have questions regarding this response. In any future correspondence with us regarding this specific project, please refer to the SIR tracking number indicated above. Thank you for your cooperation and attention to this matter of rare, threatened, and endangered species conservation.

Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

KLD/

cc: Ron Tibbott, PFBC
DEP-NC Region

Table 2.2.5-4

HYDROSTATIC TEST INFORMATION FOR THE TL-453 EXT1 PIPELINE

Segment	Pipe Size (inches)	Test Site (milepost)	Initial Fill (approx. gallons)	Discharge Location (milepost)
1	24	MP0.0 to MP0.7	8,800	MP0.0
2	24	MP6.0 to MP6.1	5,500	MP6.0
3	24	MP6.6 to MP6.67	10,600	MP6.6
4	24	MP11.5 to MP11.6	3,500	MP7.5
5	24	MP0.0 to MP11.5	1,365,000	MP0.0

Note:

1. Water sources will be the Middle Branch Genesee River at MP2.26 and the Genesee River at MP4.29. The water will be withdrawn and trucked to the five test segment sites listed above.

2. The intake rate will be a maximum of 5,000 gpm, based upon the special conditions of PAG-106901, General NPDES for Hydrostatic Testing.

3. The discharge rate will be 750 gpm.

4. Hydrostatic testing will be conducted in accordance with Section VII of the "Wetland and Waterbody Construction and Mitigation Procedures" (Appendix 1-B).

VII. HYDROSTATIC TESTING

A. NOTIFICATION PROCEDURES AND PERMITS

1. Apply for state-issued water withdrawal permits, as required.

2. Apply for National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required.

3. Notify appropriate state agencies of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.

B. GENERAL

1. Perform 100 percent radiographic inspection of all pipeline section welds or hydrotest the pipeline sections, before installation under waterbodies or wetlands.

2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetland, address the operation and refueling of these pumps in the project's Spill Prevention and Response Procedures.

3. The project sponsor shall file with the Secretary before construction a list identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location.

C INTAKE SOURCE AND RATE

1. Screen the intake hose to prevent entrainment of fish.

2. Do not use state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and/or local permitting agencies grant written permission.

3. Maintain adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users.

4. Locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable.

D. DISCHARGE LOCATION, METHOD, AND RATE

1. Regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow.

2. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and local permitting agencies grant written permission.

RESOURCE REPORT 4 - CULTURAL RESOURCES

4.0 INTRODUCTION

Initial cultural resources consultation and documentation, and documentation of consultation with Native Americans. (§ 380.12(f) (l) (i) & (2))

Overview/Survey Report(s). (§ 380.12(f) (l) (ii) & (2))

4.0.1 PL-1 EXT2

This Resource Report addresses the nature and extent of cultural resources within the Area of Potential Effect (APE) for the PL-1 EXT2 pipeline. The following appendices for PL-1 EXT2 can be found in Volume IX of XIII. The report includes:

- documentation of consultation with the State Historic Preservation Office(s) [SHPO(s)] (Appendix 4-A);
- a summary of the status of cultural resources investigations undertaken to date;
- a copy of the Overview/Survey Report(s) prepared for the project (presented as Appendix 4-B);
- a copy of the Phase I-II Archaeology Report (Appendix 4-C);
- a brief summary of the status of Native American consultation regarding traditional cultural properties; and
- a plan for dealing with the unanticipated discovery of historic properties or human remains.

4.0 2 TL-492 EXT3

This Resource Report addresses the nature and extent of cultural resources within the APE for the TL-492 EXT3 pipeline. The following appendices for TL-492 EXT3 can be found in Volume X of XIII. The report includes:

- documentation of consultation with the SHPO(s) (Appendix 4-A);
- a summary of the status of cultural resources investigations undertaken to date;
- a copy of the Overview/Survey Report(s) prepared for the project (presented as Appendix 4-B);

- a brief summary of the status of Native American consultation regarding traditional cultural properties; and
- a plan for dealing with the unanticipated discovery of historic properties or human remains.

4.0 3 TL-536

This Resource Report addresses the nature and extent of cultural resources within the APE for the TL-536 pipeline. The following appendices for TL-536 can be found in Volume XI of XIII. The report includes:

- documentation of consultation with the SHPO(s) (Appendix 4-A);
- a summary of the status of cultural resources investigations undertaken to date;
- a copy of the Overview/Survey Report(s) prepared for the project (Appendix 4-B);
- a brief summary of the status of Native American consultation regarding traditional cultural properties; and
- a plan for dealing with the unanticipated discovery of historic properties or human remains.

4.0.4 TL-453 EXT1

This Resource Report addresses the nature and extent of cultural resources within the APE for the TL-453 EXT1 pipeline. The following appendices for TL-453 EXT1 can be found in Volume XII of XIII. The report includes:

- documentation of consultation with the SHPO(s) (Appendix 4-A);
- a summary of the status of cultural resources investigations undertaken to date;
- a copy of the Phase I Survey Report(s) prepared for the project (presented as Appendices 4-B and 4-C);
- a brief summary of the status of Native American consultation regarding traditional cultural properties; and
- a plan for dealing with the unanticipated discovery of historic properties or human remains.

4.1 CONSULTATION WITH THE STATE HISTORIC PRESERVATION OFFICERS

4.1.1 PL-1 EXT2

On May 6, 2004, Douglas H. MacDonald, Ph.D., RPA, of GAI Consultants, Inc. (GAI) briefed Mr. Steve McDougal of the PHMC-BHP on the entire route of the proposed project in PA (the PHMC-BHP is the SHPO for PA). He showed them the route of the pipeline on USGS topographic maps, sought their advice concerning the relative cultural resource sensitivity of the project corridor, and requested their input concerning any cultural resource studies that might be needed for the pipeline project. In a letter dated May 7, 2004, Dr. Kurt Carr of the PHMC-BHP and Mr. McDougal noted that the pipeline corridor traversed a region that had seen little in the way of systematic archaeological research. They recommended that a field survey should be done to identify undisturbed areas and to search for previously unidentified archaeological sites. They also indicated that three previously-identified archaeological sites (PASS #36CE342, #36CE357, and #36CE358) are located in or near the project area. The PHMC-BHP also indicated that this project had a high probability of encountering National Register of Historic Places (NRHP)-eligible historic resources and that project planners should conduct a survey to identify these resources.

On August 19, 2004, Dr. MacDonald of GAI sent a letter to Dr. Carr and Mr. McDougal of the PHMC-BHP to provide an update and status report concerning the archaeological studies conducted as of that date. This letter summarized the Phase I survey, and the preliminary recommendations for additional studies at sites that appeared to be potentially-eligible for the NRHP. Mr. McDougal acknowledged receipt of that letter in a telephone conversation on August 23, 2004. At this time, Mr. McDougal also confirmed that it was acceptable to submit a Phase I Management Summary with a summary of Phase I results and recommendations for Phase II studies. The Phase I Management Summary was submitted to the PHMC-BHP on September 15, 2004, and was accepted by their office on December 6, 2004 (archaeology) and December 9, 2004 and January 13, 2005 (architecture). ***In addition,*** the complete Phase I-II report was submitted for review ***on March 8, 2005. The PA SHPO concurred with all of GAI's recommendations in a letter dated April 8, 2005. Also, GAI conducted a Phase I survey of the Brooks reroute, with results submitted to the PA SHPO on May 26, 2005. No comments have been received to date. A portion of this Brooks reroute was previously studied by GAI for an unrelated project. This April 1990 report is included as an appendix to this document.***

4.1.2 TL-492 EXT3

On June 16, 2004, Dr. Yodnane of GAI contacted Ms. Susan Pierce of the WV Division of Culture and History and Dr. Carr of the PHMC-BHP, to request information regarding the potential for cultural, historic, or prehistoric resources in the proposed TL-492 EXT3 pipeline.

On July 14, 2004, Dr. Carr informed GAI that there may be historic buildings, structures and/or archaeological resources in the project area; however, the proposed activities were determined to have no effect on these resources. If previously unknown cultural resources are observed during construction, the PA SHPO should be contacted.

On July 26, 2004, Ms. Lora A. Lamarre of the WV SHPO responded that no further consultation was necessary regarding architectural resources for the proposed project because no properties listed on or eligible for inclusion in the NRHP will be affected by the project. For archaeological resources, insufficient information was provided in the submitted cultural resource notice. Ms. Lamarre requested photographs of the project area so she could evaluate if an archaeological survey was required. Regarding Native American Tribes, Ms. Lamarre indicated that no federally recognized tribal lands are located in WV.

GAI has submitted a Phase I Cultural Resources Report for review to Ms. Pierce and Dr. Carr. Both the WV SHPO and the PA SHPO (in letters dated February 2, 2005 and February 11, 2005, respectively) recommended that the project will have no effect on cultural resources eligible for inclusion in the NRHP (refer to Appendix 4-A). ***The PA SHPO also thanked GAI for submitting the four curation copies of the report to their office in a letter dated May 17, 2005.***

4.1.3 TL-536

On June 16, 2004, Dr. Yodnane of GAI sent a Cultural Resource Notice to Dr. Carr of the PHMC-BHP, PA SHPO for the proposed LN-257-S loop pipeline (now referred to by DTI as TL-536). The notice requested assistance to determine the potential impact of the project on historic and/or archaeological site(s) within 200 feet of each side of the proposed pipeline. On August 11, 2004, Dr. Carr notified Dr. Yodnane that significant archaeological sites are located in or near the TL-536 (LN-257-S loop) pipeline. Site 36PO23 is recorded near the project area and a Phase I survey to identify additional sites was required. However, Dr. MacDonald notified Mr. McDougal of the PA SHPO on August 31, 2004 (and again on September 15, 2004) that Kemron Environmental Services had previously completed a Phase I survey of the project APE in 1995 (*Phase I Cultural Resources Report for the Proposed Upgrade of Gas Transmission Line L-257-S in Potter County, Pennsylvania*, by L. Clifford and S. Roberts for CNG Transmission Corporation, now DTI). Site 36PO23 was identified during the survey (Kemron 1995:57-58), but the site will be avoided during pipeline construction, as approved by the PA SHPO in a letter to Kemron dated November 8, 1995. Appendix 4-C contains a copy of Kemron's 1995 report and the SHPO clearance letter (in the appendix of Kemron's report). In addition, GAI completed a portion of the survey for the Northeast Storage Project (*Phase I Cultural Resources Survey, Northeast Storage Project, Cattaraugus County, New York and McKean and Potter Counties, Pennsylvania*, by D. H. MacDonald and J. N. Tuk) in 2003. In light of these facts, Mr. McDougal called Dr. MacDonald on October 11, 2004 to notify GAI that the PA SHPO agreed that the current project should focus its cultural resources survey on

areas not previously studied and that no additional work was required in previously-studied areas along the proposed TL-536 pipeline.

In light of the prior surveys in the project area, GAI conducted additional archaeological surveys at previously-unsurveyed areas, including State Line Station and associated pipeline reroutes. A Phase I supplement report was submitted to the PA SHPO in December 2004. In a letter dated January 26, 2005, the PA SHPO documents no cultural resources within the project area and recommends no additional archaeological field work. ***On March 7, 2005, GAI submitted four final curation copies of the TL-536 Phase I report to the PA SHPO. On April 18, 2005, the PA SHPO thanked GAI for submitting the additional report copies.***

4.1 4 TL-453 EXT1

On June 16, 2004, Dr. Yodnane of GAI sent a Cultural Resource Notice to Dr. Carr of the PHMC-BHP, who serves as the PA SHPO for the proposed TL-453 EXT1 project. The notice requested assistance to determine the potential impact of the project on historic and/or archaeological site(s) within 200 feet of each side of the proposed pipeline. On August 11, 2004, Dr. Carr notified Dr. Yodnane that no archaeological or architectural survey was necessary in the project area. However, Dr. MacDonald of GAI notified Mr. McDougal of the PA SHPO office on August 31, 2004 (and again on September 15, 2004) that Horizon Research Consultants, Inc. (Horizon) had previously completed a Phase I survey of the project APE in 2000 (*A Cultural Resource Report for Dominion Transmission Proposed TL-453 Natural Gas Pipeline*). The report was submitted to DTI but was never submitted to the SHPO for review because project construction was delayed. On October 11, 2004, Mr. McDougal stated that since the report was completed that we should submit it as an appendix to any supplemental work we conduct in the TL-453 EXT1 project area. As such, GAI submitted an abbreviated report of supplemental archaeological survey results along an access road near the Genesee River (Access Road 4), and for a reconnaissance of the proposed modifications at Ellisburg and Harrison Stations. At this time, GAI attached Horizon's 2000 report as an appendix to the abbreviated report, as requested by the PA SHPO. Both of these reports (Horizon, 2000 and GAI, 2004) are provided as Appendices 4-C and 4-D, respectively. No cultural resources were identified during these surveys of the project area. On February 14, 2005, the PA SHPO concurred with GAI's recommendation of no additional archaeological field work. ***On March 18, 2005, GAI submitted four final curation report copies to the PA SHPO. The PA SHPO thanked GAI for the additional report copies in a letter dated April 15, 2005.***

Finally, GAI submitted a Supplemental Phase I Report for a reroute (750 feet by 50 feet) in June 2005. The PA SHPO has not commented to date on that report.

In addition to the facilities in PA, the TL-453 EXT1 project involves construction of a regulation station at Woodhull Compressor Station in Steuben County, New York, (NY). As such, GAI conducted a field reconnaissance to evaluate archaeological potential in the project area. Given the extensive disturbance, GAI sent a letter (dated October 14,

2004) and Project Review Cover Form to the NY State Office of Parks and Recreation and Historic Preservation (NY SHPO). In the letter, GAI recommended no additional archaeology and that the project would have no effect on cultural resources. On November 16, 2004, Ms. Ruth L. Pierpont, Director of the NY SHPO, concurred with GAI's recommendation.

4.2 STATUS OF CULTURAL RESOURCE INVESTIGATIONS

4.2.1 Archaeological Studies

4.2.1.1 PL-1 EXT2

The APE for archaeological resources is defined as all locations associated with the proposed undertaking where there will be alteration and disturbance of surface and subsurface soils that contain or have the potential to contain archaeological sites. This includes the pipeline ROW, plus all access roads, pipeyards, and staging areas. The study corridor was 200 feet wide (100 feet on either side of the centerline) and approximately 81 miles long. All access roads were examined within the PL-1 EXT2 pipeline utilizing a 50-foot ROW. Refer to Table 4.2.1-1 for project status.

In May 2004, GAI began background research to develop cultural contexts for field surveys and to inventory previously identified cultural resources in or near the project area. Given the length of the proposed corridor, relatively little information was available; only 38 archaeological sites were previously reported within one-mile of the PL-1 EXT2 pipeline corridor. Three sites (36CE342, #36CE357 and #36CE358), are situated in or adjacent to the current project limits.

Subsequent to completion of background research, Phase I fieldwork began with a pedestrian reconnaissance of the entire corridor in May of 2004. This reconnaissance was coordinated with DTI to maximize avoidance of natural and cultural resources prior to selecting the project corridor. The entire length of the PL-1 EXT2 pipeline was then divided into high, moderate or low probability areas prior to systematic survey fieldwork.

Systematic survey began on May 17, 2004 and was completed in the fall of 2004. The survey included investigations along the proposed pipeline ROW, as well as access roads, pipeyards, and EWS areas. Fieldwork included excavation of shovel test pits (STPs) and 1x1-meter test units, selective placement of bucket auger holes, deep trench backhoe testing, and the examination of any surface exposure available to determine if artifacts were present.

The Phase I survey identified 11 archaeological sites (seven prehistoric and four historic) and one isolated prehistoric isolated find within the proposed PL-1 EXT2 pipeline corridor. The isolated prehistoric find is a red jasper biface tip recovered during surface collection of an upland farm field south of Kishacoquillas Creek. Radial STPs and close-interval pedestrian survey failed to identify additional artifacts in this location.

No additional work is recommended at the location of the findspot. Refer to Table 4.2.1-2 for a list of identified cultural resources.

Of the 11 sites, three are low-density prehistoric lithic scatters, including Site 36MI105 (Segment 1, Site 5; the Zook Site), Site 36CN218 (Segment 3, Site 1; the West Branch Site), and the Woods Farm Site. Site 36MI105, located on the southern floodplain of Kishacoquillas Creek, produced eight small flakes from the plowzone. Site 36CN218, located on a Pleistocene terrace overlooking the West Branch Susquehanna River, yielded eight flakes from five STPs and two 1x1-meter test units. The Woods Farm Site was identified in Segment 1 west of Lewistown. The low-density of artifacts at these three prehistoric sites and their unknown ages indicates a lack of data potential and no additional work is recommended.

Three of the identified sites date to the nineteenth-through-twentieth centuries, including Site 36MI104 (Segment 1, Site 2), Site 36JU116 (Segment 1, Site 3), and Site 36CN217 (the Springhouse Site; Segment 3, Site 3). Sites 36MI104 and 36JU116 are refuse dumps not associated with any known or previously-extant structures. Both sites yielded modern and late-nineteenth to early-twentieth century debris, including whiteware sherds and assorted glass and metal fragments. Site 36CN217 is a dry-laid spring house foundation associated with a spring head on a steep slope. The foundation may date to the early twentieth century, but no artifacts were recovered from this site. The lack of data potential for these three historic-period sites suggests that they are not eligible for listing on the NRHP and no additional work is recommended.

Four of the 11 sites identified within the project corridor yielded the remains of fairly substantial prehistoric occupations, including: Site 36MI103 (Juniata Crossing Site; Segment 1, Site 1, Area A); Site 36CE519 (Brooks Site; Segment 2, Site 1); Site 36CE342 (Bald Eagle Creek Site; Segment 2, Site 2); and Site 36CE518 (Bald Eagle North Site; Segment 2, Site 3).

Site 36MI103 (Juniata Crossing Site; Segment 1, Site 1, Area A) was identified on a natural levee landform approximately 200 feet north of the Juniata River. Surface collection and STP excavation yielded 96 lithic artifacts, one prehistoric pottery sherd, and three historic artifacts. Evidence of a Late Woodland occupation (ca. 500 to 1,000 years ago) included three triangle projectile points and one untyped, grit-tempered pottery sherd. A Late Archaic-Early Woodland Susquehanna Broadspear projectile point was also surface-collected from the site, indicating an earlier occupation approximately 3,500 to 4,000 years ago. Deep backhoe trenching immediately north of the site boundary failed to identify deeply-buried soils, indicating little potential for deeply-buried sites; however, backhoe trenching south of Site 36MI103 along the banks of the Juniata River failed to encounter cobbles at its basal depth (3.34 meters below surface). More deep testing is necessary at this location to determine if deeply buried soils are present below the terminal depth of 3.34 meters.

Site 36CE519 (Brooks Site; Segment 2, Site 1) is a lithic scatter located immediately north of Nittany Mountain on an upland flat overlooking S.R. 64. The site yielded 29 lithic artifacts, but no diagnostic projectile points, from 18 positive STPs.

Site 36CE342 (Bald Eagle Creek Site; Segment 2, Site 2) is located on the southern floodplain/first terrace of Bald Eagle Creek. The University of Pittsburgh conducted Phase II excavations at the site in the early 1990s, recovering hundreds of ceramic sherds and lithic artifacts. Within a portion of the site in the current ROW, but not previously tested by the University of Pittsburgh, GAI recovered a Late Woodland pottery sherd, a Late Woodland Levanna triangular projectile point, and 25 additional lithic artifacts. Deep backhoe trenching at this site revealed a buried soil at approximately 70 to 110 cm below ground surface. Additional work at this site should sample this buried soil to determine if the site contains multiple stratified components.

Site 36CE518 (Bald Eagle North Site; Segment 2, Site 3) was identified on the northern first terrace landform of Bald Eagle Creek. Phase I survey at the site yielded 14 lithic artifacts from seven positive STPs. No diagnostic artifacts were recovered and backhoe trench excavation was not conducted due to a lack of access. Additional work at this site should investigate the potential for more deeply-buried archaeological components.

Each of these four prehistoric sites (36MI103, 36CE519, 36CE342, and 36CE518) is potentially eligible for listing on the NRHP under Criterion D. Additional Phase II work is recommended at each site if they cannot be avoided during construction. As part of the Phase II work effort, additional deep backhoe trench and/or deep hand-excavated test units are recommended at Sites 36MI103, 36CE342, and 36CE518 to determine the presence or absence of stratified cultural deposits.

The eleventh site, 36MI102 (the Juniata Canal Site; Segment 1, Site 1, Area B), is a nineteenth century canal feature. Background research of Mifflin County history indicated that the Juniata Division of the Pennsylvania Canal crossed the proposed project area approximately 1,500 feet north of the Juniata River. The canal dates to the mid-to-late nineteenth century. Phase I reconnaissance failed to identify any aboveground indication of the canal; however, deep backhoe trench excavation revealed an intact portion of the canal prism within the proposed project corridor. Additional Phase II backhoe trenching is recommended to fully expose this canal feature in cross-section.

In summary, GAI's Phase I survey identified 11 archaeological sites and one prehistoric isolated find. The prehistoric isolated find and six of the sites, including three prehistoric lithic scatters (the Woods Farm Site and Sites 36MI105 and 36CN218) and three historic-period sites (Sites 36MI104, 36JU116, and 36CN217), are not recommended to be eligible for listing on the NRHP and no additional work is recommended. The remaining five sites, including prehistoric Sites 36MI103 (Juniata Crossing Site), 36CE518 (Bald Eagle North Site), 36CE519 (Brooks Site), and 36CE342 (Bald Eagle Creek Site) and the historic-period Site 36MI102 (Juniata Canal Site), are recommended to be potentially eligible for listing on the NRHP. As such, if these five

sites cannot be avoided, Phase II testing is recommended to determine their eligibility for listing in the NRHP.

Laboratory processing was completed on August 24, 2004 and report preparation was completed on September 2, 2004. A Phase I Management Summary detailing the results of this survey is provided in Appendix 4-B. This document was submitted to the PHMC-BHP for review and comment, and was accepted on December 6, 2004. A complete Phase I-II Report was submitted to the PHMC-BHP in February 2005 (refer to Appendix 4-C). In this report, GAI identifies reroutes under Sites 36MI103, 36CE342, and 36CE518. DTI will utilize HDD to pass greater than 10 feet beneath the cultural deposits at these sites. GAI also conducted a supplemental archaeological survey at Site 36CE519. A 100-foot reroute corridor was identified around the site.

Finally, Phase II backhoe trenching and background research indicated that Site 36MI102 (Juniata Canal Site) does not contribute to the NRHP-eligibility of the site as a whole.

Based on these findings, and reroutes at the five sites considered to be potentially NRHP-eligible, GAI recommends that the PL-1 EXT2 pipeline will have no effect on the cultural resources. ***The PHMC-BHP concurred with this report's recommendations in a letter dated April 8, 2005. GAI also conducted a supplemetal Phase I survey on the Brooks property, failing to identify cultural resources. This report was submitted to the PA SHPO on May 26, 2005. To date, the PA SHPO has provided no comments.***

4.2.1.2 TL-492 EXT3

In September and October of 2004, GAI conducted a Phase I cultural resources survey of the proposed TL-492 EXT3 pipeline corridor. Background research indicated that little prior archaeological research has been completed in this portion of southwestern PA and northern WV. No previously recorded archaeological sites are present within a four-mile radius of the proposed project corridor. GAI conducted a reconnaissance of the project area and more than 70 percent of it was deemed untestable due to steep slope or prior disturbance (mostly related to mining).

GA conducted a Phase I archaeological survey in the remaining portions of the project area that were located in areas with archaeological site potential, including low-order stream valleys and upland flat settings. A total of 126 STPs were excavated across the project area, resulting in the identification of one previously unidentified archaeological site, identified as GAI-1. Excavations at the site revealed four lithic debitage from stone tool manufacture, three metal fragments, and two possible fire-cracked rock; however, the artifacts were recovered from within a surface fill deposit in a low-lying floodplain. Interviews with the landowner revealed that the fill was transported to the location from an upland terrace approximately 100 meters to the northeast. The fill was placed in the lower floodplain settings to fill flood wallows created during flood events. Because of

the site's poor integrity and lack of data potential, GAI recommends that Site GAI-1 is not eligible for listing on the NRHP.

Based on the lack of NRHP-eligible resources, GAI recommends no additional archaeology in the project area. Site GAI-1 is not recommended eligible for listing on the NRHP. The project should be allowed to proceed according to current design.

4.2 1.3 TL-536

The APE for archaeological resources is defined as all locations associated with the proposed undertaking where there will be alteration and disturbance of surface and subsurface soils that contain or have the potential to contain archaeological sites. This includes the TL-536 pipeline ROW, plus all access roads, pipeyards, and staging areas. The ROW surveyed was approximately 200 feet wide and approximately 10 miles long (237.57 acres). Access roads were examined utilizing a 25-foot ROW. Refer to Table 4.2.1-5 for the status of cultural resource surveys for the TL-536 pipeline.

In 1995, Kemron Environmental Services, Inc. (Kemron) conducted a Phase I survey of a 196-foot wide corridor for the proposed L-257-S loop pipeline (now TL-536) for CNG Transmission Corporation (now DTI). Their survey was approximately 8.6 miles long between State Line Compressor Station in the east to approximately Butter Creek in the west. Their survey identified Site 36PO23 (Table 4.2.1-6), an historic-period structure and remains, which will be avoided during construction. This avoidance/protection plan was approved by the PA SHPO in a letter dated November 8, 1995 (refer to Appendix 4-C for a copy of Kemron's Phase I report). DTI plans to utilize the same avoidance plan designed during the prior cultural resources survey, namely, to place a protective fence 45 feet north of the proposed pipeline centerline (the identified site is 68 feet north of the centerline).

In 2003, GAI conducted a Phase I survey of a 200-foot wide corridor in the previously unsurveyed section on the far western end of the TL-536 pipeline corridor between Butler Creek and a metering and regulating station proposed for the associated Northeast Storage Project (*Phase I Cultural Resources Survey, Northeast Storage Project, Cattaraugus County, New York and McKean and Potter Counties, Pennsylvania* by D.H. MacDonald and J.N. Tuk). For the Northeast Storage Project, DTI proposes to construct an eight-inch LN-2471S pipeline within the same 200 feet wide pipeline APE as the proposed TL-536 line between Butter Creek and the proposed metering and regulating station (a distance of approximately one mile (4,939 feet). The report for this portion of the TL-536 pipeline corridor (and the LN-2471S for the Northeast Storage Project) was accepted and cleared by the PA SHPO in a letter dated September 13, 2004.

Finally, in August 2004, GAI conducted Phase I survey at State Line Station and an associated pipeline reroute. The excavation of 55 STPs, at the station failed to yield archaeological sites. A Phase I supplement report was submitted to the PA SHPO in December 2004. In a letter dated January 26, 2005, the PA SHPO documents no

cultural resources within the project area and recommends no additional archaeological field work.

