

PennEast Pipeline Company, LLC

PENNEAST PIPELINE PROJECT

APPENDIX L-3F

CUMULATIVE IMPACTS ANALYSIS

BUCKS COUNTY

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Submitted by:

PennEast Pipeline Company, LLC



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Acronyms and Abbreviations

ABACT	Antidegradation Best Available Combination of Technologies
ATWS	Additional Temporary Workspace
BMP	best management practices
CIA	Cumulative Impacts Assessment
CIAA	Cumulative Impacts Assessment Area
CHP	Combined Heat and Power
EA	Environmental Assessment
eFACTS	Environment, Facility, Application, Compliance Tracking System
E&S	Erosion and Sediment
E&SCP	Erosion and Sediment Control Plan
EV	Exceptional Value
FERC	Federal Energy Regulatory Commission
HDD	horizontal directional drill
HQ	High-Quality
JPA	Joint Permit Application
kV	Kilovolt
LF	linear feet
LNG	Liquefied Natural Gas
MMcfd	Million Cubic Feet per Day
MMDth/d	Million Dekatherms per Day
MP	milepost
Pa. Code	Pennsylvania Code
Pa.C.S.	Pennsylvania Consolidated Statutes
PADEP	Pennsylvania Department of Environmental Protection
PEDA	Pennsylvania Energy Development Authority
PEM	palustrine emergent
PennDOT	Pennsylvania Department of Transportation
PennEast	PennEast Pipeline Company, LLC
PFO	palustrine forested
Project	PennEast Pipeline Project
PSS	palustrine scrub-shrub
ROW	right-of-way
T&E	Threatened and Endangered
Transco	Transcontinental Gas Pipeline Company, LLC
U.S.C.A.	United States Code Annotated
WQS	Water Quality Standard



1.0 Introduction

PennEast Pipeline Company, LLC (PennEast) proposes to construct, install and operate an approximate 115-mile pipeline (Project or PennEast) extending from Luzerne County, Pennsylvania, to Mercer County, New Jersey. Approximately 77.3 miles of the pipeline is located in Pennsylvania, with approximately 23 miles in Luzerne County, approximately 28 miles in Carbon County, approximately 1 mile in Monroe County, approximately 24 miles in Northampton, and approximately 2 miles in Bucks County. The Project facilities include a 36-inch diameter pipeline to provide approximately 1.1 million dekatherms per day (MMDth/d) of year-round transportation services from northern Pennsylvania to markets in New Jersey, eastern and southeastern Pennsylvania and surrounding states. The 24-inch diameter Hellertown Lateral will be an approximately 2.1-mile new pipeline in Northampton County, Pennsylvania. The 4-inch diameter Blue Mountain Interconnect Lateral will be an approximately 0.5 mile new pipeline in Carbon County, Pennsylvania.

To minimize impacts, PennEast has co-located the construction right-of-way (ROW) adjacent to or in proximity to existing ROWs to the greatest extent practicable (e.g., gas pipeline, electrical transmission line or product pipeline). Approximately 30.7 miles (approximately 38 percent) of new ROW located in Pennsylvania will be co-located with existing utility corridors, including 50 percent (11.4 miles) of the Project in Luzerne County, 56 percent (15.9 miles) of the Project in Carbon County, 100 percent (1 mile) of the Project in Monroe County, and 9 percent (2.4 miles) of the Project in Northampton.

An Alternatives Analysis of the proposed Project was prepared during planning, pipeline routing, and aboveground facility siting; a county-specific Alternatives Analysis is provided in JPA Section S. PennEast sited the ROW to avoid and minimize impacts to wetlands and watercourses to the extent practicable for the entire Project. However, because this is a linear project, complete avoidance of all wetlands and watercourses was not possible or practicable. The Project will result in 207 watercourse and/or floodway crossings and 168 wetland crossings in Pennsylvania.

The Project will result in temporary and permanent wetland and watercourse impacts. The majority of impacts are temporary. Wetlands and watercourses will either be temporarily impacted using conventional trenching techniques, where pre-construction contours and hydrology will be restored after the pipeline is constructed, or surface impacts will be avoided by installing the pipe using trenchless crossing techniques such as horizontal directional drilling (HDD) or boring. Although the majority of impacts are temporary, there will be some permanent impacts. The Project will permanently impact approximately 7.00 acres of wetland associated with the permanent conversion of palustrine forested (PFO) and palustrine scrub-shrub (PSS) cover types to palustrine emergent (PEM) wetlands. The PFO and PSS wetland cover type conversion will result in some functional loss, but impacts will be offset through the enhancement of three offsite compensatory mitigation sites, described in the Compensatory Mitigation Plan in JPA Section L-4B. As presented in JPA Section L (Environmental Assessment [EA]) and JPA Section S (Alternatives Analysis), with implementation and proper installation and maintenance of the Project's best management practices (BMPs), pre-construction wetland function and values within temporarily impacted wetlands will be restored, and impacts to wetlands and watercourses will be minor and mostly temporary, and result in no more than minimal individual and cumulative adverse environmental effects. In addition to the permanent conversion of PFO and PSS to PEM wetlands within the 30-foot wide maintained ROW, the Project will also result in permanent impacts to two isolated, PEM wetlands and three watercourses. At the proposed Kidder Compressor Station, 0.01 acre of isolated, PEM wetlands would be filled by the construction of the station in Carbon County. The Project would also

