



PennEast Pipeline Company, LLC

PENNEAST PIPELINE PROJECT

RESOURCE REPORT 11

Reliability and Safety

FERC Docket No. CP15-__-000

Final

FERC Section 7(c) Application

September 2015

Resource Report 11 – Reliability and Safety FERC Environmental Checklist

| INFORMATION | FOUND IN |
|--|----------------------|
| <input type="checkbox"/> Describe how the project facilities would be designed, constructed, operated, and maintained to minimize potential hazard to the public from the failure of project components because of accidents or natural catastrophes. (§380.12(m)) | Sections 11.1 – 11.6 |

Public and Stakeholder Issues of Concern

| ISSUE OF CONCERN | FOUND IN |
|--|------------------------------|
| <input type="checkbox"/> Pipeline safety record | Section 11.2 |
| <input type="checkbox"/> Pipeline safety standards, including explosion/fire hazards, leaks, and emergency plans | Sections 11.3 – 11.5, 11.6.2 |
| <input type="checkbox"/> Monitoring of the pipeline and responsibility for routine maintenance | Section 11.7 |
| <input type="checkbox"/> Safety associated with public areas in the vicinity of the Project | Section 11.5.2 |
| <input type="checkbox"/> Ability and ease for communities with ingress/egress associated with any potential explosions or emergencies | Sections 11.5.1, 11.6.2 |
| <input type="checkbox"/> Notification to landowners if leaks occur | Sections 11.6.2, 11.7 |
| <input type="checkbox"/> Leak detection and use of odorant (mercaptan) | Sections 11.2, 11.7 |
| <input type="checkbox"/> Pipeline safety improvements | Section 11.7 |
| <p>During the Pre-Filing process, PennEast received comments from the public and stakeholders related to reliability and safety issues and reviewed comments submitted on the FERC docket e-filing. This table provides a summary of comments received to date and where the comments are addressed within this resource report.</p> | |

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11.0 RELIABILITY AND SAFETY

PennEast Pipeline Company, LLC (PennEast) has prepared this Resource Report to support its application to the Federal Energy Regulatory Commission (FERC or Commission) for a Certificate of Public Convenience and Necessity (Certificate) for the PennEast Pipeline Project (Project). PennEast designed its Project to provide a direct and flexible path for transporting natural gas produced in the Marcellus Shale play in northeastern Pennsylvania to growing natural gas markets in New Jersey, eastern Pennsylvania, southeastern Pennsylvania and surrounding states with the capability of providing approximately 1.1 million dekatherms per day (MMDth/d) of year-round natural gas transportation service.

This Resource Report focuses on the Project facilities and locations that PennEast selected as of September, 2015.

The Project consists of the following primary components:

- 114 miles of new 36-inch diameter mainline pipeline extending from Dallas Township in Luzerne County, Pennsylvania to Hopewell Township in Mercer County, New Jersey;
- 2.1-miles of new 24-inch diameter pipe lateral near Hellertown, Northampton County, Pennsylvania to transport gas to an interconnection with Columbia Gas Transmission, LLC (Columbia Gas) and UGI Utilities, Inc. (UGI Utilities);
- 0.6-miles of new 12-inch diameter lateral near Holland Township, Hunterdon County, New Jersey to transport gas to Pivotal Utility Holdings, Inc. (d/b/a Elizabethtown Gas) (Elizabethtown Gas) and NRG REMA, LLC's Gilbert Power Station;
- 1.4-miles of new 36-inch diameter lateral in West Amwell Township, Hunterdon County, New Jersey to transport gas to an interconnection with Algonquin Gas Transmission, LLC (Algonquin) and Texas Eastern Transmission, LP (Texas Eastern);
- One new compressor station in Carbon County, Pennsylvania; and
- Various associated aboveground facilities including interconnects, launchers, receivers, and mainline block valves to support the pipeline system.

The Project will be rated for a maximum allowable operating pressure (MAOP) of 1,480 pounds per square inch gauge (psig). Figure 1.2-1 in Resource Report 1 provides a Project Overview Map showing the locations of the proposed pipeline route and associated facilities. A detailed discussion of the Project route selection and alternatives analysis is contained in Resource Report 10.