These two surveys by Kemron in 1995 and GAI in 2003 effectively cleared the 200-foot wide ROW for the entire 10-mile length of the proposed TL-536 pipeline, as concurred upon by the PA SHPO in a phone conversation of October 11, 2004.

4.2.1.4 TL-453 EXT1

On August 11, 2004, Dr. Carr of the PA SHPO contacted GAI to inform them that no archaeological or architectural survey was required for the proposed project, largely due to the rugged, upland terrain traversed by the proposed pipeline and the low potential for encountering archaeological sites (personal communication between Dr. MacDonald and Mr. McDougal). Nevertheless, as discussed above in Section 4.1, a prior Phase I survey was completed for the entire project area in 2000 by Horizon Research, results of which are discussed here. The APE for archaeological resources is defined as all locations associated with the proposed undertaking where there will be alteration and disturbance of surface and subsurface soils that contain or have the potential to contain archaeological sites. This includes the TL-453 EXT1 pipeline ROW, plus all access roads, pipeyards, and staging areas. The ROW surveyed for the pipeline was approximately 200 feet wide and approximately 11.5 miles long (278.78 acres). Access roads were examined utilizing a 25-foot ROW. Refer to Table 4.2.1-7 for the status of cultural resource surveys for the TL-453 EXT1 pipeline.

During Horizon's Phase I survey, approximately 7.6 miles (66 percent) was deemed untestable due to steep slopes or prior disturbance, while the remainder (3.9 miles, or 34 percent) was subjected to archaeological survey. The centerline of the proposed pipeline bisected study areas of 166 feet, 200 feet, and 225 feet. Proposed access roads were visually inspected, but were preexisting and disturbed, requiring no subsurface survey. No cultural resources were identified in the project area during Horizon's 2000 survey.

In 2004, GAI conducted additional survey at a proposed new access road in an upland setting adjacent to the Genesee River (Access Road 4). The road will provide access to a proposed directional drill location. Excavation of 12 STPs along the proposed access road revealed no cultural materials. During this supplemental Phase I, an archaeological reconnaissance was conducted of proposed modifications to the Ellisburg and Harrison Stations. Given that these are existing facilities, ground disturbance was extensive at both stations, and neither contained archaeological potential. No additional archaeology is recommended for the TL-453 EXT1 project.

These two surveys by Horizon in 2000 and GAI in 2004 studied the 200-foot wide ROW for the entire ca. 11.5-mile length of the proposed TL-453 EXT1 pipeline. Reports for these surveys will be submitted and reviewed by the PA SHPO (and are provided in Appendices 4-C and 4-D, respectively. The project received clearance for cultural resources from the PA SHPO in their letter dated August 11, 2004. ***A Supplemental***

Phase I Survey was also conducted for a 750-foot by 50-foot reroute site (five STPs). No cultural materials were recovered and no additional work is recommended. A Supplemental Phase I Report was submitted to the PA SHPO in June 2005, with no comments received to date.

In October 2004, GAI conducted an archaeological reconnaissance of the Woodhull Compressor Station in Steuben County, NY. The 5.8-acre parcel proposed for use as a regulation station was determined to be entirely disturbed. No additional archaeology was recommended in GAI's letter to the NY SHPO on October 14, 2004. The NY SHPO concurred with this recommendation on November 14, 2004, and stated that the project would have no effect on cultural resources.

4.2.2 Architectural Studies

4.2.2.1 PL-1 EXT2

As mentioned previously, during initial consultations, the PHMC-BHP indicated a high probability for encountering aboveground historic architectural resources in the project corridor.

The APE for architectural resources is defined as the 200-foot wide ROW for the proposed pipeline, with a 130-foot width in sections where the proposed line parallels the existing Texas Eastern line. The APE also encompasses the footprint of the associated Renovo pipeyard facility. This APE was defined as such since all proposed pipeline construction activities will be subsurface and associated facilities will be temporary, and therefore will not constitute potential visual effects. Background research revealed 30 previously-identified structures greater than 50 years of age within one-mile of the project, none of which were within the APE. Given that none of the proposed project facilities are aboveground, none of these structures within one-mile will be impacted by the project. However, review of county and USGS historic maps indicated the presence of eight pre-1950 railroads to be crossed by the project. Fieldwork conducted by GAI Architectural Historian, Jared N. Tuk, confirmed that four of these resources remain extant.

The Phase I survey identified nine resources (GAI-1 through GAI-9) greater than 50 years old in the project APE. Given the subterranean nature of the proposed pipeline and that there are no proposed aboveground facilities, there will be no view shed impact for the project. Eight of the identified resources are east to west operating railroad corridors traversed by the proposed north to south PL-1 EXT2 pipeline. The ninth resource, associated with a proposed pipeyard location, is the site of the former Renovo Yard on the Philadelphia and Erie Branch of the Pennsylvania Railroad.

Of the eight railroad resources constructed prior to 1950, four are currently extant and remain in operation. These include: 1) the Pennsylvania Railroad (GAI-1), south of the Juniata River, built in the late nineteenth century currently utilized by Amtrak and ConRail, Mifflin County; 2) the pre-1950 Penn Central Railroad (GAI-4), currently

utilized by ConRail and other carriers within the Nittany Valley in central Centre County; 3) the pre-1890 Bald Eagle Valley Railroad (GAI-6), also currently utilized by ConRail within the Bald Eagle Creek Valley, Centre County; and 4) the pre-1890 Philadelphia and Erie Railroad (GAI-8), now utilized by Norfolk Southern and other carriers immediately north of the West Branch Susquehanna River, Clinton County. DTI plans to drill beneath these four railroads; thus, regardless of NRHP eligibility, the project will have no effect on them and they will remain in active use.

The remaining four pre-1950 railroad resources are no longer in operation, but evidence of their prior existence is present within or immediately adjacent to the project corridor. Their remains typically consist of extant railroad prism and/or wooden railroad ties, and none were observed to have intact rails. Prior construction of the extant natural gas pipeline typically destroyed approximately a 50-foot wide section of these former railroads. Thus, only the eastern and western 50-foot sections (if any) are typically present on the very edges of the project APE for the following four railroads.

Only a minor undulation in a farm field marks the former prism of the pre-1924 Kishacoquillas Valley Railroad (GAI-2), south of Kishacoquillas Creek. Ruins of small stone bridge piers and other rubble are present approximately 100 feet east of the project APE adjacent to the creek. Evidence of the pre-1874 Lewisburg, Centre, and Spruce Creek Railroad (GAI-3) is present only on the eastern and western edges of the project APE, due to prior pipeline construction. The former railroad prism is extant, along with scattered wooden ties within a narrow tree line on the edge of agricultural fields east and west of the project centerline. No evidence of the pre-1890 Nittany Valley Railroad (GAI-5) or the pre-1908 New York Central Railroad (GAI-7) is present within the project corridor; however, their locations are marked by extant tree lines. These four railroad corridor segments in the current project APE maintain a low integrity and are not historically significant as railroad resources. They are recommended not eligible as contributors to the overall eligibility of any part of the four railroads to the NRHP.

The 42-acre Philadelphia and Erie Branch of the Pennsylvania Railroad-Renovo Yard historically contained a number of tracks, including sidings and hump tracks, as well as several shops, a roundhouse, car barn, a coaling tower, and office buildings. In the last 10 years, a number of buildings on the site have been demolished, leaving only the coaling tower, three altered shop buildings, a smokestack, an office building, and a covered, wood frame car shed. There are several abandoned railroad cars on the site, as well. A 20th-century signal tower stands on the east end of the yard. There are also modern metal buildings located on the west end of the site that currently serve as light industrial buildings. Many of the tracks throughout the yard have been removed, as have the roundhouse, a number of shops and other service buildings, and the adjacent depot. Currently, all of the buildings on this site are vacant and not in use, and only the main line track through the very southern portion of the property is still in use for regular train service.

In summary, four structures (GAI-1, GAI-4, GAI-6, and GAI-8) are extant railroads built prior to 1950 and are currently in active use. Because the proposed pipeline will drill beneath these railroads, GAI recommends that regardless of NRHP eligibility status, the project will have no effect on them. The other four railroad resources (GAI-2, GAI-3, GAI-5, and GAI-7) are former railroads built prior to 1950 that are no longer in use. Their integrity within the project corridor is poor due to prior construction of the extant natural gas pipeline and other modern uses. These four resources are not recommended to contribute to the potential eligibility of the respective railroad corridors to the NRHP. The ninth resource (GAI-9) is a site of former railroad shops and repair and service facilities. The proposed pipeyard at this site will be temporary in nature and will not disturb any of the extant buildings on the property. It will not diminish any of the characteristics of the resource that qualify it for NRHP listing, and therefore, will have no effect. The PHMC-BHP concurred with these recommendations in a letter dated December 9, 2004. As requested by the PHMC-BHP, GAI also conducted background research and a structure evaluation for the Juniata Canal Site in the project area. GAI recommended that, due to a loss of integrity, the section of the canal crossed by the project does not contribute to the NRHP-eligibility of the Juniata Canal under Criterion A, B, or C. The PHMC-BHP concurred with this recommendation in a letter dated December 9, 2004.

4.2 2.2 TL-492 EXT3

On July 14, 2004, Dr. Carr informed GAI that there may be historic buildings, structures and/or archaeological resources in the project area; however, the proposed activities were determined to have no effect on these resources. If previously unknown structural resources are observed during construction, the PA SHPO should be contacted.

On July 26, 2004, Ms. Lamarre responded that no further consultation was necessary regarding architectural resources for the proposed project because no properties listed on or eligible for inclusion in the NRHP will be affected by the project.

In September and October 2004, GAI cultural resource staff visited the project area to conduct cultural resource survey. No structures greater than 50 years old were identified in the APE for the project.

4.2.2.3 TL-536

The PHMC-BHP (PA SHPO) indicated a high probability for encountering aboveground historic architectural resources in the project corridor in their letter dated August 11, 2004. However, due to the nature of the proposed activity, the project was determined to have no effect on these properties, and the PA SHPO did not require architectural studies.

4.2.2.4 TL-453 EXT1

The PHMC-BHP indicated a high probability for encountering aboveground historic architectural resources in the project corridor. However, due to the nature of the work, the PHMC-BHP determined that the project will not affect architectural resources and did not require an architectural survey.

4.3 STATUS OF NATIVE AMERICAN CONSULTATIONS

4.3 1 PL-1 EXT2

On August 19, 2004, GAI sent a project notification letter to the Seneca Nation of Indians (SNI) Tribal Historic Preservation Office (THPO). The SNI THPO is the most active participant in cultural resource projects in central and northern PA. GAI's letter requested that the SNI THPO participate in consultation on the project, including review of reports and determination of Phase II scopes of work at sites potentially eligible to the NRHP.

On August 24, 2004, Ms. Kathleen Mitchell of the SNI THPO responded in an e-mail stating that they look forward to participating in the review of the cultural resource project documents. Copies of the SNI THPO e-mail and GAI's letter to the SNI THPO are provided in Appendix 4-A. A copy of the Phase I Cultural Resources Management Summary was submitted to the SNI THPO on September 27, 2004, while the Phase I-II Report was submitted ***on March 8, 2005. The Brooks reroute report was also submitted to the SNI THPO on May 26, 2005.*** No comment has been provided to date on ***these documents.***

4.3.2 TL-492 EXT3

On October 20, 2004, GAI sent a project notification letter to the SNI THPO. The SNI THPO is the most active participant in cultural resource projects in western PA. GAI's letter requested that the SNI THPO participate in consultation on the project, including review of reports. GAI submitted copies of cultural resource reports to their office for review and comment. Refer to Table 4.3-1. Included in Appendix 4-A is a telephone memo dated February 10, 2005 documenting the request for an archaeological monitor during pipeline construction along archaeologically-sensitive portions of the TL-492 EXT3 pipeline.

4.3.3 TL-536

On October 11, 2004, GAI sent a project notification letter to the SNI THPO. The SNI THPO is the most active participant in cultural resource projects in central and northern PA (Table 4.3-1). GAI's letter requested that the SNI THPO participate in consultation on the project, including review of reports. GAI submitted copies of cultural resource reports to their office for review and comment. Refer to Table 4.3-1. Included in Appendix 4-A is a telephone memo dated February 10, 2005 documenting the request

for an archaeological monitor during pipeline construction along archaeologically-sensitive portions of the TL-536 EXT3 pipeline.

4.3.4 TL-453 EXT1

On October 11, 2004, GAI sent a project notification letter to the SNI THPO. The SNI THPO is the most active participant in cultural resource projects in central and northern PA. GAI's letter requested that the SNI THPO participate in consultation on the project, including review of reports. Table 4.3-1 contains the contact information for the SNI THPO. GAI submitted copies of cultural resource reports to their office for review and comment. Included in Appendix 4-A is a telephone memo dated February 10, 2005 documenting the request for an archaeological monitor during pipeline construction along archaeologically-sensitive portions of the TL-453 EXT1 pipeline. ***In June 2005, GAI also submitted a Phase I Supplemental Report to the SNI THPO for the 750-foot by 50-foot reroute. No comments have been provided to date.***

4.4 SCHEDULE FOR COMPLETION OF OUTSTANDING STUDIES

All archaeological studies have been completed for the project.

4.5 UNANTICIPATED DISCOVERIES PLAN

In order to minimize the potential for the accidental discovery of cultural resources, DTI will complete a detailed archaeological survey of the project APE (all locations associated with the proposed undertaking where there will be alteration and disturbance of surface and subsurface soils that contain or have the potential to contain archaeological sites. This includes the pipeline ROW, plus all access roads, and staging areas). To ensure that DTI maintains full and complete compliance with all federal and state regulations concerning the protection of cultural resources, an Accidental Discovery Plan has been prepared for the project.

All inspectors have the responsibility to monitor the construction sites for potential archaeological remains throughout construction. If, during the course of construction, potential cultural resource remains are identified, the Environmental Inspector will immediately notify the Construction Supervisor who will immediately halt work in the vicinity of the potential find. At this point, DTI will notify the SHPO and the Commission, and will hire a state-approved archaeological consultant who will survey the site and provide an immediate verbal report to DTI, the Commission, and the SHPO. DTI will continue to consult with the SHPO's office, as per the requirements of Section 106 of the National Historic Preservation Act. The SHPO contacts for the pipelines are listed below:

For PA:

Dr. Kurt W. Carr
State Historic Preservation Office
Pennsylvania Historic and Museum Commission
Bureau of Historic Preservation
Commonwealth Keystone Building
400 North Street, 2nd Floor
Harrisburg, PA 17120-0093

For WV:

Ms. Susan Pierce
West Virginia Division of Culture and History
The Cultural Center
1900 Kanawha Boulevard East
Charleston, WV 25305-0300

If the unanticipated discovery is determined to be ineligible for inclusion in the NRHP, DTI will proceed with the project following written concurrence from the SHPO and approval from the Commission. If the site is determined to be potentially eligible for inclusion in the NRHP, additional work, such as a Determination of Eligibility or Data Recovery, will be performed as required/approved by the SHPO and the Commission. Further construction work at the site will be suspended until all criteria of Section 106 of the National Historic Preservation Act and other related federal and state regulations have been successfully completed.

In the event that human remains are discovered during construction, the Construction Inspector will immediately halt work and notify the local law enforcement agency and medical examiner. If remains are found not to be of recent origin, DTI will contact the SHPO's office and the Commission, and begin consultation to ensure that all provisions of relevant Commonwealth of PA law (Pennsylvania Consolidated Statute 37, §104, et seq.) are followed, including the PHMC Burial Policy (1991). Provision for security to protect suspected burials from vandalism will be taken. DTI will notify the Commission of the situation and will continue to keep the Commission informed as to the progress of further consultation.

If the unanticipated discovery of human remains is determined by the SHPO and the Commission to be ineligible for inclusion in the NRHP, DTI will proceed with coordinating the proper removal of the remains through cooperation from the local police, the medical examiner, the SHPO, and the Commission. Only after the human remains have been properly removed from the site should construction of the pipeline facilities in the site area be resumed.

Under no circumstances should human remains be removed from the site without completing all permitting and coordination processes with the local police, the medical

examiner, the SHPO, Native American representatives as appropriate, and the Commission. Further work at the site will be suspended until all criteria of Section 106 of the National Historic Preservation Act and other related state and federal regulations have been successfully completed.

APPENDIX 4-A

CORRESPONDENCE

CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE

(UNDER SEPARATE COVER)

APPENDIX 4-D (VOLUME IX OF XIII)

ADDENDUM REPORT, PHASE I SUPPLEMENTAL ARCHAEOLOGICAL SURVEY, PL-1 EXT2 NATURAL GAS PIPELINE, BROOKS REROUTE

CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE

(UNDER SEPARATE COVER)

Revised June 16, 2005

APPENDIX 4-D (VOLUME XII OF XIII)

TL-453 EXT1 REROUTE ARCHAEOLOGICAL PHASE I REPORT

CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE

(UNDER SEPARATE COVER)

Revised June 16, 2005

APPENDIX 4-E (VOLUME IX OF XIII)

CULTURAL RESOURCES INVESTIGATION OF THE LEIDY LOOP REPORT

CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE

(UNDER SEPARATE COVER)

Revised June 16, 2005

Table 6.2.5-1

MINERAL RESOURCES ALONG THE PL-1 EXT2 PIPELINE

Milepost	Mining Activity	Mine Type	Mine Operator[1]	Distance from Pipeline (feet)
S1MP15.4 to S1MP15.70	Sand and Gravel	Quarry	Strodes Mills Pits and Plant	780
S2MP12.6 to S2MP13.10	Limestone	Quarry	Pleasant Gap Quarry No. 2	*200 to 550*
S2MP12.6 to S2MP13.10	Limestone	Quarry	White Rock Quarry and Mill	*150 to 700*
S2MP13.74	Limestone	Underground	Pleasant Gap Mine and Mill	5,174
S2MP13.85	Limestone	Quarry	Pleasant Gap Mine and Mill	5,800
S2MP15.60	Iron	Surface	Bellefonte-Nittany Valley Group	592
S3MP16.50	Coal	Surface	Westport Strip Mine	1,269

Note:

[1] From PADCNR (2004b and 2004d) and O'Neill (1964).

Table 6.4-1

AREAS THAT MAY REQUIRE BLASTING ALONG THE PL-1 EXT2 PIPELINE

Soil Series	Soil Series Symbol	Milepost		Approximate Depth to Rock (inches)[1]
		Start	End	
Juniata and Mifflin Counties				
Berks	BMF	S1MP0.03	S1MP0.35	*30*
		S1MP0.54	S1MP0.71	
		S1MP3.02	S1MP3.55	
		S1MP4.04	S1MP4.21	
		S1MP13.59	S1MP13.65	
		S1MP18.61	S1MP18.65	
Berks	BkC	S1MP0.00	S1MP0.03	*32*
		S1MP0.35	S1MP0.44	
		S1MP1.92	S1MP2.69	
		S1MP3.69	S1MP3.73	
		S1MP14.03	S1MP14.14	
		S1MP16.95	S1MP17.21	
		S1MP22.56	S1MP22.60	
Berks	BkB	S1MP0.71	S1MP1.58	*32*
		S1MP2.69	S1MP3.02	
		S1MP13.65	S1MP14.03	
		S1MP16.66	S1MP16.95	
Berks	BID	S1MP1.58	S1MP1.92	*30*
		S1MP3.63	S1MP3.69	
		S1MP3.73	S1MP3.91	
		S1MP18.49	S1MP18.61	
Ecom	EdC	S1MP4.75	S1MP4.79	*46*
		S1MP12.69	S1MP12.73	
		S1MP12.90	S1MP13.07	
		S1MP13.15	S1MP13.38	
		S1MP14.14	S1MP14.21	
		S1MP14.29	S1MP14.36	
		S1MP14.73	S1MP14.79	
		S1MP14.83	S1MP14.88	
		S1MP16.38	S1MP16.43	
Klinesville	KlF	S1MP12.13	S1MP12.18	*19*
Ecom	EdD	S1MP12.73	S1MP12.81	*46*
		S1MP13.07	S1MP13.15	

Table 6.4-1 (Continued)

Soil Series	Soil Series Symbol	Milepost		Approximate Depth to Rock (inches)[1]
		Start	End	
Juniata and Mifflin Counties (continued)				
Opequon	ORF	S1MP12.81 S1MP13.53 S1MP14.79	S1MP12.90 S1MP13.59 S1MP14.83	*16*
Klinesville	KIC	S1MP13.38 S1MP14.43 S1MP16.32	S1MP13.53 S1MP14.54 S1MP16.35	*19*
Klinesville	KiD	S1MP14.54	S1MP14.73	*19*
Edom	EeB	S1MP16.06 S1MP16.27	S1MP16.20 S1MP16.32	*46*
Rubble Land	Ru	S1MP17.60	S1MP17.78	*~ 0*
Opequon	OpC	S1MP18.95 S1MP19.33 S1MP21.59	S1MP19.04 S1MP19.38 S1MP21.76	*16*
Opequon	OpD	S1MP19.15	S1MP19.25	*16*
Opequon	OpB	S1MP21.47	S1MP21.51	*16*
Huntingdon County				
Hazleton	HTF	S1MP32.32 S1MP23.72 S1MP24.27 S1MP24.95 S2MP0.29 S2MP0.73 S2MP1.33	S1MP23.50 S1MP24.20 S1MP24.79 S1MP25.66 S2MP0.45 S2MP0.81 S2MP1.70	42 to 84
Hazleton	HTD	S1MP23.23 S1MP24.20	S1MP23.32 S1MP24.27	42 to 84
Rubble Land	Ru	S2MP0.45	S1MP0.73	N/A
Leetonia	LeB	S1MP23.04 S2MP0.81	S2MP23.23 S2MP1.33	42 to 84
Centre County				
Rubble Land	Ru	S2MP1.93 S2MP11.98 S2MP12.07 S2MP17.57 S2MP17.91	S2MP2.00 S2MP12.04 S2MP12.18 S2MP17.67 S2MP18.01	N/A

Table 6.4-1 (Continued)

Soil Series	Soil Series Symbol	Milepost		Approximate Depth to Rock (inches)[1]
		Start	End	
Centre County (continued)				
Andover	AoC	S2MP1.70 S2MP2.83 S2MP3.36 S2MP3.96 S2MP4.07 S2MP12.63 ***S2MP12.78*** S2MP18.10	S2MP1.75 S2MP2.93 S2MP3.83 S2MP4.01 S2MP4.10 S2MP12.66 ***S2MP12.86*** S2MP18.50	48 to more than 240
Leetonia	LtB	S2MP1.75 S2MP4.57 S2MP5.39	S2MP1.90 S2MP4.62 S2MP5.47	*42 to 48*
Hazleton	HTF	S2MP1.33 S2MP1.90 S2MP2.00 S2MP2.16 S2MP2.23 S2MP3.02 S2MP4.31	S2MP1.70 S2MP1.93 S2MP2.04 S2MP2.19 S2MP2.42 S2MP3.24 S2MP4.57	42 to 84
Hazleton	HSD	S2MP2.04 S2MP2.19 S2MP10.74 S2MP11.66 S2MP11.90 S2MP24.57 S2MP26.67 S2MP27.23 S2MP27.72 S2MP28.19 S2MP5.28 S2MP5.53 S2MP6.15 S2MP6.66	S2MP2.16 S2MP2.23 S2MP10.77 S2MP11.68 S2MP11.98 S2MP25.02 S2MP26.98 S2MP27.32 S2MP27.74 S2MP28.53 S2MP5.48 S2MP5.79 S2MP6.21 S2MP6.87	42 to 84
Berks	BMF	S2MP4.10 S2MP5.59 S2MP12.18 S2MP12.39 S2MP19.59	S2MP4.17 S2MP5.83 S2MP12.31 S2MP12.49 S2MP19.75	*18 to 42*

Table 6.4-1 (Continued)

Soil Series	Soil Series Symbol	Milepost		Approximate Depth to Rock (inches)[1]
		Start	End	
Centre County (continued)				
Berks (continued)	BMF	S2MP20.04	S2MP20.11	*18 to 42*
		S2MP20.14	S2MP20.19	
		S2MP20.36	S2MP20.50	
		S2MP20.54	S2MP20.83	
		S2MP20.95	S2MP21.05	
		S2MP21.32	S2MP21.39	
		S2MP21.50	S2MP21.56	
		S2MP21.60	S2MP21.69	
		S2MP21.70	S2MP21.78	
		S2MP21.94	S2MP21.98	
		S2MP25.05	S2MP25.18	
		S2MP25.40	S2MP25.79	
Ardover	AnB	S2MP6.13	S2MP6.23	48 to more than 240
		S2MP18.54	S2MP18.58	
		S2MP28.02	S2MP28.10	
		S2MP4.58	S2MP4.64	
Weikert	WeC	S2MP6.23	S2MP6.29	*12 to 18*
Ecom	EdB	S2MP6.41	S2MP6.57	*42 to 72*
Opequon	OhB	S2MP6.57	S2MP6.61	*12 to 18*
		S2MP8.34	S2MP8.83	
		S2MP8.57	S2MP8.62	
		S2MP8.82	S2MP8.93	
		S2MP8.95	S2MP9.06	
		S2MP9.27	S2MP9.31	
		S2MP12.87	***S2MP12.92***	
		S2MP13.06	***S2MP13.11***	
		S2MP13.19	S2MP13.26	
		S2MP13.33	S2MP13.35	
		S2MP13.78	S2MP13.81	
		S2MP14.53	S2MP14.62	
		S2MP14.76	S2MP14.80	
		S2MP15.43	S2MP15.48	
		S2MP15.70	S2MP15.73	
		S2MP15.87	S2MP15.92	
		S2MP15.94	S2MP15.97	
		S2MP16.13	S2MP16.19	

Table 6.4-1 (Continued)

Soil Series	Soil Series Symbol	Milepost		Approximate Depth to Rock (inches)[1]
		Start	End	
Centre County (continued)				
Hagerstown	HaB	S2MP6.61	S2MP6.78	42 to 84
		S2MP7.05	S2MP7.11	
		S2MP7.79	S2MP7.83	
		S2MP7.98	S2MP8.10	
		S2MP8.19	S2MP8.32	
		S2MP8.83	S2MP8.43	
		S2MP8.62	S2MP8.63	
		S2MP8.70	S2MP8.79	
		S2MP8.93	S2MP8.95	
		S2MP9.06	S2MP9.10	
		S2MP9.14	S2MP9.27	
		S2MP9.31	S2MP9.44	
		S2MP9.48	S2MP9.52	
		S2MP13.39	S2MP13.46	
		S2MP13.68	S2MP13.70	
		S2MP13.73	S2MP13.78	
		S2MP13.85	S2MP13.99	
		S2MP14.15	S2MP14.18	
		S2MP14.23	S2MP14.25	
		S2MP14.27	S2MP14.32	
		S2MP14.46	S2MP14.51	
		S2MP14.75	S2MP14.76	
		S2MP14.80	S2MP14.83	
		S2MP15.08	S2MP15.14	
		S2MP15.31	S2MP15.43	
		S2MP15.55	S2MP15.57	
		S2MP15.63	S2MP15.65	
		S2MP15.67	S2MP15.70	
		S2MP15.79	S2MP15.83	
		S2MP15.92	S2MP15.94	
		S2MP16.01	S2MP16.13	
		S2MP16.19	S2MP16.40	
		S2MP16.93	S2MP16.97	
Hagerstown	HaC	S2MP7.11	S2MP7.15	42 to 84
		2MP13.59	2MP13.68	
		2MP15.17	2MP15.22	