result in permanent watercourse impacts associated with the installation of three culverts. Two culverts along existing access roads will be replaced in-kind – one in Luzerne County and one in Carbon County. A new culvert will also be installed for access to the proposed Kidder Compressor Station in Carbon County.

PennEast submitted Chapter 105 Water Obstruction & Encroachment Joint Permit Applications to the Pennsylvania Department of Environmental Protection (PADEP) in February 2016 requesting permits to construct and maintain various water obstructions and encroachments associated with the Project, including crossings of wetlands and interrelated wetland areas (inclusive of adjacent watercourses). In compliance with PADEP’s regulations, PennEast has assessed the potential cumulative impacts associated with Project crossings of wetlands and interrelated wetland areas.

This cumulative impacts assessment (CIA) has been prepared to comply with the requirements of 25 Pennsylvania Code (Pa. Code) Section (§) 105.14(b)(14) and 105.15 and the PADEP’s technical guidance document entitled *Comprehensive Environmental Assessment of Proposed Project Impacts for Chapter 105 Water Obstruction and Encroachment Permit Applications Technical Guidance Number 310-2137-006* (“PADEP’s technical guidance”) to evaluate the cumulative impact of the Project and other potential or existing projects, and if numerous piecemeal changes may result in a major impairment of the wetland resources, in consideration of interrelated wetland areas, affected by the Project. This CIA also has been prepared to comply with the requirements of § 105.18a(a)(6) and 105.18a(b)(6) to evaluate if the effect of the Project when considered in combination with the impacts of other potential or existing projects, including consideration of interrelated wetland areas (inclusive of adjacent watercourses), may result in the impairment of the Commonwealth’s exceptional value (EV) wetland resources or a major impairment of the Commonwealth’s other wetland resources, respectively.

This CIA addresses the cumulative impact of the Project, and other potential or existing projects within the Cumulative Impact Assessment Area (CIAA) of the Project (see Section 2.5 for a discussion of the CIAA). As part of this analysis, the wetland impacts presented in the Chapter 105 applications related to this Project and other projects have been evaluated to determine if the impacts may result in the impairment of the Commonwealth’s EV wetland resources or a major impairment of the Commonwealth’s other wetland resources.

The methodology for preparing this CIA is discussed in Section 2.0. Section 3.0 describes the cumulative actions included in this assessment. Section 4.0 summarizes the cumulative impacts for this Project and other potential or existing projects within the CIAA. Information on the Project impacts to wetlands and interrelated wetland areas (inclusive of adjacent watercourses) is included in Section 4.1 and other projects impacts within the CIAA are described in Section 4.2.

2.0 Methodology

In accordance with Section 5a and 5b of the PADEP’s technical guidance, PennEast used due diligence for identifying and considering other existing and potential projects permanently impacting each wetland resource including:

- a. Other Existing Permanent Project Impacts – Existing permanent wetland impacts in, along, across or projecting into the wetland resource.

- b. Other Potential Projects Proposing Permanent Impacts – Future anticipated permanent wetland impacts in, and along, across or projecting into the wetland resource including:
- (i) Proposed but not yet built permanent wetland impacts proposed by the applicant; or
 - (ii) Other permanent wetland impacts proposed by other entities within the wetland resource currently under review by the PADEP; and
 - (iii) Other permanent wetland impacts from projects proposed by other entities authorized by valid PADEP Chapter 105 Water Obstruction and Encroachment Permits (issued in the last five years; i.e., not expired), but not constructed.

As indicated in PADEP’s technical guidance, where a temporary wetland impact is proposed to be properly restored, the applicant does not need to identify the temporary impact as an adverse cumulative impact on the wetland resource. Therefore, temporary impacts and their restoration measures have been discussed as provided in EA Modules 3 and 4 (JPA Sections L-3 and L-4, respectively), but those temporary impacts are not considered an adverse cumulative impact and have not been discussed within this CIA.

In addition, other project actions greater than five years in the past (i.e., projects where construction occurred greater than 5 years from the date of filing administratively complete Joint Permit Application (JPA) – projects have been constructed and placed in service more than the last five years) are considered to be contributing to the existing environmental conditions, and those impacts have not been included in the CIA. Therefore, only other potential or existing projects located within the CIAA and which have occurred within the last five years were evaluated as part of the CIA.

