PennEast Pipeline Company, LLC
One Meridian Boulevard, Suite 2C01
Wyomissing, PA 19610

December 14, 2015

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

Re: PennEast Pipeline Company, LLC, Docket No. CP15-558-000
Responses to November 24, 2015 Environmental Information Request
OEP/DG2E/Gas 2

Dear Ms. Bose:

PennEast Pipeline Company, LLC ("PennEast") hereby submits responses to the Environmental Information Request issued by the Federal Energy Regulatory Commission ("Commission") on November 24, 2015 in the above-referenced proceeding ("Data Request"). PennEast has provided responses to the majority of the Commission's Data Request, and for those requests where PennEast is continuing to gather information, PennEast is working diligently to provide the Commission with such information and materials and has noted when PennEast expects to file supplemental responses in the near future.

For those requests seeking updated or revised tables, appendices, or other materials originally submitted with PennEast's certificate application, PennEast has updated the materials and is providing these materials as attachments. However, due to the voluminous nature of the attachments, PennEast is making a contemporaneous filing of the attachments referenced in the data request responses under separate cover. In addition, PennEast notes that following discussions with stakeholders, PennEast has adopted certain route deviations and is providing details on such deviations in a contemporaneous filing in this proceeding. PennEast's responses provided herein address and incorporate information pertaining to these route deviations when responsive to a request.

PennEast requests that certain information in the attached responses be treated as privileged and confidential and for use by the Commission Staff only and not released to the public. The information to be treated as privileged and confidential has been marked "**Contains Privileged Information – Do Not Release**." Questions pertaining to confidential information may be submitted to:

Frank H. Markle
Senior Counsel
PennEast Pipeline Company, LLC
460 North Gulph Road
King of Prussia, PA 19406
T: (610) 768-3625
F: (610) 992-3258
marklef@ugicorp.com

Pursuant to Section 385.2010 of the Commission's regulations, 18 C.F.R. § 385.2010 (2015), PennEast is contemporaneously serving copies of the public portion of its narrative responses to persons whose names appear on the Official Service List in this proceeding.

Should you have any questions concerning this filing, please contact me at (610) 406-4322.

Sincerely,

/s/ Anthony C. Cox
Anthony C. Cox
PennEast Pipeline Company, LLC,
By its Project Manager
UGI Energy Services, LLC

cc: Medha Kochhar (FERC)
All Parties of Record

VERIFICATION

THE STATE OF PENNSYLVANIA)
)
COUNTY OF BERKS)

Anthony C. Cox, being first duly sworn, states that he is the Project Manager for PennEast Pipeline Company, LLC; that he is authorized to execute this Verification; that he has reviewed the responses to the November 24, 2015 Data Request in Docket No. CP15-558-000; and that after reasonable diligence and review, the information provided in such responses constitutes a complete and accurate response to the best of his knowledge, information and belief.

PennEast Pipeline Company, LLC,
By: UGI Energy Services, LLC
Its Project Manager

Anthony C. Cox
Project Manager

Subscribed and sworn to before me this 14th day of December, 2015.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Joan T. Neustadter, Notary Public
Wyomissing Boro, Berks County
My Commission Expires March 8, 2016
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Notary Public,
State of Pennsylvania

My Commission Expires:

March 8, 2016

ENVIRONMENTAL INFORMATION REQUEST

Resource Report 1 – General Project Description

Data Request 1

In section 1.3, page 1-19 to 1-21, tables 1.3-1 and 1.3-2, there are several discrepancies. most notable are the overall construction impacts. Clarify all discrepancies in these tables.

Response 1

Tables 1.3-1 and 1.3-2 have been revised and updated to reflect adjustments in the alignment and construction workspace.

Table 1.3-1
Land Requirements for Pipeline Facilities[1]

Facility[2]	Approximate Length/ No. of Sites	Temporary Workspace for Construction (acres)	Additional Temporary Workspace for Construction (acres)	Permanent Easement for Construction and Operation (acres)[3]	Total Workspace for Construction (acres)
PennEast Mainline Route Pipeline	114.6 (mi)/1	618.4	415.7	692.2	1726.3
Hellertown 24-inch Lateral	2.1 (mi)/1	9.8	7.8	12.5	30.1
Lambertville 36-inch Lateral	1.4 (mi)/1	8.0	4.8	8.3	21.1
Total Pipeline	**118.2 (mi)/3**	**636.2**	**428.2**	**713.0**	**1777.5**
Access Roads[4]	29.4 (mi)/117	101.0	0.0	9.7	110.8
Pipeyards	261.6 (ac)/8	0.0	261.6	0.0	261.6
Aboveground Facilities	59.6 (ac)/20	3.3	1.6	54.8	59.6
Staging Areas	37.4 (ac)/8	0.0	37.4	0.0	37.4
Total Project		**740.5**	**728.8**	**777.5**	**2246.9**

Notes:
1. The totals shown on this table may not equal the sum of addends due to rounding.

2. This table does not specify valves and launcher/receivers that will be constructed on the pipeline segments since the land requirements for these facilities are within the land requirements for the pipeline segments.
3. Only includes existing permanent 50 foot ROW within limits of construction.
4. Estimated Temporary Workspace for Construction includes access roads (new and existing).

Table 1.3-2
Land Requirements for Pipeline Facilities by River Basin[1]

River Basin	Approximate Length/ No. of Sites	Temporary Workspace for Construction (acres)	Additional Temporary Workspace for Construction (acres)	Permanent Easement for Construction and Operation (acres)			Total Workspace for Construction (acres)
				Existing[2]	Partially Existing	New	
Pipeline							
Upper Susquehanna	14.2 (mi)/1	79.9	71.0	0.0	0.0	84.7	235.6
Upper Delaware	101.9 (mi)/3	545.5	349.3	0.0	0.0	615.8	1510.6
Lower Hudson	2.1 (mi)/1	10.8	7.9	0.0	0.0	12.5	31.2
Access Roads[3]							
Upper Susquehanna	7.3 (mi)/31	23.1	0.0	0.0	0.0	3.8	26.9
Upper Delaware	22.1 (mi)/85	77.9	0.0	0.0	0.0	5.8	83.8
Lower Hudson	0.0 (mi)/1	0.0	0.0	0.0	0.0	0.1	0.1
Pipeyards							
Upper Susquehanna	30.6 (ac)/2	0.0	30.6	0.0	0.0	0.0	30.6
Upper Delaware	231.0 (ac)/6	0.0	231.0	0.0	0.0	0.0	231.0
Lower Hudson	0.0/0	0.0	0.0	0.0	0.0	0.0	0.0
Above Ground Facilities[4]							
Upper Susquehanna	12.5 (ac)/4	2.2	0.5	0.0	0.0	9.8	12.5
Upper Delaware	42.3 (ac)/14	1.1	0.5	0.0	0.0	40.8	42.3
Lower Hudson	4.8 (ac)/2	0.0	0.6	0.0	0.0	4.2	4.8
Staging Areas							
Upper Susquehanna	1.4 (ac) /1	0.0	1.4	0.0	0.0	0.0	1.4

Upper Delaware	36.0 (ac) /7	0.0	36.0	0.0	0.0	0.0	36.0
Lower Hudson	0.0 /0	0.0	0.0	0.0	0.0	0.0	0.0
Total Project							
Upper Susquehanna	21.5(mi) /44.5 (ac)[5]	105.2	103.5	0.0	0.0	98.3	307.0
Upper Delaware	124(mi) /309.3 (ac)[5]	624.5	616.7	0.0	0.0	662.4	1903.7
Lower Hudson	2.1(mi) /13.9 (ac)[5]	10.8	8.5	0.0	0.0	16.8	36.1
						Project Total	**2246.7**

Notes:

1. The totals shown on this table may not equal the sum of addends due to rounding.

2. Only includes existing permanent 50 foot ROW within limits of construction.

3. Estimated Temporary Workspace for Construction includes access roads (new and existing).

4. This table does not specify valves and launcher/receivers that will be constructed on the pipeline segments since the land requirements for these facilities are within the land requirements for the pipeline segments.

5. Mileage of Pipeline and Access Roads, Acreage of Pipeyards, Staging Areas, and Above ground facilities.

Data Request 2

In section 1.3.2, page 1-44, PennEast states the compressor station would require "full site development." Explain what is meant by this statement. Clarify if PennEast would develop the entire site it has purchased, including the wetland on site. The plot plan provided does not show full site development, but indicates the entire property would be surrounded by chain link fence. Clarify where grading would be done within the site.

Response 2

The property for which PennEast has executed an Option to Purchase Agreement for the proposed Kidder Compressor Station is a total of approximately 60 acres of undeveloped forested land. Of this area, construction and operation of the compressor station would require full site development of approximately 26.2 acres that would be permanently graded and fenced-in. PennEast recently conducted infiltration testing, and the stormwater management facilities are currently being designed. The extent of grading and wetland impacts within the 26.2-acre footprint will be determined after the stormwater management facilities are designed. The remaining acreage will remain as an undeveloped buffer around the proposed station facilities. A revised site plans will be submitted in the first quarter of 2016.

Data Request 3

Table 1.3-5, page 1-43 is incomplete. Please complete the modification table.

Response 3

Table 1.3-5
Proposed Pipeyards in Pennsylvania and New Jersey

Facility Name	Municipality	County	Latitude	Longitude	Land Use	Proposed Modification	Acres
PE-A-01	Laflin Boro	Luzerne	41° 17' 18.660" N	75° 48' 45.126" W	Commercial/Industrial	Temporary Equipment Storage	1.9
PE-A-02	Laflin Boro	Luzerne	41° 17' 5.223" N	75° 47' 23.050" W	Commercial/Industrial, Forest/Woodland, Open Land	Temporary Equipment Storage	28.7
PE-B-02	Kidder Twp	Carbon	41° 1' 10.253" N	75° 37' 16.894" W	Agricultural, Forest/Woodland, Open Land, Residential	Temporary Equipment Storage	15.4
PE-C-03	Upper Nazareth Twp	Northampton	40° 43' 41.199" N	75° 21' 43.965" W	Agricultural, Commercial/Industrial, Forest/ Woodland, Residential	Temporary Equipment Storage	17.9
PE-C-04	Lower Nazareth Twp	Northampton	40° 43' 40.203" N	75° 19' 12.684" W	Commercial/Industrial, Open Land	Temporary Equipment Storage	92.7
PE-D-05	Bethlehem Twp	Northampton	40° 39' 10.419" N	75° 16' 59.895" W	Open Land	Temporary Equipment Storage	39.3
PE-E-06	Kingwood Twp	Hunterdon	40° 27' 27.454" N	75° 0' 27.817" W	Agricultural, Forest/Woodland, Open Land, Residential	Temporary Equipment Storage	50.1
PE-F-07	West Amwell Twp	Hunterdon	40° 22' 52.985" N	74° 55' 30.417" W	Agricultural, Open Land	Temporary Equipment Storage	15.6

Data Request 4

Provide a revised table 1.4-2 that includes the primary region of influence by resource (air, water, cultural, etc.) that would be affected by each project.

Response 4

Table 1.4-2
Projects Potentially Contributing to Cumulative Impacts Analysis

Project [a]	Location (Address, Township, County, State)	Description	Permit Number	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	River Basin [b]	Primary Region of Influence [c]
Marcellus Shale Development									
Wells [d]									
None									
Pipeline Gathering Systems [e, f]									
Auburn Line Extension Operated by UGI Energy Services	Wyoming and Luzerne Counties, PA	27.4-mile, 20-inch diameter pipeline and compressor station capable of delivering approximately 200,000 Dth/d	Erosion and Sediment Control GP2 Permit No. ESX131310001(1), E4029-003, E6629-0153	0.0 to 4.4	0.2 miles, East	166.1	In-service (2013)	Upper Susquehanna	Water, Fish, Wildlife, and Vegetation Resources: Upper Susquehanna River Watershed (0205010702) Cultural Resources: 0.25-mile from project Socioeconomics: Wyoming and Luzerne Counties, PA Geological Resources: 0.25-mile from project Soils: 0.25-mile from project Land Use, Recreation, and Aesthetics: Upper Susquehanna River Watershed (0205010702) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Springville Gathering Pipeline Operated by Williams	Susquehanna, Wyoming and Luzerne Counties, PA	33.5-mile, 24-inch Springville pipeline transports natural gas from Williams' gathering system to its Transco interstate gas transmission system	Not Available	0.0 to 0.5	Projects Intersect	203.0	In-service (2012)	Upper Susquehanna	Water, Fish, Wildlife, and Vegetation Resources: Upper Susquehanna River Watershed (0205010702) Cultural Resources: 0.25-mile from project Socioeconomics: Susquehanna, Wyoming and Luzerne Counties, PA Geological Resources: 0.25-mile from project Soils: 0.25-mile from project Land Use, Recreation, and Aesthetics: Upper Susquehanna River Watershed (0205010702) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise:1-mile from project

Project [a]	Location (Address, Township, County, State)	Description	Permit Number	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	River Basin [b]	Primary Region of Influence [c]
Wyoming Gathering Pipeline Operated by Energy Transfer Partners	Wyoming and Luzerne Counties, PA	30-mile, 24-inch diameter pipeline delivering 750 million cubic feet per day (MMcfd). Connects with the Transco interstate pipeline system	Erosion and Sediment Control GP2 Permit No. E6629-003 (Wyoming) and E4029-002 (Luzerne)	0.0	<0.25 mile, Northwest	181.8	In-service (2012)	Upper Susquehanna	Water, Fish, Wildlife, and Vegetation Resources: Upper Susquehanna River Watershed (0205010702) Cultural Resources: 0.25-mile from project Socioeconomics: Wyoming and Luzerne Counties, PA Geological Resources: 0.25-mile from project Soils: 0.25-mile from Project Land Use, Recreation, and Aesthetics: Upper Susquehanna River Watershed (0205010702) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Interstate Natural Gas Pipeline Projects [e]									
Garden State Expansion Project Operated by Transco	Burlington County, NJ	Provide up to 180,000 Dth/d of natural gas. The project will include the installation of a new compressor station, meter and regulating station on land located in Burlington County, NJ. No expansion of the pipeline is required.	FERC Docket No. CP15-89-000	114	2.5 miles, Northeast	23.2	Start of construction proposed for early 2016	Lower Hudson	Water, Fish, Wildlife, and Vegetation Resources: Millstone River Watershed (0203010503) Cultural Resources: 0.25-mile from project Socioeconomics: Burlington County, NJ Geological Resources: 0.25-mile from project Soils: Millstone River Watershed (0203010503) Land Use, Recreation, and Aesthetics: Millstone River Watershed (0203010503) Air Quality: Metropolitan Philadelphia Interstate Air Quality Control Region (PA-NJ-Delaware) Noise: 1-mile from project

Project [a]	Location (Address, Township, County, State)	Description	Permit Number	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	River Basin [b]	Primary Region of Influence [c]
Franklin Loop (Leidy Southeast Expansion) Operated by Transco	Luzerne County, PA	11.5 mile, 42-inch diameter pipeline expansion project to connect to Transco Pipeline	FERC Docket No. CP13-551-000	21.0-32.0	1.5 miles, East	69.7	Under Construction	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Upper Lehigh River Watershed (0204010602) and Middle Lehigh River Watershed (0204010603) Cultural Resources: 0.25-mile from project Socioeconomics: Luzerne County, PA Geological Resources: 0.25-mile from project Soils: Upper Lehigh River Watershed (0204010602) and Middle Lehigh River Watershed (0204010603) Land Use, Recreation, and Aesthetics: Upper Lehigh River Watershed (0204010602) and Middle Lehigh River Watershed (0204010603) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Skillman Loop (Leidy Southeast Expansion) Operated by Transco	Princeton and Montgomery Townships, Mercer County, NJ	6.3 mile, 42-inch expansion project to connect to Transco Pipeline	FERC Docket No. CP13-551-000	114	5.7 miles, Northeast	37.6	Under Construction	Lower Hudson	Water, Fish, Wildlife, and Vegetation Resources: Millstone River Watershed (0203010503) Cultural Resources: 0.25-mile from project Socioeconomics: Mercer County, NJ Geological Resources: 0.25-mile from project Soils: Millstone River Watershed (0203010503) Land Use, Recreation, and Aesthetics: Millstone River Watershed (0203010503) Air Quality: Metropolitan Philadelphia Interstate Air Quality Control Region (PA-NJ-Delaware) Noise: 1-mile from project

Project [a]	Location (Address, Township, County, State)	Description	Permit Number	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	River Basin [b]	Primary Region of Influence [c]
Atlantic Sunrise Pipeline Project Operated by Transco	Susquehanna, Wyoming, Luzerne, Columbia, Northumberland, Lancaster, Clinton, Lycoming, Counties, PA; Howard County, MD; Prince William and Appomattox Counties, VA; Rockingham, Davidson, Iredell, Cleveland, Gaston, Lincoln, Guilford, Rowan, and Forsyth Counties, NC; and Cherokee County, SC	190 miles of pipeline, 2.5 miles of pipeline replacement, two new compressor stations, and other facility additions or modifications In PA, MD, VA, NC, and SC	FERC Docket No. CP15-138-000	0.0	2.0 miles, Northwest	1078.8	Currently proposed. Target in-service date of Summer 2017.	Upper Susquehanna	Water, Fish, Wildlife, and Vegetation Resources: Upper Susquehanna River Watershed (0205010702) Cultural Resources: 0.25-mile from project Socioeconomics: Susquehanna, Wyoming, Luzerne, Columbia, Northumberland, Lancaster, Clinton, Lycoming, Counties, PA; Howard County, MD; Prince William and Appomattox Counties, VA; Rockingham, Davidson, Iredell, Cleveland, Gaston, Lincoln, Guilford, Rowan, and Forsyth Counties, NC; and Cherokee County, SC Geological Resources: 0.25-mile from project Soils: Upper Susquehanna River Watershed (0205010702) Land Use, Recreation, and Aesthetics: Upper Susquehanna River Watershed (0205010702) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region and Northwest Pennsylvania-Youngstown Interstate Noise:1-mile from project
Northeast Supply Link (NSL) Project, Stanton Loop Operated by Transco	Hunterdon County, NJ	6.6 miles of 42-inch diameter pipeline loop	FERC Docket No. CP12-30-000	84.0	7.0 miles, Northeast	40.0	In-service (2013)	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Watershed Boundary HUC 10 Cultural Resources: 0.25-mile from project Socioeconomics: Hunterdon County, NJ Geological Resources: 0.25-mile from project Soils: 0.25-mile from project Land Use, Recreation, and Aesthetics: 10-miles from project Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Other Projects									
Electric Generation And Transmission									

Project [a]	Location (Address, Township, County, State)	Description	Permit Number	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	River Basin [b]	Primary Region of Influence [c]
Susquehanna-Roseland Project Operated by PPL Electric Utilities (PA) and Public Service Electric & Gas Company (NJ)	Lackawanna, Luzerne, Wayne, Pike and Monroe Counties, PA and Warren, Sussex, Morris and Essex Counties, NJ	150-mile long, 500 kV transmission line	Not Available	4.5	Intersects Alignment, Southwest to Northeast	Not Available	In-service (May 2015)	Upper Susquehanna, Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Upper Susquehanna River Watershed (0205010702) Cultural Resources: 0.25-mile from project Socioeconomics: Luzerne, Lackawanna, Wayne, Pike and Monroe Counties, PA Geological Resources: 0.25-mile from project Soils: 0.25-mile from project Land Use, Recreation, and Aesthetics: Upper Susquehanna River Watershed (0205010702) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Northeast Pocono Reliability Project Operated by PPL Electric Utilities	Lackawanna, Monroe, Wayne, Pike and Luzerne Counties, PA	Constructing three new electrical substations, 57 miles of new 230 kV transmission lines, and various shorter segments of 69 kV sub-transmission lines. Rebuilding one 20 mile long kV line.	Not Available	15.8-18.6	Parallels ROW, Northwest to Southeast	Not Available	Proposed for completion in fall 2017	Upper Susquehanna, Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Upper Lehigh River Watershed (0204010602) Cultural Resources: 0.25-mile from project Socioeconomics: Lackawanna, Monroe, Wayne, Pike and Luzerne Counties, PA Geological Resources: 0.25-mile from project Soils: 0.25-mile from project Land Use, Recreation, and Aesthetics: Upper Lehigh River Watershed (0204010602) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Transportation									
Interstate 81	Plains Township, Luzerne County, PA	Replacement of four bridges, two over Jumper Road and two over Sunset Road	Not Available	10.5	0.1–1.7 miles, Southwest	Not Available	Under Construction	Upper Susquehanna	Water, Fish, Wildlife, and Vegetation Resources: Upper Susquehanna River Watershed (0205010702) Cultural Resources: 0.25-mile from project Socioeconomics: Luzerne County, PA Geological Resources: 0.25-mile from project Soils: Upper Susquehanna River Watershed (0205010702) Land Use, Recreation, and Aesthetics: Upper Susquehanna River Watershed (0205010702) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project

Project [a]	Location (Address, Township, County, State)	Description	Permit Number	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	River Basin [b]	Primary Region of Influence [c]
US 209 Interchange Road	Franklin and Towamensing Townships, Carbon County, PA	Highway restoration project. Mill and fill 8.43 miles and repair various drainages.	Not Available	44.4	Intersects Alignment, West to East	Not Available	Preliminary Engineering Phase. Estimated project state date of early 2016.	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Pohopoco Creek Watershed (0204010604) Cultural Resources: 0.25-mile from project Socioeconomics: Carbon County, PA Geological Resources: 0.25-mile from project Soils: 0.25-mile from project Land Use, Recreation, and Aesthetics: Pohopoco Creek Watershed (0204010604) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Freemansburg Ave Interchange	Bethlehem Township, Northampton County, PA	Roadway reconstruction and bridge rehabilitation of SR 2018 structure	Not Available	70.0	0.1 mile, West	Not Available	Proposed in 2015	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Lower Lehigh River Watershed (0204010608) Cultural Resources: 0.25-mile from project Socioeconomics: Northampton County, PA Geological Resources: 0.25-mile from project Soils: 0.25-mile from project Land Use, Recreation, and Aesthetics: Lower Lehigh River Watershed (0204010608) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
NJ Route 31 Expansion	Throughout Raritan Township and Flemington Borough, Hunterdon County, NJ	Build parkway system and expand street networking to Route 31 throughout Raritan Township and Flemington Borough	Not Available	96.9	7.4 miles, Northeast	Not Available	Ongoing	Lower Hudson	Water, Fish, Wildlife, and Vegetation Resources: Watershed Boundary HUC 10 Cultural Resources: 0.25-mile from project Socioeconomics: Hunterdon County, NJ Geological Resources: 0.25-mile from project Soils: 0.25-mile from project Land Use, Recreation, and Aesthetics: 10-miles from project Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Commercial/Residential Development									

Project [a]	Location (Address, Township, County, State)	Description	Permit Number	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	River Basin [b]	Primary Region of Influence [c]
Combined Heat and Power (CHP) Plant at Blue Mountain	Blue Mountain Water Park, Lower Towamensing Township, Carbon County, PA	Combined Heat And Power Plant By Tuthill Corporation, Funded By Pennsylvania Energy Development Authority (PEDA)	Not Available	47.1	Projects Intersect at Blue Mountain Interconnect	Not Available	Not Available	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Aquashicola Creek (0204010605) Cultural Resources: 0.25-mile from project Socioeconomics: Carbon County, PA Geological Resources: 0.25-mile from project Soils: Aquashicola Creek (0204010605) Land Use, Recreation, and Aesthetics: Aquashicola Creek (0204010605) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Blue Ridge Real Estate Properties	Multiple Resort Residential and Commercial Properties, Carbon County, PA	Real estate company specializing in resort residential communities in the Pocono Mountains; properties include Jack Frost National Golf Course	Not Available	24.4-30.5	0.1 mile, East	5,696 acres	Not Available	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Upper Lehigh River Watershed (0204010602) and Middle Lehigh River Watershed (0204010603) Cultural Resources: 0.25-mile from project Socioeconomics: Carbon County, PA Geological Resources: 0.25-mile from project Soils: 0.25-mile from project Land Use, Recreation, and Aesthetics: Upper Lehigh River Watershed (0204010602) and Middle Lehigh River Watershed (0204010603) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Sterling Crossing Subdivision	Hanoverville Road in Lower Nazareth Township, Northampton County, PA	Forty-one lot residential subdivision. Per zoning officer, Laurie Sesse.	Not Available	64.1	3.2 miles, Southwest	Not Available	Not Available	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Lower Lehigh River Watershed (0204010608) Cultural Resources: 0.25-mile from project Socioeconomics: Northampton County, PA Geological Resources: 0.25-mile from project Soils: Lower Lehigh River Watershed (0204010608) Land Use, Recreation, and Aesthetics: Lower Lehigh River Watershed (0204010608) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project

Project [a]	Location (Address, Township, County, State)	Description	Permit Number	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	River Basin [b]	Primary Region of Influence [c]
Saratoga Farms Subdivision	Nazareth Bethlehem Pike in Lower Nazareth Township, Northampton County, PA	Fifty-five lot residential subdivision. Per zoning officer, Laurie Sesse	Not Available	66.2	0.7 miles, West	Not Available	Not Available	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Lower Lehigh River Watershed (0204010608) Cultural Resources: 0.25-mile from project Socioeconomics: Northampton County, PA Geological Resources: 0.25-mile from project Soils: Lower Lehigh River Watershed (0204010608) Land Use, Recreation, and Aesthetics: Lower Lehigh River Watershed (0204010608) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Trio Fields Subdivision	Gremar Road in Lower Nazareth Township, Northampton County, PA	Three hundred and seventy-four lots residential subdivision. Per zoning officer, Laurie Sesse	Not Available	61.8– 64.7	0.1 miles, Southwest	89.8 acres	Not Available	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Lower Lehigh River Watershed (0204010608) Cultural Resources: 0.25-mile from project Socioeconomics: Northampton County, PA Geological Resources: 0.25-mile from project Soils: 0.25-mile from project Land Use, Recreation, and Aesthetics: Lower Lehigh River Watershed (0204010608) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Subdivision	Intersection of Green Pond Road and Farmersville Road in Bethlehem Township, Northampton County, PA	Traditions of America, proposes to build a 265-home subdivision. An area known locally as Green Pond Marsh is located in the northwestern part of the project site. Per FERC comment provided by PADEP Northeast Regional Office.	Not Available	68.0	0.5 miles, West	119 acre	Not Available	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Bushkill Creek-Delaware River Watershed (0204010503) Cultural Resources: 0.25-mile from project Socioeconomics: Northampton County, PA Geological Resources: 0.25-mile from project Soils: Bushkill Creek-Delaware River Watershed (0204010503) Land Use, Recreation, and Aesthetics: Bushkill Creek-Delaware River Watershed (0204010503) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project

Project [a]	Location (Address, Township, County, State)	Description	Permit Number	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	River Basin [b]	Primary Region of Influence [c]
Huntington Knolls, LLC Housing Development	West of Route 519 and south of the Fox Hill development in Holland Township, Hunterdon County, NJ	Twenty nine buildings with age-restricted housing units as well as assisted-living units. Per FERC comment provided by Philip Giebel	Not Available	79.7-82.5	0.1 miles, North	87 acres	Not Available	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Lower Delaware River Watershed (0204010509) Cultural Resources: 0.25-mile from project Socioeconomics: Hunterdon County, NJ Geological Resources: 0.25-mile from project Soils: 0.25-mile project Land Use, Recreation, and Aesthetics: Lower Delaware River Watershed (0204010509) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project
Ewing Town Center Redevelopment Project	Parkway Avenue, Ewing Township, Mercer County, NJ	Plan to redevelop closed general motors facility with 1000 housing units and 115,000 square feet of retail/commercial space	Not Available	114	6 miles, Southwest	128 acres	Not Available	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Lower Delaware River Watershed (0204010509) Cultural Resources: 0.25-mile from project Socioeconomics: Mercer County, NJ Geological Resources: 0.25-mile from project Soils: Lower Delaware River Watershed (0204010509) Land Use, Recreation, and Aesthetics: Lower Delaware River Watershed (0204010509) Air Quality: Metropolitan Philadelphia Interstate Air Quality Control Region (PA-NJ-Delaware) Noise: 1-mile from project
St. Luke's University Health Network Expansion Anderson Campus	PA Route 33 intersection with Freemansburg Avenue, Bethlehem Township, Northampton County, PA.	75,000 square foot medical office building with future construction of 1.7 million square feet of additional hospital space, medical offices, and educational and research facilities.	Not Available	70.1	0.1 mile, North	1,775,000 square feet	Construction Medical Office Building is planned for the end of 2016. Other phases not yet authorized	Upper Delaware	Water, Fish, Wildlife, and Vegetation Resources: Lower Lehigh River Watershed (0204010608) Cultural Resources: 0.25-mile from project Socioeconomics: Northampton County, PA Geological Resources: 0.25-mile from project Soils: 0.25-mile from project Land Use, Recreation, and Aesthetics: Lower Lehigh River Watershed (0204010608) Air Quality: Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region Noise: 1-mile from project

Project [a]	Location (Address, Township, County, State)	Description	Permit Number	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	River Basin [b]	Primary Region of Influence [c]

Sources: USGS 2015a; PADEP 2015 (a) (b); 40 CFR 81.13; 40 CFR 81.15; 40CFR 81.55; UGI Energy Services 2014; Williams 2015 (a) (b); First Energy 2015; PPL Electric Utilities 2008; PPL Electric Utilities 2014; PPL Electric Utilities 2015; Pennsylvania Wind Working Group 2006; ACORE 2014; PennDOT 2015; Clean Air Council 2015; NJDOT 2015; FERC 2014(a); Delaware River Keeper 2015; Jersey Central Power & Light 2015.; Crestwood Midstream Partners LP 2014; Crestwood Midstream Partners LP 2015; New Jersey Natural Gas 2015; Blue Ridge Real Estate Company 2015; Carbon Chamber and Economic Development 2014; Mercer County Planning Division 2012; Mercer County Planning Division 2015;

[a] Includes past (e.g. in-service within past 5 years), present or reasonably foreseeable future projects located within 0.25 miles of the Project centerline for minor projects and within 10 miles for major projects

[b] River basins listed are crossed by both the PennEast Pipeline Project and the projects identified during the CIAA.

[c] Primary ROI was determined based upon resource boundaries outlined in Table 1.4-1. For resources such as soils and land use which have more than one boundary listed, the boundary chosen is based upon the project's proximity to the PennEast Project and whether their impacted watershed boundaries (HUC 10) overlap. If the two projects do not occur in the same watershed(s), then the proximity was used as the primary ROI.

[d] Wells permitted in counties within 0.25 miles of the proposed Project ROW in Pennsylvania. No well information available for New Jersey.

[e] Assumes a 50-foot permanent ROW width

[f] eFACTS search conducted for Erosion And Sediment Control GP-2 permits in Pennsylvania between 01/01/2012 and 06/19/2015. No gathering system information was found for New Jersey.

Data Request 5

Expansion associated with St. Luke's Hospital is not included in cumulative impacts section. Due to the close proximity of the hospital to the pipeline a full analysis of potential cumulative impacts on these facilities should be provided.

Response 5

The St. Luke's University Health Network Expansion Anderson Campus project has been added to the revised Table 1.4-2, above. PennEast has been coordinating with the St Luke's Hospital throughout the Pre-Filing Process. The original alignment has been revised to address potential impacts to proposed development plans. At the request of the Hospital the pipeline was relocated from the west side of Route 33 to the east side of the highway to avoid proposed development plans for the St. Luke's University Health Network Expansion Anderson Campus. The Campus plans involve a 75,000 square foot medical office building with future construction of 1.7 million square feet of additional hospital space, medical offices, and educational and research facilities. Construction of the Medical Office Building is scheduled for the end of 2016.

The proposed PennEast pipeline is approximately 0.1 mile to the east and Route 33 extends between the Campus and the Project. PennEast has engaged with representatives of St. Luke's Hospital on their properties on the east side of Route 33. At this time there are no approved development plans for the area. Preliminary analysis of how the properties might be developed has been initiated. Coordination is ongoing such that the location of the pipeline will not isolate any developable tracts, and the depth of pipeline placement will not hamper future development plans. PennEast has considered the Project's cumulative effects for each resource in the combined project's area and determined that the conclusions regarding potential cumulative effects contained within the original Resource Report 1 summary remain correct.

Data Request 6

Provide all correspondences with the mining company associated with the re-route near milepost (MP) 8. Indicate how timing of future mining would precede, overlap, or follow the proposed construction of the Project. Provide an analysis of impacts that could occur should these projects be constructed simultaneously.

Response 6

PennEast has been in communication with both quarry operators near MP 8 about their future mining plans. PennEast shifted the route in July 2015 and again in December 2015 to accommodate these future mining plans. The quarries have indicated that these future plans are decades away. Therefore, it is not anticipated that construction of the pipeline will overlap or interfere with these future plans.

Records of correspondence with the quarry operators near MP 8 and a Figure showing proposed future development areas are included as Attachment 1.

Data Request 7

In section 1.5.1, page 1-64, and section 1.5.1.3, page 1-66, PennEast states that tree clearing would occur over the winter 2016-2017, and that it is possible construction could extend into the winter from October 15-May 15. As previously requested, provide a Winter Construction Plan that outlines steps PennEast would take to stabilize the right-of-way over the winter and during the spring thaw.

Response 7

A Winter Construction Plan is included as Attachment 2.

Data Request 8

Provide a Horizontal Directional Drill (HDD) Contingency Plan that outlines measures that PennEast would take in the event of an inadvertent release, including measures to contain and mitigate a release into a waterbody. Also, include in the HDD Contingency Plan how PennEast would determine an HDD attempt had failed and what measures would be taken following that determination.

Response 8

An HDD Inadvertent Returns and Contingency Plan is provided as Attachment 3.

Data Request 9

Provide a Blasting Plan that PennEast would implement where blasting would be required to excavate the pipeline trench. Include in the Blasting Plan the measures that would be used if blasting would be needed in waterbodies.

Response 9

PennEast originally provided a Blasting Plan as Appendix O under Attachment D of Resource Report 6 – Geologic Resources.

PennEast has updated this Plan to Revision B to incorporate feedback provided by the NJDEP in a letter submitted to FERC and PennEast dated October 28, 2015. The revised Blasting Plan has been included as Attachment 4.

Data Request 10

Explain the statement that the depth of cover for the proposed pipeline facilities would be in accordance with PennEast's minimum specifications. Provide a description of these specifications; and how and why they would be in compliance, or different from, the U.S. Department of Transportation requirements.

Response 10

The pipeline shall have 36 in. minimum cover of soil in all Class areas regardless of pre-existing soil/rock conditions.

These specifications are in compliance with the U.S. Department of Transportation requirements as stated in 49 CFR §192 section §192.327 as shown below.

Location	Normal soil	Consolidated rock
Inches (Millimeters)		
Class 1 locations	30 (762)	18 (457)
Class 2, 3, and 4 locations	36 (914)	24 (610)
Drainage ditches of public roads and railroad crossings	36 (914)	24 (610)

Data Request 11

Provide the timing restrictions for regulated activities that would discharge sediment into waterbodies as set forth in New Jersey Administrative Code 7:13-10.5(d) of the New Jersey Flood Hazard Area Control Act Rules identified in section 1.5.2.1, and identify how these differ from the FERC Wetland and Waterbody Construction and Mitigation Procedures.

Response 11

The New Jersey Department of Environmental Protection Flood Hazard Area Control Act Rules (N.J.A.C. 7:13-10) specify the following restricted time periods for waters with fishery resources:

1. Trout Production Waters: September 15 – March 15;
2. Trout Maintenance Waters: March 15 – June 15;
3. Non-Trout Waters: May 1 – June 30.

An Applicant may request that the Department reduce, extend or otherwise modify a timing restriction.

The FERC Wetland and Waterbody Construction and Mitigation Procedures (May 2013 Version), Section V.B.1, provides a Time Window for Construction based on two categories (Coldwater Fisheries and Coldwater & Warmwater fisheries). The construction should not occur during October 1st through May 31st and December 1st through May 31st, respectively, unless expressly permitted or further restricted by the appropriate Federal or State Agency.

Timing restrictions for regulated activities are provided in Attachment 5: Supplemental Information to Appendix 3C of Resource Report 3-Fisheries, Vegetation and Wildlife.

Data Request 12

Provide the length of each HDD crossing, by MP identified in table 1.5-3.

Response 12

Table 1.5-3
Horizontal Directional Drilling

Location/Feature	Mile Post[1]	Begin Mile Post[1]	End Mile Post[1]	Length (ft.)
US Hwy 81 / St. Hwy 315	10.6	10.4	10.7	1550
Wild Creek & Pohopoco Creek (Beltzville Lake)[2]	43.5	43.0	44.1	6100
St. Lukes (Lowes)	70.0	69.7	70.3	2900
Lehigh River	70.8	70.4	71.2	4900
Interstate 78	71.6	71.4	71.9	2400
Delaware River and Canal	77.4	77.2	77.7	2850
Lackatong Creek	92.8	92.2	93.4	6300
Pleasant Valley Road	106.2	105.9	106.5	3100
Washington Crossing Pennington Rd	111.1	110.9	111.4	2550
CSXT Railroad	112.1	111.9	112.4	2550

[1] Mileposts are estimated due to rounding
[2] New Wild Creek & Pohopoco Creek HDD is the combination of the Pohopoco Creek and Pohopoco Stream HDDs from the September FERC filing

Data Request 13

Provide a revised table 1.5-5 that includes the diameter of all natural gas pipelines that would be crossed by the project, and identify whether the crossed pipeline is currently in operation or abandoned.

Response 13

PennEast has exhausted all public and survey information obtained to date to verify pipe diameters in the revised Table 1.5-5. Until otherwise verified, all pipes in the ground will be treated as active. PennEast will continue to contact known operators of the facility to determine the pipe characteristics and operational status for pipeline at each one of the crossings

Table 1.5-5 Foreign Utilities Crossed

MP[1]	MP[2]	Facility Type	Intersected Utility	Intersected Project Pipeline	Diameter[3]
0.0	0.0	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	24
0.0	0.0	Overhead Utility	Unknown	PennEast	N/A
0.5	0.5	Gas Pipeline	Williams Field Services	PennEast	20
2.8	2.8	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	20
3.0	3.0	Overhead Utility	Unknown	PennEast	N/A
4.5	4.5	Overhead Utility	Unknown	PennEast	N/A
4.5	4.5	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
4.5	4.5	Overhead Utility	Black Hills Energy	PennEast	N/A
4.5	4.5	Overhead Utility	UGI Utilities, Inc.	PennEast	N/A
4.5	4.5	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
5.4	5.4	Overhead Utility	Unknown	PennEast	N/A
5.4	5.4	Gas Pipeline	UGI Penn Natural Gas	PennEast	4
5.5	5.5	Overhead Utility	Unknown	PennEast	N/A
6.5	6.5	Gas Pipeline	UGI Penn Natural Gas	PennEast	2
6.5	6.5	Gas Pipeline	UGI Penn Natural Gas	PennEast	10
6.6	6.6	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	20

8.0	8.0	Gas Pipeline	UGI Central Penn Gas	PennEast	2
8.1	8.1	Gas Pipeline	UGI Central Penn Gas	PennEast	2
8.1	8.1	Gas Pipeline	UGI Central Penn Gas	PennEast	2
8.1	8.1	Gas Pipeline	UGI Penn Natural Gas	PennEast	12
8.1	8.1	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	24
8.2	8.2	Gas Pipeline	UGI Penn Natural Gas	PennEast	4
8.8	8.8	Gas Pipeline	UGI Penn Natural Gas	PennEast	4
8.8	8.8	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
8.8	8.8	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
9.5	9.5	Overhead Utility	Unknown	PennEast	N/A
10.6	10.6	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
10.6	10.6	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
10.8	10.8	Overhead Utility	UNK	PennEast	N/A
12.1	12.1	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	24
15.5	15.7	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	24
18.1	18.3	Overhead Utility	Black Hills Energy	PennEast	N/A
18.4	18.6	Gas Pipeline	Buckeye Partners, LP	PennEast	14
18.4	18.6	Gas Pipeline	Buckeye Partners, LP	PennEast	8
18.4	18.6	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	24
20.2	20.4	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	Unknown
20.2	20.4	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	Unknown
26.0	26.2	Gas Pipeline	UGI Utilities Inc	PennEast	Unknown
26.1	26.3	Gas Pipeline	UGI Utilities	PennEast	8
28.6	28.8	Overhead Utility	Unknown	PennEast	N/A
28.8	29.0	Gas Pipeline	Buckeye Partners, LP	PennEast	14
28.9	29.1	Overhead Utility	Unknown	PennEast	N/A
35.4	35.6	Gas Pipeline	Buckeye Partners, LP	PennEast	Unknown
36.6	36.8	Gas Pipeline	Buckeye Partners, LP	PennEast	Unknown
37.2	37.4	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
37.2	37.4	Gas Pipeline	Buckeye Partners, LP	PennEast	Unknown

37.2	37.4	Gas Pipeline	Buckeye Partners, LP	PennEast	Unknown
39.5	39.7	Gas Pipeline	Buckeye Partners, LP	PennEast	Unknown
39.5	39.7	Gas Pipeline	Buckeye Partners, LP	PennEast	Unknown
40.5	40.7	Gas Pipeline	Buckeye Partners, LP	PennEast	Unknown
40.7	40.9	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
40.7	40.9	Overhead Utility	Unknown	PennEast	N/A
44.0	44.2	Water Tunnel	Bethlehem Water Authority	PennEast	N/A
48.5	48.7	Gas Pipeline	UGI Central Penn Gas	PennEast	8
49.8	50.0	Overhead Utility	Unknown	PennEast	N/A
50.7	50.9	Water Tunnel	Bethlehem Water Authority	PennEast	N/A
51.1	51.3	Water Tunnel	Bethlehem Water Authority	PennEast	N/A
54.1	54.3	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
54.1	54.3	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
54.1	54.3	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
54.1	54.3	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
56.8	57.0	Overhead Utility	Unknown	PennEast	N/A
57.6	57.8	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
60.4	60.6	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
62.1	62.3	Gas Pipeline	UGI Utilities	PennEast	8
64.3	64.5	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	Unknown
65.2	65.4	Overhead Utility	Unknown	PennEast	N/A
66.4	66.6	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
66.4	66.6	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
67.5	67.7	Gas Pipeline	PPL Corp	PennEast	10
68.8	69.0	Gas Pipeline	UGI Utilities	PennEast	8
69.8	70.0	Gas Pipeline	UGI Utilities	PennEast	4
71.8	72.0	Gas Pipeline	UGI Utilities	PennEast	12
73.8	74.0	Gas Pipeline	Columbia Gas Transmission Corp	PennEast	30
74.0	74.2	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
74.0	74.2	Overhead	PPL Electric Utilities Corp.	PennEast	N/A

		Utility			
76.6	76.8	Overhead Utility	Unknown	PennEast	N/A
76.6	76.8	Overhead Utility	Unknown	PennEast	N/A
79.0	79.2	Overhead Utility	Unknown	PennEast	N/A
79.0	79.2	Gas Pipeline	Elizabethtown Gas Co	PennEast	Unknown
79.0	79.2	Gas Pipeline	Elizabethtown Gas Co	PennEast	Unknown
79.0	79.2	Overhead Utility	Jersey Central Power & Light Co.	PennEast	N/A
79.1	79.3	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
79.1	79.3	Overhead Utility	Jersey Central Power & Light Co.	PennEast	N/A
79.4	79.6	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
79.4	79.6	Overhead Utility	Jersey Central Power & Light Co.	PennEast	N/A
79.4	79.6	Overhead Utility	Unknown	PennEast	N/A
79.4	79.6	Overhead Utility	Jersey Central Power & Light Co.	PennEast	N/A
79.4	79.6	Overhead Utility	Unknown	PennEast	N/A
79.7	79.9	Overhead Utility	Jersey Central Power & Light Co.	PennEast	N/A
79.9	80.1	Overhead Utility	Jersey Central Power & Light Co.	PennEast	N/A
80.6	80.8	Overhead Utility	PPL Electric Utilities Corp.	PennEast	N/A
89.6	88.8	Overhead Utility	Unknown	PennEast	N/A
90.8	90.0	Gas Pipeline	Buckeye Partners, LP	PennEast	Unknown
96.1	95.6	Overhead Utility	Unknown	PennEast	N/A
98.3	97.8	Overhead Utility	Unknown	PennEast	N/A
100.6	100.1	Gas Pipeline	Texas Eastern Transmission LP	PennEast	30
100.6	100.1	Gas Pipeline	Texas Eastern Transmission LP	PennEast	Unknown
100.8	100.3	Overhead Utility	Unknown	PennEast	N/A
100.9	100.4	Gas Pipeline	Peco Energy Co.	PennEast	Unknown
100.9	100.4	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A

100.9	100.4	Overhead Utility	Peco Energy Co.	PennEast	N/A
100.9	100.4	Gas Pipeline	Texas Eastern Transmission LP	PennEast	20
100.9	100.4	Gas Pipeline	Texas Eastern Transmission LP	PennEast	20
101.0	100.5	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A
102.2	101.7	Overhead Utility	Unknown	PennEast	N/A
102.2	101.7	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A
102.2	101.7	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A
102.8	102.3	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A
102.8	102.3	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A
102.8	102.3	Overhead Utility	Unknown	PennEast	N/A
103.1	102.6	Overhead Utility	Unknown	PennEast	N/A
103.6	103.1	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A
103.6	103.1	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A
104.6	104.1	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A
104.6	104.1	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A
104.6	104.1	Overhead Utility	Unknown	PennEast	N/A
104.8	104.3	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A
104.8	104.3	Overhead Utility	Public Service Electric and Gas Co.	PennEast	N/A
105.0	104.5	Overhead Utility	Unknown	PennEast	N/A
105.4	104.9	Overhead Utility	Jersey Central Power & Light Co.	PennEast	N/A
108.0	107.5	Overhead Utility	Jersey Central Power & Light Co.	PennEast	N/A
108.6	108.1	Overhead Utility	Jersey Central Power & Light Co.	PennEast	N/A
111.9	111.4	Overhead Utility	Jersey Central Power & Light Co.	PennEast	N/A
112.8	112.3	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	36

112.8	112.3	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	30
112.8	112.3	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	42
113.4	112.9	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	42
113.4	112.9	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	30
113.4	112.9	Gas Pipeline	Transcontinental Gas Pipe Line Corp	PennEast	36
0.2	N/A	Overhead Utility	Unknown	Lambertville Lateral	N/A
0.2	N/A	Overhead Utility	Public Service Electric and Gas Co.	Lambertville Lateral	N/A
0.2	N/A	Overhead Utility	Public Service Electric and Gas Co.	Lambertville Lateral	N/A
1.4	N/A	Gas Pipeline	Texas Eastern Transmission LP	Lambertville Lateral	Unknown
1.4	N/A	Gas Pipeline	Texas Eastern Transmission LP	Lambertville Lateral	30
1.7	N/A	Gas Pipeline	PPL Corp	Hellertown Lateral	Unknown
1.7	N/A	Gas Pipeline	Columbia Gas Transmission Corp	Hellertown Lateral	Unknown
2.0	N/A	Overhead Utility	PPL Electric Utilities Corp.	Hellertown Lateral	N/A

Notes:

1. Milepost values reflective of restationing to include route variations implemented since September FERC submission.
2. Milepost values calculated using station equations to relate current route to the route at the time of the September FERC submission.
3. Pipe diameter taken from deeds where available.
4. Utilities information sourced from publicly available and survey data.

Data Request 14

Provide a revised table 1.5-6 that includes the percent slope for each area identified.

Response 14

Table 1.5-6
Rugged Topography

ROW ID	Route	MP Start	MP End	Distance (feet)	Percent Slope
1	PennEast Mainline	0.5	0.5	181	37
2	PennEast Mainline	0.5	0.5	78	30
3	PennEast Mainline	0.6	0.6	213	34
4	PennEast Mainline	0.7	0.7	106	34
5	PennEast Mainline	0.7	0.7	106	42
6	PennEast Mainline	1.7	1.8	101	35
7	PennEast Mainline	2.3	2.3	137	36
8	PennEast Mainline	3.2	3.2	224	31
9	PennEast Mainline	3.3	3.3	74	36
10	PennEast Mainline	3.3	3.3	108	47
11	PennEast Mainline	3.6	3.7	234	37
12	PennEast Mainline	4.9	4.9	103	41
13	PennEast Mainline	5.1	5.1	420	33
14	PennEast Mainline	5.2	5.2	199	30
15	PennEast Mainline	5.2	5.2	74	30
16	PennEast Mainline	5.3	5.4	377	47
17	PennEast Mainline	6.0	6.0	70	30
18	PennEast Mainline	7.7	7.7	70	32
19	PennEast Mainline	8.1	8.1	114	39
20	PennEast Mainline	8.6	8.6	195	67
21	PennEast Mainline	8.6	8.7	304	67
22	PennEast Mainline	8.7	8.8	240	67
23	PennEast Mainline	9.3	9.3	161	67
24	PennEast Mainline	9.7	9.7	76	37
25	PennEast Mainline	9.7	9.8	162	36
26	PennEast Mainline	9.9	9.9	85	64
27	PennEast Mainline	10.3	10.3	270	60
28	PennEast Mainline	10.5	10.6	73	47
29	PennEast Mainline	10.9	10.9	94	63
30	PennEast Mainline	10.9	10.9	169	66
31	PennEast Mainline	11.8	11.8	76	32
32	PennEast Mainline	12.0	12.1	69	41
33	PennEast Mainline	12.6	12.6	135	30

ROW ID	Route	MP Start	MP End	Distance (feet)	Percent Slope
34	PennEast Mainline	12.9	13.0	315	53
35	PennEast Mainline	13.3	13.4	365	50
36	PennEast Mainline	13.6	13.6	90	33
37	PennEast Mainline	14.1	14.1	122	33
38	PennEast Mainline	14.2	14.3	519	61
39	PennEast Mainline	16.0	16.0	115	30
40	PennEast Mainline	16.7	16.7	257	41
41	PennEast Mainline	17.0	17.0	80	35
42	PennEast Mainline	18.1	18.2	183	34
43	PennEast Mainline	20.0	20.0	120	30
44	PennEast Mainline	22.6	22.6	347	45
45	PennEast Mainline	22.8	22.8	92	30
46	PennEast Mainline	23.1	23.1	337	51
47	PennEast Mainline	23.2	23.2	71	30
48	PennEast Mainline	23.6	23.7	289	30
49	PennEast Mainline	33.0	33.1	154	65
50	PennEast Mainline	33.1	33.1	174	30
51	PennEast Mainline	34.0	34.0	243	37
52	PennEast Mainline	38.2	38.3	181	30
53	PennEast Mainline	39.1	39.2	387	43
54	PennEast Mainline	39.2	39.3	117	35
55	PennEast Mainline	40.0	40.0	235	47
56	PennEast Mainline	40.1	40.3	673	60
57	PennEast Mainline	43.5	43.5	189	38
58	PennEast Mainline	43.6	43.6	111	55
59	PennEast Mainline	44.7	44.8	250	33
60	PennEast Mainline	44.9	44.9	112	35
61	PennEast Mainline	45.0	45.0	114	30
62	PennEast Mainline	45.1	45.2	660	30
63	PennEast Mainline	45.3	45.3	141	30
64	PennEast Mainline	45.4	45.4	181	32
65	PennEast Mainline	45.5	45.5	300	37
66	PennEast Mainline	45.6	45.6	258	41
67	PennEast Mainline	47.0	47.0	174	30
68	PennEast Mainline	47.1	47.1	79	30
69	PennEast Mainline	47.5	47.6	70	30
70	PennEast Mainline	47.6	47.6	74	30
71	PennEast Mainline	47.6	47.7	137	46
72	PennEast Mainline	47.8	47.9	567	37
73	PennEast Mainline	47.9	47.9	77	34
74	PennEast Mainline	48.0	48.1	294	41

ROW ID	Route	MP Start	MP End	Distance (feet)	Percent Slope
75	PennEast Mainline	48.2	48.2	83	43
76	PennEast Mainline	48.4	48.5	217	33
77	PennEast Mainline	48.6	48.6	103	30
78	PennEast Mainline	48.6	48.7	372	37
79	PennEast Mainline	50.0	50.1	586	51
80	PennEast Mainline	50.2	50.3	788	59
81	PennEast Mainline	50.3	50.4	104	51
82	PennEast Mainline	50.4	50.4	213	33
83	PennEast Mainline	51.1	51.1	277	42
84	PennEast Mainline	51.2	51.2	74	38
85	PennEast Mainline	51.2	51.3	157	41
86	PennEast Mainline	51.4	51.5	620	47
87	PennEast Mainline	55.8	55.9	185	39
88	PennEast Mainline	56.1	56.1	369	32
89	PennEast Mainline	56.7	56.8	127	32
90	PennEast Mainline	59.5	59.5	177	38
91	PennEast Mainline	59.6	59.6	281	34
92	PennEast Mainline	59.7	59.8	527	39
93	PennEast Mainline	60.2	60.2	82	34
94	PennEast Mainline	60.3	60.4	246	32
95	PennEast Mainline	61.4	61.4	70	33
96	PennEast Mainline	67.7	67.7	145	37
97	PennEast Mainline	68.4	68.4	124	44
98	PennEast Mainline	70.8	70.8	80	44
99	PennEast Mainline	70.8	70.8	69	53
100	PennEast Mainline	70.9	70.9	334	50
101	PennEast Mainline	71.1	71.2	301	40
102	PennEast Mainline	71.5	71.5	70	31
103	PennEast Mainline	71.6	71.7	176	31
104	PennEast Mainline	74.1	74.1	169	35
105	PennEast Mainline	74.1	74.1	123	36
106	PennEast Mainline	77.4	77.4	91	58
107	PennEast Mainline	78.0	78.0	95	33
108	PennEast Mainline	78.6	78.6	111	32
109	PennEast Mainline	80.1	80.1	122	37
110	PennEast Mainline	80.4	80.4	95	63
111	PennEast Mainline	80.4	80.4	71	33
112	PennEast Mainline	80.5	80.6	539	56
113	PennEast Mainline	80.7	80.8	184	31
114	PennEast Mainline	80.8	80.9	81	36
115	PennEast Mainline	80.9	80.9	162	42

ROW ID	Route	MP Start	MP End	Distance (feet)	Percent Slope
116	PennEast Mainline	81.1	81.2	515	48
117	PennEast Mainline	81.2	81.2	133	37
118	PennEast Mainline	81.6	81.6	172	36
119	PennEast Mainline	81.7	81.7	152	36
120	PennEast Mainline	82.3	82.3	214	37
121	PennEast Mainline	82.7	82.7	155	37
122	PennEast Mainline	82.8	82.8	170	49
123	PennEast Mainline	82.8	82.9	230	55
124	PennEast Mainline	83.1	83.2	235	58
125	PennEast Mainline	83.2	83.3	194	41
126	PennEast Mainline	83.4	83.5	583	39
127	PennEast Mainline	83.8	83.8	161	45
128	PennEast Mainline	83.9	83.9	100	32
129	PennEast Mainline	84.4	84.5	181	30
130	PennEast Mainline	85.3	85.3	85	36
131	PennEast Mainline	85.9	85.9	124	33
132	PennEast Mainline	86.0	86.0	70	32
133	PennEast Mainline	86.7	86.8	99	43
134	PennEast Mainline	86.8	86.9	91	31
135	PennEast Mainline	87.6	87.6	89	30
136	PennEast Mainline	87.6	87.7	101	44
137	PennEast Mainline	87.7	87.7	113	59
138	PennEast Mainline	88.3	88.4	232	45
139	PennEast Mainline	88.4	88.4	216	36
140	PennEast Mainline	96.7	96.7	223	39
141	PennEast Mainline	99.9	99.9	126	39
142	PennEast Mainline	99.9	100.0	187	42
143	PennEast Mainline	100.2	100.2	168	54
144	PennEast Mainline	102.7	102.7	310	43
145	PennEast Mainline	104.7	104.8	82	43
146	PennEast Mainline	105.3	105.3	79	33
147	PennEast Mainline	106.5	106.5	78	30
148	PennEast Mainline	106.6	106.7	595	36
149	PennEast Mainline	106.8	106.8	111	37
150	PennEast Mainline	107.6	107.7	77	31
151	PennEast Mainline	107.8	107.8	123	39
152	PennEast Mainline	109.1	109.1	70	35
153	Hellertown Lateral	0.5	0.5	213	32
154	Hellertown Lateral	1.8	1.9	106	39
155	Hellertown Lateral	2.1	2.1	121	34
156	Lambertville Lateral	0.1	0.1	95	38

ROW ID	Route	MP Start	MP End	Distance (feet)	Percent Slope
157	Lambertville Lateral	0.1	0.1	135	30
158	Lambertville Lateral	0.4	0.4	70	41
159	Lambertville Lateral	0.4	0.4	138	41
160	Lambertville Lateral	0.8	0.8	99	58
			Total Distance (feet)	**30766**	
			Total Distance (miles)	**5.8**	

Notes:
[1] Data Sources include Pictometry Lidar-derived 1-meter DEM and PAMAP Lidar-derived 1-meter DEM.
[2] Pipeline segments intersecting terrain with slopes of 30% or greater and for a pipeline length of greater than 68 feet (triple length of pipe) were recorded.
e totals shown in this table may not equal the sum of addends due to rounding

Data Request 15

Provide the MP locations for the anode beds and test stations, including description of land cover and additional impacts at each location.

Response 15

PennEast is in the process of engaging a Cathodic Protection (CP) and Alternating Current (AC) Mitigation firm. PennEast is targeting completion of the detailed design of this system by the third quarter of 2016. PennEast will provide milepost locations as requested for the anode beds and test stations following the detailed design stage.

Data Request 16

Provide updated tables 1.7-1 and 1.7-2 that include the latest status of consultations with federal and state permitting agencies. Include documentation of any updated consultations as appropriate. Specifically, the U.S. Army Corps of Engineers (COE), U.S. Fish and Wildlife Service (FWS), National Park Service, PADEP and New Jersey Department of Environmental Protection (NJDEP).

Response 16

Updated Tables 1.7-1 and 1.7-2 are provided below. Documentation of updated consultations is included in Attachment 6, Supplemental Information to Appendix G1; and Attachment 6, Supplemental Information to Appendix G2 [Privileged and Confidential].