Table 6.4-1 (Continued)

Soil Series	Soil Series Symbol	Milepost		Approximate Depth to Rock (inches)[1]
		Start	End	
Centre County (continued)				
Hagerstown (continued)	HaC	S2MP15.57 S2MP15.65	S2MP15.63 S2MP15.67	42 to 84
Hagerstown	HaA	S2MP7.83 S2MP8.43 S2MP8.63 S2MP13.35 S2MP13.54 S2MP13.70 S2MP16.97	S2MP7.90 S2MP8.57 S2MP8.70 S2MP13.39 S2MP13.59 S2MP13.73 S2MP17.00	42 to 84
Opequon	OxD	S2MP8.10 S2MP15.83 S2MP16.00	S2MP8.15 S2MP15.87 S2MP16.01	*12 to 18*
Opequon	OhC	S2MP8.15 S2MP8.79 S2MP9.61 S2MP13.81 S2MP15.22 S2MP15.48 S2MP15.73	S2MP8.19 S2MP8.82 S2MP9.68 S2MP13.85 S2MP15.31 S2MP15.55 S2MP15.76	*12 to 18*
Hagerstown	HcB	S2MP9.44 S2MP12.72 S2MP13.99 S2MP14.18 S2MP14.25 S2MP14.62 S2MP16.40 S2MP16.56 S2MP16.76	S2MP9.48 S2MP13.33 S2MP14.15 S2MP14.23 S2MP14.27 S2MP14.75 S2MP16.51 S2MP16.68 S2MP16.80	42 to 84
Hazleton	HSB	S2MP10.34 S2MP12.04 S2MP26.44 S2MP27.74 S2MP1.99 S2MP2.69 S2MP3.16	S2MP10.38 S2MP12.07 S2MP26.67 S2MP27.96 S2MP2.09 S2MP3.06 S2MP3.24	42 to 84

Table 6.4-1 (Continued)

Soil Series	Soil Series Symbol	Milepost		Approximate Depth to Rock (inches)[1]
		Start	End	
Centre County (continued)				
Hazleton (continued)	HSB	S2MP3.29 S2MP6.03 S2MP6.31	S2MP3.63 S2MP6.15 S2MP6.55	42 to 84
Ungers	UmB	S2MP11.19	S2MP11.32	*42 to 78*
Ungers	UnD	S2MP11.32	S2MP11.66	*42 to 78*
Ungers	UmC	S2MP11.00	S2MP11.19	*42 to 78*
Andover	AnC	S2MP12.58 S2MP17.24 S2MP18.50	S2MP12.63 S2MP17.39 S2MP18.54	48 to more than 240
Opequon	OhD	S2MP9.10	S2MP9.11	*12 to 18*
Opequon	ORF	S2MP13.16	S2MP13.19	*12 to 18*
Urban Land	URB	S2MP14.92	S2MP15.08	N/A
Opequon	OxB	S2MP15.97	S2MP16.00	*12 to 18*
Hagerstown	HcC	S2MP16.51 S2MP16.68 S2MP16.80	S2MP16.56 S2MP16.72 S2MP16.93	42 to 84
Weikert	WeD	S2MP19.43 S2MP19.75 S2MP19.80	S2MP19.54 S2MP19.79 S2MP19.95	*12 to 18*
Berks	BkC	S2MP20.33 S2MP20.50 S2MP21.40 S2MP21.69 S2MP21.78 S2MP21.98	S2MP20.36 S2MP20.54 S2MP21.50 S2MP21.70 S2MP21.94 S2MP22.01	*18 to 42*
Berks	BkD	S2MP20.19 S2MP21.05 S2MP21.39	S2MP20.33 S2MP21.32 S2MP21.40	*18 to 42*
Leck Kill	LkD	S2MP22.13 S2MP22.33 S2MP22.51 S2MP23.15 S2MP23.49 S2MP23.65 S2MP23.84	S2MP22.23 S2MP22.34 S2MP23.00 S2MP23.18 S2MP23.59 S2MP23.80 S2MP24.00	*42 to 72*

Table 6.4-1 (Continued)

Soil Series	Soil Series Symbol	Milepost		Approximate Depth to Rock (inches)[1]
		Start	End	
Leck Kill (continued)	LkD	S2MP24.03 S2MP25.94	S2MP24.31 S2MP26.02	*42 to 72*
Leck Kill	LMF	S2MP22.23 S2MP23.00 S2MP23.33 S2MP23.59 S2MP24.31 S2MP25.83	S2MP22.33 S2MP23.15 S2MP23.49 S2MP23.65 S2MP24.52 S2MP25.94	*42 to 72*
Leck Kill	LkC	S2MP22.34 S2MP23.80 S2MP24.00	S2MP22.51 S2MP23.84 S2MP24.03	*42 to 72*
Gi pin	GIB	S2MP25.02 S2MP25.18	S2MP25.05 S2MP25.40	*18 to 42*
Leck Kill	LIB	S2MP25.79	S2MP25.83	*42 to 72*
Ar dover	AoB	S2MP27.38 S2MP6.21	S2MP27.49 S2MP6.31	48 to 240
W narton	WhB	S2MP28.53 S3MP0.35 S3MP5.00	S3MP0.17 S3MP0.80 S3MP5.28	*42 to more than 72*
Cl nton County				
De kalb	DkE	S3MP6.87 S3MP7.13 S3MP7.47 S3MP7.95 S3MP9.46 S3MP10.02 S3MP10.46 S3MP13.13 S3MP13.58 S3MP14.60 S3MP15.68 S3MP15.79 S3MP16.66 S3MP17.49 S3MP17.76 S3MP19.86	S3MP6.99 S3MP7.32 S3MP7.52 S3MP8.06 S3MP9.52 S3MP10.08 S3MP10.83 S3MP13.42 S3MP14.04 S3MP14.91 S3MP15.71 S3MP15.85 S3MP17.29 S3MP17.62 S3MP18.69 S3MP19.92	*24 to 42*

Table 6.4-1 (Continued)

Soil Series	Soil Series Symbol	Milepost		Approximate Depth to Rock (inches)[1]
		Start	End	
Clinton County (continued)				
Dekalb (continued)	DkE	S3MP20.09	S3MP20.11	*24 to 42*
		S3MP20.18	S3MP20.26	
		S3MP20.63	S3MP20.72	
		S3MP20.89	S3MP20.93	
		S3MP23.53	S3MP24.23	
		S3MP24.62	S3MP24.83	
Dekalb	DkC	S3MP7.05	S3MP7.13	*24 to 42*
		S3MP7.38	S3MP7.47	
		S3MP7.52	S3MP7.95	
		S3MP8.06	S3MP9.16	
		S3MP9.40	S3MP9.46	
		S3MP9.52	S3MP9.54	
		S3MP9.98	S3MP10.02	
		S3MP10.08	S3MP10.46	
		S3MP11.55	S3MP12.10	
		S3MP12.58	S3MP13.13	
		S3MP13.42	S3MP13.58	
		S3MP14.91	S3MP15.11	
		S3MP15.71	S3MP15.79	
		S3MP15.85	S3MP15.87	
		S3MP16.07	S3MP16.16	
		S3MP17.29	S3MP17.42	
		S3MP18.89	S3MP19.25	
		S3MP19.62	S3MP19.70	
		S3MP20.07	S3MP20.09	
		S3MP20.72	S3MP20.89	
		S3MP21.00	S3MP21.32	
		S3MP21.49	S3MP21.59	
		S3MP21.74	S3MP21.83	
		S3MP22.47	S3MP22.68	
		S3MP23.40	S3MP23.53	
Dekalb	DkB	S3MP7.32	S3MP7.38	*24 to 42*
		S3MP9.16	S3MP9.40	
		S3MP10.83	S3MP11.55	
		S3MP16.31	S3MP16.40	
		S3MP19.70	S3MP19.86	

Table 6.4-1 (Continued)

Soil Series	Soil Series Symbol	Milepost		Approximate Depth to Rock (inches)[1]
		Start	End	
Clinton County (continued)				
Dekalb (continued)	DkB	S3MP20.11 S3MP21.59 S3MP21.91 S3MP22.68 S3MP23.22 S3MP24.23	S3MP20.18 S3MP21.74 S3MP22.47 S3MP22.90 S3MP23.40 S3MP24.62	*24 to 42*
Cookport	CpB	S3MP12.10 S3MP20.93 S3MP21.48 S3MP21.83	S3MP12.58 S3MP20.95 S3MP21.49 S3MP21.91	*36 to 72*
Calvode	CaB	S3MP15.11	S3MP15.63	*36 to 72*
Strip Mines	St	S3MP15.63 S3MP16.02 S3MP16.16 S3MP16.57 S3MP19.25	S3MP15.68 S3MP16.07 S3MP16.31 S3MP16.65 S3MP19.38	N/A
Cookport	CoC	S3MP15.87 S3MP15.92 S3MP16.40	S3MP15.89 S3MP16.02 S3MP16.57	*36 to 72*
Cookport	CoB2	S3MP15.89	S3MP15.92	*36 to 72*
Gilpin	GpB	S3MP18.69	S3MP18.89	*24 to 60*
Cookport	CpC	S3MP19.38 S3MP19.92 S3MP21.32	S3MP19.62 S3MP20.07 S3MP21.48	*36 to 72*
Hartsells	HrB	S3MP20.26	S3MP20.63	48 to 96
Lectonia	LnC	S3MP22.90	S3MP23.04	*24 to 48*
Leetonia	LnB	S3MP23.04	S3MP23.22	*24 to 48*
Lehew	LvE	S3MP24.83	S3MP24.95	*24 to 36*
Urgers	UnB2	S3MP24.95 S3MP25.32	S3MP25.02 S3MP25.36	*36 to 72*
Dekalb	DaB	S3MP25.14 S3MP25.49	S3MP25.32 S3MP25.61	*24 to 42*

Note:

[1] Limitations are in italics, with a trench depth minimum of 48 inches.

Table 7.1.1-1

SOIL ASSOCIATIONS AND MILEPOST LOCATIONS OF MAJOR SOIL LIMITATIONS FOR THE PL-1 EXT2 PIPELINE AND FACILITIES

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (Inches)	Revegetation Potential
ROW Crossings for Juniata and Mifflin Counties								
Berks	BMF	Weikert Association, Steep	S1MP0.03 S1MP0.54 S1MP3.02 S1MP4.04 S1MP13.59 S1MP18.61	S1MP0.35 S1MP0.71 S1MP3.55 S1MP4.21 S1MP13.65 S1MP18.65	Moderate	Fair to Good	*30*	*Very Poor*
Berks	BkC	Shaly Silt Loam, 8 to 15 Percent Slopes	S1MP0.00 S1MP0.35 S1MP1.92 S1MP3.69 S1MP14.03 S1MP16.95 S1MP22.99	S1MP0.03 S1MP0.44 S1MP2.69 S1MP3.73 S1MP14.14 S1MP17.21 S1MP23.04	Slight	Fair to Good	*32*	Poor
Brinkerton	BrB	Silt Loam, 3 to 8 Percent Slopes	S1MP0.44 S1MP3.55 S1MP4.21 S1MP4.73	S1MP0.54 S1MP3.63 S1MP4.27 S1MP4.75	Slight	Fair to Good	*65*	Fair
Berks	BkB	Shaly Silt Loam, 2 to 8 Percent Slopes	S1MP0.71 S1MP2.69 S1MP13.65 S1MP16.66	S1MP1.58 S1MP3.02 S1MP14.03 S1MP16.95	Slight	Fair to Good	*32*	*Poor*
Berks	BID	Wilkert Shaly Silt Loams, 15 to 25 Percent Slopes	S1MP1.58 S1MP3.63 S1MP3.73 S1MP18.49	S1MP1.92 S1MP3.69 S1MP3.91 S1MP18.61	Slight	Fair to Good	*30*	*Very Poor*

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2, 3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Juniata and Mifflin Counties (Continued)								
Mertz	MeC	Cherty Silt Loam, 8 to 15 Percent Slopes	S1MP4.27 S1MP4.62 S1MP14.88 S1MP15.84 S1MP16.00	S1MP4.51 S1MP4.73 S1MP15.03 S1MP15.92 S1MP16.04	Slight	Fair to Good	*60*	Good
Elliber	ElD	Very Cherty Loam, 15 to 25 Percent Slopes	S1MP4.73 S1MP15.78	S1MP4.75 S1MP15.84	Slight	Poor to Fair	*71*	Good
Mertz	MeD	Cherty Silt Loam, 15 to 25 Percent Slopes	S1MP4.51 S1MP15.96	S1MP4.62 S1MP16.00	Slight	Fair to Good	*60*	Good
Edom	EdC	Silty Clay Loam, 8 to 15 Percent Slopes	S1MP4.75 S1MP12.69 S1MP12.90 S1MP13.15 S1MP14.14 S1MP14.29 S1MP14.73 S1MP14.83 S1MP16.38	S1MP4.79 S1MP12.73 S1MP13.07 S1MP13.38 S1MP14.21 S1MP14.36 S1MP14.79 S1MP14.88 S1MP16.43	Slight	Not Applicable	*46*	Good
Buchanan	BuB	Gravelly Loam, 3 to 8 Percent Slopes	S1MP4.79	S1MP4.86	Slight	Fair to Good	*60*	Good
Buchanan	BuC	Gravelly Loam, 8 to 15 Percent Slopes	S1MP4.86 S1MP4.96	S1MP4.92 S1MP5.19	Slight	Fair to Good	*60*	Poor
Edom	EdB	Silty Clay Loam, 3 to 8 Percent Slopes	S1MP4.92 S1MP16.20 S1MP16.43	S1MP4.96 S1MP16.27 S1MP16.59	Slight	Not Applicable	*60*	Good
Buchanan	BxD	Extremely Stony Loam, 8 to 15 Percent Slopes	S1MP5.19 S1MP6.70 S1MP9.56 S1MP10.43 S1MP11.64 S1MP18.28	S1MP5.38 S1MP6.88 S1MP9.77 S1MP10.55 S1MP11.70 S1MP18.44	Slight	Fair to Good	*60*	*Very Poor*

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Juniata and Mifflin Counties (Continued)								
Laidig	LcD	Extremely Stony Loam, 8 to 15 Percent Slopes	S1MP5.38 S1MP7.01 S1MP8.31 S1MP11.46 S1MP17.21	S1MP5.44 S1MP7.36 S1MP8.84 S1MP11.64 S1MP17.36	Slight	Fair to Good	*55*	*Very Poor*
Laidig	LDF	Extremely Stony Loam, Steep	S1MP5.49	S1MP5.85	Moderate	Fair to Good	*56*	*Very Poor*
Hazleton	HTF	Dekalb Association, Steep	S1MP5.85 S1MP6.39 S1MP7.36 S1MP7.89 S1MP9.77 S1MP10.74 S1MP11.03 S1MP15.08 S1MP15.22 S1MP15.56 S1MP15.62 S1MP17.36 S1MP17.78 S1MP18.16 S1MP23.04	S1MP6.30 S1MP6.70 S1MP7.61 S1MP8.31 S1MP10.43 S1MP10.90 S1MP11.46 S1MP15.15 S1MP15.29 S1MP15.59 S1MP15.73 S1MP17.60 S1MP17.93 S1MP18.28 S1MP23.29	Moderate	Poor to Fair	*60*	*Very Poor*
Hazleton	HSD	Dekalb Association, Extremely Stony Sandy Loams, Moderately Steep	S1MP6.30 S1MP10.63 S1MP15.15 S1MP15.29 S1MP15.49 S1MP15.59 S1MP16.59 S1MP17.93	S1MP6.39 S1MP10.74 S1MP15.22 S1MP15.42 S1MP15.56 S1MP15.62 S1MP16.66 S1MP18.16	Slight	Fair	*60*	*Very Poor*

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2, 3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (Inches)	Revegetation Potential
ROW Crossings for Juniata and Mifflin Counties (Continued)								
Andover	AoB	Extremely Stony Loam, 0 to 8 Percent Slopes	S1MP6.88 S1MP8.84 S1MP10.55 S1MP11.70	S1MP6.99 S1MP9.56 S1MP10.63 S1MP11.76	Slight	Fair to Good	*60*	*Poor*
Buchanan	BxB	Extremely Stony Loam, 3 to 8 Percent Slopes	S1MP7.61	S1MP7.89	Slight	Fair to Good	*60*	*Very Poor*
Hazleton	HSB	Dekalb Association, Extremely Stony Sand Loams, Gently Sloping	S1MP10.90 S1MP23.29	S1MP11.03 S1MP23.48	Slight	Fair	*60*	*Poor*
Andover	AnB	Gravelly Loam, 2 to 8 Percent Slopes	S1MP11.76	S1MP11.83	Slight	Fair to Good	*60*	Fair
Tyler	Ty	Silt Loam	S1MP11.83 S1MP12.57	S1MP12.13 S1MP12.60	Slight	Fair	*60*	Good
Purdy	Pu	Silt Loam	S1MP12.60	S1MP12.69	Slight	Fair to Good	*60*	Fair
Klinesville	KlF	Shaly Silt Loam, 25 to 50 Percent Slopes	S1MP12.13	S1MP12.18	Moderate	Fair to Good	*19*	*Very Poor*
Allegheny	AbB	Loam, 2 to 8 Percent Slopes	S1MP12.18	S1MP12.25	Slight	Fair to Good	*67*	Good
Atkins	At	Silt Loam	S1MP12.32	S1MP12.39	Slight	Fair	*66*	Fair
Monongahela	MoA	Silt Loam, 0 to 3 Percent Slopes	S1MP12.39	S1MP12.48	Slight	Poor to Fair	*70*	Good
Chavies	CaB	Loam, 2 to 8 Percent Slopes	S1MP12.48	S1MP12.57	Slight	Fair	*76*	Good
Edom	EdD	Silty Clay Loam, 15 to 25 Percent Slopes	S1MP12.73 S1MP13.07	S1MP12.81 S1MP13.15	Slight	Poor	*46*	*Poor*
Opequon	ORF	Hagerstown Complex, Steep	S1MP12.81 S1MP13.53 S1MP14.79	S1MP12.90 S1MP13.59 S1MP14.83	Severe	Poor	*16*	*Poor*
Klinesville	KlC	Shaly Silt Loam, 8 to 15 Percent Slopes	S1MP13.38 S1MP14.43 S1MP16.32	S1MP13.53 S1MP14.54 S1MP16.35	Slight	Poor	*19*	*Very Poor*
Melvin	Ma	Silt Loam	S1MP14.21 S1MP14.36	S1MP14.29 S1MP14.43	Slight	Poor	*60*	Fair
Klinesville	KlD	Shaly Silt Loam, 15 to 25 Percent Slopes	S1MP14.54	S1MP14.73	Slight	Poor	*19*	*Very Poor*
Mertz	MeB	Cherty Silt Loam, 3 to 8 Percent Slopes	S1MP15.03	S1MP15.08	Slight	Fair to Good	*63*	Good

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2, 3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Juniata and Mifflin Counties (Continued)								
Elliber	ElB	Very Cherty Loam, 3 to 8 Percent Slopes	S1MP4.48 S1MP15.42	S1MP4.51 S1MP15.49	Slight	Fair	*71*	Good
Morrison	MrC	Gravelly Sandy Loam, 8 to 15 Percent Slopes	S1MP15.73	S1MP15.78	Slight	Fair	*70*	Good
Elliber	ElF	Very Cherty Loam, 25 to 60 Percent Slopes	S1MP15.92	S1MP15.96	Moderate	Fair	*70*	*Poor*
Ernest	ErB	Silt Loam, 2 to 8 Percent Slopes	S1MP16.04	S1MP16.06	Slight	Fair to Good	*70*	Good
Edom	EeB	Klinesville Complex, 3 to 8 Percent Slopes	S1MP16.06 S1MP16.27	S1MP16.20 S1MP16.32	Slight	Poor	*46*	*Poor*
Penlaw	Pe	Silt Loam	S1MP16.35 S1MP21.83	S1MP16.38 S1MP21.90	Slight	Poor	*69*	Good
Rubble Land	Ru	Rubble Land	S1MP17.60	S1MP17.78	N/A	N/A	*~ 0*	*Very Poor*
Ernest	ErC	Silt Loam, 8 to 15 Percent Slopes	S1MP18.65	S1MP18.73	Moderate	Fair to Good	*60*	Good
Murrill	MuC	Gravelly Loam, 8 to 15 Percent Slopes	S1MP18.73 S1MP22.75	S1MP18.79 S1MP22.99	Slight	Fair to Good	80	Good
Murrill	MuB	Gravelly Loam, 3 to 8 Percent Slopes	S1MP18.79 S1MP22.72	S1MP18.91 S1MP22.75	Slight	Fair to Good	80	Good
Hagerstown	HaB	Silt Loam, 2 to 8 Percent Slopes	S1MP18.91 S1MP19.07 S1MP19.48 S1MP20.21 S1MP20.50 S1MP20.58 S1MP20.89 S1MP21.16 S1MP22.19	S1MP18.95 S1MP19.15 S1MP20.02 S1MP20.32 S1MP20.54 S1MP20.81 S1MP21.03 S1MP21.32 S1MP22.48	Slight	Poor to Fair	*60*	Good
Opequon	OpC	Silty Clay Loam, 8 to 15 Percent Slopes	S1MP18.95 S1MP19.33 S1MP22.02	S1MP19.04 S1MP19.38 S1MP22.19	Moderate	Poor to Fair	*16*	Poor

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Juniata and Mifflin Counties (Continued)								
Hagerstown	HcB	Silty Clay Loam, 3 to 8 Percent Slopes	S1MP19.04 S1MP19.38 S1MP20.18 S1MP21.32 S1MP21.53	S1MP19.07 S1MP19.48 S1MP20.45 S1MP21.39 S1MP21.60	Slight	Poor to Fair	*60*	Good
Opequon	OpD	Silty Clay Loam, 15 to 25 Percent Slopes	S1MP19.15	S1MP19.25	Severe	Poor to Fair	*16*	Poor
Nolin	No	Nolin Silt Loam	S1MP19.25 S1MP21.75 S1MP21.95	S1MP19.31 S1MP21.83 S1MP22.02	Slight	Fair	*60*	Good
Opequon	OpB	Silty Clay Loam, 3 to 8 Percent Slopes	S1MP21.90	S1MP21.95	Moderate	Poor to Fair	*16*	Poor
Hagerstown	HcC	Silty Clay Loam, 8 to 15 Percent Slopes	S1MP20.45 S1MP20.54 S1MP20.81 S1MP21.03 S1MP21.39 S1MP21.60 S1MP22.48	S1MP20.50 S1MP20.58 S1MP20.89 S1MP21.16 S1MP21.53 S1MP21.75 S1MP22.72	Slight	Poor to Fair	*60*	Good
ROW Crossings for Huntingdon County								
Buchanan	Bxb	Extremely Stony Loam, 3 to 8 Percent Slopes	S1MP26.44	S2MP0.15	Slight	Fair to Good	60 to 96	Good
Hazleton	HTF	Dekalb Association, Steep	S1MP23.76 S1MP24.15 S1MP24.71 S1MP25.38 S2MP0.29 S2MP0.73 S2MP1.33	S1MP23.94 S1MP24.64 S1MP25.23 S1MP26.10 S2MP0.45 S2MP0.81 S2MP1.70	Moderate	Poor to Fair	42 to 84	Fair
Hazleton	HTD	Dekalb Association, Moderately Steep	S1MP23.66 S1MP24.54	S1MP23.76 S1MP24.71	Slight	Poor	42 to 84	Fair

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Huntingdon County (Continued)								
Buchanan	BxD	Extremely Stony Loam, 8 to 25 Percent Slopes	S1MP23.94 S1MP25.23 S1MP26.10 S2MP0.15	S1MP24.15 S1MP25.38 S1MP26.62 S2MP0.24	Moderate	Fair to Good	60 to 96	Good
Philo	Ph	Philo and Basher Silt Loams	S1MP26.62	S1MP26.70	Slight	Poor to Fair	*60*	Excellent
Philo	Po	Philo and Basher Silt Loams, High Bottom	S1MP26.70	S1MP26.88	Slight	Fair	*60*	Excellent
Laidig	LcD	Extremely Stony Loam, 8 to 30 Percent Slopes	S2MP0.24	S2MP0.29	Slight	Fair to Good	*60*	Good
Rubble Land	Ru	Rubble Land	S2MP0.45	S1MP0.73	N/A	N/A	N/A	N/A
Leetonia	LeB	Extremely Stony Loamy Sand, 0 to 12 Percent Slopes	S1MP23.48 S2MP0.81	S1MP23.66 S2MP1.33	Slight	Poor to Fair	42 to 84	*Poor*
ROW Crossings for Centre County								
Rubble Land	Ru	Rubble Land	S2MP1.93 S2MP11.98 S2MP12.07 S2MP17.57 S2MP17.91	S2MP2.00 S2MP12.04 S2MP12.18 S2MP17.67 S2MP18.01	N/A	N/A	N/A	N/A
Andover	AoC	Very Stony Loam, 8 to 15 Percent Slopes	S2MP1.70 S2MP2.83 S2MP3.36 S2MP3.96 S2MP4.07 S2MP12.63 ***S2MP12.78*** S2MP18.10	S2MP1.75 S2MP2.93 S2MP3.83 S2MP4.01 S2MP4.10 S2MP12.66 ***S2MP12.86*** S2MP18.50	Moderate	Fair to Good	48 to More than 240	Good
Leetonia	LtB	Extremely Stony Loamy Sand, 0 to 12 Percent Slopes	S2MP1.75 S2MP4.57 S2MP5.39	S2MP1.90 S2MP4.62 S2MP5.47	Slight	Poor to Fair	*42 to 48*	*Poor*
Murrill	MuA	Silt Loam, 0 to 3 Percent Slopes	***S2MP12.97*** ***S2MP13.15*** S2MP17.00	***S2MP12.99*** ***S2MP13.23*** S2MP17.02	Slight	Poor to Fair	*More than 72*	Good