In order to identify existing and other potential proposed projects in the area that may contribute to cumulative impacts to past, existing and future anticipated permanent wetland and watercourse impacts, PennEast reviewed the PADEP’s *Pennsylvania Bulletin* for Chapter 105 and other land development permit applications and permits, reviewed Pennsylvania’s Environment Facility Application Compliance Tracking System (eFACTS), conducted file reviews of projects at PADEP’s regional office, and consulted with municipalities and county planning agencies. The cumulative impacts assessment is also based on information about projects obtained from resources such as planning commissions and county and municipal departments, available transportation improvement plans, meeting minutes and communications with county staff, input provided at Federal Energy Regulatory Agency (FERC) Project Open Houses, and industry sources.

2.1 Wetland Definitions

As defined in 25 Pa. Code § 105.1, wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs and similar areas.

As defined in 25 Pa. Code § 105.17, wetlands are categorized as either *Exceptional Value (EV) Wetlands* or *Other Wetlands*. EV wetlands are wetlands that exhibit one or more of the following characteristics:

- i. Wetlands which serve as habitat for fauna or flora listed as “threatened” or “endangered” under the Endangered Species Act of 1973 (7 U.S.C.A. § 136; 16 U.S.C.A. § 4601-9, 460k-1, 668dd,

- 715i, 715a, 1362, 1371, 1372, 1402 and 1531—1543), the Wild Resource Conservation Act (32 P. S. § 5301—5314), 30 Pa.C.S. (relating to the Fish and Boat Code) or 34 Pa.C.S. (relating to the Game and Wildlife Code).
- ii. Wetlands that are hydrologically connected to or located within 1/2-mile of wetlands identified under subparagraph (i) and that maintain the habitat of the threatened or endangered species within the wetland identified under subparagraph (i).
 - iii. Wetlands that are located in or along the floodplain of the reach of a wild trout watercourse or waters listed as exceptional value under Chapter 93 (relating to water quality standards [WQS]) and the floodplain of watercourses tributary thereto, or wetlands within the corridor of a watercourse or body of water that has been designated as a National wild or scenic river in accordance with the Wild and Scenic Rivers Act of 1968 (16 U.S.C.A. § § 1271—1287) or designated as wild or scenic under the Pennsylvania Scenic Rivers Act (32 P. S. § § 820.21—820.29).
 - iv. Wetlands located along an existing public or private drinking water supply, including both surface water and groundwater sources, that maintain the quality or quantity of the drinking water supply.
 - v. Wetlands located in areas designated by PADEP as “natural” or “wild” areas within state forest or park lands, wetlands located in areas designated as federal wilderness areas under the Wilderness Act (16 U.S.C.A. § § 1131—1136) or the Federal Eastern Wilderness Act of 1975 (16 U.S.C.A. § 1132) or wetlands located in areas designated as national natural landmarks by the Secretary of the Interior under the Historic Sites Act of 1935 (16 U.S.C.A. § § 461—467).

Other wetlands are defined as wetlands that are not categorized as EV wetlands.

2.2 Wetland Functions

Wetland functions that have been analyzed are defined within 25 Pa. Code § 105.1 and include the following:

- Serving natural biological functions, including food chain production; general habitat; and nesting, spawning, rearing and resting sites for aquatic or land species.
- Providing areas for study of the environment or as sanctuaries or refuges.
- Maintaining natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, natural water filtration processes, current patterns or other environmental characteristics.
- Shielding other areas from wave action, erosion or storm damage.
- Serving as a storage area for storm and flood waters.
- Providing a groundwater discharge area that maintains minimum base flows.
- Serving as a prime natural recharge area where surface water and groundwater are directly interconnected.
- Preventing pollution.
- Providing recreation.

2.3 Interrelated Wetland Areas

Permanent impacts resulting from the Project and other ongoing and future projects in the vicinity of the Project, when considered cumulatively, could result in potentially greater cumulative impacts to specific wetlands and the interrelated wetland area, which includes adjacent watercourses. This CIA considers impacts to wetlands based on the previously-listed functions. In addition, as a conservative approach, an analysis of watercourses crossed by the Project and other ongoing and future projects in the vicinity of the Project has been included within this CIA to address the interrelated wetland areas, regardless of whether watercourses are adjacent to affected wetlands.