Table 1.7-1
Required Environmental Permits and Approvals for the Project

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
FEDERAL			
U.S. Army Corps of Engineers - Philadelphia and Baltimore Districts	Clean Water Act Section 404, Rivers and Harbors Act Section 10, and Title 33 Section 408 Approvals	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting held 10/30/14. Updated route materials sent 7/24/15 and 10/01/15. Pre-application meetings held 7/13/2015 and 7/16/2015. Delineation Verifications commenced in Nov. 2015 and are ongoing.	Dec. 2015 - Jan. 2016 Applications/ Nov.- Dec. 2016 Receipt
U.S. Fish and Wildlife Service - Pennsylvania	Endangered Species Act, Section 7 Consultation and Clearance	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting held 10/29/14. Updated route materials sent 7/24/15 and 10/1/15. Rare, Threatened, and Endangered (RTE) species survey coordination meeting held 4/22/15. Species report submitted 10/7/15.	Oct. 2015 Consultation/ Nov.- Dec. 2016 Receipt

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
U.S. Fish and Wildlife Service - New Jersey	Endangered Species Act, Section 7 Consultation and Clearance	Initial consultation letter sent 8/12/2014. Consultation discussions ongoing. Updated route materials sent 7/24/15 and 10/1/15. RTE survey coordination meeting held 4/23/15. Species report submitted 10/7/15.	Oct. 2015 Consultation/ Nov.- Dec. 2016 Receipt
National Marine Fisheries Service (NMFS)	Endangered Species Act, Section 7 Consultation and Clearance	Initial consultation letter sent 8/12/2014. Response received stating that no threatened or endangered species under the jurisdiction of the NMFS are known to occur in the Project area, and no further consultation is necessary. Updated route materials sent 7/24/15 and 10/1/15. Follow-up consultation on 12/8/15 regarding in-work timing restriction for Delaware River. Consultations ongoing.	Aug. 2014 Consultation/ Nov.- Dec. 2016 Receipt
National Park Service (NPS)	NPS Consultation and Clearance for National Natural Landmarks, National Trails, and National Historic Sites	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting with National Wild and Scenic Rivers Program managers held 10/1/14. Updated route materials sent 7/24/15 and 10/1/15. Held conference call on Appalachian Trail crossing on 8/11/15.	No Filing Necessary
National Resources Conservation Service (NRCS)	NRCS Consultation	Initial coordination meeting held 3/18/15. Joint agriculture community meeting held 6/2/15. Updated route materials sent 7/24/15.	No Filing Necessary

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
STATE - PENNSYLVANIA			
PADEP (Northeast and Southeast Regional Offices)	Water Obstruction and Encroachment Permits Submerged Lands License Agreements Section 401 Water Quality Certification Erosion and Sediment Control General Permit (ESCGP-2) Hydrostatic Testing Discharge General Permits (PAG-10) Plan Approval and Operating Permit for a Non-Major Source	Initial consultation letter sent 8/12/2014. Coordination meeting held 11/19/14. Updated route materials sent 7/24/15 and 10/1/15. Pre-application meeting held 7/13/15. Additional pre-application meeting scheduled for 12/17/15.	Jan. 2016 Applications/ Nov.- Dec. 2016 Receipt
Pennsylvania Game Commission (PGC)	T&E Species Consultation and Clearance	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting held 9/25/14. Special Use Permits for surveys on PGC lands issued 9/2014. Updated route materials sent 7/24/15 and 10/1/15. Appalachian Trail crossing meetings held 5/21/15 and 8/27/15. Species report submitted 10/7/15 and 11/10/15. Consultations ongoing.	Oct. 2015 Consultation/ Nov.- Dec. 2016 Receipt
Pennsylvania Fish and Boat Commission (PFBC)	T&E Species Consultation and Clearance Permit for Use of Explosives in Commonwealth Waters Aid to Navigation Plan Approval	Initial consultation letter sent 8/12/2014. Introduction and coordination meetings held 11/4/14 and 11/24/14. Updated route materials sent 7/24/15 and 10/01/15.RTE species survey and land use consultations ongoing. Species reports submitted 10/7/15 and 11/10/15. PFBC T&E Consultation responses received 11/5/2015 and 12/10/15. Consultations ongoing.	Oct. 2015 Consultation and Jan. 2016 Applications/ Nov.- Dec. 2016 Receipt

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
Pennsylvania Department of Conservation and Natural Resources (DCNR)	RTE Species Consultation and Clearance	Initial consultation letter sent 8/12/2014. Introduction and coordination meetings held 11/4/14 and 11/24/14. Updated route materials sent 7/24/15 and 10/1/15. Special Use Permits for surveys on state park lands issued 4/8/15. Species report submitted 10/7/15. DCNR response received 10/22/15. Consultations ongoing.	Oct. 2015 Consultation/ Nov.- Dec. 2016 Receipt
Pennsylvania Historical and Museum Commission (PHMC)	National Historic Preservation Act, Section 106 Consultation and Clearance	Initial consultation letter received 08/21/2014. Consultations ongoing. Updated route materials sent 7/24/15 and 10/1/15. Phase I Archeological Report and Historical Reconnaissance Report submitted 9/23/15. PHMC responses received 10/21/15 and 10/22/15. Consultations ongoing.	Sept. 2015 Consultation/ Nov.- Dec. 2016 Receipt

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
STATE – NEW JERSEY			
NJDEP, Division of Land Use Regulation	NJ Freshwater Wetlands Letter of Interpretations and Individual Permit, includes Federal wetlands certification NJ Flood Hazard Area Verifications and Individual Permit	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting held 9/23/14. Interagency coordination meeting held 12/2/14. Updated route materials sent 7/24/15. Consultation meetings held 7/2/15, 7/30/15, 8/4/2015, 8/5/2015, 8/19/2015, 9/2/2015, 9/8/2015, 9/10/2015 and 9/16/2015.	Application process commencing Fall 2015
NJDEP, Green Acres Program	NJ Green Acres Minor/Major Diversion	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting held 9/23/14. Interagency coordination meeting held 12/2/14. Updated route materials sent 7/24/15. Consultation meeting held 7/2/15.	Commencing Fall 2015
NJDEP, Division of Air Quality	Air Quality General Permits, including Federal Air Permits	Scheduled prior to construction.	Consultation Ongoing
NJDEP, Division of Water Resources	Discharge to Surface Water Permit Water Allocation Permit NJDEP General Permit No. 5G3 (NJ0088323) for Stormwater Discharge Associated with Construction Activity	Applicability will be determined as Project design advances.	Consultation Ongoing
New Jersey State Historic Preservation Office (NJSHPO)	National Historic Preservation Act, Section 106 Consultation and Clearance	Initial consultation letter sent 8/19/2014. Introduction and coordination meeting held 9/16/14. Interagency coordination meeting held 12/2/14. Updated route materials sent 7/24/15. Revised archaeological sensitivity model accepted 4/8/15.	Sept. 2015 Application/ Nov.- Dec. 2016 Receipt
NJ State Agriculture Development Committee	NJ Farmland Preservation Program Consultation	Introductory meeting held 9/12/14. Interagency coordination meeting held 12/2/14. Updated route materials sent 7/24/15. Joint agricultural community meeting held 6/2/15.	N/A
COUNTY			

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
Luzerne Conservation District	Erosion and Sediment Control General Permit (ESCGP-2) Technical Review	Initial consultation letter sent 8/21/2014. Pre-application meeting held 7/13/15. Additional pre-application meeting scheduled for 12/17/15. Updated route materials sent 7/24/15 and 10/1/15.	Jan. 2016 Application/ Nov.- Dec. 2016 Receipt
Carbon County Conservation District	Erosion and Sediment Control General Permit (ESCGP-2) Technical Review	Initial consultation letter sent 8/21/2014. Pre-application meeting held 7/13/15. Additional pre-application meeting scheduled for 12/17/15. Updated route materials sent 7/24/15 and 10/1/15.	Jan. 2016 Application/ Nov.- Dec. 2016 Receipt
Northampton County Conservation District	Erosion and Sediment Control General Permit (ESCGP-2) Technical Review	Initial consultation letter sent 8/21/2014. Pre-application meeting held 7/13/15. Additional pre-application meeting scheduled for 12/17/15. Updated route materials sent 7/24/15 and 10/1/15.	Jan. 2016 Application/ Nov.- Dec. 2016 Receipt
Bucks County Conservation District	Erosion and Sediment Control General Permit (ESCGP-2) Technical Review	Initial consultation letter sent 8/21/2014. Pre-application meeting held 7/13/15. Additional pre-application meeting scheduled for 12/17/15. Updated route materials sent 7/24/15 and 10/1/15.	Jan. 2016 Application/ Nov - Dec. 2016 Receipt
Hunterdon County Conservation District	Soil Erosion and Sediment Control (SESC) Plan Certification	Initial consultation letter sent 8/21/2014.	Consultation Ongoing
Mercer County Conservation District	Soil Erosion and Sediment Control (SESC) Plan Certification	Initial consultation letter sent 8/21/2014.	Consultation Ongoing
WATERSHED-SPECIFIC REGULATORY AUTHORITIES			
Delaware River Basin Commission (DRBC)	Water Withdrawal Approval and Project Review	Initial consultation letter sent 8/21/2014. Introduction and coordination meeting held 9/3/14. Updated route materials sent 7/24/15 and 10/1/15. Pre-application meetings held 7/13/15 and 12/2/15.	Jan. 2016 Application/ Mar. 2017 Receipt

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
Susquehanna River Basin Commission (SRBC)	Water Withdrawal Approval if more than 100,000 gallons per day averaged over 30 days	Initial consultation letter sent 8/21/2014. Introduction and coordination meeting held 11/6/14. Updated route materials sent 7/24/15 and 10/1/15.	Consultation Ongoing

Table 1.7-2
Summary of Agency Consultations and Communications

Date	Correspondence	Notes
U.S. ARMY CORPS OF ENGINEERS		
12 August, 2014	Initial consultation letter	Materials sent to Philadelphia, Baltimore, and New York Districts. Materials provided Included GIS shapefiles, USGS 7.5 minute quadrangle maps with project alignment, and detailed aerial maps with environmental features.
24 October, 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
30 October, 2014	Introduction and coordination meeting held at USACE Philadelphia District Office. Participants included 9 USACE staff, 2 PennEast environmental staff, and 2 PennEast land staff.	Meeting covered Project overview, maps, FERC process, USACE projects and jurisdiction.
14 January, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
30 March, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
13 July 2015	Pre-application meeting for PA permits held a PADEP Northeast Regional Office. Attended by	Reviewed and coordinated permitting schedule, potential wetland and waterbody impacts, air

Date	Correspondence	Notes
	9 PADEP staff, 2 USACE staff, 2 DRBC staff, 4 County Conservation District staff, 4 PennEast environmental staff and 2 PennEast project management/outreach staff,	permitting, anticipated hydrostatic test discharges, Section 401 Water Quality Certification, Chapter 105/Section 404/Section10, impacts within the Delaware River Basin, Chapter 102, and general recommendations and lessons learned from other recent projects,
16 July, 2015	Pre-application meeting held at USACE Beltzville Lake facility. Participants included 3 USACE regulatory/NEPA staff, 4 USACE operations staff, 1 PennEast engineering staff, 2 PennEast environmental staff, and 1 PennEast land staff	Discussed general project design, environmental survey status in the area including USACE lands, Beltzville Lake and Lehigh River crossing methods, potential recreational and wildlife impacts, Section 408 submittal application and review process, and NEPA review process.
24 July, 2015	Route Update	Materials provided Included a cover letter describing the route changes and GIS shapefiles.
1 October 2015	Route Update	Materials provided included GIS shapefiles.
November and December 2015	Field Review of Delineated PA Wetlands	Field review and adjustment of delineated wetland boundaries where appropriate
PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION		
12 August, 2014	Initial consultation letter sent	Materials sent to the Northeast and Southeast Regional Offices. Materials provided Included GIS shapefiles, USGS 7.5 minute quadrangle maps with project alignment, and detailed aerial maps with environmental features.
24 October, 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
19 November, 2014	Introductory coordination meeting held at PADEP Bethlehem District Office. Participants included 2 PADEP Assistant Regional Directors, 4 PADEP Waterways and Wetlands Program Staff, 1 PADEP Air Quality Program Staff, 1 PADEP	PADEP was invited to be a cooperating agency with FERC. General project design, Project stakeholder coordination and potential concerns, permitting approach and technical issues were

Date	Correspondence	Notes
	Water Quality Program Staff and 2 PennEast environmental staff	discussed.
14 January, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
11 February, 2015	PA Interagency meeting with FERC attended by FERC and PADEP staff and 2 PennEast representatives	FERC Project Manager provided an overview of the FERC process and initiated coordination with PADEP staff. PennEast reps provided project overview and environmental survey status updates.
23 February, 2015	Coordination meeting held with PADEP Bureau of Abandoned Mine Reclamation. Participants included 4 PADEP staff, 1 PennEast Engineering Staff and 1 PennEast environmental staff	Reviewed archived mine maps and discussed Susquehanna River crossing as it pertained to abandoned mines and unconsolidated materials beneath the riverbed.
31 March, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
13 July, 2015	Pre-application meeting held at PADEP Northeast Regional Office and attended by 9 PADEP staff, 2 USACE staff, 2 DRBC staff, 4 County Conservation District staff, 4 PennEast environmental staff and 2 PennEast project management/outreach staff,	Reviewed and coordinated permitting schedule, potential wetland and waterbody impacts, air permitting, anticipated hydrostatic test discharges, Section 401 Water Quality Certification, Chapter 105/Section 404/Section10, impacts within the Delaware River Basin, Chapter 102, and general recommendations and lessons learned from other recent projects,
24 July, 2015	Route Update	Materials provided Included a cover letter describing the route changes and GIS shapefiles.
1 October 2015	Route Update	Materials provided included GIS shapefiles

Date	Correspondence	Notes
U.S. FISH AND WILDLIFE SERVICE - PENNSYLVANIA		
12 August, 2014	Initial consultation letter sent	Materials provided Included GIS shapefiles, USGS 7.5 minute quadrangle maps with project alignment, and detailed aerial maps with environmental features.
16 September, 2014	Phone conversation between USFWS staff and PennEast Environmental Staff	PennEast requested known locations of bat hibernaculum and/or maternity roosts and discussed seasonal timing restrictions on tree clearing as a viable impact minimization measure for bats.
24 October, 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
29 October, 2014	Introduction meeting with the USFWS PA Field Office. Participants included 2 USFWS Staff and 2 PennEast Environmental Staff	USFWS PA Field Office was introduced to the project and provided with a project description, associated project maps, a description of the FERC filing process and a schedule of the open houses. RTE species that will be of concern to PennEast were discussed.
14 January, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
30 March, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
22 April, 2015	Bat Survey Protocol Review Meeting with the USFWS PA Field Office. Participants included 1 USFWS Ecological Services Staff, 1 PGC Staff, and 3 PennEast Environmental Staff	Coordinated specific bat survey protocols.
15 May, 2015	Email correspondence between PennEast environmental staff and USFWS staff.	PennEast notified USFWS of dates and locations for Phase 1 and 2 bog turtle surveys.
1 July, 2015	Email correspondence between USFWS and PennEast Environmental Staff	Coordination regarding recent federal listing of Northern long-eared bat. USFWS shared known

Date	Correspondence	Notes
		occurrences within Project area, established protective buffers around hibernacula, and coordinating future bat surveys for this and other protected species.
24 July, 2015	Route Update	Materials provided Included a cover letter describing the route changes and GIS shapefiles.
1 October 2015	Route Update	Materials provided included GIS shapefiles.
7 October 2015	Technical Reports	Provided RTE surveys (federal bats, bog turtle, and bulrush).
U.S. FISH AND WILDLIFE SERVICE – NEW JERSEY		
12 August, 2014	Initial consultation letter sent	Materials provided Included GIS shapefiles, USGS 7.5 minute quadrangle maps with project alignment, and detailed aerial maps with environmental features.
17 September, 2014	Phone conversation between PennEast environmental staff and USFWS staff.	Discussed USFWS Section 7 consultation review and species under USFWS NJ field office jurisdiction listed in the iPAC
24 October, 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
14 January, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
30 March, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
23 April, 2015	Bat Survey Protocol Review Meeting with the USFWS NJ Field Office. Participants included 1 USFWS Ecological Services Staff and 2 PennEast Environmental Staff.	Coordinated specific bat survey protocols.
24 July, 2015	Route Update	Materials provided Included a cover letter describing the route changes and GIS

Date	Correspondence	Notes
		shapefiles.
1 October 2015	Route Update	Materials provided included GIS shapefiles.
7 October 2015	Technical Report	Provided RTE Surveys (federal bats, bog turtle, and bulrush).
NATIONAL MARINE FISHERIES SERVICE		
12 August, 2014	Initial consultation letter sent	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
18 September, 2014	Response containing preliminary comments pursuant to the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act.	Letter states that further consultation by the federal action agency is not necessary as part of the federal permit process.
24 October, 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
14 January, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
30 March, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
24 July, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
1 October 2015	Route Update	Materials provided included GIS shapefiles.
8 December, 2015	Email correspondence	Correspondence between Karen Greene (NMFS) and Deborah Poppel (AECOM) to confirm which waterbodies have in-water work restrictions between March 1 and June 30 to protect anadromous fishes.
NATIONAL PARK SERVICE		

Date	Correspondence	Notes
12 August 2014	Initial consultation letter sent	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
1 October 2014	Introduction and coordination meeting with National Wild and Scenic Rivers Program Managers. Participants included 3 National Park Service Wild and Scenic River Representatives, 1 PennEast Public Relations Staff and 2 PennEast Environmental Staff.	PennEast provided the National Park Service and the Executive Committee of the Lower Delaware National Wild & Scenic River an overview of the Project and discussed any concerns. Opportunities for public involvement in the Lower Delaware Corridor were discussed.
24 October 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
30 March 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
24 July, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
1 October 2015	Route Update	Materials provided included GIS shapefiles.
PENNSYLVANIA GAME COMMISSION (PGC)		
12 August 2014	Initial consultation letter sent	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
25 September 2014	Introduction and coordination meeting with the Pennsylvania Game Commission. Participants included 6 Pennsylvania Game Commission Staff and 3 PennEast Staff.	PennEast provided the PGC with an overview of the Project and discussed any concerns.
24 October 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
14 January 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.

Date	Correspondence	Notes
30 March 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
21 May 2015	Coordination Meeting with the Pennsylvania Game Commission. Participants included 1 PGC Right-of-Way Administrator, 1 PGC Wildlife Conservation Officer, the PGC Southeast Region Land Management Supervisor and 4 PennEast Staff.	Consultation with the PGC regarding crossing the Appalachian Trail. Co-location with the Buckeye pipeline and the expansion of the Appalachian Trail were also discussed.
18 July, 2015	Coordination Meeting with the Pennsylvania Game Commission Southeast Region. Participants included 1 PGC Southeast Region Land Management Supervisor, 1 PGC Right-of-Way Administrator and 3 PennEast Staff.	Consultation with the PGC regarding crossing the Appalachian Trail. The route passing through Blue Mountain Water Park was presented to PGC and all related concerns were discussed.
21 July, 2015	Coordination Meeting with the Pennsylvania Game Commission Northeast Region. Participants included 1 PGC Northeast Region Land Management Supervisor and 5 PennEast Staff.	Consultation with the PGC regarding the crossing of Pennsylvania Game Land 91, 40 and 129. Wildlife, existing access roads, land reclamation and compensation were also discussed.
24 July, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
1 October 2015	Route Update	Materials provided included GIS shapefiles.
7 October 2015	Technical Reports	Provided eastern small-footed bat and Allegheny woodrat surveys.
10 November 2015	Technical Report Supplement	Provided technical report supplement for eastern small-footed bat and Allegheny woodrat.
PENNSYLVANIA FISH AND BOAT COMMISSION (PFBC)		
12 August 2014	Initial consultation letter sent	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
8 September, 2014	Response containing a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database	PAFBC provided PennEast with a PNDI review of the Original route. Based on their review, the

Date	Correspondence	Notes
	search "potential conflicts" or threatened and endangered species impact review.	PAFBC was concerned that the project would have an impact on various species of special concern.
24 October 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
10 November, 2014	Response containing a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflicts" or threatened and endangered species impact review.	PAFBC provided PennEast with a PNDI review of the updated October route. Based on their review, the PAFBC was concerned that the project would have an impact on various species of special concern.
14 January, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
23 January, 2015	Response containing a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflicts" or threatened and endangered species impact review.	PAFBC provided PennEast with a PNDI review of the updated January route. Based on their review, the PAFBC was concerned that the project would have an impact on various species of special concern.
30 March, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
4 April, 2015	Response containing a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflicts" or threatened and endangered species impact review.	PAFBC provided PennEast with a PNDI review of the updated March route. Based on their review, the PAFBC was concerned that the project would have an impact on various species of special concern.
24 July, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
12 August, 2015	Response containing a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflicts" or threatened and endangered species impact review.	PAFBC provided PennEast with a PNDI review of the updated July route. Based on their review, the PAFBC was concerned that the project would have an impact on various species of special

Date	Correspondence	Notes
		concern.
1 October 2015	Route Update	Materials provided included GIS shapefiles.
7 October 2015	Technical Reports	Provided northern cricket frog and timber rattlesnake surveys.
10 November 2015	Technical Report Supplement	Provided technical report supplement for timber rattlesnake.
The Delaware Nation		
11 February 2015	Response Letter	Correspondence stating to continue with planned project and provide notification if a historical archaeological site is unearthed during construction.
17 February 2015	E-mail Correspondence	E-mail acknowledging the receipt of the response letter and requesting contact information.
17 February 2015	E-mail Correspondence	Provides updated contact information for The Delaware Nation.
The Delaware Tribe of Indians		
4 March 2015	E-mail Correspondence	Confirming correct contacts within the Delaware Tribe of Indians.
24 September 2015	Consultation letter	Submittal of Phase I Archaeological Survey Reports.
16 October 2015	Record of Conversation	Discussion of review of Phase I archaeological reports submitted.
Oneida Indian Nation		
24 September 2015	Consultation letter	Submittal of Phase I Archaeological Survey Reports.
Ramapough Lenape Indian Nation		
20 October 2015	E-mail Correspondence	Coordination on moving forward with the project and receipt of initial consultation letter.
Shawnee Tribe		

Date	Correspondence	Notes
19 February 2015	E-mail Correspondence	Confirming the receipt of the initial consultation letter and no concerns at this time about the project moving forward.
St. Regis Mohawk Tribe		
18 February 2015	Record of Conversation	Voicemail left requesting receipt of initial consultation letter, confirmation of Tribe's THPO and present chief.
25 February 2015	E-mail Correspondence	Requesting to participate in the Section 106 process.
Stockbridge-Munsee Band of Mohicans		
24 September 2015	Consultation letter	Submittal of Phase I Archaeological Survey Reports.
PENNSYLVANIA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (DCNR)		
12 August, 2014	Initial consultation letter sent	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
24 October, 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
4 November, 2014	Initial coordination with PADCNR. Participants included 1 PA Fish and Boat Commission Staff, 3 DCNR Bureau of Forestry Staff, 1 DCNR Bureau of State Parks Staff and 4 PennEast Staff.	PennEast provided PADCNR with an overview of the Project. The formalized process to obtain ROW permission was discussed along with any concerns.
14 January, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
20 February, 2015	PNDI Environmental Review receipt	PA Natural Diversity Inventory (PNDI) Environmental Review Large Project # 022407.
30 March, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.

Date	Correspondence	Notes
18 March, 2015	Pre-Survey Meeting with PADCNR at Weiser State Forest District Office. Participants included PADCNR Staff and PennEast Staff.	Prior to the meeting, PADCNR provided a Summary of Initial Concerns (SOIC) with the Project that was discussed with PennEast.
6 April, 2015	PNDI Environmental Review receipt	PA Natural Diversity Inventory (PNDI) Environmental Review Large Project # 022426.
24 July, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
17 September, 2015	Pre-Survey Meeting with PADCNR at Harrisburg Office. Participants included PADCNR Staff and PennEast Staff	Prior to the meeting, PADCNR provided a Summary of Initial Concerns (SOIC) with the Project that was discussed with PennEast.
7 October 2015	Technical Reports	Provided RTE plant surveys.
22 October, 2015	PNDI Environmental Review receipt	PA Natural Diversity Inventory (PNDI) Environmental Review Large Project # 022426.
27 October, 2015	Phone conversation and follow-up email correspondence	Conversation between David Mong (PADCNR) and Jon West (AECOM) discussing requirements for completing State Forest Environmental Review report for PADCNR review.
5 November, 2015	Email correspondence re: technical report review	Email correspondence from Fredrick Sechler (PADCNR) to Deb Poppel (AECOM) regarding results of RTE plant surveys.
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION (PHMC)		
21 August, 2014	Initial consultation letter received	PennEast submitted a detailed scoping letter to PAHMC. Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment. The letter also proposed methodology for identification-level archaeological and architectural history surveys and included an Unanticipated Discovery Plan (UDP).
10 September, 2014	Response Letter from PAHMC regarding PennEast scoping letter sent 21 August, 2015.	PAHMC concurred with the survey methodologies and the UDP provided by

Date	Correspondence	Notes
		PennEast.
24 October, 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
14 January, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
30 March, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
22 April 2015	Response Letter	PHMC response to March 31, 2015 project alignment update.
27 July, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
1 September 2015	Boring Update	Letter report to PHMC re: Geotechnical bore in Delaware Canal
11 September 2015	Response letter	PHMC response to July 24, 2015 project alignment update.
24 September 2015	Technical Report	Phase I Archaeological Report and Unanticipated Discovery Plan.
25 September 2015	Response Letter	PHMC response to September 1, 2015 letter report re: Geotechnical bore in Delaware Canal
30 September 2015	Technical Report	Reconnaissance-Level Historic Architectural Survey Report
1 October 2015	Route Update	Materials provided included GIS shapefiles.
21 October 2015	Response Letter	PHMC response to October 1, 2015 Reconnaissance-Level Historic Architectural Survey Report
22 October 2015	Response Letter	PHMC response to September 23, 2015 Phase I Archaeological Survey Report

Date	Correspondence	Notes
Pennsylvania Cultural Resources Stakeholder Contacts		
9 December 2015	Society of Pennsylvania Archaeology	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Bucks County Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Delaware and Lehigh National Heritage Corridor	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Durham Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Governor Wolf Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Historic Bethlehem Museums and Sites	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Jacobsburg Historical Society Inc.	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Lehigh Valley Railroad Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Lower Saucon Township Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Luzerne County Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	The Mauch Chunk Historical Society	Initial consultation letter including GIS shapefiles

Date	Correspondence	Notes
		and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Moravian Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Northampton County Historical and Genealogical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Pennsylvania Canal Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Preservation Pennsylvania	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Riegelsville Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
New Jersey Cultural Resources Stakeholder Contacts		
9 December 2015	Archaeological Society of New Jersey	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Alexandria Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Cherokee Nation of New Jersey	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Cherokee Tribe of New Jersey	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Delaware Township Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with

Date	Correspondence	Notes
		project alignment.
9 December 2015	Garden State Preservation Trust	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Holland Township Historic Preservation Commission	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Hopewell Township Historic Preservation Commission	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Hopewell Valley Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Hunterdon County Cultural % Heritage Commission	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Hunterdon County Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Kingwood Township Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Lambertville Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Mercer County Cultural and Heritage Commission	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Milford Borough Historical Society	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Nanticoke Lenni-Lenape Indians of New Jersey	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with

Date	Correspondence	Notes
		project alignment.
9 December 2015	Jersey Central Chapter	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	New Jersey Historical Commission	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	New Jersey Historic Land Trust	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Borough of Pennington Historic Preservation Commission	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Preservation New Jersey	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Ramapough Lenape Indian Nation	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Ramapough Mountain Indians	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Sand Hill Indian Historical Association	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
9 December 2015	Township of West Amwell Historic Preservation	Initial consultation letter including GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION		
12 August, 2014	Initial consultation letter sent	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.

Date	Correspondence	Notes
23 September, 2014	Introduction and coordination meeting held with the NJDEP. Participants included 1 NJDEP Staff and 4 PennEast Staff.	PennEast provided NJDEP with an overview of the Project. NJDEP's concerns with the Project were discussed.
24 October, 2014	Route Update and completed NJDEP Permit Readiness Checklist sent to NJDEP.	Materials provided Included GIS shapefiles, USGS 7.5 minute quadrangle maps with project alignment and a completed NJDEP Permit Readiness Checklist.
14 January 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
2 December 2014	Interagency Meeting held at the NJDEP. Participants included 11 NJDEP Staff, 1 Archer & Grenier P.C. Staff, 2 DRBC Staff, 2 NJ Green Acres Program Staff, 3 USACE Staff, 1 SADC Staff, 1 USFWS Staff, 1 Tetra Tech Staff, 2 FERC Staff, 5 PennEast staff.	PennEast provided all attending agencies with an overview of the Project. Specific concerns of all the agencies were discussed. These included Co-location, the need for a Freshwater Wetlands application for a major discharge, USACE's role in the Project, Section 7 of the ESA, the Green Acres Program, air quality standards and cultural resources along the route. In order to accommodate all of these concerns, PennEast assured the agencies that there would be continued and extensive consultation with them throughout the permitting process.
4 February 2015	Coordination meeting	
26 February 2015	Interagency meeting with FERC	
30 March 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
31 March 2015	Coordination meeting with NJDEP Natural and Historic Resources. Participants included 8 NJDEP Staff and 3 PennEast Staff.	PennEast and NJDEP discussed Natural Lands Trust/Gravel Hill, NJ State Owned Lands, Green Acres Funds/Encumbered Parcels and Parcel Lists.
2 July, 2015	Pre-application held at NJDEP. Participants included 15 NJDEP Staff and 9 PennEast Staff.	PennEast described the project and its purpose and need. PennEast and NJDEP discussed project compliance with all NJ regulations.

Date	Correspondence	Notes
24 July, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
30 July, 2015	Pre-application held at NJDEP. Participants included 9 NJDEP Staff and 7 PennEast Staff.	PennEast and NJDEP discussed preparation of complete applications and regulatory process.
4 August, 2015	Coordination meeting with Highlands Council at Council office. Participants included 3 Council members and 9 PennEast management, engineering, and environmental staff	Discussed regulatory framework pertaining to the Highlands Act and Rules, Regional Master Plan resources, and Consistency Determination.
5 August, 2015	Conference call with NJDEP staff. Participants included 11 NJDEP regulatory and land use staff and 5 PennEast environmental staff	Provided updates on mitigation, percentage of survey access, survey schedules, and agency consultations. Materials provided included project overview handouts, mapping, and fact sheets.
19 August, 2015	Conference call with NJDEP staff. Participants included 10 NJDEP staff, 5 PennEast environmental staff, and 2 PennEast outreach staff.	Discussed permits for geotechnical borings; qualifications for wildlife and plan surveyors; and gravel Hill Alternatives Analysis. Materials provided included project overview handouts, mapping, and fact sheets.
2 September 2015	Pre-Application and route review meeting held with the NJDEP. Participants included 5 NJDEP Staff and 15 PennEast Staff.	PennEast presented a virtual walk through of the pipeline alignment, workspaces, wetlands, waterbodies, transition areas, and riparian zones. NJDEP asked questions and provided suggestions regarding the preferred alignment and workspaces.
8 September 2015	Conference call with NJDEP Staff. Participants included 11 NJDEP Staff and 6 PennEast Staff.	Provided updates and discussed the status of surveys, FERC filing schedule, and meetings.
10 September 2015	Pre-Application and route review meeting held with Green Acres staff. Participants included 8 NJDEP Staff and 10 PennEast Staff.	PennEast presented a virtual walk through of the pipeline alignment and workspaces in relation to Green Acres parcels. PennEast and NJDEP discussed the regulatory and application process.
16 September 2015	Conference call with NJDEP Staff. Participants included 10 NJDEP Staff and 4 PennEast Staff.	Provided updates and discussed the status of surveys, opportunities to comment on FERC application, and meetings.

Date	Correspondence	Notes
30 September 2015	Conference call with NJDEP Staff. Participants included 11 NJDEP Staff, 2 NJADC and 5 PennEast Staff.	Timeline of threatened and endangered species surveys as compared to FERC review; dewatering and NJPDES permits; impacts to agriculture.
1 October 2015	Route Update	Materials provided included GIS shapefiles.
8 October 2015	Meeting with NJDEP Staff. Participants included 3 NJDEP Staff and 7 PennEast Staff.	Technical review of route and areas of regulatory concern and regulatory process.
14 October 2015	Conference call with NJDEP Staff. Participants included 11 NJDEP Staff, 1 NJADC and 4 PennEast Staff.	NJ surveys, threatened and endangered species reports, table of temporary and permanent impacts.
28 October 2015	Conference call with NJDEP Staff, Participants included 15 NJEDP Staff, 1 NJADC and 5 PennEast Staff.	NJ Surveys, threatened and endangered species reports, FERC comments and intervener status, table of temporary and permanent impacts, flood hazard areas and stream crossings in accordance with NJ regulations.
25 November 2015	Conference call with NJDEP Staff. Participants included 12 NJDEP Staff, 2 NJADC and 5 PennEast Staff.	NJ surveys, threatened and endangered species reports, NJDEP comment letters posted on FERC socket, survey access and route alternatives discussed,
NEW JERSEY STATE HISTORICAL PRESERVATION OFFICE		
19 August, 2014	Initial consultation letter sent	PennEast submitted a detailed scoping letter to NJHPO. Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment. The letter also proposed methodology for identification-level archaeological and architectural history surveys and included an Unanticipated Discovery Plan (UDP).
16 September, 2014	Introduction and coordination meeting held with NJHPO. Participants included by NJHPO reviews and PennEast Cultural Resources staff.	PennEast provided NJHPO with an overview of the Project. The meeting included a review of proposed methodology and requirements and expectations of the Organization.
24 September, 2014	Formal NJHPO response to the Project's scoping	NJHPO requested that their comments be

Date	Correspondence	Notes
	letter.	addressed in a revised scoping document, along with an updated Unanticipated Discovery Plan (UDP).
24 October, 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
14 January, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
2 February, 2015	Letter from PennEast to NJHPO including a revised cultural investigation scope and work plan.	Per the request of NJHPO in its official response to the Project's scoping letter, PennEast updated the UDP.
18 February, 2015	NJHPO response to PennEast's revised coping document and updated UDP.	NJHPO stated that all of their comments on the earlier document had been addressed, with the exception of additional information on the sensitivity model.
6 March, 2015	PennEast's response to NJHPO's request for more information regarding sensitivity model.	PennEast provided NJHPO with the requested information regarding the sensitivity model.
30 March, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
8 April, 2015	NJHPO response to PennEast's additional information regarding sensitivity model.	NJHPO accepted the revised site sensitivity model. The revised model is being applied to the ongoing archaeological field studies.
20 April, 2015	Field Meeting – Lambertville, NJ. Participants included the Landowner, NJHPO Staff and PennEast Cultural Resources Staff.	Resources potentially affected by the project: Rock Road and a potters' field.
24 July, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
2 September 2015	E-mail Correspondence	Correspondence regarding public comment letter received by NJ SHPO

Date	Correspondence	Notes
23 September 2015	Technical Report	Transmittal of Phase I Archaeological Survey Report.
28 September 2015	Correspondence	Correspondence regarding NJ SHPO request for electronic data related to Phase I Archaeological Survey Report
30 September 2015	Technical Report	Transmittal of Reconnaissance-Level Historic Architectural Survey Report
1 October 2015	Route Update	Materials provided included GIS shapefiles.
21 October 2015	Telephone Call	Conversation regarding consulting party status of Ramapough Lenape Indian Nation
4 November 2015	Telephone Call	Conversation regarding NJ SHPO review of Phase I Archaeological Survey Report
NEW JERSEY STATE AGRICULTURE DEVELOPMENT COMMITTEE		
12 September 2014	Meeting	Provide information for “informal” open houses with residents, discuss application and environmental impact statement submissions.
2 June, 2015	Meeting	PennEast provided the New Jersey State Agricultural Development Committee with an overview of the Project. Farmland Preservation Programs, Impact Avoidance/Mitigation Techniques and the Committee’s concerns with the Project were discussed.
24 July, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
24 March 2015	Organic Farm Certification	Information provided explains organic farm certification process in New Jersey and why all farms are not identified on the Certified Organic Farm list.
1 October 2015	Route Update	Materials provided included GIS shapefiles.
COUNTY CONSERVATION DISTRICTS		

Date	Correspondence	Notes
21 August, 2014	Initial Consultation letter sent	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
14 January, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
30 March, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
13 July 2015	Meeting	Pre-application meeting.
24 July, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
1 October 2015	Route Update	Materials provided included GIS shapefiles.
DELAWARE RIVER BASIN COMMISSION (DRBC)		
21 August, 2014	Initial consultation letter sent	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
3 September, 2014	Introduction and coordination meeting with the Delaware River Basin Commission. Participants included DRBC Staff and PennEast Staff.	PennEast provided DRBC with an overview of the Project and concerns were discussed.
24 October, 2014	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
14 January, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
21 January, 2015	Environmental meeting with the DRBC. Participants included 6 DRBC Staff including a PRS Supervisor, Branch Managers, a Geologist and the Executive Director, along with 4 PennEast Staff.	Coordination meeting with the DRBC. The Commission's concerns with the Project were discussed.

Date	Correspondence	Notes
30 March, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
12 May, 2015	Conference Call with FERC and DRBC to discuss DRBC's Scoping Comments. Participants included 1 FERC Staff, 1 Tetra Tech Staff, 2 DRBC Staff and 6 PennEast Staff.	Scope and Pre-Application coordination call. Water Quality Assessment Plan & Post Construction Impacts, the Project Schedule, Planned Construction Methods, Restoration & Mitigation, Safety and FERC-DRBC Coordination were discussed.
13 July 2015	Meeting	Pre-application Meeting.
24 July, 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
1 October 2015	Route Update	Materials provided included GIS shapefiles.
2 December 2015	Pre-Application Meeting. Participants included 5 DRBC staff and 8 PennEast Staff.	PowerPoint summarizing project health and safety, project over view, DRBC Application, Plans and BMPs, 3rd Party Support, Q&A and Action Items
SUSQUEHANNA RIVER BASIN COMMISSION (SRBC)		
21 August, 2014	Initial consultation letter sent	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
24 October, 2014	Project Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
6 November, 2014	Introduction and coordination meeting with the Susquehanna River Basin Commission. Participants included SRBC Staff and PennEast Staff.	PennEast provided SRBC with an overview of the Project and concerns were discussed.
14 January, 2015	Project Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.

Date	Correspondence	Notes
30 March, 2015	Project Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
24 July, 2015	Project Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
1 October 2015	Project Update	Materials provided included GIS shapefiles.
U.S. Environmental Protection Agency Regions 2 and 3		
3 December 2014	Initial Consultation Letter Sent	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
14 January 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
30 March 2015	Route Update	Materials provided Included GIS shapefiles and USGS 7.5 minute quadrangle maps with project alignment.
8 May 2015	GIS Files	Materials provided included GIS shapefiles.
24 July 2015	Route Update	Materials provided included GIS shapefiles.
1 October 2015	Route Update	Materials provided included GIS shapefiles.

Data Request 17

Provide a response to items identified by the New Jersey Department of Environmental Protection (NJDEP) in letters filed with the Commission on November 4, 2015 (accession number 20151104-0045) and November 17, 2015 (accession number 20151117-0040).

Response 17

PennEast is continuing to prepare responses to the NJDEP letter filed with the Commission on November 4, 2015 (accession number 20151104-0045) and will file responses to both NJDEP and FERC in early 2016. Attachment 7 provides responses to NJDEP's letter dated November 4, 2015 and posted to the docket by the Commission on November 17, 2015 (accession number 20151117-0040).

Data Request 18

Provide a discussion of mitigation measures that PennEast proposes to implement in response to land use mitigation requests identified on page 4 of the NJDEP letter filed with the Commission on November 4, 2015 (accession number 20151104-0045).

Response 18

PennEast proposes to implement a mitigation plan in compliance with NJDEP requirements. This mitigation plan will be discussed with NJDEP as part of on-going pre-application coordination and submitted to NJDEP concurrent with the permit applications. For wetland and riparian mitigation, this plan will include on-site restoration of temporary impacts along with off-site mitigation designed in accordance with the Freshwater Wetlands Protection Act Rules and the Flood Hazard Area Control Act Rules. PennEast has identified potential offsite wetland and riparian mitigation sites capable of replacing lost functions, values and area of the regulated resources. Off-site mitigation will be provided to compensate for the permanent conversion of forested and scrub-shrub wetlands and riparian zones to emergent communities. Additionally, temporarily disturbed areas will be restored in-place following construction in accordance with an NJDEP-approved restoration plan, and one acre of off-site wetland enhancement will be provided for each acre disturbed. Each proposed off-site mitigation property will be screened for potential hazardous material contamination as well as the potential for impacts to historic and archaeological resources.

Resource Report 2 – Water Resources

Data Request 19

Provide revised tables 2A-1 and 2A-2 that correct the discrepancies between the listed waterbody crossing widths and FERC classifications of major, minor and intermediate.

Response 19

Tables 2A-1 and 2A-2 were updated to incorporate delineations conducted since the September application, delineation boundary changes that resulted from site visits with the USACE, and route deviations.

The following footnotes were added to clarify the definition of waterbody crossing width and FERC classifications of major, minor and intermediate.

[13] The approximate crossing width is measured at the pipeline centerline and does not represent the width of the stream. In instances where a stream will not be crossed by the pipeline centerline, the crossing width provided is the average width of the stream within the Projects study area.

[14] FERC stream classifications are based on FERC's Wetland and Waterbody Construction and Mitigation Procedures definition of minor, intermediate and major waterbodies. Minor = waterbodies less than or equal to 10 feet wide; Intermediate = waterbodies greater than 10 feet wide but less than or equal to 100 feet wide; Major = greater than 100 feet wide.

[15] Per Pennsylvania State Programmatic General Permit-4 (PASGP-4) (Revised September 29, 2015) definition for Linear Footage of Stream Impact, the linear footage of stream impact is whichever measurement is greater, the measurement from the top of bank to the top of the opposite bank or the measurement from the upstream to downstream limits of work.

Table 2A-1
Waterbodies Crossed by the Project in Pennsylvania

Facility/ Mile Post[a]	Facility/ Mile Post[a]	County	Latitude (dd nad83)[1]	Longitude (dd nad83)[1]	Waterbody Name[2]	Waterbody ID[3]	FERC Class[4]	Waters Types[5]	Stream Type[6]	PA Code Ch. 93 Designated Use or Existing Use[7]	Wild Trout Waters[8]	ATW[9]	Crossing Width[10, 13, 14, 15]	Acres Affected	Acres Affected	Instream Construction Period[11,13,14,15]	Proposed Crossing Method[12]	Alignment Sheet, Plan Sheet, or Figure #
														Perm. ROW	Perm. ROW			
PennEast Mainline – Upper Susquehanna River Basin																		
0.6	0.6	Luzerne	41.346521	-75.935288	Trout Brook	092414_GO_1001_P_IM	Intermediate	RPW	P	CWF, MF	III	-	5	0.003937	0.006119	6/1-9/30	BORE	000-03-01-001
1.4	1.4	Luzerne	41.341462	-75.92179	UNT to Trout Brook	PA-NHD-002	Intermediate	RPW	P	CWF, MF	III	-	TBD	0.008	0.02	6/1-9/30	Dry Crossing	000-03-01-003
2.1	2.1	Luzerne	41.337704	-75.910537	UNT to Abrahams Creek	S-SUR-003	Minor	RPW	P	CWF, MF	-	-	TBD	0.008	0.02	6/1-9/30	Dry Crossing	000-03-01-005
2.6	2.6	Luzerne	41.33198	-75.904848	UNT to Abrahams Creek	011815_JC_1000_I_MI	Minor	RPW	I	CWF, MF	-	-	7	0.005874	0.008375	6/1-9/30	Dry Crossing	000-03-01-006
3.1	3.1	Luzerne	41.325841	-75.899492	UNT to Toby Creek	011815_JC_1001_P_MI	Minor	RPW	P	CWF, MF	III	-	8	0.015378	0.031062	6/1-9/30	Dry Crossing	000-03-01-007
3.1	3.1	Luzerne	41.325627	-75.899281	UNT to Toby Creek	011815_JC_1002_I_MI	Minor	RPW	I	CWF, MF	III	-	5	0.009431	0.022149	6/1-9/30	Dry Crossing	000-03-01-007
3.5	3.5	Luzerne	41.322744	-75.892897	UNT to Abrahams Creek	S-SUR-005	Minor	RPW	P	CWF, MF	-	-	TBD	0.008	0.02	6/1-9/30	Dry Crossing	000-03-01-007
4.3	4.3	Carbon	41.321015	-75.87941	UNT to Abrahams Creek	111814_JC_1002_E_MI	Minor	NRPW	E	CWF, MF	III	-	3	0.00144	0.002899	6/1-9/30	Dry Crossing	000-03-01-009
4.6	4.6	Luzerne	41.317484	-75.875136	UNT to Abrahams Creek	S-SUR-008	Minor	RPW	P	CWF, MF	III	-	TBD	0.008	0.020	6/1-9/30	Dry Crossing	000-03-01-010
5	5	Luzerne	41.313708	-75.869712	UNT to Abrahams Creek	093014_DY_1004_E_IM	Intermediate	NRPW	E	CWF, MF	III	-	15	0.014	0.027	6/1-9/30	Dry Crossing	000-03-01-010
5.9	5.9	Luzerne	41.307799	-75.854154	UNT to Abrahams Creek	092314_GO_1001_I_MI	Minor	RPW	I	CWF, MF	-	-	2	0.008	0.020	6/1 - 9/30	BORE	000-03-01-012
6	6	Luzerne	41.307207	-75.852573	UNT to Abrahams Creek	092414_GO_1002_D_MI	Minor	RPW	E	CWF, MF	-	-	27	0.015	0.031	6/1 - 9/30	Dry Crossing	000-03-01-012

Facility/ Mile Post[a]	Facility/ Mile Post[a]	County	Latitude (dd nad83)[1]	Longitude (dd nad83)[1]	Waterbody Name[2]	Waterbody ID[3]	FERC Class[4]	Waters Types[5]	Stream Type[6]	PA Code Ch. 93 Designated Use or Existing Use[7]	Wild Trout Waters[8]	ATW[9]	Crossing Width[10, 13, 14, 15]	Acres Affected	Acres Affected	Instream Construction Period[11,13,14,15]	Proposed Crossing Method[12]	Alignment Sheet, Plan Sheet, or Figure #
														Perm. ROW	Perm. ROW			
6.3	6.3	Luzerne	41.305211	-75.849768	UNT to Susquehanna River	092414_GO_1003_P_IN	Intermediate	RPW	P	CWF, MF	-	-	24	0.004	0.028	6/1 - 9/30	Dry Crossing	000-03-01-013
6.5	6.5	Luzerne	41.304063	-75.846015	UNT to Susquehanna River	110915_WA_1002_E_MI	Minor	NRPW	E	WWF, MF	-	-	4	0.005	0.002	6/1 - 11/30	Dry Crossing	000-03-01-013
7	7	Luzerne	41.298748	-75.834577	Susquehanna River	102315_WA_1001_P_MA	Major	TNW	P	WWF, MF	-	-	1056	7.370	1.212	6/1 - 11/30	Dry Crossing	000-03-01-015
8.3	8.3	Luzerne	41.289331	-75.82849	UNT to Susquehanna River	043015_JC_1002_D_MI	Minor	NRPW	E	WWF, MF	-	-	9	0.009	0.008	6/1 - 11/30	Dry Crossing	000-03-01-018
9.8	9.8	Luzerne	41.279709	-75.8117	Gardner Creek	PA-NHD-015	Intermediate	RPW	P	CWF, MF	-	-	8	0.000	0.001	6/1 - 9/30	BORE	000-03-01-021
10.9	10.9	Luzerne	41.267141	-75.79968	Mill Creek	PA-NHD-016	Intermediate	RPW	P	CWF, MF	III	-	26	0.110	0.073	6/1 - 9/30	Open cut	000-03-01-023
11.3	11.3	Luzerne	41.263496	-75.793901	UNT to Deep Creek	NHD-123	Minor	RPW	P	CWF, MF	III	-	8	0.000	0.001	6/1 - 9/30	BORE	000-03-01-024
11.5	11.5	Luzerne	41.261311	-75.791239	Deep Creek	121614_JC_1000_P_MI	Minor	RPW	P	CWF, MF	III	-	8	0.014	0.010	6/1 - 9/30	Open cut	000-03-01-024
11.6	11.6	Luzerne	41.260491	-75.789731	UNT to Deep Creek	121614_JC_1001_E_MI	Minor	NRPW	E	CWF, MF	III	-	3	0.007	0.005	6/1 - 9/30	Open cut	000-03-01-024
12.5	12.7	Luzerne	41.251712	-75.778822	UNT to Mill Creek	121514_JC_1001_D_MI	Minor	-	Ditch	CWF, MF	III	-	2	0.001	0.003	6/1 - 9/30	Dry Crossing	000-03-01-026
12.8	13	Luzerne	41.249878	-75.774086	UNT to Mill Creek	121814_JC_1010_P_MI	Minor	RPW	P	CWF, MF	III	-	6	0.016	0.032	6/1 - 9/30	BORE	000-03-01-026
12.9	13.1	Luzerne	41.249626	-75.773327	UNT to Mill Creek	121814_JC_1011_P_MI	Minor	RPW	P	CWF, MF	III	-	8	0.017	0.032	6/1 - 9/30	Dry Crossing	000-03-01-026
12.9	13.1	Luzerne	41.249083	-75.771894	UNT to Mill Creek	121814_JC_1013_E_MI	Minor	NRPW	E	CWF, MF	III	-	5	0.003	0.006	6/1 - 9/30	Dry Crossing	000-03-01-027
13	13.2	Luzerne	41.248395	-75.770577	UNT to Mill Creek	121814_JC_1012_E_MI	Minor	NRPW	E	CWF, MF	III	-	7	0.004	0.008	6/1 - 9/30	Dry Crossing	000-03-01-027
13.1	13.3	Luzerne	41.247987	-75.770246	UNT to Mill Creek[a]	121814_JC_1007_D_MI	Minor	-	Ditch	CWF, MF	III	-	10	0.006	0.011	6/1 - 9/30	Dry Crossing	000-03-01-027
13.1	13.3	Luzerne	41.247692	-75.770007	UNT to Mill Creek	121814_JC_1008_P_MI	Minor	RPW	P	CWF, MF	III	-	10	0.006	0.011	6/1 - 9/30	BORE	000-03-01-027

Facility/ Mile Post[a]	Facility/ Mile Post[a]	County	Latitude (dd nad83)[1]	Longitude (dd nad83)[1]	Waterbody Name[2]	Waterbody ID[3]	FERC Class[4]	Waters Types[5]	Stream Type[6]	PA Code Ch. 93 Designated Use or Existing Use[7]	Wild Trout Waters[8]	ATW[9]	Crossing Width[10, 13, 14, 15]	Acres Affected	Acres Affected	Instream Construction Period[11,13,14,15]	Proposed Crossing Method[12]	Alignment Sheet, Plan Sheet, or Figure #
														Perm. ROW	Perm. ROW			
13.1	AR 13.3 - 13.4	Luzerne	41.2489139	-75.7676774	UNT to Mill Creek	081215_MK_016_E_MI	Minor	NRPW	E	CWF, MF	III	-	2	0.002	0.000	6/1 - 9/30	N/A	000-03-01-027
13.1	AR 13.3 - 13.4	Luzerne	41.2486267	-75.7680567	UNT to Mill Creek	081215_MK_015_I_MI	Minor	RPW	I	CWF, MF	III	-	3	0.002	0.000	6/1 - 9/30	N/A	000-03-01-027
13.1	AR 13.3 - 13.4	Luzerne	41.2483604	-75.7685455	UNT to Mill Creek	081215_MK_014_P_IM	Intermediate	RPW	P	CWF, MF	III	-	12	0.009	0.000	6/1 - 9/30	N/A	000-03-01-027
13.1	AR 13.3 - 13.4	Luzerne	41.2483506	-75.7687577	UNT to Mill Creek	081215_MK_013_I_MI	Minor	RPW	I	CWF, MF	III	-	5	0.023	0.000	6/1 - 9/30	N/A	000-03-01-027
13.4	13.6	Luzerne	41.244063	-75.767529	UNT to Mill Creek	121814_JC_1005_P_MI	Minor	RPW	P	CWF, MF	III	-	7	0.013	0.025	6/1 - 9/30	Dry Crossing	000-03-01-027
13.4	13.6	Luzerne	41.244075	-75.767399	UNT to Mill Creek	121814_JC_1006_I_MI	Minor	RPW	I	CWF, MF	III	-	4	0.006	0.007	6/1 - 9/30	Dry Crossing	000-03-01-028
13.5	13.7	Luzerne	41.243088	-75.766327	UNT to Mill Creek	121814_JC_1004_I_MI	Minor	RPW	I	CWF, MF	III	-	5	0.008	0.016	6/1 - 9/30	Dry Crossing	000-03-01-028
13.6	13.8	Luzerne	41.24165	-75.764321	UNT to Mill Creek	121814_JC_1003_I_MI	Minor	RPW	I	CWF, MF	III	-	74 ***	0.021	0.018	6/1 - 9/30	Dry Crossing	000-03-01-028
13.7	13.9	Luzerne	41.241122	-75.763764	UNT to Mill Creek	121814_JC_1002_P_MI	Minor	RPW	P	CWF, MF	III	-	6	0.012	0.024	6/1 - 9/30	Dry Crossing	000-03-01-028
13.7	13.9	Luzerne	41.240541	-75.763007	UNT to Mill Creek	121814_JC_1001_P_MI	Minor	RPW	P	CWF, MF	III	-	6	0.013	0.047	6/1 - 9/30	Dry Crossing	000-03-01-028
13.9	14.1	Luzerne	41.238528	-75.760491	UNT to Mill Creek	111014_JC_1001_I_MI	Minor	RPW	I	CWF, MF	III	-	17	0.010	0.019	6/1 - 9/30	Dry Crossing	000-03-01-029
PennEast Mainline Pipeline Route – Upper Delaware River Basin																		
14.5	14.7	Luzerne	41.232898	-75.751722	UNT to Little Bear Creek	S-SUR-025	Minor	RPW	P	HQ-CWF, MF	-	-	TBD	0.001	0.000	6/1 - 9/30	Dry Crossing	000-03-01-030
14.8	15	Luzerne	41.229625	-75.749322	UNT to Little Bear Creek	043015_JC_1001_I_MI	Minor	RPW	I	HQ-CWF, MF	-	-	7	0.001	0.002	6/1 - 9/30	Dry Crossing	000-03-01-030
16	16.2	Luzerne	41.21748	-75.73332	UNT to Bear Creek	112114_JC_1003_P_IM	Intermediate	RPW	P	HQ-CWF, MF	-	-	53	0.107	0.075	6/1 - 9/30	Dry Crossing	000-03-01-033
16	16.2	Luzerne	41.217269	-75.73299	Bear Creek	112114_JC_1002_P_MI	Minor	RPW	P	HQ-CWF, MF	-	-	11	0.008	0.013	6/1 - 9/30	Dry Crossing	000-03-01-033
16.2	16.4	Luzerne	41.215535	-75.730226	UNT to Bear Creek	112114_JC_1001_P_MI	Minor	RPW	P	HQ-CWF, MF	-	-	6	0.011	0.023	6/1 - 9/30	Dry Crossing	000-03-01-033

Facility/ Mile Post[a]	Facility/ Mile Post[a]	County	Latitude (dd nad83)[1]	Longitude (dd nad83)[1]	Waterbody Name[2]	Waterbody ID[3]	FERC Class[4]	Waters Types[5]	Stream Type[6]	PA Code Ch. 93 Designated Use or Existing Use[7]	Wild Trout Waters[8]	ATW[9]	Crossing Width[10, 13, 14, 15]	Acres Affected	Acres Affected	Instream Construction Period[11,13,14,15]	Proposed Crossing Method[12]	Alignment Sheet, Plan Sheet, or Figure #
														Perm. ROW	Perm. ROW			
16.3	AR 16.6	Luzerne	41.217571	-75.716888	UNT Meadow Run	081215_MK_018_P_MI	Minor	RPW	P	HQ-CWF, MF	-	-	4	0.004	0.000	6/1 - 9/30	NA	000-03-01-034
16.4	AR 16.6	Luzerne	41.21731	-75.714311	UNT Meadow Run	081315_MK_020_I_MI	Minor	RPW	I	HQ-CWF, MF	-	-	8	0.001	0.000	6/1 - 9/30	NA	000-03-01-034
16.4	AR 16.6	Luzerne	41.217227	-75.70596	UNT Meadow Run	081315_MK_021_P_IN	Minor	RPW	P	HQ-CWF, MF	-	-	4	0.003	0.000	6/1 - 9/30	NA	000-03-01-034
16.4	AR 16.6	Luzerne	41.215606	-75.692959	Meadow Run	081415_MK_023_P_IN	Minor	RPW	P	HQ-CWF, MF	-	-	5	0.025	0.000	6/1 - 9/30	NA	000-03-01-034
16.4	AR 16.6	Luzerne	41.215606	-75.692959	UNT Meadow Run	081415_MK_024_P_MI	Minor	RPW	P	HQ-CWF, MF	-	-	7	0.005	0.000	6/1 - 9/30	NA	000-03-01-034
16.4	AR 16.6	Luzerne	41.217513	-75.687998	UNT Meadow Run	081415_MK_025_I_MI	Minor	RPW	I	HQ-CWF, MF	-	-	6	0.001	0.000	6/1 - 9/30	NA	000-03-01-034
16.5	16.7	Luzerne	41.212497	-75.72588	Meadow Run	112014_JC_1003_P_IM	Intermediate	RPW	P	HQ-CWF, MF	-	-	44.5	0.067	0.044	6/1 - 9/30	Dry Crossing	000-03-01-034
16.7	16.9	Luzerne	41.210545	-75.723035	UNT Meadow Run	112014_JC_1002_P_MI	Minor	RPW	P	HQ-CWF, MF	-	-	2	0.002	0.002	6/1 - 9/30	Dry Crossing	000-03-01-034
17.5	17.7	Luzerne	41.202611	-75.711271	UNT to Little Shades Creek	112014_JC_1001_P_MI	Minor	RPW	P	HQ-CWF, MF	III	-	4	0.005	0.003	6/1 - 9/30	Dry Crossing	000-03-01-036
18.1	18.3	Luzerne	41.196987	-75.701663	Little Shades Creek	111914_JC_1002_P_IM	Intermediate	RPW	P	HQ-CWF, MF	III	-	105	0.012	0.120	6/1 - 9/30	Dry Crossing	000-03-01-037
18.2	18.4	Luzerne	41.1963648	-75.7016864	UNT to Little Shades Creek	111914_JC_1001_P_IM	Intermediate	RPW	P	HQ-CWF, MF	III	-	19 ***	0.009	0.000	6/1 - 9/30	Dry Crossing	000-03-01-037
18.8	19	Luzerne	41.188311	-75.697376	UNT to Little Shades Creek[a]	121814_JC_1014_D_MI	Minor	-	Ditch	HQ-CWF, MF	III	-	27 ***	0.001	0.000	6/1 - 9/30	Dry Crossing	000-03-01-039
18.9	19.1	Luzerne	41.187697	-75.697506	UNT to Little Shades Creek	121814_JC_1014_I_MI	Minor	RPW	I	HQ-CWF, MF	III	-	32 ***	0.009	0.002	6/1 - 9/30	Dry Crossing	000-03-01-039
19.4	19.6	Luzerne	41.179579	-75.696554	Shades Creek	121614_JC_1009_P_IM	Intermediate	RPW	P	HQ-CWF, MF	I, III	-	26	0.014	0.031	6/1 - 9/30	Dry Crossing	000-03-01-040
19.8	20	Luzerne	41.173511	-75.69632	UNT to Shades Creek	121714_JC_1001_E_MI	Minor	NRPW	E	HQ-CWF, MF	III	-	10	0.006	0.038	6/1 - 9/30	Dry Crossing	000-03-01-041
19.9	20.1	Luzerne	41.172286	-75.696179	UNT to Shades Creek	121614_JC_1006_P_MI	Minor	RPW	P	HQ-CWF, MF	III	-	14	0.030	0.065	6/1 - 9/30	Dry Crossing	000-03-01-041
21	21.2	Luzerne	41.157445	-75.693796	UNT to Stony Run	121614_JC_1004_I_MI	Minor	RPW	I	HQ-CWF, MF	III	-	5	0.006	0.014	6/1 - 9/30	Dry Crossing	000-03-01-043

Facility/ Mile Post[a]	Facility/ Mile Post[a]	County	Latitude (dd nad83)[1]	Longitude (dd nad83)[1]	Waterbody Name[2]	Waterbody ID[3]	FERC Class[4]	Waters Types[5]	Stream Type[6]	PA Code Ch. 93 Designated Use or Existing Use[7]	Wild Trout Waters[8]	ATW[9]	Crossing Width[10, 13, 14, 15]	Acres Affected	Acres Affected	Instream Construction Period[11,13,14,15]	Proposed Crossing Method[12]	Alignment Sheet, Plan Sheet, or Figure #
														Perm. ROW	Perm. ROW			
	AR 21.8	Luzerne	41.14844	-75.67744	Stony Run	PA-NHD-039	Intermediate	RPW	P	HQ-CWF, MF	III	-	TBD	N/A	0.000	6/1 - 9/30	NA	000-03-01-044
22.4	22.6	Luzerne	41.137443	-75.690063	UNT Stony Run	102115_WA_002_E_MI	Minor	NRPW	E	HQ-CWF, MF	III	-	8	0.004	0.003	6/1 - 9/30	Dry Crossing	000-03-01-045
22.4	22.6	Luzerne	41.13696	-75.689904	UNT Stony Run	102115_WA_001_E_MI	Minor	NRPW	E	HQ-CWF, MF	III	-	8	0.002	0.001	6/1 - 9/30	Dry Crossing	000-03-01-046
22.4	22.6	Luzerne	41.135711	-75.690348	Stony Run	102115_WA_001_P_IM	Intermediate	RPW	P	HQ-CWF, MF	III	-	24	0.012	0.027	6/1 - 9/30	Dry Crossing	000-03-01-046
22.5	22.7	Luzerne	41.135737	-75.68966	UNT Stony Run	102115_WA_001_I_MI	Minor	NRPW	I	HQ-CWF, MF	III	-	6	0.001	0.000	6/1 - 9/30	Dry Crossing	000-03-01-046
22.8	23	Luzerne, Carbon	41.130355	-75.689558	Lehigh River	052115_JC_1001_P_MA	Major	TNW[a]	P	HQ-CWF, MF	III	-	444	0.504	0.510	6/1 - 9/30	Dry Crossing	000-03-01-047
24.8	AR 25	Carbon	41.09944	-75.68344	UNT to Lehigh River	PA-NHD-040	Minor	RPW	P	HQ-CWF, MF	III	-	9	0.013	0.000	6/1 - 9/30	NA	000-03-01-051
26.4	26.6	Carbon	41.084063	-75.661181	UNT to Black Creek	102114_JC_1001_P_MI	Minor	RPW	P	HQ-CWF, MF	III	-	13	0.013	0.034	6/1 - 9/30	Dry Crossing	000-03-01-054
27.1	27.3	Carbon	41.0735348	-75.6549745	UNT to Black Creek	102314_JC_1001_P_MI	Minor	RPW	P	HQ-CWF, MF	III	-	12	0.034	0.053	6/1 - 9/30	Dry Crossing	000-03-01-055
30.1	30.3	Carbon	41.040904	-75.626771	UNT to Hawk Run	042415_JC_1006_E_MI	Minor	RPW	E	HQ-CWF, MF	III	-	1 ***	0.000	0.000	6/1 - 9/30	Dry Crossing	000-03-01-061
30.7	30.9	Carbon	41.031588	-75.624807	UNT to Laurel Run	042415_JC_1002_P_IN(1)	Intermediate	RPW	P	HQ-CWF, MF	III	-	4 ***	0.027	0.004	6/1 - 9/30	Dry Crossing	000-03-01-062
30.9	31.1	Carbon	41.030324	-75.624447	UNT to Laurel Run	042415_JC_1004_P_MI	Minor	RPW	P	HQ-CWF, MF	III	-	53	0.018	0.034	6/1 - 9/30	Dry Crossing	000-03-01-063
30.9	31.1	Carbon	41.030324	-75.624447	UNT to Laurel Run	042415_JC_1005_D_MI	Minor	RPW	Ditch	HQ-CWF, MF	III	-	4	0.007	0.005	6/1 - 9/30	Dry Crossing	000-03-01-063
30.9	31.1	Carbon	41.029984	-75.624403	Laurel Run	042415_JC_1002_P_IN(2)	Intermediate	RPW	P	HQ-CWF, MF	III	-	16	0.013	0.016	6/1 - 9/30	Dry Crossing	000-03-01-063
32.4	AR 32.7	Carbon	41.008571	-75.615349	UNT to Mud Run	S-SUR-044	Minor	RPW	P	HQ-CWF, MF	III	-	5	0.007	0.000	6/1 - 9/30	NA	000-03-01-066
32.9	33.1	Carbon	41.002878	-75.612921	Mud Run	042115_JC_1001_P_IN	Intermediate	RPW	P	HQ-CWF, MF	III	TS	48	0.057	0.057	6/15 - 9/30	Dry Crossing	000-03-01-067
32.9	33.1	Carbon	41.002658	-75.612872	UNT to Mud Run	042115_JC_1002_P_MI	Minor	RPW	P	HQ-CWF, MF	III	-	10	0.006	0.012	6/1 - 9/30	Dry Crossing	000-03-01-067

Facility/ Mile Post[a]	Facility/ Mile Post[a]	County	Latitude (dd nad83)[1]	Longitude (dd nad83)[1]	Waterbody Name[2]	Waterbody ID[3]	FERC Class[4]	Waters Types[5]	Stream Type[6]	PA Code Ch. 93 Designated Use or Existing Use[7]	Wild Trout Waters[8]	ATW[9]	Crossing Width[10, 13, 14, 15]	Acres Affected	Acres Affected	Instream Construction Period[11,13,14,15]	Proposed Crossing Method[12]	Alignment Sheet, Plan Sheet, or Figure #
														Perm. ROW	Perm. ROW			
33.1	33.3	Carbon	40.999475	-75.612032	UNT to Mud Run[a]	042115_JC_1004_D_MI	Minor	RPW	Ditch	HQ-CWF, MF	III	-	15	0.010	0.018	6/1 - 9/30	Dry Crossing	000-03-01-066
33.1	33.3	Carbon	40.998955	-75.611872	UNT to Mud Run	042115_JC_1005_E_MI	Minor	RPW	E	HQ-CWF, MF	III	-	3	0.002	0.004	6/1 - 9/30	Dry Crossing	000-03-01-067
34.4	34.6	Carbon	40.982027	-75.620481	UNT to Stony Creek	042315_JC_1002_P_MI	Minor	RPW	P	EV, MF	III	-	5	0.013	0.036	6/1 - 9/30	Dry Crossing	000-03-01-070
34.5	34.7	Carbon	40.980984	-75.62127	Stony Creek	042315_JC_1003_P_IN	Intermediate	RPW	P	EV, MF	III	-	53	0.067	0.072	6/1 - 9/30	Dry Crossing	000-03-01-070
35.9	36.1	Carbon	40.962319	-75.630037	Yellow Run	PA-NHD-049	Minor	RPW	P	EV, MF	III	-	TBD	0.001	0.015	6/1 - 9/30	Dry Crossing	000-03-01-073
37.3	37.5	Carbon	40.94331	-75.634587	UNT to Wild Creek	061615_DB_1001_I_MI	Minor	RPW	I	EV, MF	III	-	7	0.004	0.008	6/1 - 9/30	Dry Crossing	000-03-01-075
38.1	38.3	Carbon	40.931313	-75.634571	Wild Creek	061615_DB_1002_P_IN	Intermediate	RPW	P	EV, MF	III	-	10	0.007	0.012	6/1 - 9/30	Dry Crossing	000-03-01-077
39.3	39.5	Carbon	40.917461	-75.620741	UNT to White Oak Run	061615_DB_1003_I_MI	Minor	RPW	I	EV, MF	III	-	100 ***	0.019	0.000	6/1 - 9/30	Dry Crossing	000-03-01-080
39.4	39.6	Carbon	40.917042	-75.62046	UNT to White Oak Run	091714_MK_1005_P_MI	Minor	RPW	P	EV, MF	III	-	25	0.027	0.014	6/1 - 9/30	Dry Crossing	000-03-01-080
39.9	40.1	Carbon	40.910622	-75.614322	UNT to White Oak Run	091714_MK_1005_P_MI (2)	Minor	RPW	P	EV, MF	III	-	188	0.138	0.089	6/1 - 9/30	Dry Crossing	000-03-01-081
40.9	41.1	Carbon	40.903089	-75.600813	UNT to White Oak Run	PA-NHD-060	Minor	RPW	I	EV, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-083
41	41.2	Carbon	40.903023	-75.599486	UNT to White Oak Run	PA-NHD-061	Minor	RPW	I	EV, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-083
41	41.2	Carbon	40.903023	-75.599486	UNT to White Oak Run	PA-NHD-063	Minor	RPW	I	EV, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-083
41.1	41.3	Carbon	40.902884	-75.596717	UNT to White Oak Run	PA-NHD-062	Minor	RPW	I	EV, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-083
41.4	41.6	Carbon	40.900781	-75.59228	White Oak Run	PA-NHD-056	Minor	RPW	P	EV, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-084
43.3	43.5	Carbon	40.883151	-75.554003	Wild Creek/Beltzville Lake	052215_JC_1001_LAKE_MA(1)	Major	RPW	Lake	EV, MF	III	-	164	0.000	0.011	6/1 - 9/30	HDD	000-03-01-088

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43.7	43.9	Carbon	40.883398	-75.554466	UNT to Pohopoco Creek	052215_JC_1003_I_MI	Minor	RPW	I	CWF, MF	III	-	25 ***	0.000	0.002	6/1 - 9/30	HDD	000-03-01-088
43.8	44	Carbon	40.883151	-75.554003	Pohopoco Creek/Beltzville Lake	052215_JC_1001_LAKE_MA(2)	Major	RPW	Lake	CWF, MF	III	-	388	0.000	0.027	6/1 - 9/30	HDD	000-03-01-088
44	44.2	Carbon	40.879854	-75.549332	UNT to Pohopoco Creek	061715_DB_1001_I_MI	Minor	RPW	I	CWF, MF	III	-	20	0.043	0.065	6/1 - 9/30	Dry Crossing	000-03-01-089
44.6	44.8	Carbon	40.874296	-75.544352	UNT to Hunter Creek	PA-NHD-070	Minor	RPW	I	HQ-CWF, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	BORE	000-03-01-090
44.9	45.1	Carbon	40.872136	-75.542258	UNT to Hunter Creek	051115_JC_1002_P_MI	Minor	RPW	I	HQ-CWF, MF	III	-	4	0.001	0.002	6/1 - 9/30	Dry Crossing	000-03-01-091
45.4	45.6	Carbon	40.865675	-75.538078	UNT to Hunter Creek	051115_JC_1001_P_MI	Minor	RPW	I	HQ-CWF, MF	III	-	3	0.001	0.002	6/1 - 9/30	Dry Crossing	000-03-01-092
47.9	48.1	Carbon	40.837387	-75.508783	Buckwha Creek	090914_WA_1000_P_IM	Intermediate	RPW	P	CWF, MF	III	ATW, TS	57	0.032	0.065	6/15 - 9/30	Open Cut	000-03-01-097
48.3	AR 48. - 48.9	Carbon	40.828913	-75.5006845	UNT to Aquashicola Creek	081715_MK_028_E_MI	Minor	NRPW	E	HQ-CWF, MF	III	-	76 ***	0.000	0.000	6/1 - 9/30	Dry Crossing	000-03-01-098
49	49.2	Carbon	40.824941	-75.51004	Aquashicola Creek	072215_JC_1001_P_IN	Intermediate	RPW	P	HQ-CWF, MF	III	ATW	36	0.021	0.041	6/15 - 9/30	Dry Crossing	000-03-01-099
52.2	52.4	Northampton	40.801025	-75.509955	UNT to Indian Creek	072415_JC_1001_I_MI	Minor	RPW	I	CWF, MF	III	-	2 ***	0.001	0.000	6/1 - 9/30	Dry Crossing	000-03-01-105
53.1	53.3	Northampton	40.800925	-75.495437	UNT to Indian Creek	PA-NHD-080	Minor	RPW	I	CWF, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-107
53.2	53.4	Northampton	40.799171	-75.494023	UNT to Indian Creek	S-SUR-081	Minor	RPW	P	CWF, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-107
53.2	53.4	Northampton	40.799074	-75.492816	UNT to Indian Creek	S-SUR-082	Minor	RPW	P	CWF, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-107
53.3	53.5	Northampton	40.798927	-75.491402	UNT to Indian Creek	S-SUR-083	Minor	RPW	P	CWF, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-107
54.1	54.3	Northampton	40.789877	-75.481262	Indian Creek	PA-NHD-084	Intermediate	RPW	P	CWF, MF	III	ATW	TBD	0.015	0.040	6/15 - 9/30	Dry Crossing	000-03-01-109