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Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Centre County (continued)								
Hazleton	HTF	Dekalb Association, Very Steep	S2MP1.33 S2MP1.90 S2MP2.00 S2MP2.16 S2MP2.23 S2MP3.02 S2MP4.31	S2MP1.70 S2MP1.93 S2MP2.04 S2MP2.19 S2MP2.42 S2MP3.24 S2MP4.57	Moderate	Poor to Fair	42 to 84	Fair
Hazleton	HSD	Extremely Stony Sandy Loam, Moderately Steep	S2MP2.04 S2MP2.19 S2MP5.28 S2MP5.53 S2MP6.15 S2MP6.66 S2MP10.74 S2MP11.66 S2MP11.90 S2MP24.57 S2MP26.67 S2MP27.23 S2MP27.72 S2MP28.19	S2MP5.48 S2MP5.79 S2MP6.21 S2MP6.87 S2MP2.16 S2MP2.23 S2MP10.77 S2MP11.68 S2MP11.98 S2MP25.02 S2MP26.98 S2MP27.32 S2MP27.74 S2MP28.53	Slight	Fair	42 to 84	Good
Laidig	LcD	Extremely Stony Loam, 8 to 25 Percent Slopes	S2MP2.42 S2MP4.17 S2MP4.87 S2MP5.86	S2MP2.83 S2MP4.29 S2MP5.01 S2MP5.97	Slight	Fair to Good	*More than 72*	Good
Philo	Pk	Philo and Atkins Very Stony Soils	S2MP1.07 S2MP2.36 S2MP2.93 S2MP3.83 S2MP4.01 S2MP26.02	S2MP1.24 S2MP2.46 S2MP3.02 S2MP3.87 S2MP4.07 S2MP26.07	Slight/ *Severe*	Poor to Fair	*More than 72*	Very Good

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Centre County (continued)								
Laidig	LDF	Extremely Stony Loam, Steep	S2MP3.24	S2MP3.31	Moderate	Fair to Good	*More than 72*	Good
			S2MP4.29	S2MP4.31				
			S2MP5.83	S2MP5.86				
			S2MP10.18	S2MP10.28				
			S2MP12.31	S2MP12.35				
Buchanan	BxD	Extremely Stony Loam, 8 to 25 Percent Slopes	S2MP0.98	S2MP1.07	Moderate	Fair to Good	*More than 60*	Good
			S2MP1.75	S2MP1.93				
			S2MP3.31	S2MP3.36				
			S2MP3.87	S2MP3.96				
			S2MP10.13	S2MP10.18				
			S2MP17.79	S2MP17.85				
			S2MP18.01	S2MP18.10				
			S2MP26.07	S2MP26.11				
Berks	BMF	Berks and Weikert Soils, Steep	S2MP4.10	S2MP4.17	Moderate	Fair to Good	*18 to 42*	Fair
			S2MP5.59	S2MP5.83				
			S2MP12.18	S2MP12.31				
			S2MP12.39	S2MP12.49				
			S2MP19.59	S2MP19.75				
			S2MP20.04	S2MP20.11				
			S2MP20.14	S2MP20.19				
			S2MP20.36	S2MP20.50				
			S2MP20.54	S2MP20.83				
			S2MP20.95	S2MP21.05				
			S2MP21.32	S2MP21.39				
			S2MP21.50	S2MP21.56				
			S2MP21.60	S2MP21.69				
			S2MP21.70	S2MP21.78				
			S2MP21.94	S2MP21.98				
			S2MP25.05	S2MP25.18				
			S2MP25.40	S2MP25.79				

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Centre County (continued)								
Buchanan	BxB	Extremely Stony Loam, 0 to 8 Percent Slopes	S2MP0.17 S2MP0.31 S2MP1.93 S2MP3.06 S2MP3.24 S2MP3.96 S2MP5.01 S2MP27.35 S2MP27.49 S2MP27.66 S2MP27.96 S2MP28.10	S2MP0.29 S2MP0.35 S2MP1.99 S2MP3.16 S2MP3.29 S2MP4.15 S2MP5.17 S2MP27.38 S2MP27.56 S2MP27.68 S2MP28.02 S2MP28.19	Slight	Fair to Good	*More than 60*	Good
Laidig	LaC	Channery Loam, 8 to 15 Percent Slopes	S2MP5.97	S2MP6.13	Slight	Fair to Good	*More than 72*	Good
Andover	AnB	Channery Loam, 3 to 8 Percent Slopes	S2MP4.58 S2MP6.13 S2MP18.54 S2MP28.02	S2MP4.64 S2MP6.23 S2MP18.58 S2MP28.10	Slight	Fair to Good	48 to More than 240	Good
Weikert	WeC	Shaly Silt Loam, 5 to 15 Percent Slopes	S2MP6.23	S2MP6.29	Slight	Poor	*12 to 18*	Fair
Clarksburg	CkB	Silt Loam, 3 to 8 Percent Slopes	S2MP6.29 S2MP6.39	S2MP6.36 S2MP6.41	Slight	Fair to Good	*More than 60*	Very Good
Edom	EdB	Silt Loam, 2 to 8 Percent Slopes	S2MP6.41	S2MP6.57	Slight	Poor	*42 to 72*	Very Good
Opeguon	OhB	Opeguon-Hagerstown Complex, 3 to 8 Percent Slopes	S2MP6.57 S2MP8.34 S2MP8.57 S2MP8.82 S2MP8.95 S2MP9.27 **S2MP12.87** **S2MP13.06** S2MP13.19 S2MP13.33 S2MP13.78	S2MP6.61 S2MP8.38 S2MP8.62 S2MP8.93 S2MP9.06 S2MP9.31 ***S2MP12.92*** ***S2MP13.11*** S2MP13.26 S2MP13.35 S2MP13.81	Slight	Poor	*12 to 18*	Good

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2, 3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Centre County (continued)								
Opequon (continued)	OhB	Opequon-Hagerstown Complex, 3 to 8 Percent Slopes	S2MP14.53 S2MP14.76 S2MP15.43 S2MP15.70 S2MP15.87 S2MP15.94 S2MP16.13	S2MP14.62 S2MP14.80 S2MP15.48 S2MP15.73 S2MP15.92 S2MP15.97 S2MP16.19	Slight	Poor	*12 to 18*	Good
Hagerstown	HaB	Silt Loam, 3 to 8 Percent Slopes	S2MP6.61 S2MP7.05 S2MP7.79 S2MP7.98 S2MP8.19 S2MP8.38 S2MP8.62 S2MP8.70 S2MP8.93 S2MP9.06 S2MP9.14 S2MP9.31 S2MP9.48 S2MP13.39 S2MP13.68 S2MP13.73 S2MP13.85 S2MP14.15 S2MP14.23 S2MP14.27 S2MP14.46 S2MP14.75 S2MP14.80 S2MP15.08	S2MP6.78 S2MP7.11 S2MP7.83 S2MP8.10 S2MP8.32 S2MP8.43 S2MP8.63 S2MP8.79 S2MP8.95 S2MP9.10 S2MP9.27 S2MP9.44 S2MP9.52 S2MP13.46 S2MP13.70 S2MP13.78 S2MP13.99 S2MP14.18 S2MP14.25 S2MP14.32 S2MP14.51 S2MP14.76 S2MP14.83 S2MP15.14	Slight	Poor to Fair	42 to 84	Excellent

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (Inches)	Revegetation Potential
ROW Crossings for Centre County (continued)								
Hagerstown (continued)	HaB	Silt Loam, 3 to 8 Percent Slopes	S2MP15.31	S2MP15.43	Slight	Poor to Fair	42 to 84	Excellent
			S2MP15.55	S2MP15.57				
			S2MP15.63	S2MP15.65				
			S2MP15.67	S2MP15.70				
			S2MP15.79	S2MP15.83				
			S2MP15.92	S2MP15.94				
			S2MP16.01	S2MP16.13				
			S2MP16.19	S2MP16.40				
			S2MP16.93	S2MP16.97				
Hublersburg	HuB	Silt Loam, 3 to 8 Percent Slopes	S2MP6.78	S2MP6.88	Slight	Poor to Fair	More than 60	Very Good
			S2MP6.96	S2MP7.01				
			S2MP7.15	S2MP7.65				
			S2MP7.90	S2MP7.98				
			S2MP14.32	S2MP14.46				
			S2MP14.51	S2MP14.53				
Hublersburg	HuA	Silt Loam, 0 to 3 Percent Slopes	S2MP6.88	S2MP6.96	Slight	Poor to Fair	More than 60	Very Good
			S2MP7.01	S2MP7.05				
			S2MP7.65	S2MP7.75				
			S2MP7.78	S2MP7.79				
Hagerstown	HaC	Silt Loam, 8 to 15 Percent Slopes	S2MP7.11	S2MP7.15	Slight	Poor to Fair	42 to 84	Excellent
			S2MP13.59	S2MP13.68				
			S2MP15.17	S2MP15.22				
			S2MP15.57	S2MP15.63				
			S2MP15.65	S2MP15.67				

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Centre County (continued)								
Nolin	No	Silt Loam, Local Alluvium, 0 to 5 Percent Slopes	S2MP7.75 S2MP8.32 S2MP9.11 S2MP9.54 S2MP13.46 S2MP14.83 S2MP15.14 S2MP15.76 S2MP16.72	S2MP7.78 S2MP8.34 S2MP9.14 S2MP9.61 S2MP13.54 S2MP14.92 S2MP15.17 S2MP15.79 S2MP16.76	Slight	Fair	*More than 72*	Excellent
Hagerstown	HaA	Silt Loam, 0 to 3 Percent Slopes	S2MP7.83 S2MP8.43 S2MP8.63 S2MP13.35 S2MP13.54 S2MP13.70 S2MP16.97	S2MP7.90 S2MP8.57 S2MP8.70 S2MP13.39 S2MP13.59 S2MP13.73 S2MP17.00	Slight	Poor to Fair	42 to 84	Excellent
Opequon	OxD	Opequon-Rock Outcrop Complex, 8 to 25 Percent Slopes	S2MP8.10 S2MP15.83 S2MP16.00	S2MP8.15 S2MP15.87 S2MP16.01	Severe	Poor	*12 to 18*	Good
Opequon	OhC	Opequon-Hagerstown Complex, 8 to 15 Percent Slopes	S2MP8.15 S2MP8.79 S2MP9.61 S2MP13.81 S2MP15.22 S2MP15.48 S2MP15.73	S2MP8.19 S2MP8.82 S2MP9.68 S2MP13.85 S2MP15.31 S2MP15.55 S2MP15.76	Moderate	Poor	*12 to 18*	Good

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Centre County (continued)								
Hagerstown	HcB	Silty Clay Loam, 3 to 8 Percent Slopes	S2MP9.44 S2MP12.72 S2MP13.99 S2MP14.18 S2MP14.25 S2MP14.62 S2MP16.40 S2MP16.56 S2MP16.76	S2MP9.48 S2MP13.33 S2MP14.15 S2MP14.23 S2MP14.27 S2MP14.75 S2MP16.51 S2MP16.68 S2MP16.80	Slight	Poor to Fair	42 to 84	Excellent
Murrill	MuB	Channery Silt Loam, 3 to 8 Percent Slopes	S2MP9.52 S2MP9.68 ***S2MP12.69*** ***S2MP12.86*** ***S2MP12.92*** ***S2MP12.99*** ***S2MP13.11*** S2MP17.07	S2MP9.54 S2MP9.84 ***S2MP12.70*** ***S2MP12.87*** ***S2MP12.97*** ***S2MP13.06*** ***S2MP13.15*** S2MP17.24	Slight	Poor to Fair	*More than 72*	Good
Murrill	MvB	Very Stony Silt Loam, 0 to 8 Percent Slopes	S2MP9.84	S2MP9.89	Slight	Poor to Fair	*More than 72*	Good
Buchanan	BuB	Channery Loam, 3 to 8 Percent Slopes	S2MP9.89	S2MP9.94	Slight	Fair to Good	*More than 60*	Good
Buchanan	BuC	Channery Loam, 8 to 15 Percent Slopes	S2MP9.94 S2MP12.49	S2MP10.13 S2MP12.58	Slight	Fair to Good	*More than 60*	Good
Hazleton	HSB	Extremely Stony Sandy Loam, Gently Sloping	S2MP10.34 S2MP12.04 S2MP26.44 S2MP27.74 S3MP1.99 S3MP2.69 S3MP3.16 S3MP3.29 S3MP6.03 S3MP6.31	S2MP10.38 S2MP12.07 S2MP26.67 S2MP27.96 S3MP2.09 S3MP3.06 S3MP3.24 S3MP3.63 S3MP6.15 S3MP6.55	Slight	Poor to Fair	42 to 84	Good

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Centre County (continued)								
Ungers	UmB	Very Stony Loam, 3 to 8 Percent Slopes	S2MP11.19	S2MP11.32	Slight	Fair	*42 to 78*	Good
Ungers	UnD	Very Stony Loam, 8 to 25 Percent Slopes	S2MP11.32	S2MP11.66	Slight	Fair	*42 to 78*	Good
Ungers	UmC	Channery Loam, 8 to 15 Percent Slopes	S2MP11.00	S2MP11.19	Slight	Fair	*42 to 78*	Good
Clymer	CvD	Very Stony Sandy Loam, 8 to 25 Percent Slopes	S2MP11.68	S2MP11.90	Slight	Fair	*More than 60*	Very Good
Laidig	LaD	Channery Loam, 3 to 8 Percent Slopes	S2MP12.35 S2MP17.39	S2MP12.39 S2MP17.46	Slight	Fair to Good	*More than 72*	Good
Andover	AnC	Channery Loam, 8 to 15 Percent Slopes	S2MP12.58 S2MP17.24 S2MP18.50	S2MP12.63 S2MP17.39 S2MP18.54	Moderate	Fair to Good	48 to More than 240	Good
Murrill	MuC	Channery Silt Loam, 8 to 15 Percent Slopes	S2MP12.66	***S2MP12.78***	Slight	Poor to Fair	*More than 72*	Good
Opequon	OhD	Opequon-Hagerstown Complex, 8 to 25 Percent Slopes	S2MP9.10	S2MP9.11	Severe	Poor	*12 to 18*	Good
Opequon	ORF	Opequon-Hagerstown Complex, Steep	S2MP13.16	S2MP13.19	Severe	Poor	*12 to 18*	Good
Urban Land	URB	Urban Land - Hagerstown Complex, Gently Sloping	S2MP14.92	S2MP15.08	N/A	N/A	N/A	N/A
Opequon	OxB	Opequon-Rock Outcrop Complex, 0 to 8 Percent Slopes	S2MP15.97	S2MP16.00	Slight	Poor	12 to 18	Good
Hagerstown	HcC	Silty Clay Loam, 8 to 15 Percent Slopes	S2MP16.51 S2MP16.68 S2MP16.80	S2MP16.56 S2MP16.72 S2MP16.93	Slight	Poor to Fair	42 to 84	Excellent
Laidig	LaB	Channery Loam, 3 to 8 Percent Slopes	S2MP18.58	S2MP18.88	Slight	Fair to Good	*More than 72*	Good
Chagrin	Ch	Chagrin Soils	S2MP18.88 S2MP18.97 S2MP19.06	S2MP18.92 S2MP19.04 S2MP19.07	Slight	Fair to Poor	*More than 72*	Excellent
Lindside	Lx	Lindside Soils	S2MP6.36 S2MP18.92 S2MP19.07	S2MP6.39 S2MP18.97 S2MP19.16	Slight	Fair	*More than 72*	Excellent
Melvin	Mm	Silt Loam	S2MP19.16 S2MP19.30	S2MP19.24 S2MP19.39	Slight	Fair	*More than 72*	Fair

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2, 3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Centre County (continued)								
Dunning	Du	Silty Clay Loam	S2MP19.24	S2MP19.30	Slight	Poor	*More than 72*	Poor
Weikert	WeD	Shaly Silt Loam, 15 to 25 Percent Slopes	S2MP19.43 S2MP19.75 S2MP19.80	S2MP19.54 S2MP19.79 S2MP19.95	Slight	Poor to Fair	*12 to 18*	Fair
Brinkerton	BrC	Silt Loam, 8 to 15 Percent Slopes	S2MP19.54 S2MP19.79 S2MP20.11 S2MP21.56	S2MP19.59 S2MP19.80 S2MP21.14 S2MP21.60	Moderate	Fair to Good	*More than 60*	Very Good
Brinkerton	BrB	Silt Loam, 3 to 8 Percent Slopes	S2MP19.39 S2MP22.01	S2MP19.43 S2MP22.05	Slight	Fair to Good	*More than 60*	Very Good
Berks	BkC	Shaly Silt Loam, 8 to 15 Percent Slopes	S2MP20.33 S2MP20.50 S2MP21.40 S2MP21.69 S2MP21.78 S2MP21.98	S2MP20.36 S2MP20.54 S2MP21.50 S2MP21.70 S2MP21.94 S2MP22.01	Slight	Fair to Good	*18 to 42*	Good
Berks	BkD	Shaly Silt Loam, 15 to 25 Percent Slopes	S2MP20.19 S2MP21.05 S2MP21.39	S2MP20.33 S2MP21.32 S2MP21.40	Slight	Fair to Good	*18 to 42*	Good
Ernest	EvD	Very Stony Silt Loam, 8 to 25 Percent Slopes	S2MP20.83	S2MP20.95	Moderate	Fair to Good	*More than 60*	Very Good
Albrights	AbB	Silt Loam, 3 to 8 Percent Slopes	S2MP22.05 S2MP23.18	S2MP22.08 S2MP23.20	Slight	Fair to Good	*More than 60*	Good
Meckesville	MeC	Silt Loam, 8 to 15 Percent Slopes	S2MP22.08 S2MP23.27	S2MP22.13 S2MP23.33	Slight	Fair to Good	*More than 72*	Very Good
Leck Kill	LkD	Channery Silt Loam, 15 to 15 Percent Slopes	S2MP22.13 S2MP22.33 S2MP22.51 S2MP23.15 S2MP23.49 S2MP23.65	S2MP22.23 S2MP22.34 S2MP23.00 S2MP23.18 S2MP23.59 S2MP23.80	Slight	Fair to Good	*42 to 72*	Good

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (Inches)	Revegetation Potential
ROW Crossings for Centre County (continued)								
Leck Kill (continued)	LkD	Channery Silt Loam, 15 to 15 Percent Slopes	S2MP23.84 S2MP24.03 S2MP25.94	S2MP24.00 S2MP24.31 S2MP26.02	Slight	Fair to Good	*42 to 72*	Good
Leck Kill	LMF	Leck Kill and Calvin Soils, Steep	S2MP22.23 S2MP23.00 S2MP23.33 S2MP23.59 S2MP24.31 S2MP25.83	S2MP22.33 S2MP23.15 S2MP23.49 S2MP23.65 S2MP24.52 S2MP25.94	Moderate	Fair to Good	*42 to 72*	Good
Leck Kill	LkC	Channery Silt Loam, 8 to 15 Percent Slopes	S2MP22.34 S2MP23.80 S2MP24.00	S2MP22.51 S2MP23.84 S2MP24.03	Slight	Fair to Good	*42 to 72*	Good
Basher	Ba	Basher Loam	S2MP23.20	S2MP23.27	Slight	Fair to Poor	*More than 72*	Excellent
Gilpin	GlB	Channery Silt Loam, 2 to 8 Percent Slopes	S2MP25.02 S2MP25.18	S2MP25.05 S2MP25.40	Slight	Poor to Fair	*18 to 42*	Very Good
Leck Kill	LlB	Very Stony Silt Loam, 0 to 8 Percent Slopes	S2MP25.79	S2MP25.83	Slight	Fair to Good	*42 to 72*	Good
Clymer	ClB	Sandy Loam, 3 to 8 Percent Slopes	S2MP26.98 S2MP27.32	S2MP27.23 S2MP27.35	Slight	Fair	*More than 60*	Very Good
Andover	AoB	Very Stony Loam, 0 to 8 Percent Slopes	S2MP6.21 S2MP27.38	S2MP6.31 S2MP27.49	Slight	Fair to Good	48 to 240	Good
Wharton	WhB	Silt Loam, 3 to 8 Percent Slopes	S2MP28.53 S3MP0.35 S3MP5.00	S3MP0.17 S3MP0.80 S3MP5.28	Slight	Poor to Fair	*42 to More than 72*	Very Good
Philo	Ph	Philo Loam	S2MP1.26 S2MP1.56 S2MP2.27	S2MP1.27 S2MP1.63 S2MP2.36	Slight	Poor to Fair	*More than 72*	Very Good
Ernest	ErC	Channery Silt Loam, 8 to 15 Percent Slopes	S2MP1.40	S2MP1.56	Slight	Fair to Good	*More than 60*	Very Good

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Centre County (continued)								
Clymer	CvB	Very Stony Sandy Loam, 0 to 8 Percent Slopes	S2MP3.63 S2MP4.15 S2MP4.64 S2MP5.79 S2MP5.99	S2MP3.96 S2MP4.58 S2MP5.00 S2MP5.82 S2MP6.03	Slight	Fair	*More than 60*	Very Good
Buchanan	BtB	Buchanan Loam, 2 to 8 Percent Slopes	S3MP5.82 S3MP6.58	S3MP5.99 S3MP6.62	Slight	Fair to Good	*More than 60*	Good
ROW Crossings for Clinton County								
Dekalb	DkE	Very Stony Soils, 25 to 100 Percent Slopes	S3MP6.87 S3MP7.13 S3MP7.47 S3MP7.95 S3MP9.46 S3MP10.02 S3MP10.46 S3MP13.13 S3MP13.58 S3MP14.60 S3MP15.68 S3MP15.79 S3MP16.66 S3MP17.49 S3MP17.76 S3MP19.86 S3MP20.09 S3MP20.18 S3MP20.63 S3MP20.89 S3MP23.53 S3MP24.62	S3MP6.99 S3MP7.32 S3MP7.52 S3MP8.06 S3MP9.52 S3MP10.08 S3MP10.83 S3MP13.42 S3MP14.04 S3MP14.91 S3MP15.71 S3MP15.85 S3MP17.29 S3MP17.62 S3MP18.69 S3MP19.92 S3MP20.11 S3MP20.26 S3MP20.72 S3MP20.93 S3MP24.23 S3MP24.83	Moderate	Fair	*24 to 42*	*Very Poor*

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2, 3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (Inches)	Revegetation Potential
ROW Crossings for Clinton County (continued)								
Gilpin		Silt Loam, 8 to 15 Percent Slopes	S3MP16.65	S3MP16.66	Moderate	Not Applicable	*20 to 36*	Good
Ungers	UnC	Loam, 8 to 15 Percent Slopes	S3MP25.02	S3MP25.08	Slight	Fair	*22 to 28*	Good/ *Very Poor*
Dekalb	DkC	Very Stony Soils, 8 to 25 Percent Slopes	S3MP7.05	S3MP7.13	Slight	Fair	*24 to 42*	*Very Poor*
			S3MP7.38	S3MP7.47				
			S3MP7.52	S3MP7.95				
			S3MP8.06	S3MP9.16				
			S3MP9.40	S3MP9.46				
			S3MP9.52	S3MP9.54				
			S3MP9.98	S3MP10.02				
			S3MP10.08	S3MP10.46				
			S3MP11.55	S3MP12.10				
			S3MP12.58	S3MP13.13				
			S3MP13.42	S3MP13.58				
			S3MP14.91	S3MP15.11				
			S3MP15.71	S3MP15.79				
			S3MP15.85	S3MP15.87				
			S3MP16.07	S3MP16.16				
			S3MP17.29	S3MP17.42				
			S3MP18.89	S3MP19.25				
			S3MP19.62	S3MP19.70				
			S3MP20.07	S3MP20.09				
			S3MP20.72	S3MP20.89				
			S3MP21.00	S3MP21.32				
			S3MP21.49	S3MP21.59				
			S3MP21.74	S3MP21.83				
			S3MP22.47	S3MP22.68				
			S3MP23.40	S3MP23.53				
Dekalb	DkB	Very Stony Soils, 0 to 8 Percent Slopes	S3MP7.32	S3MP7.38	Slight	Fair to Good	*24 to 42*	*Very Poor*
			S3MP9.16	S3MP9.40				
			S3MP10.83	S3MP11.55				

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2,3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Clinton County (continued)								
Dekalb (continued)	DkB	Very Stony Soils, 0 to 8 Percent Slope	S3MP16.31 S3MP19.70 S3MP20.11 S3MP21.59 S3MP21.91 S3MP22.68 S3MP23.22 S3MP24.23	S3MP16.40 S3MP19.86 S3MP20.18 S3MP21.74 S3MP22.47 S3MP22.90 S3MP23.40 S3MP24.62	Slight	Fair to Good	24 to 42	Very Poor
Albrights	AbB	Silt Loam, 3 to 8 Percent Slopes	S3MP9.54	S3MP9.98	Slight	Fair to Good	60 to 96	Good
Cookport	CpB	Very Stony Loam, 0 to 8 Percent Slopes	S3MP12.10 S3MP20.93 S3MP21.48 S3MP21.83	S3MP12.58 S3MP20.95 S3MP21.49 S3MP21.91	Slight	Good	36 to 72	Poor
Sequatchie	Sf	Fine Sandy Loam, High	S3MP14.04 S3MP14.17 S3MP14.52	S3MP14.12 S3MP14.39 S3MP14.60	Slight to Medium	Fair	120 to 360	Good
Sequatchie	Sa	Loam	S3MP14.39	S3MP14.41	Slight to Medium	Fair	120 to 360	Good
Cavode	CaB	Silt Loam, 3 to 8 Percent Slopes	S3MP15.11	S3MP15.63	Slight	Poor to Fair	36 to 72	Fair
Strip Mines	St	Strip Mines	S3MP15.63 S3MP16.02 S3MP16.16 S3MP16.57 S3MP19.25	S3MP15.68 S3MP16.07 S3MP16.31 S3MP16.65 S3MP19.38	Moderate to Severe	N/A	N/A	Very Poor
Cookport	CoC	Loam, 8 to 15 Percent Slopes	S3MP15.87 S3MP15.92 S3MP16.40	S3MP15.89 S3MP16.02 S3MP16.57	Slight	Good	36 to 72	Good/ Very Poor
Cookport	CoB2	Loam, 3 to 8 Percent Slopes, Moderately Eroded	S3MP15.89	S3MP15.92	Slight	Fair	36 to 72	Good