2.4 Impairment and Major Impairment

The terms “impairment” and “major impairment” are not defined in Chapter 105; however, because wetlands are subject to PADEP’s antidegradation requirements set forth at 25 Pa. Code § Chapter 93, PADEP must protect the level of water quality necessary to protect the current uses pursuant to 25 Pa. Code § 93.4a(b).1. In addition, any wetlands that are impaired must be replaced in accordance with 25 Pa. Code § 105.20a, as pursuant to 25 Pa. Code § 105.18a(b)(7). For the purposes of this assessment, “impairment” and “major impairment” are defined as the long-term loss of water quality necessary to protect the current uses where replacement of those impaired wetlands cannot be attained.

2.5 Cumulative Impact Assessment Area

Pursuant to the requirements of 25 Pa. Code § 105.14(b)(14), 105.15, 105.18a(a)(6), and 105.18a(b)(6) and PADEP’s technical guidance, the CIAA for this analysis includes the ROW utilized by the Project that is the subject of this CIA, and any permanent wetland or watercourse impacts in, along, across or projecting into the wetland resource from the Project or other existing and other potential projects. Additionally, consideration of impacts to wetlands and interrelated wetland areas (inclusive of adjacent watercourses) included the use of detailed in-field data located within the 400-foot wide survey corridor of analysis for the Project. As indicated in PADEP’s technical guidance, where a temporary wetland impact is proposed to be properly restored, that temporary impact has not been identified as an adverse cumulative impact on the wetland resource.

3.0 Cumulative Actions

Pursuant to the requirements of 25 Pa. Code § 105.14(b)(14), 105.15, 105.18a(a)(6), and 105.18a(b)(6) and PADEP’s technical guidance, the evaluation focused on this Project and other potential or existing projects within the CIAA. PennEast has identified other projects that could potentially contribute to cumulative impacts when considered with the proposed Project. These include natural gas development projects (natural gas wells, pipeline gathering systems, and interstate pipelines); electric generation and transmission projects; transportation projects; and residential, commercial and industrial development projects.

Based on the methodology described above, a total of seventeen other project actions were identified as other potential or existing other projects to be considered in the CIA for the Project. Two of these other project actions were identified within the CIAA in Bucks County. Table BU-L-3F-1 provides a brief description of these actions, identifies the locations of the actions relative to the Project and county-

specific location, and characterizes the timeframe for these actions (e.g., past, present and future). The figure in Appendix BU-L-3F-1 shows the location of these potential or existing projects within the CIAA.

**Table BU-L-3F-1
 Projects Evaluated for Potential Cumulative Impacts in Bucks County**

Project ^a	Proposed Activities	Location	Project Status (Past, Present, Future) ^b
Natural Gas Projects			
Adelphia Gateway	Adelphia will convert 50 miles of an existing 84-mile pipeline in southeastern Pennsylvania from oil to natural gas transport, change the jurisdiction over a 4.4-mile pipeline from the Pennsylvania Public Utilities Commission to FERC, construct two new pipeline laterals, construct two new compressor stations, and modify or install new aboveground facilities including twelve meter and regulatory facilities, blowdown facilities, and a mainline valve.	The 18-inch diameter mainline traverses Delaware, Chester, Montgomery, Bucks, and Northampton Counties, PA ^c	Future
Electrical Transmission Projects			
None			
Transportation Projects			
PA 611 Bridge over Cooks Creek	PennDOT's bridge replacement on PA 611 over Cooks Creek	Bucks County, PA	Present
Residential/Commercial/Industrial Development Projects			
None			

Notes:

- a. Identified projects through a review of permit applications submitted and/or approved by PADEP in the Pennsylvania Bulletin, review of Pennsylvania's Environment Facility Application Compliance Tracking System (eFACTS), and PADEP File reviews.
- b. Past Projects are those where construction occurred within the past 5 years from the date of filing administratively complete JPA. Present projects are recently completed or under construction as of 2018. Future projects are expected to be under construction in the same timeframe as and crossed by the Project.
- c. Because there is no earth disturbance associated with the Adelphia Project within 14 miles of the PennEast Pipeline Project in Bucks County, the location is not shown on the figure in Appendix BU-L-3F-1.

4.0 Cumulative Impacts

Cumulative impacts are estimated by aggregating the impacts of the Project with the impacts of other potential or existing projects. The analysis of cumulative impacts is presented on both a state-wide and county-specific basis. A summary of the wetland and interrelated wetland area (inclusive of adjacent watercourses) impacts within the CIAA for the overall Project in Pennsylvania are included within Table BU-L-3F-2 and TableBU-L-3F-3, respectively. The narrative discussion of the cumulative impacts below

provides additional information about specific resources that are affected by the Project and other projects in the CIAA.