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55.5	55.7	Northampton	40.783723	-75.459065	UNT to Hokendauqua Creek	102815_WA_1001_E_MI	Minor	NRPW	E	CWF, MF	III	-	14	0.044	0.015	6/1 - 9/30	Dry Crossing	000-03-01-112
55.7	55.9	Northampton	40.780614	-75.457989	Hokendauqua Creek	051215_JC_1002_P_IN	Intermediate	RPW	P	CWF, MF	III	ATW, TS	35	0.004	0.009	6/15 - 9/30	Dry Crossing	000-03-01-112
55.7	55.9	Northampton	40.780618	-75.457848	UNT to Hokendauqua Creek	051215_JC_1001_D_MI	Minor	-	Ditch	CWF, MF	III	-	5	0.002	0.006	6/15 - 9/30	Dry Crossing	000-03-01-112
55.8	56	Northampton	40.779937	-75.457027	UNT to Hokendauqua Creek	051215_JC_1003_D_MI	Minor	NRPW	Ditch	CWF, MF	III	-	4	0.004	0.002	6/15 - 9/30	Dry Crossing	000-03-01-112
56.5	56.7	Northampton	40.771821	-75.44719	UNT to Hokendauqua Creek	PA-NHD-088	Minor	RPW	P	CWF, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-114
58.3	58.5	Northampton	40.7552	-75.423024	UNT to Monocacy Creek	PA-NHD-089	Minor	RPW	I	HQ-CWF, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-117
58.8	59	Northampton	40.749619	-75.416463	UNT to Monocacy Creek	090314_DB_1011_E_MI	Minor	NRPW	E	HQ-CWF, MF	III	-	5	0.003	0.006	6/1 - 9/30	Dry Crossing	000-03-01-118
59	59.2	Northampton	40.747405	-75.413552	UNT to Monocacy Creek	090414_DB_1012_I_MI	Minor	RPW	I	HQ-CWF, MF	III	-	5	0.001	0.006	6/1 - 9/30	Dry Crossing	000-03-01-119
59	59.2	Northampton	40.747217	-75.413331	UNT to Monocacy Creek	090414_DB_1013_I_MI	Minor	RPW	I	HQ-CWF, MF	III	-	8	0.005	0.016	6/1 - 9/30]	Dry Crossing	000-03-01-119
60.1	60.3	Northampton	40.736966	-75.399418	Monocacy Creek	051215_JC_1005_P_IN	Intermediate	RPW	P	HQ-CWF, MF	I, III	ATW, TS	28	0.003	0.019	6/15 - 9/30	Dry Crossing	000-03-01-121
60.4	60.6	Northampton	40.736004	-75.393612	UNT to Monocacy Creek	090314_DB_1005_E_MI	Minor	NRPW	E	HQ-CWF, MF	III	-	9	0.005	0.011	6/1 - 9/30	BORE	000-03-01-122
60.4	60.6	Northampton	40.735774	-75.392242	UNT to Monocacy Creek	090314_DB_1007_E_MI	Minor	NRPW	E	HQ-CWF, MF	III	-	4	0.003	0.005	6/1 - 9/30	BORE	000-03-01-122
60.5	60.7	Northampton	40.735818	-75.392494	UNT to Monocacy Creek	090314_DB_1006_I_MI	Minor	RPW	I	HQ-CWF, MF	III	-	6	0.003	0.007	6/1 - 9/30	Dry Crossing	000-03-01-122

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61.2	61.4	Northampton	40.73449	-75.377273	East Branch Monocacy Creek	111214_JC_1004_P_IM	Intermediate	RPW	P	HQ-CWF, MF	III	-	24	0.014	0.027	6/1 - 9/30	Dry Crossing	000-03-01-123
62.1	62.3	Northampton	40.729042	-75.364381	UNT to East Branch Monocacy Creeka	PA-NHD-094	Minor	RPW	P	HQ-CWF, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-125
62.6	62.8	Northampton	40.725821	-75.356915	UNT to East Branch Monocacy Creek	051415_JC_1001_I_MI	Minor	RPW	I	HQ-CWF, MF	III	-	3	0.007	0.013	6/1 - 9/30	BORE	000-03-01-126
63.3	63.5	Northampton	40.724861	-75.342842	UNT to East Branch Monocacy Creek	051415_JC_1002_P_IN	Intermediate	RPW	P	HQ-CWF, MF	III	-	19	0.010	0.022	6/1 - 9/30	Dry Crossing	000-03-01-128
63.5	63.7	Northampton	40.723177	-75.3405	UNT to East Branch Monocacy Creeka	051415_JC_1003_D_MI	Minor	RPW	Ditch	HQ-CWF, MF	III	-	2	0.001	0.002	N/A	BORE	000-03-01-128
66.7	66.9	Northampton	40.691944	-75.305705	UNT to Monocacy Creek	PA-NHD-098	Minor	RPW	I	HQ-CWF, MF	III	-	TBD	0.008	0.020	6/1 - 9/30	Dry Crossing	000-03-01-134
70.2	70.4	Northampton	40.650892	-75.28258	UNT to Lehigh River	S-SUR-100	Minor	RPW	P	CWF, MF	-	-	TBD	0.007	0.015	6/1 - 9/30	HDD	000-03-01-141
70.7	70.9	Northampton	40.643027	-75.27928	Lehigh River	PA-NHD-005	Major	TNW[a]	P	WWF	-	-	66.9	0.000	0.076	6/1-11/30	HDD	000-03-01-142
70.9	71.1	Northampton	40.64144	-75.28344	Lehigh River	PA-NHD-099	Major	TNW[a]	P	WWF	-	-	TBD	0.000	0.400	6/1-11/30	HDD	000-03-01-143
71.9	72.1	Northampton	40.628351	-75.272092	UNT to Bull Run	092614_GO_1001_P_IM	Intermediate	RPW	P	CWF, MF	III	-	15	0.002	0.005	6/1 - 9/30	HDD	000-03-01-145
72	AR 72.2	Northampton	40.62772	-75.270208	UNT to Bull Run	S-SUR-113(1)	Minor	RPW	P	CWF, MF	III	-	TBD	TBD	TBD	6/1 - 9/30	NA	000-03-01-145
72	AR 72.2	Northampton	40.628094	-75.269869	UNT to Bull Run	S-SUR-112	Minor	RPW	P	CWF, MF	III	-	TBD	TBD	TBD	6/1 - 9/30	NA	000-03-01-145
72.1	72.3	Northampton	40.626527	-75.269701	UNT to Bull Run	S-SUR-113(2)	Minor	RPW	P	CWF, MF	III	-	TBD	TBD	TBD	6/1 - 9/30	Dry Crossing	000-03-01-145
72.3	72.5	Northampton	40.625043	-75.266102	UNT to Bull Run	051415_JC_1006_E_MI	Minor	RPW	E	CWF, MF	III	-	3	0.002	0.003	6/1 - 9/30	Dry Crossing	000-03-01-146

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72.4	72.6	Northampton	40.624342	-75.264564	UNT to Bull Run	S-SUR-115	Minor	RPW	P	CWF, MF	III	-	TBD	0.005	0.015	6/1 - 9/30	Dry Crossing	000-03-01-146
72.4	72.6	Northampton	40.623635	-75.264036	UNT to Bull Run	S-SUR-117	Minor	RPW	P	CWF, MF	III	-	TBD	0.001	0.025	6/1 - 9/30	Dry Crossing	000-03-01-146
72.5	72.7	Northampton	40.623182	-75.263283	UNT to Bull Run	102715_WA_1001_I_MI	Minor	RPW	I	CWF, MF	III	-	11	0.005	0.013	6/1 - 9/30	Dry Crossing	000-03-01-146
72.5	72.7	Northampton	40.623072	-75.263163	UNT to Bull Run	102715_WA_1002_I_MI	Minor	RPW	I	CWF, MF	III	-	5	0.005	0.003	6/1 - 9/30	Dry Crossing	000-03-01-146
72.5	72.7	Northampton	40.622647	-75.262633	UNT to Bull Run	102715_WA_1001_P_MI	Minor	RPW	P	CWF, MF	III	-	8	0.003	0.014	6/1 - 9/30	Dry Crossing	000-03-01-146
72.6	72.8	Northampton	40.621951	-75.261746	UNT to Bull Run	042815_JC_1005_I_MI	Minor	RPW	I	CWF, MF	III	-	6	0.004	0.007	6/1 - 9/30	Dry Crossing	000-03-01-146
72.8	73	Northampton	40.620293	-75.259891	UNT to Bull Run	042815_JC_1001_E_MI	Minor	NRPW	E	CWF, MF	III	-	8	0.003	0.008	6/1 - 9/30	Dry Crossing	000-03-01-146
73.4	73.6	Northampton	40.617885	-75.249167	UNT to Frya Run	010615_JC_1004_P_MI	Minor	RPW	P	HQ-CWF, MF	III	-	7	0.004	0.008	6/1 - 9/30	Dry Crossing	000-03-01-148
74.4	74.6	Northampton	40.608939	-75.233038	Frya Run	091814_MK_1009_P_IM	Intermediate	RPW	I	HQ-CWF, MF	I, III	-	15	0.008	0.017	6/1 - 9/30	Dry Crossing	000-03-01-150
74.7	74.9	Northampton	40.60688	-75.229381	UNT to Frya Run	062415_BT_1002_I_MI	Minor	RPW	I	HQ-CWF, MF	III	-	4	0.001	0.006	6/1 - 9/30	Dry Crossing	000-03-01-150
74.7	74.9	Northampton	40.606882	-75.22908	UNT to Frya Run	062415_BT_1001_P_MI	Minor	RPW	P	HQ-CWF, MF	III	-	51	0.022	0.028	6/1 - 9/30	Dry Crossing	000-03-01-150
75.5	75.7	Northampton	40.601778	-75.219041	UNT to Cooks Creek	111314_JC_1002_I_MI	Minor	RPW	I	EV, MF	III	-	6	0.003	0.007	6/1 - 9/30	Dry Crossing	000-03-01-152
75.5	75.7	Northampton	40.601785	-75.219052	UNT to Cooks Creek	111314_JC_1003_E_MI	Minor	NRPW	E	EV, MF	III	-	2	0.000	0.002	6/1 - 9/30	Dry Crossing	000-03-01-152
75.5	75.7	Northampton	40.601415	-75.218427	UNT to Cooks Creek	111314_JC_1001_I_MI	Minor	RPW	I	EV, MF	III	-	23	0.001	0.011	6/1 - 9/30	Dry Crossing	000-03-01-152
76	76.2	Bucks	40.596825	-75.211361	UNT to Delaware River	051515_JC_1004_E_MI	Minor	RPW	E	WWF,MF	-	-	8	0.006	0.009	6/1 - 11/30	Dry Crossing	000-03-01-153
76.2	AR-76.4 - 76.5	Bucks	40.594142	-75.211804	UNT to Cooks Creek	PA-NHD-120	Minor	RPW	P	EV, MF	III	-	TBD	0.000	0.000	6/1 - 9/30	Dry Crossing	000-03-01-153
77.4	77.6	Bucks	40.584141	-75.194827	Delaware Canal	052915_JC_1002_C_IN	Intermediate	RPW	Canal	WWF,MF	-	-	48	0.055	0.055	6/1 - 11/30	HDD	000-03-01-156

Facility/ Mile Post[a]	Facility/ Mile Post[a]	County	Latitude (dd nad83)[1]	Longitude (dd nad83)[1]	Waterbody Name[2]	Waterbody ID[3]	FERC Class[4]	Waters Types[5]	Stream Type[6]	PA Code Ch. 93 Designated Use or Existing Use[7]	Wild Trout Waters[8]	ATW[9]	Crossing Width[10, 13, 14, 15]	Acres Affected	Acres Affected	Instream Construction Period[11,13,14,15]	Proposed Crossing Method[12]	Alignment Sheet, Plan Sheet, or Figure #
														Perm. ROW	Perm. ROW			
77.4	77.6	Bucks	40.583992	-75.193283	Delaware River	PA-NHD-006	Major	TNW	P	WWF	-	-	468	0.000	0.034	6/1 - 11/30	HDD	000-03-01-156
Compressor Station – Delaware River Basin																		
26.5	26.6	Carbon	41.081996	-75.667761	UNT to Black Creek	082515_BT_1001_P_IM	Intermediate	RPW	P	HQ-CWF, MF	III	-	11	0	0.03	6/1 - 9/30	Dry Crossing	000-03-01-054
Hellertown 24-Inch Lateral - Delaware River Basin																		
0.3	N/A	Northampton	40.62984	-75.281285	Bull Run	PA-NHD-110	Intermediate	RPW	P	CWF, MF	III	-	TBD	0.015	0.04	6/1 - 9/30	Dry Crossing	000-03-01-229

Facility/ Mile Post[a]	Facility/ Mile Post[a]	County	Latitude (dd nad83)[1]	Longitude (dd nad83)[1]	Waterbody Name[2]	Waterbody ID[3]	FERC Class[4]	Waters Types[5]	Stream Type[6]	PA Code Ch. 93 Designated Use or Existing Use[7]	Wild Trout Waters[8]	ATW[9]	Crossing Width[10, 13, 14, 15]	Acres Affected	Acres Affected	Instream Construction Period[11,13,14,15]	Proposed Crossing Method[12]	Alignment Sheet, Plan Sheet, or Figure #
														Perm. ROW	Perm. ROW			

[a] Milepost values reflective of restationing to include route variations implemented since September FERC submission.

[b] Milepost values calculated using station equations to relate current route to the route at the time of the September FERC submission.

[1] Latitude and Longitude are in Decimal Degrees (dd) North American Datum (nad83).

[2] Waterbody names were based on United States Geological Service (USGS) National Hydrology Database (NHD) Data (USGS, 2014) and PA Code Ch. 93 data (PSIE, 2013).

[3] Waterbody IDs were generated during field delineation or were assigned based on USGS National Hydrology Database (NHD) Data (USGS, 2014) to the closest northern milepost.

[4] Wetland and Waterbody Construction and Mitigation Procedures (FERC, 2013).
FERC classifies waterbodies as any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes: "minor waterbody" (Minor) includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing; "intermediate waterbody" (Intermediate) includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing; and "major waterbody" (Major) includes all waterbodies greater than 100 feet wide at the water's edge at the time of crossing. FERC Classifications for NHD waterbodies were determined by measuring the distance of the waterbody at the crossing point using aerial photographs. If the stream was not visible on the aerial photograph the stream was designated as minor, with a crossing distance of "<10" feet. Classification may change based on conditions at time of construction.

[5] Section 10 waters per Army Corps of Engineers Data (USACE, 2010), Section 404 Guidelines (USACE, 2011).
Key:
TNW* = Traditional Navigable Waters, including territorial seas. TNW also refers to Section 10 waters per Army Corps of Engineers data; all other waterbodies fall under Section 404 guidelines (USACE, 2010; USACE, 2011)
RPW = Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs
NRPW = Non-RPWs that flow directly or indirectly into TNWs

[6] USGS National Hydrology Database (NHD) Data (USGS, 2014).
For delineated streams, perennial/intermittent/ephemeral determinations were made based on channel definition, i.e., having a defined bed and bank, and, as directed by PADEP (Mackowski, personal comm. 2012), by determination of stream flow using geomorphic, hydrological and biological indicators, utilizing the North Carolina Division of Water Quality (2005) identification methods as guidelines. For NHD waterbodies, perennial/intermittent/ephemeral designations were assigned in the NHD data layer.
Key:
P = Perennial, I = Intermittent, E = Ephemeral

[7] Pennsylvania Code Ch. 93 Designated Use (Pennsylvania Code 2014) and Pennsylvania Statewide Existing Use Classifications (PADEP 2014).
In instances where a stream has both a Designated Use and an Existing Use Designation, the Existing Use Designation is listed.
Key:
EV = Exceptional Value Waters
HQ = High Quality Waters. Surface water that meets one or more to the conditions listed in 93.4b.
CWF = Cold Water Fishes. Maintenance or propagation, or both, to fish species including the family Salmonidae and additional flora and fauna, which are indigenous to a cold water habitat.
WWF = Warm Water Fishes. Maintenance and propagation to fish species and additional flora and fauna, which are indigenous to a warm water habitat.
MF = Migratory Fishes. Passage, maintenance, and propagation to anadromous and catadromous fishes and other fishes, which ascend to flowing waters to complete their life cycle.

[8] Wild Trout Waters, Natural Reproduction, January 2015 (PFBC, 2015a), Wild Trout Waters (PFBC, 2015b), Class A Waters, December 2013 (PFBC, 2015c).
Wild Trout Waters include:
I = Class A Wild Trout Streams: Streams that support a population to naturally produced trout to sufficient size and abundance to support a long-term and rewarding sport fishery.
II = Wilderness Trout Streams: Wilderness trout stream management is based upon the provision to a wild trout fishing experience in a remote, natural, and unspoiled environment where man's disruptive activities are minimized.
III = Wild Trout Streams: Stream sections supporting naturally reproducing populations to trout. A wild trout stream section is a biological designation that does not determine how it is managed; therefore, these streams may also be stocked with hatchery trout by the Commission.

[9] Approved Trout Streams (PFBC, 2015d).
ATW = Approved Trout Waters
TS= Trout Stocked Streams

[10] Crossing width based on waters at time to delineation or aerial photography for NHD waters and may vary at time to construction. Direct Impacts to waterbodies will be limited to the trenching activities will be limited to the trenching activities associated with the installation to the pipeline. Trenches are typically less than 25 feet wide. Every attempt to preserve the integrity to the stream flow, bed, and banks outside to the trench will be undertaken.

[11] Per FERC Guidelines, or State restrictions where more strict – see Resource Report 3

[12] Dry crossing methods include: 1) Flumed Crossing and 2) Dam and Pump Crossing; Modified Dry crossing method (Mainline crew completes trenching using Flumed or Dam and Pump method, then flume is installed; lowering-in crew removes flume and completes lowering-in of pipe and backfilling of waterbody using Flumed or Dam and Pump Method); Wet crossing method or Open Cut Crossing (trenching and backfilling in the waterbody-not including blasting or other rock breaking measures-is complete within 24 hours).

[13] The approximate crossing width is measured at the pipeline centerline and does not represent the width of the stream. In instances where a stream will not be crossed by the pipeline centerline, the crossing width provided is the average width of the stream within the Projects study area.

[14] FERC stream classifications are based on FERC's Wetland and Waterbody Construction and Mitigation Procedures definition of minor, intermediate and major waterbodies. Minor = waterbodies less than or equal to 10 feet wide; Intermediate = waterbodies greater than 10 feet wide but less than or equal to 100 feet wide; Major = greater than 100 feet wide.

[15] Per Pennsylvania State Programmatic General Permit-4 (PASGP-4) (Revised September 29, 2015) definition for Linear Footage of Stream Impact, the linear footage of stream impact is whichever measurement is greater, the measurement from the top of bank to the top of the opposite bank or the measurement from the upstream to downstream limits of work.

Table 2A-2
Waterbodies Crossed by the Project in New Jersey

Facility / Mile Post[1]	Facility/ Mile Post[2]	County	Latitude (dd nad83)[i]	Longitude (dd nad83)[i]	Waterbody Name[ii]	Waterbody ID[iii]	FERC Class[iv]	Waters Types[v]	Stream Type[vi]	NJDEP Water Quality Class[vii]	Regulated Riparian Zone[viii]	Crossing Width[ix,13,14,15]	Square Feet Affected		Instream Construction Period[x]	Proposed Crossing Method[xi]	Alignment Sheet, Plan, or Figure #
													Perm ROW	Perm. ROW			
PennEast Mainline – Delaware River Basin																	
77.7	77.9	Hunterdon	40.583798	-75.192695	Delaware River	051415_SQ_1001_P_MA	Major	TNW	P	Zone1E*	50	256	0.000	0.009	6/1-9/30	HDD	000-03-01-156
79	79.2	Hunterdon	40.575939	-75.169481	UNT to Delaware River	NJ-NHD-123	Minor	RPW	P	FW2-TPC1	50	4	0.003	0.005	6/1 - 9/15	Dry Crossing	000-03-01-158
80	80.2	Hunterdon	40.572991	-75.156050	UNT to Delaware River	NJ-NHD-130	Minor	RPW	P	FW2-TPC1	300	8	0.005	0.009	6/1 - 9/15	Dry Crossing	000-03-01-160
80.2	80.4	Hunterdon	40.573501	-75.153254	UNT to Delaware River	NJ-NHD-131	Minor	RPW	P	FW2-NT	50	3	0.002	0.003	7/1-9/30	Dry Crossing	000-03-01-161
80.1	80.3	Hunterdon	40.574910	-75.149425	UNT to Delaware River	NJ-NHD-216	Minor	RPW	P	FW2-NT	50	6	0.003	0.005	7/1-9/30	Dry Crossing	000-03-01-161
80.4	80.6	Hunterdon	40.576601	-75.143591	UNT to Delaware River	NJ-NHD-218	Minor	RPW	P	FW2-NT	50	6	0.005	0.010	7/1-9/30	Dry Crossing	000-03-01-162
80.4	80.6	Hunterdon	40.576919	-75.142913	UNT to Delaware River	NJ-NHD-132	Minor	RPW	P	FW2-NT	50	5	0.003	0.006	7/1-9/30	Dry Crossing	000-03-01-162
81.2	81.4	Hunterdon	40.581756	-75.131046	UNT to Delaware River	NJ-NHD-134	Minor	RPW	P	FW2-NT	50	3	0.002	0.003	7/1-9/30	Dry Crossing	000-03-01-163
81.7	81.9	Hunterdon	40.581004	-75.122297	UNT to Delaware River	S-SUR-136	Minor	RPW	P	FW2-NT	50	8	0.005	0.009	7/1-9/30	BORE	000-03-01-164
82	81.9	Hunterdon	40.580936	-75.117501	UNT to Delaware River	S-SUR-137	Minor	RPW	P	FW2-TPC1	300	3	0.002	0.003	6/1 - 9/15	Dry Crossing	000-03-01-164
82.1	82	Hunterdon	40.581167	-75.115504	UNT to Spring Mills Brook	052015_JC_1001_E_MI	Minor	NPRW	E	FW2-TPC1	300	7	0.005	0.010	6/1 - 9/15	Dry Crossing	000-03-01-166
82.4	82.3	Hunterdon	40.581900	-75.109064	Spring Mills Brook	NJ-NHD-138	Intermediate	RPW	P	FW2-TPC1	300	11	0.007	0.014	6/1 - 9/15	Dry Crossing	000-03-01-165
82.4	82.3	Hunterdon	40.582071	-75.109092	UNT to Spring Mills Brook	S-SUR-139	Minor	RPW	P	FW2-TPC1	300	3	0.002	0.005	6/1 - 9/15	Dry Crossing	000-03-01-165
82.8	82.7	Hunterdon	40.581783	-75.101871	UNT to Spring Mills Brook	NJ-NHD-140	Intermediate	RPW	P	FW2-TPC1	300	16	0.011	0.022	6/1 - 9/15	Dry Crossing	000-03-01-166
83.3	83.2	Hunterdon	40.582238	-75.093595	Hakihokake Creek	NJ-NHD-008	Intermediate	RPW	P	FW2-TPC1	300	46	0.025	0.055	6/1 - 9/15	BORE	000-03-01-167
83.9	83.8	Hunterdon	40.581675	-75.080980	Hakihokake Creek UNT	NJ-NHD-142	Minor	RPW	P	FW2-TPC1	300	6	0.003	0.007	6/1 - 9/15	Dry Crossing	000-03-01-168
84.5	84.4	Hunterdon	40.575813	-75.074036	UNT to Delaware River	S-SUR-144	Minor	RPW	P	FW2-NT	50	5	0.005	0.015	7/1-9/30	Dry Crossing	000-03-01-169
84.8	84.7	Hunterdon	40.574543	-75.068871	UNT to Delaware River	NJ-NHD-225	Minor	RPW	P	FW2-NT	50	3	0.002	0.003	7/1-9/30	Dry Crossing	000-03-01-170
85.4	85.3	Hunterdon	40.571768	-75.060233	UNT to Delaware River	NJ-NHD-232	Minor	RPW	P	FW2-TMC1	300	7	0.005	0.010	6/16- 9/30	Dry Crossing	000-03-01-171
85.6	85.5	Hunterdon	40.570014	-75.056850	Harihokake Creek	NJ-NHD-240	Intermediate	RPW	P	FW2-TMC1	300	91	0.046	0.103	6/16- 9/30	Dry Crossing	000-03-01-172
85.8	85.7	Hunterdon	40.567367	-75.056385	UNT to Harihokake Creek	NJ-NHD-245	Minor	RPW	P	FW2-TMC1	300	5	0.003	0.009	6/16- 9/30	Dry Crossing	000-03-01-172
86.3	86.2	Hunterdon	40.561471	-75.059816	Harihokake Creek	NJ-NHD-247	Intermediate	RPW	P	FW2-TMC1	300	66	0.039	0.076	6/16- 9/30	Dry Crossing	000-03-01-172.1
86.7	85.9	Hunterdon	40.557564	-75.061861	UNT to Harihokake Creek	091014_WA_1004_I_MI	Minor	RPW	I	FW2-TMC1	300	8	0.004	0.008	6/16- 9/30	Dry Crossing	000-03-01-172.2
86.7	85.9	Hunterdon	40.556444	-75.061816	UNT to Harihokake Creek	091014_WA_1015_E_MI	Minor	NRPW	E	FW2-TMC1	300	12	0.006	0.013	6/16- 9/30	Dry Crossing	000-03-01-173
87.6	86.8	Hunterdon	40.545023	-75.061436	UNT to Harihokake Creek	091014_WA_1016_E_MI	Intermediate	NRPW	E	FW2-TMC1	300	20	0.011	0.023	6/16- 9/30	Dry Crossing	000-03-01-174
87.6	86.8	Hunterdon	40.546605	-75.065169	Hakihokake Creek	NJ-NHD-009	Intermediate	RPW	P	FW2-TMC1	300	57	0.028	0.066	6/16- 9/30	Dry Crossing	000-03-01-175
88	87.2	Hunterdon	40.541073	-75.059136	UNT to Delaware River	NJ-NHD-154	Minor	RPW	P	FW2-NT	50	6	0.008	0.016	7/1-9/30	Dry Crossing	000-03-01-175
88.5	87.7	Hunterdon	40.536297	-75.049020	Nishisakawick Creek	091114_WA_1001_P_IM	Intermediate	RPW	P	FW2-TMC1	300	59	0.026	0.066	6/16- 9/30	BORE	000-03-01-175
88.6	87.8	Hunterdon	40.534301	-75.046659	UNT to Nishisakawick Creek	051515_SQ_1002_P_IN	Intermediate	RPW	P	FW2-NTC1	300	80	0.041	0.097	7/1-9/30	Dry Crossing	000-03-01-176
89.2	88.4	Hunterdon	40.527176	-75.042623	Little Nishisakawick Creek	NJ-NHD-014	Intermediate	RPW	P	FW2-NTC1	300	22	0.009	0.025	7/1-9/30	Dry Crossing	000-03-01-177
89.2	88.4	Hunterdon	40.527135	-75.042623	UNT to Little Nishisakawick Creek	091114_WA_1008_E_MI	Minor	NRPW	E	FW2-NTC1	300	77	0.000	0.001	7/1-9/30	Dry Crossing	000-03-01-177
89.6	88.8	Hunterdon	40.522806	-75.040350	UNT to Little Nishisakawick Creek	091114_WA_1004_I_MI	Minor	RPW	I	FW2-NTC2	300	10	0.006	0.011	7/1-9/30	Dry Crossing	000-03-01-178
89.6	88.8	Hunterdon	40.522520	-75.040403	UNT to Little Nishisakawick Creek	091114_WA_1003_I_MI	Minor	RPW	I	FW2-NTC1	300	8	0.006	0.011	7/1-9/30	Dry Crossing	000-03-01-178
89.7	88.9	Hunterdon	40.521109	-75.039746	UNT to Little Nishisakawick Creek	S-SUR-158	Minor	RPW	P	FW2-NTC1	300	3	0.003	0.006	7/1-9/30	Dry Crossing	000-03-01-178
90.3	89.5	Hunterdon	40.511139	-75.039506	UNT to Copper Creek	NJ-NHD-159	Intermediate	RPW	P	FW2-NT	50	17	0.010	0.024	7/1-9/30	Dry Crossing	000-03-01-179

Facility / Mile Post[1]	Facility/ Mile Post[2]	County	Latitude (dd nad83)[i]	Longitude (dd nad83)[i]	Waterbody Name[ii]	Waterbody ID[iii]	FERC Class[iv]	Waters Types[v]	Stream Type[vi]	NJDEP Water Quality Class[vii]	Regulated Riparian Zone[viii]	Crossing Width[ix,13,14,15]	Square Feet Affected		Instream Construction Period[x]	Proposed Crossing Method[xi]	Alignment Sheet, Plan, or Figure #
													Perm ROW	Perm. ROW			
AR 89.6		Hunterdon	40.510588	-75.043205	Copper Creek	NJ-NHD-160	Intermediate	RPW	P	FW2-NT	50	17	0.012	0.000	7/1-9/30	Dry Crossing	000-03-01-180
90.5	89.7	Hunterdon	40.509729	-75.035665	Copper Creek	NJ-NHD-016	Intermediate	RPW	P	FW2-NT	50	14	0.009	0.016	7/1-9/30	Dry Crossing	000-03-01-180
92.3	91.5	Hunterdon	40.489986	-75.018655	Lockatong Creek	NJ-HND-248	Intermediate	RPW	P	FW2-NTC1	300	75	0.000	0.003	7/1-9/30	HDD	000-03-01-187
92.3	91.5	Hunterdon	40.489448	-75.018708	Lockatong Creek	NJ-HND-248	Intermediate	RPW	P	FW2-NTC1	300	85	0.000	0.003	7/1-9/30	HDD	000-03-01-187
92.9	92.4	Hunterdon	40.480374	-75.017171	Lockatong Creek	NJ-HND-248	Intermediate	RPW	P	FW2-NTC1	300	32	0.000	0.001	7/1-9/30	HDD	000-03-01-187
93.1	92.6	Hunterdon	40.477417	-75.016432	Lockatong Creek	NJ-NHD-162	Intermediate	RPW	P	FW2-NTC1	300	85	0.000	0.003	7/1-9/30	HDD	000-03-01-188
93.7	93.2	Hunterdon	40.471693	-75.011566	UNT to Lockatong Creek	051915_SQ_1001_P_MI	Minor	RPW	P	FW2-NT	50	8	0.004	0.006	7/1-9/30	Dry Crossing	000-03-01-187
93.9	93.4	Hunterdon	40.467910	-75.011385	UNT to Lockatong Creek	NJ-NHD-165	Intermediate	RPW	P	FW2-NTC1	300	18	0.013	0.021	7/1-9/30	Dry Crossing	000-03-01-187
95	94.5	Hunterdon	40.456502	-74.997015	UNT to Wickecheoke Creek	S-SUR-166	Minor	RPW	P	FW2-NTC1	50	5	0.003	0.006	7/1-9/30	Dry Crossing	000-03-01-189
95.1	94.6	Hunterdon	40.456073	-74.996201	UNT to Wickecheoke Creek	S-SUR-167	Minor	RPW	P	FW2-NTC1	50	3	0.002	0.003	7/1-9/30	Dry Crossing	000-03-01-189
95.6	95.1	Hunterdon	40.449701	-74.992082	UNT to Wickecheoke Creek	NJ-NHD-168	Intermediate	RPW	P	FW2-NTC1	300	14	0.011	0.019	7/1-9/30	Dry Crossing	000-03-01-190
95.8	95.3	Hunterdon	40.448666	-74.987702	UNW	NJ-NHD-019	Intermediate	N/A	POND	N/A	50	110	0.063	0.115	7/1-9/30	Dry Crossing	000-03-01-191
96.6	96.1	Hunterdon	40.437907	-74.978734	UNT to Wickecheoke Creek	NJ-NHD-169	Intermediate	RPW	P	FW2-TMC1	300	16	0.010	0.020	6/16- 9/30	Dry Crossing	000-03-01-192
96.8	96.3	Hunterdon	40.437907	-74.978734	UNT to Wickecheoke Creek	NJ-NHD-169	Minor	RPW	P	FW2-TMC1	300	8	0.005	0.010	6/16- 9/30	Dry Crossing	000-03-01-192
97.3	96.8	Hunterdon	40.432635	-74.971764	UNT to Wickecheoke Creek	NJ-NHD-171	Minor	RPW	P	FW2-TMC1	300	7	0.004	0.009	6/16- 9/30	Dry Crossing	000-03-01-194
97.3	96.8	Hunterdon	40.427780	-74.976308	Wickecheoke Creek	NJ-NHD-021	Intermediate	RPW	P	FW2-TMC1	300	71	0.008	0.081	6/16- 9/30	BORE	000-03-01-194
97.3	96.8	Hunterdon	40.431085	-74.971784	Wickecheoke Creek	NJ-NHD-172	Intermediate	RPW	P	FW2-TMC1	300	12	0.003	0.000	6/16- 9/30	BORE	000-03-01-194
97.8	97.3	Hunterdon	40.426135	-74.965308	UNT to Wickecheoke Creek	NJ-NHD-173	Intermediate	RPW	P	FW2-TMC1	300	11	0.008	0.016	6/16- 9/30	Dry Crossing	000-03-01-195
99	98.5	Hunterdon	40.414381	-74.950952	UNT to Delaware and Raritan Canal	NJ-NHD-174	Minor	RPW	P	FW2-NT	50	9	0.006	0.014	7/1-9/30	Dry Crossing	000-03-01-197
99.6	99.1	Hunterdon	40.405681	-74.947141	UNT to Alexauken Creek	NJ-NHD-175	Minor	RPW	P	FW2-TMC1	300	6	0.004	0.008	6/16- 9/30	Dry Crossing	000-03-01-198
100.2	99.7	Hunterdon	40.400680	-74.943846	UNT to Alexauken Creek	NJ-NHD-176	Intermediate	RPW	P	FW2-TMC1	300	23	0.016	0.031	6/16- 9/30	Dry Crossing	000-03-01-199
100.3	99.8	Hunterdon	40.397785	-74.940794	UNT to Alexauken Creek	NJ-NHD-177	Minor	RPW	P	FW2-TMC1	300	6	0.005	0.008	6/16- 9/30	Dry Crossing	000-03-01-200
100.4	99.9	Hunterdon	40.397031	-74.938412	UNT to Alexauken Creek	NJ-NHD-178	Minor	RPW	P	FW2-TMC1	300	10	0.006	0.012	6/16- 9/30	Dry Crossing	000-03-01-200
100.7	100.2	Hunterdon	40.392682	-74.938318	Alexauken Creek	NJ-NHD-024	Intermediate	RPW	P	FW2-TMC1	300	45	0.004	0.051	6/16- 9/30	Dry Crossing	000-03-01-201
100.8	100.3	Hunterdon	40.388440	-74.931440	UNT to Alexauken Creek	NJ-NHD-181	Intermediate	RPW	P	FW2-TMC1	300	18	0.011	0.021	6/16- 9/30	Dry Crossing	000-03-01-201
101.2	100.7	Hunterdon	40.392195	-74.935618	UNT to Alexauken Creek	NJ-NHD-182	Intermediate	RPW	P	FW2-TMC1	300	12	0.009	0.014	6/16- 9/30	Dry Crossing	000-03-01-202
101.5	101	Hunterdon	40.386085	-74.927486	UNT to Alexauken Creek	S-SUR-184	Minor	RPW	P	FW2-TMC1	300	7	0.005	0.008	6/16- 9/30	Dry Crossing	000-03-01-202
101.8	101.3	Hunterdon	40.382215	-74.924325	UNT to Swan Creek	052815_SQ_1001_P_MI	Intermediate	RPW	P	FW2-NT	50	20	0.006	0.022	7/1-9/30	Dry Crossing	000-03-01-203
102.4	101.9	Hunterdon	40.373581	-74.925233	UNT to Swan Creek	NJ-NHD-186	Minor	RPW	P	FW2-NT	50	7	0.009	0.013	7/1-9/30	Dry Crossing	000-03-01-204
103.4	102.9	Hunterdon	40.361593	-74.925568	Swan Creek	NJ-NHD-189	Minor	RPW	P	FW2-NT	50	8	0.011	0.020	7/1-9/30	Dry Crossing	000-03-01-206
103.4	102.9	Hunterdon	40.361866	-74.926897	UNT to Swan Creek	NJ-NHD-188	Intermediate	RPW	P	FW2-NT	50	15	0.009	0.025	7/1-9/30	Dry Crossing	000-03-01-206
103.4	102.9	Hunterdon	40.359924	-74.925566	UNT to Swan Creek	NJ-NHD-191	Minor	RPW	P	FW2-NT	50	15	0.005	0.011	7/1-9/30	Dry Crossing	000-03-01-206
105.1	104.6	Mercer	40.338799	-74.919354	UNT to Moores Creek	S-SUR-194	Minor	RPW	P	FW2-TM	150	4	0.015	0.024	6/16- 9/30	BORE	000-03-01-210
105.3	104.8	Mercer	40.339665	-74.916287	UNT to Moores Creek	NJ-NHD-195	Intermediate	RPW	P	FW2-TM	150	14	0.003	0.006	6/16- 9/30	Dry Crossing	000-03-01-210
105.8	105.3	Mercer	40.335963	-74.907068	UNT to Moores Creek	060315_SQ_1005_P_MI	Minor	RPW	P	FW2-TM	150	5	0.004	0.007	6/16- 9/30	Dry Crossing	000-03-01-211
106.1	105.6	Mercer	40.334613	-74.900266	Moores Creek	060415_SQ_1003_P_IN	Intermediate	RPW	P	FW2-TM	150	49	0.000	0.002	6/16- 9/30	HDD	000-03-01-212
106.4	105.9	Mercer	40.333969	-74.894944	UNT to Moores Creek	060415_SQ_1005_P_MI	Minor	RPW	P	FW2-TM	150	5	0.000	0.005	6/16- 9/30	HDD	000-03-01-212
108	107.5	Mercer	40.329925	-74.866623	UNT Fiddlers Creek	S-SUR-198	Minor	RPW	P	FW2-TM	150	3	0.002	0.003	6/16- 9/30	Dry Crossing	000-03-01-215
108.3	107.8	Mercer	40.329091	-74.860435	UNT Fiddlers Creek	S-SUR-199	Minor	RPW	P	FW2-TM	150	3	0.001	0.001	6/16- 9/30	Dry Crossing	000-03-01-216

Facility / Mile Post[1]	Facility/ Mile Post[2]	County	Latitude (dd nad83)[i]	Longitude (dd nad83)[i]	Waterbody Name[ii]	Waterbody ID[iii]	FERC Class[iv]	Waters Types[v]	Stream Type[vi]	NJDEP Water Quality Class[vii]	Regulated Riparian Zone[viii]	Crossing Width[ix,13,14,15]	Square Feet Affected		Instream Construction Period[x]	Proposed Crossing Method[xi]	Alignment Sheet, Plan, or Figure #
													Perm ROW	Perm. ROW			
108.6	108.1	Mercer	40.328430	-74.855345	UNT to Fiddlers Creek	060315_SQ_1009_I_MI	Minor	RPW	I	FW2-TM	150	1	0.001	0.004	6/16- 9/30	Dry Crossing	000-03-01-216
108.8	108.3	Mercer	40.326825	-74.851585	Fiddlers Creek	NJ-NHD-200	Minor	RPW	I	FW2-TM	150	6	0.026	0.063	6/16- 9/30	Dry Crossing	000-03-01-217
109.6	109.1	Mercer	40.325822	-74.837077	Jacobs Creek	061015_SQ_1007_P_IN	Intermediate	RPW	P	FW2-NT	50	41	0.013	0.045	7/1-9/30	Dry Crossing	000-03-01-219
110	109.5	Mercer	40.323465	-74.830207	UNT to Jacobs Creek	061015_SQ_1001_I_MI	Minor	RPW	I	FW2-NT	50	3	0.001	0.003	7/1-9/30	Dry Crossing	000-03-01-220
PennEast Mainline - Millstone River Watershed																	
110.7	110.2	Mercer	40.315470	-74.823267	UNT to Woolsey Brook	NJ-NHD-203	Minor	RPW	P	FW2-NT	50	5	0.000	0.000	7/1-9/30	Dry Crossing	000-03-01-221
111	110.5	Mercer	40.312892	-74.818320	Woolsey Brook	NJ-NHD-204	Minor	RPW	P	FW2-NT	50	13	0.000	0.000	7/1-9/30	HDD	000-03-01-221
111.3	110.8	Mercer	40.308369	-74.815449	UNW	NJ-NHD-032	Major	N/A	POND	FW2-NT	50	164	0.000	0.006	7/1-9/30	HDD	000-03-01-222
113.2	112.7	Mercer	40.307512	-74.783745	UNT to Stony Brook	NJ-NHD-207	Intermediate	RPW	P	FW2-NT	50	14	0.004	0.016	7/1-9/30	Dry Crossing	000-03-01-226
113.9	113.4	Mercer	40.316103	-74.778548	UNT to Stony Brook	061615_SQ_1003_P_MI	Minor	RPW	P	FW2-NT	50	5	0.002	0.006	7/1-9/30	Dry Crossing	000-03-01-227
Lambertville 36-inch Lateral – Delaware River Basin																	
0.1	N/A	Hunterdon	40.387445	-74.931547	UNT to Alexauken Creek	NJ-NHD-182	Minor	RPW	P	FW2-TMC1	300	5	0.002	0.005	6/16- 9/30	Dry Crossing	000-03-01-202
0.4	N/A	Hunterdon	40.391817	-74.927274	UNT to Alexauken Creek	NJ-NHD-183	Minor	RPW	P	FW2-TMC1	300	4	0.004	0.008	6/16- 9/30	Dry Crossing	000-03-01-236
0.8	N/A	Hunterdon	40.396716	-74.921747	UNT to Alexauken Creek	NJ-NHD-179	Minor	RPW	P	FW2-TMC1	300	7	0.004	0.008	6/16- 9/30	Dry Crossing	000-03-01-237

[1]Milepost values reflective of restationing to include route variations implemented since September FERC submission.
[2] Milepost values calculated using station equations to relate current route to the route at the time of the September FERC submission.
[i] Latitude and Longitude are in Decimal Degrees (dd) North American Datum (nad83).
[ii] USGS National Hydrology Database (NHD) Data (USGS, 2014), New Jersey Surface Water Quality Standards (NJDEP 2010).
a = Delineated waterbody; b = Designates partial waterbody delineations at time of writing; c = NHD water that crosses an un-surveyed area near a delineated feature, potential for these features to be the same.
[iii] USGS National Hydrology Database (NHD) Data (USGS, 2014), New Jersey Surface Water Quality Standards (NJDEP 2010).
Waterbody IDs were generated during field delineation or were assigned based on GIS data (NHD or SWQS) to the closest northern milepost.
[iv] Wetland and Waterbody Construction and Mitigation Procedures (FERC, 2013).
FERC classifies waterbodies as any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes: "minor waterbody" (Minor) includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing; "intermediate waterbody" (Intermediate) includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing; and "major waterbody" (Major) includes all waterbodies greater than 100 feet wide at the water's edge at the time of crossing. FERC Classifications for NHD waterbodies were determined by measuring the distance of the waterbody at the crossing point using aerial photographs. If the stream was not visible on the aerial photograph the stream was designated as minor, with a crossing distance of "<10.0" feet. Classification may change based on conditions at time of construction.
[v] Section 10 waters per Army Corps of Engineers Data (USACE, 2010), Section 404 Guidelines (USACE, 2011).
[a] = TNW also refers to Section 10 waters per Army Corps of Engineers data; all other waterbodies fall under Section 404 guidelines (USACE, 2010; USACE, 2011)
Key:
TNW = Traditional Navigable Waters, including territorial seas
NA = Non-Jurisdictional Waters; waters are exclusively regulated by NJDEP per New Jersey Administrative Code 7:13.
[vi] USGS National Hydrology Database (NHD) Data (USGS, 2014).
For delineated streams, perennial/intermittent/ephemeral determinations were made based on channel definition, i.e., having a defined bed and bank, and by determination of stream flow using geomorphic, hydrological and biological indicators, utilizing the North Carolina Division of Water Quality (2005) identification methods as guidelines. For NHD waterbodies, perennial/intermittent/ephemeral designations were assigned in the NHD data layer.
Key:
P = Perennial, I = Intermittent, E = Ephemeral
[vii] New Jersey Surface Water Quality Standards (NJDEP 2010).
Delaware River Designation per Delaware River Basin Commission, (DRBC, 2015)
Key:
UNT = Unnamed Tributary
FW2-NTC1 = Freshwater, non-trout, Category 1
FW2-TMC1 = Freshwater , trout-maintenance, Category 1
FW2-TPC1 = Freshwater, trout-production, Category 1
FW2-NT = Freshwater, non-trout
[viii] Per New Jersey Administrative Code 7:13-10.2. Regulated Riparian Zones are:
-300 feet along Category 1 streams and their tributaries within the same USGS HUC-14 watershed
-150 feet along trout production waters and all upstream tributaries; trout maintenance waters and tributaries within one mile upstream; waters flowing through an area containing documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the regulated water for survival (and tributaries within one mile upstream); and waters that flow through an area that contains acid producing soils
-50 feet along all other streams

Facility / Mile Post[1]	Facility/ Mile Post[2]	County	Latitude (dd nad83)[i]	Longitude (dd nad83)[i]	Waterbody Name[ii]	Waterbody ID[iii]	FERC Class[iv]	Waters Types[v]	Stream Type[vi]	NJDEP Water Quality Class[vii]	Regulated Riparian Zone[viii]	Crossing Width[ix,13,14,15]	Square Feet Affected		Instream Construction Period[x]	Proposed Crossing Method[xi]	Alignment Sheet, Plan, or Figure #
													Perm ROW	Perm. ROW			

[ix] Crossing width based on waters at time of delineation or aerial photography for NHD waters and may vary at time of construction.
[a] = Total crossing width between Pennsylvania and New Jersey.
[x] Per FERC Guidelines, or State restrictions where more strict – see Resource Report 3
[xi] Dry crossing methods include: 1) Flumed Crossing and 2) Dam and Pump Crossing; Modified Dry crossing method (Mainline crew completes trenching using Flumed or Dam and Pump method, then flume is installed; lowering-in crew removes flume and completes lowering-in of pipe and backfilling of waterbody using Flumed or Dam and Pump Method); Wet crossing method or Open Cut Crossing (trenching and backfilling in the waterbody-not including blasting or other rock breaking measures-is complete within 24 hours).
[13] The approximate crossing width is measured at the pipeline centerline and does not represent the width of the stream. In instances where a stream will not be crossed by the pipeline centerline, the crossing width provided is the average width of the stream within the Projects study area.
[14] FERC stream classifications are based on FERC's Wetland and Waterbody Construction and Mitigation Procedures definition of minor, intermediate and major waterbodies. Minor = waterbodies less than or equal to 10 feet wide; Intermediate = waterbodies greater than 10 feet wide but less than or equal to 100 feet wide; Major = greater than 100 feet wide.
[15] Per Pennsylvania State Programmatic General Permit-4 (PASGP-4) (Revised September 29, 2015) definition for Linear Footage of Stream Impact, the linear footage of stream impact is whichever measurement is greater, the measurement from the top of bank to the top of the opposite bank or the measurement from the upstream to downstream limits of work.

Data Request 20

In section 2.2.1.3, page 2-8, PennEast states that no named surficial aquifers would be crossed by the project in New Jersey. The last sentence states that surficial aquifers in New Jersey are associated with groundwater discharge. Clarify if unnamed surficial aquifers would be crossed by the project in New Jersey, and if so provide background information on those aquifers as appropriate. In addition, PennEast states that "Additional information regarding surficial aquifers for Pennsylvania and New Jersey will be assessed as engineering design progresses for the project." Describe what additional information will be available versus what has already been provided in Resource Report 2.

Response 20

The surficial aquifers in New Jersey include till, moranic reposits, lake bottom sediments, sand and gravel and surficial sediment thicker than 50 feet overlying coastal plain aquifers (NJDEP, 1998). No known unnamed surficial aquifers would be crossed by the Project in New Jersey. Additional information regarding surficial aquifers for Pennsylvania and New Jersey will be assessed as the location of public and private water supply wells and springs within Pennsylvania and New Jersey continue to be identified as engineering design of the Project, field investigations, civil surveys and discussions with landowners progress. PennEast has identified certain monitoring and mitigation measures, as described in Section 2.2.5, that will be implemented to ensure protection of identified groundwater sources in areas where public and private water supply wells and springs identified during field investigations indicate that the aquifer may be at or near the surface.

Data Request 21

Table 2.2.4 identifies at least three groundwater seeps that would be within the construction work space. Describe the measures PennEast would implement to restore these seeps once the pipeline has been installed.

Response 21

To restore the pre-existing topography and the hydrology of groundwater seeps, PennEast would procure a hydrologist during excavation to examine the cause of the seep and make a determination whether a perching layer needs to be restored or whether a drain tile might be sufficient to capture and redirect flow to the original seep position. If so, then a perforated drain tile or rock trench could be installed to capture the flow that originally went to the seep.

Data Request 22

The text in section 2.2.3 identifies a single potable well within 150 feet of the work space, however table 2.2-5 identifies two wells at MP 84.7. Clarify and/or correct this discrepancy. Also, explain why the last well listed in table 2.2-5 is shaded.

Response 22

The text in Section 2.2.3 correctly identifies a single potable well within 150 feet of the construction workspace. Table 2.2-5 correctly identifies two wells at MP 84.7. The well located 90 feet from construction workspace was drilled as a replacement potable water supply well for the well located 149 feet from the construction workspace. Therefore, there are two wells physically located within 150 feet from the construction workspace, but only one of these wells qualifies as a potable water supply. The NJ Public Wells data set does not indicate whether the well located 149 feet was abandoned once the well located at 90 feet was drilled. Additional information on these wells will be identified as engineering design of the Project, field investigations civil surveys and discussions with land owners progress.

The last well listed in Table 2.2-5 is shaded due to automatic table formatting that shades every even row beneath a table heading or subheading.

Data Request 23

In table 2.3-8 both HDD and open cut are identified as crossing methods for Moores Creek. Please clarify and/or correct this discrepancy.

Response 23

Table 2.3-8 has been revised to indicate that Moores Creek will be crossed via HDD.

Table 2.3-8
Waterbodies that Require Site-Specific Crossing Plans

Waterbody	Mile Post	Type[1]	FERC Classification	Crossing Method	Reason for Site-Specific Crossing Plan
Susquehanna River	7.2	P	Major	Open Cut	Coffer dam and diversion is planned for this dry crossing.
Gardner Creek	9.5	P	Intermediate	Open Cut	Additional construction details are required for the open cut crossing.
Lehigh River (1)	22.8	P	Major	Open Cut	Additional construction details are required for the open cut crossing.
Wild Creek/ Beltzville Lake	43.5	P	Major	HDD	Additional construction details are required for the HDD crossing.
Pohopoco Creek/ Beltzville Lake	44	P	Major	HDD	Additional construction details are required for the HDD crossing.
UNT of Lehigh Coal and Navigation Canal	70.9	P	Intermediate	Open Cut	Additional construction details are required for the open cut crossing.
Lehigh River (2)	71.1	P	Major	HDD	Additional construction details are required for the HDD crossing.
Delaware Canal	77.6	P	Intermediate	HDD	Additional construction details are required for the open cut crossing.
Delaware River	77.6	P	Major	HDD	Additional construction details are required for the HDD crossing.
Spring Mills Brook	82.4	P	Minor	Open Cut	Additional construction details are required for the open cut crossing.
Lockatong Creek (1)	92.3	P	Intermediate	HDD	Additional construction details are required for the HDD crossing.

Waterbody	Mile Post	Type[1]	FERC Classification	Crossing Method	Reason for Site-Specific Crossing Plan
Lockatong Creek (2)	92.3	P	Intermediate	HDD	Additional construction details are required for the HDD crossing.
Lockatong Creek (3)	92.9	P	Intermediate	HDD	Additional construction details are required for the HDD crossing.
Lockatong Creek (4)	93.1	P	Intermediate	HDD	Additional construction details are required for the HDD crossing.
Moores Creek	105.6	P	Intermediate	HDD	Additional construction details are required for the HDD crossing.

[1] P = Perennial, I = Intermittent, E = Ephemeral

Data Request 24

In table 2.3-12 PennEast states that no waterbodies that would be affected by the project have impaired designations associated with polychlorinated biphenyls (PCBs); however, the listings for the Susquehanna and Lehigh Rivers include PCBs on their pollutant list. Please clarify.

Response 24

PennEast conducted research through the EPA, DEP, and CDC to obtain the information about PCB-contaminated sediments in the Project area. Based on the Pennsylvania Section 303(d) lists, two waterbodies (the Lehigh River and the Susquehanna River) have sediment-related impairment issues related to the presence of PCBs. EPA classifies the Susquehanna River and the Lehigh River as having PCB contamination; however the source is non-point. This means that the EPA does not know where the PCBs come from, as there are no known abandoned factories or dump sites at the location of the crossing. The PCB contamination was discovered when fish surveys were conducted in these rivers with fish shown to have PCBs in their tissue. As a result, PADEP has issued a fish advisory warning that advises against eating no more than one meal per month for carp and American eel in the Lehigh River and no more than one meal per month for channel catfish, quillback, carp, walleye and a recommendation not to eat suckers in the Susquehanna River.

Given the information obtained through EPA, DEP, and CDC, it is unlikely that the riverbed contains PCBs and even more unlikely that significant PCBs would be dispersed into the water column during construction. PennEast will develop a plan for collecting an appropriate number of sediment samples within the Susquehanna River to determine whether PCBs are present within the Project area. The samples will be collected and sent to an approved laboratory for analysis. In the event that PCBs are found to be present within the Project area, PennEast will consult with the appropriate agencies to determine whether the concentration present is at a level that would warrant PennEast to take additional precautions to prevent the release of PCBs into the water column.

The procedures outlined in the E&SCP will minimize introduction of water pollutants into waterbodies and minimize impacts on aquatic resources. Impacts from construction-related sedimentation and turbidity will be limited to short-term, temporary disturbances by following the Procedures. Site-Specific Waterbody Crossing Plans were developed for both the Susquehanna River and the Lehigh River, which include the location of the spoil storage both in the river and onshore and the mitigative measures that would be used control and store spoil; how an inadvertent release of drilling mud would be contained; and the procedures that would be used to clean up any inadvertent releases.

The Lehigh River will be crossed via HDD, which should avoid any sediment disturbance within the River. In the event of an inadvertent release during the HDD of the Lehigh River, PennEast will undertake an immediate response to clean up potentially contaminated sediment. Mud/sediment would be disposed of at an EPA-approved facility

capable of accepting PCBs. An Inadvertent Release and HDD Contingency Plan is included as Attachment 3.

The Susquehanna River will be constructed in the dry by utilizing a coffer dam and diversion. By utilizing this dry crossing technique, stream flow can be temporarily diverted, effectively isolating the workspace from the stream, which greatly reduces sedimentation within watercourses. Using this method, the pipeline crossings can be constructed faster than trenchless techniques that can take several weeks; thereby reducing the duration of earth disturbance associated with the Project. This method also eliminates the possibility of an inadvertent return of drilling fluids that can occur with trenchless techniques and the dry crossing construction reduces the contact time between the disturbed sediment and the water column.

Based on the New Jersey Section 303(d) lists, none of the waterbodies within the Project area in New Jersey have sediment-related impairment issues related to the presence of PCBs.

Data Request 25

In section 2.3.4.7 PennEast states that one waterbody in New Jersey has sediment related issues with metals and that a determination to cross the waterbody by HDD would be made if necessary to avoid sediment related impacts. Identify the one waterbody that is the subject of that statement, and describe the process that PennEast would apply to determine if the waterbody would be crossed using HDD.

Response 25

As noted in Table 2.3-12, Jacobs Creek in New Jersey is listed as having sediment related impairment due to metals.

PennEast evaluates numerous methods for pipeline construction, particularly as it relates to traversing waterbodies. This evaluation includes consultations with the U.S. Fish and Wildlife Service (USFWS), Pennsylvania Department of Environmental Protection (PADEP), New Jersey Department of Environmental Protection (NJDEP), and the U.S. Army Corps of Engineers (USACE), among others. PennEast proposes to cross waterbodies with flow at the time of construction using a combination of horizontal directional drilling (HDD), bores, and dry-crossing methods. In order to determine whether the waterbody would be crossed using HDD PennEast would conduct an evaluation of the different construction methods for this crossing. This evaluation would include a team of engineers, environmental scientists, construction personnel and land agents to conduct joint field investigations to review the crossing area. Until further studies are completed, the final crossing technique cannot be determined.

Data Request 26

Appendix 2, table 2A-2 lists some waterbodies with similar water quality designations within the same drainage as having different construction timing restrictions. Clarify why waterbodies with similar water quality designations within the same drainages have different construction timing restrictions.

Response 26

Table 2A-2 was updated (See Response 19) to correct errors made on timing restriction as waterbodies with the same water quality designations within the same drainage should not have a different construction timing restriction. The timing restrictions contained within Table 2A-2 are consistent with NJDEP Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A), Table A1 - Restricted Time Periods for Waters with Fishery Resources.

Data Request 27

Provide a description of any special waterbody construction or restoration measures proposed for the crossing of streams designated as C-1 in New Jersey.

Response 27

Waterbody construction and restoration in regulated Category 1 Streams will be in accordance with N.J.A.C. 7:13-10.2 and 11.9. Work includes horizontal directional drilling, boring, and open trench excavation. Construction and restoration measures include: reduction of construction width; implementation of channel construction standards pursuant to N.J.A.C. 7:13-10.1; and implementation and monitoring of measures specified in the Soil Erosion and Sediment Control Plan Certification in accordance with N.J.A.C. 7:13-11.1. Appendix E to the Resource Reports filed with PennEast's September 24, 2015 certificate application in this proceeding includes a draft copy of the Soil Erosion Control Plan.

Resource Report 3 - Fisheries, Vegetation, and Wildlife

Data Request 28

In section 3.2.3 PennEast states that in Pennsylvania, riparian buffers would be protected in accordance with Chapter 102 guidelines and permit conditions; and in New Jersey, riparian buffers would be protected in accordance with Flood Hazard Area rules and permit conditions. Provide details of the riparian buffer requirements of the referenced guidelines and permits, and provide a description of how PennEast would protect these riparian buffers as stated.

Response 28

The Pennsylvania Chapter 102 Riparian Buffer Rules (PA Code 025 Chapter 102.14) stipulate that any earth disturbance, when the activity requires a permit under Chapter 102, that is conducted within 150 feet of a perennial or intermittent river, stream, or creek, or lake, pond or reservoir when the project is located in an exceptional value (EV) or high quality (HQ) watershed attaining its designated use as listed by the Department shall protect any existing riparian buffer in accordance with the regulation. Any activities in the vicinity of impaired waters (watershed not attaining its designated use) must implement the rules applicable to forested riparian buffers. These regulations are applicable through the process of the Erosion and Sediment Control Plan approval and permitting for stormwater from construction (e.g. ESCGP-2, NPDES, and Post-Construction Stormwater Management Plans).

In New Jersey, riparian buffers will be protected and compensated for in accordance with Flood Hazard Area Control Act Rules (N.J.A.C. 7.13-10.2), Requirements for a regulated activity in a Riparian Zone and N.J.A.C. 7:13-9.8 Hardship Exception for an Individual Permit. Protection includes implementation and monitoring of measures specified in the Soil Erosion and Sediment Control Plan Certification in accordance with N.J.A.C. 7:13-11.1. In addition, all temporarily cleared, cut or removed vegetation within a riparian zone will be replanted with indigenous, non-evasive vegetation upon completion of the project in accordance with N.J.A.C. 7:13-10.2. Necessary compensation requirements will be met at a 2:1 ratio as specified in N.J.A.C. 7:13-10.2(s).

Data Request 29

PennEast states that the National Marine Fisheries Service requested seasonal timing restriction on in-water work within the Delaware River to avoid impacts on anadromous fish species. Provide an explanation of whether or not the same seasonal restriction also would apply to tributaries of the Delaware River, and if so, how PennEast would comply.

Response 29

Ms. Karen Greene of NMFS was contacted on December 8, 2015 and asked to which tributaries to the Delaware River this timing restriction may also apply. NMFS was provided with the USGS maps from the FERC filing. A reply from NMFS was received on December 9 and listed the following Delaware River tributaries to which the seasonal restriction to protect anadromous fishes would apply:

Pennsylvania- The Delaware Canal and the Lehigh River

New Jersey- Hakihokake Creek to river kilometer 1.6 (1.6 kilometers upstream from the confluence with the Delaware River), Copper Creek, Lockatong Creek, Jacobs Creek and unnamed tributaries, Fiddlers Creek and unnamed tributaries.

Construction across these streams will utilize HDDs or other dry crossing techniques and will be performed in accordance with applicable permits and approvals.

Data Request 30

Provide a revised table 3.3-6 that includes total acreage and forested acreage that would be affected, by both construction and operation of the project, within each parcel that would be crossed that is subject to the No Net-Loss Reforestation Act in New Jersey.

Response 30

PennEast evaluated six (6) parcels owned by the State of NJ which are subject to the provisions of the No Net Loss Reforestation Act (NNL). One (1) of these parcels will experience no forest disturbance. Proposed forest disturbance on the remaining five (5) parcels totals approximately 23.65 acres. In order to provide the appropriate compensation in accordance with NNL, PennEast is currently applying the forest "grid method" to calculate reforestation requirements (in the form of tree planting and/or monetary compensation) associated with each of these parcels. Use of this methodology is required by NNL. A revised Table 3.3-6, which incorporates changes due to recent route deviations, is provided below.

Table 3.3-6
State-owned Parcels in New Jersey subject to No-Net Loss Reforestation Act

County	Municipality	Line List #	Begin Milepost	End Milepost	Owner	Crossing Length	Permanent Impact (Total)	Permanent Impact (Forested)	Temporary Impact (Total)	Temporary Impact (Forested)	Facility
Hunterdon	Holland	PE-HU-046.000	81.1	81.4	State of New Jersey	1589.0	1.8	1.3	3.5	1.5	Gravel Hill Preserve NLT
Hunterdon	Holland	PE-HU-A063.000	81.4	81.7	State of New Jersey	1550.7	1.8	0.5	2.5	0.6	Gravel Hill Preserve NLT
Hunterdon	West Amwell	PE-HU-233.000	102.6	102.8	State of New Jersey	929.2	1.1	0.0	2.0	0.0	Washington Crossing SP
Hunterdon	West Amwell	PE-HU-240.000	103.5	103.5	State of New Jersey	262.0	0.3	0.2	0.2	0.2	Washington Crossing SP

County	Municipality	Line List #	Begin Milepost	End Milepost	Owner	Crossing Length	Permanent Impact (Total)	Permanent Impact (Forested)	Temporary Impact (Total)	Temporary Impact (Forested)	Facility
Mercer	Hopewell	PE-ME-016.000	106.2	107.5	State of New Jersey	5089.5	5.8	5.7	8.3	8.1	Kuser Mtn (Baldpate Mtn) Washington Crossing SP
Mercer	Hopewell	PE-ME-020.000	107.5	107.9	State of New Jersey	2203.9	2.5	2.3	4.1	3.3	Kuser Mtn (Baldpate Mtn) Washington Crossing SP

Data Request 31

Provide a revised table 3.4-1 that identifies the wildlife species observed during project surveys that are listed as being endangered, threatened, or of special concern. Confirm their observation and/or occurrence within the proposed construction work space.

Response 31

Provided below is an updated Table 3.4-1 per data request, and Table 3.4-2 updated per additional survey information collected between September 2015 and October 2015. Endangered, threatened, or of special concern species are noted with an asterisk and footnote with their classification. All species listed in the tables below were confirmed within the project study survey corridor, which included the proposed construction workspace.