11.1 Introduction

Resource Report 11 describes how the Project's facilities are being designed, and will be constructed, operated, and maintained to minimize potential hazards to the public. The facilities proposed in this application will be installed and operated consistent with sound engineering practices and all applicable safety standards, including the U.S. Department of Transportation (USDOT) Minimum Federal Safety Standards specified in 49 Code of Federal Regulations (CFR) Part 192.

11.2 Hazards

11.2.1 Pipeline Safety

In the United States, underground transmission pipelines deliver the majority of the natural gas to consumers. Over the past 50 years, more than 300,000 miles of transmission pipelines have provided natural gas to more than 50 million consumers. Because of the critical role transmission pipelines play in supplying the energy needs of a large segment of the country, it is imperative that they be safe

and reliable. Overall, the natural gas transmission industry has an excellent record of safety and reliability.

The transmission of natural gas by pipeline involves some risk to the public in the event of an incident and subsequent release of gas. The greatest hazard is damage caused by a major pipeline rupture. Methane, the primary component of natural gas, is colorless, odorless, tasteless, and lighter than air. It is not toxic but is classified as a simple asphyxiate, posing a slight inhalation hazard. If one breathes methane in high concentration, oxygen deficiency can occur, resulting in serious injury or death. Methane has an ignition temperature of about 1,000 degrees Fahrenheit and is flammable at concentrations between 5.0 and 15.0 percent in air. Unconfined mixtures of methane in air are not generally explosive. Methane is buoyant at atmospheric temperatures and disperses rapidly in air.

The USDOT has been collecting and maintaining statistics on natural gas pipeline incidents and accidents since 1970. The highest percentage of transmission pipeline accidents or incidents is the result of damage caused by external forces (USDOT, Pipeline and Hazardous Materials Safety Administration (PHMSA)). These external forces include third-party damage from construction equipment, earth movements (e.g. landslides), weather damage, or deliberate damage.

PennEast will conduct thorough monitoring and inspections of its pipeline system for leak detection.

11.3 Safety Standards for Pipelines

11.3.1 USDOT Class Locations

The proposed facilities will be designed and constructed to meet or exceed the safety standards established by the USDOT in 49 CFR Part 192. The Project will be constructed in accordance with regulations that govern material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion. Class locations specified in 49 CFR Part 192 will be used to determine pipe design factors, shutoff valve spacing, and depth of cover requirements. All Class 1 locations will be considered Class 2 when designing wall thickness as per USDOT in 49 CFR Part 192 and the pipeline will be installed with minimum cover of 36 inches. High-strength carbon steel pipe per American Petroleum Institute (API) Specification API 5L will be used for the pipeline. Qualified pipeline contractors will perform construction in accordance with PennEast's specifications. Inspectors hired by PennEast will inspect contractor activities to ensure compliance with company specifications. Non-destructive examination (NDE) of each pipeline weld will meet or exceed the minimum requirements of 49 CFR Part 192, with weld acceptance in accordance with the latest USDOT referenced edition of API 1104.

Before placing the pipeline into service, PennEast will conduct pressure testing of the piping to verify the integrity of the pipe and welds. Any pipe segment that does not pass the pressure test will be repaired and retested. PennEast will design the piping to allow for the use of electronic in-line inspection tools to detect the presence of metal loss defects, such as corrosion, and pipe deformation defects, such as dents. External corrosion protection will be achieved by means of externally coated pipe and cathodic protection using rectifiers and anodes as required by 49 CFR Part 192. The cathodic protection systems will impress a low-voltage current to the pipeline to offset natural soil and groundwater corrosion potential.

49 CFR Part 192 also defines area classifications, based on population density near the pipeline. The class location unit is an area that exceeds 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined as follows:

- Class 1 - 10 or fewer buildings intended for human occupancy
- Class 2 - More than 10 but less than 46 buildings intended for human occupancy

- Class 3 - 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building or small well defined outside area occupied by 20 or more people during normal use
- Class 4 - Buildings with four or more stories aboveground are prevalent

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. In accordance with USDOT requirements, pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil (18 inches in consolidated rock). Pipelines in Class 2, 3, and 4 locations, as well as under drainage ditches of public roads and railroad crossings, must be installed with a minimum cover of 36 inches in normal soil (24 inches in consolidated rock). The maximum distance to a sectionalizing block valve is also based on the Class Location (i.e., 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipeline design pressures, pressure test levels, NDE of welds, and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas. Table 11.3-1 lists the USDOT Class locations that the pipeline will be designed to by milepost.