4.1 Proposed Project Impacts

PennEast has routed the proposed pipeline facilities and work areas to avoid and minimize effects on wetlands and watercourses to the greatest extent practicable while maintaining engineering standards and safety. However, because this is a linear project, complete avoidance of all wetlands and waterbodies was not possible or practicable. The routing process has allowed PennEast to identify a constructible pipeline alignment that will minimize disturbances on the environment while maintaining engineering standards and safety. With the proper installation and maintenance of the Project’s BMPs, impacts to wetlands and watercourses will be minor and mostly temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

The Project will result in temporary disturbance to watercourses and wetlands during construction and also permanent impacts to wetland resources during operation. Disturbances were calculated using the engineered Project area, which incorporated additional temporary workspace (ATWS), access roads and utilized a typical construction workspace of 75 feet, a 50-foot wide permanent ROW, and a 30-foot wide operational/maintained ROW. PennEast will limit the typical width of the construction ROW to 75 feet within wetlands and across watercourses, unless an alternative measure is requested at specific crossings. After the Project is constructed and placed in service, PennEast will maintain a 10-foot corridor in an herbaceous state to facilitate periodic corrosion and leak surveys. Conversion of PFO and PSS wetlands to PEM wetlands will occur within the 30-foot wide maintained ROW. Trees within 15 feet of the pipeline (including trees located within wetlands and riparian buffers), which may have roots that could damage the pipeline coating, will be cut and removed from the permanent ROW.

As further demonstrated in JPA Section L (EA) and JPA Section S (Alternatives Analysis), with the proper installation and maintenance of the Project’s BMPs, impacts to wetlands and watercourses will be minor and mostly temporary, and will result in no more than minimal individual and cumulative adverse environmental effects.

Wetland Impacts within Bucks County

The wetland impact table (Table BU-L-3F-2) summarizes wetland impact acreages for wetlands crossed by the pipeline facilities by county. As a result of PennEast’s wetland avoidance and minimization effort, the Project will cross a single wetland in Bucks County using the HDD crossing method; therefore, no surface impacts and no permanent wetland impacts are proposed.

Table BU-L-3F-2
Summary of Potential Cumulative Impacts to Wetlands from the Proposed Project and Other Projects in the CIAA

County	Total Proposed Permanent Project Impacts (acres) ^{1,2}	Total Other Projects Impacts within CIAA (acres) ¹	Overlap of Wetland Impacts (acres) ¹	Total Cumulative Impacts (acres) ¹
Luzerne	1.71	0.05 ³	-	1.76
Carbon	3.84	-	-	3.84



County	Total Proposed Permanent Project Impacts (acres) ^{1,2}	Total Other Projects Impacts within CIAA (acres) ¹	Overlap of Wetland Impacts (acres) ¹	Total Cumulative Impacts (acres) ¹
Northampton	1.46	-	-	1.46
Bucks	-	-	-	-
TOTAL	7.01	0.05 ³	-	7.06

Notes:

- Individual and aggregate acreage values are rounded to the nearest hundredth of an acre, such that county subtotals and the Project-wide total may not necessarily equal the individual rounded values presented. A dash (“-”) indicates no impacts.
- Proposed permanent impacts include the conversion of PFO and PSS wetlands to PEM wetlands within the 30-foot wide maintained ROW, where there will be no loss of wetland acreage. Permanent impacts also include 0.01 acre of isolated PEM wetlands that will be filled at the Kidder Compressor Station in Carbon County.
- Approximately 0.05 acre of permanent wetland impacts associated with the Northeast Pocono Reliability Project are discussed in the Cumulative Impacts Analysis in the Luzerne County JPA.

To maintain water quality in wetland resources crossed by the Project or downgradient (potential secondary impacts) of the construction ROW, PennEast will implement pollution prevention procedures. PennEast will implement an approved Erosion and Sediment Control Plan (E&SCP) that will be executed throughout the duration of the Project to reduce risks of erosion, sedimentation, and stormwater runoff from construction areas with exposed soils. The stormwater BMPs for the Project have been planned to minimize the extent of the proposed earth disturbance, maximize protection of existing drainage features and vegetation, minimize soil compaction and employ measures and controls that minimize the generation of increased stormwater runoff. Stormwater management site planning techniques were used throughout the site design process to preserve natural systems and hydrologic functions to the maximum extent possible through the use of non-structural BMPs. Erosion controls, such as compost filter socks, will be utilized in an effort to avoid the transport of disturbed sediments to wetlands to the maximum extent practicable. To verify that BMPs are correctly implemented, Environmental Inspectors (EIs) will oversee the installation of erosion control devices and once installed, BMPs will be monitored by EIs and maintained by contractors until grading and restoration efforts are finalized.

Watercourse Impacts within Bucks County

The watercourse impact Table BU-L-3F-3 summarizes permanent watercourses impacts proposed for the overall Project in Pennsylvania. There are no permanent watercourse impacts proposed in Bucks County.