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2, 3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
ROW Crossings for Clinton County (continued)								
Stony Alluvial Land	Sn	Stony Alluvial Land	S3MP14.12 S3MP17.44 S3MP17.62 S3MP20.97	S3MP14.17 S3MP17.49 S3MP17.76 S3MP21.00	N/A	N/A	60 to 600	*Very Poor*
Gilpin	GpB	Silt Loam, 3 to 8 Percent Slopes	S3MP18.69	S3MP18.89	Slight to Moderate	Fair	*24 to 60*	Fair
Cookport	CpC	Very Stony Loam, 8 to 25 Percent Slopes	S3MP19.38 S3MP19.92 S3MP21.32	S3MP19.62 S3MP20.07 S3MP21.48	Slight	Fair	*36 to 72*	*Very Poor*
Hartselle	HrB	Channery Loam, 3 to 8 Percent Slopes	S3MP20.26	S3MP20.63	Slight to Moderate	Good	48 to 96	Good/ *Very Poor*
Lectonia	LnC	Very Stony Sandy Loam, 8 to 25 Percent Slopes	S3MP22.90	S3MP23.04	Slight	Good	*24 to 48*	*Very Poor*
Leetonia	LnB	Very Stony Sandy Loam, 0 to 8 Percent Slopes	S3MP23.04	S3MP23.22	Slight	Good	*24 to 48*	*Very Poor*
Lehew	LvE	Very Stony Loam, 25 to 100 Percent Slopes	S3MP24.83	S3MP24.95	Moderate	Good	*24 to 36*	*Very Poor*
Ungers	UnB2	Loam, 3 to 8 Percent Slopes, Moderately Eroded	S3MP24.95 S3MP25.32	S3MP25.02 S3MP25.36	Slight to Moderate	Fair	*36 to 72*	Good/ *Very Poor*
Meckesville	MeB2	Silt Loam, 3 to 8 Percent Slopes, Moderately Eroded	S3MP25.08 S3MP25.36	S3MP25.14 S3MP25.49	Slight to Moderate	Poor	60 to 120	*Poor/Good*
Dekalb	DaB	Channery Loam, 3 to 8 Percent Slopes	S3MP25.14 S3MP25.49	S3MP25.32 S3MP25.61	Slight to Moderate	Fair	*24 to 42*	Fair
New Access Roads for Juniata and Mifflin Counties								
Tyler	Ty	Silt Loam	(S1) AR8 MP0.0	(S1) AR8 MP0.08	Slight	Fair	*60*	Good
Purdy	Pu	Silt Loam	(S1) AR8 MP0.08	(S1) AR8 MP0.18	Slight	Fair to Good	*60*	Fair

Table 7.1.1-1 (Continued)

Soil Series	Soil Series Symbol	Soil Series Description	Milepost[1]		Soil Limitation[2, 3]			
			Start	End	Erosion Hazard	Compaction Potential	Depth to Rock (inches)	Revegetation Potential
Pipeyards for Mifflin County[4]								
Penlaw	Pe	Silt Loam	Pipeyard S1MP16.14 S1MP16.32	Pipeyard S1MP16.29 S1MP16.45	Slight	Poor	*69*	Good
Ernest	ErB	Silt Loam, 2 to 8 Percent Slopes	Pipeyard S1MP16.14	Pipeyard S1MP16.29	Slight	Fair to Good	*70*	Good
Andover	AnB	Gravelly Loam, 2 to 8 Percent Slopes	Pipeyard S1MP16.14	Pipeyard S1MP16.29	Slight	Fair to Good	*60*	Fair
Edom	EdC	Silty Clay Loam, 8 to 15 Percent Slopes	Pipeyard S1MP16.32	Pipeyard S1MP16.45	Slight	N/A	46	Good
Melvin	Ma	Silt Loam	Pipeyard S1MP16.32	Pipeyard S1MP16.45	Slight	Poor	*60*	Fair
Pipeyards for Centre County[4]								
Hagerstown	HaA	Silt Loam, 3 to 8 Percent Slopes	Pipeyard S2MP13.89	Pipeyard S2MP14.15	Slight	Poor to Fair	42 to 84	Excellent
Hagerstown	HaB	Silt Loam, 0 to 3 Percent Slopes	Pipeyard S2MP13.89	Pipeyard S2MP14.15	Slight	Poor to Fair	42 to 84	Excellent
Pipeyards for Clinton County[4]								
Sequatchie	Sf	Fine Sandy Loam, High	Pipeyard S3MP18.08	Pipeyard S3MP18.30	Slight to Medium	Fair	120 to 340	Good
Melvin	Ma	Silt Loam	Pipeyard S3MP18.08	Pipeyard S3MP18.30	Slight	Poor	*60*	Fair

Notes:

1 Includes areas disturbed by construction.

2 Limitations are in italics.

3 If soil limitations were not available in one county, the information from the next county was used for missing data.

4 Mileposts for the pipeyards are the projection of the centerline milepost at the pipeyard boundary.

Table 7.1.1-2

TOTAL PIPELINE DISTANCE CROSSED FOR EACH CATEGORY OF SOIL LIMITATION FOR THE PL-1 EXT2 PIPELINE

Soil Limitation Category	Distance (in miles)
Erosion Hazard	
Slight	***54.23***
Slight to Medium	0.62
Slight to Moderate	1.17
Moderate	***22.51***
Severe	***0.43***
Moderate to Severe	0.46
Slight/Severe	0.51
Not Available	1.33
Compaction Potential	
Poor	***3.94***
Poor to Fair	***23.41***
Fair	19.94
Fair to Poor	0.07
Good	1.69
Fair to Good	***29.06***
Not Available	2.98
Depth to Rock (inches)	
~ 0	0.18
16	0.65
19	0.53
30	1.99
32	3.22
46	1.26
55	1.27
56	0.36
60	13.33
More than 60	5.62
63	0.05
65	0.26
66	0.07
67	0.07
69	0.38
70	0.35
71	0.18
More than 72	***4.23***

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Table 7.1.1-2 (Continued)

Soil Limitation Category	Distance (in miles)
Depth to Rock (inches) (continued)	
76	0.09
80	0.45
12 to 18	***1.86***
18 to 42	3.25
20 to 36	0.01
22 to 28	0.06
24 to 36	0.12
24 to 42	13.60
24 to 48	0.32
24 to 60	0.20
36 to 72	2.09
42 to 48	0.28
42 to 72	2.63
42 to More than 72	0.99
42 to 78	0.66
42 to 84	13.52
48 to 96	0.37
48 to 240	0.21
48 to More than 240	***2.18***
60 to 96	1.98
60 to 120	0.19
60 to 600	0.27
120 to 340	0.22
120 to 360	0.40
Not Available	1.34
Revegetation Potential	
Very Poor	25.07
Poor	7.47
Poor/Good	0.19
Fair	8.93
Good	***26.41***
Good/Very Poor	0.83
Very Good	5.58
Excellent	5.93
Not Available	0.88

Table 7.3-1

PRIME FARMLAND SOIL IMPACTS ALONG THE PL-1 EXT2 PIPELINE

Prime Farmland Soil	Milepost[1]		Disturbed Acreage[2]	
	Start	End	Permanent	Temporary
Juniata and Mifflin Counties				
AbB	S1MP12.18	S1MP12.25	0.42	1.57[3]
BuB	S1MP4.79	S1MP4.86	0.42	0.42[3]
CaB	S1MP12.48	S1MP12.57	0.54	2.72[3]
EdB	S1MP4.92 S1MP16.20 S1MP16.43	S1MP4.96 S1MP16.27 S1MP16.59	1.63	1.63[3]
ElB	S1MP4.48 S1MP15.42	S1MP4.51 S1MP15.49	0.60	0.39[3]
HaB	S1MP18.91 S1MP19.07 S1MP19.48 S1MP20.21 S1MP20.50 S1MP20.58 S1MP20.89 S1MP21.16 S1MP22.19	S1MP18.95 S1MP19.15 S1MP20.08 S1MP20.32 S1MP20.54 S1MP20.81 S1MP21.03 S1MP21.32 S1MP22.48	10.24	17.52[3]
HcB	S1MP19.04 S1MP19.38 S1MP20.18 S1MP20.32 S1MP21.53	S1MP19.07 S1MP19.48 S1MP20.45 S1MP20.39 S1MP21.60	3.27	2.03[3]
MeB	S1MP15.03	S1MP15.08	0.30	0.15
MoA	S1MP12.39	S1MP12.48	0.54	2.72[3]
MuB	S1MP18.79 S1MP22.72	S1MP18.91 S1MP22.75	0.91	0.81[3]
No	S1MP19.25 S1MP21.75 S1MP21.95	S1MP19.31 S1MP21.83 S1MP22.02	1.27	0.82[3]
Huntingdon County				
Ph	S1MP26.62	S1MP26.70	0.48	0.24
Po	S1MP26.70	S1MP26.88	1.09	0.65

Table 7.3-1 (Continued)

Prime Farmland Soil	Milepost[1]		Disturbed Acreage[2]	
	Start	End	Permanent	Temporary
Centre County				
AbB	S2MP22.05 S2MP23.18	S2MP22.08 S2MP23.20	0.30	0.24
Ba	S2MP23.20	S2MP23.27	0.42	0.21
BtB	S3MP5.82 S3MP6.58	S3MP5.99 S3MP6.62	1.27	0.76
BuB	S2MP9.89	S2MP9.94	0.30	0.15
Ch	S2MP18.88 S2MP18.97 S2MP19.06	S2MP18.92 S2MP19.04 S2MP19.07	0.72	1.05
CkB	S2MP6.29 S2MP6.39	S2MP6.36 S2MP6.41	0.54	0.27
ClB	S2MP26.98 S2MP27.32	S2MP27.23 S2MP27.35	1.69	0.85
EdB	S2MP6.41	S2MP6.57	0.96	0.48
GlB	S2MP25.02 S2MP25.18	S2MP25.05 S2MP25.40	1.51	0.76
HaA	S2MP7.83 S2MP8.43 S2MP8.63 S2MP13.35 S2MP13.54 S2MP13.70 S2MP16.67	S2MP7.90 S2MP8.57 S2MP8.70 S2MP13.39 S2MP13.59 S2MP13.73 S2MP17.00	2.60	2.30
HaB	S2MP6.61 S2MP7.05 S2MP7.79 S2MP7.98 S2MP8.19 S2MP8.83 S2MP8.62 S2MP8.70 S2MP8.93 S2MP9.06 S2MP9.14 S2MP9.31 S2MP9.48 S2MP13.39	S2MP6.78 S2MP7.11 S2MP7.83 S2MP8.10 S2MP8.32 S2MP8.43 S2MP8.63 S2MP8.79 S2MP8.95 S2MP9.10 S2MP9.27 S2MP9.44 S2MP9.52 S2MP13.46	13.21	8.16

Table 7.3-1 (Continued)

Prime Farmland Soil	Milepost[1]		Disturbed Acreage[2]	
	Start	End	Permanent	Temporary
Centre County (Continued)				
HaB (continued)	S2MP13.68	S2MP13.70	13.21	8.16
	S2MP13.73	S2MP13.78		
	S2MP13.85	S2MP13.99		
	S2MP14.15	S2MP14.18		
	S2MP14.23	S2MP14.25		
	S2MP14.27	S2MP14.32		
	S2MP14.46	S2MP14.51		
	S2MP14.75	S2MP14.76		
	S2MP14.80	S2MP14.83		
	S2MP15.08	S2MP15.14		
	S2MP15.31	S2MP15.43		
	S2MP15.55	S2MP15.57		
	S2MP15.63	S2MP15.65		
	S2MP15.67	S2MP15.70		
	S2MP15.79	S2MP15.83		
	S2MP15.92	S2MP15.94		
	S2MP16.01	S2MP16.13		
	S2MP16.19	S2MP16.40		
	S2MP16.93	S2MP16.97		
HcB	S2MP9.44	S2MP9.48	7.75	5.13
	S2MP12.72	S2MP13.33		
	S2MP13.99	S2MP14.15		
	S2MP14.18	S2MP14.23		
	S2MP14.25	S2MP14.27		
	S2MP14.62	S2MP14.75		
	S2MP16.40	S2MP16.51		
	S2MP16.56	S2MP16.68		
	S2MP16.76	S2MP16.80		
HuA	S2MP6.88	S2MP6.96	1.39	0.70
	S2MP7.01	S2MP7.05		
	S2MP7.65	S2MP7.75		
	S2MP7.78	S2MP7.79		
HuB	S2MP6.78	S2MP6.88	5.39	2.70
	S2MP6.96	S2MP7.01		
	S2MP7.15	S2MP7.65		
	S2MP7.90	S2MP7.98		

Table 7.3-1 (Continued)

Prime Farmland Soil	Milepost[1]		Disturbed Acreage[2]	
	Start	End	Permanent	Temporary
Centre County (Continued)				
HuB (continued)	S2MP14.32 S2MP14.51	S2MP14.46 S2MP14.53	5.39	2.70
LaB	S2MP18.58	S2MP18.88	1.81	2.73
Lx	S2MP6.36 S2MP18.92 S2MP19.07	S2MP6.39 S2MP18.97 S2MP19.16	1.03	1.36
MuA	S2MP12.97 ***S2MP13.15*** S2MP17.00	***S2MP12.99*** ***S2MP13.28*** S2MP17.07	1.57	1.00
MuB	S2MP9.52 S2MP9.68 S2MP12.69 ***S2MP12.86*** ***S2MP12.92*** ***S2MP12.99*** ***S2MP13.11*** S2MP17.07	S2MP9.54 S2MP9.84 ***S2MP12.70*** ***S2MP12.87*** ***S2MP12.97*** ***S2MP13.06*** ***S2MP13.15*** S2MP17.24	2.96	1.78
No	S2MP7.75 S2MP8.32 S2MP9.11 S2MP9.54 S2MP13.46 S2MP14.83 S2MP15.14 S2MP15.76 S2MP16.72	S2MP7.78 S2MP8.34 S2MP9.14 S2MP9.61 S2MP13.54 S2MP14.92 S2MP15.17 S2MP15.79 S2MP16.76	2.54	1.66
Ph	S2MP1.26 S2MP1.56 S2MP2.27	S2MP1.27 S2MP1.63 S2MP2.36	1.03	0.52
UmB	S2MP11.19	S2MP11.32	0.78	0.39
WhB	S2MP28.53 S3MP0.35 S3MP5.00	S3MP0.17 S3MP0.80 S3MP5.28	5.82	2.91

Table 7.3-1 (Continued)

Prime Farmland Soil	Milepost[1]		Disturbed Acreage[2]	
	Start	End	Permanent	Temporary
Centre County (Continued)				
BkC	S2MP20.33 S2MP20.50 S2MP21.40 S2MP21.69 S2MP21.78 S2MP21.98	S2MP20.36 S2MP20.54 S2MP21.80 S2MP21.70 S2MP21.94 S2MP22.01	2.24	1.76
BuC	S2MP9.94 S2MP12.49	S2MP10.13 S2MP12.58	1.69	0.85
Du	S2MP19.24	S2MP19.30	0.36	0.18
ErC	S2MP1.40	S2MP1.56	0.96	0.48
HaC	S2MP7.11 S2MP13.59 S2MP15.17 S2MP15.57 S2MP15.65	S2MP7.15 S2MP13.68 S2MP15.22 S2MP15.63 S2MP15.67	1.57	3.29
HcC	S2MP16.54 S2MP16.68 S2MP16.80	S2MP16.56 S2MP16.72 S2MP16.93	1.33	1.34
LaC	S2MP5.97	S2MP6.13	0.96	0.48
LkC	S2MP22.34 S2MP23.80 S2MP24.00	S2MP22.51 S2MP23.84 S2MP24.03	1.45	0.73
MeC	S2MP22.08 S2MP23.27	S2MP22.13 S2MP23.33	0.66	0.42
Mm	S2MP19.16 S2MP19.30	S2MP19.24 S2MP19.39	1.03	1.28
OhB	S2MP6.57 S2MP8.34 S2MP8.57 S2MP8.82 S2MP8.95 S2MP9.27 S2MP13.19 S2MP13.33 S2MP13.78 S2MP14.53 S2MP14.76 S2MP15.43	S2MP6.61 S2MP8.83 S2MP8.62 S2MP8.93 S2MP9.06 S2MP9.31 S2MP13.26 S2MP13.35 S2MP13.81 S2MP14.62 S2MP14.80 S2MP15.48	5.21	3.00

Table 7.3-1 (Continued)

Prime Farmland Soil	Milepost[1]		Disturbed Acreage[2]	
	Start	End	Permanent	Temporary
Centre County (Continued)				
ChB (continued)	S2MP15.70 S2MP15.87 S2MP15.94 S2MP16.13	S2MP15.73 S2MP15.92 S2MP15.97 S2MP16.19	5.21	3.00
OhC	S2MP8.15 S2MP8.79 S2MP9.61 S2MP12.79 S2MP13.81 S2MP15.22 S2MP15.48 S2MP15.73	S2MP8.19 S2MP8.82 S2MP9.68 S2MP12.90 S2MP13.85 S2MP15.31 S2MP15.55 S2MP15.76	2.90	1.93
UmC	S2MP11.00	S2MP11.19	1.15	0.58
Clinton County				
CaB	S3MP15.11	S3MP15.63	3.15	1.58
CoC	S3MP15.87 S3MP15.92 S3MP16.40	S3MP15.89 S3MP16.02 S3MP16.57	1.75	0.94
DaB	S3MP25.19 S3MP25.49	S2MP25.32 S2MP25.61	1.81	1.01
GpC	S3MP16.65	S3MP16.66	0.06	0.03
UnC	S3MP25.02	S3MP25.08	0.36	0.18
Pipeyards for Centre County[4]				
HaA	Pipeyard S2MP13.89	Pipeyard S2MP14.15	16.22	-
HaB	Pipeyard S2MP13.89	Pipeyard S2MP14.15	5.40	-

Notes:

1. Milepost length taken from Construction Alignment Sheets.
2. Permanent ROWs use a 50-foot width. Temporary ROWs use a 25-foot width. The temporary ROWs are 25 feet wide before EWS, and the permanent is always 50 feet wide.
3. Includes areas disturbed by construction.
4. Mileposts for the pipeyards are the projection of the centerline milepost at the pipeyard boundary.

Revised June 16, 2005 (pagination only)

Table 8.1-1

ACREAGE AFFECTED BY CONSTRUCTION AND OPERATION OF THE PL-1 EXT2 PIPELINE[1]

County	Agriculture		Forest		Industrial/ Commercial		Open Land		Rangeland		Water		Residential		Total	
	Const. ROW (acres)[2]	Perm. ROW (acres)[3]	Const. ROW (acres)	Perm. ROW (acres)	Const. ROW (acres)	Perm. ROW (acres)	Const. ROW (acres)	Perm. ROW (acres)	Const. ROW (acres)	Perm. ROW (acres)	Const. ROW (acres)	Perm. ROW (acres)	Const. ROW (acres)	Perm. ROW (acres)	Const. ROW (acres)	Perm. ROW (acres)
Juniata	10.79	5.26	51.25	32.94	0.53	0.35	15.18	10.12	0.00	0.00	0.24	0.16	0.00	0.00	78.00	48.84
Mifflin	82.78	31.68	67.75	44.83	0.59	0.39	17.98	10.12	8.17	4.05	0.93	0.62	2.53	1.62	180.73	93.31
Huntingdon	0.00	0.00	27.82	18.48	0.00	0.00	13.21	8.80	0.00	0.00	0.09	0.06	0.00	0.00	41.12	27.34
Centre	***127.70***	***51.02***	126.28	83.39	***10.47***	***4.94***	***93.64***	***61.83***	3.86	2.57	0.83	0.56	3.58	2.32	***366.36***	***206.63***
Clinton	0.73	0.50	72.75	42.10	3.11	2.07	102.16	68.11	0.00	0.00	1.14	0.76	0.00	0.00	212.19	113.54

Notes:

1 The two-directional pipeline measurement totals 79.77 miles. The surveyed pipeline measurement totals 80.66 miles. Due to differences between the pipeline lengths, an 80.66/79.77 factor was used to calculate land use areas. Totals include EWS and pipeyards.

2 Construction ROWs use a 75-foot width.

3 Permanent ROWs use a 50-foot width, included within the construction ROW.

The acreages were calculated by multiplying the linear traverses in Table 8.2-1 by the respective ROW width.

The construction ROW is 75 feet wide before EWS, and the permanent ROW is always 50 feet wide.

Revised June 16, 2005

Table 8.1-5

LAND CROSSED BY THE PL-1 EXT2 PIPELINE[1, 2, 3]

County	Agriculture		Forest		Industrial/ Commercial		Open Land		Rangeland		Water		Residential		Total[4]	
	Mile	%	Mile	%	Mile	%	Mile	%	Mile	%	Mile	%	Mile	%	Mile	%
Juniata	0.87	11	5.44	67	0.06	< 1	1.67	21	0	0	0.03	< 1	0	0	8.06	10
Mifflin	5.23	34	7.40	48	0.07	< 1	1.67	11	0.67	4	0.10	< 1	0.27	2	15.40	19
Huntingdon	0	0	3.05	67	0	0	1.45	32	0	0	0.01	< 1	0	0	4.51	6
Centre	***8.42***	***25***	13.76	40	***0.81***	***2***	***10.21***	30	0.42	1	0.09	< 1	0.38	***< 1***	***34.09***	42
Clinton	0.08	< 1	6.95	37	0.34	2	11.24	60	0	0	0.13	< 1	0	0	18.73	23

Notes:

1 Wetlands that are forested or that have been modified for recreation, agriculture, or industry are considered a sub-category and included within their specific use category. For example, a wetland found in an agricultural area was considered agricultural land. Wetland acreage is not independently tabulated in this section. Please refer to Resource Report 2, Table 2.3-1.

2 The two-directional pipeline measurement totals 79.77 miles. The surveyed pipeline measurement totals 80.66 miles. Due to differences between the pipeline lengths, an 80.66/79.77 factor was used to calculate land use areas.

3 Land use percentage is based on length of the PL-1 EXT2 pipeline per county.

4 Total percentage is based on the entire length of the PL-1 EXT2 pipeline.

Revised June 16, 2005

SUPPLEMENT NO. 1

FEDERAL ENERGY REGULATORY COMMISSION ENVIRONMENTAL REPORT

EXHIBIT F-1

COVE POINT EXPANSION PROJECT
DOMINION TRANSMISSION, INC.
DOCKET NO. CP05-131-000
MISCELLANEOUS FACILITIES MODIFICATIONS
FRANKLIN AND CLINTON COUNTIES, PENNSYLVANIA;
WETZEL AND LEWIS COUNTIES, WEST VIRGINIA;
LOUDOUN COUNTY, VIRGINIA; AND
CATTARAUGUS COUNTY, NEW YORK

Submitted By: Dominion Transmission, Inc.
445 West Main Street
Clarksburg, West Virginia 26301

Prepared By: GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

Project C040177.40

March 2005

Revised June 2005

VOLUME I OF V

LIST OF TABLES

LIST OF APPENDICES

SUPPLEMENT NO. 1

COVE POINT EXPANSION PROJECT
DOMINION TRANSMISSION, INC.
COMPRESSOR STATIONS SUPPLEMENT
EXHIBIT F-1
ENVIRONMENTAL REPORT
DOCKET NO. CP05-131-000

APPENDIX 4-D (VOLUME III OF V)

CENTRE RELAY COMPRESSOR STATION CRITERIA OF EFFECTS REPORT

CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE

Revised June 16, 2005

APPENDIX 4-D (VOLUME III OF V)

CENTRE RELAY COMPRESSOR STATION CRITERIA OF EFFECTS REPORT

CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE

(UNDER SEPARATE COVER)

Revised June 16, 2005

SUPPLEMENT NO. 1

COVE POINT EXPANSION PROJECT
DOMINION TRANSMISSION, INC.
MISCELLANEOUS FACILITIES MODIFICATIONS
EXHIBIT F-1
ENVIRONMENTAL REPORT
DOCKET NO. CP05-*131*-000

APPENDIX 3-A *(VOLUME I OF V)*

CORRESPONDENCE FOR THE LEIDY COMPRESSOR STATION

CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE

Revised June 16, 2005

Pennsylvania Department of Conservation and Natural Resources

April 15, 2005

717-787-7067
Bureau of Forestry Fax 717-772-0271

Precha Vodnane
GAI Consultants
385 Waterfront Drive
Homestead, PA 15120-5005

Re: Bureau of Forestry, Pennsylvania Natural Diversity Inventory Search for Leidy Compressor Station, Clinton County, PA - PNDI # 017278

Dear Precha:

After reviewing the information you submitted on January 12, 2005 and April 15, 2005 regarding the above project, we do not anticipate any negative impacts to plant or terrestrial invertebrate species of special concern as a result of the above-mentioned project so long as no invasive species (http://www.dcnr.state.pa.us/forestry/wildplant/invasive.aspx), including crown vetch, are planted on-site. Please note that nearby habitats of special concern include: nonglacial bog, mixed graminoid-robust emergent marsh, speckled alder swamp with tamarack, tamarack-black spruce swamp, black spruce forest, and white oak forest. Nearby plant species of special concern include: *Platanthera hookeri* (Hooker's orchid), *Carex disperma* (soft-leaved sedge), and *Sorbus decora* (showy mountain-ash). There is also an invertebrate of special concern, *Somatochlora incurvata* (Michigan bog skimmer), nearby. Any changes to your plans that include wetland disturbance may harm these species and communities of special concern. Therefore, if plans change, please coordinate further with our office.

PNDI is a site-specific information system that describes significant natural resources of Pennsylvania. This system includes data descriptive of plant and animal species of special concern, exemplary natural communities and unique geological features. PNDI is a cooperative project of the Department of Conservation and Natural Resources, The Nature Conservancy and the Western Pennsylvania Conservancy. This response represents the most up-to-date summary of the PNDI data files and is good for one year. An absence of recorded information does not necessarily imply actual conditions on-site. A field survey of any site may reveal previously unreported populations.

Sincerely,

FOR

Chris Firestone
Native Plant Program Manager

SUPPLEMENT NO. 1

COVE POINT EXPANSION PROJECT
DOMINION TRANSMISSION, INC.
MISCELLANEOUS FACILITIES MODIFICATIONS
EXHIBIT F-1
ENVIRONMENTAL REPORT
DOCKET NO. CP05-131-000

APPENDIX 3-C (VOLUME I OF V)

PHASE I BOG TURTLE REPORT FOR THE PL-1 REPLACEMENT AND RETEST SITES

Revised June 16, 2005

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Phase I Bog Turtle Habitat Evaluation at the PL-1 Replacement and PL-1 Retest Sites at the Dominion Transmission Inc. Cove Point Project in Hamilton and Fannet Townships, Franklin County, Pennsylvania

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to

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by

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INTRODUCTION

Herpetological Associates, Inc. (HA) was contracted by GAI Consultants, Inc. to conduct a bog turtle habitat evaluation (Phase I survey) at the PL-1 Replacement and PL-1 Retest sites at the Dominion Transmission Inc.'s Cove Point Project located in Hamilton and Fannet Townships respectively, Franklin County, Pennsylvania.