**Table 11.3-1
USDOT Class Locations by Milepost**

| Begin MP ² | End MP ² | USDOT Class ¹ |
|---|---------------------|--------------------------|
| PennEast Mainline – Pennsylvania | | |
| 0.0 | 1.2 | 1 |
| 1.2 | 1.9 | 2 |
| 1.9 | 2.0 | 1 |
| 2.0 | 2.6 | 2 |
| 2.6 | 2.9 | 1 |
| 2.9 | 4.5 | 2 |
| 4.5 | 5.1 | 1 |
| 5.1 | 5.4 | 2 |
| 5.4 | 5.5 | 3 |
| 5.5 | 5.7 | 2 |
| 5.7 | 6.8 | 3 |
| 6.8 | 6.9 | 1 |
| 6.9 | 9.3 | 3 |
| 9.3 | 9.4 | 1 |
| 9.4 | 9.7 | 3 |
| 9.7 | 9.8 | 1 |
| 9.8 | 10.0 | 3 |
| 10.0 | 11.3 | 1 |
| 11.3 | 12.2 | 2 |
| 12.2 | 12.9 | 1 |
| 12.9 | 13.1 | 2 |
| 13.1 | 17.6 | 1 |
| 17.6 | 17.9 | 2 |
| 17.9 | 19.2 | 1 |
| 19.2 | 19.9 | 2 |

| Begin MP ² | End MP ² | USDOT Class ¹ |
|-----------------------|---------------------|--------------------------|
| 19.9 | 31.4 | 1 |
| 31.4 | 32.3 | 2 |
| 32.3 | 34.6 | 1 |
| 34.6 | 35.9 | 2 |
| 35.9 | 42.5 | 1 |
| 42.5 | 43.2 | 2 |
| 43.2 | 44.4 | 1 |
| 44.4 | 46.5 | 2 |
| 46.5 | 46.6 | 3 |
| 46.6 | 47.6 | 2 |
| 47.6 | 48.8 | 1 |
| 48.8 | 51.3 | 3 |
| 51.3 | 52.4 | 1 |
| 52.4 | 53.4 | 2 |
| 53.4 | 53.6 | 1 |
| 53.6 | 54.5 | 2 |
| 54.5 | 54.6 | 3 |
| 54.6 | 55.3 | 2 |
| 55.3 | 55.4 | 3 |
| 55.4 | 56.1 | 2 |
| 56.1 | 56.5 | 1 |
| 56.5 | 56.8 | 2 |
| 56.8 | 57.3 | 1 |
| 57.3 | 58.4 | 2 |
| 58.4 | 58.6 | 1 |
| 58.6 | 59.4 | 2 |
| 59.4 | 60.6 | 3 |
| 60.6 | 61.3 | 2 |
| 61.3 | 61.4 | 3 |
| 61.4 | 61.6 | 2 |
| 61.6 | 61.8 | 1 |
| 61.8 | 62.0 | 2 |
| 62.0 | 62.2 | 3 |
| 62.2 | 62.3 | 2 |
| 62.3 | 62.4 | 3 |
| 62.4 | 62.6 | 2 |
| 62.6 | 62.8 | 3 |
| 62.8 | 63.0 | 2 |
| 63.0 | 63.4 | 1 |
| 63.4 | 65.3 | 3 |
| 65.3 | 65.5 | 1 |

| Begin MP ² | End MP ² | USDOT Class ¹ |
|--|---------------------|--------------------------|
| 65.5 | 66.0 | 3 |
| 66.0 | 66.6 | 1 |
| 66.6 | 68.0 | 2 |
| 68.0 | 69.9 | 3 |
| 69.9 | 69.9 | 2 |
| 69.9 | 70.1 | 3 |
| 70.1 | 70.2 | 2 |
| 70.2 | 71.5 | 1 |
| 71.5 | 74.4 | 2 |
| 74.4 | 75.7 | 1 |
| 75.7 | 76.7 | 2 |
| 76.7 | 77.4 | 1 |
| 77.4 | 77.7 | 2 |
| Hellertown Lateral – Pennsylvania | | |
| HL-0.0 | HL-1.9 | 2 |
| HL-1.9 | HL-2.1 | 1 |
| PennEast Mainline – New Jersey | | |
| 77.7 | 81.0 | 2 |
| 81.0 | 81.6 | 1 |
| 81.6 | 84.7 | 2 |
| 84.7 | 85.3 | 1 |
| 85.3 | 87.3 | 2 |
| 87.3 | 87.4 | 3 |
| 87.4 | 87.6 | 2 |
| 87.6 | 88.1 | 1 |
| 88.1 | 89.2 | 2 |
| 89.2 | 89.4 | 1 |
| 89.4 | 89.6 | 2 |
| 89.6 | 89.9 | 1 |
| 89.9 | 90.7 | 2 |
| 90.7 | 90.9 | 3 |
| 90.9 | 92.3 | 2 |
| 92.3 | 92.6 | 1 |
| 92.6 | 93.1 | 2 |
| 93.1 | 93.2 | 3 |
| 93.2 | 94.9 | 2 |
| 94.9 | 95.2 | 1 |
| 95.2 | 96.3 | 2 |
| 96.3 | 96.6 | 1 |
| 96.6 | 98.0 | 2 |
| 98.0 | 98.2 | 1 |