Table 3.4-1
Wildlife Species Observed in Project Corridor -Pennsylvania

Common Name	Scientific Name
Mammals	
Beaver	*Castor canadensis*
Black bear	*Ursus americanus*
Coyote - signs present	*Canis latrans*
Eastern small-footed bat*	*Myotis leibii*
Eastern chipmunk	*Tamias striatus*
Gray Squirrel	*Sciurus carolinensis*
Northern long-eared bat**	*Myotis septentrionalis*
Porcupine	*Erethizon dorsatum*
Raccoon	*Procyon lotor*
Red squirrel	*Tamiasciurus hudsonicus*
Shrew sp.	*Sorex sp.*
White-tailed deer	*Odocoileus virginianus*
Woodchuck	*Marmota monax*
Birds	
American crow	*Corvus brachyrhynchos*

Common Name	Scientific Name
American robin	*Turdus migratorius*
Black-capped chickadee	*Poecile atricapilla*
Blue jay	*Cyanocitta cristata*
Canada goose	*Branta canadensis*
Carolina wren	*Thryothorus ludovicianus*
Common raven	*Corvus corax*
Cooper's hawk	*Accipter cooperii*
Downy woodpecker	*Picoides pubescens*
Eastern towhee	*Pipilo erythrophthalmus*
European starling	*Sturnus vulgaris*
Gray catbird	*Dumetella carolinensis*
House sparrow	*Passer domesticus*
Mallard duck	*Anas platyrhynchos*
Pileated woodpecker	*Dryocopus pileatus*
Red-bellied woodpecker	*Melanerpes carolinus*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Ruffed grouse	*Bonansa umbellus*
Tufted titmouse	*Baeolophus bicolor*
Turkey, Eastern Wild	*Melagris gallopavo silvestris*
White-breasted nuthatch	*Sitta carolinensis*
Wood duck	*Aix sponsa*
Wood thrush	*Hylocichla mustelina*
Amphibians	
American toad	*Bufo americanus*

Common Name	Scientific Name
Bullfrog	*Rana catesbeiana*
Gray treefrog	*Hyla versicolor*
Green frog	*Rana clamitans melanota*
Northern leopard frog	*Lithobates pipiens*
Spring peeper	*Pseudacris crucifer*
Wood frog	*Rana sylvatica*
Reptiles	
Eastern box turtle	*Terrapene carolina carolina*
Eastern garter snake	*Thamnophis sirtalis*
Timber rattlesnake*	*Crotalus horridus*
Wood turtle	*Clemmys insculpta*
Fish	
Trout *sp.*	*Salvelinus sp.*
*State-threatened or candidate species ** Federal-threatened species	

Table 3.4-2
Wildlife Species Observed in the Project Corridor - New Jersey

Common Name	Scientific Name
Mammals	
Little brown bat	*Myotis lucifugus*
Northern long-eared bat**	*Myotis septentrionalis*
Tri-colored bat	*Perimyotis subflavus*
White-tailed deer	*Odocoileus virginianus*
Birds	
American crow	*Corvus brachyrhynchos*

Common Name	Scientific Name
American goldfinch	*Carduelis tristis*
American kestrel*[T]	*Falco sparverius**[T]
American robin	*Turdus migratorius*
Bald eagle*[E] (Flyover)	*Haliaeetus leucocephalus**[E]
Barn swallow	*Hirundo rustica*
Black vulture	*Coragyps atratus*
Black-billed cuckoo*[S]	*Coccyzus erythropthalmus**[S]
Black-capped chickadee	*Poecile atricapillus*
Black-throated green warbler*[S]	*Setophaga virens**[S]
Blue jay	*Cyanocitta cristata*
Bobolink*[T]	*Dolichonyx oryzivorus**[T]
Brown thrasher*[S]	*Toxostoma rufum**[S]
Canada goose	*Branta canadensis*
Common yellowthroat	*Geothlypis trichas*
Cooper's hawk*[S]	*Accipiter cooperii**[S]
Eastern wood pewee	*Contopus virens*
Field sparrow	*Spizella pusilla*
Gray catbird	*Dumetella carolinensis*
Great blue heron*[S]	*Ardea herodias**[S]
Hairy woodpecker	*Leuconotopicus villosus*
House finch	*Haemorhous mexicanus*
House wren	*Troglodytes aedon*
Mourning dove	*Zenaida macroura*
Northern cardinal	*Cardinalis cardinalis*
Northern flicker	*Colaptes auratus*
Northern mockingbird	*Mimus polyglottos*

Common Name	Scientific Name
Red-headed woodpecker*[T]	*Melanerpes erythrocephalus**[T]
Rufous sided towhee	*Pipilo erythrophthalmus*
Savannah sparrow*[T]	*Passerculus sandwichensis**[T]
Song sparrow	*Melospiza melodia*
Tufted titmouse	*Baeolophus bicolor*
Turkey Vulture	*Cathartes aura*
Vesper sparrow*[E]	*Pooecetes gramineus**[E]
Yellow warbler	*Setophaga petechia*
Amphibians	
Green frog	*Rana clamitans*
Reptiles	
Box Turtle*[S]	*Terrapene carolina**[S]

* State-listed species (E- NJ Endangered, T- NJ Threatened, S- NJ Species of Special Concern)
** Federal threatened species

Data Request 32

PennEast states that some additional surveys for timber rattlesnake are ongoing. Provide the results of these surveys.

Response 32

A copy of the updated timber rattlesnake survey report is enclosed under separate cover as Privileged and Confidential (Supplemental Information to Appendix G2 in Attachment 6). This information is not Public. Additional surveys are scheduled for the spring of 2016. Findings from these surveys will be provided to FERC and appropriate agencies once they are available.

Data Request 33

The NJDEP lists multiple species of freshwater mussels as being species of special concern in addition to the dwarf wedge mussel. Explain the potential for the PennEast Pipeline to cross waterbodies that could contain these other species.

Response 33

Database records obtained from the NJ Natural Heritage Program (NHP) report no documented occurrences of listed or special concern freshwater mussel species within the 400 foot study corridor, and these records indicate the potential presence of three (3) NJ State listed threatened and one (1) NJ State special concern species of freshwater mussel as occurring within one mile of the 400' survey corridor. The Delaware River is commonly known to support several species of freshwater mussels, however this river will be crossed via HDD techniques and no disturbance to the streambed which could disrupt potentially present listed mussel populations is proposed.

As reported by NHP and NJDEP, no freshwater mussel habitat valued by the Landscape Project mapping is present within the 400' study corridor; however, PennEast acknowledges that the alignment does cross a number of upstream tributaries to 2 waterways with documented and/or valued habitat mapped downstream of the alignment: Wickecheoke Creek in Delaware Township, and Stony Brook in Hopewell Township. Crossings of the unnamed tributary to Wickecheoke Creek in Delaware Township have not been field evaluated to date due to access constraints; however, when access becomes available the crossings will be evaluated for their potential to support freshwater mussels. Several accessible parcels which cross unnamed tributaries to Stony Brook have been field evaluated. Remaining parcels will be evaluated when access becomes available. PennEast will coordinate with NJDEP to determine the need for targeted mussel surveys as warranted.

Data Request 34

Provide a table, graph, or other means to clearly show all timing restrictions that would be in effect for specific species or habitats, including waterbody crossings, along the entire length of the pipeline. Where appropriate display by MP range. If needed due to conflicting timing restrictions or cumulative timing restrictions that would not allow enough time for Project construction, explain PennEast's plan for exceptions to the established timing restrictions. Be sure to factor in recent comments on timing restrictions provided by NJDEP in letters filed with the Commission on November 4, 2015 (accession number 20151104-0045) and November 17, 2015 (accession number 20151117-0040).

Response 34

This information was provided within Appendix 3C of Resource Report 3. PennEast has confirmed that this table includes the appropriate timing restrictions noted by NJDEP in its review letters.

To facilitate review of this data request, an updated copy of Appendix 3C is provided in Attachment 5. Additional information regarding milepost locations, where applicable to certain construction restrictions, has been included within the table. Additionally, a spreadsheet with labels for Tab A (Pennsylvania) and Tab B (New Jersey) has been added to supplement Appendix 3C with regards to specific waterbody crossings where trout fishery-related construction timing restrictions are applicable.

Resource Report 4 – Cultural Resources

Data Request 35

Confirm that PennEast's archaeological field approach reflects a revised site sensitivity model that has been accepted by the New Jersey State Historic Preservation Office (SHPO).

Response 35

In its review letter dated February 18, 2015, New Jersey SHPO requested additional information on the sensitivity model being used in New Jersey. The requested information was provided on March 6, 2015, and was approved by New Jersey SHPO in a letter dated April 8, 2015. This letter was filed with FERC on September 24, 2015, and was included in Appendix G1. PennEast's archaeological field approach in New Jersey reflects the approved sensitivity model.

Data Request 36

File documentation, including correspondence from the New Jersey SHPO, that the archaeological field methodology in New Jersey complies with the state guidelines for Phase IB survey.

Response 36

As described in Appendix A (p. 19) to PennEast's Motion for Leave to Answer and Answer, filed on November 13, 2015, the archaeological field methodology for Phase IB survey that PennEast followed in New Jersey was presented to the New Jersey SHPO in a detailed scoping letter on August 20, 2014. On September 16, 2014, PennEast met with New Jersey SHPO to discuss the Project and review the proposed methodology and New Jersey SHPO requirements and expectations. The New Jersey SHPO formally responded to the Project scoping letter on September 24, 2014, with a series of comments that they requested be addressed in a revised scoping document. PennEast submitted the revised scoping document to New Jersey SHPO on February 2, 2015, and received concurrence with the proposed methodology on February 18, 2015, with the exception of the sensitivity model, for which New Jersey SHPO requested additional information. The requested information was provided to New Jersey SHPO on March 6, 2015. New Jersey SHPO accepted the revised sensitivity model justification on April 8, 2015. All referenced correspondence was filed with FERC on September 24, 2015, in Appendices G1 and G2.

URS archaeologists followed the accepted field protocols and used the revised model for the archaeological field studies documented in the September 2015 Phase I report.

In a review of the September 2015 Phase I report dated October 22, 2015, New Jersey SHPO requested clarification of the field methodology used as well as revisions to the report to facilitate their review. PennEast discussed the comments with New Jersey SHPO in a phone conversation on November 4, 2015. The Record of Conversation from that phone conversation is filed with this response (see Attachment 6, Supplemental Information to Appendix G1). PennEast and New Jersey SHPO agreed on the necessary revisions, and the report is being resubmitted to New Jersey SHPO for review on December 14, 2015. Comments on the revised Phase I report are expected from New Jersey SHPO in January 2016, at which time they will be filed with FERC.

Data Request 37

Provide avoidance plans for all historic properties that PennEast proposes to avoid within and directly adjacent to the area of potential effects (APE).

Response 37

No archaeological historic properties have been identified within or directly adjacent to the direct APE. (Archaeological sites have been identified within the direct APE, but they have not yet been evaluated for National Register of Historic Places eligibility).

PennEast's proposed route includes a crossing of the Appalachian Trail. Although the crossing does not involve NPS land, PennEast is coordinating with NPS on ways to avoid, minimize, or mitigate adverse effects to the Appalachian Trail. Avoidance, minimization, and mitigation measures for all other historic properties will be explored during the effects analysis phase. Additional historic architectural resources have been identified within the APE, but they have not yet been evaluated for National Register of Historic Places eligibility.

Any required avoidance plans that are developed in the future will be filed with FERC.

Data Request 38

File PennEast's consultation documentation with local historical advisory committees such as the Delaware Township Historic Advisory Committee, and local historical societies about their concerns related to National Register of Historic Places (NRHP)-listed and –eligible properties that may be affected by the project.

Response 38

Consultation letters requesting input on historic properties that may be affected by the Project were mailed to local historical advisory committees, local historical societies, and other potential stakeholders on December 9, 2015 (see Attachment 6, Supplemental Information to Appendix G1). Any responses will be filed with FERC when received.

Data Request 39

Provide a description of how PennEast proposes to avoid adversely affecting historic properties such as 18th century aboveground cultural resources, the Delaware Canal, historic covered bridges, and other resources that may be vulnerable to effects from vibration during construction or operation of the facilities. Provide a list of the specific aboveground cultural resources that could be affected and describe the steps that PennEast would implement to avoid impacts.

Response 39

As described in Section 4.6 of Resource Report 4, vibration impacts on cultural resources are expected to be temporary and limited to the period of construction. For aboveground resources that are immediately adjacent to construction activities, vibration is expected to have limited effects. Along with measures proposed to control and monitor activities during construction in immediate proximity to historic aboveground resources (including, but not limited to the Delaware Canal and historic covered bridges), such as denoting "environmentally sensitive area" on construction plans and demarcation of the zone of construction with orange fencing, a vibration monitoring plan may be required to avoid adverse effects. This would require Environmental Inspectors to assess the condition of the historic buildings and monitor the effects of vibration when ground-disturbing activities (including clearing, grading, trenching and restoration) occur near a historic property, through photography and daily inspection logs before, during and after construction, and in discussions with property owners of those resources.

See below for a list of historic properties with contributing buildings or structures that are within 100-feet of the proposed pipeline centerline and may require further evaluation during the effects analysis phase to determine if they are vulnerable to vibration impacts. If the effects analysis determines the property has the potential to be adversely affected by vibration, PennEast will work with the PHMC and NJHPO to develop and implement a vibration monitoring plan.

Mile Post	ID No.	Resource Name	Municipality	County	NRHP Status	Proximity to Construction Area
PENNSYLVANIA						
57.0	156601	Pennsylvania - New Jersey (PNJ) Interconnection	Moore	Northampton	Eligible: 8/29/2011	20 feet; eligible lattice towers replaced, no adverse effect anticipated
71.0	001016	Lehigh Canal Easton Section	Bethlehem	Northampton	NRHP Listed: 10/02/1978	Crossed by HDD

Mile Post	ID No.	Resource Name	Municipality	County	NRHP Status	Proximity to Construction Area
71.7	096307	Anthony Oberly Farm	Lower Saucon	Northampton	Eligible: 11/14/1989	Property crossed, nearest feature 92 feet northeast
77.6	001661	Delaware Division of the Pennsylvania Canal	Durham Township	Bucks	NRHP Listed: 10/24/1974 NHL Listed: 12/8/1976 Eligible: 4/12/2002	Crossed by HDD
NEW JERSEY						
100.4 LL	1914	Inch Lines Linear Multistate Historic District	West Amwell	Mercer	Eligible: 8/31/1993	Crossed by alignment
111.8	4540	Delaware & Bound Brook Railroad Historic District	Hopewell	Mercer	Eligible: 9/9/2005	Crossed by HDD
113.5	1676	Joseph P. Blackwell Farm	Hopewell	Mercer	Eligible: 6/23/1982	Property crossed, nearest building 70 feet southwest

Data Request 40

Describe project-related effects on historic districts and historic and rural landscapes listed on or potentially eligible for listing on the NRHP within APE for direct and indirect effects. Examples are but not limited to Revolutionary War-era battle sites, military encampments, and mapped locations of historic troop movements, the Crossroads of the American Revolution National Heritage Area and the Delaware and Lehigh National Heritage Corridor. Provide all of the historic properties in the direct and indirect APE and their distance to the nearest project construction area. Describe the measures that PennEast would take to avoid adversely affecting historic districts and historic and rural landscapes.

Response 40

The Project has the potential to cause direct and indirect adverse effects to historic districts and rural landscapes listed in, eligible for listing in, or potentially eligible for listing in the NRHP resulting from the removal or alteration of landscape patterns (such as forested woodland, fence and tree rows) that are contributing features to those historic properties. Similarly, removal of contributing landscape patterns also has the potential to compromise the setting of historic districts which could also result in an adverse effect. A complete evaluation of the effects to historic properties will be conducted upon completion of the reconnaissance-level (identification) and the intensive-level (eligibility evaluation) investigations. Below is a table of currently known historic properties within the 400-foot study corridor and their distances to construction limits. Specific avoidance, minimization, and mitigation measures for historic properties will be explored during the effects analysis phase. Avoidance strategies can include shifting the proposed project away from the resource by boring underneath or around the resource, limiting activities in the vicinity of the resource, or by monitoring construction activities near the resource. If avoidance is not possible, minimization strategies would be explored to reduce (to the extent possible), the impact to the resource. In the case of impacts to the viewshed of historic structures or districts, minimization strategies can include planting trees or erecting fencing as a visual barrier. If avoidance or minimization is not possible, mitigation strategies would be developed to offset the impacts. Mitigation measures can include detailed documentation efforts such as National Register of Historic Places nominations, Historic American Building Survey/Historic American Engineering Record, interpretive exhibits, historic signage, or photographic documentation, among other things.

Mile Post	ID No.	Resource Name	Municipality	County	NRHP Status	Proximity to Construction Area
PENNSYLVANIA						

Mile Post	ID No.	Resource Name	Municipality	County	NRHP Status	Proximity to Construction Area
29.2	201072	Hickory Run Recreation Demonstration Area*	Penn Forest	Carbon	Eligible	Property crossed
50.5	144291	Appalachian Trail	Lower Towamensing	Northampton	Eligible: 4/11/2008	Property crossed
57.0	156601	Pennsylvania - New Jersey (PNJ) Interconnection	Moore	Northampton	Eligible: 8/29/2011	Crossed by alignment; eligible lattice towers replaced in 2013, monopole structures 30 feet north
56.9	157176	Fehnel Farm	Moore	Northampton	Eligible: 2/11/2013	Property crossed, buildings 644-feet southwest;
60.2	102488	Lehigh and New England RR (Bethlehem to Chapmanboro)	Moore	Northampton	Eligible: 9/22/1994	Property crossed, no above-ground features in the APE
70.0	096315	D. Bayer Farm	Bethlehem	Northampton	Eligible: 5/7/1990	Previously Demolished
71.0	001016	Lehigh Canal Easton Section	Bethlehem	Northampton	NRHP Listed: 10/02/1978	Crossed by HDD
71.7 HL 0.1	086688	Site No. 3: Farmhouse, Barn and Outbuildings	Lower Saucon	Northampton	Eligible: 9/17/1996	Property crossed, buildings 134-feet west;
71.7	096307	Anthony Oberly Farm	Lower Saucon	Northampton	Eligible: 11/14/1989	Property crossed, buildings 92 feet northeast

Mile Post	ID No.	Resource Name	Municipality	County	NRHP Status	Proximity to Construction Area
72.0	143013	Christman Farm; Pichel Farm	Lower Saucon	Northampton	Eligible: 8/21/2006	Property crossed, buildings 10 feet from new access road, 145 feet from alignment
74.5	123914	Isaac Stout House	Williams	Bucks	NRHP Listed: 8/11/2004	Property crossed, buildings 300-feet northeast
77.6	001661	Delaware Division of the Pennsylvania Canal	Riegelsville	Bucks	NRHP Listed: 10/24/1974 NHL Listed: 12/8/1976 Eligible: 4/12/2002	Crossed by HDD
NEW JERSEY						
82.3	4275	Bunns Valley Agricultural Historic District	Holland	Hunterdon	Eligible: 5/3/2004	Properties crossed, nearest building 100-feet north
95.9	4591	Rosemont Rural Agricultural Historic District	Delaware	Hunterdon	NRHP Listed: 6/18/2010 SRHP Listed: 2/10/2010	Properties crossed, nearest building, 300-feet northeast
100.4 LL	1914	Inch Lines Linear Multistate Historic District	West Amwell	Mercer	Eligible: 8/31/1993	Crossed by alignment
105.3	1698	Pleasant Valley Historic District	Hopewell	Mercer	NRHP Listed: 6/14/1991 SRHP Listed: 4/12/1991	Properties crossed, nearest building 293-feet west

Mile Post	ID No.	Resource Name	Municipality	County	NRHP Status	Proximity to Construction Area
110.8	4750	Oldis (Smith-Mershon) Farm	Hopewell	Mercer	Eligible: 5/17/2004	Property crossed, nearest building 1,300 feet west
111.8	4540	Delaware & Bound Brook Railroad Historic District	Hopewell	Mercer	Eligible: 9/9/2005	Crossed by HDD
112.6	4993	NJ Route 31 Circle (Pennington Circle)	Hopewell	Mercer	Eligible: 9/21/2010	Crossed by alignment
113.5	1676	Joseph P. Blackwell Farm	Hopewell	Mercer	Eligible: 6/23/1982	Property crossed, buildings 70 feet southwest

Comment 41

Stakeholders provided comments that the project crosses areas previously identified as having a potential concern to Native American tribes. File an update of any concerns or comments provided directly by Tribes to PennEast. Additionally, describe the steps that PennEast would take to address areas of concern to Tribes, including those that are state recognized.

Response 41

PennEast's submittals to and comments from federally recognized Native American tribes are being updated with this draft request response (see Attachment 6, Supplemental Information to Appendix G1).

As referenced in Appendix A (p. 19) to PennEast's Motion for Leave to Answer and Answer, filed on November 13, 2015, and further addressed in PennEast's FERC filing on November 16, 2015, PennEast consulted directly via telephone with a lawyer representing the Ramapough Lenape Indian Nation (Ramapough) on October 20, 2015. During the call, the Ramapough representative stated the Ramapough's desire to be a consulting party and informed PennEast that they had been in contact with New Jersey SHPO. PennEast does not oppose consulting party status for the Ramapough; however, the decision to make the Ramapough a consulting party is at the discretion of FERC. In response to the Ramapough's request for copies of the Phase I archaeological survey report for New Jersey, PennEast informed the representative that the report had been filed

as Privileged and Confidential and could not be released without permission. PennEast consulted with New Jersey SHPO regarding the release of the Phase I report and New Jersey SHPO stated that only FERC could authorize the release of Privileged and Confidential information. Copies of PennEast correspondence and records of conversations with the Ramapough representative and with New Jersey SHPO regarding this matter are included herewith (see Attachment 6, Supplemental Information to Appendix G1).

In addition, as discussed in PennEast's Motion for Leave to Answer and Answer at Appendix A (p. 19 – 20), PennEast has identified precautions it has taken to avoid impacts on Native American sites. PennEast will continue to coordinate with Native American tribes about their specific areas of concern. PennEast will follow the comprehensive plan documented in Resource Report 4 (Sections 4.7.2.1 and 4.7.3.1) for identifying archaeological properties within the permanent and temporary ROW (direct APE) of the proposed route and make the results of those archaeological survey reports available to federally recognized Native American tribes that have requested those reports for their comments. Because information contained in archaeological survey reports is Privileged and Confidential, their release to other Native American tribes must be authorized by FERC.

Data Request 42

For all archaeological sites that are recommended as eligible or potentially eligible for the NRHP that would not be avoided, provide the New Jersey and Pennsylvania SHPO comments on archaeological reports and recommendations, Phase II site evaluation work plans, and Phase II site evaluation reports.

Response 42

To date, PennEast has not recommended that any of the archaeological sites identified in Pennsylvania are eligible for inclusion in the NRHP. PennEast recommended that two archaeological sites in Pennsylvania that will not be avoided are potentially NRHP-eligible (36CR0149 and 36NM0328). The PHMC concurred with PennEast's recommendation that these two sites are potentially NRHP-eligible by letter dated October 22, 2015 (see Attachment 6, Supplemental Information to Appendix G1). Phase II work plans for these sites will be submitted to the PHMC in the first quarter of 2016 for review and comment and will be filed with FERC at that time.

To date, PennEast has not recommended that any of the archaeological sites identified in New Jersey are eligible for inclusion in the NRHP. PennEast recommended that two archaeological sites in New Jersey that will not be avoided are potentially NRHP-eligible (28-Hu-577 and PE-Me27-S1). Phase II work plans for sites 28-Hu-577 and PE-Me27-S1are included in the revised Phase I archaeological survey report, which will be submitted to New Jersey SHPO on December 14, 2015, and is filed with this data request response (see Attachment 8, Supplemental Information to Appendix J [Privileged and Confidential] Phase I Archaeological Survey Report, PennEast Pipeline Project, Hunterdon and Mercer Counties, New Jersey, Revised December 2015). Comments on the revised report are expected in January 2016, at which time they will be filed with FERC.

No Phase II site evaluation reports are yet available for sites in either state.

Comment 43

Provide the results of all historic architecture and landscape studies performed in the project APE for indirect effects and the comments of the New Jersey and Pennsylvania SHPOs on the reports and recommendations.

Response 43

The Reconnaissance-Level Historic Architectural Survey Reports for New Jersey (submitted to New Jersey SHPO on September 30, 2015) and Pennsylvania (submitted to PHMC on October 1, 2015) were filed with FERC on September 24, 2015, in Appendix J to PennEast's certificate application. Comments were issued by PHMC on October 22, 2015, and are included herewith (see Attachment 6, Supplemental Information to Appendix G1). Comments were issued by New Jersey SHPO on October 23, 2015, and were filed with FERC by the NJDEP on October 28, 2015, in this proceeding.

Data Request 44

Provide a revised Unanticipated Discoveries Plans for Pennsylvania that includes the following revision:

a. Page 2, last paragraph, 3rd sentence, revise - "In the event of an unanticipated discovery of human remains, PennEast will refer to the FERC and the PHMC as to the appropriate Native American groups with which to consult." to "In the event of an unanticipated discovery, PennEast, will notify the appropriate federally recognized Indian tribes previously identified and contacted through the Section 106 consultation process."

Response 44

The Unanticipated Discovery Plan for Pennsylvania has been revised to include FERC's requested revisions (see Attachment 9 – Supplemental Information to Appendix K-Revised Unanticipated Discovery Plan for Pennsylvania).

Resource Report 5 – Socioeconomics

Data Request 45

Provide an estimate of the percent of the construction workforce expected to temporarily or permanently relocate to the project area, and the duration of their stay.

Response 45

The table below provides an estimate of the percent of workforce expected to temporarily or permanently relocate to the Project area. At this time, it is estimated that there will be ongoing work for a period of approximately 8 months from mobilization for mainline construction through mechanical completion.

	Percent	**Duration**
Local/Permanent Relocations	40%	N/A
Temporary Relocations	60%	8 months

Data Request 46

Many commenters expressed concern about the conclusions of the Econsult Solutions Inc. and Drexel University economic impact analysis referenced in PennEast's application, which estimates that construction of the project would support a total of 12,160 jobs. The fact sheet on PennEast's web site states that "slightly less than half (of these jobs) would be in industries other than construction" which implies that more than 6,000 jobs would be direct construction jobs. However, peak employment for the entire project is identified in table 5.3-3 as 2,660 jobs and would last for about 8 weeks with a smaller workforce identified for the rest of the construction schedule. Please explain this discrepancy.

Response 46

The fact sheet on PennEast's web site states the following:

> *PennEast will support 12,160 jobs, of which a large portion will be related to the construction industry. Hundreds of architectural and engineering jobs, and many additional jobs in several related industries will also be supported. Within the six-county region, slightly less than half of the employment impact will occur in industries other than construction, including: food services, landscaping, legal services, and the real estate establishment.*

The paragraph is referencing indirect and induced jobs supported by the project, not direct jobs. The project will support more than 6,000 indirect and induced construction jobs in areas related to construction of the pipeline. The peak employment number of 2,660 identified in table 5.3-3 is referencing direct construction jobs. In other words, out of the total 12,160 jobs, approximately 6,000 jobs are related to the construction sector, of which 2,660 are direct. Approximately 3,340 jobs are indirect and induced construction jobs. The remaining 6,160 jobs are direct, indirect and induced non-construction jobs.

Data Request 47

Provide an estimate of the housing demand by workers temporarily relocating to the area, by housing type (e.g., hotel/motel rooms, rental housing, RV camping spaces) and construction spread. The distribution of workers by housing types may be estimated based on past experience with similar projects.

Response 47

The table below provides an approximate breakdown of all workers temporarily relocating to the area, by housing type:

	Percent	
Temporary Relocations	**Motels/Hotel**	30%
	Rental Apartments/Houses	30%
	Travel Trailers/Camping Spaces	40%

Data Request 48

Address the comment that the project would affect the ability of landowners to subdivide or develop their property in the future.

Response 48

PennEast recognizes the public's concern regarding potential effects on landowners' ability to subdivide or develop their properties in the future. After receiving feedback in open houses, FERC's scoping meetings, and numerous conversations with landowners, state and local agencies, and various other stakeholders, PennEast compiled a comprehensive list of planned residential and commercial developments within ¼-mile of the Project (see Table 8.3-2, Resource Report 8).

To the greatest extent possible, PennEast has worked to avoid and/or minimize potential direct impacts to the identified planned developments. PennEast has coordinated with the affected landowners, developers and planning officials to obtain details regarding development plans and to determine steps to minimize impacts. These efforts may include minor route variations, timing restrictions, or increased traffic control in areas where development is planned. In areas where route variations to circumvent planned developments are not possible, landowners may present any subdivision plans or expenses incurred to PennEast. PennEast will then take these into consideration when calculating ROW compensation.

In total, PennEast has implemented 14 reroutes to date to avoid planned residential or commercial developments (see Table 8.3-1, Resource Report 8).

Data Request 49

Provide additional information on potential project related impact from the movement of construction equipment, materials, and workers on local road networks. Include:

a. a list of roads that would be used during construction, and an estimate of construction-related traffic trips to and from the work sites, frequency of the trips over the construction period, and times of peak traffic volumes;
b. an assessment of potential physical impacts to existing roads and bridges; and
c. identification of the measures that would be used to mitigate potential transportation-related impacts. Potential measures may include construction of new roads, repair of roads to pre-construction conditions, avoidance of existing peak traffic periods, detours, consultation and coordination with local authorities, signage, and notification in newspapers.

Response 49

The Transportation Plan will be developed in conjunction with the selected construction contractor. A formal plan is not available at this time. A Transportation Plan will be provided in the second quarter of 2016.

Data Request 50

Identify areas along the proposed pipeline route (by census block group) that contain potential low income or minority populations. Provide a listing of the census block groups that would be crossed or otherwise affected by the project. These data are available from the U.S. Census Bureau for census block groups in the affected counties as part of the 2010 Census and the 2013 5-year American Community Survey estimates.

Response 50

The most current information regarding demographics and income within the affected Project area was obtained from the U.S. Census Bureau's 2013 5-year American Community Survey estimates (Geodatabase Format [1]). An updated version of Table 5.12-1 is provided below. The original version of Table 5.12-1 was included with Resource Report 5 in PennEast's September 24, 2015 certificate application in this proceeding.

The demography within the affected Project area was evaluated relative to the entire region to identify whether the Project may disproportionately affect potential environmental justice communities. Guidance from the Council on Environmental Quality (1997) states that, "minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or the other appropriate unity of geographic analysis." Race or ethnicity can define a minority population. Therefore, the environmental justice analysis for this Project analyzed both racial and ethnic composition of the communities in the Project area, as well as income and poverty. In this analysis, "meaningfully greater" is defined as 25 percent or greater than the applicable state average.

The Project is proposed to cross three Census Block Groups with either low income or minority populations based on CEQ standards. Two of these Block Groups, *Census Tract 105, Block Group 4* and *Census Tract 118, Block Group 1*, both located in Hunterdon County, New Jersey, are considered "meaningfully greater" than the state minority population average by negligible margins.

The City of Easton, *Census Block 146, Block Group 1*, exceeds the Pennsylvania state average in all three environmental justice criteria (low income, total minority, and Hispanic or Latino Populations) and therefore qualifies as an EJ community. As stated in Section 5.12 of Resource Report 5, the City of Easton is located between mileposts 70.8 and 70.9 of the Project area, totaling 0.1-mile of a public park located on the banks of the Lehigh River. PennEast is proposing to use HDD at the Lehigh River crossing, with the entrance bore pit located at approximate milepost 70.4 and the exit bore pit located on the opposite side of the river at approximate milepost 71.2. Through the use of HDD under the Lehigh River, potential impacts to the City of Easton are minimized or avoided. Taking this information into consideration, the route does not disproportionately impact any environmental justice communities.

Table 5.12-1
Race, Ethnicity and Poverty

U.S. Census Bureau Tract Number	County or U.S. Census Bureau Block Group Number [a]	Percent Below Poverty	White	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race	Two or more races	Total Minority	Hispanic or Latino (of any race)
Pennsylvania		**10.4**	**69.1**	**13.6**	**0.2**	**8.6**	**0.0**	**6.0**	**2.5**	**30.9**	**18.2**
	Luzerne	**16.4**	**89.9**	**3.4**	**0.3**	**0.9**	**0.0**	**3.3**	**2.3**	**10.2**	**8.5**
2112.04	4	8.0	95.5	0.9	0.0	3.6	0.0	0.0	0.0	4.5	4.8
2114	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
	6	8.4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2115	2	6.7	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8
	3	5.2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2116	3	8.5	96.1	0.0	3.9	0.0	0.0	0.0	0.0	3.9	0.0
2117.01	3	8.7	99.3	0.7	0.0	0.0	0.0	0.0	0.0	0.7	0.0
2117.02	1	2.2	91.0	0.1	0.0	6.4	0.0	1.6	0.9	9.0	1.9
2118	1	4.5	90.5	0.0	0.0	4.0	3.4	0.7	1.5	9.6	0.0
2119	1	2.6	98.4	0.0	0.0	1.6	0.0	0.0	0.0	1.6	0.0
	2	4.6	98.3	0.0	0.0	1.7	0.0	0.0	0.0	1.7	0.0
	3	16.2	99.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
2153	2	4.9	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8

U.S. Census Bureau Tract Number	County or U.S. Census Bureau Block Group Number [a]	Percent Below Poverty	White	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race	Two or more races	Total Minority	Hispanic or Latino (of any race)
	4	7.1	98.1	0.3	0.0	1.3	0.0	0.0	0.2	1.8	0.1
	Carbon	**15.7**	**95.8**	**1.8**	**0.0**	**0.3**	**0.0**	**0.8**	**1.3**	**4.2**	**3.8**
201.06	2	5.1	99.3	0.0	0.0	0.0	0.0	0.0	0.7	0.7	5.1
201.05	1	5.4	97.2	2.8	0.0	0.0	0.0	0.0	0.0	2.8	13.3
208	1	3.6	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
	2	3.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
	3	17.2	95.6	1.4	0.0	2.2	0.0	0.8	0.0	4.4	2.2
	4	7.8	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Northampton	**9.9**	**85.4**	**5.3**	**0.6**	**2.6**	**0.0**	**3.4**	**2.7**	**14.6**	**9.9**
146	1	16.4	63.4	10.7	0.0	0.0	0.9	10.4	14.5	36.5	24.3
159.01	4	7.8	99.9	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
159.02	1	7.7	93.8	0.0	0.0	5.3	0.0	0.0	0.9	6.2	2.8
	2	6.1	98.3	0.0	0.0	0.0	0.0	0.0	1.7	1.7	3.4
160.01	1	1.9	97.8	0.0	0.0	0.9	0.0	0.0	1.2	2.1	0.9
165	1	2.5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5
167	1	5.0	91.7	7.3	0.0	0.5	0.0	0.3	0.2	8.3	5.7
169.02	1	1.0	92.9	0.0	0.0	5.8	0.0	1.3	0.0	7.1	3.7
	2	1.1	94.8	0.0	0.0	3.9	0.0	0.0	1.3	5.2	0.0

U.S. Census Bureau Tract Number	County or U.S. Census Bureau Block Group Number [a]	Percent Below Poverty	White	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race	Two or more races	Total Minority	Hispanic or Latino (of any race)
176.05	2	5.3	80.6	0.0	0.0	17.6	0.0	0.0	1.8	19.4	8.6
176.07	1	8.2	82.1	7.2	0.0	5.6	0.0	2.2	2.9	17.9	5.3
	2	0.0	94.5	5.5	0.0	0.0	0.0	0.0	0.0	5.5	8.0
180.01	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1
	2	1.8	98.8	0.0	0.0	1.2	0.0	0.0	0.0	1.2	3.1
	3	2.9	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
181	2	4.6	98.8	0.0	0.0	1.2	0.0	0.0	0.0	1.2	3.1
	4	2.4	98.0	0.8	0.0	0.6	0.0	0.0	0.5	1.9	1.2
	Bucks	**6.1**	**89.0**	**3.7**	**0.2**	**4.1**	**0.0**	**1.0**	**2.0**	**11.0**	**4.7**
1066	1	8.2	95.7	0.0	0.4	2.7	0.0	0.0	1.3	4.4	1.0
	2	5.1	95.2	0.5	2.4	0.0	0.0	0.4	1.5	4.8	1.8
	New Jersey	**13.3**	**82.2**	**10.9**	**0.2**	**2.9**	**0.0**	**1.9**	**1.9**	**17.8**	**5.9**
	Hunterdon	**3.3**	**91.2**	**3.8**	**0.0**	**3.0**	**0.0**	**0.9**	**1.2**	**8.9**	**5.9**
105	3	2.5	97.3	0.3	2.3	0.0	0.0	0.0	0.0	2.6	0.0
	4	4.1	92.0	6.9	0.0	0.0	0.0	0.0	1.1	8.0	8.7
106	2	0.0	98.4	0.2	0.0	1.4	0.0	0.1	0.0	1.7	5.7
115	1	6.9	95.7	0.4	0.0	1.7	0.0	1.3	0.9	4.3	3.0
	2	4.2	98.3	1.0	0.0	0.0	0.0	0.0	0.7	1.7	1.7
	3	3.8	97.0	0.0	0.0	2.1	0.0	0.9	0.0	3.0	1.7
116	1	1.6	96.8	0.8	0.0	1.4	0.0	0.0	0.9	3.1	0.7

U.S. Census Bureau Tract Number	County or U.S. Census Bureau Block Group Number [a]	Percent Below Poverty	White	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race	Two or more races	Total Minority	Hispanic or Latino (of any race)
118	2	1.0	97.5	0.0	0.0	0.0	0.0	0.0	2.5	2.5	0.5
	1	5.5	76.6	15.1	0.0	2.4	0.0	5.1	0.9	23.5	5.9
	2	3.5	92.5	1.2	0.0	5.0	0.0	0.9	0.5	7.6	0.7
	Mercer	**11.8**	**60.5**	**19.9**	**0.1**	**10.1**	**0.0**	**7.4**	**2.0**	**39.5**	**16.2**
38	2	2.0	85.2	12.5	0.0	1.0	0.0	1.4	0.0	14.9	2.6
	3	1.6	93.0	0.4	0.0	3.8	0.0	0.9	1.9	7.0	0.9
39.04	2	1.3	65.1	5.3	0.0	22.1	0.0	2.7	4.8	34.9	3.4

Source: [1]U.S. Census Bureau. 2013. TIGER/Line® with Selected Demographic and Economic Data: American Community Survey 5-Year Estimates – Geodatabase Format. Available online at: https://www.census.gov/geo/maps-data/data/tiger-data.html

[a] Counties ordered from north to south according to state.

Data Request 51

In section 5.2.8, PennEast states that construction and operation of the project are not anticipated to result in the significant displacement of businesses or residences. Clarify if any businesses or residences would be displaced, and if so identify the businesses or residences that would be displaced.

Response 51

Construction and operation of the Project currently does not result in the permanent displacement of any businesses or residences. The proposed Project route has been designed to avoid/minimize direct impacts to residences.

Data Request 52

Provide documentation of consultations with state and local road and transportation agencies to develop a Residential Access and Traffic Management Plan. The Plan should address:

a. identification of existing roads that would be used for project access;
b. current average daily traffic counts and anticipated daily traffic counts during construction on local roads that would be used for project access;
c. increased traffic from project-related activities (including commuting workers, construction equipment, and truck deliveries), including the number of workers cars, equipment, and trucks that would use local roads, and commuting periods;
d. workers being bussed from collection points to the ROW;
e. locations of commuting workers collection points and bus routes;
f. detours and road blockage;
g. compaction on dirt roads;
h. dust suppression;
i. impacts on existing roads and measure to repair them;
j. stakeholder prior notification;
k. maintaining access for home or business owners (including tourist venues and roads frequently used by tourists);
l. in-road work relative to peak-traffic periods;
m. safety measures (including signage, fencing and assurance of immediate backfill of trenches);
n. adherence to road and bridge weight limits;
o. locations of police detail;
p. noise impacts; and
q. tracking of soil and dirt onto paved roads from the construction ROW.

Response 52

The Transportation Plan will be developed in conjunction with the selected construction contractor. A formal plan is not available at this time. A Transportation Plan will be provided in the second quarter of 2016.

Resource Report 6 – Geological Resources

Data Request 53

Provide an overlay of the bedrock geology on figure 6.1-2 (pages 1 through 32); or provide a separate set of figures showing the bedrock geology. These figures should include a legend clearly describing the bedrock lithology.

Response 53

Equivalent bedrock geologic maps will be provided at a suitable scale, given best available data. This will be presented in place of the current Figure 6.1-1 Bedrock Geology and will be several pages long. The legend will refer to a revised Table 6.1-1, which will describe the geologic formations, arranged by milepost. These maps will be completed and submitted within the first quarter of 2016.

Data Request 54

Utilizing state agency sources (Pennsylvania Department of Conservation and Natural Resources, and NJDEP Geological and Water Survey) provide a discussion of all consultations, and research conducted regarding karst areas of Pennsylvania, and the density of karst features crossed by the proposed pipeline route (i.e. Digital Karst Density Layer and Compilation of Mapped Karst Features in Pennsylvania - http://pubs.usgs.gov/of/2003/of03-471/reese/); and areas underlain by Newark Basing sedimentary bedrock with known elevations of arsenic in groundwater, and suggested monitoring and mitigation measures recommended by these agencies during construction.

Response 54

PennEast utilized the following resources regarding potential karst areas in the Project area:

Pennsylvania Department of Conservation and Natural Resources (PA DCNR), Open File Report OF 87-02; Sinkholes and karst-related features of Northampton County, Pennsylvania, http://www.dcnr.state.pa.us/topogeo/publications/pgspub/openfile/index.htm/dcnr_017309.zip Accessed on August 2, 2015.

Pennsylvania Department of Conservation and Natural Resources (PA DCNR), Open File Report OF 93-03; Sinkholes and karst-related features of Bucks County, Pennsylvania, http://www.dcnr.state.pa.us/topogeo/publications/pgspub/openfile/index.htm/dcnr_017309.zip Accessed on August 2, 2015

USGS Mineral Resources On-Line Spatial Database, Pennsylvania

http://mrdata.usgs.gov/geology/state/state.php?state=PA Accessed August 2, 2015

New Jersey Department of Environmental Protection, New Jersey Geological and Water Survey, Karst Features in New Jersey, Prepared by Richard Dalton, 2014; http://www.state.nj.us/dep/njgs/enviroed/infocirc/karst.pdf Accessed on August 4, 2015

Dalton, Richard 1976, Caves of New Jersey; New Jersey Geological Survey, Bull. 70, 51 p.

American Society for Testing and Materials (ASTM), 2001, ASTM Designation: D 5744 – 96(2001) - Standard Test Method for Accelerated Weathering of Solid Materials Using a Modified Humidity Cell,ASTM, West Conshohocken, PA, 13 p.

Atherholt, T.B., Louis, J.B., Shevlin, J., Fell, K, Kretzman, S., 2009, The New Jersey Private Well Testing Act: An Overview, NJDEP Division of Science and Research.

Blake, J.M. and S.C. Peters, 2014, The Occurrence and Dominant Controls on Arsenic in the Newark and Gettysburg Basins, Science of the Total Environment, Elsevier, 10p.

Kolker, A., Cannon, W.F., Westjohn, D.B., Woodruff, L.G., 1998, Arsenic-rich pyrite in the Mississippian Marshall Sandstone: Source of anomalous arsenic in southeastern Michigan ground water. Geological Society of America, Abstracts with Programs, v. 30, no. 7, p. A-59

Michalski, A., Britton, R., 1997, The Role of Bedding Fractures in the Hydrogeology of Sedimentary Bedrock-Evidence from the Newark Basin, New Jersey: GROUND WATER, v. 35, no. 2, p. 318-327.

Mumford, A.C., Barringer, J.L., Reilly, P.A., Eberl, D.D., Blum, A.E., Young, L.Y., 2014, Biogeochemcial environments of streambed-sediment pore waters with and without arsenic enrichment in a sedimentary rock terrain, New Jersey Piedment, USA: Science and the Total Environment, 11p.

NRC, National Academy of Sciences National Research Council (NAS), 2001, Arsenic in Drinking Water: 2001 Update, National Academy Press.

Olsen, P.E., Kent, D.V., Cornet, B., Witte W.K., and Schlishe, R.W, 1996, High–resolution stratigraphy of the Newark rift basin (early Mesozoic, eastern North America): GSA Bulletin, v. 108, no. 1, p. 40-77.

Plumlee, G.S., 1989, Processes controlling epithermal mineral distribution in the Creede mining district, Colorado. Ph.D. dissertation, Harvard University, 378 p.

Serfes, M. S., 1994, Natural ground-water quality in bedrock of the Newark Basin, New Jersey, New Jersey Geological Survey Report GSR 35, p 28.

Serfes, M. E., 2005, Arsenic occurrence, sources, mobilization, transport and prediction in the major bedrock aquifers of the Newark Basin: Ph.D. Dissertation, Rutgers University, New Brunswick, NJ, 122 pp.

Serfes, M.E., Herman, G.C. , Spayd, S.E. , and Reinfelder,J., 2010, Sources mobilization and transport ofArsenic in groundwater in the Passaic and Lockatong Formations of the Newark Basin, New Jersey: NJ Geological Survey Bulletin 77: Contributions to the Geology and Hydrogeology if the Newark Basin, Chapter E. 44 p.

Schlische, R.W., Withjack, M.O., and Olsen, P.E., 2002, Relative timing of CAMP, rifting, continental breakup, and inversion: tectonic significance, in Hames, W.E., McHone, G.C., Renne, P.R., and Ruppel, C.R., eds., The Central Atlantic Magmatic Province: Insights from Fragments of Pangea: American Geophysical Union Monograph 136, p. 33-59.

Sloto, R.A., and Schreffler, C.L., 1994, Geohydrology and groundwater quality of northern Bucks County, Pennsylvania: U.S. Geological Survey Water-Resources Investigations Report 94-4109, 85 p.

Smedley, P.L., Kinniburgh, D.G.,2002 , A review of the source, behavior and distribution of arsenic in natural waters: Applied Geochemistry, v. 17, no. 5, p. 517 – 568.

USEPA, 2011, Method 1627: Kinetic Test Method for the Prediction of Mine Drainage Quality.

A water quality monitoring plan is being developed and will be provided to FERC in conjunction with the other soils and geologic studies by the end of the first quarter of 2016.

Data Request 55

Provide copies of the Geotechnical Data Reports at HDD locations including:

a. geotechnical logs for test borings conducted at each crossing;
b. description of the subsurface lithology along the drill path, results of standard penetration tests, and bedrock coring including core recover and rock quality designation (RQD) results for each core run. Depict these data on each HDD profile;
c. HDD feasibility study conducted by a qualified contractor which utilizes the U.S. Army Corp of Engineers methods contained in their publication "Installation of Pipelines Beneath Levees Using Horizontal Directional Drilling (April 1998) to evaluate, at a minimum: predicted annular pressures and formation pressures along the drill path; and the potential for a release of drilling fluids; and
d. crossing profiles which depict the pipeline alignment at each crossing, along with each geotechnical boring the associated results of standard penetration tests and/or bedrock coring results (percent recovery and rock quality designation), as well as the top of the zone of saturation.

Response 55

a. PennEast notes geotechnical logs for test borings were provided under Attachment A of Appendix O to the Resource Reports included with PennEast's September 24, 2015 certificate application. Under Attachment A, Geotechnical Data Reports (GDR) were provided for each HDD crossing location and test boring logs. Where borings were completed, test boring logs are provided under each associated GDR's Appendix C.

The geotechnical data reports submitted as Attachment A of Appendix O contain the most current and available information for each HDD crossing. At several HDD crossing locations, property access remains unavailable; however, on-going coordination is occurring to complete geotechnical activities at these locations once survey permissions become available or access constraints such as wetland crossing permits are cleared.

While the general locations of each HDD crossing have remained constant, the approximate layout, length, and alignment may have changed for the HDD sites. Revised Geotechnical Data Reports (Revision 1) for each of the HDD crossings have been included herewith as Attachment 10

At this time, survey access constraints have prevented PennEast from conducting the remaining geotechnical borings. PennEast intends to complete the remaining geotechnical investigations at outstanding locations once access becomes available prior to final evaluation and design of proposed HDD crossings.

b. PennEast has provided a description of the subsurface lithology along the drill path, results of standard penetration tests, and bedrock coring including core recover and rock quality designation (RQD) results for each core run on a profile sheet under Appendix B of each crossing's Geotechnical Data Report.

c. Although the majority of HDD crossings have had at least 1 boring performed, a comprehensive HDD feasibility study cannot be completed prior to the completion of all of the borings for the specific crossing. Notwithstanding, as the geotechnical program has been completed in full for the Delaware River HDD crossing, PennEast has completed a preliminary feasibility study for this crossing to illustrate the typical contents of the feasibility study report which can be expected to be performed for all crossings once complete test boring information becomes available.

d. Similar to the response for item b above, PennEast has provided crossing profiles which depict the pipeline alignment at each crossing, along with each geotechnical boring the associated results of standard penetration tests and/or bedrock coring results (percent recovery and rock quality designation), as well as the top of the zone of saturation, on a profile sheet under Appendix B of each crossing's Geotechnical Data Report.

Data Request 56

Provide a narrative describing the results for each proposed HDD crossing, the feasibility of successfully utilizing HDD to complete the crossing and the potential for an inadvertent release. If a drill path would pass through carbonate bedrock, then describe in detail the degree of subsurface karst encountered during drilling, and the potential for the substantial loss of drilling fluids, and the measures to be taken to prevent drilling fluids from appearing within surface water bodies, springs, and within water-supply wells.

Response 56

As indicated in the response to Data Request 55, PennEast notes that access is pending to conduct the remaining geotechnical borings for HDD crossings. However, on-going coordination is occurring to complete geotechnical activities at this location once survey permissions become available or access constraints such as wetland crossing permits are resolved.

Though the majority of HDD crossings have had at least one boring performed, comprehensive HDD feasibility studies cannot be completed prior to the completion of all of the borings for each specific crossing. Notwithstanding, prior to performing an HDD, PennEast intends to complete feasibility studies for each crossing once the information becomes available. As typical to the state-of-the-practice, each feasibility report will include hydraulic fracture evaluation in accordance with Army Corps of Engineers 1998 Report CPAR-GL-98 (Installation of Pipelines beneath Levees Using Horizontal Directional Drilling) to determine considerations such as casing, compensation grouting, or other measure to prevent substantial loss of drilling fluid through fractured rock.

PennEast understands that this request is also focused on measures which will be taken when installing in areas with potential for carbonate formations such as the I-78 crossing, Delaware River crossing, Freemansburg Avenue crossing, and Lehigh River crossing. As indicated in the September 2015 submission, and further in response to Data Request 70 herein, PennEast is in the process of completing geophysical activities as survey permissions become available. The results of the geophysical surveys will assist in establishing the degree of subsurface karst expected to be encountered during drilling such that the potential for the substantial loss of drilling fluids can be evaluated. Measures to be taken to prevent drilling fluids from appearing within surface water bodies, springs, and within water-supply wells can be prepared, as necessary, following completion of these studies once access becomes available.

As the results of this evaluation are dependent on available access, further evaluations will become public as landowner access is granted.

Data Request 57

Provide a Best Drilling Practices Plan for use where HDD is proposed in karst terrain that includes:

a. procedures to control significant loss of drilling fluids into the karst environment during drilling;
b. spring and well monitoring plan for all receptors down-gradient of the crossing, including identification and monitoring for all receptors that are at a minimum 2,000 feet down-gradient;
c. the specific drilling muds and polymers that may be used; and
d. evaluation of the potential for impact and describe how PennEast would mitigate a lateral movement of drilling fluid during trenchless crossings that could affect source ground waters such as wells, seeps, and springs.

Response 57

A preliminary HDD Drilling Plan for Karst Terrain is provided as Attachment 11. This plan will be finalized and provided to FERC once geotechnical investigation programs are completed for all HDD crossing locations.

Data Request 58

Provide results of any geologic/geotechnical investigations at the proposed meter station and compression station sites, and provide a summary of the results for each site. Provide a description of the geology at contractor yards and other off-ROW temporary extra workspace.

Response 58

PennEast notes that the geotechnical reports previously submitted with its September 24, 2015 certificate application in this proceeding contain the most current and available information for each of the proposed meter station and compressor station sites (facilities) at this time. At several facility locations, property access remains unavailable; however, on-going coordination is occurring to complete geotechnical activities at these locations once survey permissions become available or access constraints such as wetland crossing permits are cleared. It should be noted that, where site access permission is pending, PennEast has reviewed available data sources such as local soil conservation district reports, surficial and bedrock geology maps, GIS database, and historic records to gain an understanding of the proposed facility site to guide preliminary design of the facility. PennEast intends to complete the remaining geotechnical investigations once survey permission becomes available to confirm the data and assumptions gathered through available resources.

While the regional locations of each of the facility sites have remained constant, the approximate footprints and layout of equipment may have changed for the sites. Revised Geotechnical Reports for each of the facility sites identified in PennEast's certificate application have been included with this response in Attachment 10.

In addition to revised reports for the previously submitted facility locations, PennEast notes a interconnect facility has been proposed at Blue Mountain Resort. A Geotechnical Report for the Blue Mountain Interconnect is included in Attachment 10.

At this time permission and permits to conduct the remaining geotechnical borings for compressor and meter station facilities are pending. PennEast intends to complete the remaining geotechnical investigations at outstanding locations once access becomes available prior to final design and construction of the proposed facility locations.

With regard to the contractor yards and other off-ROW temporary extra workspace, the geology was derived from available GIS sources, where available, and by tracing the bedrock formation and surficial unit contacts shown on published geologic maps for the USGS topographic quadrangles where the sites are located.

There are eight designated wareyards for the PennEast pipeline. These include: PE-A-01 and PE-A-02 near Mile Post 9 and 10, respectively; PE-B-02, near Mile Post 32; PE-C-03, near Mile Post 62; PE-C-04, near Mile Post 64; PE-D-05, straddling Mile Post70; PE-E-06 near Mile Post 95; and PE-F-07, near Mile Post 102. These are shown on Figure 1 of Attachment 12. The surficial and bedrock geology for each of these are summarized

and shown in Figures 2 and 3 of Attachment 12, respectively. Descriptions of each bedrock formation and surficial unit underlying each site and the respective acreages are presented in Table 1.

Table 1
Geology of Wareyards

Site Name	Bedrock Geology				Surficial Geology			
	Area (ac.)	Bedrock Map Symbol	Bedrock Geologic Formation	Lithologic Description	Area (ac.)	Surficial Map Symbol	Surficial Geologic Unit Name	Lithologic Description
PE-A-01	1.90	Pl	Llewellyn Formation	Sandstone, siltstone, shale; conglomerate; coal	1.68	Rp	Rock pit	Quarry pits typically have steep to vertical sides and are tens of feet deep. Active pits produce aggregate for construction activity.
					0.22	R	Bedrock	Bedrock outcrops or clast-rich diamict of residual and colluvial material derived from the directly underlying bedrock of interbedded red and gray sandstone, conglomeratic sandstone, and shale; clayey silt to sandy silt matrix; clasts are typically matrix supported with lenses of clast-supported material with or without matrix; tabular clasts generally exhibit a down slope directed orientation within the upper 1.5 feet (0.5 m) of the material; less than 6 feet (2 m) to bedrock; on greater than 15 percent slopes, typically less than 3 feet (1 m) thick.
PE-A-02	15.63	Pp	Pottsville Formation	Sandstone, conglomerate, shale; siltstone; claystone; limestone; coal	28.68	R	Bedrock	See description for Map Symbol "R" under PE-A-01 above.
	13.05	Pl	Llewellyn Formation	See description for Map Symbol "Pl" under PE-A-01 above.				
PE-B-02	15.41	Dcd	Duncannon Member of the Catskill Formation	Sandstone, Siltstone, Mudstone; conglomerate	15.41	Qwt	Wisconsinan Till	Till; poorly sorted, unstratified diamict- a nonsorted or poorly sorted, unconsolidated deposit that contains a wide range of particle sizes, commonly from clay to cobble- or boulder-size, and rounded and/or angular fragments with a clayey, silty, or sandy matrix depending on the local source bedrock; common cobble and boulder clasts; typically occurs as a fairly smooth landform with a bouldery surface and no clear constructional (knob and kettle) topography on hillslopes; upper 3 feet is often colluviated, displaying a downslope-oriented fabric; thickness is greater than 6 feet (2 m), is typically 10 to 15 feet (3 to 5 m), and can be greater than 100 feet (30 m) in some buried valley segments.
PE-C-03	17.86	Ojk	Jacksonburg Formation	Shaly limestone, Limestone	16.04	Qpit	Pre-Illinoian till	Matrix-supported glacial diamict; clayey-silt matrix; yellowish red where the weathering profile is only partly truncated, yellowish brown where original the weathering profile is completely truncated; cobbles and boulders of subrounded sandstone clasts are concentrated near the surface; boulders are rarely more than 25 cm in diameter; generally 2 to 5 meters thick except in carbonate sinkholes where it may be as thick as 10 meters; may include deeply weathered stratified drift in places; almost always underlain by variable thicknesses of residuum in carbonate bedrock areas.
					1.81	Qpl	Pre-Illinoian lag	Discontinuous cobbly to bouldery mantle of subrounded sandstone clasts; the surface is underlain by less than 2 meters of matrix-supported diamict that in turn is underlain by bedrock. Only cobbles and occasional boulders imbedded in a bedrock residuum diamict are present near the contact of the pre-Illinoian lag and bedrock residuum and in places within areas of pre-Illinoian lag, almost always underlain by variable thicknesses of residuum in carbonate bedrock areas.

Site Name	Bedrock Geology				Surficial Geology			
	Area (ac.)	Bedrock Map Symbol	Bedrock Geologic Formation	Lithologic Description	Area (ac.)	Surficial Map Symbol	Surficial Geologic Unit Name	Lithologic Description
PE-C-04	74.26	Oe	Epler Formation	Limestone, Dolomite	79.18	u	urban land	Cut and fill disturbing more than 50 percent of the ground surface; includes most areas with homes on one-half acre or smaller lots, commercial sites, and industrial sites.
	18.46	Oo	Ontelaunee Formation	Limestone, Dolomite	7.27	Qpit	Pre-Illinoian till	See description for Map Symbol "Qpit" under PE-C-03 above.
					6.27	Qpl	Pre-Illinoian lag	See description for Map Symbol "Qpl" under PE-C-03 above.
PE-D-05	39.31	Cal	Allentown Formation	Dolomite, Limestone, Calcareous siltstone; chert	24.90	Qpl	Pre-Illinoian lag	See description for Map Symbol "Qpl" under PE-C-03 above.
					3.32	Qpit	Pre-Illinoian till	See description for Map Symbol "Qpit" under PE-C-03 above.
					11.09	lr	Limestone bedrock	Matrix dominated diamict of residual and colluvial material derived from the directly underlying bedrock of gray limestone or dolostone with variable amounts of chert and limonite; clasts are typically matrix supported and become more common downward; yellowish-brown to yellowish-red matrix; clasts generally exhibit a downslope directed orientation; less than 2 meters to weathered or unweathered bedrock except in depressions; on greater than 15 percent slopes, typically less than 1 meter deep except in depressions.
PE-E-06	50.13	Trl	Lockatong Formation	Dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone	50.13	Qws	Weathered shale, mudstone, and sandstone	Silty sand to silty clay with shale, mudstone, or sandstone fragments; reddish brown, yellow, light gray. As much as 10 feet thick on shale and mudstone, 30 feet thick on sandstone.
PE-F-07	15.62	JTrp	Passaic Formation	Siltstone and shale (redbed facies)	15.62	Qws	Weathered shale, mudstone, and sandstone	Silty sand to silty clay with shale, mudstone, or sandstone fragments; reddish brown, yellow, light gray. As much as 10 feet thick on shale and mudstone, 30 feet thick on sandstone.
					0.20	Qal	Alluvium	Sand, gravel, silt, clay, organic matter. Deposited in modern floodplains and channels. As much as 20 feet thick.

Data Request 59

PennEast states that information regarding the impact on the project resulting from nearby quarry blasting activities will be provided when complete. Provide this information, or a schedule when this information will be available. This information should include the proposed or potential mitigation measures including pre-and post-blast monitoring procedures.

Response 59

The blasting study conducted is provided as Attachment 13. In addition, coordination is ongoing with the adjacent Popple Quarry. PennEast has adopted a reroute at the request of Popple Quarry to avoid areas with potential for future development. A blasting study is scheduled for their next planned blast later this month with report filed with the Commission in this proceeding by the first quarter of 2016. It is anticipated that a study of a second planned blast closer to the pipeline route will also occur in the first quarter of 2016.

Data Request 60

Provide a discussion of the potential-related effect of mine/ quarry dewatering, if any by nearby quarries, and the current and/or potential for ground subsidence as a result of this dewatering.

Response 60

Subsidence is a potential geologic hazard in areas where karst terrain occurs and where underground mining or quarrying takes place and the water table is lowered through dewatering activities, when conducted. In karst terrain, limestone and dolomite bedrock are dissolved by water and create karst features such as subsurface channels, caves, and sinkholes. Dewatering can increase subsidence associated with these solution features. Table 6.3-2 in Resource Report 6 presents the bedrock formations with sinkhole potential within the Project area. There are two active industrial mineral quarries approximately four miles from the Project in areas underlain by limestone or dolomite formations: Tarheel Quarry, LLC located in Luzerne County near MP 23.5 and Buzzi Unicem Imperial Quarry located in Northampton County near MP 60.5. Given that the mines are four miles from the proposed pipeline path, this is sufficiently distant that no adverse subsidence effects on the land on which the pipeline will be routed are anticipated from either current or future dewatering of these two quarries. Minor subsidence in the presence of substantial mine/quarry dewatering may occur in non-karst areas but is unlikely due to the composition of non-carbonate bedrock in the Project area.

Data Request 61

Provide a table that identifies by milepost the locations along the pipeline where bedrock may be encountered within trench depth and blasting may be required.