MATERIALS AND METHODS

SURVEYORS

The following HA staff were present during the habitat evaluation: Michael E. Torocco (PA qualified bog turtle expert) and Tessa M. Bickhart (PA qualified bog turtle expert). Kristy Flavin from GAI Consultant, Inc. accompanied HA staff during the Phase I habitat evaluation.

HABITAT EVALUATION METHODS

On a broad scale, HA has three criteria for judging the value of the existing conditions and habitat available for bog turtles. These are:

1. Structure of Available Habitat: Both the biotic and abiotic components are considered. These are good indicators for the possible occurrence of bog turtles within a particular study area or ecosystem (Zappalorti, 1976; Ernst, Lovich, and Barbour, 1994).

2. Historic Evidence: The overall range of the bog turtle and historic records on or near a study site are examined. Historic records are important to the overall evaluation of a site.

3. Indicator Species: The presence of plant and animal species that are often found in association with bog turtles is highly informative when evaluating a site. Such species may include food/prey organisms, or species that typically occur in similar or identical habitats as the target species. The presence of indicator species will often increase the ranking of a study site.

Once potential habitats are found, it becomes necessary to rank the habitats as to their overall value for bog turtles. At this stage in the evaluation, specific aspects of the habitat structure are examined. Important characteristics of bog turtle habitat are derived from HA's research and published data on the bog turtles. The incorporation of this information into HA's ranking system is described below.

Bog turtles inhabit unpolluted, open bogs, marshes, and wet meadows with shallow water and a soft, deep muddy substrate. Their habitat is usually vegetated with various sedges, cattail, jewelweed, skunk cabbage, red maple, and alders (Kiviat, 1978; Zappalorti and Zanelli, 1978; Zappalorti et al., 1979; Herman 1994). The habitat characteristics can be grouped into three main features: hydrology, substrate, and vegetation. These are considered significant components of bog turtle habitat and are typically found in distinct combinations, forming a characteristic ecological community (Zappalorti, 1976; Chase et al., 1989). The wetland sites were compared with confirmed bog turtle habitat located elsewhere in eastern Pennsylvania (Zappalorti et al., 1998a; Zappalorti et al., 1998b). In order to

standardize the results of bog turtle habitat evaluations, each wetland was given a numerical score or rank using HA's revised wetland habitat ranking system for bog turtles (**Table 1**).

Table 1. HA's Standardized Bog Turtle Habitat Ranking System.

Rank		Description
Phase II Not Required	1	Not suitable: Site lacks all of the three main features of bog turtle habitat: hydrology, soil, and vegetation.
	2	Atypical: Site contains two of the three habitat features, one of which must be vegetation.
Phase II Required: Potential Habitat	3	Marginal: Site contains hydrology and soils, but does not contain the ideal vegetation.
	4	Typical: Site contains all three features of bog turtle habitat.
	5	Ideal: Site has all three features of bog turtle habitat, and has numerous rivulets, seeps, and/or springs; area of perceived bog turtle habitat is large with multiple interconnected cores; area may be hydrologically connected with confirmed bog turtle populations.

In reality, some sites may not fall perfectly into one of the five categories. However, for simplicity, each wetland was ranked to best represent the existing conditions of the area as bog turtle habitat. Of the three main features of bog turtle habitat (i.e., hydrology, soil, and vegetation), hydrology and soils are considered the most important by HA. Vegetation, while an important feature of bog turtle habitat, is the most variable and therefore the least important. Situations where natural succession have turned a typical bog habitat into a shrub or hardwood dominated swamp are often encountered, but bog turtles may still persist. Therefore, wetlands that lack vegetation but have suitable soils and hydrology are ranked higher than sites that have indicator plants but lack either soils or hydrology.

This ranking system is provided for the convenience of the PFBC, USFWS, and HA's clients. This system provides a standardized method for ranking bog turtle habitat based on HA's 30 years of bog turtle experience. These rankings closely follow the recommendations of the USFWS's "Guidelines for Bog Turtle Surveys".

PROJECT AND SITE INFORMATION

PROJECT/PROPERTY NAME: PL-1 Pipeline Replacement Section and PL- Pipeline Retest Section at the Dominion Transmission Cove Point Project.

PROJECT AREA AND PROJECT DESCRIPTION: The PL-1 Replacement section is 30" wide and 3000" long. This section will be replaced. The PL-1 Retest section is 30" wide and 3000" long. This section will be tested to determine replacement or repair needs.

PERMIT AREA (FOR WETLAND/STREAM ENCROACHMENTS): Unknown

CURRENT LAND USE AND SETTING: The PL-1 Replacement section is located within Central Penn Sales, an automobile refuse yard, and fallow fields. The PL-1 Retest section is located in active agricultural fields and second growth deciduous forest.

WATERSHED: The wetland located on the PL-1 Replacement site is associated with Back Creek which is a tributary of Conococheague Creek which is within the Potomac River watershed. The wetland located on the PL-1 Retest site is associated with Narrows Branch Tuscarora Creek which is a tributary of Conococheague Creek which is within the Potomac River watershed. The PL-1 Replacement site is found on the Chambersburg, PA - Saint Thomas, PA USGS 7.5-minute topographic map. The PL-1 Retest site is found on the Doylesburg, PA - Blairs Mills, PA USGS 7.5-minute topographic map. The project locations are shown on **Figures 1 and 2**.

AREA INVESTIGATED: The entire length of each the PL-1 Replacement (**Figure 3**) and Pl-1 Retest (**Figure 4**) sections were investigated for bog turtle habitat.

WETLAND INFORMATION

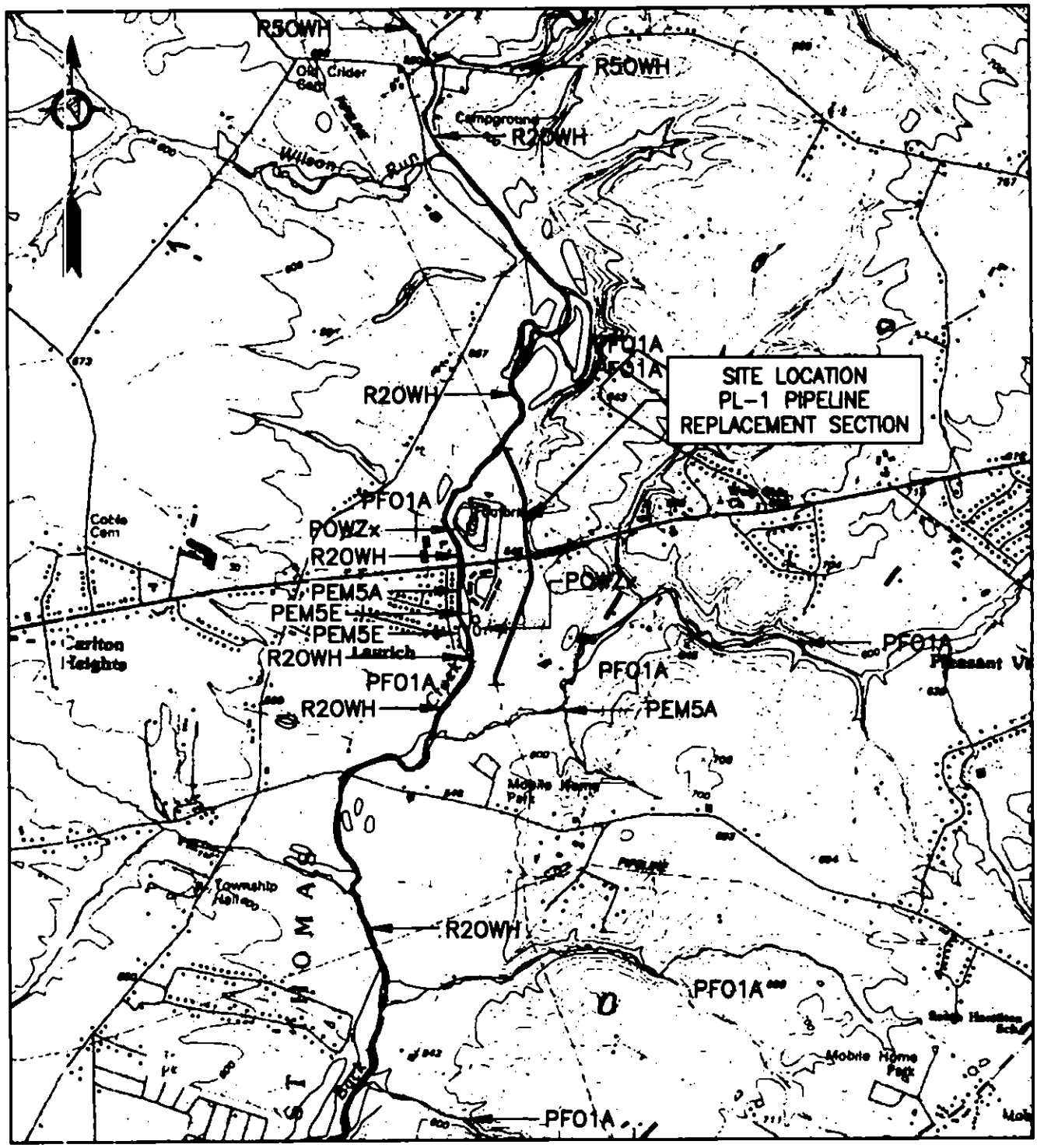
Wetlands were delineated by MSES Consultants, Inc.

All wetlands within the PL-1 Replacement section and the PL-1 Retest section were identified and delineated.

Table 2. Wetland Size and Location.

Wetland ID	Wetland Size (acres)	Lat/Long	Is the entire wetland on-site?
PL-1 Replacement	0.065	39° 55'51.565" N 77°44'05.024" W	No*
PL-1 Retest	0.187	40°14'33.111" N 77°42'17.012" W	No*

*These wetlands extend beyond the limit of the ROW, but the entire wetland was examined for the presence of bog turtle habitat.

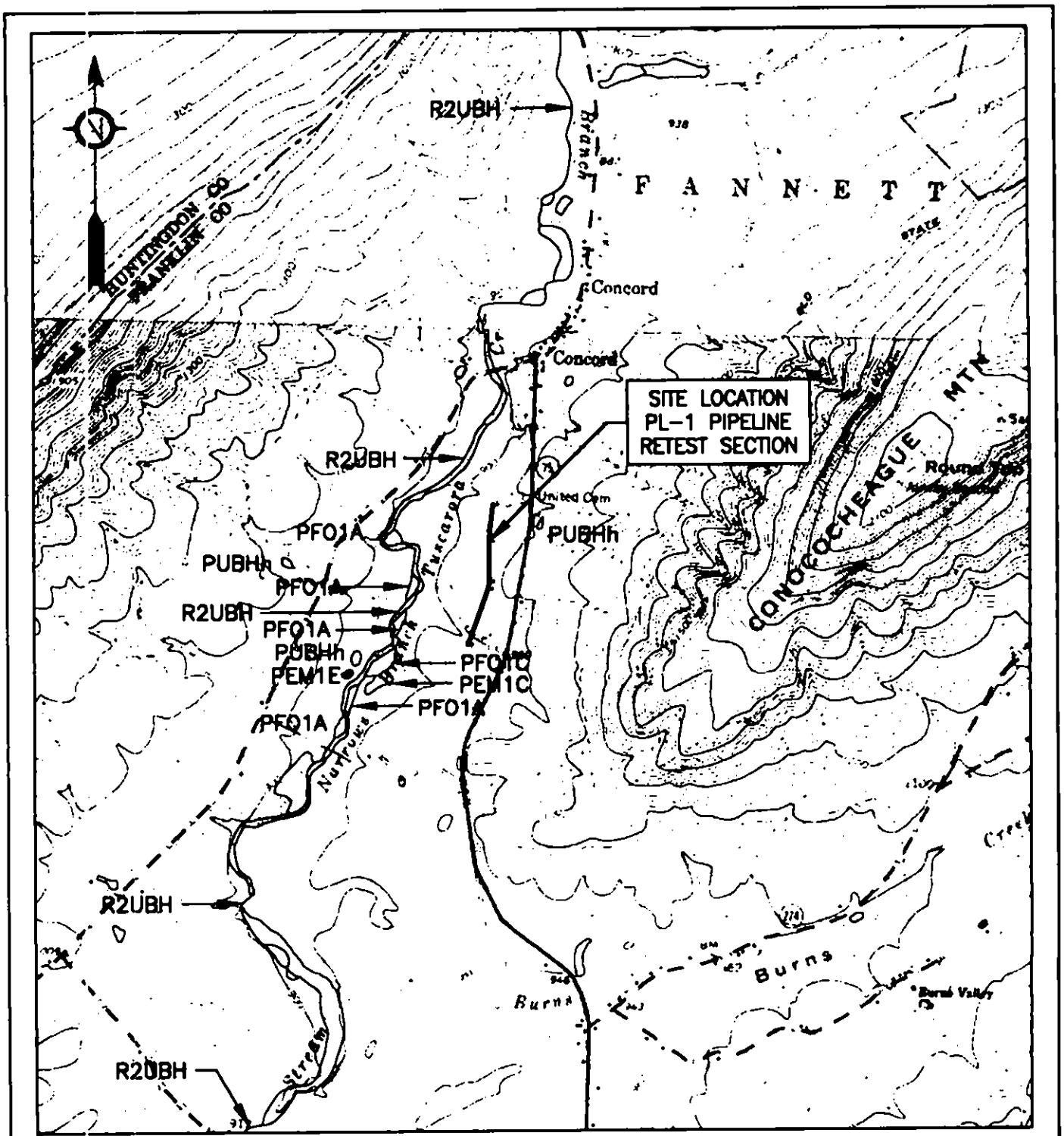


MAP REFERENCE:
U.S.G.S. 7.5 MINUTE SERIES
CHAMBERSBURG, PA 1990
SAINT THOMAS, PA 1990

SCALE 1"=2000'
2000 0 2000

GAI CONSULTANTS, INC.	SITE LOCATION MAP PL-1 PIPELINE REPLACEMENT SECTION FRANKLIN COUNTY, PENNSYLVANIA	DWN. JL CHKD. APPD. DATE SCALE: 1"=2000'
	DOMINION TRANSMISSION, INC. CLARKSBURG, WEST VIRGINIA	DRAWING NUMBER 2004-177-40-A198 REV

FIGURE 1.1-7



MAP REFERENCE:
U.S.G.S. 7.5 MINUTE SERIES
DOYLESBURG, PA 1966
PHOTOREVISED 1973, PHOTOINSPECTED 1986
BLAIRS MILLS, PA 1960 PHOTOREVISED 1971

SCALE 1"=2000'
2000 0 2000

gai CONSULTANTS, INC.	SITE LOCATION MAP PL-1 PIPELINE RETEST SECTION FRANKLIN COUNTY, PENNSYLVANIA	DWN. JL CHKD. APPD. DATE
	DOMINION TRANSMISSION, INC. CLARKSBURG, WEST VIRGINIA	SCALE: 1"=2000' DRAWING NUMBER 2004-177-40-A199 REV

FIGURE 1.1-8

LARGE-FORMAT IMAGES

One or more large-format images (over 8½" X 11") go here. These images are available in E-Library at:

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Number of page(s) in set: 2

PHASE I SURVEY RESULTS

The Phase I survey was conducted on April 26, 2005 by Michael Torocco and Tessa Bickhart of Herpetological Associates, Inc. All of the wetlands located on the project area were investigated for bog turtle habitat. Although the wetland boundaries extended beyond the limit of the ROW, the entire wetland was examined. A summary of the Phase I survey results is included in Table 3. Detailed information about each wetland follows the table.

Table 3. Summary of Phase I Survey Results

Wetland ID	Wetland Size (acres)	Wetland Type & Amount (% or acres)	Extent of "Mucky" Soils (by Wetland Type)	Survey Effort *(in person-hrs)*	Potential Bog Turtle Habitat?	Bog Turtles Found?
PL-1 Replacement	0.065	PEM-100%	20%	1	NO	NO
PL-1 Retest	0.187	PEM-80% PSS-20%	20% 10%	1	NO	NO

WETLAND DESCRIPTION

PL-1 Replacement Site (Figures 5 and 6): The wetland area located within the PL-1 Replacement section is adjacent to a drainage ditch connected to Back Creek. At the time of the Phase I survey the ditch held water but was not flowing. The wetland area is open-canopied and within a hay field. The substrate is hard-packed with only shallow, standing water and no appreciable muck. No deep springs were associated with this wetland. Vegetation within the wetland includes soft rush (*Juncus effusus*), aster (*Aster* sp.), spike rush (*Eleocharis* sp.), and sedge (*Carex lurida*). Vegetation within the ditch includes reed canary grass (*Phalaris arundinacea*), small water plantain (*Alisma subcordatum*), and duckweed (*Spirodela polyrhiza*).

PL-1 Retest Site (Figures 7 and 8): The PL-1 Retest section intersects with three small, unnamed tributaries of the Narrows Branch Tuscarora Creek. The second tributary contains a small, 0.187 ac. wetland area within the open-canopy ROW. The substrate is hard-packed throughout much of the wetland, with deeper muck (up to 20 cm) confined to old tire ruts. The area becomes channelized as it exits the ROW into the adjacent forest. Deep springs were not associated with this wetland. Vegetation includes soft rush, spike rush, golden rod (*Solidago* spp.), aster, multiflora rose (*Rosa multiflora*), and autumn olive (*Elaeagnus umbellata*).

OVERALL SITE EVALUATION

Based on the lack of suitable soil, hydrology and vegetation, all of the wetlands within both the PL-1 Replacement section and the PL-1 Retest section are given a rank of 1 (Not Suitable). These wetlands are small and lack deep springs, deep muck, and the typical tussock-forming vegetation. No suitable bog turtle habitat is present, and bog turtles are not expected to occur within the project area.

Figure 5. A view of the drainage ditch associated with Back Creek from the adjacent hill side. The wetland area is located in the top right corner and Back Creek is indicated by the tree line in the background of this photograph.

Figure 6. The substrate is hard-packed within the small wetland area adjacent to the drainage ditch.

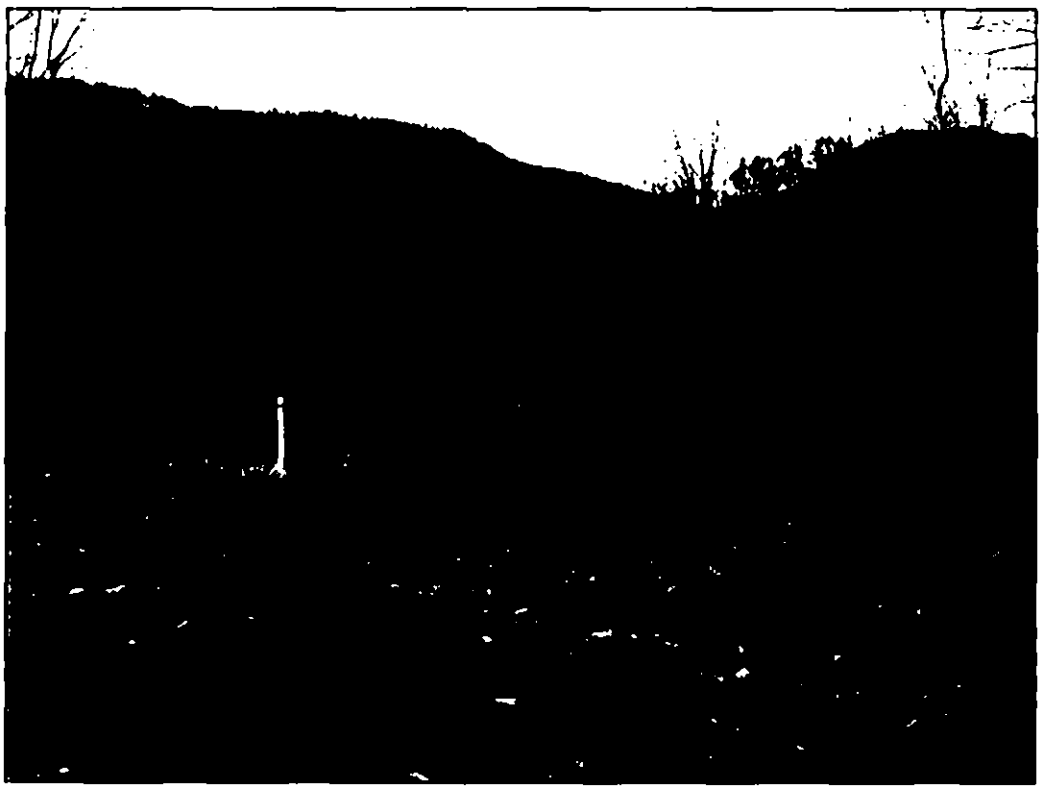

Figure 7. A northerly view from within the PL-1 Retest section. The wetland area is within the center of this portion of the ROW.

Figure 8. This wetland area contains only shallow muck and water in the old tire ruts shown in this northerly view from within the ROW.

SUMMARY AND CONCLUSIONS

A Phase I bog turtle habitat evaluation was performed on April 26, 2005 by Herpetological Associates, Inc. at the PL-1 Replacement and PL-1 Retest sites at the Dominion Transmission Inc.'s Cove Point Project located in Hamilton and Fannet Townships respectively, Franklin County, Pennsylvania.

The wetlands located on the Pl-1 Replacement and the PL-1 Retest sites were given a rank of 1 (Not Suitable) on HA's Standardized Habitat Ranking System. The wetlands do not provide critical bog turtle habitat, and bog turtles are not expected to occur within the project area. A Phase II presence/absence survey for bog turtles is not recommended.

BOG TURTLE LIFE HISTORY

Figure 9. An adult bog turtle from Cumberland County, Pennsylvania.

Description

The bog turtle is classified taxonomically into the class *Reptilia*, order *Testudines*, suborder *Thecophora*, family *Emydidae*, genus *Glyptemys* [*Clemmys*], and species *muhlenbergii* (Schoepff; **Figures 9 and 10**). Conant and Collins (1991) describe this turtle as small, attaining an average carapace length of 7.5-9 centimeters (3-3.5 inches), with a maximum recorded length of 11.4 centimeters (4.5 inches). The carapace is moderately domed, rather long, and slightly keeled (Carr, 1952). The scutes are often fairly deeply incised by the concentric rings of the laminae, although in older animals the shell is often worn smooth through years of burrowing in mud. In specimens which do not have iron oxide or other deposits on the shell, a light "sun-burst" pattern can be seen on each scute of an otherwise brown shell. The plastron is large, and dark brown or black in color with light markings either irregularly or symmetrically arranged. The limbs are typically brown with orange or reddish beneath, and there is a conspicuous orange head blotch behind the tympanum.

Status

Pennsylvania Status - Endangered
Federal Status - Threatened

Range

Disjunct populations exist throughout the range of the bog turtle, occurring in 4 distinct areas (Conant and Collins, 1991). These separate populations occur in central New York; western Pennsylvania; eastern New York south to southern New Jersey and west to central Pennsylvania; and southern Virginia, south through western North Carolina, into extreme northern Georgia.

Habitat and Life History

Although rarely found far from water, the bog turtle is not a strong swimmer and may drown quickly if forced to stay in deep water; generally bog turtles are found wallowing in soft mud or swimming in shallow (several inches) streams and puddles. This turtle is omnivorous, and may feed on a variety of insects, earthworms, slugs, or berries. Loss of habitat through the direct destruction of wetlands, fragmentation of range as a result of long-term geologic factors (Carr, 1952), and vegetative succession by wetland trees and invasive plants have all greatly impacted bog turtle populations.

Bog turtles generally do not move large distances and have relatively small home ranges. Not unlike other turtle species, males appear to have a larger home range than females (Lovich et al., 1992; Gibbons, 1986; Gibbons, et al., 1990; Morreale, et al., 1984). In Pennsylvania, Ernst (1977) reports

mean home range for males as 1.33 ha, and 1.26 ha for females. Chase, et al. (1989) is in agreement, but differences in mean home range between both sexes are larger and statistically significant for thread trailed specimens in Maryland: $\bar{x} = 0.176$ ha for males, $\bar{x} = 0.066$ ha for females. Distance traveled between locations of radiotracked bog turtles in North Carolina ranged 0-87 m ($\bar{x}$ = 24.3 m) for males and 0-62 m ($\bar{x}$ = 15.8 m) for females (Lovich, et al.,1992); rates of movements (distance/day) were also significantly larger for males. Movements and home range dimensions of bog turtles may be governed by the size of suitable habitat available to them.

Unlike most other chelonians, *G. muhlenbergii* do not travel to dry upland areas or the shore or beach of a pond to deposit their eggs. Instead, they select slightly elevated nesting sites within their semi-aquatic, marshy habitat. Probably because of the constant saturated soil conditions in such environments, eggs are not buried in deep nest chambers. Instead, they are deposited in a shallow depression on the surface of raised grassy tussocks and are slightly covered with available humus and vegetation (Zappalorti, 1976; Ernst et al., 1994). The elevated base of tussock-forming grasses and sedges is the preferred nesting site, but nests have also been found on moss covered stumps and *Sphagnum* clumps (Zappalorti, pers. obs.). Nesting areas typically have limited canopy closure, support low vegetation and provide ample solar exposure. The possibly unique nesting habits of *G. muhlenbergii* is believed to reduce high predation usually associated with upland egg-laying (Kiviat, 1978). In most chelonians and generally other K-selected vertebrates, the period of greatest vulnerability is during the early stages of life (Odum, 1984).

Figure 10. A bog turtle basking on moss.

LITERATURE CITED AND OTHER REFERENCES

*In addition to the literature cited, this list includes other publications concerned specifically with the bog turtle (*Glyptemys [Clemmys] muhlenbergii*) or with amphibians and reptiles in general. Those who wish to learn more about bog turtles in Pennsylvania, New Jersey, or throughout the eastern United States may find these publications or papers of interest.*

Anderson, J.D. 1976. The status of the tiger salamander, *Ambystoma tigrinum*, blue-spotted salamander, *Ambystoma laterale*, Tremblay's salamander, *Ambystoma tremblayi*, gray treefrog, *Hyla versicolor* and *Hyla chrysoscelis*, Pine Barrens treefrog, *Hyla andersonii*, and bog turtle, *Clemmys muhlenbergii*, in New Jersey. Special report to the Nongame and Endangered Species Project, mimeographed, pp. 1-7.

Arndt, R.G. 1977. Notes on the natural history of the bog turtle, *Clemmys muhlenbergii*, in Delaware. Chesapeake Science, 18(1):67-76.

Arndt, R.G. 1986. Notes on the Bog Turtle, *Clemmys muhlenbergii*, in Warren County, New Jersey. Bulletin Maryland Herpetological Society 22(2):56-61.

Barton, A.J. 1957. Our knowledge of the bog turtle, *Clemmys muhlenbergii*, further augmented. M.S. thesis, University of Pittsburgh, PA, p. 75.