| Begin MP ² | End MP ² | USDOT Class ¹ |
|--|---------------------|--------------------------|
| 98.2 | 98.8 | 2 |
| 98.8 | 100.3 | 1 |
| 100.3 | 100.6 | 2 |
| 100.6 | 101.0 | 1 |
| 101.0 | 101.6 | 2 |
| 101.6 | 101.9 | 1 |
| 101.9 | 102.3 | 2 |
| 102.3 | 104.6 | 1 |
| 104.6 | 105.8 | 2 |
| 105.8 | 108.7 | 1 |
| 108.7 | 109.8 | 2 |
| 109.8 | 110.7 | 1 |
| 110.7 | 110.8 | 3 |
| 110.8 | 110.9 | 1 |
| 110.9 | 111.4 | 2 |
| 111.4 | 111.4 | 3 |
| 111.4 | 111.7 | 2 |
| 111.7 | 112.2 | 3 |
| 112.2 | 112.3 | 1 |
| 112.3 | 112.4 | 2 |
| 112.4 | 112.5 | 3 |
| 112.5 | 112.6 | 2 |
| 112.6 | 112.7 | 3 |
| 112.7 | 114.0 | 2 |
| Gilbert Lateral – New Jersey | | |
| GL-0.0 | GL-0.5 | 1 |
| GL-0.5 | GL-0.6 | 3 |
| Lambertville Lateral – New Jersey | | |
| LL-0.0 | LL-1.4 | 1 |

Notes:

1. Class Location Study performed per CFR Part 192.5 using 2015 aerial data
2. Mileposts included in this table are rounded

PennEast will restore ground surface over the pipe to its pre-construction condition and install aboveground markers to indicate the location of the buried pipeline. These markers will be placed at locations where the buried pipeline crosses private and public property and at each road and railroad crossing in accordance with USDOT regulations. Markers are designed to enhance public safety and alert anyone planning any excavation of the location of the pipeline in a particular area. The markers will contain a decal that indicates PennEast’s name and the telephone number for assistance.

Leak protection and detection is important to public safety. PennEast operating personnel will regularly perform visual inspections of the pipeline to identify potential problems. These inspections

will be done on foot, by vehicle on the ROW, or by aerial survey. The ROWs will be routinely viewed by vehicles at road crossings.

PennEast will be a member and advocate of the One Call System program. Through the One Call System, PennEast will be informed of planned third-party excavations, which will allow PennEast to monitor activities around the ROW to protect the pipeline.

Once the pipeline is in service, the PennEast Gas Control Center will electronically monitor the operations of the PennEast pipeline system. The Gas Control Center will be staffed 24 hours a day, 365 days a year and use a computerized gas-monitoring system to read pressures along the pipeline on a continuous basis.

11.3.2 High Consequence Areas

The Pipeline Safety Improvement Act (HR 3609), which was signed into law on December 17, 2002, required the USDOT to issue regulations establishing standards for risk analysis and development of an integrity management program to strengthen overall pipeline safety. The Act also established minimum requirements for integrity management programs for gas pipelines located in High Consequence Areas (HCAs). The term HCA is used to identify specific areas where an inadvertent release from a pipeline could have the most significant adverse consequences. Table 11.3-2 lists the HCA locations to be crossed by the pipeline facilities.