Response 61

Table 1.5-8
Areas where Blasting may be Required

Facility	Pipe Diameter (in)	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Depth to Bedrock (ft)	Shallow Bedrock with Potential to Require Blasting	Map Symbol	Geologic Unit Name	Primary Lithology	Secondary Lithology	Additional Description
HELLERTOWN LATERAL	24	0.17	0.28	N/A	N/A	0.00	Yes	gn	Felsic to mafic gneiss	Felsic gneiss	Intermediate gneiss	Mafic gneiss
LAMBERTVILLE LATERAL	36	0.00	0.02	N/A	N/A	3.74	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
LAMBERTVILLE LATERAL	36	0.02	1.43	N/A	N/A	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	0.30	0.62	0.30	0.62	2.49	Yes	Dck	Catskill Formation	Sandstone	Siltstone	Shale; conglomerate; mudstone
PENNEAST	36	0.45	0.51	0.45	0.51	2.49	Yes	Dck	Catskill Formation	Sandstone	Siltstone	Shale; conglomerate; mudstone
PENNEAST	36	0.71	1.27	0.71	1.27	2.49	Yes	Dck	Catskill Formation	Sandstone	Siltstone	Shale; conglomerate; mudstone
PENNEAST	36	1.66	1.72	1.66	1.72	2.49	Yes	Dck	Catskill Formation	Sandstone	Siltstone	Shale; conglomerate; mudstone
PENNEAST	36	1.72	2.05	1.72	2.05	2.49	Yes	Dck	Catskill Formation	Sandstone	Siltstone	Shale; conglomerate; mudstone
PENNEAST	36	2.14	2.54	2.14	2.54	2.49	Yes	Dck	Catskill Formation	Sandstone	Siltstone	Shale; conglomerate; mudstone
PENNEAST	36	2.57	3.08	2.57	3.08	2.49	Yes	Dck	Catskill Formation	Sandstone	Siltstone	Shale; conglomerate; mudstone
PENNEAST	36	3.13	4.24	3.13	4.24	2.49	Yes	Dck	Catskill Formation	Sandstone	Siltstone	Shale; conglomerate; mudstone
PENNEAST	36	4.38	4.40	4.38	4.40	2.49	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	4.52	4.56	4.52	4.56	2.49	Yes	Mmc	Mauch Chunk Formation	Shale	Siltstone	Sandstone; conglomerate; limestone
PENNEAST	36	4.60	4.62	4.60	4.62	1.41	Yes	Mmc	Mauch Chunk Formation	Shale	Siltstone	Sandstone; conglomerate; limestone
PENNEAST	36	5.08	5.11	5.08	5.11	3.35	Yes	Pp	Pottsville Formation	Sandstone	Conglomerate	Shale; siltstone; claystone; limestone; coal
PENNEAST	36	5.11	5.13	5.11	5.13	3.35	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	5.19	5.35	5.19	5.35	3.35	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	5.42	5.42	5.42	5.42	0.07	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	5.45	5.52	5.45	5.52	3.35	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	5.68	6.01	5.68	6.01	0.07	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	7.32	7.73	7.32	7.73	3.35	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	7.84	8.05	7.84	8.05	2.49	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	8.06	8.15	8.06	8.15	2.49	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	8.51	9.32	8.51	9.32	3.35	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	9.41	9.67	9.41	9.67	1.41	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	9.67	9.70	9.67	9.70	3.35	Yes	Pp	Pottsville Formation	Sandstone	Conglomerate	Shale; siltstone; claystone; limestone; coal
PENNEAST	36	9.70	9.72	9.70	9.72	2.49	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	9.72	9.87	9.72	9.87	1.41	Yes	Pp	Pottsville Formation	Sandstone	Conglomerate	Shale; siltstone; claystone; limestone; coal
PENNEAST	36	9.87	10.19	9.87	10.19	3.35	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	10.27	10.42	10.27	10.42	3.35	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	10.77	10.92	10.77	10.92	2.66	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	10.95	10.98	10.95	10.98	2.49	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal
PENNEAST	36	10.99	11.44	10.99	11.44	2.49	Yes	Pl	Llewellyn Formation	Sandstone	Siltstone	Shale; conglomerate; coal

Facility	Pipe Diameter (in)	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Depth to Bedrock (ft)	Shallow Bedrock with Potential to Require Blasting	Map Symbol	Geologic Unit Name	Primary Lithology	Secondary Lithology	Additional Description
PENNEAST	36	11.44	11.94	11.44	11.94	1.41	Yes	Pp	Pottsville Formation	Sandstone	Conglomerate	Shale; siltstone; claystone; limestone; coal
PENNEAST	36	11.94	12.07	11.94	12.07	1.41	Yes	Mmc	Mauch Chunk Formation	Shale	Siltstone	Sandstone; conglomerate; limestone
PENNEAST	36	12.32	12.45	12.52	12.65	2.49	Yes	Mmc	Mauch Chunk Formation	Shale	Siltstone	Sandstone; conglomerate; limestone
PENNEAST	36	12.51	12.76	12.71	12.96	2.49	Yes	Mmc	Mauch Chunk Formation	Shale	Siltstone	Sandstone; conglomerate; limestone
PENNEAST	36	12.76	12.77	12.96	12.97	2.49	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	13.06	13.09	13.26	13.29	0.07	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	13.09	13.34	13.29	13.54	0.07	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	14.12	14.18	14.32	14.38	2.49	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	14.18	14.39	14.38	14.59	2.49	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	14.39	14.41	14.59	14.61	2.49	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	15.40	15.43	15.60	15.63	2.49	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	15.70	15.77	15.90	15.97	2.49	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	16.07	16.11	16.27	16.31	2.49	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	16.16	16.21	16.36	16.41	2.49	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	16.41	16.52	16.61	16.72	1.41	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	17.00	17.03	17.20	17.23	1.41	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	17.03	17.06	17.23	17.26	1.41	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	17.10	17.16	17.30	17.36	2.49	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	17.21	17.45	17.41	17.65	2.49	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	17.52	17.62	17.72	17.82	2.49	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	17.62	17.63	17.82	17.83	2.49	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	17.68	17.94	17.88	18.14	2.49	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	18.00	18.03	18.20	18.23	2.49	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	18.09	18.11	18.29	18.31	2.49	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	19.54	19.56	19.74	19.76	2.49	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	19.56	19.57	19.76	19.77	2.49	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	19.78	19.88	19.98	20.08	2.49	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	19.95	20.11	20.15	20.31	1.41	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	20.15	20.46	20.35	20.66	2.49	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	20.52	20.85	20.72	21.05	2.49	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	21.17	21.25	21.37	21.45	2.49	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate

Facility	Pipe Diameter (in)	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Depth to Bedrock (ft)	Shallow Bedrock with Potential to Require Blasting	Map Symbol	Geologic Unit Name	Primary Lithology	Secondary Lithology	Additional Description
PENNEAST	36	22.32	22.37	22.52	22.57	2.49	Yes	Mp	Pocono Formation	Sandstone	Siltstone	Conglomerate
PENNEAST	36	22.37	22.41	22.57	22.61	2.49	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	22.51	22.71	22.71	22.91	2.49	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	22.83	22.92	23.03	23.12	2.10	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	22.92	23.06	23.12	23.26	2.10	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	23.14	23.27	23.34	23.47	2.49	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	23.27	23.44	23.47	23.64	2.49	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	23.44	23.50	23.64	23.70	2.49	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	23.50	23.75	23.70	23.95	2.49	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	24.28	24.31	24.48	24.51	4.82	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	24.86	24.91	25.06	25.11	2.66	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	25.28	25.44	25.48	25.64	2.66	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	29.01	29.14	29.21	29.34	2.66	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	30.65	30.91	30.85	31.11	4.82	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	30.95	31.83	31.15	32.03	4.82	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	31.86	32.01	32.06	32.21	4.82	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	32.14	32.41	32.34	32.61	4.82	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	32.80	32.82	33.00	33.02	3.35	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	32.87	32.91	33.07	33.11	3.35	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	33.53	33.66	33.73	33.86	2.66	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	33.66	33.80	33.86	34.00	2.66	Yes	MDsk	Spechty Kopf Formation	Sandstone	Siltstone	Polymictic diamictite; mudstone; laminite; shale; conglomerate
PENNEAST	36	34.02	34.11	34.22	34.31	2.66	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	35.78	35.85	35.98	36.05	4.82	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	36.32	36.55	36.52	36.75	4.82	Yes	Dcd	Duncannon Member of Catskill Formation	Sandstone	Siltstone	Mudstone; conglomerate
PENNEAST	36	37.36	37.70	37.56	37.90	4.82	Yes	Dcpg	Poplar Gap Member of Catskill	Sandstone	Conglomerate	Siltstone

Facility	Pipe Diameter (in)	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Depth to Bedrock (ft)	Shallow Bedrock with Potential to Require Blasting	Map Symbol	Geologic Unit Name	Primary Lithology	Secondary Lithology	Additional Description
									Formation			
PENNEAST	36	37.70	37.83	37.90	38.03	4.82	Yes	Dcp	Packerton Member of Catskill Formation	Sandstone	Conglomerate	Siltstone
PENNEAST	36	37.83	38.07	38.03	38.27	3.35	Yes	Dclr	Long Run Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	38.78	39.26	38.98	39.46	3.35	Yes	Dcp	Packerton Member of Catskill Formation	Sandstone	Conglomerate	Siltstone
PENNEAST	36	39.36	39.96	39.56	40.16	2.66	Yes	Dcp	Packerton Member of Catskill Formation	Sandstone	Conglomerate	Siltstone
PENNEAST	36	39.96	40.07	40.16	40.27	2.10	Yes	Dclr	Long Run Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	41.33	41.35	41.53	41.55	2.66	Yes	Dclr	Long Run Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	41.35	41.35	41.55	41.55	2.66	Yes	Dcbr	Beaverdam Run Member of Catskill Formation	Siltstone	Sandstone	Shale
PENNEAST	36	41.39	41.44	41.59	41.64	3.35	Yes	Dcbr	Beaverdam Run Member of Catskill Formation	Siltstone	Sandstone	Shale
PENNEAST	36	41.49	41.64	41.69	41.84	3.35	Yes	Dcbr	Beaverdam Run Member of Catskill Formation	Siltstone	Sandstone	Shale
PENNEAST	36	41.64	41.81	41.84	42.01	3.35	Yes	Dcw	Walcksville Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	41.85	41.98	42.05	42.18	3.35	Yes	Dcw	Walcksville Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	41.98	42.27	42.18	42.47	3.35	Yes	Dct	Towamensing Member of Catskill Formation	Sandstone	Siltstone	Shale
PENNEAST	36	42.27	42.50	42.47	42.70	4.82	Yes	Dtr	Trimmers Rock Formation	Siltstone	Shale	Sandstone; black shale
PENNEAST	36	42.50	42.61	42.70	42.81	1.25	Yes	Dmh	Mahantango Formation	Shale	Siltstone	Argillaceous limestone; sandstone
PENNEAST	36	42.79	43.09	42.99	43.29	1.25	Yes	Dmh	Mahantango Formation	Shale	Siltstone	Argillaceous limestone; sandstone
PENNEAST	36	43.74	43.74	43.94	43.94	1.25	Yes	Dmh	Mahantango Formation	Shale	Siltstone	Argillaceous limestone; sandstone
PENNEAST	36	43.82	44.17	44.02	44.37	1.25	Yes	Dmh	Mahantango Formation	Shale	Siltstone	Argillaceous limestone; sandstone
PENNEAST	36	44.17	44.34	44.37	44.54	1.25	Yes	Dtr	Trimmers Rock Formation	Siltstone	Shale	Sandstone; black shale
PENNEAST	36	44.34	44.56	44.54	44.76	1.25	Yes	Dct	Towamensing Member of Catskill Formation	Sandstone	Siltstone	Shale
PENNEAST	36	44.56	44.59	44.76	44.79	1.25	Yes	Dcw	Walcksville Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	44.62	44.68	44.82	44.88	1.25	Yes	Dcw	Walcksville Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	44.68	44.81	44.88	45.01	1.25	Yes	Dcw	Walcksville Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	44.84	45.14	45.04	45.34	3.35	Yes	Dcw	Walcksville Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	45.14	45.35	45.34	45.55	1.25	Yes	Dcbr	Beaverdam Run Member of Catskill Formation	Siltstone	Sandstone	Shale
PENNEAST	36	45.38	45.91	45.58	46.11	3.35	Yes	Dclr	Long Run Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	45.95	46.13	46.15	46.33	3.35	Yes	Dclr	Long Run Member of Catskill Formation	Sandstone	Siltstone	Mudstone

Facility	Pipe Diameter (in)	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Depth to Bedrock (ft)	Shallow Bedrock with Potential to Require Blasting	Map Symbol	Geologic Unit Name	Primary Lithology	Secondary Lithology	Additional Description
PENNEAST	36	46.16	46.49	46.36	46.69	3.35	Yes	Dclr	Long Run Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	46.49	46.71	46.69	46.91	1.25	Yes	Dcbr	Beaverdam Run Member of Catskill Formation	Siltstone	Sandstone	Shale
PENNEAST	36	46.71	47.40	46.91	47.60	3.35	Yes	Dcw	Walcksville Member of Catskill Formation	Sandstone	Siltstone	Mudstone
PENNEAST	36	47.40	47.53	47.60	47.73	1.25	Yes	Dct	Towamensing Member of Catskill Formation	Sandstone	Siltstone	Shale
PENNEAST	36	47.53	47.65	47.73	47.85	1.25	Yes	Dtr	Trimmers Rock Formation	Siltstone	Shale	Sandstone; black shale
PENNEAST	36	47.65	47.88	47.85	48.08	1.25	Yes	Dmh	Mahantango Formation	Shale	Siltstone	Argillaceous limestone; sandstone
PENNEAST	36	47.94	47.99	48.14	48.19	3.35	Yes	Dmh	Mahantango Formation	Shale	Siltstone	Argillaceous limestone; sandstone
PENNEAST	36	48.22	48.35	48.42	48.55	2.49	Yes	Dbe	Buttermilk Falls Limestone through Esopus Formation, undivided	Siliceous sandstone	Limestone	Siltstone; shale; chert
PENNEAST	36	48.35	48.43	48.55	48.63	2.49	Yes	Drc	Ridgeley Formation through Coeymans Formation, undivided	Sandstone	Siltstone	Shale; limestone; chert
PENNEAST	36	48.43	48.52	48.63	48.72	2.49	Yes	Dbe	Buttermilk Falls Limestone through Esopus Formation, undivided	Siliceous sandstone	Limestone	Siltstone; shale; chert
PENNEAST	36	48.52	48.67	48.72	48.87	3.35	Yes	Drc	Ridgeley Formation through Coeymans Formation, undivided	Sandstone	Siltstone	Shale; limestone; chert
PENNEAST	36	48.67	48.81	48.87	49.01	3.35	Yes	Sdp	Decker Formation through Poxono Island Formation, undivided	Calcareous sandstone	Limestone	Siltstone; shale; dolomite
PENNEAST	36	49.67	49.73	49.87	49.93	2.66	Yes	Sb	Bloomsburg Formation	Shale	Siltstone	Sandstone; mudstone
PENNEAST	36	49.84	50.10	50.04	50.30	3.35	Yes	Sb	Bloomsburg Formation	Shale	Siltstone	Sandstone; mudstone
PENNEAST	36	50.10	51.30	50.30	51.50	2.66	Yes	Ss	Shawangunk Formation	Sandstone	Conglomerate	Shale
PENNEAST	36	51.30	51.31	51.50	51.51	4.99	Yes	Om	Martinsburg Formation	Shale	Siltstone	Slate
PENNEAST	36	53.53	53.59	53.73	53.79	5.09	Yes	Om	Martinsburg Formation	Shale	Siltstone	Slate
PENNEAST	36	53.79	53.86	53.99	54.06	5.09	Yes	Om	Martinsburg Formation	Shale	Siltstone	Slate
PENNEAST	36	53.90	53.91	54.10	54.11	5.09	Yes	Om	Martinsburg Formation	Shale	Siltstone	Slate
PENNEAST	36	54.15	54.38	54.35	54.58	5.09	Yes	Omgs	Graywacke and shale of Martinsburg Formation	Graywacke	Shale	Sandstone
PENNEAST	36	54.53	55.24	54.73	55.44	4.53	Yes	Omgs	Graywacke and shale of Martinsburg Formation	Graywacke	Shale	Sandstone
PENNEAST	36	55.29	55.48	55.49	55.68	5.09	Yes	Omgs	Graywacke and shale of Martinsburg Formation	Graywacke	Shale	Sandstone
PENNEAST	36	55.49	57.52	55.69	57.72	1.51	Yes	Omgs	Graywacke and shale of Martinsburg Formation	Graywacke	Shale	Sandstone
PENNEAST	36	57.52	60.04	57.72	60.24	1.51	Yes	Om	Martinsburg Formation	Shale	Siltstone	Slate
PENNEAST	36	60.08	60.41	60.28	60.61	1.51	Yes	Om	Martinsburg Formation	Shale	Siltstone	Slate
PENNEAST	36	60.44	61.01	60.64	61.21	2.76	Yes	Om	Martinsburg Formation	Shale	Siltstone	Slate
PENNEAST	36	61.01	61.38	61.21	61.58	1.51	Yes	Ojk	Jacksonburg Formation	Shaly limestone	Limestone	(N/A)
PENNEAST	36	61.80	61.82	62.00	62.02	3.15	Yes	Ojk	Jacksonburg Formation	Shaly limestone	Limestone	(N/A)
PENNEAST	36	62.02	62.09	62.22	62.29	5.09	Yes	Ojk	Jacksonburg Formation	Shaly limestone	Limestone	(N/A)

Facility	Pipe Diameter (in)	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Depth to Bedrock (ft)	Shallow Bedrock with Potential to Require Blasting	Map Symbol	Geologic Unit Name	Primary Lithology	Secondary Lithology	Additional Description
PENNEAST	36	62.57	62.61	62.77	62.81	5.09	Yes	Ojk	Jacksonburg Formation	Shaly limestone	Limestone	(N/A)
PENNEAST	36	62.61	62.66	62.81	62.86	5.09	Yes	Oe	Epler Formation	Limestone	Dolomite	(N/A)
PENNEAST	36	63.53	63.56	63.73	63.76	5.09	Yes	Oe	Epler Formation	Limestone	Dolomite	(N/A)
PENNEAST	36	63.63	63.64	63.83	63.84	5.09	Yes	Oe	Epler Formation	Limestone	Dolomite	(N/A)
PENNEAST	36	63.71	64.40	63.91	64.60	5.09	Yes	Oe	Epler Formation	Limestone	Dolomite	(N/A)
PENNEAST	36	64.40	64.65	64.60	64.85	5.09	Yes	Ori	Rickenbach Formation	Dolomite	Chert	(N/A)
PENNEAST	36	65.64	66.09	65.84	66.29	5.09	Yes	Oe	Epler Formation	Limestone	Dolomite	(N/A)
PENNEAST	36	66.09	66.62	66.29	66.82	5.09	Yes	Ori	Rickenbach Formation	Dolomite	Chert	(N/A)
PENNEAST	36	66.62	66.63	66.82	66.83	5.09	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	67.01	67.12	67.21	67.32	5.09	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	67.27	67.40	67.47	67.60	5.09	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	67.46	67.56	67.66	67.76	5.09	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	67.58	67.64	67.78	67.84	5.09	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	67.72	67.84	67.92	68.04	5.09	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	67.93	68.09	68.13	68.29	5.09	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	68.10	68.17	68.30	68.37	4.53	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	68.33	68.39	68.53	68.59	5.09	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	68.53	68.66	68.73	68.86	5.09	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	68.77	69.19	68.97	69.39	4.53	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	69.30	69.53	69.50	69.73	5.09	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	69.56	69.65	69.76	69.85	4.53	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	70.29	70.61	70.49	70.81	5.09	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	70.64	70.66	70.84	70.86	0.00	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	70.66	70.69	70.86	70.89	0.00	Yes	Clv	Leithsville Formation	Dolomite	Shaly dolomite	Chert; shale
PENNEAST	36	70.88	70.89	71.08	71.09	5.51	Yes	Clv	Leithsville Formation	Dolomite	Shaly dolomite	Chert; shale
PENNEAST	36	70.91	71.01	71.11	71.21	0.00	Yes	Clv	Leithsville Formation	Dolomite	Shaly dolomite	Chert; shale
PENNEAST	36	71.39	71.51	71.59	71.71	5.84	Yes	Cha	Hardyston Formation	Quartzite	Feldspathic sandstone	Quartz-pebble conglomerate
PENNEAST	36	71.51	71.79	71.71	71.99	4.53	Yes	gn	Felsic to mafic gneiss	Felsic gneiss	Intermediate gneiss	Mafic gneiss
PENNEAST	36	71.79	71.86	71.99	72.06	5.68	Yes	hg	Hornblende gneiss	Mafic gneiss	(N/A)	(N/A)
PENNEAST	36	71.96	72.04	72.16	72.24	5.68	Yes	hg	Hornblende gneiss	Mafic gneiss	(N/A)	(N/A)
PENNEAST	36	72.04	72.16	72.24	72.36	5.68	Yes	gn	Felsic to mafic gneiss	Felsic gneiss	Intermediate gneiss	Mafic gneiss
PENNEAST	36	73.08	73.11	73.28	73.31	5.68	Yes	hg	Hornblende gneiss	Mafic gneiss	(N/A)	(N/A)
PENNEAST	36	73.59	73.98	73.79	74.18	5.68	Yes	hg	Hornblende gneiss	Mafic gneiss	(N/A)	(N/A)
PENNEAST	36	73.98	74.07	74.18	74.27	5.68	Yes	gn	Felsic to mafic gneiss	Felsic gneiss	Intermediate gneiss	Mafic gneiss
PENNEAST	36	75.15	75.22	75.35	75.42	5.68	Yes	Cha	Hardyston Formation	Quartzite	Feldspathic sandstone	Quartz-pebble conglomerate
PENNEAST	36	75.22	75.65	75.42	75.85	5.68	Yes	hg	Hornblende gneiss	Mafic gneiss	(N/A)	(N/A)
PENNEAST	36	75.65	75.69	75.85	75.89	5.68	Yes	gn	Felsic to mafic gneiss	Felsic gneiss	Intermediate gneiss	Mafic gneiss
PENNEAST	36	75.69	75.71	75.89	75.91	5.68	Yes	gn	Felsic to mafic gneiss	Felsic gneiss	Intermediate gneiss	Mafic gneiss
PENNEAST	36	76.18	76.24	76.38	76.44	3.15	Yes	Cal	Allentown Formation	Dolomite	Limestone	Calcareous siltstone; chert
PENNEAST	36	77.52	77.64	77.72	77.84	3.41	Yes	Ylo	Quartz-Oligoclase Gneiss	Gneiss	(N/A)	gneiss, medium- to coarse-grained
PENNEAST	36	77.72	77.75	77.92	77.95	3.41	Yes	Ylo	Quartz-Oligoclase Gneiss	Gneiss	(N/A)	gneiss, medium- to coarse-grained
PENNEAST	36	77.75	78.11	77.95	78.31	3.41	Yes	Ybh	Hornblende Granite	Gneiss	(N/A)	granite, medium- to coarse-grained
PENNEAST	36	78.11	78.25	78.31	78.45	4.17	Yes	Cl	Leithsville Formation	Dolomite	Sandstone	dolomite, dolomitic sandstone, siltstone,

Facility	Pipe Diameter (in)	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Depth to Bedrock (ft)	Shallow Bedrock with Potential to Require Blasting	Map Symbol	Geologic Unit Name	Primary Lithology	Secondary Lithology	Additional Description
												and shale
PENNEAST	36	78.25	79.22	78.45	79.42	4.17	Yes	JTrpcq	Passaic Formation Quatzite-clast Conglomerate facies	Sandstone	Conglomerate	quartzite conglomerate, sandstone
PENNEAST	36	79.22	79.53	79.42	79.73	2.49	Yes	JTrpsc	Passaic Formation Conglomerate and Sandstone facies	Sandstone	Conglomerate	conglomeratic sandstone
PENNEAST	12	79.34	79.39	79.54	79.59	2.49	Yes	JTrpsc	Passaic Formation Conglomerate and Sandstone facies	Sandstone	Conglomerate	conglomeratic sandstone
PENNEAST	36	80.48	81.65	80.68	81.85	4.99	Yes	JTrpcq	Passaic Formation Quatzite-clast Conglomerate facies	Sandstone	Conglomerate	quartzite conglomerate, sandstone
PENNEAST	36	81.65	81.73	81.85	81.93	4.99	Yes	JTrpsc	Passaic Formation Conglomerate and Sandstone facies	Sandstone	Conglomerate	conglomeratic sandstone
PENNEAST	36	81.75	81.94	81.95	82.14	0.00	Yes	JTrpsc	Passaic Formation Conglomerate and Sandstone facies	Sandstone	Conglomerate	conglomeratic sandstone
PENNEAST	36	81.94	82.37	81.84	82.27	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	82.42	82.61	82.32	82.51	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	82.61	82.66	82.51	82.56	2.49	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	82.66	83.14	82.56	83.04	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	83.14	83.21	83.04	83.11	2.49	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	83.21	83.24	83.11	83.14	0.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	83.29	83.38	83.19	83.28	0.00	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	83.38	84.46	83.28	84.36	4.17	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	84.46	84.49	84.36	84.39	0.92	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	84.49	84.83	84.39	84.73	0.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	84.87	85.37	84.77	85.27	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	85.56	85.56	85.46	85.46	3.51	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	85.71	85.74	85.61	85.64	0.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	85.79	85.83	85.69	85.73	0.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	86.14	86.32	86.04	86.22	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	86.44	87.52	86.34	86.72	0.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	87.56	88.33	86.76	87.53	0.92	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	88.33	88.40	87.53	87.60	0.92	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	88.40	88.41	87.60	87.61	1.51	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	88.44	88.48	87.64	87.68	0.00	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	88.48	88.98	87.68	88.18	0.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	88.89	89.03	88.09	88.23	2.49	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	89.03	89.07	88.23	88.27	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	89.07	89.11	88.27	88.31	2.49	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	89.11	89.12	88.31	88.32	0.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	89.15	89.76	88.35	88.96	4.17	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	89.76	90.18	88.96	89.38	4.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	90.18	90.26	89.38	89.46	2.49	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale

Facility	Pipe Diameter (in)	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Depth to Bedrock (ft)	Shallow Bedrock with Potential to Require Blasting	Map Symbol	Geologic Unit Name	Primary Lithology	Secondary Lithology	Additional Description
PENNEAST	36	90.29	90.87	89.49	90.07	2.49	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	90.87	91.06	90.07	90.26	1.90	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	91.06	91.34	90.26	90.54	2.49	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	91.34	91.56	90.54	90.76	1.90	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	91.56	91.59	90.76	90.79	1.90	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	91.59	91.63	90.79	90.83	1.90	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	91.63	91.68	90.83	90.88	1.90	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	91.68	91.77	90.88	90.97	1.90	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	91.77	91.82	90.97	91.02	4.17	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	91.82	92.17	91.02	91.37	4.17	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	92.17	92.26	91.37	91.46	4.17	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	92.33	92.52	91.53	91.72	1.90	Yes	Trpg	Passaic Formation Gray bed	Siltstone	Shale	sandstone, siltstone and shale
PENNEAST	36	92.52	92.95	91.72	92.45	1.90	Yes	JTrp	Passaic Formation	Sandstone	Siltstone	siltstone and shale
PENNEAST	36	93.00	93.13	92.50	92.63	4.17	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	93.26	93.39	92.76	92.89	4.00	Yes	Trl	Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone
PENNEAST	36	93.39	93.49	92.89	92.99	4.00	Yes	Trlr	Red bed of Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone, occasionally red
PENNEAST	36	93.49	94.05	92.99	93.55	4.17	Yes	Trl	Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone
PENNEAST	36	94.05	94.18	93.55	93.68	4.17	Yes	Trlr	Red bed of Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone, occasionally red
PENNEAST	36	94.18	94.35	93.68	93.85	4.17	Yes	Trl	Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone
PENNEAST	36	94.35	94.46	93.85	93.96	4.17	Yes	Trlr	Red bed of Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone, occasionally red
PENNEAST	36	94.46	95.11	93.96	94.61	4.17	Yes	Trl	Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone
PENNEAST	36	95.19	96.34	94.69	95.84	4.17	Yes	Trl	Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone
PENNEAST	36	96.34	97.24	95.84	96.74	4.66	Yes	Trs	Stockton Formation	Sandstone	Siltstone	sandstone, mudstone, silty mudstone, argillaceous siltstone, and shale
PENNEAST	36	97.26	97.30	96.76	96.80	4.17	Yes	Trs	Stockton Formation	Sandstone	Siltstone	sandstone, mudstone, silty mudstone, argillaceous siltstone, and shale
PENNEAST	36	97.30	97.83	96.80	97.33	4.99	Yes	Trs	Stockton Formation	Sandstone	Siltstone	sandstone, mudstone, silty mudstone, argillaceous siltstone, and shale
PENNEAST	36	97.89	99.03	97.39	98.53	1.67	Yes	Trs	Stockton Formation	Sandstone	Siltstone	sandstone, mudstone, silty mudstone, argillaceous siltstone, and shale
PENNEAST	36	99.03	99.64	98.53	99.14	3.51	Yes	Jd	Jurassic Diabase	Diabase	(N/A)	diabase, medium- to coarse-grained

Facility	Pipe Diameter (in)	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Depth to Bedrock (ft)	Shallow Bedrock with Potential to Require Blasting	Map Symbol	Geologic Unit Name	Primary Lithology	Secondary Lithology	Additional Description
PENNEAST	36	99.64	99.77	99.14	99.27	4.66	Yes	Trl	Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone
PENNEAST	36	99.81	99.88	99.31	99.38	4.17	Yes	Trl	Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone
PENNEAST	36	99.88	99.94	99.38	99.44	4.17	Yes	Jd	Jurassic Diabase	Diabase	(N/A)	diabase, medium- to coarse-grained
PENNEAST	36	99.94	100.17	99.44	99.67	4.17	Yes	Trl	Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone
PENNEAST	36	100.20	100.33	99.70	99.83	1.51	Yes	Trl	Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone
PENNEAST	36	100.33	100.72	99.83	100.22	0.92	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	100.75	101.04	100.25	100.54	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	101.04	101.10	100.54	100.60	4.17	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	101.10	101.23	100.60	100.73	3.74	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	101.23	101.27	100.73	100.77	2.49	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	101.27	102.23	100.77	101.73	0.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	102.23	102.28	101.73	101.78	4.17	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	102.28	102.40	101.78	101.90	4.17	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	102.46	102.51	101.96	102.01	4.66	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	102.51	102.59	102.01	102.09	4.66	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	102.59	103.06	102.09	102.56	4.17	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	103.06	103.22	102.56	102.72	4.66	Yes	Jd	Jurassic Diabase	Diabase	(N/A)	diabase, medium- to coarse-grained
PENNEAST	36	103.33	103.41	102.83	102.91	4.17	Yes	Jd	Jurassic Diabase	Diabase	(N/A)	diabase, medium- to coarse-grained
PENNEAST	36	103.80	104.01	103.30	103.51	4.99	Yes	Jd	Jurassic Diabase	Diabase	(N/A)	diabase, medium- to coarse-grained
PENNEAST	36	104.11	104.22	103.61	103.72	3.74	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	104.22	104.60	103.72	104.10	2.82	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	104.60	104.85	104.10	104.35	2.49	Yes	Trl	Lockatong Formation	Dolomite	Sandstone	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone

Facility	Pipe Diameter (in)	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Depth to Bedrock (ft)	Shallow Bedrock with Potential to Require Blasting	Map Symbol	Geologic Unit Name	Primary Lithology	Secondary Lithology	Additional Description
PENNEAST	36	104.85	104.93	104.35	104.43	3.51	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	104.93	104.99	104.43	104.49	3.51	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	104.99	105.10	104.49	104.60	2.10	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	105.10	105.13	104.60	104.63	2.49	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	105.13	105.15	104.63	104.65	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	105.32	105.35	104.82	104.85	1.18	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	105.35	105.89	104.85	105.39	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	106.17	106.44	105.67	105.94	4.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	106.86	107.00	106.36	106.50	4.17	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	107.00	107.50	106.50	107.00	3.74	Yes	Jd	Jurassic Diabase	Diabase	(N/A)	diabase, medium- to coarse-grained
PENNEAST	36	107.80	107.56	107.30	107.06	3.74	Yes	Jd	Jurassic Diabase	Diabase	(N/A)	diabase, medium- to coarse-grained
PENNEAST	36	108.29	108.32	107.79	107.82	4.99	Yes	Jd	Jurassic Diabase	Diabase	(N/A)	diabase, medium- to coarse-grained
PENNEAST	36	108.36	108.61	107.86	108.11	4.99	Yes	Jd	Jurassic Diabase	Diabase	(N/A)	diabase, medium- to coarse-grained
PENNEAST	36	108.61	108.86	108.11	108.36	4.17	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	108.86	109.05	108.36	108.55	2.49	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	109.05	109.56	108.55	109.06	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	109.60	110.17	109.10	109.67	1.18	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	110.17	110.27	109.67	109.77	2.49	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	110.27	110.64	109.77	110.14	2.10	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	110.69	110.94	110.19	110.44	1.18	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	110.99	111.00	110.49	110.50	1.18	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	111.00	111.04	110.50	110.54	1.18	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	111.04	111.31	110.54	110.81	0.92	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	111.34	112.08	110.84	111.58	2.49	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale

Facility	Pipe Diameter (in)	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Depth to Bedrock (ft)	Shallow Bedrock with Potential to Require Blasting	Map Symbol	Geologic Unit Name	Primary Lithology	Secondary Lithology	Additional Description
PENNEAST	36	112.08	112.20	111.58	111.70	4.00	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	112.20	112.55	111.70	112.05	4.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	112.55	112.61	112.05	112.11	4.00	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	112.61	113.31	112.11	112.81	4.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	113.31	113.55	112.81	113.05	2.33	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	113.55	114.32	113.05	113.82	4.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale
PENNEAST	36	114.32	114.40	113.82	113.90	4.00	Yes	Trpg	Passaic Formation Gray bed	Sandstone	Siltstone	sandstone, siltstone and shale
PENNEAST	36	114.40	114.53	113.90	114.03	4.00	Yes	JTrp	Passaic Formation	Siltstone	Shale	siltstone and shale

Notes:
1. Milepost values reflective of restationing to include route variations implemented since September FERC submission.
2. Milepost values calculated using station equations to relate current route to the route at the time of the Semptember FERC submission.

Data Request 62

Provide a discussion of how PennEast would document the pre-and post-blasting conditions of structures and utilities (water wells) in areas adjacent to where blasting may be required for trench excavation.

Response 62

In order to document pre-and post-blasting conditions of structures and utilities (water wells) in areas adjacent to where blasting may be required for trench excavation, PennEast will conduct surveys as required by FERC.

Pre-Blasting Survey

PennEast will retain an independent firm that will conduct pre-blast surveys, with landowner permission, to assess the conditions of structures (interior and exterior), wells, springs, and utilities within 150 feet of the proposed construction ROW. If local or state ordinances require inspections in excess of 150 feet from the work area, PennEast will comply with the local or state ordinances.

For structures, this survey will include:

- Discussions with adjacent owners and receptors to familiarize them with the activities to be conducted and planned precautions to be taken including pre- and post-blast condition surveys and vibration monitoring;
- Determination of the existence and location of structures, utilities, septic systems, and wells at the nearby property location;
- Detailed examination, photographs, and/or video records of adjacent structures and utilities; and
- Detailed mapping and measurement of large cracks, crack patterns, and oth er evidence of structural distress.

For wells and springs, this survey will include:

- Discussion with adjacent owner to identify the type of well, water bearing zone, and end-use of water from the well or spring system;
- Determination of pre-blasting flow rate and sampling for pre-blasting total dissolved solids (TDS)

For buried utilities, this survey will include:

- Discussion with utility owner/operators to identify the type of utility, number and size of utility structures, material type and construction date, depth to utility, and protective coatings, if applicable; and

- If required, exposure of section of utility within closest radial distance to proposed blasting activities to conduct pre-blasting visual condition assessment.

The results will be summarized in a condition report that will include description of construction and condition of existing structure, well, or utility, photo documentation, and any structure-specific precautions such as vibration limit or air blast limit thresholds to be implemented for nearby blasting activities to be completed.

Post-Blasting Survey

Once blasting operations are completed, PennEast will then document the post-blasting conditions by repeating a similar inspection as the pre-blasting condition survey. The results of the pre-blasting condition survey will be compared against the post-blasting condition survey. Should any damage or change occur during the blasting operations, PennEast will perform remedial measures to restore the feature to pre-blasting condition. In the unlikely event that blasting activities temporarily impair well water, PennEast will provide alternative sources of water or otherwise compensate the owner. If well or structural damage is substantiated, PennEast will either compensate the owner for damages or arrange for a new well to be drilled.

Data Request 63

Identify the locations of approved rock disposal sites.

Response 63

PennEast land agents and representatives are currently in discussions with land owners (including quarries) located within the vicinity along the alignment for acceptance and beneficial reuse of rock extracted during construction activities. It is noted that the quality, size, and type of rock extracted would determine the ultimate end market or destination for rock requiring off-site transport; however, preference would be toward re-use rather than disposal if possible to minimize waste.

Data Request 64

Provide an explanation of the potential project-related effect on future oil and gas development, and development of other mineral rights, in the areas that would be crossed by the pipeline. Describe any setbacks or other measures and requirements that may hamper a landowner's ability to drill a new gas well.

Response 64

There are currently no mapped locations of oil and gas wells within 0.25 mile of the Project (see Section 6.2.1 [mines within 0.25 miles] and 6.2.2 [oil/gas wells within 0.25 mile] in Resource Report 6). Activity within the Marcellus Shale in Luzerne and Carbon Counties is limited and according to sourcewatch.org, no drilling has occurred in New Jersey (Sourcewatch.org, 2015 and Delaware River Basin Commission Moratorium on Drilling, May 2010; https://stateimpact.npr.org/pennsylvania/tag/drbc; Accessed 12/11/15). However, if gas well development were to take place in Luzerne and Carbon counties in Pennsylvania where such geologic resources may be available, associated vertical gas well drilling activities are will be prohibited within the PennEast pipeline permanent ROW of 50 feet (approximately 25 feet on either side of pipeline centerline). If future development were to be proposed in the areas immediately adjacent to the pipeline or if access roads would be required to cross the pipeline, coordination with PennEast would be necessary in order to ensure proper construction techniques were implemented to protect the integrity of the pipeline. These standard construction techniques, as well as monitoring techniques, are described in greater detail in Resource Report 1. It is not expected that the PennEast pipeline would impact or constrain future development of gas wells in areas crossed by the pipeline other than as described in this response.

Future development of other mineral rights, such as coal, would also be limited within the Project ROW. Coal resources are limited to Luzerne and Carbon counties in Pennsylvania and future development of this resource would be subject to the same requirements as noted for future gas well development above. As discussed in Section 6.2.1 of Resource Report 6, there are two active quarries within 0.25 mile in Luzerne County, Pennsylvania. Ongoing coordination is occurring with the owners of these quarries and the pipeline has been realigned to avoid plans for future development. No other active quarries are located within 0.25 mile of the Project in Pennsylvania or New Jersey. Trap Rock Industries operates three crushed stone quarries greater than 0.25 miles from the Project; one in Lambertville approximately 0.75 mile from MP 96.6; one in Titusville, approximately 0.6 mile from MP 102.5, and one in Pennington, approximately 2.3 miles from MP 106.5. PennEast has been in contact with Trap Rock Industries regarding future quarry expansion plans and has determined that these expansion plans are located at a safe distance from the Project and will not be affected by the Project. It is not expected that the PennEast pipeline would impact future development of coal resources and/or other mineral right development in areas crossed by the pipeline.

Data Request 65

Provide the following measures that would be instituted with regards to mining:

a. communication plans or procedures that would be used with mine operators including what activities at nearby mines would trigger the need for the mine operators to notify PennEast;
b. specific limitations that may affect mining along the Project such as restrictions on excavation, heavy equipment movement, blasting, and planned subsidence for room and pillar mining operations; and
c. specific measures that would be used in regards to landsliding and slumping, blasting, excavation, heavy equipment movement, and planned mine subsidence within proximity to the pipeline and aboveground facilities.

Response 65

Measures that would be instituted are provided in Attachment 14, Requirements for Construction Near the PennEast Pipeline.

Data Request 66

PennEast states that additional soil characterization borings for the purpose of evaluating seismic hazards are ongoing. Provide the results of these additional studies, or a schedule for when these will be completed and filed with FERC.

Response 66

The results of these studies will be filed with FERC in the first quarter of 2016.

Data Request 67

PennEast states that site-specific evaluations of landslide risks are ongoing, and that it will continue to investigate potential risks and alternative mitigation. Provide, by milepost, a summary of landslide risk and any proposed mitigation for that risk and the results of these site-specific evaluations, or a schedule for when these will be completed and filed with FERC.

Response 67

PennEast completed a Seismic Hazard Evaluation of the proposed pipeline which was submitted as Attachment E of Appendix O to the Resource Reports included with PennEast's certificate application filing on September 24, 2015, and which included a preliminary assessment of segments with landslide risks by mileposts which are currently undergoing further investigation. The preliminary evaluation of seismically-induced landslides was presented using the USGS landslide susceptibility maps and induced seismic demand. The areas of high susceptibility for seismically-induced landslides included segments from approximately MP 5 to MP 15 and approximately MP 40 to MP 52.

As mentioned in Section 4.1 of the Seismic Hazard Evaluation Report and suggested by industry-standard guidelines presented in "Seismic Design of Buried and Offshore Pipelines" by O'Rourke and Liu (2012) and "Seismic Guidelines for Water Pipelines" by the American Lifelines Alliance (2005), the landslide hazard evaluation will include a qualitative assessment of available mapping and aerial photography to identify areas of existing or potential slope instability.

Along with landslide areas, as the preferred alignment is being finalized and established, PennEast currently remains in the process of inventorying steep slope areas which will also be field-investigated for risk and mitigation. The investigations will be used to guide constructability considerations as well as pre-, during, and post-construction mitigation of potential slopes of concerns.

For steep slope evaluations, PennEast will be utilizing a slope rating and inventory ranking tool which evaluates, among other criteria, slope length and angle, presence of vegetation, water features, visible instability features, and geologic units prone to failure to identify slopes of concern which require subsequent inspection. Following a suggestion by NJDEP, PennEast has incorporated the digital geodata series DGS06-3 for Landslides in New Jersey as a data source within the inventory ranking tool being utilized to evaluate landslide potential for areas traversed along the preferred pipeline alignment.

At this time, PennEast anticipates completing the steep slope and landslide risk evaluations by the end of the first quarter of 2016. As inspections are weather-dependent, it is noted that this date is qualified pending ability to visually inspect the slopes and ground cover clear of snow and ice during winter 2015. The results of these investigations and any recommendations stemming will be incorporated into a Steep

Slope and Landslide Evaluation Report which is expected to be filed with FERC in the second quarter of 2016.

Data Request 68

Provide a figure that depicts the U.S. Geological Survey (USGS) Seismic Hazard Maps for peak ground accelerations (PGA) with a 2 percent and 10 percent probability of being exceeded within 50 years, and state what the mapped PGA(s) are for the Project areas.

Response 68

Figures that depict the U.S. Geological Survey (USGS) Seismic Hazard Maps for peak ground accelerations (PGA) with a 2 percent and 10 percent probability of being exceeded within 50 years, are provided as Attachment 15. The mapped PGA(s) are as follows:

For 2% probability

Approximate MP 0 to 25: PGA = 10
Approximate MP 25 to 54: PGA = 12
Approximate MP 54 to 74: PGA = 14
Approximate MP 74 to 99: PGA = 16
Approximate MP 99 to END: PGA = 18

For 10% probability

Approximate MP 0 to 41: PGA = 3
Approximate MP 41 to 90: PGA = 4
Approximate MP 90 to END: PGA = 5

Data Request 69

For construction through karst and/or areas with current, or planned mine subsidence, provide the maximum intrinsic ability for the proposed pipeline to span subsidence features unsupported. Provide the documentation showing where this information was derived.

Response 69

PennEast provided a document that presents the maximum pipe span length for various wall thickness during the September 2015 FERC filing. The document was provided in Appendix O of Resource Report 1 and is being attached for reference as Attachment 16 – Maximum Pipe Span Lengths for PennEast Pipeline.

Data Request 70

As described in Section 6.3.4, the results of a geophysical study completed Hager-Richter included a recommendation that PennEast complete additional electrical resistivity imaging (ERI) at a number of locations, including possible karst impacted areas. Provide the results of these additional studies, or a schedule for when these will be completed and filed with FERC.

Response 70

PennEast has been discussing follow-up work with Hager-Richter; however, as access is limited, only a portion of the recommended geophysical work has been completed. Once PennEast has access to all the affected properties, it is anticipated that the recommended work will take approximately 30 working days to complete.

At this time, PennEast anticipates being able to complete an additional portion of the remaining geophysical work in the first quarter of 2016. As inspections are weather-dependent it is noted that this date is qualified pending the ground not being frozen and ground cover clear of snow and ice. As substantial data becomes available, the results of this work will be incorporated into a revised Karst Investigation Interim Report, similar to the original report provided as Attachment F of Resource Report 6 - Appendix O. A revised report is expected to be filed with FERC at the end of the first quarter of 2016.

Data Request 71

Provide a review and analysis of known caves within 0.25 mile of the pipeline. Include documentation of consultations with appropriate state and local agencies regarding caves.

Response 71

Based on the *Digital Data Set of Mapped Karst Features in South-Central and Southeastern Pennsylvania* from the Bureau of Topographic and Geologic Survey, Department of Conservation and Natural Resources (Publication Date:2007), there are no caves within 0.25 mile of the proposed Project.

Durham Cave is located approximately 3/8 mile southwest of the alignment and will be avoided. A bat cave that was identified by a landowner in the Wilkes Barre area is located approximately ½ mile from the Project alignment and will also be avoided. Neither of the caves mentioned by commenters cave is located within the .25 mile zone.

In New Jersey, no caves are found within 0.25 mile of the Project. This is according to the list of caves documented in the NJ Geological Survey Bulletin 70 (Table I, List of New Jersey Caves).

Data Request 72

PennEast states that it is developing a Karst Mitigation Plan to address any potential impacts and hazards from karst features. Provide a copy of the Karst Mitigation Plan, or provide a schedule for when the plan will be filed with FERC. The plan should address the following:

a. measures to identify areas of known or potential karst;
b. avoidance, minimization and mitigation measures for sinkholes and caves within 200 feet of the pipeline centerline;
c. best management practices to prevent contamination of groundwater and karst systems from run-off from within and off the ROW toward a karst feature;
d. pre- and post-construction monitoring of water quality and yield of wells and springs used for domestic supplies within 150 feet of the ROW;
e. identify the construction set-back from wells, springs, and karst surface expressions;
f. blasting in karst terrain, and potential impact on wells and springs;
g. equipment storage, fueling, and maintenance procedures;
h. procedures in the event of an unanticipated discovery of karst features during construction; and
i. description of measures that would be implemented to repair or mitigate the development of a sinkhole in proximity to the pipeline, and the monitoring of these features during Project operation.

Response 72

As indicated in response to Data Request 70, PennEast is in the process of completing the remaining geophysical investigations to document the potential for karst along the location of the preferred alignment. Once PennEast has access to all affected properties, the remaining geophysical investigations and geotechnical borings will be conducted. This additional information will support understanding and evaluation of karst features specific to the alignment, and which will allow creation of the Karst Mitigation Plan as previously mentioned.

At this time, PennEast anticipates being able to complete an additional portion of the remaining geophysical work in the first quarter of 2016. As inspections are weather-dependent it is noted that this date is qualified pending the ground not being frozen and ground cover clear of snow and ice. It is therefore anticipated that the Karst Mitigation Plan will be expected to be filed with FERC by the end of the first quarter of 2016. PennEast will incorporate each of the items recommended into this Plan.

Data Request 73

Provide a discussion of the potential to encounter naturally occurring uranium and radon during construction, include discussion of potential impacts to the public as a result, and describe appropriate monitoring and mitigation techniques.

Response 73

Naturally occurring uranium and radon may occur at low to moderate levels in any part of the pipeline route, but are anticipated to be at the highest levels in areas underlain by the lithologies of the Reading Prong (Northampton County, PA) and the Jurassic/Triassic (Hunterdon and Mercer Counties, NJ) sedimentary rocks derived from them, including the Stockton, Lockatong, and Passaic Formations. These formations are listed on Table 6.1.1 by milepost and include areas underlying approximately 35 miles of pipeline.

Radon is an odorless, colorless gas that will dissipate rapidly in the atmosphere during construction and is not anticipated to require any mitigation or monitoring to protect the public. The pipeline trench will be sufficiently distant from any structure that has public occupancy that it will not serve as a pathway for movement of radon into buildings. Any increase in the bedrock permeability caused by pipeline construction (i.e., blasting or ripping shallow bedrock) is likely to liberate the radon gas present in the subsurface, rather than to increase the dissolved radon levels in groundwater. Gases are much more permeable than liquids, and the flux of radon to the atmosphere would be significantly higher than the flux of water infiltrating into bedrock fissures where it could absorb radon, were it present. In other words, the Project is not expected to adversely impact radon absorption into groundwater than what would be expected from natural and current occurring absorption.

Uranium is a constituent of some minerals in the rocks of the aforementioned formations, and exposure to the public will be controlled through normal construction practices, including the techniques specified in the E&SC Plan to control sediment runoff and fugitive dusts. The Project will have no effect on the concentration or availability of uranium, and most of the cut material with naturally occurring uranium will be returned to the same location from which it was temporarily excavated and the construction area restored with a vegetated cover. No special monitoring or mitigation is necessary to protect the public from the naturally occurring uranium that may be encountered during pipeline construction.

Resource Report 7 - Soils

Data Request 74

Provide the source of the electronic data used for soil mapping.

Response 74

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for [Luzerne, Carbon, Northampton, and Bucks Counties, PA and Hunterdon and Mercer Counties, NJ]. Available online at: http://www.arcgis.com/apps/OnePane/basicviewer/index.html?appid=a23eb436f6ec4ad6982000dbaddea5ea . Accessed 7/27/2015.

Data Request 75

Provide a revised figure 7.1-1 that includes the proposed aboveground facilities, and all temporary construction workspace, including contractor yards and pipe laydown areas.

Response 75

A revised Figure 7.1-1 is provided as Attachment 17.

Data Request 76

Provide the soil type and characteristics under the land that would be permanently and temporarily impacted by aboveground facilities, by acreage, along with a table on soil type/characteristics temporarily impacted.

Response 76

The following table provides soil type and characteristics for land that would be permanently and temporarily impacted by aboveground facilities.

Facility	County	Municipality	State	Soil Map Unit Name	Soil Map Unit Key	Drainage Classification	Erosion Potential	Revegetation Potential	Permanent Impact	Temporary Impact
Algonquin and TETCO Interconnects	HUNTERDON	WEST AMWELL TWP	NEW JERSEY	Penn channery silt loam, 2 to 6 percent slopes	PeoB	Well drained	Moderate	Fair	3.36	0.00
Algonquin and TETCO Interconnects	HUNTERDON	WEST AMWELL TWP	NEW JERSEY	Reaville wet variant silt loam, 2 to 6 percent slopes	RepwB	Poorly drained	Moderate	Poor	0.00	0.00
Algonquin and TETCO Interconnects	HUNTERDON	WEST AMWELL TWP	NEW JERSEY	Rough broken land, shale	ROPF	Well drained	Severe	Poor	0.77	0.54
Auburn and Leidy Interconnects	LUZERNE	WEST WYOMING BORO	PENNSYLVANIA	Mardin channery silt loam, 3 to 8 percent slopes	MaB	Moderately well drained	Moderate	Fair	0.39	0.45
Auburn and Leidy Interconnects	LUZERNE	WEST WYOMING BORO	PENNSYLVANIA	Oquaga and Lordstown channery silt loams, 3 to 8 percent slopes	OlB	Well drained	Moderate	Fair	0.33	0.01
Auburn and Leidy Interconnects	LUZERNE	WEST WYOMING BORO	PENNSYLVANIA	Oquaga and Lordstown channery silt loams, 8 to 15 percent slopes	OlC	Well drained	Severe	Poor	0.89	0.49
Auburn and Leidy Interconnects	LUZERNE	WEST WYOMING BORO	PENNSYLVANIA	Volusia channery silt loam, 0 to 8 percent slopes	VoB	Somewhat poorly drained	Moderate	Poor	2.52	0.16
Auburn and Leidy Interconnects	LUZERNE	WEST WYOMING BORO	PENNSYLVANIA	Mardin very stony silt loam, 3 to 8 percent slopes	McB	Moderately well drained	Moderate	Poor	0.27	0.54
Auburn and Leidy Interconnects	LUZERNE	WEST WYOMING BORO	PENNSYLVANIA	Wellsboro very stony silt loam, 3 to 8 percent slopes	WmB	Moderately well drained	Moderate	Poor	0.16	0.03
Auburn and Leidy Interconnects	LUZERNE	WEST WYOMING BORO	PENNSYLVANIA	Oquaga and Lordstown extremely stony silt loams, 8 to 25 percent slopes	OpD	Well drained	Severe	Poor	0.08	0.29
Auburn and Leidy Interconnects	LUZERNE	WEST WYOMING BORO	PENNSYLVANIA	Oquaga and Lordstown extremely stony silt loams steep	OXF	Well drained	Severe	Poor	0.60	0.64
Auburn and Leidy Interconnects	LUZERNE	WEST WYOMING BORO	PENNSYLVANIA	Oquaga and Lordstown extremely stony silt loams, 3 to 8 percent slopes	OpB	Well drained	Moderate	Poor	0.03	0.04
Blue Mountain Interconnect/MLV-5	CARBON	LOWER TOWAMENSING TWP	PENNSYLVANIA	Dekalb very stony loam, 8 to 25 percent slopes	DeD	Well drained	Moderate	Poor	0.98	0.00
Etown and Gilbert Interconnects	HUNTERDON	HOLLAND TWP	NEW JERSEY	Penn channery silt loam, 2 to 6 percent slopes	PeoB	Well drained	Moderate	Fair	1.13	0.00
Etown and Gilbert Interconnects	HUNTERDON	HOLLAND TWP	NEW JERSEY	Riverhead gravelly sandy loam, 8 to 15 percent slopes	RksC	Well drained	Severe	Poor	0.18	0.00

Facility	County	Municipality	State	Soil Map Unit Name	Soil Map Unit Key	Drainage Classification	Erosion Potential	Revegetation Potential	Permanent Impact	Temporary Impact
Etown and Gilbert Interconnects	HUNTERDON	HOLLAND TWP	NEW JERSEY	Klinesville channery loam, 12 to 18 percent slopes	KkoD	Somewhat excessively drained	Severe	Poor	0.08	0.00
Gilbert Lateral Tap Site/MLV-9	HUNTERDON	HOLLAND TWP	NEW JERSEY	Penn channery silt loam, 2 to 6 percent slopes	PeoB	Well drained	Moderate	Fair	0.06	0.00
Hellertown Launcher & Mainline Launcher/Receiver/MLV-8	NORTHAMPTON	LOWER SAUCON TWP	PENNSYLVANIA	Udorthents, limestone, 0 to 8 percent slopes	UbB	Moderately well drained	Moderate	Poor	2.00	0.89
Hellertown Launcher & Mainline Launcher/Receiver/MLV-8	NORTHAMPTON	LOWER SAUCON TWP	PENNSYLVANIA	Urban land-Udorthents, limestone complex, 8 to 25 percent slopes	UudD	Unknown	Severe	Poor	0.00	0.06
KIDDER COMPRESSOR	CARBON	KIDDER TWP	PENNSYLVANIA	Albrights very stony loam, 0 to 8 percent slopes	AcB	Moderately well drained	Moderate	Poor	4.74	0.00
KIDDER COMPRESSOR	CARBON	KIDDER TWP	PENNSYLVANIA	Morris very stony silt loam, 0 to 8 percent slopes	MrB	Somewhat poorly drained	Moderate	Poor	21.49	0.00
Lambertville Launcher Site/MLV-11	HUNTERDON	WEST AMWELL TWP	NEW JERSEY	Lehigh silt loam, 2 to 6 percent slopes	LemB	Somewhat poorly drained	Moderate	Fair	0.24	0.03
Lambertville Launcher Site/MLV-11	HUNTERDON	WEST AMWELL TWP	NEW JERSEY	Penn channery silt loam, 6 to 12 percent slopes, eroded	PeoC2	Well drained	Severe	Poor	0.52	0.03
Lambertville Launcher Site/MLV-11	HUNTERDON	WEST AMWELL TWP	NEW JERSEY	Penn channery silt loam, 12 to 18 percent slopes	PeoD	Well drained	Severe	Poor	0.09	0.00
MLV-1	LUZERNE	PLAINS TWP	PENNSYLVANIA	Volusia channery silt loam, 0 to 8 percent slopes	VoB	Somewhat poorly drained	Moderate	Poor	0.06	0.00
MLV-10	HUNTERDON	KINGWOOD TWP	NEW JERSEY	Penn channery silt loam, 6 to 12 percent slopes, eroded	PeoC2	Well drained	Severe	Poor	0.04	0.00
MLV-10	HUNTERDON	KINGWOOD TWP	NEW JERSEY	Reaville silt loam, 2 to 6 percent slopes	RehB	Somewhat poorly drained	Moderate	Poor	0.02	0.00
MLV-2	LUZERNE	BEAR CREEK TWP	PENNSYLVANIA	Lackawanna very stony silt loam, 8 to 25 percent slopes	LcD	Well drained	Severe	Poor	0.06	0.00
MLV-3	CARBON	KIDDER TWP	PENNSYLVANIA	Hazleton loam, 0 to 3 percent slopes	HtA	Well drained	Slight	Good	0.00	0.00
MLV-3	CARBON	KIDDER TWP	PENNSYLVANIA	Hazleton loam, 3 to 8 percent slopes, moderately eroded	HtB2	Well drained	Slight	Fair	0.06	0.00
MLV-4	CARBON	TOWAMENSING TWP	PENNSYLVANIA	Leck kill channery silt loam, 3 to 8 percent slopes, moderately eroded	LeB2	Well drained	Moderate	Poor	0.03	0.00
MLV-4	CARBON	TOWAMENSING TWP	PENNSYLVANIA	Leck kill channery silt loam, 8 to 15 percent slopes, severely eroded	LeC3	Well drained	Moderate	Poor	0.03	0.00
MLV-6	NORTHAMPTON	MOORE TWP	PENNSYLVANIA	Brinkerton-Comly silt loams, 0 to 3 percent slopes	BtA	Poorly drained	Slight	Poor	0.06	0.00
MLV-7	NORTHAMPTON	UPPER NAZARETH TWP	PENNSYLVANIA	Urban land-Duffield complex, 0 to 8 percent slopes	UoB	Unknown	Moderate	Poor	0.06	0.00
Springville Interconnect	LUZERNE	DALLAS TWP	PENNSYLVANIA	Wellsboro channery silt	WlB	Moderately well	Moderate	Fair	0.38	0.00

Facility	County	Municipality	State	Soil Map Unit Name	Soil Map Unit Key	Drainage Classification	Erosion Potential	Revegetation Potential	Permanent Impact	Temporary Impact
				loam, 3 to 8 percent slopes		drained				
Springville Interconnect	LUZERNE	DALLAS TWP	PENNSYLVANIA	Lackawanna channery silt loam, 8 to 15 percent slopes	LaC	Well drained	Severe	Poor	1.55	0.00
Springville Interconnect	LUZERNE	DALLAS TWP	PENNSYLVANIA	Wellsboro channery silt loam, 8 to 15 percent slopes	WlC	Moderately well drained	Severe	Poor	0.87	0.00
TCO & UGI-LEH Interconnects	NORTHAMPTON	LOWER SAUCON TWP	PENNSYLVANIA	Gladstone gravelly loam, 8 to 15 percent slopes	GlC	Well drained	Severe	Poor	1.80	0.00
TCO & UGI-LEH Interconnects	NORTHAMPTON	LOWER SAUCON TWP	PENNSYLVANIA	Washington silt loam, 8 to 15 percent slopes	WaC	Well drained	Severe	Poor	0.94	0.00
TCO & UGI-LEH Interconnects	NORTHAMPTON	LOWER SAUCON TWP	PENNSYLVANIA	Gladstone-Parker gravelly loams, 15 to 25 percent slopes	GnD	Well drained	Severe	Poor	0.71	0.00
TCO & UGI-LEH Interconnects	NORTHAMPTON	LOWER SAUCON TWP	PENNSYLVANIA	Gladstone gravelly loam, 25 to 55 percent slopes, very bouldery	GmF	Well drained	Severe	Poor	0.08	0.00
TCO & UGI-LEH Interconnects	NORTHAMPTON	LOWER SAUCON TWP	PENNSYLVANIA	Urban land-Udorthents, schist and gneiss complex, 8 to 25 percent slopes	UupD	Unknown	Severe	Poor	0.07	0.00
TCO & UGI-LEH Interconnects	NORTHAMPTON	LOWER SAUCON TWP	PENNSYLVANIA	Urban land-Gladstone complex, 0 to 8 percent slopes	UpB	Unknown	Moderate	Poor	1.17	0.00
TCO & UGI-LEH Interconnects	NORTHAMPTON	LOWER SAUCON TWP	PENNSYLVANIA	Urban land-Udorthents, limestone complex, 0 to 8 percent slopes	UudB	Unknown	Moderate	Poor	0.00	0.00
Transco Interconnect	MERCER	HOPEWELL TWP	NEW JERSEY	Bucks silt loam, 0 to 2 percent slopes	BucA	Well drained	Slight	Good	0.26	0.00
Transco Interconnect	MERCER	HOPEWELL TWP	NEW JERSEY	Bucks silt loam, 2 to 6 percent slopes	BucB	Well drained	Moderate	Fair	3.63	0.52
Transco Receiver Site	MERCER	HOPEWELL TWP	NEW JERSEY	Bucks silt loam, 2 to 6 percent slopes	BucB	Well drained	Moderate	Fair	0.04	0.00
Transco Receiver Site	MERCER	HOPEWELL TWP	NEW JERSEY	Readington and Abbottstown silt loams, 2 to 6 percent slopes	REFB	Moderately well drained	Moderate	Fair	0.27	0.09
Wyoming Interconnect	LUZERNE	DALLAS TWP	PENNSYLVANIA	Oquaga and Lordstown channery silt loams, 3 to 8 percent slopes	OlB	Well drained	Moderate	Fair	0.00	0.00
Wyoming Interconnect	LUZERNE	DALLAS TWP	PENNSYLVANIA	Wellsboro channery silt loam, 3 to 8 percent slopes	WlB	Moderately well drained	Moderate	Fair	0.92	0.00
Wyoming Interconnect	LUZERNE	DALLAS TWP	PENNSYLVANIA	Morris channery silt loam, 0 to 8 percent slopes	MoB	Somewhat poorly drained	Moderate	Poor	0.17	0.00
Wyoming Interconnect	LUZERNE	DALLAS TWP	PENNSYLVANIA	Chippewa silt loam, 3 to 8 percent slopes	ClB	Poorly drained	Moderate	Poor	0.58	0.00

Data Request 77

Explain how hydric soils would be affected by construction and operation of the project. Include a calculation of the percentage of the pipeline that would cross hydric soils.

Response 77

Hydric soils generally coincide with the presence of high water tables and are indicative of wetland hydrology. These high water tables have an impact on trenching design and construction. Dewatering of the trench, bore pits and/or additional precautions may be necessary where the groundwater or shallow perched water is encountered during pipeline installation in hydric soils. Impacts associated with hydric soils often coincide with impacts associated with construction in wetlands. These impacts and associated mitigation techniques are addressed in detail in Section 2.1.1 of Resource Report 2. Hydric soils will not affect operation of the pipeline, as the soils will be restored after construction in accordance with the E&SC Plan and Section 2.5.3 of Resource Report 2. PennEast will provide the percentage of the pipeline that would cross hydric soils in the first quarter of 2016.

Data Request 78

Provide a description of the type of soil amendments and conditions under which soil amendments would or would not be used. Also include all methods PennEast would use to aid in revegetation (i.e. seed bed preparation, seeding methods, seeding rates, and anchoring methods).

Response 78

Where possible, PennEast will intend to use native site soils and top soil to aid in restoration of the ROW area. Typically, soil amendments are utilized to improve the physical nature of the soil by reducing compaction, aerating soil to allow improved flow of water and nutrients to plant roots, and to help retain moisture such that re-vegetation of the vegetative community can occur. PennEast intends to consider the requirements of each County's local Soil Conservation District with regard to the use of soil amendments; however, should amendments be required, they would likely be organic in nature such as topsoil and composted mixtures, or inorganic such as lime, sand, or nutrient as approved by each District. The amendments also include wood or straw mulches, soil stabilizing emulsions, or tackifying agents, which are typical of broadcast methods of seeding. In locations where steep slopes, rocky soils, or terrain-limited areas exist, hydroseeding or other broadcast method of seeding may be required to provide effective seed coverage. As broadcast methods of seeding are not as efficient as direct seeding since seeds are spread on top of the surface, typically the rate of seeding for each particular mix recommended by each District is increased to accommodate this method of seeding.

PennEast recognizes that the revegetation of the ROW) and disturbed areas may be considered both short-term and long term. The measures implemented by PennEast will generally include: segregation and stockpiling of topsoil and subsoil for re-use during construction; installation of appropriate temporary erosion control devices; re-contouring and re-grading to promote proper drainage; seedbed preparation; application of region-specific seed mixes; establishment and maintenance of plant community; nuisance and non-native weed abatement; and, long-term monitoring. As indicated, PennEast intends to consider the guidance provided by local Soil Conservation Districts as they relate to preparation of seed beds, methods of seeding and seed placement, mixture and rate of seeding, and anchoring methods.

Prior to the start of construction activities, it may be necessary to pre-treat the ROW for invasive weeds to prevent the re-growth and circulation of nuisance growth during stripping and stockpiling activities which tend to mix soils. Short-term, during construction and backfilling of the pipeline trench, the intent of ROW restoration will be to stabilize soils by re-contouring and re-grading terrain, strategic construction of water bars and drainage features, placement of erosion control devices, spreading stockpiled topsoil, establishing temporary vegetative cover, and abating noxious and invasive weed growth. Additionally, during short-term, re-distribution of cobbles and boulders removed from the trench may occur and these features may be replaced across the ROW succeeding seeding activities.

Following closure of the pipeline trench, long-term operation and maintenance of the ROW will begin. The intention of this phase is to establish a permanent vegetative cover with similar species community and density. PennEast intends to establish a perennial plant cover as it is essential to resist the growth of invasive species and weeds. It is anticipated that this long-term revegetation and stabilization would be accomplished by maintaining existing erosion control devices such as water bars and drainage features, as well as introducing additional devices including hay bales, stone aprons, or additional re-contouring or surfaces to maintain runoff flow velocities. In addition, minimizing off-road equipment traffic on access roads and ROWs and the implementation of a monitoring program would be instituted to further support restorative activities. PennEast intends to establish vegetation compatible with the surrounding landscape, and the use of native plant species will be implemented unless the mixture of suitable seed for these species is unavailable, the natural biological diversity would be diminished by placement of native species, or it is recommended by local Districts that a specific seed mixture be utilized within the locale of construction.

Data Request 79

Describe the method(s) that PennEast would use to remove excess rock and stone greater than four inches from agricultural lands.

Response 79

Excess rock and stone removal greater than 4 inches will be removed using York rakes. For large rocks that are unable to be removed by a York rake, hand removal will be performed by construction personnel. For rocks too large to be removed by hand, a pin grabber bucket or similar piece of heavy equipment shall be utilized. To avoid/minimize potential for soil compaction following rock removal, agricultural lands mats, pads, balloon tires or other types of equipment will be utilized. In those areas where compaction cannot be avoided paraplowing or "ripping" will be conducted prior to final completion of restoration activities.

Resource Report 8 – Land Use, Recreation and Aesthetics

Data Request 80

Clarify the discrepancy between table 8.2-2 and table 1.3-1 with regard to the acreage that would be required for construction and operation of the mainline.

Response 80

Tables 1.3-1 and 8.2-2 have been revised to clarify discrepancies between acreages required for construction and operation of the mainline. A revised table 1.3-1 is provided in Response 1, and a revised table 8.2-2 is provided below.