**Table BU-L-3F-3
 Summary of Potential Cumulative Impacts to Watercourses from the Proposed Project and Other Projects in the CIAA**

County	Total Proposed Permanent Impacts (linear feet) ^{1,2}	Total Other Projects Impacts within CIAA (linear feet) ¹	Overlap of Watercourse Impacts (linear feet) ¹	Total Cumulative Impacts (linear feet) ¹
Luzerne	11	162 ³	-	173
Carbon	20	-	-	20
Northampton	-	-	-	-
Bucks	-	-	-	-



County	Total Proposed Permanent Impacts (linear feet) ^{1,2}	Total Other Projects Impacts within CIAA (linear feet) ¹	Overlap of Watercourse Impacts (linear feet) ¹	Total Cumulative Impacts (linear feet) ¹
TOTAL	31	162 ³	-	193
Notes: 1. A dash (“-“) indicates no impacts. 2. Proposed permanent impacts include the installation of one new culvert and the in-kind replacement of two existing culverts along access roads. 3. Approximately 162 linear feet of permanent watercourse impacts associated with the Auburn Line Extension Project are discussed in the Cumulative Impacts Analysis in the Luzerne County JPA.				

Temporary impacts to surface watercourses during construction activities include watercourse bank vegetation removal, watercourse bank disturbances and, in some instances, flow modifications during dry-crossing construction. The crossing of all watercourses located within the Project ROW will use temporary equipment bridge installation and/or timber matting to facilitate the crossing of watercourses with vehicles, equipment and haul trucks. As indicated in PADEP’s technical guidance, where a temporary impact is proposed to be properly restored, that temporary impact has not been identified as an adverse cumulative impact on the resource. All temporary impacts as part of the Project have not been included in the CIA since they will be restored after construction.

PennEast proposes to cross watercourses with flow at the time of construction using a combination of trenchless and conventional dry-crossing methods. During dry construction installations, natural drainage patterns, flushing characteristics and current flow patterns of watercourses may be temporarily disturbed. However, the normal quantity of watercourse flow will continue unabated by diverting flows through (i.e., flume) or around (i.e., dam and pump) the installation area. Upon completion of construction in watercourses, watercourse grades will be restored to pre-construction conditions, which will re-establish natural flow patterns and hydrology. Construction of the proposed Project will not affect natural drainage patterns. There are no watercourse relocations, new enclosures, or channel deepening/dredging activities proposed in conjunction with the Project.

PennEast will conduct construction and restoration activities in accordance with Chapter 102 Permit requirements and will implement erosion and sediment control BMPs, including appropriate antidegradation best available combination of technologies (ABACT) measures for high-quality (HQ)/EV watercourse resources. Within Bucks County, none of the watercourses crossed by the Project are considered HQ or EV watercourses; however, PennEast will implement ABACT BMPs such as compost filter sock to prevent off-ROW sediment transport. In accordance with the PADEP’s antidegradation requirements contained within the Chapter 93, WQS (Title 25 Pa. Code, Chapter 93), which require the maintenance and protection of existing WQS for HQ and EV watercourses, PennEast is proposing to implement specific BMPs for HQ and EV waters to minimize impacts to the greatest extent practicable. Specifically, PennEast will employ a number of BMPs classified by PADEP as ABACT to reduce impacts at HQ watercourse crossings. JPA Section L-3E provides an Antidegradation Analysis, the Project Narrative in JPA Section J provides a detailed description of the watercourse crossing construction methods, and EA Modules 3 and 4 (JPA Sections L-3 and L-4) discuss the potential impacts to watercourses, including the impact avoidance and minimization measures PennEast has and/or will implement.

4.2 Other Project Impacts

PennEast has identified other projects that could potentially contribute to cumulative impacts when considered with the proposed Project. These include natural gas development projects (natural gas wells, pipeline gathering systems and interstate pipelines); electric generation and transmission projects; transportation projects; and residential, commercial and industrial development projects.

Seventeen other projects, including three natural gas projects, two electrical transmission projects, four transportation projects and eight residential, commercial and industrial development projects are past (have been constructed and placed in service within the last five years), present (currently under construction), or proposed for construction in the near future (2019 to 2020). Within Bucks County, two projects were identified as part of the CIA. These projects are described below, and the locations are depicted in Appendix BU-L-3F-1.

Natural Gas Projects

One other natural gas pipeline project, the Adelpia Gateway Project, was identified as a potential project that may be constructed in the near future.

There are no natural gas wells permitted for extraction within 0.25 miles of the proposed Project. As a result, PennEast does not anticipate that construction and operation of natural gas wells would result in cumulative impacts.

The following information is a brief description of each proposed other natural gas project and the impacts to wetlands and watercourses within the CIAA of the Project area.