**Table 11.3-2
High Consequence Areas Crossed by the Pipeline Facilities**

| County | Begin Milepost ⁴ | End Milepost ⁴ | HCA Verification Date ¹ | HCA Type ³ |
|---|-----------------------------|---------------------------|------------------------------------|-----------------------|
| PennEast Mainline - Pennsylvania | | | | |
| Luzerne | 3.0 | 3.3 | 9/15/2015 | 2 |
| Luzerne | 5.2 | 5.4 | 9/15/2015 | 3 |
| Luzerne | 5.4 | 5.5 | 9/15/2015 | 1,3 |
| Luzerne | 5.5 | 5.7 | 9/15/2015 | 1,3 |
| Luzerne | 5.7 | 6.3 | 9/15/2015 | 1,3 |
| Luzerne | 6.3 | 6.7 | 9/15/2015 | 1,2,3 |
| Luzerne | 6.7 | 6.8 | 9/15/2015 | 1,2 |
| Luzerne | 7.1 | 7.7 | 9/15/2015 | 1,3 |
| Luzerne | 7.7 | 8.4 | 9/15/2015 | 1,2,3 |
| Luzerne | 8.4 | 8.9 | 9/15/2015 | 1,2 |
| Luzerne | 8.9 | 9.3 | 9/15/2015 | 1 |
| Luzerne | 9.4 | 9.7 | 9/15/2015 | 1 |
| Luzerne | 9.8 | 10.0 | 9/15/2015 | 1 |
| Luzerne | 11.7 | 12.1 | 9/15/2015 | 3 |
| Luzerne | 19.4 | 19.8 | 9/15/2015 | 3 |
| Carbon | 26.1 | 26.5 | 9/15/2015 | 3 |
| Carbon | 31.9 | 32.3 | 9/15/2015 | 3 |
| Carbon | 44.5 | 44.6 | 9/15/2015 | 3 |

| County | Begin Milepost ⁴ | End Milepost ⁴ | HCA Verification Date ¹ | HCA Type ³ |
|-------------|-----------------------------|---------------------------|------------------------------------|-----------------------|
| Carbon | 44.6 | 44.9 | 9/15/2015 | 2,3 |
| Carbon | 44.9 | 45.1 | 9/15/2015 | 2 |
| Carbon | 45.9 | 46.3 | 9/15/2015 | 3 |
| Carbon | 46.4 | 46.5 | 9/15/2015 | 3 |
| Carbon | 46.5 | 46.6 | 9/15/2015 | 1,3 |
| Carbon | 46.6 | 46.8 | 9/15/2015 | 3 |
| Carbon | 48.8 | 49.4 | 9/15/2015 | 1 |
| Carbon | 49.4 | 49.7 | 9/15/2015 | 1,3 |
| Carbon | 49.7 | 50.3 | 9/15/2015 | 1 |
| Carbon | 50.3 | 50.8 | 9/15/2015 | 1,3 |
| Carbon | 50.8 | 51.1 | 9/15/2015 | 1 |
| Northampton | 51.1 | 51.3 | 9/15/2015 | 1 |
| Northampton | 53.5 | 54.1 | 9/15/2015 | 3 |
| Northampton | 54.4 | 54.5 | 9/15/2015 | 3 |
| Northampton | 54.5 | 54.6 | 9/15/2015 | 1,3 |
| Northampton | 54.6 | 54.7 | 9/15/2015 | 3 |
| Northampton | 54.7 | 54.9 | 9/15/2015 | 2,3 |
| Northampton | 54.9 | 55.1 | 9/15/2015 | 2 |
| Northampton | 55.1 | 55.3 | 9/15/2015 | 3 |
| Northampton | 55.3 | 55.4 | 9/15/2015 | 1,3 |
| Northampton | 55.4 | 55.5 | 9/15/2015 | 3 |
| Northampton | 59.4 | 59.9 | 9/15/2015 | 1,3 |
| Northampton | 59.9 | 60.4 | 9/15/2015 | 1 |
| Northampton | 60.4 | 60.6 | 9/15/2015 | 1,2,3 |
| Northampton | 60.6 | 60.8 | 9/15/2015 | 2,3 |
| Northampton | 61.2 | 61.3 | 9/15/2015 | 3 |
| Northampton | 61.3 | 61.4 | 9/15/2015 | 1,3 |
| Northampton | 61.4 | 61.6 | 9/15/2015 | 3 |
| Northampton | 61.8 | 62.0 | 9/15/2015 | 3 |
| Northampton | 62.0 | 62.4 | 9/15/2015 | 1,3 |
| Northampton | 62.4 | 62.6 | 9/15/2015 | 3 |
| Northampton | 62.6 | 62.8 | 9/15/2015 | 1,3 |
| Northampton | 62.8 | 63.1 | 9/15/2015 | 3 |
| Northampton | 63.4 | 64.0 | 9/15/2015 | 1,3 |
| Northampton | 64.0 | 64.1 | 9/15/2015 | 1 |