Table 8.2-2
Land Use Acreage Affected by Construction and Operation of Project Pipeline Facilities

State/Facility/County	Municipality	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Agricultural[3]		Forest/ Woodland[4]		Open Land[5]		Residential[6]		Industrial/ Commercial[7]		Open Water[8]		Total	
						Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW[9]	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW
Pennsylvania																			
PennEast Mainline Route Pipeline																			
Luzerne	DALLAS TWP	0.0	1.3	0.0	1.3	0.0	0.0	10.2	6.7	0.4	0.2	0.0	0.0	0.1	0.1	0.0	0.0	10.7	7.0
Luzerne	KINGSTON TWP	1.3	4.2	1.3	4.2	1.6	0.9	26.5	15.1	0.9	0.4	1.7	1.1	0.4	0.3	0.0	0.0	31.2	17.7
Luzerne	WEST WYOMING BORO	4.2	6.0	4.2	6.0	0.8	0.7	9.6	8.1	0.5	0.4	1.7	0.6	1.5	0.9	0.0	0.0	14.2	10.7
Luzerne	WYOMING BORO	6.0	7.1	6.0	7.1	9.4	3.5	5.4	1.5	0.9	0.5	0.6	0.1	0.6	0.5	5.7	0.6	22.6	6.6
Luzerne	JENKINS TWP	7.1	11.0	7.1	11.0	0.0	0.0	5.9	3.5	4.3	1.5	0.2	0.1	0.7	0.6	6.4	0.6	17.5	6.2
Luzerne	PLAINS TWP	8.1	12.6	8.1	12.8	0.8	0.8	26.9	15.3	1.0	1.6	1.8	1.4	8.0	6.3	0.0	0.0	38.5	25.4
Luzerne	LAFLIN BORO	9.1	10.2	9.1	10.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.4	0.2
Luzerne	BEAR CREEK TWP	12.6	23.0	12.8	23.2	0.0	0.0	72.1	59.8	4.2	1.7	2.1	0.9	0.1	0.3	0.2	0.3	78.7	63.1
					Subtotal	**12.6**	**5.8**	**156.7**	**110.0**	**12.2**	**6.3**	**8.1**	**4.1**	**11.7**	**9.2**	**12.4**	**1.5**	**213.7**	**136.9**
Carbon	KIDDER TWP	23.0	23.2	22.8	23.4	1.2	0.9	61.1	49.6	10.1	8.5	1.1	0.8	0.5	0.6	0.3	0.3	74.3	60.8
Carbon	PENN FOREST TWP	33.1	40.6	33.3	40.8	0.0	0.0	50.9	34.6	8.5	10.6	0.3	0.4	0.1	0.3	0.0	0.0	59.8	45.9
Carbon	TOWAMENSING TWP	40.6	47.1	40.8	47.3	18.0	8.6	32.1	25.3	4.2	3.2	1.2	0.4	0.9	0.9	0.0	0.6	56.4	38.9
Carbon	LOWER TOWAMENSING TWP	47.1	51.1	47.3	51.3	5.4	2.8	18.1	14.4	0.4	0.3	0.0	0.0	10.3	6.9	0.0	0.1	34.2	24.5
					Subtotal	**24.7**	**12.3**	**162.1**	**123.8**	**23.2**	**22.7**	**2.6**	**1.7**	**11.9**	**8.6**	**0.3**	**1.0**	**224.8**	**170.1**
Northampton	LEHIGH TWP	51.1	53.5	51.3	53.7	0.0	0.0	28.0	14.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0	14.3
Northampton	MOORE TWP	53.5	60.3	53.7	60.5	46.4	25.7	22.9	13.6	0.2	0.1	4.2	1.4	1.6	0.7	0.0	0.0	75.3	41.5
Northampton	EAST ALLEN TWP	60.3	61.2	60.5	61.4	6.6	3.9	1.5	1.0	0.0	0.0	0.4	0.1	0.0	0.1	0.0	0.0	8.5	5.0
Northampton	UPPER NAZARETH TWP	61.2	63.9	61.4	64.1	21.5	12.0	4.4	2.1	1.1	0.6	2.1	1.0	2.1	1.0	0.0	0.0	31.1	16.7
Northampton	LOWER NAZARETH TWP	63.9	67.1	64.1	67.3	25.2	15.6	0.9	0.3	1.2	1.1	3.6	1.7	0.1	0.2	0.0	0.0	31.0	19.1
Northampton	BETHLEHEM TWP	67.1	70.9	67.3	71.1	17.4	8.5	2.7	2.6	8.6	4.9	1.0	0.8	7.9	6.5	0.0	0.0	37.5	23.3
Northampton	EASTON CITY	70.9	71.1	71.1	71.3	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.9
Northampton	LOWER SAUCON TWP	71.1	72.4	71.3	72.6	3.1	2.1	2.7	3.0	0.7	1.2	0.4	0.3	0.1	0.7	0.0	0.2	6.9	7.6
Northampton	WILLIAMS TWP	72.4	75.9	72.6	76.1	11.2	6.4	14.3	11.6	3.1	2.1	1.5	0.9	0.1	0.2	0.0	0.0	30.3	21.2
					Subtotal	**131.4**	**74.2**	**77.3**	**49.1**	**14.9**	**10.0**	**13.1**	**6.3**	**11.9**	**9.5**	**0.0**	**0.5**	**248.6**	**149.6**
Bucks	DURHAM TWP	75.9	77.7	76.1	77.9	13.0	6.8	2.4	1.6	0.1	0.2	0.2	0.2	0.1	0.2	0.0	0.3	15.8	9.2
Bucks	RIEGELSVILLE BORO	76.7	76.9	76.9	77.1	2.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	1.5
					Subtotal	**15.5**	**8.2**	**2.4**	**1.6**	**0.1**	**0.2**	**0.2**	**0.2**	**0.1**	**0.2**	**0.0**	**0.3**	**18.2**	**10.6**
Hellertown 24-inch Lateral																			
Northampton	LOWER SAUCON TWP	0.0	2.1	N/A	N/A	5.0	3.6	9.5	6.4	2.2	1.9	0.7	0.4	0.1	0.2	0.0	0.0	17.6	12.5
					Subtotal	**5.0**	**3.6**	**9.5**	**6.4**	**2.2**	**1.9**	**0.7**	**0.4**	**0.1**	**0.2**	**0.0**	**0.0**	**17.6**	**12.5**
New Jersey																			
PennEast Mainline Route Pipeline																			
Hunterdon	HOLLAND TWP	77.7	85.6	77.9	85.5	36.5	20.8	28.5	24.1	4.8	2.9	1.4	0.5	0.7	0.8	0.0	0.3	71.9	49.3
Hunterdon	ALEXANDRIA TWP	85.6	87.7	85.5	86.9	16.3	9.4	8.7	7.2	2.2	1.3	0.1	0.1	0.1	0.1	0.0	0.1	27.3	18.1

State/Facility/County	Municipality	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Agricultural[3]		Forest/ Woodland[4]		Open Land[5]		Residential[6]		Industrial/ Commercial[7]		Open Water[8]		Total	
						Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW[9]	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW
Hunterdon	KINGWOOD TWP	87.7	94.4	86.9	93.9	24.1	14.0	19.9	20.8	1.6	0.9	1.7	1.1	0.1	2.2	0.0	0.2	47.3	39.2
Hunterdon	DELAWARE TWP	94.4	100.3	93.9	99.8	26.5	17.3	23.3	15.7	1.5	0.5	2.3	1.3	0.2	0.4	0.0	0.1	53.8	35.4
Hunterdon	WEST AMWELL TWP	100.3	104.4	99.8	103.9	17.3	9.4	19.9	12.1	4.3	3.0	0.4	0.0	0.3	0.5	0.0	0.0	42.2	25.0
					Subtotal	**120.6**	**70.9**	**100.2**	**79.9**	**14.4**	**8.6**	**5.9**	**2.9**	**1.3**	**4.0**	**0.1**	**0.6**	**242.5**	**167.0**
Mercer	HOPEWELL TWP	104.4	114.0	103.9	113.5	35.5	22.5	41.4	28.7	5.3	3.2	3.1	1.5	0.8	1.6	0.1	0.4	86.2	58.0
					Subtotal	**35.5**	**22.5**	**41.4**	**28.7**	**5.3**	**3.2**	**3.1**	**1.5**	**0.8**	**1.6**	**0.1**	**0.4**	**86.2**	**58.0**
Lambertville 36-inch Lateral																			
Hunterdon	West Amwell Twp	0.0	1.4	N/A	N/A	5.0	3.1	7.5	5.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	12.8	8.3
					Subtotal	**5.0**	**3.1**	**7.5**	**5.0**	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**12.8**	**8.3**
					Project Total	**350.2**	**200.6**	**557.1**	**404.6**	**72.5**	**53.0**	**33.8**	**17.1**	**37.8**	**33.3**	**13.0**	**4.4**	**1064.4**	**713.0**

Notes:

1. Milepost values reflective of restationing to include route variations implemented since September FERC submission.
2. Milepost values calculated using station equations to relate current route to the route at the time of the September FERC submission.
3. Agricultural Land - Active cropland, pasture, orchards, vineyards, and/or hay fields;
4. Forest And Woodland - Tracts of upland or wetland forest or woodland that would be removed for the construction row or extra work or staging areas;
5. Open Land - Non-forested lands, herbaceous and scrub-shrub wetlands, and maintained utility row;
6. Residential Land - Residential yards, residential subdivisions, and planned new residential developments;
7. Industrial Or Commercial Land - Electric power or gas utility stations, manufacturing or industrial plants, landfills, mines, quarries, commercial or retail facilities, and roads;
8. Open Water – Water crossings greater than 100 feet.
9. Permanent impacts to forest/woodland were calculated for the entire 50-foot permanent ROW, however, only the management of the 30-foot wide cleared permanent ROW in upland forests and 10-foot wide cleared operational ROW in wetlands will require the permanent removal of trees in these forested areas.
10. Temp. ROW – Temporary ROW for construction of the project; includes temporary ROW and additional temporary workspace (ATWS). All units in acres and rounded to the nearest 0.1. Values of 0.0 represent impacts less than 0.05 acre and are included in the total project impacts.
11. Perm. ROW – New permanent ROW; all units in acres and rounded to the nearest 0.1. Values of 0.0 represent impacts less than 0.05 acre and are included in the total project impacts.
12. The totals shown on this table may not equal the sum of addends due to rounding.

Data Request 81

Provide an update on ongoing negotiations with existing utility companies as to the amount of overlap that could be safely allowed, and if any additional workspace/ROW would be required for construction and operation of the project adjacent to existing utilities. If additional workspace would be needed, explain how much and the reason it would be needed.

Response 81

Currently, PennEast has been in contact with companies that own either above or underground pipelines or electrical wires to which the project either crosses or is collocated. The list of companies are as follows: Buckeye Partners, Columbia Gas Transmission, Elizabethtown Gas Co, Metropolitan Edison Company, Jersey Central Power & Light, PECO Energy, Pennsylvania Power and Light, Texas Eastern Transmission, Transcontinental Gas Pipe Line, UGI and Williams Field Services.

PennEast has either received or provided initial encroachment terms from or to the appropriate parties. PennEast is currently reviewing received documentation as well as coordinating with the necessary companies during their review of our materials. Per this process, PennEast has identified items for discussion with each company, before agreements can be finalized, but will ensure the minimum federal safety standards within Title 49 CFR 192 – Transportation of Natural Gas and Other Gas by Pipeline are followed. It is PennEast's intention to schedule meetings in the near term to negotiate the terms and conditions with the various pipeline and utility companies and finalize our route and workspace impacts in those areas.

Discussions are ongoing with utilities and a report will be filed by the end of the first quarter of 2016.

Data Request 82

Provide temporary and permanent impact acreage calculations by land use for access roads and all aboveground facilities, including interconnects, mainline valves, launcher/receiver sites, and the compressor station. This table should be based on proposed right-of-width and formatted similarly to table 8.2-2.

Response 82

Tables providing the temporary and permanent impact acreage calculations by land use for access roads and all aboveground facilities, including interconnects, mainline valves, launcher/receiver sites, and the compressor station are provided below.

Land Use Acreage Affected by Construction and Operation of Access Roads

State/Facility/County	Municipality	Agricultural		Forest/ Woodland[1]		Open Land		Residential		Industrial/ Commercial		Open Water		Total	
		Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW
Pennsylvania															
AR-001															
Luzerne	DALLAS TWP	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.6	0.0	0.0	0.0	1.0
Subtotal		**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.6**	**0.0**	**0.0**	**0.0**	**1.0**
AR-002A															
Luzerne	DALLAS TWP	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.7	0.0	0.0	0.0	1.2
Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**	**0.0**	**0.0**	**1.2**
AR-002B															
Luzerne	DALLAS TWP	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**
AR-003															
Luzerne	KINGSTON TWP	0.0	0.1	0.0	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Luzerne	WEST WYOMING BORO	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Subtotal		**0.0**	**0.1**	**0.0**	**0.6**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**
AR-004															
Luzerne	WEST WYOMING BORO	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.6	0.0
Subtotal		**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.6**	**0.0**
AR-005															
Luzerne	WYOMING BORO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0
Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**
AR-006															
Luzerne	WYOMING BORO	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
Subtotal		**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**
AR-006A															
Luzerne	JENKINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luzerne	WYOMING BORO	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
Subtotal		**0.0**	**0.0**	**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**
AR-007															
Luzerne	JENKINS TWP	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.6	0.0
Subtotal		**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.6**	**0.0**
AR-008															
Luzerne	PLAINS TWP	0.0	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Subtotal		**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**
AR-009															
Luzerne	PLAINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
AR-010															

Luzerne		PLAINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-011																
Luzerne		PLAINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-013																
Luzerne		PLAINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-014																
Luzerne		JENKINS TWP	0.0	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.0
	Subtotal		**0.0**	**0.0**	**0.2**	**0.0**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**
AR-014A																
Luzerne		JENKINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
AR-015																
Luzerne		PLAINS TWP	0.0	0.0	1.0	0.0	0.1	0.0	0.0	0.0	1.2	0.0	0.0	0.0	2.2	0.0
	Subtotal		**0.0**	**0.0**	**1.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**1.2**	**0.0**	**0.0**	**0.0**	**2.2**	**0.0**
AR-016																
Luzerne		JENKINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
Luzerne		LAFLIN BORO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.5	0.0
Luzerne		PLAINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.5**	**0.0**	**0.0**	**0.0**	**1.6**	**0.0**
AR-016B																
Luzerne		LAFLIN BORO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
AR-017A																
Luzerne		LAFLIN BORO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.9	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.9**	**0.0**	**0.0**	**0.0**	**0.9**	**0.0**
AR-017B																
Luzerne		JENKINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luzerne		LAFLIN BORO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**
AR-017C																
Luzerne		JENKINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
AR-021																
Luzerne		LAFLIN BORO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**
AR-022																
Luzerne		PLAINS TWP	0.0	0.0	0.1	0.0	0.4	0.0	0.0	0.0	0.9	0.0	0.0	0.0	1.4	0.0
	Subtotal		**0.0**	**0.0**	**0.1**	**0.0**	**0.4**	**0.0**	**0.0**	**0.0**	**0.9**	**0.0**	**0.0**	**0.0**	**1.4**	**0.0**
AR-022A																
Luzerne		PLAINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
AR-023																
Luzerne		PLAINS TWP	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.7	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**
AR-025																
Luzerne		BEAR CREEK TWP	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.8	0.0	0.0	0.0	1.4	0.0
	Subtotal		**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.8**	**0.0**	**0.0**	**0.0**	**1.4**	**0.0**
AR-028																
Luzerne		BEAR CREEK TWP	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.8	0.0
	Subtotal		**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**
AR-029																
Luzerne		BEAR CREEK TWP	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	1.8	0.0
	Subtotal		**0.0**	**0.0**	**1.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**1.8**	**0.0**
AR-030																
Luzerne		BEAR CREEK TWP	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	7.3	0.0	0.0	0.0	7.6	0.0
	Subtotal		**0.0**	**0.0**	**0.2**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**7.3**	**0.0**	**0.0**	**0.0**	**7.6**	**0.0**
AR-031																
Luzerne		BEAR CREEK TWP	0.0	0.0	9.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0
	Subtotal		**0.0**	**0.0**	**9.8**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**9.9**	**0.0**
AR-032																
Luzerne		BEAR CREEK TWP	0.0	0.0	0.7	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0
Luzerne		BUCK TWP	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0
	Subtotal		**0.0**	**0.0**	**0.7**	**0.0**	**1.1**	**0.0**	**0.0**	**0.0**	**0.6**	**0.0**	**0.0**	**0.0**	**2.3**	**0.0**
AR-033																
Luzerne		BEAR CREEK TWP	0.0	0.0	0.8	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0
Luzerne		BUCK TWP	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0
	Subtotal		**0.0**	**0.0**	**0.8**	**0.0**	**7.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**8.4**	**0.0**
AR-034																
Carbon		KIDDER TWP	0.0	0.0	0.6	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.0
	Subtotal		**0.0**	**0.0**	**0.6**	**0.0**	**5.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**6.2**	**0.0**
AR-035																
Carbon		KIDDER TWP	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	4.3	0.0
	Subtotal		**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**4.1**	**0.0**	**0.0**	**0.0**	**4.3**	**0.0**
AR-036																
Carbon		KIDDER TWP	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	2.2	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**2.2**	**0.0**
AR-037																
Carbon		KIDDER TWP	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**
AR-037A																
Carbon		KIDDER TWP	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**
AR-038																
Carbon		KIDDER TWP	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.2	0.0

	Subtotal		**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.0**	**0.0**	**0.0**	**0.0**	**2.2**	**0.0**
AR-039																
Carbon		PENN FOREST TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
AR-040																
Carbon		PENN FOREST TWP	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.8	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**
AR-041																
Carbon		PENN FOREST TWP	0.0	0.0	0.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
	Subtotal		**0.0**	**0.0**	**0.6**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**
AR-042																
Carbon		PENN FOREST TWP	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.9	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**1.6**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**1.9**	**0.0**
AR-043																
Carbon		TOWAMENSING TWP	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-044																
Carbon		TOWAMENSING TWP	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-045																
Carbon		TOWAMENSING TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
AR-046																
Carbon		TOWAMENSING TWP	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-047																
Carbon		TOWAMENSING TWP	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.8	0.0
	Subtotal		**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.6**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**
AR-048																
Carbon		LOWER TOWAMENSING TWP	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-049																
Carbon		LOWER TOWAMENSING TWP	0.0	0.0	0.4	0.0	0.1	0.0	0.0	0.0	1.3	0.0	0.0	0.0	1.8	0.0
	Subtotal		**0.0**	**0.0**	**0.4**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.0**	**1.8**	**0.0**
AR-050																
Carbon		LOWER TOWAMENSING TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
AR-051																
Carbon		LOWER TOWAMENSING TWP	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
	Subtotal		**0.0**	**0.0**	**0.0**	**0.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**
AR-052																
Northampton		LEHIGH TWP	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.8	0.0

	Subtotal		**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**
AR-053																
Northampton		MOORE TWP	0.5	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.0
	Subtotal		**0.5**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**
AR-054																
Northampton		MOORE TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
AR-055																
Northampton		EAST ALLEN TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4	0.0
Northampton		MOORE TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**
AR-056																
Northampton		BATH BORO	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.9	0.0
Northampton		EAST ALLEN TWP	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
	Subtotal		**0.6**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**1.2**	**0.0**
AR-057																
Northampton		UPPER NAZARETH TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**
AR-058																
Northampton		UPPER NAZARETH TWP	0.7	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	1.0	0.0
	Subtotal		**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**
AR-059																
Northampton		LOWER NAZARETH TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Northampton		UPPER NAZARETH TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**
AR-060																
Northampton		LOWER NAZARETH TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.7	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**
AR-061																
Northampton		LOWER NAZARETH TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-062																
Northampton		LOWER NAZARETH TWP	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Subtotal		**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
AR-063																
Northampton		LOWER NAZARETH TWP	0.3	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.8	0.0
	Subtotal		**0.3**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**
AR-064																
Northampton		LOWER NAZARETH TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
AR-065A																
Northampton		BETHLEHEM TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0
Northampton		LOWER NAZARETH TWP	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.6	0.0
	Subtotal		**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**

AR-065B																
Northampton		BETHLEHEM TWP	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Northampton		LOWER NAZARETH TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal		**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-066																
Northampton		BETHLEHEM TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**
AR-067																
Northampton		BETHLEHEM TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
AR-068																
Northampton		BETHLEHEM TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-069																
Northampton		BETHLEHEM TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-070																
Northampton		BETHLEHEM TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.7	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**
AR-070A																
Northampton		BETHLEHEM TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
AR-071																
Northampton		BETHLEHEM TWP	1.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.4	0.0
	Subtotal		**1.1**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**1.4**	**0.0**
AR-072A																
Northampton		LOWER SAUCON TWP	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.7	0.0	0.0	0.0	1.3	0.0
	Subtotal		**0.0**	**0.0**	**0.3**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**
AR-072B																
Northampton		LOWER SAUCON TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
AR-073																
Northampton		LOWER SAUCON TWP	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.0
	Subtotal		**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**
AR-074																
Northampton		LOWER SAUCON TWP	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
	Subtotal		**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**
AR-075																
Northampton		WILLIAMS TWP	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
AR-076																
Northampton		WILLIAMS TWP	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-077																

Northampton	WILLIAMS TWP	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Subtotal		**0.0**	**0.0**	**0.0**	**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**
AR-078															
Northampton	WILLIAMS TWP	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Subtotal		**0.2**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**
AR-079															
Bucks	DURHAM TWP	0.2	0.0	0.6	0.0	0.0	0.0	0.1	0.0	0.9	0.0	0.0	0.0	1.9	0.0
Subtotal		**0.2**	**0.0**	**0.6**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.9**	**0.0**	**0.0**	**0.0**	**1.9**	**0.0**
AR-080															
Bucks	DURHAM TWP	0.3	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.8	0.0
	Subtotal	**0.3**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**
	Pennsylvania Total	**6.0**	**0.1**	**21.5**	**2.2**	**21.2**	**1.7**	**4.0**	**0.0**	**30.8**	**1.3**	**0.0**	**0.0**	**83.6**	**5.4**
New Jersey															
AR-081															
Hunterdon	HOLLAND TWP	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.0
Subtotal		**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-082															
Hunterdon	HOLLAND TWP	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Subtotal		**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**
AR-083															
Hunterdon	HOLLAND TWP	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0
Subtotal		**0.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.9**	**0.0**
AR-084															
Hunterdon	WEST AMWELL TWP	0.0	0.0	0.1	0.0	0.3	0.0	0.1	0.0	0.6	0.0	0.0	0.0	1.0	0.0
Subtotal		**0.0**	**0.0**	**0.1**	**0.0**	**0.3**	**0.0**	**0.1**	**0.0**	**0.6**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**
AR-085															
Hunterdon	KINGWOOD TWP	0.0	0.0	0.1	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Subtotal		**0.0**	**0.0**	**0.1**	**0.0**	**0.4**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.6**	**0.0**
AR-086															
Mercer	HOPEWELL TWP	0.0	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0	1.0	0.0
Subtotal		**0.0**	**0.0**	**0.4**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**
AR-087B															
Mercer	HOPEWELL TWP	0.2	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.7	0.0
Subtotal		**0.2**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**
AR-089															
Hunterdon	ALEXANDRIA TWP	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.6	0.0
Subtotal		**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.6**	**0.0**
AR-090															
Hunterdon	ALEXANDRIA TWP	0.4	0.0	0.4	0.0	0.2	0.0	0.1	0.0	0.6	0.0	0.0	0.0	1.7	0.0
Subtotal		**0.4**	**0.0**	**0.4**	**0.0**	**0.2**	**0.0**	**0.1**	**0.0**	**0.6**	**0.0**	**0.0**	**0.0**	**1.7**	**0.0**
AR-091															
Hunterdon	ALEXANDRIA TWP	0.0	0.0	1.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
Subtotal		**0.0**	**0.0**	**1.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**
AR-092															

Hunterdon		KINGWOOD TWP	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	1.0	0.0
	Subtotal		**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**
AR-094																
Hunterdon		DELAWARE TWP	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-096																
Mercer		DELAWARE TWP	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.4	0.0
	Subtotal		**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**
AR-097																
Mercer		WEST AMWELL TWP	0.9	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.2	0.0
	Subtotal		**0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.2**	**0.0**
AR-098																
Hunterdon		WEST AMWELL TWP	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Subtotal		**0.0**	**0.0**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**
AR-099																
Hunterdon		WEST AMWELL TWP	0.0	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
	Subtotal		**0.0**	**0.5**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.7**
AR-100																
Hunterdon		WEST AMWELL TWP	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Subtotal		**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
AR-101																
Hunterdon		HOPEWELL TWP	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.6	0.0
	Subtotal		**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**	**0.0**	**0.0**	**0.6**	**0.0**
AR-102																
Mercer		HOPEWELL TWP	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0
	Subtotal		**0.0**	**0.0**	**0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.9**	**0.0**
AR-103A																
Mercer		HOPEWELL TWP	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Subtotal		**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
AR-103B																
Mercer		HOPEWELL TWP	0.9	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.3	0.0
	Subtotal		**0.9**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**
AR-104																
Mercer		HOPEWELL TWP	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.6	0.0
	Subtotal		**0.3**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.6**	**0.0**
AR-105A																
Mercer		HOPEWELL TWP	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.4	0.0
	Subtotal		**0.0**	**0.0**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.4**	**0.0**
AR-105B																
Hunterdon		HOPEWELL TWP	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	1.0	0.0
	Subtotal		**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**
AR-106																
Hunterdon		HOPEWELL TWP	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
	Subtotal		**0.4**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**

AR-107																
Hunterdon		HOPEWELL TWP	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
	Subtotal		**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**
AR-108																
Hunterdon		HOPEWELL TWP	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Subtotal		**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
AR-109																
Mercer		HOPEWELL TWP	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
AR-301																
Mercer		HOLLAND TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.4
	Subtotal		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.4**
AR-401																
Mercer		WEST AMWELL TWP	0.0	0.8	0.0	0.4	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
	Subtotal		**0.0**	**0.8**	**0.0**	**0.4**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.5**
AR-402																
Mercer		WEST AMWELL TWP	0.0	0.6	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.7
		Subtotal	**0.0**	**0.6**	**0.0**	**0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**1.7**
		New Jersey Total	**5.9**	**1.9**	**4.0**	**1.4**	**1.6**	**0.3**	**0.9**	**0.2**	**5.0**	**0.5**	**0.0**	**0.0**	**17.4**	**4.3**
		Project Total	**11.9**	**2.0**	**25.5**	**3.6**	**22.8**	**2.1**	**4.9**	**0.2**	**35.8**	**1.8**	**0.1**	**0.0**	**101.0**	**9.7**

Notes:

1. Permanent impacts to forest/woodland were calculated for the entire 50-foot permanent ROW, however, only the management of the 30-foot wide cleared permanent ROW in upland forests and 10-foot wide cleared operational ROW in wetlands will require the permanent removal of trees in these forested areas.
2. Agricultural Land - Active cropland, pasture, orchards, vineyards, and/or hay fields;
3. Forest And Woodland - Tracts of upland or wetland forest or woodland that would be removed for the construction row or extra work or staging areas;
4. Open Land - Non-forested lands, herbaceous and scrub-shrub wetlands, and maintained utility row;
5. Residential Land - Residential yards, residential subdivisions, and planned new residential developments;
6. Industrial Or Commercial Land - Electric power or gas utility stations, manufacturing or industrial plants, landfills, mines, quarries, commercial or retail facilities, and roads;
7. Open Water – Water crossings greater than 100 feet.
8. Temp. ROW – Temporary ROW for construction of the project; includes temporary ROW and additional temporary workspace (ATWS). All units in acres and rounded to the nearest 0.1. Values of 0.0 represent impacts less than 0.05 acre and are included in the total project impacts.
9. Perm. ROW – New permanent ROW; all units in acres and rounded to the nearest 0.1. Values of 0.0 represent impacts less than 0.05 acre and are included in the total project impacts.
10. The totals shown on this table may not equal the sum of addends due to rounding.

Land Use Acreage Affected by Construction and Operation of Aboveground Facilities

State/Facility/County	Municipality	Agricultural		Forest/ Woodland[1]		Open Land		Residential		Industrial/ Commercial		Open Water		Total	
		Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW	Temp. ROW	Perm. ROW
Pennsylvania															
Auburn and Leidy Interconnects															
Luzerne	WEST WYOMING BORO	0.0	0.0	2.2	3.1	0.4	2.2	0.0	0.0	0.0	0.0	0.0	0.0	2.6	5.3
	Subtotal	**0.0**	**0.0**	**2.2**	**3.1**	**0.4**	**2.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.6**	**5.3**
Blue Mountain Interconnect/MLV-5															
Carbon	LOWER TOWAMENSING TWP	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
	Subtotal	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.0**
Hellertown Launcher & Mainline Launcher/Receiver/MLV-8															
Northampton	LOWER SAUCON TWP	0.0	0.0	0.4	0.6	0.3	1.3	0.0	0.0	0.2	0.1	0.0	0.0	0.9	2.0
	Subtotal	**0.0**	**0.0**	**0.4**	**0.6**	**0.3**	**1.3**	**0.0**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.9**	**2.0**
Kidder Compressor															
Carbon	KIDDER TWP	0.0	0.0	0.0	26.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.2
	Subtotal	**0.0**	**0.0**	**0.0**	**26.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**26.2**
MLV-1															
Luzerne	PLAINS TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
	Subtotal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**
MLV-2															
Luzerne	BEAR CREEK TWP	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Subtotal	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
MLV-3															
Carbon	KIDDER TWP	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Subtotal	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
MLV-4															
Carbon	TOWAMENSING TWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Subtotal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
MLV-6															
Northampton	MOORE TWP	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Subtotal	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
MLV-7															
Northampton	UPPER NAZARETH TWP	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Subtotal	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
Springville Interconnect															
Luzerne	DALLAS TWP	0.0	0.0	0.0	1.6	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8
	Subtotal	**0.0**	**0.0**	**0.0**	**1.6**	**0.0**	**1.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.8**
TCO & UGI-LEH Interconnects															

Northampton	LOWER SAUCON TWP	0.0	0.0	0.0	1.6	0.0	2.7	0.0	0.0	0.0	0.5	0.0	0.0	0.0	4.8
	Subtotal	**0.0**	**0.0**	**0.0**	**1.6**	**0.0**	**2.7**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**4.8**
Wyoming Interconnects															
Luzerne	DALLAS TWP	0.0	0.0	0.0	1.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
	Subtotal	**0.0**	**0.0**	**0.0**	**1.6**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.7**
New Jersey															
Algonquin and TETCO Interconnects															
Hunterdon	WEST AMWELL TWP	0.0	2.5	0.1	1.6	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.1
	Subtotal	**0.0**	**2.5**	**0.1**	**1.6**	**0.4**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**4.1**
Etown and Gilbert Interconnects															
Hunterdon	HOLLAND TWP	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.4
	Subtotal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**1.4**
Gilbert Lateral Tap Site/MLV-9															
Hunterdon	HOLLAND TWP	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Subtotal	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
Lambertville Launcher Site/MLV-11															
Hunterdon	WEST AMWELL TWP	0.0	0.1	0.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9
	Subtotal	**0.0**	**0.1**	**0.1**	**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.9**
MLV-10															
Hunterdon	KINGWOOD TWP	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Subtotal	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
Transco Interconnect															
Mercer	HOPEWELL TWP	0.0	3.3	0.0	0.1	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	3.9
	Subtotal	**0.0**	**3.3**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.9**
Transco Receiver Site															
Mercer	HOPEWELL TWP	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3
	Subtotal	**0.0**	**0.0**	**0.0**	**0.0**	**0.6**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.6**	**0.3**
	Project Total	**0.0**	**5.9**	**2.8**	**38.1**	**1.8**	**9.5**	**0.0**	**0.5**	**0.3**	**0.8**	**0.0**	**0.0**	**4.8**	**54.8**

Notes:

1. Permanent impacts to forest/woodland were calculated for the entire 50-foot permanent ROW, however, only the management of the 30-foot wide cleared permanent ROW in upland forests and 10-foot wide cleared operational ROW in wetlands will require the permanent removal of trees in these forested areas.
2. Agricultural Land - Active cropland, pasture, orchards, vineyards, and/or hay fields;
3. Forest And Woodland - Tracts of upland or wetland forest or woodland that would be removed for the construction row or extra work or staging areas;
4. Open Land - Non-forested lands, herbaceous and scrub-shrub wetlands, and maintained utility row;
5. Residential Land - Residential yards, residential subdivisions, and planned new residential developments;
6. Industrial Or Commercial Land - Electric power or gas utility stations, manufacturing or industrial plants, landfills, mines, quarries, commercial or retail facilities, and roads;
7. Open Water – Water crossings greater than 100 feet.
8. Temp. ROW – Temporary ROW for construction of the project; includes temporary ROW and additional temporary workspace (ATWS). All units in acres and rounded to the nearest 0.1. Values of 0.0 represent impacts less than 0.05 acre and are included in the total project impacts.
9. Perm. ROW – New permanent ROW; all units in acres and rounded to the nearest 0.1. Values of 0.0 represent impacts less than 0.05 acre and are included in the total project impacts.
10. The totals shown on this table may not equal the sum of addends due to rounding.

Data Request 83

As required in our Guidance Manual for Environmental Report Preparation, provide written landowner agreements for all residences that would be within 10 feet of any construction work space. For each location where a residence would be within 10 feet of the construction work space, and the landowner has not yet provided a written agreement to PennEast, explain why measures, such as reducing the workspace, shifting the working side of the construction ROW, or moving or removing extra workspaces to maximize the offset between the residence and construction work areas would not be feasible.

Response 83

As PennEast continues to obtain survey permission, residences that fall within 10 feet of the Project workspace limits will be identified. During finalization of the construction plans, adjustments will be made, so these residences will be at least 10 feet from the Project workspace, where practicable.

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Data Request 84

For those structures within the construction workspace, indicate whether PennEast plans to relocate or purchase the structures. Provide a list and description of any residences that PennEast proposes to purchase outright.

Response 84

PennEast is awaiting survey permission for a large percentage of parcels along the route. As survey permissions and landowner negotiations continue, the Project will be engineered so that it minimizes the removal of existing dwellings, barns or structures for the construction of the Project. If structures cannot be removed or avoided for construction, they will be relocated as practicable, at the expense of PennEast.

Data Request 85

Provide a schedule for when permanent repairs would be completed to agricultural drain tiles impacted by construction (i.e., within so many days of pipeline installation).

Response 85

If water is flowing through a damaged tile line, the tile line shall be immediately and temporarily repaired until such time that permanent repairs can be made. If tile lines are dry and water is not flowing, temporary repairs will not occur if the permanent repair is made within 7 days of the time damage occurred. The temporary repair shall be removed just prior to lowering in the pipeline.

Drain tiles must be permanently repaired before the pipeline trench is backfilled and within 14 days of construction completion, weather and soil conditions permitting. All tile lines shall be repaired with materials of the same or better quality as that which was damaged. The drain tile marker shall not be removed until the tile repairs have been inspected, approved, and accepted by PennEast's inspectors, the county inspectors, where applicable, and the landowner or tenant.

Data Request 86

Provide a description of general impact minimization and mitigation measures that would be used by PennEast to minimize impacts on specialty agricultural areas identified in table 8.3-4, and which could be fine-tuned to match site-specific conditions.

Response 86

Table 8.3-4 identified two specialty agricultural areas crossed by the pipeline. However, the route has been realigned so that it does not impact the first site (pine trees located at MP 44.7), and at the second site (MP 96.2), the fruit trees are no longer present and the land is being utilized for crop agricultural use.

Data Request 87

Provide an update on the status of the Section 408 process for crossing the Francis E. Walter Dam and Beltzville State Park.

Response 87

On November 18, 2015, PennEast and the US Army Corps of Engineers (USACE) discussed minor changes to the proposed Beltzville Lake crossing and a revised submittal schedule for the Section 408 Requests for Approval. Rather than using two horizontal directional drill (HDD) bores to cross the two Beltzville Lake branches, PennEast proposes to use a single bore to cross both waterbodies, thereby avoiding direct impacts to Wild Creek and Pohopoco Creek, adjacent wetlands, the surrounding forested uplands, and Beltzville State Park recreational facilities. One single bore would cross under both waterbodies. The drill entry point would be sited in an open field adjacent to an upland forested area within the Beltzville State Park boundaries. The drill exit point would be located on a property south of the USACE-owned property. PennEast anticipates submitting the Section 408 Requests for Approval for the Francis E Walter Reservoir and Beltzville Lake in late December 2015.

As part of the Section 408 approval process, PennEast must obtain easements for the USACE-owned parcels crossed by the Project. PennEast has been in contact with the USACE government real estate office in Baltimore to obtain a temporary license for survey access and to discuss the outgrant process to obtain easements on the parcels. PennEast will continue to coordinate with government real estate office staff to provide information needed for the Report of Availability and Determination of Availability in accordance with AR 405-80 and Chapter 8 ER 405-1-12.

Data Request 88

Clarify who the landowner is for the parcel(s) through which PennEast is proposing to cross the Appalachian National Scenic Trail. Provide updated alignment sheets that includes this information, and provide documentation of consultation with the landowner and/or land-managing agency regarding the proposed crossing.

Response 88

The proposed crossing of the Appalachian Trail would be on properties owned by the Commonwealth of Pennsylvania. Attachment 18 provides a Figure and documentation on coordination.

Data Request 89

Provide a description of general impact minimization and mitigation measures that would be used by PennEast to prevent impacts on state-owned lands, such as state parks and state game lands, which could be fine-tuned to match site-specific conditions. These measures should specifically address recreational areas and visitor access.

Response 89

A summary of all state-owned lands, including state parks and state game lands, crossed by the Project is presented in the updated Table 8.4-1 provided in Response 90. PennEast has attempted to avoid or minimize impacts to state-owned lands to the extent practical through co-location, utilizing HDD techniques, and by designing the route alignment to avoid heavily used recreational areas and facilities. PennEast is prepared to take the appropriate measures to minimize restrictions to visitor access during construction, and after completion of the Project there will be nothing that will prevent public access to or normal state administration of the state-owned lands. Consultation with state-agencies including the Pennsylvania Department of Conservation and Natural Resources (PADCNR), Pennsylvania Game Commission (PGC), and NJDEP are ongoing and summarized in the updated Table 1.7-2 provided in Response 16. PennEast is coordinating with the appropriate agencies to develop suitable work plans for all state-owned lands to minimize impacts and disruption to recreation and park visitors. These plans will address comments received from the agencies including PADCNRs Summary of Initial Concerns (SOIC) received prior to meetings held on March 18, 2015, and September 17, 2015.

Although there will be temporary impacts and potential disruption to passive recreational areas including hiking trails and access roads during construction, following the pipeline installation all activities and access currently available to the public will be returned to their original state. The ROW topography will be restored to pre-construction conditions and be vegetated with grass and plant species that are native to the area and tree growth within the temporary work space areas will be allowed to re-vegetate naturally. In areas where recreational areas or temporary impacts to state-owned lands cannot be avoided, general impact minimization and mitigation measures which may be fine-tuned to match site specific conditions include:

- Installation of signs and exclusion fencing along the edge of approved work areas to provide a clearly defined boundary and buffer zone for construction crews and the public throughout the course of construction.
- Utilization of safety professionals to be present onsite during site preparation and Project construction to prevent entry of unauthorized personnel into work areas, and enforce safe working procedures and assess safety in the work zone.
- Management of woody debris that would not impact aesthetic value or adversely impact forest growth.
- Maintaining adequate recreational and aesthetic buffers around recreational areas as specified in the approved permits and limit tree removal in these areas.

- Conducting stream crossings such as the crossing of the Lehigh River at the Francis E. Walter Dam during winter months or low flow conditions to allow for quick construction, and otherwise reduce the possibility of downstream sedimentation and impacts to recreation including fishing and boating.
- Coordination with the appropriate personnel including PADCNR State Park Managers and District Foresters to develop the construction schedule and coordinate road improvements, temporary road or trail closures, and identify "special events" or hunting seasons which may restrict pipeline construction activities.
- Coordination with the appropriate personnel including PADCNR and co-located transmission line owners to develop gating and bouldering systems to prevent unauthorized vehicle access as needed.
- Conducting BMPs to limit the introduction of invasive species and development of an invasive species management plan.

Site specific measures to minimize and mitigate impacts to state-owned lands including recreational areas and visitor access are still being coordinated with the appropriate agencies and will be addressed in permit applications anticipated to be submitted in the first quarter of 2016.

Data Request 90

Provide a revised table 8.4-1 that corrects discrepancies in subtotals of federal, state, county, municipal lands, and public conservation areas that would be crossed. Include the crossing method and any special construction measures that PennEast would implement when crossing each special recreation land. Provide revised text as needed to match the revised table 8.4-1.

Response 90

Table 8.4-1
Federal, State, County, Municipal Lands, and
Public Conservation Areas Crossed by the Project Facilities

State/Facility/County	Municipality	Tax-ID	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Type of Area/Name of Associated Area	Land Ownership/Land Management	Leased/ Owned	Approximate Crossing Length (ft)	Land Affected During Construction (acres)	Land Affected During Operation (acres)	Crossing Method
Pennsylvania													
PennEast Mainline Route Pipeline													
LUZERNE	KINGSTON TWP	35-D9-00A-016-000	2.1	2.4	2.1	2.4	State owned land/ Frances Slocum	General State Authority	UNK	1,702.2	5.3	2.0	Bore/Open Cut
LUZERNE	WEST WYOMING BORO	66-E10-00A-00A-000	5.6	5.6	5.6	5.6	County owned land	Luzerne County Redevelopment Authority	UNK	141.1	0.4	0.2	Open Cut
LUZERNE	WEST WYOMING BORO	66-E10-00A-0A1-000	6.0	6.0	6.0	6.0	County owned land	Luzerne County Redevelopment Authority	UNK	58.9	0.1	0.1	Open Cut
LUZERNE	WYOMING BORO	67-F10-00A-001-000	6.3	6.3	6.3	6.3	County owned land	Luzerne County Flood Protection Authority	UNK	206.2	0.9	0.2	Open Cut
LUZERNE	JENKINS TWP	33-E11-00A-0A1-000	7.3	7.3	7.3	7.3	County owned land	Luzerne County Redevelopment Authority	UNK	71.6	0.1	0.1	Open Cut
LUZERNE	JENKINS TWP	33-F11-00A-22A-000	7.8	8.0	7.8	8.0	County owned land	Luzerne County Redevelopment Authority	UNK	1,151.8	1.7	1.2	Open Cut
LUZERNE	JENKINS TWP	50-G10-00A-29A-000	8.0	8.1	8.0	8.1	County owned land	Luzerne County Redevelopment Authority	UNK	30.1	0.0	0.0	Open Cut
LUZERNE	PLAINS TWP	50-G10-00A-29A-000	8.1	8.1	8.1	8.1	County owned land	Luzerne County Redevelopment Authority	UNK	226.9	0.4	0.3	Open Cut
LUZERNE	PLAINS TWP	50-G10-00A-00F-000	9.8	9.8	9.8	9.8	County owned land	Luzerne County Redevelopment Authority	UNK	42.2	0.0	0.0	Bore
LUZERNE	PLAINS TWP	50-H11-00A-019-000	12.1	12.4	12.1	12.6	State owned land	Pennsylvania Commonwealth, Dept. of Conservation & Natural Resources	UNK	1,434.2	4.9	1.6	Open Cut
LUZERNE	BEAR CREEK TWP	50-H11-00A-019-000	12.4	12.4	12.6	12.6	State owned land	Pennsylvania Commonwealth, Dept. of Conservation & Natural Resources	UNK	198.9	0.7	0.2	Open Cut
LUZERNE	BEAR CREEK TWP	04-I13-00A-001-000	15.5	17.4	15.7	17.6	State owned land/ State Game Land	Pennsylvania Commonwealth	UNK	10,195.5	35.6	4.8	Open Cut

State/Facility/County	Municipality	Tax-ID	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Type of Area/Name of Associated Area	Land Ownership/Land Management	Leased/ Owned	Approximate Crossing Length (ft)	Land Affected During Construction (acres)	Land Affected During Operation (acres)	Crossing Method
							area No. 91						
LUZERNE	BEAR CREEK TWP	04-I13-00A-001-000	17.5	17.5	17.7	17.7	State owned land/ State Game Land area No. 91	Pennsylvania Commonwealth	UNK	269.3	0.5	0.3	Open Cut
LUZERNE	BEAR CREEK TWP	04-I13-00A-001-000	17.6	18.4	17.8	18.6	State owned land/ State Game Land area No. 91	Pennsylvania Commonwealth	UNK	4,272.7	10.2	4.9	Open Cut
LUZERNE	BEAR CREEK TWP	04-M13-00A-05A-000	21.3	22.7	21.5	22.9	State owned land	Pennsylvania Commonwealth	UNK	7,360.3	20.8	8.4	Open Cut
LUZERNE	BEAR CREEK TWP	04-M13-00A-001-000	22.7	22.8	22.9	23.0	Federally owned land/Francis E. Walter Dam	US Army Corps Of Engineers	UNK	297.0	0.8	0.3	Open Cut
									Subtotal	**27,659.0**	**82.3**	**24.8**	
CARBON	KIDDER TWP	58-20-A1.01USA	22.8	22.9	23.0	23.1	Federally owned land/Francis E. Walter Dam	US Government	UNK	528.7	1.5	0.6	Open Cut
CARBON	KIDDER TWP	45-20-A11	24.6	25.6	24.8	25.8	State owned land/ State Game Land No. 40	Pennsylvania Commonwealth	UNK	5,005.1	16.6	5.7	Open Cut
CARBON	KIDDER TWP	47-21-A1	28.9	29.6	29.1	29.8	State owned land/ Hickory Run State Park	Pennsylvania Commonwealth	UNK	3,933.2	10.1	5.0	Open Cut
CARBON	KIDDER TWP	33-21-B2	29.6	30.1	29.8	30.3	State owned land/ State Game Land No. 129	Pennsylvania Commonwealth	UNK	2,509.5	5.8	2.9	Open Cut
CARBON	KIDDER TWP	47-21-A1	30.1	30.2	30.3	30.4	State owned land/ Hickory Run State Park	Pennsylvania Commonwealth	UNK	463.3	10.1	5.0	Open Cut
CARBON	KIDDER TWP	34-21-A4	30.2	31.0	30.4	31.2	State owned land/ Hickory Run State Park	Pennsylvania Commonwealth	UNK	4,146.3	10.4	5.3	Open Cut
CARBON	KIDDER TWP	34-21-A3	31.0	31.1	31.2	31.3	State owned land/ Hickory Run State Park	Pennsylvania Commonwealth	UNK	440.8	1.1	0.5	Open Cut
CARBON	KIDDER TWP	34-21-A4	31.1	31.2	31.3	31.4	State owned land/ Hickory Run State Park	Pennsylvania Commonwealth	UNK	447.8	10.4	5.3	Open Cut
CARBON	KIDDER TWP	35-21-A4	32.5	32.8	32.7	33.0	State owned land/ Hickory Run State Park	Pennsylvania Commonwealth	UNK	1,834.6	4.4	2.1	Bore/Open Cut
CARBON	PENN FOREST TWP	35-21-A4	32.8	33.2	33.0	33.4	State owned land/ Hickory Run State Park	Pennsylvania Commonwealth	UNK	2,105.8	5.6	2.4	Bore/Open Cut
CARBON	PENN FOREST TWP	35-21-A4	33.3	34.2	33.5	34.4	State owned land/ Hickory Run State Park	Pennsylvania Commonwealth	UNK	5,029.1	13.4	6.0	Bore/Open Cut
CARBON	PENN FOREST TWP	35-21-A4	34.4	34.4	34.6	34.6	State owned land/ Hickory Run State Park	Pennsylvania Commonwealth	UNK	221.5	13.4	6.0	Bore/Open Cut

State/Facility/County	Municipality	Tax-ID	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Type of Area/Name of Associated Area	Land Ownership/Land Management	Leased/ Owned	Approximate Crossing Length (ft)	Land Affected During Construction (acres)	Land Affected During Operation (acres)	Crossing Method
CARBON	PENN FOREST TWP	37-51-A10	36.2	36.9	36.4	37.1	State owned land/ Weiser State Forest	Pennsylvania Commonwealth, Dept Of Forests & Waters	UNK	3,522.8	10.3	4.0	Open Cut
CARBON	PENN FOREST TWP	37-51-A7	36.9	37.3	37.1	37.5	Municipal owned land	Bethlehem Authority	UNK	2,207.4	7.9	2.5	Open Cut
CARBON	PENN FOREST TWP	37-51-A6INLIEU	37.3	37.5	37.5	37.7	Municipal owned land	Bethlehem Authority	UNK	1,259.0	3.3	1.4	Bore/Open Cut
CARBON	PENN FOREST TWP	37-51-A6INLIEU	37.5	38.3	37.7	38.5	Municipal owned land	Bethlehem Authority	UNK	4,132.0	12.2	4.7	Bore/Open Cut
CARBON	PENN FOREST TWP	37-51-A1	38.3	38.5	38.5	38.7	Municipal owned land	Bethlehem Authority	UNK	1,081.5	3.3	1.2	Open Cut
CARBON	PENN FOREST TWP	38-51-A4INLIEU	38.5	39.4	38.7	39.6	Municipal owned land	Bethlehem Authority	UNK	4,775.1	12.6	5.5	Open Cut
CARBON	TOWAMENSING TWP	15-56-A18.04USA	42.9	43.3	43.1	43.5	Federally owned land/Beltzville State Park	USA	UNK	2,276.8	6.2	4.0	HDD/Bore/ Open Cut
CARBON	TOWAMENSING TWP	15-56-A18.04USA	43.3	43.6	43.5	43.8	Federally owned land/Beltzville State Park	USA	UNK	1,225.0	6.2	4.0	HDD/Bore/ Open Cut
CARBON	TOWAMENSING TWP	15-56-A18.04USA	43.6	43.6	43.8	43.8	Federally owned land/Beltzville State Park	USA	UNK	135.6	0.2	0.2	HDD/Bore/ Open Cut
CARBON	TOWAMENSING TWP	15-56-A33USA	43.6	43.6	43.8	43.8	Federally owned land/Beltzville State Park	USA	UNK	143.6	0.2	0.2	HDD
CARBON	TOWAMENSING TWP	15-56-A34USA	43.6	43.7	43.8	43.9	Federally owned land/Beltzville State Park	US Army Corps Of Engineers	UNK	601.8	0.7	0.7	HDD
CARBON	TOWAMENSING TWP	15-56-A11.01USA	43.8	43.9	44.0	44.1	Federally owned land/Beltzville State Park	USA	UNK	475.1	0.5	0.5	HDD
CARBON	TOWAMENSING TWP	15-56-A11	43.9	44.3	44.1	44.5	Municipal owned land	Bethlehem Authority	UNK	2,357.5	5.4	2.7	HDD/Bore/ Open Cut
CARBON	LOWER TOWAMENSING TWP	G3-2-1	50.9	50.9	51.1	51.1	State owned land/ State Game Land No. 168	Pennsylvania Commonwealth	UNK	200.1	1.1	0.2	Open Cut
									Subtotal	**51,059.0**	**172.8**	**79.0**	
NORTHAMPTON	LEHIGH TWP	G3-2-1	50.9	52.5	51.1	52.7	State owned land/ State Game Land No. 168	Pennsylvania Commonwealth	UNK	8,689.2	29.1	10.0	Bore/Open Cut
NORTHAMPTON	LEHIGH TWP	G4-1-2	52.5	52.7	52.7	52.9	State owned land/ State Game Land No. 168	Pennsylvania Commonwealth	UNK	822.7	3.1	0.9	Open Cut
NORTHAMPTON	LEHIGH TWP	G4-1-17	52.9	53.1	53.1	53.3	State owned land/ State Game Land No. 168	Pennsylvania Commonwealth	UNK	926.0	3.0	1.1	Open Cut
NORTHAMPTON	LEHIGH TWP	G4-1-17	53.2	53.3	53.4	53.5	State owned land/ State Game Land No. 168	Pennsylvania Commonwealth	UNK	70.5	3.0	1.1	Open Cut

State/Facility/County	Municipality	Tax-ID	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Type of Area/Name of Associated Area	Land Ownership/Land Management	Leased/ Owned	Approximate Crossing Length (ft)	Land Affected During Construction (acres)	Land Affected During Operation (acres)	Crossing Method
NORTHAMPTON	MOORE TWP	G4-1-17	53.3	53.3	53.5	53.5	State owned land/ State Game Land No. 168	Pennsylvania Commonwealth	UNK	447.5	1.1	0.5	Open Cut
NORTHAMPTON	MOORE TWP	J5-10-9	58.0	58.0	58.2	58.2	Municipal owned land	Bath Borough Authority	UNK	134.9	0.4	0.2	Bore/Open Cut
NORTHAMPTON	BETHLEHEM TWP	M8-2-3	68.1	68.1	68.3	68.3	State owned land	Pennsylvania Commonwealth	UNK	73.5	0.3	0.1	Bore/Open Cut
NORTHAMPTON	BETHLEHEM TWP	M8-2-3C	68.3	68.7	68.5	68.9	State owned land	Pennsylvania Commonwealth	UNK	1,857.6	5.5	2.1	Open Cut
NORTHAMPTON	BETHLEHEM TWP	M8-9-15B	69.0	69.3	69.2	69.5	Township owned land	Bethlehem Township	UNK	1,699.8	5.7	2.1	Open Cut
NORTHAMPTON	BETHLEHEM TWP	M8-9-15	69.3	69.3	69.5	69.5	State owned land	Pennsylvania Commonwealth	UNK	335.2	1.9	1.0	Open Cut
NORTHAMPTON	BETHLEHEM TWP	M8-9-15B	69.3	69.4	69.5	69.6	Township owned land	Bethlehem Township	UNK	341.3	5.7	2.1	Open Cut
NORTHAMPTON	BETHLEHEM TWP	M8-9-15	69.4	69.5	69.6	69.7	State owned land	Pennsylvania Commonwealth	UNK	300.2	1.9	1.0	Open Cut
NORTHAMPTON	BETHLEHEM TWP	M8-11-2	70.2	70.2	70.4	70.4	Township owned land	Bethlehem Township	UNK	75.9	0.3	0.1	HDD
NORTHAMPTON	BETHLEHEM TWP	N8-5-1B	70.7	70.7	70.9	70.9	Township owned land	Bethlehem Township	UNK	147.3	0.2	0.2	HDD
NORTHAMPTON	BETHLEHEM TWP	N8-7-5A-1A	70.7	70.7	70.9	70.9	State owned land	Pennsylvania Commonwealth	UNK	43.8	0.1	0.1	HDD
NORTHAMPTON	EASTON CITY	N8-7-5A-1A	70.7	70.7	70.9	70.9	State owned land	Pennsylvania Commonwealth	UNK	70.8	0.1	0.1	HDD
NORTHAMPTON	EASTON CITY	N8-8-3	70.7	70.8	70.9	71.0	Municipal owned land	Easton City	UNK	516.0	0.6	0.6	HDD
									Subtotal	**16,552.3**	**61.9**	**23.4**	
BUCKS	DURHAM TWP	38-006-215	77.4	77.4	77.6	77.6	State owned land/ Delaware Canal State Park	Pennsylvania Commonwealth Del River / Div Canal	UNK	77.4	0.1	0.1	HDD
BUCKS	DURHAM TWP	11-005-133	77.4	77.4	77.6	77.6	State owned land/ Delaware Canal State Park	Pennsylvania Commonwealth	UNK	107.9	0.1	0.1	HDD
									Subtotal	**185.3**	**0.2**	**0.2**	
New Jersey													
PennEast Mainline Route Pipeline													
HUNTERDON	HOLLAND TWP	1015-22-58.01	81.1	81.4	81.3	81.6	State owned land	State of New Jersey-DEP	UNK	1,589.0	5.4	1.8	Open Cut
HUNTERDON	HOLLAND TWP	1015-22-56	81.4	81.7	81.6	81.9	State owned land	State of New Jersey-DEP	UNK	1,550.7	4.3	1.8	Bore/Open Cut
HUNTERDON	KINGWOOD TWP	1016-12-31.01	90.5	90.8	89.7	90.0	State/County owned land	NJ Conservation Foundation & Hunterdon Land Trust Alliance	UNK	1,657.3	3.7	1.9	Open Cut
HUNTERDON	KINGWOOD TWP	1016-24-13	93.2	93.5	92.7	93.0	County owned land	Hunterdon Land Trust	UNK	1,163.2	3.5	1.4	HDD/Open Cut
HUNTERDON	KINGWOOD TWP	1016-24-13.09	93.5	93.5	93.0	93.0	County owned land	Hunterdon Land Trust	UNK	252.3	0.6	0.3	Open Cut

State/Facility/County	Municipality	Tax-ID	Begin MP[1]	End MP[1]	Begin MP[2]	End MP[2]	Type of Area/Name of Associated Area	Land Ownership/Land Management	Leased/ Owned	Approximate Crossing Length (ft)	Land Affected During Construction (acres)	Land Affected During Operation (acres)	Crossing Method
HUNTERDON	KINGWOOD TWP	1016-24-13	93.5	93.5	93.0	93.0	County owned land	Hunterdon Land Trust	UNK	99.1	3.5	1.4	Bore/Open Cut
HUNTERDON	WEST AMWELL TWP	1026-28-7	103.5	103.5	103.0	103.0	State owned land	State of New Jersey-DEP	UNK	262.0	0.5	0.3	Open Cut
									Subtotal	**6,573.5**	**21.4**	**9.0**	
MERCER	HOPEWELL TWP	1106-59-13.01	105.9	106.2	105.4	105.7	County owned land	County Of Mercer	UNK	1,733.6	4.0	2.0	HDD/Open Cut
MERCER	HOPEWELL TWP	1106-60-5	106.2	106.7	105.7	106.2	County owned land	County Of Mercer	UNK	2,520.7	14.2	5.8	HDD/Open Cut
MERCER	HOPEWELL TWP	1106-60-4.02	106.7	107.0	106.2	106.5	County owned land	County of Mercer	UNK	1,686.5	5.0	2.2	Open Cut
MERCER	HOPEWELL TWP	1106-60-5	107.0	107.2	106.5	106.7	County owned land	County Of Mercer	UNK	864.3	14.2	5.8	Open Cut
MERCER	HOPEWELL TWP	1106-60-4.02	107.2	107.2	106.7	106.7	County owned land	County of Mercer	UNK	212.4	5.0	2.2	Open Cut
MERCER	HOPEWELL TWP	1106-60-5	107.2	107.5	106.7	107.0	County owned land	County Of Mercer	UNK	1,704.4	14.2	5.8	Open Cut
MERCER	HOPEWELL TWP	1106-60-29.03	107.5	107.9	107.0	107.4	State owned land	State Of NJ Environ Protection	UNK	2,203.9	6.6	2.5	Open Cut
MERCER	HOPEWELL TWP	1106-60-28	107.9	108.3	107.4	107.8	State/County owned land	NJ Dep & County of Mercer	UNK	1,728.8	5.6	2.0	Open Cut
MERCER	HOPEWELL TWP	1106-92-2.01	110.2	110.5	109.7	110.0	Township owned land	Township Of Hopewell	UNK	1,741.0	5.6	2.0	Bore/Open Cut
MERCER	HOPEWELL TWP	1106-92-9	110.5	110.7	110.0	110.2	Township owned land	Township Of Hopewell	UNK	838.4	6.5	2.4	Open Cut
MERCER	HOPEWELL TWP	1106-92-9	110.7	111.0	110.2	110.5	Township owned land	Township Of Hopewell	UNK	1,268.8	6.5	2.4	HDD/Open Cut
MERCER	HOPEWELL TWP	1106-92-5	111.0	111.3	110.5	110.8	Township owned land	Township Of Hopewell	UNK	1,616.1	3.2	1.9	HDD
MERCER	HOPEWELL TWP	1106-91-3.12	111.9	112.0	111.4	111.5	Township owned land	Township Of Hopewell	UNK	652.2	2.4	0.7	HDD/Open Cut
MERCER	HOPEWELL TWP	1106-85-3	112.6	112.9	112.1	112.4	Township owned land	Township Of Hopewell	UNK	1,600.9	4.6	1.8	Open Cut
MERCER	HOPEWELL TWP	1106-72-35	113.9	113.9	113.4	113.4	County owned land	County Of Mercer	UNK	84.0	0.6	0.1	Open Cut
									Subtotal	**20,456.1**	**98.0**	**39.7**	
									Project Total	**122,485.2**	**436.5**	**176.0**	

Notes:
1. Milepost values reflective of restationing to include route variations implemented since September FERC submission.
2. Milepost values calculated using station equations to relate current route to the route at the time of the September FERC submission.
3. Please reference Table 8.2-3 for information related to the special construction techniques that will be employed on the project.

Resource Report 9 – Air and Noise

Air Quality

Data Request 91

Provide details on PennEast's proposed fugitive dust control measures. Include a description of the decision process for when and where dust control would be implemented, and identify potential sources of water that would be used, and any permits that may be required for water withdrawal or other dust suppression activities.

Response 91

PennEast's proposed fugitive dust control measures are described in the "PennEast Pipeline Project Fugitive Dust Control Plan" as filed in Appendix L-5. Section 4 of the Plan describes the decision process.

The plan indicates that the Field Project Manager (FPM) and the Environmental Inspector (EI) will determine when it is necessary to apply dust control measures during construction activities and that these Project personnel will share the authority with the Contractor and Construction Superintendent to determine if/when water needs to be reapplied for dust control and to determine if/when additional mitigation will be needed. The Field Project Manager (FPM) and Environmental Inspector (EI) will have the authority over the Contractor to stop work on any activity that does not comply with the dust control measures outlined in the plan.

The Construction Contractor will furnish, operate and maintain equipment and employ methods anywhere it is needed to minimize the migration of dust beyond the boundaries of the work site. The Contractor Construction Superintendent will be responsible for implementing the Fugitive Dust Control Plan. The Contractor will provide a copy of the Dust Control Plan to all applicable subcontractors.

Negotiations for water withdrawals are in progress. Water sources are subject to change during the negotiation process. However, the Project has identified many of the sources of water that are proposed for use as dust control and these are shown in the PennEast - Dust Control Water Use Summary Table below. This table is based on a draft application for the Delaware River Basin Commission (DRBC) water withdrawal permit and other Project water planning information. The DRBC preapproval is required for water withdrawal for dust suppression activities within the Delaware River Basin. For water used for dust suppression activities in the Susquehanna River Basin, there is no permit or preapproval required; instead a registration of the actual withdrawals is to be submitted to the Susquehanna River Basin Commission as per Pennsylvania Act 220 based on project construction activities. A preliminary list of potential water sources for the project area within the Hudson River Basin is still being determined.

PennEast - Dust Control Water Use Summary Table

Water Use	Approximate Volume Required (gallons)	Potential Source[1]	Approximate Source Location	Disposition	Water Volume Consumptive (Y/N)
Susquehanna River Basin (MP 0.0 - 14.4)					
Residential Areas MP 0.0 - 14.4	2,619,540	Trucked in / Francis Slocum Lake	41°19'47.68"N, 75°53'43.38"W	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y
Delaware River Basin (MP 14.4 - 111.9)					
Residential Areas MP 14.4 - 30.0	249,480	Trucked in / Meadow Run Ponds	41° 13'10.42"N, 75°40'00.17"W	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y
Residential Areas MP 30.1 - 40.0	997,920	Trucked in / Lake Harmony, Big Boulder Lake	41° 3'1.25"N, 75°35'53.64"W	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y
Residential Areas MP 40.1 - 50.0	1,580,040	Trucked in / Bethlehem Water Authority	TBD	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y

Water Use	Approximate Volume Required (gallons)	Potential Source[1]	Approximate Source Location	Disposition	Water Volume Consumptive (Y/N)
Residential Areas MP 50.1 - 60.0	1,455,300	Trucked in / Bethlehem Water Authority	TBD	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y
Residential Areas MP 60.1 - 70.0	2,910,600	Trucked in / Lehigh River	40°38'29.30"N, 75°16'42.72"W	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y
Residential Areas Hellertown Lateral	374,220	Trucked in / Lehigh River	40°38'29.30"N, 75°16'42.72"W	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y
Residential Areas MP 70.1 - 80.0	1,746,360	Trucked in / Delaware River	40°34'0.34"N, 75° 9'26.19"W	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y
Residential Areas MP 80.1 - 90.0	1,829,520	Trucked in / Delaware River	40°34'0.34"N, 75° 9'26.19"W	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y

Water Use	Approximate Volume Required (gallons)	Potential Source[1]	Approximate Source Location	Disposition	Water Volume Consumptive (Y/N)
Residential Areas MP 90.1 - 100.0	1,704,780	Trucked in / Delaware River	40°34'0.34"N, 75° 9'26.19"W	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y
Residential Areas Lambertville Lateral	0	N/A	N/A	N/A	N/A
Residential Areas MP 100.1 - 111.9	1,413,720	Trucked in / Delaware River	40°34'0.34"N, 75° 9'26.19"W	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y
Lower Hudson River Basin (MP 111.9 - 114.0)					
Residential Areas MP 111.9 - 114.0	848,232	TBD	TBD	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 15 days	Y
PROJECT TOTAL	17,729,712				

Notes:
1. Negotiations for water withdrawals are in progress. Water sources are subject to change during the negotiation process.

Data Request 92

In responding to public comments about loss of CO_2 sequestration capacity, PennEast states "It is the intent of the project to cause no net loss in vegetative sequestration capacity through conformance with the FERC Upland Erosion Control, Revegetation, and Maintenance Plan (May 2013) (Plan)." However, the referenced FERC Plan does not require the replacement of trees that are removed from the ROW. Clarify how conformance with the FERC Plan would prevent a net loss in vegetative sequestration capacity.

Response 92

PennEast continues to evaluate alternative construction measures to minimize potential impacts to forested areas and other important sources of carbon sequestration. At the request of State Agencies and some land owners the alignment has been shifted from forested areas to agricultural lands. Both the FERC Plan and Procedures in conjunction with BMPs will be used to avoid a loss on sequestration capacity.

Wetlands are a key component of carbon sequestration. To protect wetlands the construction workspace has been reduced and construction provides for segregation and timely restoration. HDDs are being proposed in additional areas to avoid impacts to forested wetlands and riparian zones along waterbodies. A mitigation plan is being developed in conjunction with ongoing Federal and State permit applications that will compensate for the conversion of forested wetlands to emergent and scrub shrub wetlands. PennEast is proposing a 2:1 ratio for PFO impacts and 1.5:1 ratio for PSS impacts in PA. With the proposed restoration, there will be no net loss in wetlands and the proposed mitigation at greater than a 1:1 ratio provides an increase in protected resource area.