Barton, A.J. and J.W. Price, Sr. 1955. Our knowledge of the bog turtle, *Clemmys muhlenbergii*, surveyed and augmented. Copeia 1955(3):159-165.

Bloomer, T.J. and D. Bloomer. 1973. New Jersey Bog Turtle...Destined to Extinction? Bulletin New York Herpetological Society, 9(3-4) p. 8-12.

Bury, R.B. 1979. Review of the ecology and conservation of the bog turtle, *Clemmys muhlenbergii*. U.S. Department of Interior, Fish and Wildlife Service, Special Scientific Report No. 219, p. 1-9.

Bury, R.B. and C.H. Ernst. 1977. *Clemmys muhlenbergii*. Cat. Am. Amphibians and Reptiles, p. 203, 1-203.2, p. 204, 1-204-2.

Campbell, H.W. and S.P. Christman. 1982. Field techniques for herpetofaunal community analysis in herpetological communities. Ed. by Norman J. Scott, Jr., U.S. Dept. of the Interior, Fish and Wildlife Service. Wildlife Research Report No. 13, pp. 193-200.

Chase, J.D., K.R. Dixon, J.E. Gates, D. Jacobs and G.J. Taylor. 1989. Habitat characteristics, population size, and home range of the bog turtle, *Clemmys muhlenbergii*, in Maryland. J. Herpetol. 23(4):356-362.

Eccler, J.T., A.R. Breisch and J.L. Behler. 1990. Radio telemetry techniques applied to the bog turtle (*Clemmys muhlenbergii* Schoepff 1801). *In* Mitchell, R.S., C.J. Sheviak, and D.J. Leopold, Eds. Ecosystem management: Rare species and significant habitats, 69-70. Bulletin No. 471, New York State Museum, Proc. 15th Annual Natural Areas Conference.

Ernst, C.H. 1976. Ecology of the spotted turtle, *Clemmys guttata* (Reptilia, Testudines, Testinudinae), in southeastern Pennsylvania. J. Herpetol. 10(1):25-33.

Ernst, C.H. 1982. Environmental temperatures and activities in wild spotted turtles, *Clemmys guttata*. J. Herpetol. 16(2):112-120.

Ernst, C.H. and R.W. Barbour. 1989. Turtles of the World. Smithsonian Institution Press, Washington, D.C. 313 pp.

Ernst, C.H. and R.B. Bury. 1977. *Clemmys muhlenbergii*. Catalog of American Amphibians and Reptiles. SSAR, 204:1-2.

Ernst, C.H., R.W. Barbour and M.F. Hershey. 1974. A new coding system for hard shelled turtles. Trans. Kentucky Acad. Sci. 35:27-28.

Ernst, C.H., J.E. Lovich and R.W. Barbour. 1994. Turtles of the United States and Canada. Smithsonian Institution Press, Washington and London. 578 pp.

Ernst, C.H., R.T. Zappalorti, and J.E. Lovich. 1989. Overwintering sites and thermal relations of hibernating bog turtles, *Clemmys muhlenbergii*. *Copeia* 1989(3), pp. 761-764.

Ernst, C.H., J.E. Lovich, R.T. Zappalorti, and D.W. Herman. 1996. Geographic variation in growth and sexual size dimorphism of bog turtles (*Clemmys muhlenbergii*). American Midland Naturalist 139:69-78.

Gibbons, J.W. 1986. Movement patterns among turtle populations: Applicability to management of the desert torto se. Herpetologica 42:104-113.

Gibbons, J.W. 1990a. *Sex ratios and their significance among turtle populations. In* Life History and Ecology of the Slider Turtles. (*Ed.*) Smithsonian Institution Press, Washington, D.C., London. pp. 171-182.

Haxton, T. and M. Berrill. 2001. Seasonal activity of spotted turtles (*Clemmys guttata*) at the northern limit of their range. J. Herpetol. 35(4):606-614.

Herman, D.W. 1994. The bog turtle, *Clemmys muhlenbergii*, in North Carolina: An action plan for its conservation and management. Zoo Atlanta, Department of Herpetology, Atlanta, Georgia. 144 pp. Submitted to The North Carolina Wildlife Resources Commission, Contract No. 93 SG 06.

Holub, R.J. and T.J. Bloomer. 1977. The bog turtle, *Clemmys muhlenbergii* - A natural history. Herp. Bull. New York Herpetological. Soc. 13:9-23.

Karns, D.R. 1986. Field herpetology methods for the study of amphibians and reptiles in Minnesota. Published in cooperation with the Nongame Wildlife Program of the Minnesota Dept. of Natural Resources. James Ford Bell Museum of Natural History, Univ. of Minnesota, Occasional Paper No. 18.

Klimat, E. 1978. Bog turtle habitat ecology. Bull. Chicago Herpetological. Society 13:29-42.

Krebs, C.J. 1989. Ecological Methodology. University of British Columbia. Harper Collins Publishers, Chapter 2.

Lee, D.S. and A.W. Norden. 1996. The distribution, ecology and conservation needs of bog turtles, with special emphasis on Maryland. Md. Mat. 40:7-46.

Lovich, J.E., D.W. Herman and K.M. Fahey. 1992. Seasonal activity and movements of bog turtles (*Clemmys muhlenbergii*) in North Carolina. *Copeia* 1992:1107-1111.

Morrow, J.L., J.H. Howard, S.A. Smith, and D.K. Poppel. 2001. Habitat selection and habitat use by the bog turtle (*Clemmys muhlenbergii*) in Maryland. J. Herpetol. 35(4):545-552.

Nemuras, K.T. 1967. Notes on the natural history of *Clemmys muhlenbergii*. Bulletin of the Maryland Herpetological Society 3:80-96.

Parkstis, G.L. and F.J. Janzen, 1990. Sex determination in reptiles: Summary of effects of constant temperatures of incubation on sex ratios of offspring. Smithsonian Herpetological Information Service, No. 83.

Ryan, J.J. 1981. A record size female and egg clutch for the bog turtle, *Clemmys muhlenbergii*. Bull. Maryland Herpetological Society, pp. 102-106.

Sorrers, A.B. 2000. A population of bog turtles in the Piedmont of North Carolina: Habitat preferences, capture method efficacy, conservation initiatives, and site enhancement. Report submitted to Natural Resources Conservation Service Wetlands Institute.

Torocco, M.E., T.M. Bickhart, and R.T. Zappalorti. 2002. Phase II bog turtle survey at the proposed Barclay Subdivision, New Britain Township, Bucks County, Pennsylvania. Unpublished report submitted to Select Properties. HA File No. PA02.10.

Torocco, M.E., T.M. Bickhart, and R.T. Zappalorti. 2002. Phase II bog turtle survey at the proposed AIM/WICK Development, Sadsbury Township, Chester County, Pennsylvania. Unpublished report submitted to Nave Newell, Inc. HA File No. PA02.12.

Torocco, M.E., T. M. Bickhart, and R.T. Zappalorti. 2002. Phase I bog turtle habitat evaluation at the proposed Point Ardashes Development, Middletown Township, Delaware County, Pennsylvania. Unpublished report submitted to Wheeler Environmental Services. HA File No. PA02.14.

Torocco, M.E., T.M. Bickhart, and R.T. Zappalorti. 2003. Phase II Bog Turtle Survey and Trapping Program at the Proposed Heaterwoods Subdivision, in East Cocalico Township, Lancaster County, Pennsylvania. Unpublished report submitted to Heatherwoods Village Associates. HA File No. PA01.07.

Torocco, M.E., T.M. Bickhart, and R.T. Zappalorti. 2003. Bog Turtle Habitat Management Plan for the Lamb Tavern Preserve in Wallace Township, Chester County, Pennsylvania. Unpublished report submitted to Wallace Township Planning Commission. HA File No. PA03.03.

Torocco, M.E., T.M. Bickhart, and R.T. Zappalorti. 2003. Phase II Bog Turtle Survey at the Covance Tract in West Cocalico Township, Lancaster County, Pennsylvania. Unpublished report submitted to Covance Research Products, Inc. HA File No. PA03.06.

Tuberville, T.D. and V.J. Burke. 1994. Do flag markers attract turtle nest predators? J. Herpetol. 28(4):514-516.

Vogt, R.C. 1994. Temperature controlled sex determination as a tool for turtle conservation. Chelonian Conservation and Biology. 1(2):159-162.

Zappalorti, R.T. 1976. The Amateur Zoologist's Guide to Turtles and Crocodilians. Harrisburg, Pa., Stackpole Books. pp. 122-139.

Zappalorti, R.T. 1978-79. An updated progress report on the distribution and locality records of New Jersey's Endangered and Threatened reptiles and amphibians. For NJDEP, E&NSP, Vol. 10, Herpetological Associates, Inc., Parts 1-4. pp. 198.

Zappalorti, R.T. and R.F. Farrell. 1980. An ecological study of the bog turtle, *Clemmys muhlenbergii* (Schoepff, Reptilia, Testudines, Emydidae), in New Jersey, Part III. Unpublished progress report submitted to NJDEP. HA File No. 81.12, pp. 1-36.

Zappalorti, R.T. and R. Farrell. 1989. A habitat evaluation and updated bog turtle survey of known colonies and locations throughout New Jersey. Report to NJDEP, E&NSP. Herpetological Associates, Inc. pp. 1-100.

Zappalorti, R.T. and E.W. Johnson. 1980. Additional updated locality and distribution records of endangered and threatened herptiles in New Jersey, Third Supplement. Unpublished report submitted to the NJDEP, HA File No. 81.15, pp. 55-68.

Zappalorti R.T. and E.W. Johnson. 1981. Proposed management plans for endangered and threatened amphibians and reptiles in New Jersey. Unpublished report submitted to the NJDEP, HA File No. 81.12, pp. 12-15.

Zappalorti, R.T. and G. Rocco. 1992. An intensive collection program and habitat evaluation to determine the population status of the bog turtle (*Clemmys muhlenbergii*) at the Nature Conservancy's Preserve in Lancaster, Pennsylvania, HA File No. 91.01, pp. 1-41.

Zappalorti, R.T. and G. Rocco. 1993. Surveys, habitat evaluations and ecological studies of the bog turtle (*Clemmys muhlenbergii*) in Chester and Lancaster Counties, Pennsylvania with recommendations on its conservation and management, HA File No. 93.08, pp. 1-71.

Zappalorti, R.T. and M.E. Torocco. 2001. Results of a Phase II Bog Turtle (*Clemmys muhlenbergii*) Survey at the Cherry Property, Thornbury Township, Delaware County, Pennsylvania. Unpublished report submitted to Trilogy Development Co., Inc. HA File No. 2000.54.

Zappalorti, R.T. and M.E. Torocco. 2001. Phase I bog turtle habitat evaluation at the Alberto Property, Newtown Township, Delaware County, Pennsylvania. Unpublished report submitted to C.F. Holloway, III and Company. HA File No. 2001.54.

Zappalorti, R.T. and E. Zanelli. 1978. The status and distribution of the bog turtle, *Clemmys muhlenbergii*, in New Jersey, Part I. Unpublished progress report submitted to NJDEP, pp. 1-58.

Zappalorti, R.T., P.J. Drake, and M.E. Torocco. 1996. Mark and recapture studies of the bog turtle (*Clemmys muhlenbergii*) at four Mount Bethel Fens in Pennsylvania. Unpublished report submitted to The Eastern Pennsylvania Field Office of The Nature Conservancy. HA File No. 96.10.

Zappalorti, R.T., P.J. Drake, and M.E. Torocco. 1998a. Habitat evaluations, ecological studies, and nesting studies of the bog turtle (*Clemmys muhlenbergii*) at nine sites in Pennsylvania from April Through October, 1997. Unpublished report submitted to The Eastern Pennsylvania Field Office of The Nature Conservancy. HA File No. 97.09.

Zappalorti, R.T., R.F. Farrell and P.A. Reap. 1985. Progress report on an experimental bog turtle management program in Monmouth County, New Jersey, Part II. Unpublished Report submitted to Endangered and Nongame Species Program, Division of Fish, Game and Wildlife, NJDEP. HA File No. 84.02.

Zappalorti, R.T., R.F. Farrell, and G. Rocco. 1993. A comparison of microhabitat use and behavior by the bog turtle (*Clemmys muhlenbergii*) in New Jersey, North Carolina, and Pennsylvania. Report for the Symposium on the Status and Conservation of Turtles of the Northeast. HA File No. 93.09.

Zappalorti, R.T., G. Rocco, and P. J. Drake. 1995. Results of a two phase bog turtle (*Clemmys muhlenbergii*) study within the Cocalico Creek Drainage Basin in Lancaster County, Pennsylvania, with special notes on nesting. Unpublished report submitted to The Nature Conservancy. HA File No. 94.18 & 94.19, pp. 1-84.

Zappalorti, R.T., M.E. Torocco, and P.J. Drake. 1995. Results of bog turtle (*Clemmys muhlenbergii*) surveys and habitat evaluations conducted in eastern Pennsylvania during May and June, 1995. Unpublished report submitted to The Nature Conservancy. HA File No. 95.05, pp. 1-40.

Zappalorti, R.T., M.E. Torocco, and T. Bickhart. 2001. Bog turtle monitoring and mitigation plan at anomaly investigation sites 4 and 24 on Texas Eastern Transmission Corporation's Columbia Liberty Project. Unpublished report submitted to Texas Eastern Transmission Corporation and Foster Wheeler Environmental. HA File No. 2001.44.

Zappalorti, R.T., M.E. Torocco, and M. McCort. 2001. Results of a bog turtle (*Clemmys muhlenbergii*) and northern pine snake (*Pituophis melanoleucus*) survey at the proposed Apollo South Fiber Optic Cable Project, Wall Township, Monmouth County, New Jersey. Unpublished report submitted to Michael Baker, Jr., Inc. HA File No. 2001.55.

Zappalorti, R.T., E. Zanelli, and R.J. Farrell. 1979. The ecology and distribution of the bog turtle, *Clemmys muhlenbergii* (Schoepff), in New Jersey, Part II. Unpublished progress report submitted to NJDEP. HA File No. 79.02, pp. 1-38.

Zappalorti, R.T., P.J. Drake, S. Sykes, and A. Pasquini. 1998b. The ecology and nesting behavior of the bog turtle (*Clemmys muhlenbergii*) at two sites in Chester County, Pennsylvania. Unpublished report submitted to The Eastern Pennsylvania Field Office of the Nature Conservancy. HA File No. 98.11.

Zappalorti, R.T., M.E. Torocco, M.P. McCort, and D.W. Schneider. 2001. Phase I bog turtle habitat evaluation along a proposed sewerline right-of-way in Thornbury Township, Delaware County, Pennsylvania. HA File No. PA01.01.

RESOURCE REPORT 4 - CULTURAL RESOURCES

4.0 INTRODUCTION

Initial cultural resources consultation and documentation, and documentation of consultation with Native Americans. (§ 380.12(f) (l) (i) & (2))

Overview/Survey Report(s). (§ 380.12(f) (l) (ii) & (2))

This Resource Report addresses the nature and extent of cultural resources within the Area of Potential Effect (APE) for the Miscellaneous Facilities Modifications. The report includes:

- documentation of consultation with the State Historic Preservation Office(s) SHPO(s) (Appendix 4-A);
- a summary of the status of cultural resources investigations undertaken to date; and
- a brief summary of the status of Native American consultation regarding traditional cultural properties.

4.1 CONSULTATION WITH THE STATE HISTORIC PRESERVATION OFFICERS

4.1.1 Mockingbird Hill Compressor Station Upgrade

Modifications as described in Resource Report 1 will be performed at the existing Mockingbird Hill Compressor Station, Wetzel County, WV. The resources at this site are filed under the Mid-Atlantic Expansion Project, Docket No. CP03-41-000, FERC certificate issued in April 2003. The WV SHPO provided cultural resource clearance for construction at Mockingbird Hill Compressor Station in a letter dated December 5, 2002 (WV SHPO FR # 03-89-WZ). GAI completed cultural resources survey along a proposed access road to the compressor station and provided a no-finding letter to the WV SHPO on August 2, 2004. The WV SHPO provided cultural resources clearance for widening of the road in a letter dated August 23, 2004 (WV FR # 03-984-WZ).

4.1.2 Chambersburg Compressor Station Modifications

Modifications as described in Resource Report 1 will be performed at the existing Chambersburg Compressor Station, Franklin County, PA. The resources at this site are filed under the Mid-Atlantic Expansion Project, Docket No. CP03-41-000, FERC certificate issued in April 2003. The PA SHPO provided cultural resource clearance for

the proposed work in a letter dated November 5, 2002 (PA SHPO File No. ER 91-2276-055-G).

4.1.3 Leesburg Compressor Station Modification

Modifications as described in Resource Report 1 will be performed at the existing Leesburg Compressor Station, Loudoun County, VA. The resources at this site are filed under the Mid-Atlantic Expansion Project, Docket No. CP03-41-000, FERC certificate issued in April 2003. GAI conducted cultural resources survey of the proposed project area in 2002, with a Phase I report submitted to the VA SHPO (DHR File No. 2002-1575) on January 23, 2003. The report recommended no adverse effect to cultural resources. In a letter dated March 27, 2003, the VA SHPO concurred with the no adverse effect finding.

4.1.4 Leidy M&R

This Resource Report discusses the cultural resource impacts for proposed M&R station at the existing Leidy Compressor Station facility, Clinton County, PA. Modifications at the Leidy Compressor Station include the installation of additional metering equipment, regulation equipment, and misc. piping changes associated with the Cove Point Expansion Project. In a cultural resource notice to the PA SHPO (dated January 6, 2005), GAI recommended that the project would have no effect on cultural resources based on a field reconnaissance conducted in June 2004. In a letter dated February 11, 2004, the PA SHPO concurred with the no adverse affect finding.

4.1.5 PL-1 Pressure Restoration Sites

This Resource Report discusses the cultural resources impacts for two proposed PL-1 Pressure Restoration Sites in Franklin County, PA. At two locations along DTI's existing PL-1 pipeline, the structures increased to the point that action was required per the DOT regulations. DTI chose to reduce the MAOP in these pipeline segments. The Cove Point Expansion Project requires these pipe sections to operate at pressures above the reduced MAOP. As such, this pipeline section requires retesting and replacement. In a cultural resource notice to the PA SHPO (dated January 6, 2005), GAI recommended that the proposed pressure restoration locations are within the previously-disturbed pipeline corridor and contained no potential for cultural resources. In a letter dated January 19, 2004 the PA SHPO has concurred with the no adverse effect finding for the PL-1 retest section; however, PA SHPO has requested a Phase I report for the PL-1 Replacement Section due to archaeological site potential and the presence of a previously identified site near the section. ***In April 2005, GAI conducted Phase I survey of the PL-1 replacement section, as requested by the PA SHPO. The Phase I report was submitted to the PA SHPO in May 2005. The PA SHPO concurred with the recommendations of No Effect to cultural resources in a letter dated June 3, 2005.***

4.1.6 Quinlan Compressor Station Upgrade

DTI has received correspondence regarding the Quinlan Compressor Station site in Cattaraugus County, NY from the NY State Office of Parks, Recreation, and Historic Preservation (NY SHPO). The SHPO stated in initial correspondence (letter dated July 17, 2003) that the project will have no effect upon cultural resources in or eligible for inclusion in the National Register of Historic Places (NRHP).

However, during initial reconnaissance of the proposed compressor station, GAI and DTI field staff observed the remains of oil production debris dating likely to the late-19th to early-20th century. In a conversation of July 23, 2003, Doug Mackey of the NY SHPO requested that the remains of the oil production sites be recorded as historic archaeological sites. As such, a Phase I archaeological survey was conducted of the proposed compressor station parcel and the associated facilities in the NY portion of the project area. Three historic oil production sites were identified in the compressor station parcel, none of which are recommended eligible for listing on the NRHP. The NY SHPO concurred with GAI's recommendations in a letter dated August 30, 2004. This work was previously conducted for the Northeast Storage Project under Docket No. CP04-365-000.

In accordance with the Commission's "Guidelines for Reporting on Cultural Resources Investigations for Pipeline Projects" (December 2002), (Section IV. INITIAL CULTURAL RESOURCES CONSULTATION and DOCUMENTATION), DTI is providing documentation by way of written correspondence of this consultation as the required submittal that the proposed construction activity at the Quinlan Compressor Station site will not affect historic properties.

4.1.7 Wolf Run Compressor Station Expansion

DTI has received correspondence regarding the Wolf Run Compressor Station (formerly called the Fink Compressor Station) in Lewis County, WV, from the WV Division of Culture and History (WV SHPO). The SHPO states in the correspondence of July 14, 2003, that there are no known archaeological sites within the project area and that no historic properties will be affected by the proposed construction. A Phase I survey was conducted of the proposed compressor station parcel, failing to identify any cultural resources. This work was previously conducted for the Northeast Storage Project under Docket No. CP04-365-000.

In accordance with the Commission's "Guidelines for Reporting on Cultural Resources Investigations for Pipeline Projects" (December 2002), (Section IV. INITIAL CULTURAL RESOURCES CONSULTATION and DOCUMENTATION), DTI is providing documentation by way of written correspondence of this consultation as the required submittal that the proposed construction activity at the Wolf Run Compressor Station will not affect historic properties.

4.2 STATUS OF CULTURAL RESOURCE INVESTIGATIONS

4.2.1 Archaeological Studies

4.2.1.1 Mockingbird Hill Compressor Station Upgrade

Modifications as described in Resource Report 1 will be performed at the existing Mockingbird Hill Compressor Station, Wetzel County, WV. The resources at this site are filed under the Mid-Atlantic Expansion Project, Docket No. CP03-41-000, FERC certificate issued in April 2003. In a letter to GAI dated December 5, 2002 (WV SHPO FR # 03-89-WZ), the WV SHPO provided a finding of no effect for the project due to the disturbed nature of the project area. As such, no archaeological survey was required, nor was one conducted for the project.

However, GAI conducted archaeological survey/reconnaissance along a proposed access road to the project area, with a recommendation of no effect provided in a letter report to the WV SHPO on August 2, 2004. The WV SHPO provided cultural resources clearance for widening of the road in a letter dated August 23, 2004 (WV FR # 03-984-WZ).

4.2.1.2 Chambersburg Compressor Station Modifications

Modifications as described in Resource Report 1 will be performed at the existing Chambersburg Compressor Station, Franklin County, PA. The resources at this site are filed under the Mid-Atlantic Expansion Project, Docket No. CP03-41-000, FERC certificate issued in April 2003. The PA SHPO provided cultural resource clearance for the proposed work in a letter dated November 5, 2002 (PA SHPO File No. ER 91-2276-055-G). No archaeological survey was required, nor was one conducted for the project.

4.2.1.3 Leesburg Compressor Station Modifications

For the Mid-Atlantic Expansion Project (Docket No. CP03-41-000), construction of an addition to the existing Leesburg Compressor Station was proposed within a 12.7-acre parcel south of Leesburg, Loudoun County, VA. Background research of VDHR files and research reports indicates a low incidence of prehistoric and historic archaeological sites in upland settings similar to the project area. However, Site 44LD0461, an historic cemetery, is located approximately 500 feet south of the current project area. The cemetery is not in the proposed APE and will not be disturbed during construction.

GAI conducted cultural resources survey of the proposed project area in 2002, with a Phase I report submitted to the VA SHPO (DHR File No. 2002-1575) on January 23, 2003. The report recommended no adverse effect to cultural resources. In a letter dated March 27, 2003, the VA SHPO concurred with the no adverse effect recommendation. However, they stated that if construction plans changed and would disturb areas in the vicinity of Site 44LD0461, that Phase II archaeological testing would

be required. The work for this proposed project includes the addition of two new fire gates and crossover lines to allow bi directional flow of the existing PL 1 pipeline. The project area for this work remains the same as that studied in 2002, and will have no adverse effect on Site 44LD0461.

4.2.1.4 Leidy M&R

Modifications at the existing Leidy Compressor Station, Clinton County, PA include the installation of additional M&R equipment and miscellaneous piping changes. During June 2004, GAI conducted a field reconnaissance of the project area and determined the area to be entirely disturbed due to use and construction of the existing Leidy Compressor Station. In a cultural resource notice to the PA SHPO (dated January 6, 2005), GAI recommended that the project would have no effect on cultural resources. In a letter dated February 11, 2004, the PA SHPO concurred with the no adverse effect finding.

4.2.1.5 PL-1 Pressure Restoration Sites

As described above (Section 4.1.5), DTI needs to replace one section of pipeline and pressure test a second pipeline segment in Franklin County, PA. Mr. Brent Shreckengost (GAI Field Director) examined the two pipeline sections in a field reconnaissance in April 2004. A 100-foot wide study area was examined for the retest pipeline section. DTI plans to retest this section of pipe; if the retest does not meet DOT standards, this segment of pipeline will be replaced. If necessary, this replacement will be approximately 2,025 feet in length and will be replaced within the existing trench (lift and lay method). Due to the subsurface nature of the activity, the project will also not effect aboveground architectural resources. Based on the lack of cultural resources in the project area, GAI recommends no additional work. The project should be allowed to proceed according to current design. The PA SHPO concurred with this recommendation in a letter dated January 19, 2005.

GA also examined a second 3,400-foot pipeline section in a field reconnaissance in Franklin County during April 2004. Replacement disturbance will be limited to the existing pipeline corridor, encompassing a total APE of approximately 200 feet wide within the existing pipeline ROW. DTI proposes to replace the 3,400-foot pipeline segment within the existing trench (lift-and-lay method). A GAI fieldview of the pipeline replacement section confirmed that the pipeline corridor is disturbed. While GAI recommended no more archaeology (due to the prior disturbance), the PA SHPO stated that a survey was required due to the presence of a previously-identified prehistoric archaeological site near the project area. As such, GAI ***conducted a Phase I survey of the PL-1 replacement section, as requested by the PA SHPO. The Phase I report was submitted to the PA SHPO in May 2005. The PA SHPO concurred with the recommendations of No Effect to cultural resources in a letter dated June 3, 2005.***

In a cultural resource notice to the PA SHPO (dated January 6, 2005), GAI recommended that the proposed pressure restoration locations are within the previously-disturbed pipeline corridors and contained no potential for cultural resources. The PA SHPO responses to the cultural resource notices are provided in Appendix 4 A.

4.2.1.6 Quinlan Compressor Station Upgrade

GAI conducted Phase I archaeological and architectural survey of the proposed Quinlan compressor station in summer, 2003, for the previously completed Northeast Storage Project (Docket No. CP04-365-000). Three historic-period archaeological sites were identified during the survey, none of which are recommended eligible for listing on the NRHP. The sites are associated with 19th and 20th century oil drilling in the compressor station parcel. The NY SHPO concurred with GAI's recommendations in a letter dated August 30, 2004. This work was previously conducted for the Northeast Storage Project under Docket No. CP04-365-000.