Adelpia Gateway Project

As part of the Adelpia Gateway Project, Adelpia will convert 50 miles of an existing 84-mile pipeline in southeastern Pennsylvania from oil to natural gas transport, change the jurisdiction over a 4.4-mile pipeline from the Pennsylvania Public Utilities Commission to FERC, construct two new pipeline laterals, construct two new compressor stations, and modify or install new aboveground facilities including twelve meter and regulatory facilities, blowdown facilities, and a mainline valve. One wareyard and several access roads will be required during project construction. Because existing infrastructure is being used to the greatest extent practicable, there will be limited construction and minimal environmental impacts.

Within Bucks County, the PennEast Pipeline Project will be construction approximately 5 miles from the existing pipeline that will be converted to natural gas transport. According to t Adelpia's *Resource Report 1 – General Project Description* (Docket No. CP-18-46), the only construction that will occur within Bucks County is the construction of the Quakertown Compressor Station and the Quakertown Meter Station, which are located more than 14 miles from the PennEast Pipeline Project.

Therefore, this project is not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA.



Electrical Transmission Projects

No electrical transmission projects were identified within the CIAA in Bucks County.

Transportation Projects

Within Bucks County, one transportation project, the PA 611 Bridge over Cooks Creek Project, is a project that is currently under construction.

PA 611 Bridge over Cooks Creek

PennDOT's bridge replacement on PA 611 over Cooks Creek, in Durham Township, Bucks County is currently under construction with an estimated completion date of August 2019. The bridge replacement is approximately 0.30 mile south of MP 77.6.

The proposed Project anticipates no impacts to wetlands or watercourse resources in this area due to the proposed HDD of the Delaware Canal and Delaware River. Due to the lack of proposed surface impacts to these watercourses, impacts have not been included in this CIA.

Residential/Commercial/Industrial Development Projects

No residential, commercial, or industrial projects were identified within the CIAA in Bucks County.

4.3 Cumulative Impacts to Wetlands

As shown in Table BU-L-3F-2, the Project will not permanently impact approximately any wetlands in Bucks County. PennEast also did not identify any known wetland impacts associated with the other projects in the CIAA in Bucks County; therefore, there will be no cumulative permanent impacts as a result of the PennEast Pipeline Project.

4.4 Cumulative Impacts to Watercourses

As shown in Table BU-L-3F-3, the Project will not result in permanent impacts to any watercourses in Bucks County. PennEast also did not identify any known watercourse impacts associated with the other projects in the CIAA in Bucks County; therefore, there are no cumulative permanent watercourse impacts.

With the implementation of each potential or existing project in compliance with BMPs and permit conditions, all of the remaining disturbances to watercourses are or are anticipated to be minor and temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

5.0 Conclusion

PennEast has routed the proposed pipeline facilities and work areas of the Project to avoid and minimize effects on wetlands and watercourses to the greatest extent practicable while maintaining engineering standards and safety. The routing process has allowed PennEast to identify a constructible pipeline alignment that will minimize disturbances on the environment while maintaining engineering standards and safety.



Permanent modification of vegetative cover type of PFO wetlands and PSS wetlands to PEM wetlands is anticipated in establishing a new maintained ROW for the Project. The Project will permanently impact approximately 7.01 acres of wetlands in Pennsylvania including 0.01 acre of permanent fill within two isolated, PEM wetlands at the proposed Kidder Compressor Station and approximately 7.00 acres associated with the permanent conversion of PFO and PSS cover types to PEM wetlands. Within Bucks County, and no permanent wetland or watercourse impacts are proposed.

Based on the results of this CIA, implementation of the Project and other potential or existing projects evaluated within the CIAA will not result in aggregate cumulative impacts to wetlands or watercourses. With the implementation of each potential or existing project in compliance with BMPs and permit conditions, the remaining disturbances to watercourses are or are anticipated to be minor and temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