As noted in Resource Report 1 there will be a 50-foot permanent ROW but only 30 feet will be maintained free of mature woody vegetation for safety and security. The remaining 20 feet as well as temporary construction work area will be allowed to revegetate to pre-existing conditions or restored in accordance with landowner requirements.

PennEast is also in the process of implementing a series of other mitigative measures in conjunction with agency review and approval process. These include the purchase and permanent conservation of tracts of forested lands in key watersheds and reforestation if required. The combination of these measures will provide for no net loss in vegetative sequestration capacity.

Data Request 93

Provide a discussion regarding the feasibility of using waste heat electric generation (cogeneration) for the proposed turbines at the Kidder Compressor Station. Provide the rate of electricity potentially generated on a kilowatt/month basis and compare this with the amount of electricity used by the compressor station per month. Describe the average load factor of the facility and any impediments that would prevent the operation of the compressor station continuously at 60% minimum load. Compare the size of the electric transmission line necessary under the current proposal with what would be required under a cogeneration system with return to the electric grid.

Response 93

The proposed Kidder compressor station for the PennEast Pipeline, LLC project is designed to have three (3) Solar Mars 100 turbine compressor sets rated at 15,900 HP each (rating at ISO conditions).

PennEast recognizes the overall environmental benefits of conserving energy and the importance of considering the installation of efficiency measures in conjunction with natural gas transmission facilities, where feasible.

In conjunction with the installation of the nominal 47,700 turbine horsepower (rating at ISO conditions) of compression at Kidder Station, PennEast will perform the following to optimize efficiency:

Size station and unit piping, gas filters, gas after coolers, and other similar facilities to minimize pressure drops and related loss of energy;

Size the turbine exhaust and intake system to minimize pressure drops and related loss of energy; and

Optimize the staging of the gas compressor impellors such that the units operate at a high level of efficiency over as much of the station's operating envelope as is practicable.

In addition, the station compressors will be monitored by the manufacturer's performance software, which, in addition to the station control program and unit programmable logic controllers, will monitor the performance of each compressor turbine. This performance information will be used to ensure that the units are operating in an efficient manner.

PennEast is aware of the industry studies regarding waste heat recovery, including the Interstate Natural Gas Association of America ("INGAA") study[1]. Based on other industry initiatives, PennEast believes it has a general understanding of the feasibility of waste heat recovery. In light of its understanding of this technology and the scope of the

[1] INGAA, Waste Energy Recovery Opportunities for Interstate Natural Gas Pipelines (February 2008)).)

existing and proposed facilities at Kidder Station, PennEast did not undertake a formal feasibility analysis for installing waste heat power generation facilities as part of the Kidder Project.

General industry guidelines cited in the referenced INGAA report indicate that the following minimum criteria must be met to provide for installation of a potentially viable waste heat power generation facility:

- Total gas turbine station capacity of at least 15,000 HP;
- Operate more than 5,250 hours per year (60% duty cycle);
- Operate during that duty cycle at or near 100% load, and
- Sufficient land on which to locate the waste heat recovery and power generation equipment (including cooling).

While the Kidder Station is being designed based on contractual service parameters for flows and pressures, the actual flow of gas and the resulting utilization of the compressor engines will be a result of the extent to which PennEast's customers actually utilize their contracted capacity, the patterns of such usage and how fast this new service matures and stabilizes. PennEast has no operating history on which to make an informed analysis about the feasibility of waste heat power recovery and is unable to predict exact utilization or load factors for the units at this time.

PennEast does however have expectations on how the station operations will unfold.

Horsepower Range

Although the proposed three turbomachinery compressor units are rated at 15,900 HP each to provide the full contracted pipeline capacity, it is expected that full and consistent utilization of the contracted capacity will occur several years after Project start-up. During periods of low demand, the load will be carried by a mix of turbine configurations at a variety of load capacities. One of the turbines will be used initially as a swing unit, coming online during peak gas demand and reducing to 50% load, or completely shutting down for periods of low demand.

A decision was made to design the station around larger blocks of horsepower. The selection of three 15,900 HP turbines to service the contracted volumes rather than a larger group of smaller turbine units of an equivalent total horsepower was made on the basis of capital efficiency. While this does reduce capital dollar intensity, it does raise concerns about servicing low load operations due to the limited horsepower range and turndown capacity of most turbine engines, typically 100% to 50% of site horsepower. Operating turbines with no overlap in their horsepower range leads to frequent engine starts and stops which compromises equipment reliability and service life. In order to address this concern and retain the capital dollar benefits of fewer but larger units, the proposed units have been specified with an extended turndown capacity, 100% down to

40% of site horsepower. The need for the extended turbine engine turndown range and the extended hours expected to be spent at partial loads is at odds with the economic requirements for a successful waste heat recovery installation.

Load Factor

The amount of power that can be produced by a gas turbine heat recovery system is proportional to the compressor load profile. Compressors that operate at or near full load for extended annual hours (i.e., have a high load factor) are much better candidates for heat recovery application than compressors with highly variable loads. In addition to producing more power, compressors with a high load factor will provide a steady, predictable power supply that is economically viable and valuable to purchasers.

The expected nature of the station operation for the first few years with intermittent utilization of the turbines at partial loads as the contractual pipeline service matures and develops will not result in compressor operations that will generate sufficient exhaust heat to warrant the capital cost of waste heat power generation facilities. In addition, the 5,250-hour minimum use factor assumes each compressor unit is operating at 100 percent load. Since there is no historical usage pattern of the proposed Project, it would be very difficult to forecast the economic performance of the capital investment required for heat recovery and transmission capacity. Therefore, based on the probability that minimum criteria identified by INGAA will not be achieved, PennEast determined that it would not be feasible to generate electrical power from waste heat at Kidder Station an economically at this time.

Theoretical Potential Power Generation from Waste Heat Recovery

For purposes of this discussion, if all minimum criteria for a viable waste heat power generation facility could be met at Kidder Station, and based on INGAA data, an installed waste heat recovery to power installation might be expected to produce power at a rate of approximately 3.2 MW from each of the proposed station compressors operating at full load, on a 60°F day. This would mean the station could possibly produce from 6 to 9.6 MW of electrical power from waste heat power generation if it would be viable for this station.

Power Line Requirements and Proximity

During preliminary design of the compressor station the source of the required 1MW electrical power station power was investigated. Design engineers report that the initial information provided by the Electric Distribution Company, PPL Electric Utilities, was that the available power for the station would need to come from a substation approximately 6 miles away. A new 6-mile distribution circuit sized for 1 MW capacity will be required to deliver the needed station power.

If the waste power generation was viable, an approximately 10 times greater circuit and line capacity would be required to deliver the 9 MW of power from the station to the power grid. The 6-mile distance from the compressor station to the closest power grid

substation would impact the station power interconnection costs, particularly to install transmission lines and ancillary equipment (e.g., transformers). There would be additional costs incurred to establish and maintain an interconnection agreement to inject up to 10 MW of power into the PPL distribution grid.

Land

Sufficient land must be available to locate waste heat recovery and power equipment including heat recovery unit(s) and air-cooled condensers. Space near, and access to, the gas turbine exhausts is needed for efficient and cost-effective heat recovery. It is anticipated that the addition of waste heat recovery with power generation facilities would therefore require a significant amount of usable acreage that is not currently available. The Kidder Station site consists of a tight layout that is constrained by the proximity of wetland areas. The proposed layout of the station is such that the most of the site's available buildable ground will be consumed by the gas turbines, piping, gas coolers, access and site roads, and ancillary station equipment and buildings. There is insufficient additional land at the Kidder Station property due to the need to avoid wetland impacts to place any additional adjacent equipment such as waste heat recovery steam generators, steam power generation facilities, and required cooling equipment.

Web Posting of Operating Data

As PennEast stated in its September 24, 2015 certificate application in this proceeding, consistent with the Commission's directives in other proceedings, PennEast will monitor the operation of the Kidder Station and, if the station meets the waste heat recovery parameters in the INGAA whitepaper, PennEast will post such information on its electronic bulletin board.

Data Request 94

Indicate whether PennEast has looked into the feasibility of installing electric motor driven compressor units instead of the natural gas currently proposed.

Response 94

PennEast has considered the feasibility of installing electric motor driven compressor units compared to the natural gas driven motor that was evaluated. To replace the proposed turbines would require approximately 35 to 40 MW of electrical motor powered compression. According to PP&L[2], any load greater than 6MW would require upgrades to the substation and lines that would provide power to the compressor station.

In addition, an analysis comparing the Total Emissions for Natural Gas and Electrical Power Compression Alternatives for the PennEast Pipeline (as provided in Appendix L, Tables L3-25a-d) found that electrical powered compression would emit more total air contaminates than natural gas for all pollutants except PM10 and Mercury. Below is a summary of Table L3-25a-d and the findings:

Air Contaminant	Increase in Emissions estimated if Electric is used instead of Natural Gas to power the Compressors (tons per year)
NOx	221
CO	59
VOC	11
SO2	842
PM10	(12)
Lead	0.010
Mercury	(0.0010)
CO2	49,062
CH4	559
N2O	6
Total CO2e	59,348
GHG Emissions to deliver fuel to the Station	33,155
Net GHG Increase for Electric Compressors	**26,193**

[2] Communicated during a telephone conversation with Stan Kirby of Hatch Mott MacDonald, Shreveport, LA, 2015

Data Request 95

PennEast is proposing to install one fuel gas heater at the compressor station and five heaters at interconnects. Clarify which natural gas heaters are presented in table 9.1-3 and revise as appropriate.

Response 95

Resource Report 9 describes the one fuel gas heater at the compressor station and eight gas line heaters at seven locations. The emission estimates for the Compressor Station Operational Phase Emissions as presented in Table 9.1-3a and includes the estimate of emissions for the one fuel gas heater at the compressor station. These are also detailed in Appendix L as follows:

- Table L3-0 - This is the Appendix version of Table 9.1-3.
- Table L3-1 - Includes a summary line of for Gas Line Heater.
- Table L3-18B – Includes the detailed emission estimates for the fuel gas heater at the compressor station.

The estimated emissions of the eight gas line heaters are included at a summary level total in Table 9.1-3b and Table 9.1-3c. Detailed emission estimates for these heaters are presented in Table L3-18A. Table 9.1-3b presents the Pipeline Operational Phase Emissions estimated with a state summary breakdown. Line heaters proposed for Pennsylvania interconnects are listed in the first two lines of Table 9.1-3b, and the subtotal of the five (5) heaters in NJ is also listed:

- One (1) rated at 0.2 MMBTU/hr at the Blue Mountain Interconnect in Carbon County, Pennsylvania.
- Two (2) each rated at 6.7 MMBTU/hr at the UGI-LEH and TCO Interconnects in Northampton Pennsylvania (one heater per interconnect).
- New Jersey Heaters subtotaled in Table 9.1-3b:
    - Two (2) rated at 6.6 to 6.7 MMBTU/hr at the Gilbert and Etown Interconnects in NJ
    - Three (3) nominally rated at 40, 32, and 49 MMBTU/hr in NJ at the Algonquin, TETCO, and Transco Interconnects, respectively.

Table 9.1-3c presents the overall project operational emission estimates with a breakdown including the state pipeline subtotals and the compressor station. All subtotals in Table 9.1-3c include the related gas line heater and fuel gas emission estimates. Heater details by location are presented in Appendix L, Table L3-18.

Data Request 96

Currently table 9.1-3b includes the operational emissions of three heaters and two interconnects. However, the project would include five heaters and three interconnects. Clarify this discrepancy and revise table 9.1-3b as appropriate.

Response 96

See response to Data Request 95. The proposed Project includes eight (8) heaters at seven (7) locations. Table 9.1-3b has been revised to show emissions for each of the five (5) heaters proposed for NJ locations.

Table 9.1-3b
Pipeline Operational Phase Emissions

Air Sources	Pollutant (tons per year)						GHG[b]	CH_2O[c]	Total HAPs[d]
	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$	VOC[a]			
UGI-LEH Interconnect Natural Gas Line Heater	2.30	1.93	0.017	0.17	0.17	0.13	2,749	0.0017	0.043
TCO Interconnect Natural Gas Line Heater	2.30	1.93	0.017	0.17	0.17	0.13	2,749	0.0017	0.043
Blue Mountain Interconnect Line Heater	0.09	0.07	0.001	0.01	0.01	0.005	103	0.0001	0.002
PA Pipeline Fugitive Leaks						0.72	5,722		
PA Interconnect Fugitives/Vents						0.003	24		
PA Pipeline Total	4.77	4.01	0.035	0.36	0.36	0.99	11,450	0.00	0.09
ETG Interconnect Line Heater	2.30	1.93	0.017	0.17	0.17	0.13	2,749	0.0017	0.043
NRG Interconnect Line Heater	2.30	1.93	0.017	0.17	0.17	0.13	2,749	0.0017	0.043
Algonquin Interconnect Line Heater	13.73	11.53	0.100	1.04	1.04	0.76	16,412	0.0103	0.259
Tetco Interconnect Line Heater	10.98	9.23	0.080	0.83	0.83	0.60	13,130	0.0082	0.207

Transco Interconnect Line Heater	16.82	14.13	0.123	1.28	1.28	0.92	20,105	0.0126	0.318
NJ Pipeline Fugitive Leaks						1.93	15,666		
NJ Interconnect Fugitives/Vents						0.001	11		
NJ Pipeline Total	46.13	38.75	0.34	3.51	3.51	4.47	70,823	0.03	0.87

[a] VOC – non-methane/ethane volatile organic compounds
[b] GHG – as carbon dioxide equivalents (CO_2e); provided for informational purposes only
[c] CH_2O – formaldehyde, the primary HAP emitted from combustion turbines
[d] HAPs – as aggregated total HAPs
PTE = potential to emit

Data Request 97

Provide a revised table 9.1-3c that includes the emissions of the one fuel gas heater at the compressor station, five heaters at interconnects, and the auxiliary power line.

Response 97

See responses to Data Requests 95 and 96. Table 9.1-3c presents the overall Project operational emission estimates with a breakdown of pipeline operations subtotals (including heaters) per state, along with the subtotal for the compressor station operational emissions. All subtotals in Table 9.1-3c include the related gas line heater and fuel gas emission estimates.

Heater details, by location, are presented in Appendix L, Table L3-18 (A & B). The estimate of the d total annual operational emissions is provided in Appendix L, Table L3-1, and this table includes emissions for the one fuel gas heater and the auxiliary power unit at the Kidder Compressor Station.

Data Request 98

Provide a copy of the permit application of the Kidder Compressor Station, or indicate when it will be available.

Response 98

The current estimated schedule is that the Plan Approval Application for the Kidder Compressor Station will be submitted to PADEP, and that a full copy will be forwarded to FERC, first quarter of 2016.

Data Request 99

Indicate whether open burning would be used. If so, provide the mitigation measures PennEast would use to minimize air emissions from burning any brush, slash, or and materials generated from construction activities and describe any applicable state or local regulations. Estimate the emissions of criteria pollutants (NOx, VOC, CO, SO2, PM10, and PM2.5), total hazardous air pollutants (HAPs) and greenhouse gases (GHGs) in tons per year from open burning. In addition, identify any state or local regulations or permits required for open burning.

Response 99

Open burning will not be used as per 25 PA Code §129.14, which will also be applied to New Jersey. All brush, timber, stumps, overhanging limbs and slash shall be disposed of by the Contractor in accordance with all applicable permits and state and local regulations. Open burning would not be permitted during construction or operation of the Project.

Data Request 100

Indicate whether PennEast would install any blowdown facilities at the Kidder Compressor Station. In addition, estimate the number of yearly releases, the amount of VOC and GHG released per blowdown in tons per year.

Response 100

PennEast intends to install blowdown facilities at the Kidder Compressor Station. PennEast estimates these emissions in Appendix Table L3-6 – Kidder Compressor Station Venting Emission Estimates. This table includes an estimate of one Emergency Shutdown (entire station) blowdown per year that would release 50,000 standard cubic feet (scf) of natural gas. In addition, other smaller blowdown events such as the 2" Fuel Gas system (1 time per year, 500 scf) and the Turbine Lube Oil Tank Vent (365 times per year, 10 scf per event, total of 3,650 scf per year). The sum total of all station process venting is estimated at 91,756 scf.

As shown in Table L3-6, when this 91,756 scf of gas vents and blowdowns are combined with the natural gas released from pneumatic actuators, the net emissions estimate of Kidder Compressor Station operations is estimated to be 47 tons per year of GHG (based on 1.9 tons per year of methane emissions), and 0.01 tons per year of VOC.

Data Request 101

Provide an air quality screening (AERSCREEN) analysis of the Kidder Compressor Station demonstrating that emissions of criteria pollutants do not result in exceedance of the National Ambient Air Quality Standards (NAAQS), SILs or state standards. Include all input parameters (emission rate, stack height, stack temp, exit velocity, etc.) and justify bases for any assumptions. For any facility requiring refined modeling for an air permit using refined modeling (AERMOD or EPA-approved alternative), provide the modeling protocol, a narrative describing and justifying the modeling basis all inputs (MET data, terrain data), and all input and output files.

Response 101

A Modeling Summary Report is included as Attachment 19 to provide the requested air quality screening modeling analysis of the Kidder Compressor Station (station). The air dispersion modeling performed of the station emissions demonstrates that emissions of criteria pollutants from the station do not result in exceedance of the National Ambient Air Quality Standards (NAAQS).

The model results indicate that the 1-hour NO_2 modeled concentration would exceed the NO_2 SIL for normal "maximum case" operations of the station (all 3 combustion turbine compressors at 100% load). The APU was not modeled per USEPA guidance on intermittent sources. All other pollutant modeled concentrations are below the respective SILs. The SILs analysis presented in Table 3 of the report shows the (Tier 2) 1-hour NO_2 modeled concentration as 19.89 $\mu g/m^3$ which exceeds the SIL of 7.5 $\mu g/m^3$. For non-PSD applications, model results of concentrations above the SILs typically prompt a summation of the project impacts with monitored background concentrations. The report presents this simple screening method for estimating cumulative impacts (highest modeled project concentration plus the highest concentration from recent ambient air monitoring data in the vicinity of the project). Table 4 of the report presents the screening assessment of cumulative impacts and finds that the proposed station would not be predicted to cause an exceedance of the 1-hour NO_2 NAAQS when combined with the existing air quality.

Data Request 102

Provide the distance and direction to the nearest federal Class 1 area.

Response 102

The nearest Mandatory Class I Federal Area is the Brigantine Wilderness Area. It is located approximately 11 miles north of Atlantic City and is approximately 125 miles to the southeast from the Kidder Compressor Station.

Data Request 103

Provide an inventory of current, proposed, and reasonably foreseeable air emission sources within 50 miles of the Project vicinity. Emission sources could be any industrial facilities (i.e., compressor stations, refinery, etc.), and the construction and operational emissions from oil and gas production wells. Provide the location, distance of those emissions sources from the proposed Project, estimated permitted emissions for each criteria pollutant in tons per year, any permits these facilities received or will receive, and then describe the potential incremental cumulative impacts.

Response 103

The figure included in Attachment 20 shows sources of air emissions located within 50 kilometers of the proposed Kidder Compressor Station" is attached, and the table below contains supporting data for this figure lists the mapped Major Source air emission facilities. The basis of the figure and table are air emission facility data from public databases and other industry data sources. The data table includes the location and distance of the emissions sources from the proposed Project as requested. However, the facility details of permitted emission rates, for each criteria pollutant, in tons per year, and details of any permits these facilities have recently received, or will receive, is not readily available. These details are being formally requested from the PADEP, and based on past experience would take approximately 6 weeks of agency effort and time to assemble and obtain. It is estimated that the collection, review and organization of this data could possibly be completed and submitted by the end of the first quarter of 2016. However, this schedule forecasts has not been confirmed with agency consultation.

With respect to the region of influence used by PennEast for its response to this data request, PennEast believes that the requested radius for air emissions sources may have been intended to coincide with the CEQ's handbook on "Considering Cumulative Effects," which notes that the NAAQS analysis requires modeling existing sources for air quality effects "as far aware as 50 kilometers." *See* CEQ, Considering Cumulative Effects at 41-42 (1997). In other recent data requests, PennEast has found no instance of a request for information extending to a 50-mile radius and the Commission has instead consistently sought air emission source information within a 50 kilometer radius. *See* Commission Data Requests in Docket Nos. CP15-499 (issued September 8, 2015), CP15-90 (issued June 18, 2015), CP15-505 (issued September 18, 2015), CP15-520 (issued November 10, 2015), and PF15-26 (issued October 23, 2015). Therefore, PennEast has assumed an intended radius of 50 kilometers.

PennEast has assessed Major Sources of air emissions within this 50-kilometer region of influence. The context of the question appears to suggest by way of example Major Sources (i.e., compressor stations, refinery, etc.), and information on smaller sources is not reasonably available as it would take an extremely long time to gather any available data and would pose a substantial burden on the resources of agencies that would be required to comply with the extensive and numerous FOIA requests that would be necessary to obtain the data on smaller sources. Also, the information on smaller sources likely would provide little to no benefit in performing a full and thorough environmental

analysis as required under NEPA. For these reasons, PennEast has limited its analysis to Major Sources of air emissions.

PennEast notes that the Commission has applied the 50-kilometer radius specifically to project operations in other data requests and, consistent with that approach, the Commission has clarified that the "Cumulative Impact Assessment Area for Air Quality – Operations" of 50 kilometers was not applicable to a project that involved construction of pipeline only where no compressor stations or other stationary sources with operational emissions were part of the project. *See Tennessee Gas Pipeline Company, L.L.C.*, CP15-520, Response to November 10, 2015 Environmental Information Request at 6 (Nov. 30, 2015). Accordingly, PennEast understands that the 50-kilometer radius applies to Project facilities with operational emissions, namely, the proposed Kidder Compressor Station.

Finally, PennEast notes that, relevant to the data request's reference to current air emission sources, Table 9.1-2 included with Resource Report 9 in PennEast's September 24, 2015 certificate application in this proceeding provides the attainment status by Air Quality Control Region on a pollutant-by-pollutant basis for all Project sites, and that the current attainment status considers the contributions from existing air emission sources.

	Facility Name	Owner Or Operator Name	Distance To Kidder CS (Km)	(Mi)	City	County	State	ZIP Code	Database ID
Compressor Stations (Source: POWER MAP 2012 (Q3))									
1	Station NO. 515 - BEAR CREEK	Transcontinental Gas Pipe Line Corp.	10.1	6.3	Bear Creek	Carbon	PA	18602	6199315
Power Generation Stations (Source: POWER MAP 2012 (Q3))									
2	Amity Landfill	Taylor Energy Partners, LP	35.4	22.0	Taylor	Lackawanna	PA	18517	X308
3	Archbald Power Station	PEI Power Corp.	45.9	28.5	Archbald	Lackawanna	PA	18403	50279
4	Green Knight Energy Center	Waste Management, Inc.	42.5	26.4	Pen Argyl	Northampton	PA	18072	55765
5	Harwood (PPLGEN)	PPL Generation, LLC	34.6	21.5	NOT GIVEN	Luzerne	PA	18201	3144
6	Hazleton	Williams Generation Co.-Hazleton	36.0	22.4	Hazleton	Luzerne	PA	18201	10870
7	Hunlock Creek	UGI Utilities, Inc.	36.5	22.7	Hunlock Creek	Luzerne	PA	18621	3176
8	Hunlock Creek 4		36.5	22.7	Hunlock Creek	Luzerne	PA	18621	56397
9	Jenkins	PPL Generation, LLC	25.6	15.9	NOT GIVEN	Luzerne	PA	18640	3146
10	Keystone Landfill	Keystone Recovery, Inc.	39.5	24.5	Throop	Lackawanna	PA	18512	54934
11	Northampton Generating Company	Northampton Generating Co., LP	46.0	28.6	Northampton	Northampton	PA	10867	50888
12	Northeastern Power Cogeneration	SUEZ Energy Generation North America Inc	36.0	22.4	Mcadoo	Schuylkill	PA	18237	50039
13	Panther Creek Energy Facility	Exelon Generation Co., LLC	30.8	19.2	Nesquehoning	Carbon	PA	18240	50776
14	Susquehanna	PPL Generation, LLC	40.7	25.3	Berwick	Luzerne	PA	18603	6103
15	Taylor Energy Partners	Taylor Energy Partners, LP	34.7	21.6	Taylor	Lackawanna	PA	18517	50782
Major Industrial Facilities (Source: EPA FRS Database 2015)									
16	Essroc Cement Corp - Plant 3		48.3	30.0	Nazareth	Northampton	PA	18064	110000335012

	Facility Name	Owner Or Operator Name	Distance To Kidder CS (Km)	(Mi)	City	County	State	ZIP Code	Database ID
17	Buzzi Unicem Stockertown Plant		49.5	30.8	Stockertown	Northampton	PA	18083	110000335049
18	Silgan White Cap Corp		32.2	20.0	Hazleton	Luzerne	PA	18201	110000335254
19	Multi-Plastics Extrusions Inc		30.0	18.6	Hazleton	Luzerne	PA	18201	110000335290
20	National Starch & Chemical		35.4	22.0	Hazleton	Luzerne	PA	18201	110000335325
21	Mactac		32.1	20.0	Scranton	Lackawanna	PA	18505	110000335539
22	Polychemie		34.7	21.6	Taylor	Lackawanna	PA	18517	110000555355
23	Keystone Cement Co		46.4	28.8	Bath	Northampton	PA	18014	110000584332
24	Air Prod & Chem Tamaqua Plt		41.1	25.6	Tamaqua	Schuylkill	PA	18252	110000584449
25	Silberline Mfg Co, Inc		39.3	24.4	Tamauqua	Schuylkill	PA	18252	110000584458
26	Cheetah Chassis Corp/Berwick Plt		48.7	30.2	Berwick	Columbia	PA	18603	110000584519
27	Cascades Tissue Group PA Inc Ransom Mill		36.7	22.8	Ransom	Lackawanna	PA	18653	110000584555
28	National Electrical Carbon Products, Inc		40.1	24.9	East Stroudsburg	Monroe	PA	18301	110000701928
29	Encor Coatings Inc		47.2	29.3	Bath	Northampton	PA	18014	110000772646
30	Air Products & Chemicals Inc		27.2	16.9	Wilkes Barre Township	Luzerne	PA	18702	110000841457
31	Newstech PA Lp		46.3	28.8	Northampton	Northampton	PA	18067	110000878809
32	Alliance Sani Ldfl		34.6	21.5	Taylor	Lackawanna	PA	18517	110001028290
33	Acton Technologies Inc		27.7	17.2	Pittston	Luzerne	PA	18640	110001066462
34	Altadis Usa Inc		33.7	20.9	Mcadoo	Schuylkill	PA	18237	110002470317

	Facility Name	Owner Or Operator Name	Distance To Kidder CS (Km)	(Mi)	City	County	State	ZIP Code	Database ID
35	Sanofi Pasteur Inc		28.5	17.7	Swiftwater	Monroe	PA	18370	110006522735
36	Leggett & Platt		39.8	24.8	Berwick	Luzerne	PA	18603	110006662478
37	PA Dpw White Haven Ctr		11.1	6.9	White Haven	Luzerne	PA	18661	110007028064
38	Wilkes Barre Materials/Plains Plt		24.9	15.5	Laflin	Luzerne	PA	18705	110007220186
39	Ppl Martins Creek Llc/Jenkins Ctg		25.6	15.9	Laflin	Luzerne	PA	18705	110007340332
40	Prince Manufacturing Co		31.4	19.5	Bowmanstown	Carbon	PA	18030	110010987254
41	Schott Na		30.3	18.8	Duryea	Luzerne	PA	18642	110010989109
42	Vertellus Health & Specialty Prod		45.8	28.4	Delaware Water Gap	Monroe	PA	18327	110011537088
43	Us Army Tobyhanna Army Depot		24.0	14.9	Tobyhanna	Monroe	PA	18466	110011575189
44	Green Knight Economic Dev		41.9	26.0	Pen Argyl	Northampton	PA	18072	110012591187
45	Johns Manville		32.9	20.5	Hazleton	Luzerne	PA	18201	110017418230
46	Michelman Cancelliere Iron Works Inc		48.4	30.1	Bath	Northampton	PA	18014	110018493334
47	World Color (Usa) Llc (Dba Worldcolor Hazleton)		31.2	19.4	Hazleton	Luzerne	PA	18201	110020054199
48	Buchheit Logistics Inc/Tamaqua		40.1	24.9	Tamaqua	Schuylkill	PA	18252	110021110199
49	Gfc Dura Bond L L C		48.9	30.4	Berwick	Columbia	PA	18603	110033595492
50	Pocono Mountains Muni		24.8	15.4	Mount Pocono	Monroe	PA	18344	110037993384
51	Wilkes-Barre Wyoming Va		28.6	17.7	Wilkes-Barre	Luzerne	PA	Tbd	110038027355
52	Hazleton Muni		29.7	18.4	Hazleton	Luzerne	PA	Tbd	110038036666

	Facility Name	Owner Or Operator Name	Distance To Kidder CS (Km)	(Mi)	City	County	State	ZIP Code	Database ID
53	Wilkes-Barre/Scranton I		28.6	17.8	Wilkes-Barre/Scranton	Luzerne	PA	Tbd	110038101498
54	Lehighton		27.0	16.8	Lehighton	Carbon	PA	18235	110040621869
55	Lockheed Martin Tact/Archbald		47.2	29.3	Archbald	Lackawanna	PA	18403	110041152971
56	HPG Intl Inc		18.6	11.6	Mountain Top	Luzerne	PA	18707	110041452406
57	Ametek Westchester Plastics		28.6	17.8	Nesquehoning	Carbon	PA	18240	110041569077
58	Keystone Sanitary Landfill		38.8	24.1	Dunmore	Lackawanna	PA	18512	110043813013
59	Bemis Company Inc.		32.5	20.2	Hazleton	Luzerne	PA	18202	110045604057
60	Royal Chemical		39.6	24.6	East Stroudsburg	Monroe	PA	18301	110055107851

Noise

Data Request 104

With regard to HDD activities, provide the following:

a. It is stated that once survey access has been obtained, noise studies at the NSAs nearest to the HDDs entry and exit locations would be conducted. Indicate PennEast's plan to conduct noise surveys at the nearest noise sensitive areas (NSAs) to HDDs in the event PennEast can't obtain survey access;
b. identify all NSAs within ½ mile of each HDD entry and exit location;
c. the estimated number of days of drilling required for each location, and whether drilling would be done 24 hours per day;
d. a topographic map showing the distance and direction of the nearest NSAs within ½ mile of each HDD entry and exit location;
e. the ambient day-night average noise (L_{dn}) at the nearest NSAs, the estimated noise impacts at the NSAs during drilling activities, and the total noise including ambient and estimated noise; and
f. a description of any noise mitigation (or propose alternate measures such as temporary relocation, compensation, etc. that would be implemented during short term drilling operations) which would be implemented during drilling activity to reduce noise impacts at the NSAs to below 55 dBA L_{dn}, or 10 dBA over background if ambient levels are above 55 dBA L_{dn}.

Response 104

Attachment 21 includes a revised Section 9.2 of Resource Report 9 and provides an update of the noise analysis.

a. Section 9.2.2.2.2 - Baseline noise field survey was conducted at 17 locations, at or in proximity to NSA considered nearest to HDD positions.

b. Figures 9.2-4 through 9.2-13 show nearest NSA to HDD entry and exit sites.

c. Information not known at this time, analysis assumes (for purposes of HDD noise Ldn calculation) that HDD may take one or multiple 24-hour periods to complete.

d. Figures 9.2-4 through 9.2-13 provide a topographic map showing the following for each NSA:
    1. The HDD entry and exit location and half-mile radius
    2. Distances and directions of the nearest NSAs within ½ mile of each HDD N
    3. Locations of the baseline noise level measurements

e. Section 9.2.4.4.3 and Table 9.2-16 presents estimated ambient day-night average noise (Ldn) for each nearest NSA identified at each HDD crossing entry and exit site.

f. Section 9.2.7.2.3 describes three suggested types of temporary noise barriers that may be implemented between the construction activity and the nearest NSA locations

during short term drilling operations. Table 9.2-18 presents the estimated HDD Noise Levels with the use of the proposed temporary noise barriers.

Data Request 105

Provide a revised table 9.2-3 that includes the calculated L_{dn} sound level metrics for all short-term monitoring locations.

Response 105

Attachment 21 – revised Section 9.2 – provides updated Tables 9.2-2 and 9.2-3.

Data Request 106

Provide a figure showing estimated sound contours during operation of the Kidder Compressor Station. The figure should include the NSAs identified in table 9.2-12 and the same study area shown in figure 9.2-3.

Response 106

Attachment 21 – revised Section 9.2 – provides an updated Figure 9.2-3.

Data Request 107

Provide a revised table 9.2.12 that includes:

a. the average ambient sound levels, not just the quieter ambient sound levels;
b. clarification whether the estimated noise listed includes mitigation or not; and
c. the estimated noise with mitigation and without mitigation.

Response 107

Attachment 21 – revised Section 9.2 – provides a revised Table 9.2.12.

Data Request 108

The NSAs presented in table 9.2-13 and table 9.2-12 do not match. Provide revised tables 9.2-13 and 9.2-12 with matching NSAs, and use consistent baseline L_{dn} values to represent ambient sound levels at those NSAs. Also, include the calculated resulting increase in ambient sound levels at each NSA.

Response 108

Attachment 21 – revised Section 9.2 – provides revised tables 9.2-13 and 9.2-12.

Data Request 109

PennEast states on page 9-41 that the Snow Ridge Village, Jack Frost Big Boulder Ski Area, Jack Frost Natural Golf Club, Hickory Run State Park, and the Beltzville State Park would be over 1 mile away from the Kidder Compressor Station. Provide the distance of those recreational areas from proposed HDD entry and exit locations. Provide revised table 9.2-14 that includes predicted pipeline construction noise levels at the three NSAs presented in table 9.2-12; the Econolodge, Pizza Residence, and Golf Course.

Response 109

Attachment 21 – revised Section 9.2 – provides revised table 9.2-14..

Data Request 110

Confirm that the column in table 9.2-15 labeled as "estimated existing ambient noise level" includes actual measured ambient sound levels at each HDD crossing. In addition, confirm that the column labeled as "total estimated ambient sound level" represents the total cumulative sound level of ambient conditions plus the proposed HDD activities.

Response 110

Attachment 21 – revised Section 9.2 – provides an updated Table 9.2-16.

Data Request 111

Provide a discussion of noise related to blasting during pipeline trench excavation.

Response 111

Attachment 21 – revised Section 9.2.4.1.2.4 – provides an updated noise analysis.

Data Request 112

Provide a noise analysis from the operation of meter stations and mainlines valves within ½ mile of the NSAs, which includes the ambient noise, estimated noise, and total noise in L_{dn}. In addition, identify any mitigation measures, including specific control, equipment that PennEast would commit to in order to reduce noise.

Response 112

Attachment 21 – revised Section 9.2 – provides an updated noise analysis.

Resource Report 10 - Alternatives

Data Request 113

Provide a table similar to table 10.2-1 for the Transco Leidy Line Alternative, but that includes the following revisions:

a. the addition of a column that lists resources that would be affected by the proposed route between about mileposts 19 and 114;
b. additional pipeline on the Transco Leidy Alternative as needed to make the alternative end at the same point as the proposed route, or a statement confirming that PennEast's proposed natural gas deliveries could be made at the end point of the alternative as shown on PennEast's figure 10.2-1;
c. the resources affected by the alternative route only along the section of alternative between about MPs 19 and the end point of the alternative (as determined in item b above);
d. for all acreage calculations included in the table, revise to show only the acreage that would be affected by actual project construction and operation of the proposed or alternative pipelines, not the resources within the 400 foot study corridor;
e. the acreage of forest vegetation that would be affected by both pipeline construction and operation;
f. acreage of forested wetland that would be affected by both pipeline construction and operation;
g. for resources crossed by the proposed and alternative routes, and quantified by the number of crossings, the number of these resources that would be crossed by the pipeline centerline, not number within the 400 foot study corridor; and
h. the number of residences that would be within 50 feet of the pipeline construction work areas.

Response 113

Table 10.2-1
Transco Leidy Line Alternative

CIA Items	Pennsylvania		New Jersey		Total Project		Transco Route MP 19 to 114		Dec Route MP 19 to 114	
	Const. ROW	Oper. ROW	Const. ROW	Oper. ROW	Const. ROW	Oper. ROW	Const. ROW	Oper. ROW	Const. ROW	Oper. ROW
Length (Miles) [1]	59.07		54.3		113.37		94.82		97.67	
Municipalities Crossed (#) [2]	16		11		27		18		22	
Stream Crossings (Total as NHD streams) [3]	55		54		109		93		106	
PA EV Cold Water Fishes (EV-CWF, Total)[4]	4		0		4		4		5	

CIA Items	Pennsylvania	New Jersey	Total Project	Transco Route MP 19 to 114	Dec Route MP 19 to 114
PA HQ Cold Water Fishes (HQ-CWF, Total) [4]	28	0	28	23	17
PA Cold Water Fishes (CWF, Total) [4]	21	0	21	11	20
PA Warm Water Fishes (WWF, Total) [4]	2	0	2	1	2
PA Trout Stocking Stream (TST, Total) [4]	0	0	0	0	0
PA Naturally Producing Trout Waters (from EV) [5]	2	0	2	2	4
PA Naturally Producing Trout Waters (from HQ) [5]	4	0	4	3	7
PA Naturally Producing Trout Waters (from CWF)[5]	7	0	7	2	5
Other, Non-PA Chapter 93 Designated Streams (NHD streams) [4]	0	0	0	54	62
NJDEP SWQS Category 1 Streams	NA	18	18	18	31
DRBC Wild and Scenic River Crossings	1 (Lower Delaware River)	1 (Musconetcong River)	2	2	0
Total Acreage of wetlands (PA NWI and NJDEP)	35 12	60 17	95 29	60 17	30 18
Wetland Crossings (of the Center Line) [6]	25	49	74	68	59
Total number of NHD waterbodies (of the Centre Line[7]	9	1	10	7	7
Total Acreage of NHD waterbodies[7]	20 6.51	0.8 0.02	21 7	11 2	5 4

CIA Items	Pennsylvania		New Jersey		Total Project		Transco Route MP 19 to 114		Dec Route MP 19 to 114	
Total # Wells (PAGWIS and NJDEP)	0	0	0	0	0	0	0	0	0	
Wind Turbines (USGS)	0	0	0	0	0	0	0	0	0	
Approx. Acreage of County Natural Heritage Inventory Core Habitat (PA)	43	14	NA		43	14	25	9	86	36
Approx. Acreage of National Audubon Society Important Bird Area	169	56	209	68	378	125	378	125	410	157
Approx. Acreage of County Natural Heritage Inventory Provisional Species of Concern (PA)	45	15	NA		45	15	45	15	50	20
Approx. Acreage of County Natural Heritage Inventory Supporting Landscape area (PA)	264	88	NA		264	88	264	88	648	160
Approx. Acreage of Natural Heritage Priority Sites for Rare Species and Ecological Communities (NJ)	NA		0	0	0	0	0	0	13	4
Approx. Acreage of Critical Environmental and Historic Sites (NJ)	NA		12	4	12	4	12	4	6	2
Known Contaminated Sites (NJ)	NA		0	0	0	0	0	0	0	0

CIA Items	Pennsylvania		New Jersey		Total Project		Transco Route MP 19 to 114		Dec Route MP 19 to 114	
Approx. Acreage of Groundwater Contamination Areas (CEA) (NJ)	NA		0	0	0	0	0	0	0	0
Approx. Acreage of NJDEP Tier 1 Well Head Protection Area (NJ)	NA		14	5	14	5	14	5	3	1
Potential NRHP Cultural Resources (unrestricted)	0	0	0	0	0	0	0	0	0	0
Approx. Acreage of Delaware and Raritan Canal Commission Review Zone A (NJ)	NA		0	0	0	0	0	0	0	0
Approx. Acreage of Delaware and Raritan Canal Commission Review Zone B (NJ)	NA		0	0	0	0	0	0	407	138
Total # of churches, cemeteries, schools, and parks[8]	0		0	0	0	0	0	0	0	0
Approx. Acreage of Highland Preservation Area (NJ)	NA		132	44	132	44	132	44	0	0
Approx. Acreage of Highland Preservation Sewer Service Area (NJ)	NA		2	1	2	1	2	1	0	0
Approx. Acreage of Historic Properties (NJ SHPO)	NA		21	7	21	7	21	7	32	15

CIA Items	Pennsylvania		New Jersey		Total Project		Transco Route MP 19 to 114		Dec Route MP 19 to 114	
Approx. Acreage of Open Space (State) (NJ)[9]	NA		5	2	5	2	5	2	8	3
Approx. Acreage of State Parks (PA)	2	1	NA		2	1	0	0	53	27
Approx. Acreage of State Forests (PA)	6	2	NA		6	2	0	0	6	4
Approx. Acreage of State Game Lands (PA)	58	19	NA		58	19	10	3	68	21
Length of PA Trails within 50' and 150' of line (miles) [10]	0.2	0.07	NA		0.2	0.07	0.1	0.03	0.2	0.2
Total Acreage of 100 Year Flood Hazard areas (FEMA)	NA		NA		NA		NA		N/A	N/A
Total Acreage of Preserved Farmland[11]	37	12	60	20	98	33	98	33	199	69
Approx. Acreage of Forested Vegetation	669	223	232	73	901	296	639	208	835	314
Approx. Acreage of Forested Wetlands	19	6	34	11	53	17	51	16	30	2
Railroad Crossings (Status Unknown) [12]	8		0		8		4		11	
Road Crossings [13]	114		78		192		155		145	
Bridge Crossings(all) [14]	1	0	0	0	1	0	1	0	0	0
Bridges Structurally Deficient or Functionally Obsolete(from all bridges) [15]	1	0	0	0	1	0	1	0	0	0
Product Pipeline Crossings [16]	3		0		3		0		6	

CIA Items	Pennsylvania		New Jersey		Total Project		Transco Route MP 19 to 114		Dec Route MP 19 to 114	
Existing Gas Pipeline Crossings [16]	NA		NA		NA		NA		N/A	
Transmission line Crossings [16]	21		8		29		19		29	
Karst/Sink holes (PA) (DCNR Bureau of Topographic and Geologic Survey)	0		NA		0		0		99	18
Coal Mines (PA) (DCNR)	0	0	NA	NA	0	0	0	0	0	0
Number of residents within 50' of pipeline construction work areas	220		145		365		253		76	
Approx. Acreage of Slopes > 30%	NA	NA	NA	NA	NA	NA	NA	NA	N/A	N/A
Total Acreage of workspace	1074	358	769	256	1843	614	1505	502	1864	619
Percent of workspace that is wetland	3.26%	3.35%	7.80 %	6.64 %	5.15%	4.72 %	3.99%	3.39 %	1.59%	2.87 %

Notes:
[1] Length of pipeline for the Transco Alternative includes a potential 12-mile lateral
[2] Municipality crossings based on the PennDOT and NJDOT boundaries data sets
[3] Stream crossings are based on the intersect of the pipeline and the 2002 National Hydrography Dataset NHD Flowline (PA) & NJDEP SWQ Streams (NJ)
[4] Penn State Streams Chapter 93 Designated Use
[5] Pennsylvania Fish and Boat Commission data (Oct 2013); counts should not be summed as a crossing is already counted for other categories
[6] Wetland crossing counts based on the intersect of the pipeline into a discretely mapped wetlands
[7] NHD waterbodies includes only lakes and ponds and not stream areas
[8] Churches, schools, and cemetery counts are based on USGS GNI
[9] NJDEP Open Space (State, County, Cross-Acceptance)
[10] PA DCNR and Rails-to-Trails Conservancy
[11] PA Agricultural Security Areas and NJ Farmland Parcel Preservation Program
[12] PennDOT County Rail lines NJDOT Rail Network
[13] PennDOT State and Local roads; NJDOT Road Network
[14] Federal Highway Administration National Bridge Inventory
[15] Structurally deficient criteria defined at http://nationalbridges.com/nbiDesc.html#SDFO
[16] Platts POWERmap®
[17] The totals shown on this table may not equal the sum of addends due to rounding.

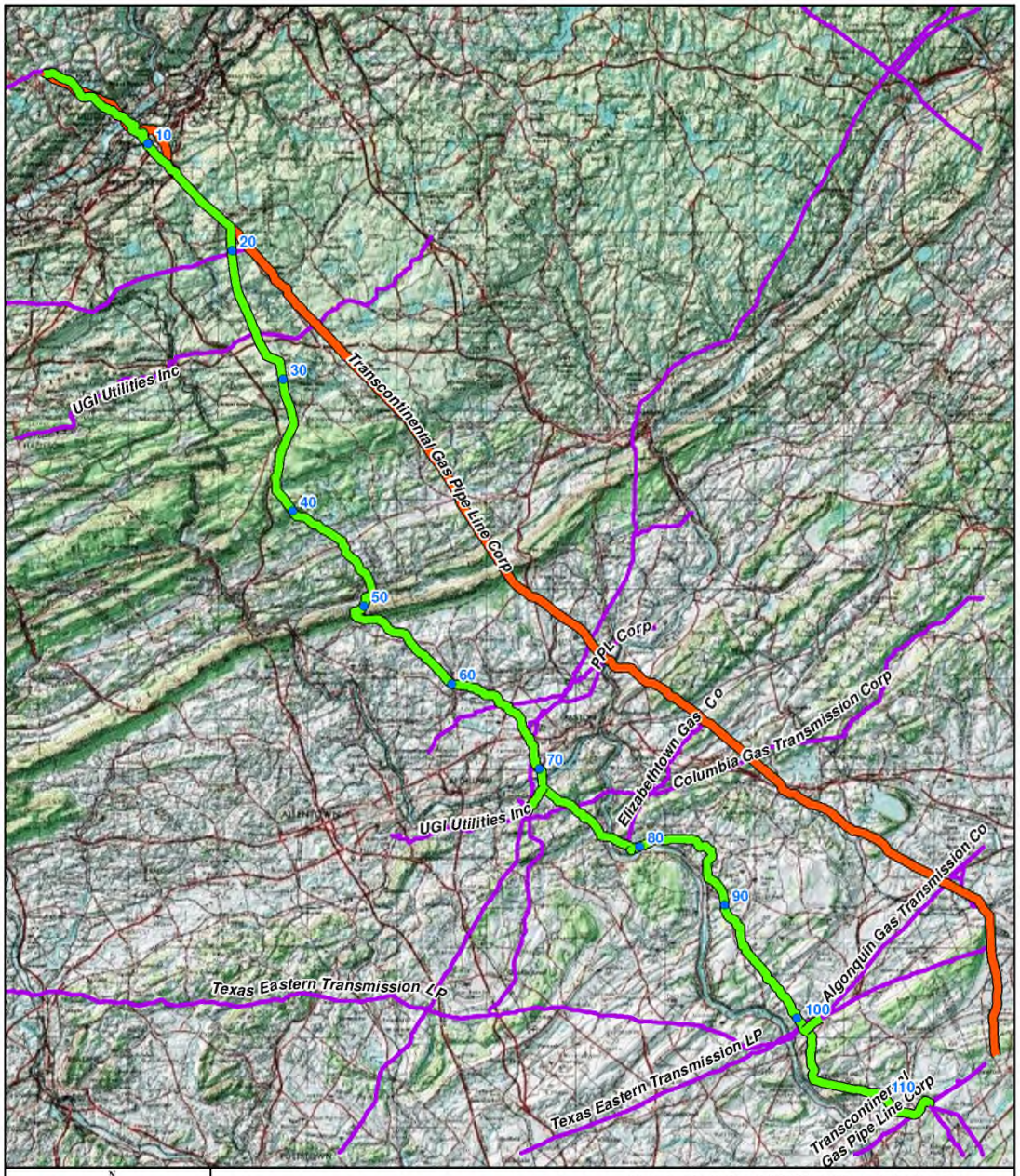
Data Request 114

Provide narrative text that describes a major pipeline alternative route that would follow the Transco Leidy line between approximate MPs 19 and 114 of the proposed route. Include the environmental characteristics of the alternative and the corresponding segment of the proposed route, including any significant resources that would be crossed. Summarize the potential environmental advantages and disadvantages of this major route alternative compared to the corresponding segment of proposed route, and include a clear statement of the overall advantages and disadvantages of the proposed route. Also, provide a figure showing the pipeline alternative and corresponding segment of proposed route (see items a. and b. in the preceding request, using U.S. Geological Survey topographic mapping as the base).

Response 114

PennEast considered a route which would follow the Transco Leidy ROW as an alternative to the project. This pipeline alternative is illustrated in relation to the current proposed route in Figure 10.2-1, below. However, this alternative does not offer the same access to specific delivery point locations provided by the Project. This would necessitate multiple laterals spanning several miles each. Transco Leidy operates in an extremely densely populated area, which would result in operating and construction impacts to almost 200 additional residential structures when compared with the current proposed route between MPs 19 and 114. By only increasing overall length by approximately 3 miles, PennEast's proposed route greatly reduces residential impacts. These encroachments would also require significant greenfield construction despite colocation with the Transco Leidy pipeline. The constructability issues with a congested ROW are also avoided by PennEast's proposed route, as well as significantly reduced disruption in neighborhoods.

While the alternative would be advantageous in several critical issues analysis categories, such as fewer NHD stream crossings and reduced preserved farmland acreage impacts. The proposed route would also be advantageous in relation to several other critical issues, such as reduced total acreage of PA NWI and NJDEP wetlands and a reduced number of wetlands and waterbodies crossed. In addition, as an overall percentage of the workspace, PennEast's proposed route significantly reduces impacts in wetlands. A summary table of all critical issues analysis items is included in the revised Table 10.2-1 (provided in response to Data Request 113). The proposed route has significant constructability and residence-avoidance advantages, with the disadvantages of the aforementioned increased environmental impacts outlined in Table 10.2-1.



N W E S

0 2.5 5 10 Miles

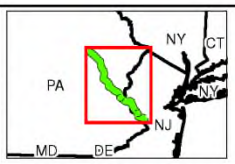
Legend

- Mile Post
- PennEast Proposed Route
- Transco Leidy Line Alternative
- Existing Gas Pipeline

Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

TITLE:
Figure 10.2-1
PennEast Pipeline Project
Alternative Routes Map - Transco Leidy Line Alternative

LOC:			REV.:
CKD. BY: BH	ENG.:	Date: 12/10/2015	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET:



PennEast PIPELINE

PennEast Pipeline Company, LLC

Data Request 115

For the analysis of the alternative to the corresponding segment of the proposed route between approximate MPs 75 and 97, provide the following:

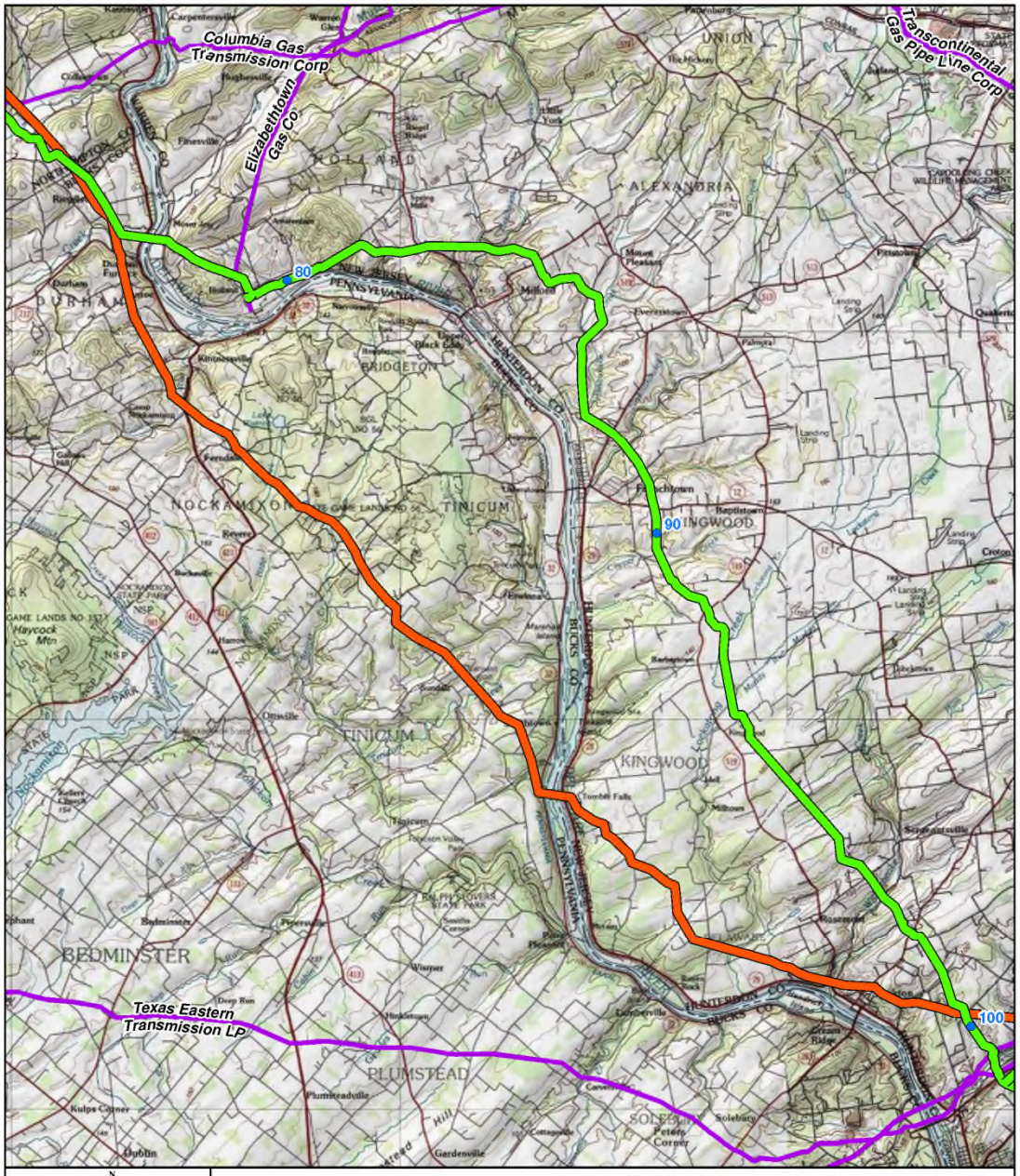
a. a narrative that describes why PennEast evaluated the alternative, the location of the alternative including the corresponding MPs (of the proposed route) where the alternative deviates from and rejoins the proposed route, and the environmental characteristics of the alternative and the corresponding segment of the proposed route, including any significant resource issues crossed;
b. Summarize the potential environmental advantages and disadvantages of this alternative compared to the corresponding segment of proposed route, and include a clear statement of the overall advantages and disadvantages of the proposed route;
c. a revised table 10.3-10 that includes:
    i. for all acreage calculations included in the table, revise to show only acreage that would be affected by actual project construction and operation of the proposed and alternative pipelines, not the resources within the 400 foot study corridor;
    ii. acreage of forest vegetation that would be affected by both pipeline construction and operation;
    iii. acreage of forested wetland that would be affected by both pipeline construction and operation;
    iv. for resources that would be crossed by the proposed and alternative routes, and quantified by the number of crossings, show the number crossed by the pipeline centerline, not number within the 400 foot study corridor;
    v. the number of residences that would be within 50 feet of the pipeline construction work areas;
    vi. the number and/or acreage of sensitive or specially designated habitats or land uses crossed; and
d. a revised figure 10.3-4 using USGS topographic mapping as the base.

Response 115

PennEast evaluated the “Original Route” in order to avoid standing structures, densely populated areas, and planned development projects. This portion of the alternative deviates from the current proposed route at approximate MP 76.7 (MP 75 of the Filed Route – September 24, 2015 certificate application) and rejoins at MP 99.7 (MP 97 of the Filed Route – September 24, 2015 certificate application). This portion of the pipeline alternative is illustrated in relation to the current proposed route in Figure 10.3-4, below.

The original route is two miles shorter than the corresponding portion of the proposed route along this analyzed section. The number of structures impacted is reduced by one third. In addition, the constructability of the route is improved, with lower acreages of slopes greater than 30% and fewer road crossings. The critical issues analysis showed decreased environmental impacts in several critical issues categories when compared to the original route, such as approximate acreage of forested vegetation and wetlands. In addition, there are reduced impacts to acreage with supporting rare species. The original

route has fewer crossed streams and wetlands crossed by the centerline, and a lower percentage of operational ROW that is a wetland. A summary table of all critical issues analysis items is included in the revised Table 10.3-10 (provided in response to Data Request 115, Part C). The proposed route has reduced impacts to residences in addition to key environmental advantages of reduced forested and rare species area impacts. This comes at the expense of increased length, more stream and wetland crossings, and slightly increased area (as a percentage) of operational ROW in a wetland.



Legend

Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

- Mile Post
- PennEast Proposed Route
- PennEast Original Route
- Existing Gas Pipeline

0 0.5 1 2 Miles

TITLE: Figure 10.3-4
PennEast Pipeline Project - Alternative Routes Map
Original Route and Proposed Route

LOC:			REV.:
CKD. BY: BH	ENG.:	Date: 12/10/2015	W.O.:
DRN. BY: CS	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET:

PennEast PIPELINE
PennEast Pipeline Company, LLC

Table 10.3-10
Critical Issues Analysis for MP 75-97 of the Proposed Route and Corresponding Segment of the Original Route

CIA Items	Original Route		Proposed Dec 2015 Route	
	Construction ROW	Operational ROW	Construction ROW	Operational ROW
Length (Miles) [1]	20		22	
Municipalities Crossed (#) [2]	8		7	
Stream Crossings (Total as NHD streams) [3]	30		37	
PA EV Cold Water Fishes (EV-CWF, Total)[4]	7		0	
PA HQ Cold Water Fishes (HQ-CWF, Total) [4]	0		0	
PA Cold Water Fishes (CWF, Total) [4]	4		0	
PA Warm Water Fishes (WWF, Total) [4]	1		1	
PA Trout Stocking Stream (TST, Total) [4]	4		0	
PA Naturally Producing Trout Waters (from EV) [5]	1		0	
PA Naturally Producing Trout Waters (from HQ) [5]	0		0	
PA Naturally Producing Trout Waters (from CWF)[5]	1		0	
Other, Non-PA Chapter 93 Designated Streams (NHD streams) [4]	14		36	
NJDEP SWQS Category 1 Streams	3		21	
DRBC Wild and Scenic River Crossings	1		0	
Total Acreage of wetlands (PA NWI and NJDEP)	17	6	12	8
Wetland Crossings (of the Center Line) [6]	18		34	
Total number of NHD waterbodies(of the centerline) [7]	0		2	
Total Acreage of NHD waterbodies[7]	0.2	0.0	0.1	0.1
Total # Wells (PAGWIS and NJDEP)	0	0	0	0
Wind Turbines (USGS)	0	0	0	0
Approx. Acreage of County Natural Heritage Inventory Core Habitat (PA)	46	15	0	0
Approx. Acreage of National Audubon Society Important Bird Area	0	0	125	49
Approx. Acreage of County Natural Heritage Inventory Provisional Species of Concern (PA)	61	20	0	0

CIA Items	Original Route		Proposed Dec 2015 Route	
he number of Sensitive or Specially Designated habitats or land use crosses (PA) (from NH Inventory Provisional Species of Concern)	3	1	0	0
Approx. Acreage of County Natural Heritage Inventory Supporting Landscape area (PA)	45	15	37	12
Approx. Acreage of Natural Heritage Priority Sites for Rare Species and Ecological Communities (NJ)	1	0.47	0	0
The number of Sensitive or Specially Designated habitats or land use crosses (NJ) (from Priority Sites for Rare Species and Ecological Communities)	0	0	3	1
Approx. Acreage of Critical Environmental and Historic Sites (NJ)	0	0	0	0
Known Contaminated Sites (NJ)	0	0	0	0
Approx. Acreage of Groundwater Contamination Areas (CEA) (NJ)	0		0	
Approx. Acreage of NJDEP Tier 1 Well Head Protection Area (NJ)	0	0	3	1
Potential NRHP Cultural Resources (unrestricted)	0	0	0	0
Approx. Acreage of Delaware and Raritan Canal Commission Review Zone A (NJ)	7	4	0	0
Approx. Acreage of Delaware and Raritan Canal Commission Review Zone B (NJ)	84	28	113	30
Total # of churches, cemeteries, schools, and parks [8]	0	0	0	0
Approx. Acreage of Highland Preservation Area (NJ)	0	0	0	0
Approx. Acreage of Highland Preservation Sewer Service Area (NJ)	0	0	0	0
Approx. Acreage of Historic Properties (NJ SHPO)	4	1	0	0
Approx. Acreage of Open Space (State) (NJ) [9]	4	1	0	0
Approx. Acreage of State Parks (PA)	0.3	0.1	0	0
Approx. Acreage of State Forests (PA)	0	0	0	0
Approx. Acreage of State Game Lands (PA)	0	0	0	0
Length of PA Trails (miles) [10]	0.06	0.02	0.02	0.02

CIA Items	Original Route		Proposed Dec 2015 Route	
Total Acreage of 100 Year Flood Hazard areas (FEMA)	5	2	14	8
Total Acreage of Preserved Farmland [11]	44	14	82	32
Approx. Acreage of Forested Vegetation	200	66	142	57
Approx. Acreage of Forested Wetlands	3	1	0.4	0.2
Railroad Crossings (Status Unknown) [12]	0		0	
Road Crossings [13]	40		28	
Bridge Crossings (all) [14]	0	0	0	0
Bridges Structurally Deficient or Functionally Obsolete (from all bridges) [15]	0	0	0	0
Product Pipeline Crossings [16]	2		2	
Existing Gas Pipeline Crossings [16]	0		2	
Transmission line Crossings [16]	5		9	
Karst/Sink holes (PA) (DCNR Bureau of Topographic and Geologic Survey)	4	0	10	8
Coal Mines (PA) (DCNR)	0	0	0	0
Number of residents within 50' of pipeline construction work areas	21		14	
Approx. Acreage of Slopes > 30%	15	5	11	4
Total workspace Acreage	365	122	388	135
Percent of workspace that is wetland	5%	5%	3%	6%

Notes:
[1] Length of pipeline for the Transco Alternative includes a potential 12-mile lateral
[2] Municipality crossings based on the PennDOT and NJDOT boundaries data sets
[3] Stream crossings are based on the intersect of the pipeline and the 2002 National Hydrography Dataset NHD Flowline (PA) & NJDEP SWQ Streams (NJ)
[4] Penn State Streams Chapter 93 Designated Use
[5] Pennsylvania Fish and Boat Commission data (Oct 2013); counts should not be summed as a crossing is already counted for other categories
[6] Wetland crossing counts based on the intersect of the pipeline into a discretely mapped wetlands
[7] NHD waterbodies includes only lakes and ponds and not stream areas
[8] Churches, schools, and cemetery counts are based on USGS GNI
[9] NJDEP Open Space (State, County, Cross-Acceptance)
[10] PA DCNR and Rails-to-Trails Conservancy
[11] PA Agricultural Security Areas and NJ Farmland Parcel Preservation Program
[12] PennDOT County Rail lines NJDOT Rail Network
[13] PennDOT State and Local roads; NJDOT Road Network
[14] Federal Highway Administration National Bridge Inventory
[15] Structurally deficient criteria defined at http://nationalbridges.com/nbiDesc.html#SDFO
[16] Platts POWERmap®
[17] The totals shown on this table may not equal the sum of addends due to rounding.

Data Request 116

For the analysis of the alternative to the corresponding segment of the proposed route between approximate MPs 97 and110, provide the following:

a. revised alternative pipeline route that includes additional pipeline at the end of the alternative as needed so the alternative ends at the same location as the proposed route, or a statement confirming that the proposed natural gas deliveries could be made at the end point of the alternative route as shown on PennEast's Figure 10.3-5;
b. a narrative that describes why PennEast evaluated a specific route alternative, the location of the alternative including the mileposts (of the proposed route) at which the alternative deviates from and rejoins the proposed route, and the environmental characteristics of the alternative and the corresponding segment of the proposed route, including any significant resource issues crossed. Summarize the potential environmental advantages and disadvantages of this alternative compared to the corresponding segment of proposed route, and include a clear statement of the overall advantages of the proposed route;
c. revised Table 10.3-11 that includes the following:
    i. the revised pipeline alternative if needed based on item a. above;
    ii. for all acreage calculations included in the table, revise to show only acreage that would be affected by actual project construction and operation of the proposed or alternative pipelines, not the resources within the 400 foot study corridor;
    iii. acreage of forest vegetation that would be affected by both pipeline construction and operation;
    iv. acreage of forested wetland that would be affected by both pipeline construction and operation;
    v. for resources crossed the proposed and alternative routes, and quantified by number of crossings, revise to show the number crossed by the pipeline centerline, not number within the 400 foot study corridor;
    vi. number of residences located within 50 feet of the pipeline construction work area;
    vii. the number and/or acreage of sensitive or specially designated habitats or land uses crossed; and
d. revised Figure 10.3-5 using USGS topographic mapping as the base, and also showing the revised pipeline alternative route if needed based on item a. above.