4.2.1.7 Wolf Run Compressor Station Expansion

The following cultural resource work was previously conducted for the Northeast Storage Project under Docket No. CP04-365-000. GAI conducted archaeological survey in 2004 at the Wolf Run project area. GAI excavated 28 shovel test pits (STPs) at the proposed location of the Wolf Run compressor station, revealing either disturbed soils (from logging) or shallow upland soil profiles. No cultural materials were identified in these upland STPs. Six additional STPs were excavated along the proposed pipeline route between Foley Junction and the proposed Wolf Run compressor station. These STP's were adjacent to the Right Fork of Freeman's Creek, revealing entirely disturbed soils due to the presence of the logging access road. No cultural materials were identified in these STPs.

The APE for architectural resources consisted of the area of proposed disturbance and the view shed of the proposed Wolf Run compressor station. The compressor station will stand approximately 25 feet to 35 feet tall and will be encompassed within the 9.18-acre densely-wooded parcel. No structures are present within the footprint of the proposed station and the thick woods will prohibit its view from structures in the project vicinity. As such, no structures are present in the APE for architectural resources.

Based on the lack of archaeological and architectural resources in the APE, GAI recommended that the project will have no adverse effect on cultural resources in the proposed Wolf Run Project area. GAI recommended that construction of the Wolf Run facilities be allowed to proceed according to current design with no additional cultural resource studies. In their letter dated July 14, 2003 (Appendix 4 A), the WVDCH stated that no NRHP-eligible properties will be affected by the project; however, the WVDCH should be contacted if cultural resources are encountered during construction. ***In January 2005, GAI conducted a supplementary Phase I survey of 10.07 additional acres required by DTI at the compressor station. Excavation of 14 STPs failed to***

identify cultural resources. The Phase I report was submitted in May 2005, but the WV SHPO has provided no comment to date.

4.2.2 Architectural Studies

4.2.2.1 Mockingbird Hill Compressor Station Upgrade

In a letter to GAI dated December 5, 2002 (WV SHPO FR # 03-89-WZ), the WV SHPO provided a finding of no effect for the project due to the lack of architectural resources in or near the project area. As such, no architectural survey was required, nor was one conducted for the project.

4.2.2.2 Chambersburg Compressor Station Modifications

The PA SHPO provided cultural resource clearance for the proposed work in a letter dated November 5, 2002 (PA SHPO File No. ER 91-2276-055-G). Due to the nature of the work, no architectural survey was required, nor was one conducted for the project.

4.2.2.3 Leesburg Compressor Station Modifications

Because the proposed work at the Leesburg Compressor Station entails work in the vicinity of the existing facility (which is surrounded by dense woods), the project will have no physical or visual effect on pre-1950 standing structures. As such, GAI's Phase I report (submitted January 23, 2003) recommended no adverse effect to cultural resources. In a letter dated March 27, 2003, the VA SHPO (DHR File No. 2002-1575) concurred with the no adverse effect recommendation.

4.2.2.4 Leidy M&R

Because the proposed work at the Leidy Compressor Station entails modifications within existing DTI property in rural uplands of Clinton County, the project will have no physical or visual effect on pre-1950 standing structures. As such, GAI's cultural resource notice to the PA SHPO (dated January 6, 2005) recommended no architectural survey. In a letter dated February 11, 2004 the PA SHPO concurred with the no adverse affect recommendation.

4.2.2.5 PL-1 Pressure Restoration Sites

Because of the sub-surface nature of the proposed work and the lack of aboveground disturbance, GAI recommended that the project would have no effect on standing structures (cultural resource notice submitted to the PA SHPO, January 6, 2005). No standing structure survey was recommended for the project. The PA SHPO concurred with this recommendation in a letter dated January 19, 2005.

4.2.2.6 Quinlan Compressor Station Upgrade

GA completed standing structure survey for Quinlan compressor station for the Northeast Storage Project. No structures are in the APE (including viewshed) of the proposed station and no additional work was recommended for structures. The NY SHPO concurred with GAI's recommendations of no effect to standing structures in a letter dated August 30, 2004.

4.2.2.7 Wolf Run Compressor Station Expansion

Based on the lack of architectural resources in the APE, GAI recommended that the project will have no adverse effect on cultural resources in the proposed Wolf Run Project area (including viewshed). GAI recommended that construction of the Wolf Run facilities be allowed to proceed according to current design with no additional cultural resource studies. In their letter dated July 14, 2003 (Appendix 4 A), the WVDCH stated that the project will have no effect on standing structures.

4.3 STATUS OF NATIVE AMERICAN CONSULTATIONS

For the Mockingbird Hill, Chambersburg, and Leesburg Compressor Stations, Native American consultation was conducted under the Mid-Atlantic Expansion Project, Docket No. CP03-41-000, FERC certificate issued in April 2003. For the Quinlan and Wolf Run Compressor Stations, Native American consultation was conducted under the Northeast Storage Project, Docket No. CP04-365-000.

GA submitted a letter (dated August 19, 2004) requesting participation in the cultural resources process to the Seneca Nation of Indians (SNI) Tribal Historic Preservation Office (THPO) for the Cove Point Expansion Project, including the Leidy M&R, Clinton County, PA. The SNI responded on October 24, 2004, confirming their desire to participate in consultation for the portion of the Cove Point Expansion Project in PA.

Copies of the PA SHPO cultural resource notices for the Leidy M&R and the two Franklin County pipeline restoration locations were submitted to the SNI THPO in January 2005. As of the date of report submission, the SNI THPO has not responded to the cultural resource notice.

4.4 SCHEDULE FOR COMPLETION OF OUTSTANDING STUDIES

No additional cultural resource studies are recommended for the project.

4.5 UNANTICIPATED DISCOVERIES PLAN

In order to minimize the potential for the accidental discovery of cultural resources, DTI completed cultural resources survey of the project APE (all locations associated with the proposed undertaking where there will be alteration and disturbance of surface and subsurface soils that contain or have the potential to contain archaeological sites). DTI

will maintain full and complete compliance with all federal and state regulations concerning the protection of cultural resources.

All inspectors have the responsibility to monitor the construction sites for potential archaeological remains throughout construction. If, during the course of construction, potential cultural resource remains are identified, the Environmental Inspector will immediately notify the Construction Supervisor who will immediately halt work in the vicinity of the potential find. At this point, DTI will notify the SHPO and the Commission, and will hire a state-approved archaeological consultant who will survey the site and provide an immediate verbal report to DTI, the Commission, and the SHPO. DTI will continue to consult with the SHPO's office, as per the requirements of Section 106 of the National Historic Preservation Act. The SHPO contacts for the project are listed below:

Dr. Kurt W. Carr
State Historic Preservation Office
Pennsylvania Historic and Museum Commission
Bureau of Historic Preservation
Commonwealth Keystone Building
400 North Street, 2nd Floor
Harrisburg, PA 17120-0093

Ms. Ethel Eaton
Manager, Office of Review and Compliance
Commonwealth of Virginia
Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Ms. Susan Pierce
Deputy State Historic Preservation Officer
West Virginia Division of Culture and History
The Cultural Center
Capitol Complex
1900 Kanawha Boulevard East
Charleston, WV 25305-0300

Ms. Ruth Pierpont
Director
Historic Preservation Office
Field Services Bureau
P. O. Box 189
Waterford, NY 12188-1089

If the unanticipated discovery is determined to be ineligible for inclusion in the NRHP, DTI will proceed with the project following written concurrence from the SHPO and

approval from the Commission. If the site is determined to be potentially eligible for inclusion in the NRHP, additional work, such as a Determination of Eligibility or Data Recovery, will be performed as required/approved by the SHPO and the Commission. Further construction work at the site will be suspended until all criteria of Section 106 of the National Historic Preservation Act and other related federal and state regulations have been successfully completed.

In the event that human remains are discovered during construction, the Construction Inspector will immediately halt work and notify the FERC, the local law enforcement agency and medical examiner. If remains are found not to be of recent origin, DTI will contact the SHPO's office and begin consultation to ensure that all provisions of relevant state laws are followed. Provision for security to protect suspected burials from vandalism will be taken. DTI will notify the Commission of the situation and will continue to keep the Commission informed as to the progress of further consultation.

If the unanticipated discovery of human remains is determined by the SHPO and the Commission to be ineligible for inclusion in the NRHP, DTI will proceed with coordinating the proper removal of the remains through cooperation from the local police, the medical examiner, the SHPO, and the Commission. Only after the human remains have been properly removed from the site should construction of the pipeline facilities in the site area be resumed.

Under no circumstances should human remains be removed from the site without completing all permitting and coordination processes with the local police, the medical examiner, the SHPO, Native American representatives as appropriate, and the Commission. Further work at the site will be suspended until all criteria of Section 106 of the National Historic Preservation Act and other related state and federal regulations have been successfully completed.

4.6 REFERENCE

United States Department of Energy. 2002. Guidelines for Reporting on Cultural Resources Investigations for Pipeline Projects. Washington, D.C.: Federal Energy Regulatory Commission. December 2002.

Table 4.2-1

STATUS OF CULTURAL RESOURCES SURVEYS FOR THE MISCELLANEOUS FACILITIES MODIFICATIONS

Facility	Survey Complete	Report Reference	Date Submitted to SHPO	SHPO Comment
Mockingbird Hill Compressor Station Upgrade	Yes	Letter Report[1]	August 2, 2004	December 5, 2002 and August 23, 2004
Chambersburg Compressor Station Modification	Yes	-	-	November 5, 2002
Leesburg Compressor Station Modification	Yes	Phase I Report[2]	January 23, 2003	March 27, 2003
Leidy M&R	Yes	Cultural Resource Notice[3]	January 6, 2005	***February 11, 2005***
PL-1 Pressure Retest Site	Yes	Cultural Resource Notice[3]	January 6, 2005	January 19, 2005
PL-1 Pressure Replacement Site	***Yes***	***Phase I Report***[4]	***May 2005***	***June 3, 2005***
Quinlan Compressor Station Upgrade	Yes	Phase I Report[5]	May 2004	August 30, 2004
Wolf Run Compressor Station Expansion	Yes	Phase I Report[6]	June 2004	July 14, 2003

Notes:

1 Phase I Letter Report, Supplemental Archaeological Survey, Mockingbird Hill Compressor Station Access Road Widening, Wetzel County, WV. Submitted by GAI Consultants, Inc., Pittsburgh, PA to DTI.

2 Phase I Archaeological Survey, Dominion Mid-Atlantic Project, Quantico Pipeline/Compressor Station, Leesburg Compressor Station, Loudoun and Faquier Counties, Virginia. Report submitted by GAI Consultants, Inc., January 2003.

3 Phase Ia Archaeological Reconnaissance letter, January 6, 2005.

4 ***Phase I Report, Cove Point Project, PL-1 Natural Gas Pipeline Replacement Section, Franklin County, PA.***

5 Phase I Cultural Resources Report, Northeast Storage Project, Potter and McKean Counties, Pennsylvania, and Cattaraugus County, New York.

6 Phase I Cultural Resources Report, Wolf Run Compressor Station, Lewis County, West Virginia.

Table 4.3-1

LIST OF NATIVE AMERICAN GROUPS CONSULTED[1]

Indian Nation	Contact	Contact Title	Address
Seneca Nation of Indians	Ms. Kathleen Mitchell	Tribal Historic Preservation Officer	Seneca Nation of Indians Tribal Historic Preservation Office 467 Center Street Salamanca, NY 14779

Note:

[1] Also see the Mid-Atlantic Expansion Project, Docket No. CP03-41-000, FERC certificate issued in April 2003 for additional Native American Consultation, and the Northeast Storage Project Docket No. CP04-365-000, FERC certificate pending approval.

APPENDIX 4-A (VOLUME III OF V)

CORRESPONDENCE

CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE

(UNDER SEPARATE COVER)

Revised June 16, 2005

APPENDIX 4-B (VOLUME III OF V)

ABBREVIATED REPORT, PHASE I ARCHAEOLOGICAL SURVEY
PL-1 NATURAL GAS PIPELINE REPLACEMENT SECTION

CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE

(UNDER SEPARATE COVER)

Revised June 16, 2005

SUPPLEMENT NO. 1

FEDERAL ENERGY REGULATORY COMMISSION ENVIRONMENTAL REPORT

EXHIBIT F-1

COVE POINT EXPANSION PROJECT
DOMINION TRANSMISSION, INC.
DOCKET NO. CP05-131-000
COMPRESSOR STATIONS SUPPLEMENT
JUNIATA AND CENTRE COUNTIES, PENNSYLVANIA

Submitted By: Dominion Transmission, Inc.
445 West Main Street
Clarksburg, West Virginia 26301

Prepared By: GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

Project C040177.40

March 2005

Revised June 2005

VOLUME I OF V

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LIST OF APPENDICES

RESOURCE REPORT 4 - CULTURAL RESOURCES

4.0 INTRODUCTION

Initial cultural resources consultation and documentation, and documentation of consultation with Native Americans. (§ 380.12(f) (l) (i) & (2))

Overview/Survey Report(s). (§ 380.12(f) (l) (ii) & (2))

This Resource Report addresses the nature and extent of cultural resources within the Area of Potential Effect (APE) for the compressor stations. The report includes:

- documentation of consultation with the State Historic Preservation Office(s) SHPO(s) (Appendix 4-A);
- a summary of the status of cultural resources investigations undertaken to date (Table 4.2-1);
- a brief summary of the status of Native American consultation regarding traditional cultural properties (Table 4.3-1); and
- a copy of the Phase I Cultural Resources Report prepared for the project (Appendix 4-B).

4.1 CONSULTATION WITH THE STATE HISTORIC PRESERVATION OFFICERS

4.1.1 Perulack Compressor Station

As described in Resource Report 1, the proposed Perulack Compressor Station will be constructed adjacent to an extant Texas Eastern Compressor Station in Juniata County, PA, at the southern terminus of the proposed PL-1 EXT 2 pipeline. A cultural resource notice of the proposed project was submitted to the PA SHPO on January 6, 2005, as was a Phase I Cultural Resources Report. The SHPO responses to the cultural resource notice and the response to the submission of the Phase I Cultural Resources Report are provided in Appendix 4-A. GAI recommended Phase II studies for the Perulack Station, which have been ***completed with a Phase II report submitted on March 23, 2005. The PA SHPO concurred with a recommendation of No Adverse Effect in a letter dated May 6, 2005.*** A copy of the Phase II Cultural Resource Assessment Report is provided in Appendix 4-C.

4.1.2 Centre Relay Compressor Station

As described in Resource Report 1, DTI proposes to construct the Centre Relay Compressor Station at approximately the mid-point of the proposed PL-1 EXT 2 pipeline near Pleasant Gap, Centre County, PA. A cultural resource notice and Phase I cultural

resources report were submitted to the PA SHPO regarding the project on January 6, 2005. The ***February 23, 2005*** SHPO response to the cultural resource notice is provided in Appendix 4-A. ***In this response, the PA SHPO concurred that no additional archeology was required; however, they determined that a Criteria of Effects for Structures Report be completed. As such, GAI completed the report which was submitted for review on June 3, 2005, with no PA SHPO response to date.***

4.2 STATUS OF CULTURAL RESOURCE INVESTIGATIONS

4.2 1 Archaeological Studies

4.2.1.1 Perulack Compressor Station

As described in Resource Report 1, DTI proposes construction of the Perulack Compressor Station within a 25-acre parcel in Juniata County, PA. A Phase I archaeological survey was conducted of the entire parcel during November and December, 2004 by GAI. During the survey, a previously-unidentified archaeological site, Site 36Ju117 (the Petersheim Site), was identified within the project boundary. Based on background research (including review of historic maps and deeds) and an analysis of recovered artifacts and features (stone building foundations), the site likely dates to the mid-19th century. A copy of the Phase I Cultural Resources Report is included as Appendix 4-B. GAI recommended Phase II studies to determine National Register of Historic Places (NRHP) eligibility of the site. Phase II fieldwork was conducted in December 2004 and January 2005, results of which have been provided in a Phase II report that has been submitted to the PA SHPO and SNI THPO. Based on the results of the Phase II assessment, Site 36Ju117 is not eligible for NRHP listing, ***as per the PA SHPO concurrence letter of May 6, 2005. The*** response from SNI THPO for the Phase II assessment will be filed with the Commission as ***it*** becomes available. A copy of the Phase II Cultural Resource Assessment is provided in Appendix 4-C.

4.2.1.2 Centre Relay Compressor Station

GAI conducted Phase I survey of the proposed 56-acre Centre Relay Compressor Station parcel during December 2004 and January 2005. GAI excavated 694 shovel test pits across the open agricultural field, failing to identify any archaeological sites during the survey. ***The Phase I survey report was submitted in January 2005, with a No Effect recommendation concurred upon by the PA SHPO in a letter dated February 23, 2005.***

4.2.2 Architectural Studies

The architectural and historical survey of the compressor stations' project areas was conducted according to *Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations* (PHMC-BHP, 1991); *Archeology and Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-44742) [National

Park Service (NPS), 1993]; *National Register Bulletin 15-How to Apply the National Register Criteria for Evaluation* (NPS, 1992a); and *National Register Bulletin 21-Defining Boundaries for National Register Properties* (NPS, 1992b).

The architectural resources survey consisted of six phases: 1) establishment of an APE; 2) literature and background research; 3) preparation of a historic context; 4) field survey; 5) completion of PHRS forms and evaluation of surveyed architectural resources; and 6) assessment of effects/impacts to the surveyed resources from the proposed project.

4.2.2.1 Perulack Compressor Station

Background map research revealed several standing structures in the vicinity of the proposed Perulack Compressor Station. A field view was conducted to determine the presence, if any, of standing structures greater than 50 years of age within the viewshed of the proposed facility. Upon field review, it was determined that no structures greater than 50 years of age are located within the viewshed of the Perulack Compressor Station. A handful of modern structures to the north, east, and south of the site were identified, including residences and buildings associated with the existing Texas Eastern facility in Perulack. ***The PA SHPO concurred with these findings in a letter dated February 23, 2005.***

4.2.2.2 Centre Relay Compressor Station

Given the location of the proposed Centre Relay Compressor Station in Nittany Valley, a wide, open landscape with many farmsteads and other structures, GAI anticipated a number of structures greater than 50 years of age within the APE. Review of a historic map of the project area (Pomeroy, 1874) indicated the potential presence of several 19th century farmsteads in the viewshed of the proposed Centre Relay Compressor Station. A field survey was conducted on December 20 and 21, 2004, which confirmed the presence of four farmsteads identified on the 1874 Pomeroy map. In addition, a fifth, 20th century farmstead was identified within the APE of the proposed facility.

GA conducted the field survey of the APE to identify architectural and historical resources that are eligible for NRHP listing. PHRS Forms were prepared or updated, as necessary, for any standing structures over 50 years of age that are located within the APE. Their locations were plotted on USGS Quad maps and on project maps, and each resource was photographed.

GA identified six (6) resources greater than 50 years of age within the APE of the proposed Centre Relay Compressor Station. Of these, the Penn Central Railroad (GAI-4) was identified by GAI as part of the DTI PL-1 EXT2 pipeline project in August 2004 (GAI, 2004). This railroad, which was recommended not eligible for NRHP listing, is located to the north of the proposed compressor station site. Since this resource was discussed in GAI's 2004 report on the DTI PL-1 EXT2 pipeline project, it has been excluded from this report. The remaining five resources are small-scale to large-scale

family farmsteads that date from circa 1790 through circa 1914. The six resources are briefly illustrated in Table 4.2-2.

In summary, of the six identified resources in the Centre Relay Compressor Station project area, only the Abraham S. Valentine Farmstead (101668) is recommended eligible for NRHP listing, under Criteria A and C on the local level. The remaining four farmsteads have lost integrity due to additions and alterations to the main houses and construction and/or demolition of associated outbuildings. The loss of integrity, coupled with the lack of historical significance for these four resources, results in their ineligibility for NRHP listing. The sixth resource, the Penn Central Railroad (GAI-4), was identified and evaluated in 2004, and is not eligible for NRHP listing. Effects to the NRHP-eligible Abraham S. Valentine Farmstead will be addressed in a Criteria of Effects evaluation document, to be submitted to DTI following final project design.

4.3 STATUS OF NATIVE AMERICAN CONSULTATIONS

GA submitted a letter (dated August 19, 2004) requesting participation in the cultural resources process to the Seneca Nation of Indians (SNI) Tribal Historic Preservation Office (THPO) for the Cove Point Expansion Project, including the two compressor stations. The SNI responded on October 24, 2004, confirming their desire to participate in consultation for the Cove Point Expansion project in PA.

Copies of the PA SHPO cultural resource notices and Phase I reports for the respective compressor stations were submitted to the SNI THPO in January 2005. Copies of the Phase II Cultural Resources Report for the Perulack Station were submitted to SN THPO in April 2005. As of the date of report submission, the SNI THPO has not responded to the cultural resource notice.

4.4 SCHEDULE FOR COMPLETION OF OUTSTANDING STUDIES

4.4.1 Perulack Compressor Station

Phase II studies of Site 36Ju117 have been completed at the proposed Perulack Compressor Station and ***have*** been submitted to PA SHPO and SNI THPO. Archaeological survey was completed in the remainder of the parcel.

4.4.2 Centre Relay Compressor Station

No additional archaeological studies are recommended at the Centre Relay Compressor Station; however, as discussed above, effects to the NRHP-eligible Abraham S. Valentine Farmstead ***have been*** addressed in a Criteria of Effects evaluation document, ***submitted for review on June 3, 2005. There are no outstanding studies to be completed for the project.***

4.5 UNANTICIPATED DISCOVERIES PLAN

In order to minimize the potential for the accidental discovery of cultural resources, DTI completed a detailed archaeological survey of the project APE (all locations associated with the proposed undertaking where there will be alteration and disturbance of surface and subsurface soils that contain or have the potential to contain archaeological sites. This includes the pipeline right-of-way (ROW), plus all access roads, and staging areas). DTI will maintain full and complete compliance with all federal and state regulations concerning the protection of cultural resources.

All inspectors have the responsibility to monitor the construction sites for potential archaeological remains throughout construction. If, during the course of construction, potential cultural resource remains are identified, the Environmental Inspector will immediately notify the Construction Supervisor who will immediately halt work in the vicinity of the potential find. At this point, DTI will notify the SHPO and the Commission, and will hire a state-approved archaeological consultant who will survey the site and provide an immediate verbal report to DTI, the Commission, and the SHPO. DTI will continue to consult with the SHPO's office, as per the requirements of Section 106 of the National Historic Preservation Act. The SHPO contact for the compressor stations listed below:

Dr. Kurt W. Carr
State Historic Preservation Office
Pennsylvania Historic and Museum Commission
Bureau of Historic Preservation
Commonwealth Keystone Building
400 North Street, 2nd Floor
Harrisburg, PA 17120-0093

If the unanticipated discovery is determined to be ineligible for inclusion in the NRHP, DTI will proceed with the project following written concurrence from the SHPO and approval from the Commission. If the site is determined to be potentially eligible for inclusion in the NRHP, additional work, such as a Determination of Eligibility or Data Recovery, will be performed as required/approved by the SHPO and the Commission. Further construction work at the site will be suspended until all criteria of Section 106 of the National Historic Preservation Act and other related federal and state regulations have been successfully completed.

In the event that human remains are discovered during construction, the Construction Inspector will immediately halt work and notify the Commission, the local law enforcement agency, and medical examiner. If remains are found not to be of recent origin, DTI will contact the SHPO's office and begin consultation to ensure that all provisions of relevant Commonwealth of PA law (PA Consolidated Statute 37, §104, et seq.) are followed, including the PHMC Burial Policy (1991). Provision for security to protect suspected burials from vandalism will be taken. DTI will notify the Commission

of the situation and will continue to keep the Commission informed as to the progress of further consultation.

If the unanticipated discovery of human remains is determined by the SHPO and the Commission to be ineligible for inclusion in the NRHP, DTI will proceed with coordinating the proper removal of the remains through cooperation from the local police, the medical examiner, the SHPO, and the Commission. Only after the human remains have been properly removed from the site should construction of the pipeline facilities in the site area be resumed.

Under no circumstances should human remains be removed from the site without completing all permitting and coordination processes with the local police, the medical examiner, the SHPO, Native American representatives as appropriate, and the Commission. Further work at the site will be suspended until all criteria of Section 106 of the National Historic Preservation Act and other related state and federal regulations have been successfully completed.

4.6 REFERENCES

Federal Energy Regulatory Commission. 2001. *Guidelines for Reporting on Cultural Resources Investigations.* Office of Pipeline Regulation, Washington, D.C.

GAI Consultants, Inc. 2004. *Phase I Management Summary, Cove Point Expansion Project, Juniata, Huntingdon, Mifflin, Centre, and Clinton Counties, Pennsylvania.* Document submitted to Dominion Transmission, Inc., Clarksburg, WV.

National Park Service. 1993. *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-44742). National Park Service, United States Department of the Interior, Washington, D.C.

National Park Service. 1992a. *National Register Bulletin 15-How to Apply the National Register Criteria for Evaluation*, United States Department of the Interior, Washington, D.C.

National Park Service. 1992b. *National Register Bulletin 21-Defining Boundaries for National Register Properties*, United States Department of the Interior, Washington, D.C.

Pennsylvania Historical and Museum Commission, Bureau of Historic Preservation. 1991. *Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations.* Harrisburg, PA.

Table 4.2-1

STATUS OF CULTURAL RESOURCES SURVEYS FOR THE COMPRESSOR STATIONS

Facility	Survey Complete	Report Reference	Date Submitted to SHPO	SHPO Comment
Perulack Compressor Station	Yes	Phase I Report[1]	February 7, 2005	February 23, 2005
Perulack Compressor Station	Yes	Phase II Report[2]	March 23, 2005	***May 6, 2005***
Centre Relay Compressor Station	Yes	Phase I Report[1]	February 7, 2005	February 23, 2005

Notes:

1 Phase I Report, Perulack and Centre Relay Compressor Stations, Juniata and Centre Counties, Pennsylvania. Report submitted by GAI to Dominion Transmission, Inc., January 2005.

2 Phase II, Cultural Resource Assessment, Site 36Ju117, Petersheim Site.

Table 4.3-1

LIST OF NATIVE AMERICAN GROUPS CONSULTED

Indian Nation	Contact	Contact Title	Address
Seneca Nation of Indians	Ms. Kathleen Mitchell	Tribal Historic Preservation Officer	Seneca Nation of Indians Tribal Historic Preservation Office 467 Center Street Salamanca, NY 14779

APPENDIX 4-A

CORRESPONDENCE

CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE

(UNDER SEPARATE COVER)

APPENDIX 4-D (VOLUME III OF V)

CRITERIA OF EFFECTS REPORT

CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE

(UNDER SEPARATE COVER)

Revised June 16, 2005