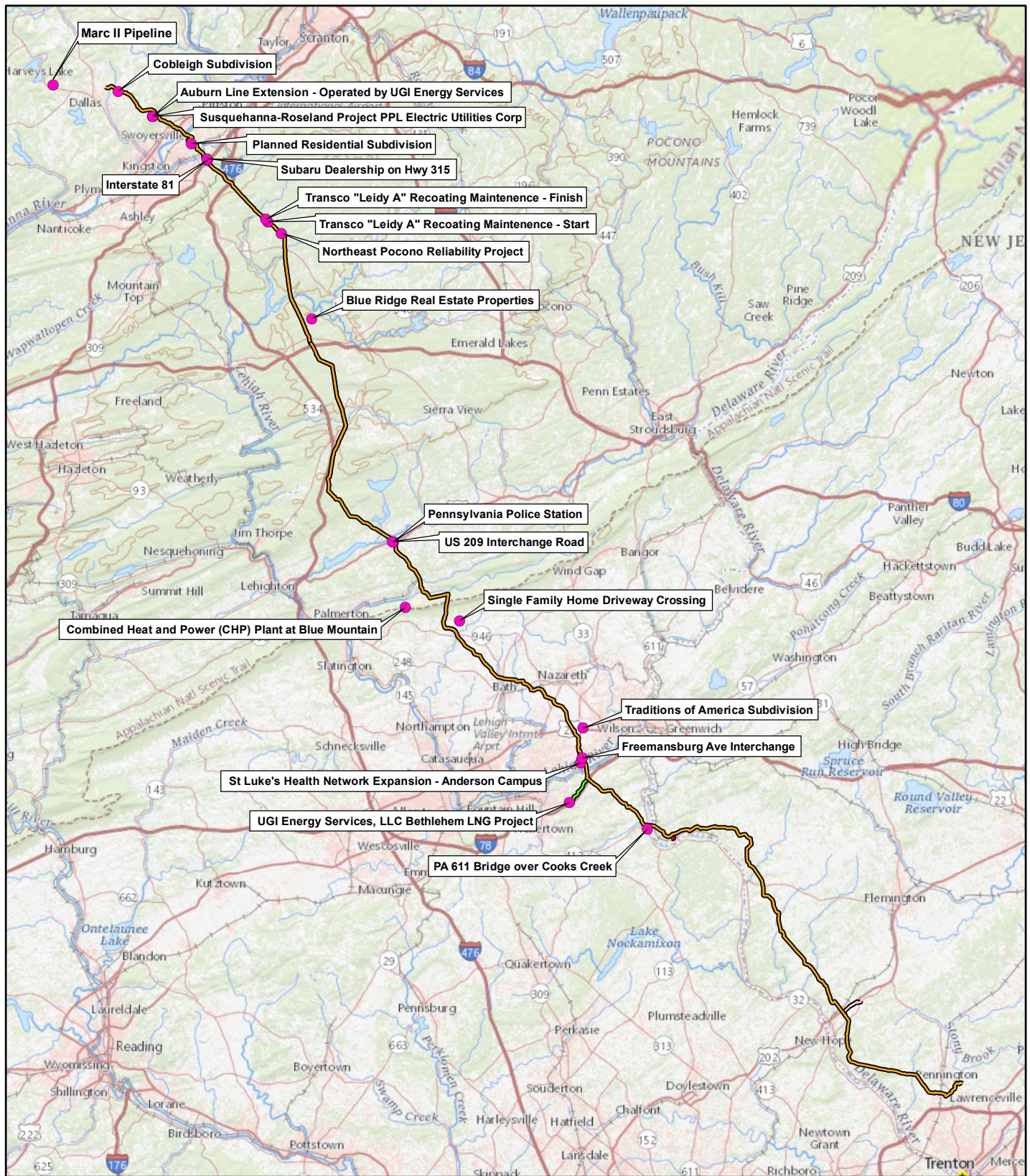
Based on these aggregate (i.e., cumulative) impacts of the Project and other potential or existing projects evaluated within the CIAA, the wetland impacts associated with all the Chapter 105 applications related to this Project, in consideration of interrelated wetland areas (inclusive of adjacent watercourses), will not result in the impairment of the Commonwealth's EV wetland resources or a major impairment of the Commonwealth's other wetland resources.

6.0 References

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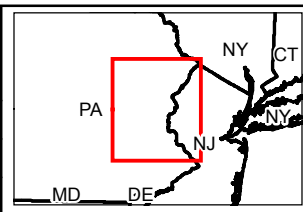
Appendix BU-L-3F-1: Cumulative Impact Analysis Figures



Legend	
● CUMULATIVE IMPACT FEATURES	— PROPOSED HELLERTOWN LATERAL
— PENNEAST MAINLINE	— GILBERT LATERAL
— BLUE MOUNTAIN INTERCONNECT LATERAL	— LAMBERTVILLE LATERAL

Reference:
USGS Topo

TITLE: Figure 1 PennEast Pipeline Project Cumulative Impact Analysis Overview Map			
LOC:	REV.:		
CKD. BY: SB	ENG.:	Date: 12/18/2018	W.O.:
DRN. BY: BF	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET:





0 0.015 0.03 0.06 Miles

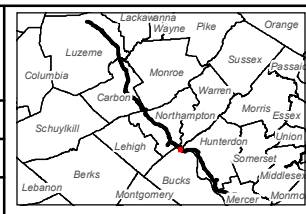
Legend

- CUMULATIVE IMPACT FEATURES
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED CONSTRUCTION LIMITS

Reference:
ESRI Aerial

TITLE: **Figure 1**
PennEast Pipeline Project
Cumulative Impact Analysis Figures

LOC:		REV.:	
CKD. BY: SB	ENG.:	Date: 12/18/2018	W.O.:
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PennEast Pipeline Company, LLC