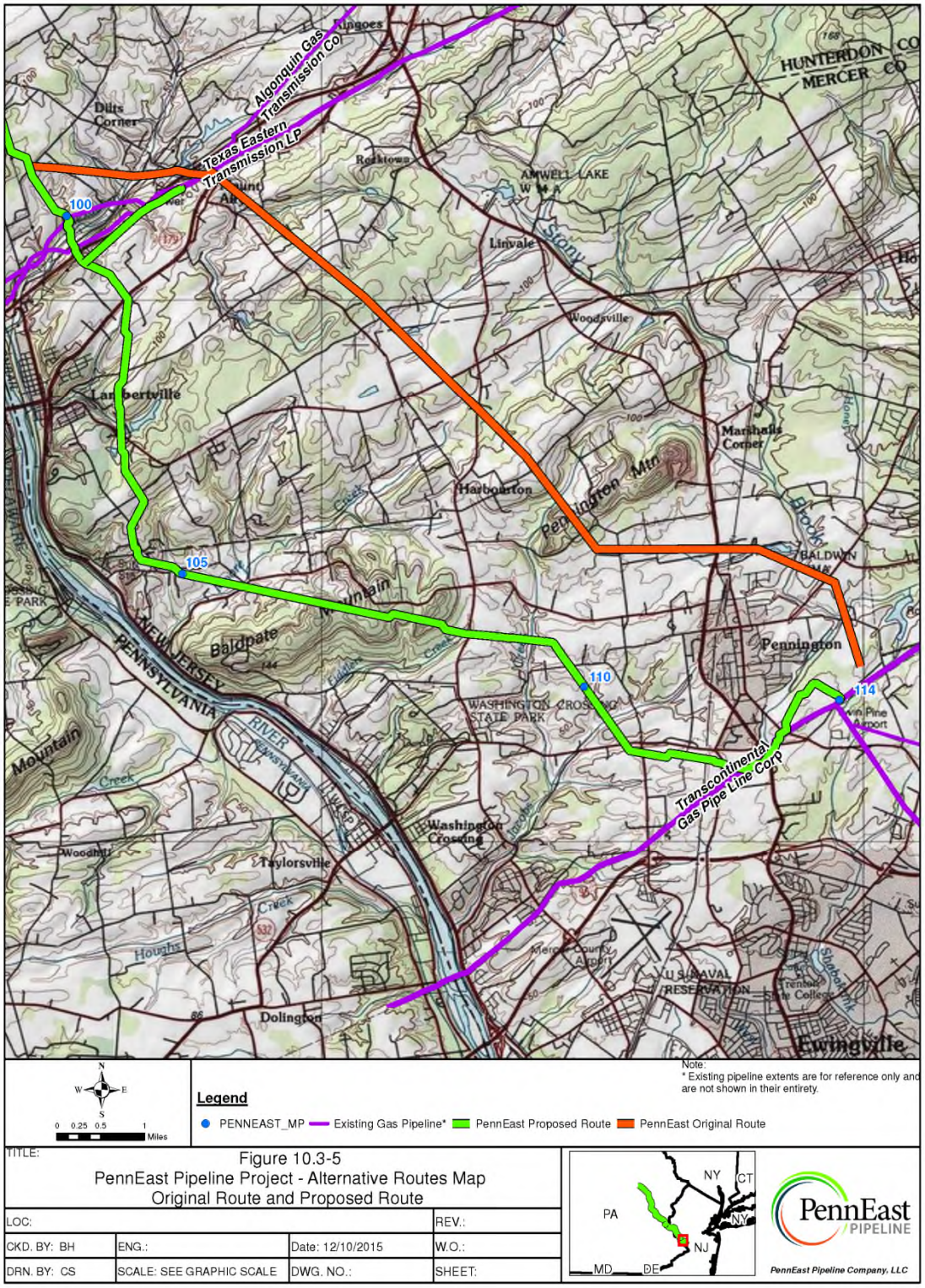
Response 116

<u>Part A and B</u>

The Original Route terminates north of the planned delivery points for the PennEast Project, however, the proposed natural gas deliveries could be made at the end point of the alternative route as shown on PennEast's Figure 10.3-5 with the addition of a short lateral to the delivery site. PennEast evaluated the "Original Route" in order to avoid standing structures, densely populated areas, and planned development projects. This portion of the alternative deviates from the proposed route at approximate MP 99.7 (MP 97 of the Filed Route – September 24, 2015 certificate application) and ends

approximately 0.5 miles away from MP 114.4 of the current proposed route. This portion of the pipeline alternative is illustrated in relation to the current proposed route in Figure 10.3-5, below.

The original route is one mile shorter than the corresponding portion of the proposed route along this analyzed section. The number of structures impacted is significantly reduced, from 41 to 3. This has significant advantages in terms of constructability and reduced residential disruption. The critical issues analysis showed decreased environmental impacts in several critical issues categories when compared to the original route, such as a reduced approximate acreage of forested wetlands impacted. The proposed route has fewer crossed streams and wetlands crossed by the centerline, and a lower percentage of temporary and operational ROW that is a wetland. A summary table of all critical issues analysis items is included in the revised Table 10.3-11 (see provided response to FERC Data Request 116, Part C). The proposed has reduced impacts to residents in addition to key environmental advantages of reduced forested wetland impacts. The disadvantages include increased length and increases in high-quality streams crossed and rare species habitat impacts.


Algonquin Gas Transmission Co
Texas Eastern Transmission LP
Dilts Corner
Rockfown
AMWELL LAKE
Linvale
Stony
Woodsville
HUNTERDON CO
MERCER CO
Lambertville
Marshalls Corner
Harbourton
Pennington Mtn
BALDWIN
Pennington
Baldpate
NEW JERSEY
PENNSYLVANIA
RIVER
WASHINGTON CROSSING STATE PARK
Transcontinental Gas Pipe Line Corp
Washington Crossing
Taylorsville
Woodhill
Houghs
Dolington
U.S. NAVAL RESERVATION
Ewingville
100
105
110
114
Legend
PENNEAST_MP
Existing Gas Pipeline*
PennEast Proposed Route
PennEast Original Route
Note:
* Existing pipeline extents are for reference only and are not shown in their entirety.
0 0.25 0.5 1 Miles
TITLE:
Figure 10.3-5
PennEast Pipeline Project - Alternative Routes Map
Original Route and Proposed Route
LOC:
REV.:
CKD. BY: BH
ENG.:
Date: 12/10/2015
W.O.:
DRN. BY: CS
SCALE: SEE GRAPHIC SCALE
DWG. NO.:
SHEET:
NY
CT
PA
NJ
MD
DE
PennEast PIPELINE
PennEast Pipeline Company, LLC

Part C –

Table 10.3-11
Critical Issues Analysis for MP 97-110 of the Proposed December 2015 Route and Corresponding Segment of the Original Route

CIA Items	Original Route		Proposed December 2015 Route	
	Construction ROW	Operational ROW	Construction ROW	Operational ROW
Length (Miles) [1]	14		15	
Municipalities Crossed (#) [2]	4		3	
Stream Crossings (Total as NHD streams) [3]	31		25	
PA EV Cold Water Fishes (EV-CWF, Total)[4]	N/A		N/A	
PA HQ Cold Water Fishes (HQ-CWF, Total) [4]	N/A		N/A	
PA Cold Water Fishes (CWF, Total) [4]	N/A		N/A	
PA Warm Water Fishes (WWF, Total) [4]	N/A		N/A	
PA Trout Stocking Stream (TSF, Total) [4]	N/A		N/A	
PA Naturally Producing Trout Waters (from EV) [5]	N/A		N/A	
PA Naturally Producing Trout Waters (from HQ) [5]	N/A		N/A	
PA Naturally Producing Trout Waters (from CWF)[5]	N/A		N/A	
Other, Non-PA Chapter 93 Designated Streams (NHD streams) [4]	31		25	
NJDEP SWQS Category 1 Streams	11		13	
DRBC Wild and Scenic River Crossings	0		0	
Total Acreage of wetlands (PA NWI and NJDEP)	13	4	3	2
Wetland Crossings (of the Center Line) [6]	21		8	
Total number of NHD waterbodies[7]	4		0	
Total Acreage of NHD waterbodies[7]	4	1	0.1	0.1
Total # Wells (PAGWIS and NJDEP)	0	0	0	0
Wind Turbines (USGS)	0	0	0	0
Approx. Acreage of County Natural Heritage Inventory Core Habitat (PA)	0	0	0	0
Approx. Acreage of National Audubon Society Important Bird Area	126	42	130	43
Approx. Acreage of County Natural Heritage Inventory Provisional Species of Concern (PA)	0	0	0	0

CIA Items	Original Route		Proposed December 2015 Route	
he number of Sensitive or Specially Designated habitats or land use crosses (PA) (from NH Inventory Provisional Species of Concern)	0	0	0	0
Approx. Acreage of County Natural Heritage Inventory Supporting Landscape area (PA)	0	0	0	0
Approx. Acreage of Natural Heritage Priority Sites for Rare Species and Ecological Communities (NJ)	0	0	7	2
The number of Sensitive or Specially Designated habitats or land use crosses NJ)	0	0	3	2
Approx. Acreage of Critical Environmental and Historic Sites (NJ)	8	3	6	2
Known Contaminated Sites (NJ)	0	0	0	0
Approx. Acreage of Groundwater Contamination Areas (CEA) (NJ)	0	0	0	0
Approx. Acreage of NJDEP Tier 1 Well Head Protection Area (NJ)	18	5	0	0
Potential NRHP Cultural Resources (unrestricted)	0	0	0	0
Approx. Acreage of Delaware and Raritan Canal Commission Review Zone A (NJ)	0		0	
Approx. Acreage of Delaware and Raritan Canal Commission Review Zone B (NJ)	140	47	261	96
Total # of churches, cemeteries, schools, and parks[8]	0	0	0	0
Approx. Acreage of Highland Preservation Area (NJ)	0	0	0	0
Approx. Acreage of Highland Preservation Sewer Service Area (NJ)	0	0	0	0
Approx. Acreage of Historic Properties (NJ SHPO)	17	6	17	7
Approx. Acreage of Open Space (State) (NJ) [9]	13	4	8	3
Approx. Acreage of State Parks (PA)	0	0	0	0
Approx. Acreage of State Forests (PA)	0	0	0	0
Approx. Acreage of State Game Lands (PA)	0	0	0	0
Length of PA Trails [10]	0	0	0	0
Total Acreage of 100 Year Flood Hazard areas (FEMA)	22	8	3	2

CIA Items	Original Route		Proposed December 2015 Route	
Total Acreage of Preserved Farmland [11]	51	17	57	16
Approx. Acreage of Forested Vegetation	119	39	118	46
Approx. Acreage of Forested Wetlands	2	1	0	0
Railroad Crossings (Status Unknown) [12]	0		0	
Road Crossings [13]	26		28	
Bridge Crossings (all) [14]	0	0	0	0
Bridges Structurally Deficient or Functionally Obsolete (from all bridges) [15]	0	0	0	0
Product Pipeline Crossings [16]	0		0	
Existing Gas Pipeline Crossings [16]	1		2	
Transmission line Crossings [16]	4		6	
Karst/Sink holes (PA) (DCNR Bureau of Topographic and Geologic Survey)	0	0	0	0
Coal Mines (PA) (DCNR)	0	0	0	0
Number of residents within 50' of pipeline construction work areas	41		3	
Approx. Acreage of Slopes > 30%	1	0	3	1
Total workspace Acreage	253	84	361	96
Percent of workspace that is wetland	5%	5%	1%	2%

Notes:
[1] Length of pipeline for the Transco Alternative includes a potential 12-mile lateral
[2] Municipality crossings based on the PennDOT and NJDOT boundaries data sets
[3] Stream crossings are based on the intersect of the pipeline and the 2002 National Hydrography Dataset NHD Flowline (PA) & NJDEP SWQ Streams (NJ)
[4] Penn State Streams Chapter 93 Designated Use
[5] Pennsylvania Fish and Boat Commission data (Oct 2013); counts should not be summed as a crossing is already counted for other categories
[6] Wetland crossing counts based on the intersect of the pipeline into a discretely mapped wetlands
[7] NHD waterbodies includes only lakes and ponds and not stream areas
[8] Churches, schools, and cemetery counts are based on USGS GNI
[9] NJDEP Open Space (State, County, Cross-Acceptance)
[10] PA DCNR and Rails-to-Trails Conservancy
[11] PA Agricultural Security Areas and NJ Farmland Parcel Preservation Program
[12] PennDOT County Rail lines NJDOT Rail Network
[13] PennDOT State and Local roads; NJDOT Road Network
[14] Federal Highway Administration National Bridge Inventory
[15] Structurally deficient criteria defined at http://nationalbridges.com/nbiDesc.html#SDFO
[16] Platts POWERmap®
[17] The totals shown on this table may not equal the sum of addends due to rounding.

Data Request 117

For any other major pipeline reroute described in section 10.3.2 that can be compared directly to the currently proposed route (not a previous pipeline route), provide the same information as requested above for MPs 75-97 and MPs 97-110.

Response 117

All other major pipeline reroutes compare to previous pipeline routes and have not been included for analysis in this data request. The minor reroutes along previous preferred routes have been analyzed separately as part of Appendix P.

Data Request 118

Evaluate an alternative route that would avoid the wellhead protection area at MP 87.2. The alternative should evaluate the potential for the pipeline route to shift east near MP 85.7, continuing east until after the crossing of Route 513 (Everittstown Road). At the western edge of the property east of Route 513, the route would then shift south until meeting back up with the planned route.

Response 118

The alternative route to avoid the wellhead protection area along the current proposed route was developed and evaluated for several characteristics to quantify advantages and disadvantages when compared to the correlating stretch of the current route. A map is provided in Attachment 22 which shows this deviation. Although the alternative route does avoid the wellhead protection area, it does so at the cost of 3,000 additional feet of length added to the pipeline. This contributes towards higher land requirements and environmental impacts, as well as a greater number of landowners impacted. A table has been provided which shows a numerical breakdown of the deviation and the corresponding portion of the proposed route.

Data Request 119

Provide a narrative that compares the environmental and engineering advantages and disadvantages of the alternative compressor station site to the proposed site. Identify the NSAs in proximity to each site, including their distance and direction from each site, and description of topography and vegetation between the NSAs and the proposed and alternate sites. Include a clear statement of the overall advantages and disadvantage of the proposed and alternative sites.

Response 119

Resource Report 10, Section 10.3.3 provides a comparison of the two compressor station sites. Table 10.3-20 and Figure 10.3-18 compare critical issues that were assessed during initial phases of the Project. Due to these constraints Compressor Station Option 1 (Option 1) site did not progress to the full engineering and design stage as the Kidder Compressor Station (Kidder).

Although the 2 sites are in proximity to one another there are some key differences. The Option 1 site and associated access directly abuts or is within approximately 500 feet from commercial and residential properties including the current and or former County Place Inn and Suites, Alpina Ski Shop; Alpine Ski, Storage King, Econolodge and Pizza shop to the south of the access road and east of the site. It is also approximately 1,000 feet west from one of the Jack Frost fairways. The Kidder site is approximately 1,000 feet south from these properties and over 2,500 feet south west from Jack Frost fairways.

The Option 1 site has a small forested buffer of approximately 100 feet between the property and an existing 100 foot wide open corridor to the east by Jack Frost. The Kidder site has over 1,000 feet of wooded buffer between access road and the aforementioned properties to the east, and Route 940 and over ___ feet of forested buffer between it and Jack Frost. The Kidder site is in proximity to the I-80 westbound travel lanes. An approximately 100 foot forested buffer would separate the southern edge of the site from the highway. The highway is elevated above the Kidder site.

The topography of the two sites slopes from the north to the south with minor variations due to past logging disturbance and grading. There are more wetlands within the Kidder site but these have been avoided with the exception of access road crossing and pipeline interconnect crossing.

The Kidder site is zoned light industrial whereas the Option 1 site would require the Township to change the zoning. The key advantage of the Kidder site is this zoning, the forested buffer between it and nearby NSAs, and the fact that it abuts I-80 which is a major noise source. The site also has the support of the Land Owners and the Township.

Data Request 120

Provide revised table 10.3-20 that includes:

a. total acreage required for construction and operation;
b. acreage of forest clearing required for construction and operation;
c. noise sensitive areas; and
d. for all acreage calculations included in the table, revise to show only acreage that would be affected by actual project construction and operation of the proposed or alternative compressor station sites, not the resources within the 400 foot study corridor.

Response 120

Table 10.3-20
Critical Issues Analysis of PennEast Compressor Station Site Alternatives

CIA Items	Compressor Station Site Option 1		Compressor Station Site Option 2 (Preferred)	
	Construction ROW	Operational ROW	Construction ROW	Operational ROW
Municipalities Crossed (#) [1]	1		1	
Stream Crossings (Total as NHD streams) [2]	0		1	
PA EV Cold Water Fishes (EV-CWF, Total)[3]	0		0	
PA HQ Cold Water Fishes (HQ-CWF, Total) [3]	0		1	
PA Cold Water Fishes (CWF, Total) [3]	0		0	
PA Warm Water Fishes (WWF, Total) [3]	0		0	
PA Trout Stocking Stream (TST, Total) [3]	0		0	
PA Naturally Producing Trout Waters (from EV) [4]	0		0	
PA Naturally Producing Trout Waters (from HQ) [4]	0		0	
PA Naturally Producing Trout Waters (from CWF) [4]	0		0	
Other, Non-PA Chapter 93 Designated Streams (NHD streams) [4]	0		0	
NJDEP SWQS Category 1 Streams	N/A		0	
DRBC Wild and Scenic River Crossings	0		0	
Total Acreage of wetlands (PA NWI and NJDEP)	0.2	0.2	1.4	1.4
Wetland Crossings [5]	1		1	
Total number of NHD waterbodies [6]	1		0	
Total Acreage of NHD waterbodies [6]	1.7	1.7	0	0
Total # Wells (PAGWIS and NJDEP)	0	0	0	0
Wind Turbines (USGS)	0	0	0	0

CIA Items	Compressor Station Site Option 1		Compressor Station Site Option 2 (Preferred)	
Approx. Acreage of County Natural Heritage Inventory Core Habitat (PA)	0	0	2.2	1.9
Approx. Acreage of National Audubon Society Important Bird Area	0	0	0	0
Approx. Acreage of County Natural Heritage Inventory Provisional Species of Concern (PA)	0	0	0	0
Approx. Acreage of County Natural Heritage Inventory Supporting Landscape area (PA)	0	0	0	0
Approx. Acreage of Natural Heritage Priority Sites for Rare Species and Ecological Communities (NJ)	N/A	N/A	N/A	N/A
Approx. Acreage of Critical Environmental and Historic Sites (NJ)	N/A	N/A	N/A	N/A
Known Contaminated Sites (NJ)	N/A	N/A	N/A	N/A
Approx. Acreage of Groundwater Contamination Areas (CEA) (NJ)	N/A	N/A	N/A	N/A
Approx. Acreage of NJDEP Tier 1 Well Head Protection Area (NJ)	N/A	N/A	N/A	N/A
Potential NRHP Cultural Resources (unrestricted)	0	0	0	0
Approx. Acreage of Delaware and Raritan Canal Commission Review Zone A (NJ)	N/A	N/A	N/A	N/A
Approx. Acreage of Delaware and Raritan Canal Commission Review Zone B (NJ)	N/A	N/A	N/A	N/A
Total # of churches, cemeteries, schools, and parks [7]	0	0	0	0
Approx. Acreage of Highland Preservation Area (NJ)	N/A	N/A	N/A	N/A
Approx. Acreage of Highland Preservation Sewer Service Area (NJ)	N/A	N/A	N/A	N/A
Approx. Acreage of Historic Properties (NJ SHPO)	N/A	N/A	N/A	N/A
Approx. Acreage of Open Space (State) (NJ) [8]	N/A	N/A	N/A	N/A
Approx. Acreage of State Parks (PA)	0	0	0	0
Approx. Acreage of State Forests (PA)	0	0	0	0
Approx. Acreage of State Game Lands (PA)	0	0	0	0
Length of PA Trails (miles) [9]	0	0	0	0
Total Acreage of 100 Year Flood Hazard areas (FEMA)	0	0	0	0
Total Acreage of Preserved Farmland [10]	0	0	0	0
Approx. Acreage of Forested Vegetation	25	23	31.4	24.8
Approx. Acreage of Forested Wetlands	0	0	0.0	0.0
Railroad Crossings (Status Unknown) [11]	0	0	0	0
Road Crossings [12]	0	0	1	0

CIA Items	Compressor Station Site Option 1		Compressor Station Site Option 2 (Preferred)	
Bridge Crossings (all) [13]	0	0	0	0
Bridges Structurally Deficient or Functionally Obsolete (from all bridges) [14]	0	0	0	0
Product Pipeline Crossings [15]	3		3	
Existing Gas Pipeline Crossings [15]	0		0	
Transmission line Crossings [15]	0		0	
Karst/Sink holes (PA)(DCNR Bureau of Topographic and Geologic Survey)	0	0	0	0
Coal Mines (PA)(DCNR)	0	0	0	0
Approx. Acreage of Slopes > 30%	0	0	0	0
Number of noise sensitive areas within 1 mile 16	5		5	
Total workspace Acreage	26	23	34	26
Percent of workspace that is wetland	1%	1%	4%	5%

Notes:
[1] Length of pipeline for the Transco Alternative includes a potential 12-mile lateral
[2] Municipality crossings based on the PennDOT and NJDOT boundaries data sets
[3] Stream crossings are based on the intersect of the pipeline and the 2002 National Hydrography Dataset NHD Flowline (PA) & NJDEP SWQ Streams (NJ)
[4] Penn State Streams Chapter 93 Designated Use
[5] Pennsylvania Fish and Boat Commission data (Oct 2013); counts should not be summed as a crossing is already counted for other categories
[6] Wetland crossing counts based on the intersect of the pipeline into a discretely mapped wetlands
[7] NHD waterbodies includes only lakes and ponds and not stream areas
[8] Churches, schools, and cemetery counts are based on USGS GNI
[9] NJDEP Open Space (State, County, Cross-Acceptance)
[10] PA DCNR and Rails-to-Trails Conservancy
[11] PA Agricultural Security Areas and NJ Farmland Parcel Preservation Program
[12] PennDOT County Rail lines NJDOT Rail Network
[13] PennDOT State and Local roads; NJDOT Road Network
[14] Federal Highway Administration National Bridge Inventory
[15] Structurally deficient criteria defined at http://nationalbridges.com/nbiDesc.html#SDFO
[16] Platts POWERmap®
[17] The totals shown on this table may not equal the sum of addends due to rounding.

Data Request 121

For each route variation included in appendix P, include a narrative that describes why PennEast evaluated the variation, the location of the variation including the beginning and ending MPs (of the proposed route) at which the variation deviates from and rejoins the proposed route, and any significant resource issues that would be crossed. Summarize the potential environmental advantages and disadvantages of the variation compared to the corresponding segment of proposed route, and include a clear statement of the overall advantages and disadvantages of the proposed route at this location. Be sure to identify comments received from landowners, land managing agencies, or regulatory agencies that factored into the evaluation of each variation.

Response 121

Below is a narrative write-up for each of the deviations 1-80 in Appendix P. The following deviations have been superseded due to the inclusion of the five additional deviations included with this data response (No. 1005, No. 1400, No. 1701, No. 1802, and No. 1900): No. 4, No. 5, No. 12, and No. 48.

Deviation No. 1:

Deviation No. 1 is a route optimization that begins at mile post (MP) 5.0 of the Proposed Route and ends at MP 5.6. This deviation is located in Luzerne County, PA. This deviation is approximately 300 feet shorter than the prior alternative. There are reduced land use impacts when compared to the prior alternative. In addition, there are more structures within 50 feet of the construction work area and a greater amount of impacted landowners when compared to the prior alternative. This deviation was adopted due to the overall advantages of reduced environmental and land use impacts, decreased deviation length, and avoidance of the pond and cemetery. This deviation allows the Proposed Route to avoid crossing a pond behind businesses off Shoemaker Road and it avoids potential adverse impacts to the cemetery off Miscavage Street.

Deviation No. 2:

Deviation No. 2 is a landowner accommodation based on proposed industrial park development plans. This deviation begins at MP 6.6, ends at MP 7.9, and avoids a sensitive area, and includes crossing the Susquehanna River in Luzerne County, PA. This deviation is approximately 1,000 feet longer than the prior alternative. There are reduced environmental impacts but greater land use impacts. In addition, there are more structures within 50 feet of the construction work area but fewer impacted landowners when compared to the prior alternative. This deviation was adopted due to the overall advantages of future land development avoidance and decreased landowner impacts. This deviation was developed in coordination with the property owner and the route is designed to minimize impacts to the industrial park.

Deviation No. 3:

The basis for Deviation No. 3 is a landowner request to address a concern of tree removal along the abandoned railroad corridor. This deviation begins at MP 7.3 and ends at MP 8.3 in Luzerne County, PA. This deviation is approximately 860 feet longer than the corresponding portion of the proposed September route. In this deviation there are greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of impacted landowners when compared to the corresponding portion of the proposed September route. This deviation was not adopted due to increasing the number of residences within 50 feet of the construction work area and requiring additional impacted acreage.

Deviation No. 4:

Deviation No. 4 is a landowner accommodation based on site management plans for future quarry expansion. This deviation begins at MP 8.4 and ends at MP 12.39 in Luzerne County, PA. This deviation is approximately 1,800 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of landowners impacted when compared to the prior alternative. Although this deviation is longer than the prior alternative, co-location was increased by 0.7 miles, the modified route provides separation from a known endangered species habitat/site (Indiana Bat), reduces the number of residential structures within 50 feet of the workspace, and reduces impact to Mohegan Sun Casino horse racing facilities. This deviation is superseded by the proposed deviation No. 1005 and is no longer under consideration

Deviation No. 5:

Deviation No. 5 addresses a request to address concerns that the Proposed Route will impact future quarry expansion areas for Wilkes-Barre Quarry. This deviation begins at MP 9.6 and ends at MP 10.4 in Luzerne County, PA. This deviation is approximately 1,300 feet longer than the corresponding portion of the proposed September route. In addition, there are greater land use impacts when compared to the corresponding portion of the proposed September route. Wilkes-Barre Quarry indicated to PennEast that there is a 300-foot wide no blasting zone that surrounds the quarry property line, and that the landowner's requested deviation would locate the Proposed Route within this no blasting zone. This deviation is superseded by the proposed deviation No. 1005 and is no longer under consideration.

Deviation No. 6:

Deviation No. 6 is a route optimization that begins at MP 8.4 of the Proposed Route and ends at MP 37.5. This deviation is located in Luzerne and Carbon Counties, PA. This deviation is approximately 10,600 feet longer than the prior alternative. There are greater environmental and land use impacts. In addition, there are more structures within 50 feet of the construction work area and more impacted landowners when compared to the prior alternative. This deviation accomplishes improved co-location by approximately 22

miles. Although this deviation is longer than the prior alternative, the improved co-location was a significant consideration in adopting this change.

Deviation No. 7:

Deviation No. 7 is a stakeholder request that begins at MP 33.5 of the Proposed Route and ends at MP 46.2. This deviation is located in Carbon and Monroe Counties, PA. This deviation is approximately 1,100 feet longer than the corresponding portion of the proposed September route. PennEast evaluated a route to avoid impacts to forested land in the Bethlehem Authority (BA) watershed district associated with Beltzville Lake. There are reduced environmental impacts but greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of impacted landowners when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the Proposed Route indicates that the forested land use impacted would decrease by approximately 8%, co-location would be reduced by approximately 4.4 miles or 100%, and the number parcels crossed would increase by 35 or 44%. The deviation would also present engineering and constructability concerns due to restricted/reduced workspace areas in residential areas where there will be substantial number of fittings and/or points of inflection (PI), installing the pipeline along public road ROW, and increased landowner disruption due to congested areas (residential dwellings within 50 feet of workspace) and additional timeframe to install the pipeline with specialized construction techniques. This deviation was not adopted for these reasons.

Deviation No. 8:

The basis for Deviation No. 8 is a landowner request to locate the Proposed Route on the east side of the existing Buckeye Pump Station. This deviation begins at MP 36.8 and ends at MP 38.0 in Carbon County, PA. This deviation is approximately 80 feet shorter than the corresponding portion of the proposed September route. There are greater environmental impacts but fewer land use impacts. In addition, there are more impacted landowners within 50 feet of the construction work area when compared to corresponding portion of the proposed September route. This deviation was not adopted due to potential increased wetland/waterbody impacts and the addition of one additional parcel. The proposed route would also require the crossing of Reservoir Road under a power line. Crossing a road under high voltage lines is a safety concern with the lifting equipment for the road bore working directly under the lines.

Deviation No. 9:

Deviation No. 9 is a stakeholder request that begins at MP 39.7 of the Proposed Route and ends at MP 51.1 to avoid impacts to forested land in the Bethlehem Authority (BA) watershed district associated with Beltzville Lake. This deviation is located in Carbon County, PA. This deviation is approximately 6,000 feet shorter than the corresponding portion of the proposed September route. There are reduced environmental and land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of impacted landowners when compared to the corresponding

portion of the proposed September route. PennEast evaluated a route to avoid impacts to forested land in the BA watershed district associated with Beltzville Lake. A quantitative comparison of this deviation to the Proposed Route indicates that the deviation would improve co-location and decreases the crossing of preserved farm land. However, the deviation would present engineering and constructability concerns due to a dry trenched crossing of Beltzville Lake. The feasibility of a Beltzville Lake HDD at the proposed deviation crossing location presents substantial risk due to topography, resulting in an unbalanced HDD crossing with the south side of the crossing at approximate elevation 1,050 feet and the north side location at 700 feet. The water surface is at approximately 650 feet elevation. The elevation change would increase the length of the HDD to accommodate geometry of the drill path and significantly increases the potential for inadvertent returns. This deviation was not adopted due to constructability considerations of the Beltzville Lake crossing.

Deviation No. 10:

Deviation No. 10 is a route optimization that begins at MP 40.8 of the Proposed Route and ends at MP 42.1. This deviation is located in Carbon County, PA. This deviation is approximately 260 feet shorter than the prior alternative. There are reduced land use impacts. In addition, there are fewer structures within 50 feet of the construction work area and fewer impacted landowners when compared to the prior alternative. This deviation reduces the number of parcels crossed by 8 and provides less impact to the Woods Campground. It removes a High Consequence Area from the Proposed Route footprint. Therefore, PennEast adopted this deviation.

Deviation No. 11:

The basis for Deviation No. 11 is a landowner request to locate the Proposed Route in a desired location on their parcel. This deviation begins at MP 42.5 and ends at MP 43.2 in Carbon County, PA. This deviation is approximately 920 feet longer than the corresponding portion of the proposed September route. This deviation has greater land use impacts. In addition, there are less impacted landowners when compared to the corresponding portion of the proposed September route. This deviation was not implemented due to potential increased crossing of the BWA parcel, terrain/topography considerations for side slope, and requiring additional construction ROW to support the HDD crossing of Beltzville Lake.

Deviation No. 12:

Deviation No. 12 is a stakeholder request that begins at MP 44.5 of the Proposed Route and ends at MP 45.3. This deviation is located in Carbon County, PA. This deviation is approximately 90 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, there are fewer structures within 50 feet of the construction work area but a greater amount of impacted landowners when compared to the prior alternative. This deviation was evaluated at the request of BWA to facilitate crossing the BA water pipeline at a location where it flows through a tunnel and would result in significant vertical separation between it and the PennEast pipeline. PennEast

implemented this deviation to cross the BA water pipeline where it is a tunnel under Route 209. The vertical separation between the BA water pipeline and the Proposed Route at this crossing location is anticipated to be approximately 230 feet. This deviation is superseded by the proposed deviation No. 1400 and is no longer under consideration

Deviation No. 13-24:

Route deviations 13 – 24 were evaluated as alternatives to address stakeholder comments and reduce impacts in the area of the Appalachian Trail Crossing, including the letters from the Appalachian Trail Conservancy (Docket PF15-1-000 Comment # 5238) and the National Park Service (Docket PF15-1-000 Comment # 5385). The addition of the interconnect at Blue Mountain also provided a need to be able to accommodate this delivery point in the routing of the PennEast pipeline. These deviations were developed by taking into account stakeholder comments, working collaboratively with affected property owners in the immediate vicinity of the Appalachian Trail, evaluating regulatory and timing constraints with regard to deed restrictions and easements, and evaluating overall environmental and landowner impacts. The intent of these deviations were to focus on co-location in order to minimize impacts to the Appalachian Trail view shed. In this effort, various alternatives were considered incorporating co-location with various existing utility easements, State Road ROW and also utilizing the previously disturbed area of the Blue Mountain Ski Resort. When comparing Deviations 13-24 with Deviation 25 discussed below, these options were not adopted due to operational safety concerns, constructability concerns, increased number of landowners affected, increased total disturbed acreage, and impacts to National Park Service owned or protected lands. Deviations 13, 14 and 16 through 23 would require an additional lateral to serve the Blue Mountain Interconnect. Deviations 23 and 24 posed significant constructability concerns. Deviations 13, 14, 16 through 20, and 21 posed significant operational safety concerns due to proximity to existing product pipelines. Deviations 13, 14 and 16 through 23 would have impacts on National Park Service owned parcels or parcels which are subject to a National Park Service preservation easement.

Deviation No. 25:

Deviation No. 25 is to accommodate the Blue Mountain delivery point. Additionally it was evaluated along with Deviations 13 - 24 to address stakeholder comments to minimize additional impacts in the vicinity of the Appalachian Trail. This deviation begins at MP 48.9 and ends at MP 53.6 of the proposed route in Carbon County and Northampton County, PA. This deviation is approximately 12,700 feet longer than the prior alternative. There are greater environmental and land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of impacted landowners when compared to the prior alternative. This deviation was adopted due to its ability to meet the requirements of the Blue Mountain interconnect. This deviation also maximizes the utilization of previously disturbed area on the North side of Blue Mountain through the existing ski resort and does not impact National Park Service owned parcels or scenic easements.

Deviation No. 26:

The basis for Deviation No. 26 is a landowner request to locate the Proposed Route away from their property. This deviation begins at MP 54.2 and ends at MP 57.5 in Northampton County, PA. This deviation is approximately 500 feet shorter than the corresponding portion of the proposed September route. This deviation has greater environmental impacts but fewer land use impacts. In addition, there are fewer structures within 50 feet of the construction work area but a greater amount of impacted landowners when compared to the corresponding portion of the proposed September route. This deviation was not adopted due to increased impacts to wetlands and waterbodies along with one less owner impacted.

Deviation No. 27:

The basis for Deviation No. 27 is a landowner request to locate the Proposed Route in an area that does not conflict with future development plans for a residential dwelling. This deviation begins at MP 54.9 and ends at MP 55.3 in Northampton County, PA. This deviation is approximately 155 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, there are fewer structures within 50 feet of the construction work area when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in April 2015, and would have impacted a newly constructed home on a parcel that did not show on the available aerial photography. This deviation was adopted to avoid impacts to the new home.

Deviation No. 28:

The basis for Deviation No. 28 is a landowner request to locate the Proposed Route in an area that does not conflict with future development plans for their parcel. This deviation begins at MP 55.6 and ends at MP 56.2 in Northampton County, PA. This deviation is approximately 20 feet shorter than the prior alternative. This deviation has fewer environmental and land use impacts. In addition, there are a greater amount of impacted landowners when compared to the prior alternative. The prior alternative, presented to FERC in the Draft Resource Reports filed in April 2015, would have impacted future development plans. This deviation was adopted to avoid impacts to future development plans.

Deviation No. 29:

The basis for Deviation No. 29 is a regulatory consideration to minimize impact to environmentally sensitive areas. This deviation begins at MP 61.2 and ends at MP 61.7 in Northampton County, PA. This deviation is approximately 220 feet longer than the corresponding portion of the proposed September route. This deviation has greater land use impacts. In addition, there are fewer structures within 50 feet of the construction work area and fewer impacted landowners when compared to the corresponding portion of the proposed September route. Further field investigations revealed an increase in impacts to environmentally sensitive areas; therefore, this deviation was not adopted.

Deviation No. 30:

The basis for Deviation No. 30 is a landowner request to locate the Proposed Route in an area that does not conflict with potential future development plans for multiple parcels. This deviation begins at MP 61.7 and ends at MP 62.7 in Northampton County, PA. . This deviation is approximately 400 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of impacted landowners when compared to the prior alternative. The prior alternative, presented to FERC in the Draft Resource Reports filed in April 2015, and would have impacted these future development plans. This deviation was adopted to avoid impacts to future development plans.

Deviation No. 31:

The basis for Deviation No. 31 is a landowner request to locate the Proposed Route in an area that does not conflict with future development plans for multiple parcels. This deviation begins at MP 61.7 and ends at MP 64.0 in Northampton County, PA. This deviation is approximately 530 feet shorter than the prior alternative. This deviation has reduced environmental and land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of impacted landowners when compared to the prior alternative. The prior alternative, which was presented to FERC in the Draft Resource Reports filed in April 2015, and would have impacted future development plans. This deviation was adopted to avoid impacts to future development plans.

Deviation No. 32:

The basis for Deviation No. 32 is a regulatory consideration to minimize impact to sensitive areas. This deviation begins at MP 62.8 and ends at MP 63.9 in Northampton County, PA. This deviation is approximately 550 feet shorter than the corresponding portion of the proposed September route. This deviation has fewer land use impacts. In addition, there are fewer structures within 50 feet of the construction work area and a fewer impacted landowners when compared to the corresponding portion of the proposed September route. This deviation was not adopted following additional field surveys which showed the route would not reduce the impacts to sensitive areas.

Deviation No. 33:

The basis for Deviation No. 33 is a landowner request to locate the Proposed Route in an area that does not conflict with future development of a parcel. This deviation begins at MP 64.3 and ends at MP 65.0 in Northampton County, PA. This deviation is approximately 510 feet longer than the prior alternative. This deviation has greater land use impacts when compared to the prior alternative. The prior alternative, which was presented to FERC in the Draft Resource Reports filed in April 2015, would have impacted future development plans. This deviation was routed in conjunction with the landowner's engineering firm to avoid impacts to future development and therefore has been adopted.

Deviation No. 34:

The basis for Deviation No. 34 is a route optimization to locate the Proposed Route in an area that does not conflict with existing commercial areas and a congested pipeline ROW. This deviation begins at MP 67.6 and ends at MP 71.6 in Northampton County, PA. This deviation is approximately 1,030 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and fewer impacted landowners when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in October 2014. A quantitative comparison of this deviation to the prior alternative indicates more land will be required to build the pipeline along the deviation, but it avoids a development under construction of 800 residences on the north side of Freemansburg Ave., avoids the future location of St. Luke's Hospital, and crosses 4 fewer parcels. This deviation was adopted to avoid these impacts and to accommodate an optimized HDD alignment across the Lehigh River.

Deviation No. 35:

The basis for Deviation No. 35 is a landowner request to locate the Proposed Route in an area that does not conflict with future development of an additional home and septic system on a parcel. This deviation begins at MP 67.6 and ends at MP 67.8 in Northampton County, PA. This deviation is approximately 200 feet longer than the prior alternative. This deviation has greater land use impacts when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in April 2015, and would have impacted the septic field required for the future residence. This deviation was adopted to avoid these impacts.

Deviation No. 36:

The basis for Deviation No. 36 is a landowner request that begins at MP 67.6 and ends at MP 68.1 in Northampton County, PA. This deviation is approximately 190 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, there are fewer structures within 50 feet of the construction work area but a greater amount of impacted landowners when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in April 2015, and would have impacted the future landowner development plans and an existing septic system. This deviation was adopted to avoid these impacts.

Deviation No. 37:

The basis for Deviation No. 37 is a landowner request to locate the Proposed Route in an area that does not conflict with future development plans for a parcel. This deviation begins at MP 68.9 and ends at MP 69.5 in Northampton County, PA. This deviation is approximately 750 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in April 2015, and would have impacted future

development plans. This deviation was adopted to avoid impacts to future development plans.

Deviation No. 38:

The basis for Deviation No. 38 is a landowner request to locate the Proposed Route in an area that does not conflict with the current construction of 800 residences being built on the north side of Freemansburg Avenue and the future development plans for St. Luke's Hospital. This deviation begins at MP 69.4 and ends at MP 71.6 in Northampton County, PA. This deviation is approximately 1300 feet shorter than the prior alternative. This deviation has fewer land use impacts. In addition, there are more impacted landowners when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in October 2014, and would have impacted these current and future development plans. This deviation was adopted to avoid these impacts.

Deviation No. 39:

The basis for Deviation No. 39 is a landowner request to locate the Proposed Route in an area that does not restrict potential future Penn DOT facility expansions. This deviation begins at MP 69.4 and ends at MP 69.4 in Northampton County, PA. This deviation is approximately 600 feet shorter than the prior alternative. This deviation has greater land use impacts. In addition, there are fewer structures within 50 feet of the construction work area but more impacted landowners when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in April 2015. A quantitative comparison of this deviation to the prior alternative indicates more land will be required to build the pipeline along the Proposed Route. This deviation was adopted to avoid impacts to future expansion at the facility.

Deviation No. 40:

The basis for Deviation No. 40 is a stakeholder request by municipal officials to locate the Proposed Route in an inactive Reliant Pipeline easement. This deviation begins at MP 71.6 in Northampton County, PA, crosses into Bucks County, PA, and ends at MP 79.3 in Hunterdon County, NJ. This deviation is approximately 18,100 feet longer than the corresponding portion of the proposed September route. The deviation has greater environmental and land use impacts. In addition, there are more structures within 50 feet of the construction work area and greater amount of impacted landowners when compared to the corresponding portion of the proposed September route. The Reliant pipeline easement currently has one inactive petroleum pipeline. This deviation was evaluated to determine if following the inactive Reliant pipeline easement would reduce the number of parcels crossed and environmental considerations. A quantitative comparison of this deviation to the Proposed Route indicates that the forested land use impacted would increase by approximately 16% and the number parcels crossed would increase by 28 (48%). The deviation presents engineering and constructability concerns due to restricted/reduced workspace areas in residential areas where there are several locations of encroachments on the inactive Reliant easement, would increase landowner

disruption due to congested areas, and require additional time to install the pipeline with specialized construction techniques. This deviation would require crossing the Delaware River at a location that is not conducive to trenchless crossing methods due to the rock outcrops and vertical elevation changes on both sides of the river. This deviation was not adopted for these reasons.

Deviation No. 41:

The basis for Deviation No. 41 is a landowner request to locate the Proposed Route on the south side of their property and minimize forest impacts. This deviation begins at MP 73.1 and ends at MP 73.2 in Northampton County, PA. This deviation is approximately 85 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area when compared to the corresponding portion of the proposed September route. This deviation was not adopted due to proximity of residential area and to accommodate a landowner request.

Deviation No. 42:

The basis for Deviation No. 42 is a regulatory consideration to minimize potential impacts to sensitive areas and in response to a landowner request. This deviation begins at MP 75.0 and ends at MP 75.5 in Northampton and Bucks Counties, PA. This deviation is approximately 660 feet shorter than the corresponding portion of the proposed September route. The deviation has reduced land use impacts when compared to the corresponding portion of the proposed September route. This deviation was adopted due to reduced potential impacts to sensitive areas.

Deviation No. 43:

The basis for Deviation No. 43 is a regulatory consideration to minimize potential impacts to sensitive areas. This deviation begins at MP 74.5 and ends at MP 74.8 in Northampton County, PA. This deviation is approximately 45 feet longer than the prior alternative. This deviation has greater land use impacts when compared to the prior alternative. This deviation was adopted due to reduced potential impacts to sensitive areas.

Deviation No. 44:

The basis for Deviation No. 44 is a regulatory consideration to minimize impacts to sensitive areas. This deviation begins at MP 74.6 and ends at MP 76.8 in Northampton and Bucks Counties, PA. This deviation is approximately 665 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are fewer structures within 50 feet of the construction work area but a greater amount of landowners impacted when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the Proposed Route indicates that the preserved farm land crossed would increase and the number parcels crossed would increase by 2. This deviation was not

adopted due to the increased potential impact to sensitive areas and increased crossing of preserved farm land.

Deviation No. 45:

The basis for Deviation No. 45 is a landowner request to locate the Proposed Route at a desired location across this parcel. This deviation begins at MP 75.0 and ends at MP 75.6 in Northampton County, PA. This deviation is approximately 230 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, there is a greater amount of impacted landowners when compared to the prior alternative. This prior alternative was presented to FERC in the Draft Resource Report in April 2015 as it avoided three springs and environmentally sensitive areas. Additional discussions with the landowner have introduced additional areas of concern on their property that need to be avoided. This deviation was adopted to avoid known sensitive areas shown by the landowner.

Deviation No. 46:

The basis for Deviation No. 46 is a landowner request to locate the proposed route at the base of his field and avoid the upper field. This deviation begins at MP 75.2 and ends at MP 76.2 in Northampton and Bucks Counties, PA. This deviation is approximately 70 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area but a fewer amount of landowners impacted when compared to the corresponding portion of the proposed September route. This deviation was not adopted due to increased impacts to a residential area and adding two (2) residences within 50 feet of the construction workspace.

Deviation No. 47:

The basis for Deviation No. 47 is a regulatory consideration based on feedback from FERC. This deviation begins at MP 75.4 in Northampton County, PA, crosses into Bucks County, PA, and ends at MP 98.9 in Hunterdon County, NJ. This deviation is approximately 15,305 feet shorter than the corresponding portion of the proposed September route. The deviation has fewer environmental and land use impacts. In addition, there are more structures within 50 feet of the construction work area but a fewer amount of landowners impacted when compared to the corresponding portion of the proposed September route. The deviation was presented to FERC in the Draft Resource Reports filed in October 2014. This deviation has greater forested impacts, more residences within 50 foot of the workspace, and requires an additional lateral to feed the Gilbert Station and E-town delivery point. This deviation was not adopted due to multiple crossings of the Delaware River and the additional impacts described above that would be required with this deviation.

Deviation No. 48:

The basis for Deviation No. 48 is a stakeholder consideration based on feedback from B&D River Railway. This deviation begins at MP 77.9 and ends at MP 81.4 in Hunterdon County, NJ. This deviation is approximately 5,300 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area when compared to the corresponding portion of the proposed September route. Additionally this deviation would impact a documented superfund site on the east bank of the Delaware River. This deviation is superseded by the proposed deviation No. 1400 and is no longer under consideration.

Deviation No. 49:

The basis for Deviation No. 49 is a landowner request to locate the Proposed Route on the east side of Phillips Road. This deviation begins at MP 0 and ends at MP 0.5 of the Gilbert Lateral in Hunterdon County, NJ. This deviation is approximately 400 feet shorter than the corresponding portion of the proposed September route. The deviation has reduced land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of landowners impacted when compared to the corresponding portion of the proposed September route. This deviation was not adopted due to increased length of forest area crossed, two additional parcels, and locating the Proposed Route in front of residential dwellings which increases the number of residences within 50 feet of the workspace.

Deviation No. 50:

The basis for Deviation No. 50 is a regulatory consideration to locate the Proposed Route in the public road ROW to avoid crossing property included in the Gravel Hill Preserve. This deviation begins at MP 80.1 and ends at MP 82.3 in Hunterdon County, NJ. This deviation is approximately 10,700 feet longer than the corresponding portion of the proposed September route. The deviation has greater environmental and land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of landowners impacted when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the Proposed Route indicates that the length of pipeline would increase by 100% (approximately 2 miles), residential land area required for construction would increase by over 15 acres, and the number of parcels impacted would increase by 53. This deviation was not adopted due to additional amount of disruption to residential areas, slower timeframe for specialty pipeline construction in the public road ROW, and local traffic impacts due to road closures. Installing the Proposed Route in the roadway increases the integrity threats of the pipeline due to increased potential for 3rd party damage.

Deviation No. 51:

The basis for Deviation No. 51 is a landowner request to locate the Proposed Route in an area that does not conflict with future development plans for a parcel. This deviation

begins at MP 80.2 and ends at MP 82.4 in Hunterdon County, NJ. This deviation is approximately 1,150 feet shorter than the prior alternative. This deviation has reduced environmental impacts and land use impacts. In addition, there are more structures within 50 feet of the construction work area when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in October 2014, and would have impacted future development plans for a parcel and created more impact to the Gravel Hill preserve. This deviation crosses six (6) fewer streams, affects less forested land, avoids impacts to future development plans, and reduces impacts to Gravel Hill. This deviation was adopted due to the reasons listed above.

Deviation No. 52:

The basis for Deviation No. 52 is a landowner request to locate the Proposed Route in an area that does not conflict with future development plans for a parcel. This deviation begins at MP 80.7 and ends at MP 82.4 in Hunterdon County, NJ. This deviation is approximately 650 feet longer than the corresponding portion of the proposed September route. The deviation has greater environmental and land use impacts. In addition, there are fewer structures within 50 feet of the construction work area and a fewer amount of landowners impacted when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the Proposed Route indicates that the land area required for construction would increase. This deviation was not adopted due to implementation of Deviation 51.

Deviation No. 53:

The basis for Deviation No. 53 is a landowner request to locate the Proposed Route in an area that does not conflict with future development plans for a parcel. This deviation begins at MP 80.7 and ends at MP 82.4 in Hunterdon County, NJ. This deviation is approximately 650 feet longer than the corresponding portion of the proposed September route. The deviation has greater environmental and land use impacts. In addition, there are more structures within 50 feet of the construction work area and a fewer amount of landowners impacted when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the Proposed Route indicates that the land area required for construction would increase, the pipeline would be place in close proximity to the public water tower and the route would be in closer proximity to existing residences. This deviation was not adopted due to implementation of Deviation 51.

Deviation No. 54:

The basis for Deviation No. 54 is a landowner request to locate the Proposed Route in an area that does not conflict with future development plans for a parcel. This deviation begins at MP 82.0 and ends at MP 82.3 in Hunterdon County, NJ. This deviation is approximately 350 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area compared to the corresponding portion of the proposed September route. A review of the landowner's development indicated the

Proposed Route will not impact with the development plans. This deviation was not adopted due to a review of the development plans and implementation of Deviation 51.

Deviation No. 55:

The basis for Deviation No. 55 is a regulatory consideration to locate the Proposed Route in an area that avoids an existing public water supply drinking well area along Everittstown Road (County Route 513). This deviation begins at MP 86.7 and ends at MP 88.1 in Hunterdon County, NJ. This deviation is approximately 550 feet longer than the corresponding portion of the proposed September route. The deviation has reduced environmental impacts but greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and a fewer amount of landowners impacted when compared to the corresponding portion of the proposed September route. This deviation would place the route on a sensitive horse farm property. In addition to the horse farm, the deviation would require more land area for construction, and there would be one additional residence and one commercial building that would be within 50 feet of the workspace. With the sensitivity of the horse farm and the public water well located in a paved parking lot, this deviation was not adopted.

Deviation No. 56:

The basis for Deviation No. 56 is a landowner request to locate the Proposed Route in an area that does not conflict with future development plans for a parcel. This deviation begins at MP 89.7 and ends at MP 90.1 in Hunterdon County, NJ. This deviation is approximately 250 feet longer than the corresponding portion of the proposed September route. The deviation results in greater land use impacts. In addition, there is a greater amount of landowners impacted when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the Proposed Route indicates that the land area required for construction would increase and the length of preserved farm land crossed would increase. This deviation was not adopted due to additional land required for construction and two powerline utility crossings.

Deviation No. 57:

The basis for Deviation No. 57 is a regulatory consideration to locate the Proposed Route in the public road ROW to reduce forest land use impacts on a parcel. This deviation begins at MP 90.1 and ends at MP 90.7 in Hunterdon County, NJ. This deviation is approximately 1,100 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of landowners impacted when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the Proposed Route indicates that the length of pipeline would increase by 40% (0.2 miles), and residential land area required for construction would increase by over 3 acres. This deviation was not adopted due to additional amount of disruption to residential areas, slower timeframe for specialty pipeline construction in the public road ROW, and local traffic impacts due

to road closures. Installing the Proposed Route in the roadway increases the integrity threats of the pipeline due to increased potential for third party damage.

Deviation No. 58:

The basis for Deviation No. 58 is a landowner request to locate the Proposed Route in an area that does not conflict with an existing onsite private sewer system. This deviation begins at MP 90.7 and ends at MP 91.2 in Hunterdon County, NJ. This deviation has more structures within 50 feet of the construction work area but a fewer amount of impacted landowners when compared to the prior alternative. A quantitative comparison of this deviation to the Proposed Route indicates that the land area required for construction would increase and the amount of impact to forest land crossed would increase. This deviation was adopted to avoid impacts to the onsite private sewer system and to increase areas of co-location.

Deviation No. 59:

The basis for Deviation No. 59 is a stakeholder request to locate the Proposed Route in an area that minimizes crossings of the Lockatong Creek. This deviation begins at MP 91.3 and ends at MP 93.0 in Hunterdon County, NJ. This deviation is approximately 1,350 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of landowners impacted when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the Proposed Route indicates that the land area required for construction would increase. This deviation was not adopted due to implementation of Deviation 63.

Deviation No. 60:

The basis for Deviation No. 60 is a stakeholder request to locate the Proposed Route in an area that minimizes crossings of the Lockatong Creek. This deviation begins at MP 91.4 and ends at MP 93.0 in Hunterdon County, NJ. This deviation is approximately 75 feet shorter than the corresponding portion of the proposed September route. The deviation has fewer land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of landowners impacted when compared to the corresponding portion of the proposed September route. This deviation was not adopted due to implementation of Deviation 63.

Deviation No. 61:

The basis for Deviation No. 61 is a stakeholder request to locate the Proposed Route in an area that minimizes crossings of the Lockatong Creek. This deviation begins at MP 91.4 and ends at MP 93.0 in Hunterdon County, NJ. This deviation is approximately 1,400 feet shorter than the corresponding portion of the proposed September route. The deviation has reduced land use impacts. In addition, there are more structures within 50 feet of the construction work area but a fewer amount of landowners impacted when compared to

the corresponding portion of the proposed September route. This deviation was not adopted due to implementation of Deviation 63.

Deviation No. 62:

The basis for Deviation No. 62 is a stakeholder request to locate the Proposed Route in an area that minimizes crossings of the Lockatong Creek. This deviation is approximately 1,710 feet shorter than the corresponding portion of the proposed September route. The deviation has fewer land use impacts. In addition, there are fewer structures within 50 feet of the construction work area and a fewer amount of landowners impacted when compared to the corresponding portion of the proposed September route. This deviation begins at MP 91.4 and ends at MP 93.0 in Hunterdon County, NJ. This deviation was not adopted due to implementation of Deviation 63.

Deviation No. 63:

The basis for Deviation No. 63 is a stakeholder request to locate the Proposed Route in an area that minimizes crossings of the Lockatong Creek. The deviation was presented to FERC in the Draft Resource Reports filed in April 2015. This deviation begins at MP 91.4 and ends at MP 93.0 in Hunterdon County, NJ. This deviation is approximately 1,200 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of landowners impacted when compared to the prior alternative. The prior alternative that was presented to FERC in the Draft Resource Reports filed in April 2015 would have required multiple stream crossings and increased impacts on environmental sensitive areas. This deviation was adopted to minimize potential impacts to these sensitive areas.

Deviation No. 64:

The basis for Deviation No. 64 is a stakeholder, municipality, and regulatory agency request to optimize co-location opportunities with existing electric transmission ROWs. The deviation was presented to FERC in the Draft Resource Reports filed in April 2015. This deviation begins at MP 91.4 in Hunterdon County, NJ and ends at MP 114.0 in Mercer County, NJ. This deviation is approximately 13,400 feet longer than the prior alternative. This deviation has reduced environmental impacts but greater land use impacts. In addition, there are fewer structures within 50 feet of the construction work area and a fewer amount of landowners impacted when compared to the prior alternative. A quantitative comparison of this deviation to the prior alternative presented to FERC in draft Resource Reports filed in October 2014 indicates that the land area required for construction would increase, the amount of impact to forest land crossed would increase and co-location would increase by approximately 13.4 miles. This deviation was adopted to increase the co-location with existing utility ROWs. This deviation resulted in several previous deviations considered becoming obsolete due to their proximity to the Proposed Route. These obsolete deviations are included in Appendix P.

Deviation No. 65:

The basis for Deviation No. 65 is a regulatory consideration to locate the Proposed Route in the public road ROW to reduce wetland impacts on multiple parcels. This deviation begins at MP 93.1 and ends at MP 93.7 in Hunterdon County, NJ. This deviation is approximately 3,160 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of landowners impacted when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the Proposed Route indicates that the length of pipeline would increase by 90% (0.6 miles), and residential land area required for construction would increase by over 9 acres. This deviation was not adopted due to additional amount of disruption to residential areas, slower timeframe for specialty pipeline construction in the public road ROW, and local traffic impacts due to road closures. Installing the Proposed Route in the roadway increases the integrity threats of the pipeline due to increased potential for third party damage.

Deviation No. 66:

The basis for Deviation No. 66 is a regulatory consideration to locate the Proposed Route in an area that avoids a parcel encumbered by a USDA conservation easement. This deviation begins at MP 93.2 and ends at MP 94.3 in Hunterdon County, NJ. This deviation is approximately 250 feet shorter than the prior alternative. This deviation has fewer land use impacts. In addition, there are more structures within 50 feet of the construction work area when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in October 2014. A quantitative comparison of this deviation to the prior alternative indicates more land will be required to build the pipeline along the prior alternative. This deviation was adopted.

Deviation No. 67:

The basis for Deviation No. 67 is a regulatory consideration to locate the Proposed Route in an area that avoids a parcel encumbered by a USDA conservation easement. This deviation begins at MP 97.1 and ends at MP 97.8 in Hunterdon County, NJ. This deviation is approximately 150 feet longer than the prior alternative. This deviation has greater environmental impacts and land use impacts. In addition, there are more structures within 50 feet of the construction work area but a reduced amount of landowners impacted when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in October 2014. A quantitative comparison of this deviation to the prior alternative indicates more land will be required to build the pipeline along the prior alternative. This deviation was adopted.

Deviation No. 68

The basis for Deviation No. 68 is a regulatory consideration to locate the Proposed Route in the public road ROW to reduce wetland impacts on multiple parcels. This deviation begins at MP 97.4 and ends at MP 97.6 in Hunterdon County, NJ. This deviation is approximately 1,000 feet shorter than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are fewer structures within 50 feet of the construction work area when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the Proposed Route indicates that the length of pipeline would increase by 95% (0.2 miles), and residential land area required for construction would increase by over 2 acres. This deviation was not adopted due to additional amount of disruption to residential areas, slower timeframe for specialty pipeline construction in the public road ROW, and local traffic impacts due to road closures. Installing the Proposed Route in the roadway increases the integrity threats of the pipeline due to increased potential of 3rd party damage.

Deviation No. 69:

The basis for Deviation No. 69 is a landowner request to locate the Proposed Route in an area that does not conflict with future development plans for parcel. This deviation begins at MP 99.0 and ends at MP 99.4 in Hunterdon County, NJ. This deviation is approximately 40 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, there are fewer structures within 50 feet of the construction work area and a fewer amount of landowners impacted when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in April 2015. A quantitative comparison of this deviation to the prior alternative indicates more land will be required to build the pipeline along the deviation. This deviation was adopted to accommodate future land development plans on this parcel.

Deviation No. 70:

The basis for Deviation No. 70 is a route optimization to locate the Proposed Route (Lambertville Lateral) in an area that allows the Lambertville Launcher site to be located away from overhead powerlines. This deviation begins at MP 0.0 and ends at MP 1.0 of the Lambertville Lateral in Hunterdon County, NJ. This deviation is approximately 3,000 feet longer than the corresponding portion of the proposed September route prior alternative. This deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and an increased proposed route. A quantitative comparison of this deviation to the Proposed Route (Lateral) indicates more land will be required to build the pipeline along the deviation and there will be 9 more parcels crossed. This deviation was not adopted taking into account increased land use impacts and landowners affected.

Deviation No. 71:

The basis for Deviation No. 71 is a route optimization to locate the Proposed Route (Lambertville Lateral) in an area that allows the Lambertville Launcher site to be located away from overhead powerlines. This deviation begins at MP 0.0 and ends at MP 1.0 of the Lambertville Lateral in Hunterdon County, NJ. This deviation is approximately 550 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there is a greater amount of landowners impacted area when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the Proposed Route (Lateral) indicates more land will be required to build the pipeline along the deviation and there will be 4 more parcels crossed. This deviation was not adopted.

Deviation No. 72:

The basis for Deviation No. 72 is a route optimization to locate the Proposed Route (Lambertville Lateral) in an area that allows the Lambertville Launcher site to be located away from overhead powerlines. This deviation begins at MP 100.1 and ends at MP 100.9 in Hunterdon County, NJ. This deviation is approximately 600 feet longer than the prior alternative. This deviation has reduced environmental and land use impacts. In addition, there are fewer structures within 50 feet of the construction work area when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in April 2015. A quantitative comparison of this deviation to the prior alternative indicates more land will be required to build the pipeline along the deviation and length of crossed preserved farm land would increase. This deviation was adopted to optimize the crossing of Alexauken Creek due to the location of the Lambertville Lateral.

Deviation No. 73:

The basis for Deviation No. 73 is a route optimization to locate the Proposed Route (Lambertville Lateral) in an area that allows the Lambertville Launcher site to be located away from overhead powerlines. This deviation begins at MP 0.0 and ends at MP 1.43 in Hunterdon County, NJ. This deviation is approximately 230 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and a greater amount of landowners impacted when compared to the corresponding portion of the proposed September route. The prior alternative was presented to FERC in the Draft Resource Reports filed in April 2015. A quantitative comparison of this deviation to the prior alternative indicates less land will be required to build the pipeline along the deviation and length of crossed preserved farm land would increase. This deviation was adopted due to relocating the Lambertville Launcher site away from overhead powerlines and to accommodate a potential mainline HDD crossing of Alexauken Creek should site conditions be favorable for this effort. The prior alternative presented engineering and constructability concerns in the area of co-location with the overhead powerlines and pipelines due to topography and terrain features of interest.

Deviation No. 74:

The basis for Deviation No. 74 is a route optimization to locate the Proposed Route in an area on the west side of the existing powerlines. This deviation begins at MP 102.3 and ends at MP 102.6 in Hunterdon County, NJ. This deviation is approximately 60 feet longer than the prior alternative. This deviation has greater land use impacts when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in April 2015. A quantitative comparison of this deviation to the prior alternative indicates less forested area will be required to build the pipeline along the deviation. PennEast adopted this deviation.

Deviation No. 75:

The basis for Deviation No. 75 is a regulatory consideration to avoid sensitive areas. This deviation begins at MP 102.8 and ends at MP 103.8 in Hunterdon County, NJ. This deviation is approximately 400 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are more structures within 50 feet of the construction work area and a fewer amount of landowners impacted when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation to the prior alternative indicates more land will be required to build the pipeline along the deviation. This deviation was not adopted due to additional land required for construction, topography considerations, and locating the pipeline closer to the outlet of the reservoir and adjoining dam.

Deviation No. 76:

The basis for Deviation No. 76 is a landowner request to locate the Proposed Route in an area that does not conflict with future development plans along Hewitt Road. This deviation begins at MP 103.3 and ends at MP 104.0 in Hunterdon County, NJ. This deviation is approximately 200 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, there are fewer structures within 50 feet of the construction work area and a reduced amount of landowners impacted when compared to the prior alternative. The prior alternative was presented to FERC in the Draft documents filed in January 2015. This deviation was adopted to accommodate future land development plans along Hewitt Road.

Deviation No. 77:

The basis for Deviation No. 77 is a route optimization to locate the Proposed Route in an area that does not cross a pond adjacent to the existing powerline corridor. This deviation begins at MP 107.4 and ends at MP 108.1 in Mercer County, NJ. This deviation is approximately 250 feet longer than the prior alternative. This deviation has greater land use impacts. In addition, a greater amount of landowners impacted when compared to the prior alternative. A quantitative comparison of this deviation to the prior alternative indicates more land will be required to build the pipeline along the deviation and there will be an increased number of powerline crossings. This deviation was adopted to minimize impacts to sensitive areas.

Deviation No. 78:

The basis for Deviation No. 78 is a regulatory consideration to locate the Proposed Route in an area that avoids a parcel encumbered by a USDA conservation easement. This deviation begins at MP 108.7 and ends at MP 108.9 in Mercer County, NJ. This deviation is approximately 5 feet longer than the prior alternative. This deviation has reduced environmental impacts but greater land use impacts when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in April 2015. This deviation was adopted.

Deviation No. 79:

The basis for Deviation No. 79 is a stakeholder request by Hopewell Township to locate the Proposed Route away from its public works facility. This deviation begins at MP 110.5 and ends at MP 110.9 in Mercer County, NJ. This deviation is approximately 850 feet longer than the corresponding portion of the proposed September route. The deviation has greater land use impacts. In addition, there are fewer structures within 50 feet of the construction work area and a reduced amount of landowners impacted when compared to the corresponding portion of the proposed September route. A quantitative comparison of this deviation indicates that the land area required for construction would increase, the amount of impact to forest land crossed would increase and co-location would decrease by approximately 0.4 miles. This deviation was not adopted due to PennEast proposing to HDD across the existing public works facility and limited impact disruption to the land occupants.

Deviation No. 80:

The basis for Deviation No. 80 is a landowner request to locate the Proposed Route in an area along the northwest property line. This deviation begins at MP 113.4 and ends at MP 113.9 in Mercer County, NJ. This deviation is approximately 30 feet shorter than the prior alternative. This deviation has reduced land use impacts. In addition, there are fewer structures within 50 feet of the construction work area when compared to when compared to the prior alternative. The prior alternative was presented to FERC in the Draft Resource Reports filed in April 2015. This deviation was adopted to accommodate the landowner request.