| County | Begin Milepost ⁴ | End Milepost ⁴ | HCA Verification Date ¹ | HCA Type ³ |
|--|-----------------------------|---------------------------|------------------------------------|-----------------------|
| Northampton | 64.1 | 64.9 | 9/15/2015 | 1,3 |
| Northampton | 64.9 | 65.3 | 9/15/2015 | 1,2,3 |
| Northampton | 65.5 | 66.0 | 9/15/2015 | 1 |
| Northampton | 66.2 | 66.5 | 9/15/2015 | 3 |
| Northampton | 67.7 | 68.0 | 9/15/2015 | 3 |
| Northampton | 68.0 | 68.1 | 9/15/2015 | 1,3 |
| Northampton | 68.1 | 68.3 | 9/15/2015 | 1 |
| Northampton | 68.3 | 68.7 | 9/15/2015 | 1,2 |
| Northampton | 68.7 | 69.1 | 9/15/2015 | 1,2,3 |
| Northampton | 69.1 | 70.1 | 9/15/2015 | 1,3 |
| Northampton | 70.1 | 70.2 | 9/15/2015 | 3 |
| Northampton | 77.3 | 77.7 | 9/15/2015 | 3 |
| Hellertown Lateral - Pennsylvania | | | | |
| Northampton | HL-0.8 | HL-1.1 | 9/15/2015 | 3 |
| PennEast Mainline – New Jersey | | | | |
| Hunterdon | 80.0 | 80.4 | 9/15/2015 | 3 |
| Hunterdon | 87.2 | 87.3 | 9/15/2015 | 3 |
| Hunterdon | 87.3 | 87.4 | 9/15/2015 | 1,3 |
| Hunterdon | 87.4 | 87.6 | 9/15/2015 | 3 |
| Hunterdon | 90.6 | 90.7 | 9/15/2015 | 3 |
| Hunterdon | 90.7 | 90.9 | 9/15/2015 | 1,3 |
| Hunterdon | 90.9 | 91.4 | 9/15/2015 | 3 |
| Hunterdon | 91.7 | 92.3 | 9/15/2015 | 2 |
| Hunterdon | 92.9 | 93.1 | 9/15/2015 | 2,3 |
| Hunterdon | 93.1 | 93.2 | 9/15/2015 | 1,2,3 |
| Hunterdon | 93.2 | 93.3 | 9/15/2015 | 2,3 |
| Hunterdon | 95.6 | 96.0 | 9/15/2015 | 3 |
| Hunterdon | 101.1 | 101.5 | 9/15/2015 | 2,3 |
| Mercer | 107.3 | 107.7 | 9/15/2015 | 3 |
| Mercer | 110.5 | 110.7 | 9/15/2015 | 1,3 |
| Mercer | 110.7 | 110.8 | 9/15/2015 | 1,3 |
| Mercer | 110.8 | 111.0 | 9/15/2015 | 3 |
| Mercer | 111.2 | 111.4 | 9/15/2015 | 3 |
| Mercer | 111.4 | 111.7 | 9/15/2015 | 1,3 |
| Mercer | 111.7 | 112.2 | 9/15/2015 | 1,2 |

| County | Begin Milepost ⁴ | End Milepost ⁴ | HCA Verification Date ¹ | HCA Type ³ |
|--|-----------------------------|---------------------------|------------------------------------|-----------------------|
| Mercer | 112.3 | 112.4 | 9/15/2015 | 3 |
| Mercer | 112.4 | 112.5 | 9/15/2015 | 1,3 |
| Mercer | 112.5 | 112.6 | 9/15/2015 | 3 |
| Mercer | 112.6 | 112.7 | 9/15/2015 | 1,3 |
| Mercer | 112.7 | 112.9 | 9/15/2015 | 3 |
| Gilbert Lateral – New Jersey | | | | |
| Hunterdon | GL-0.4 | GL-0.5 | 9/15/2015 | 3 |
| Hunterdon | GL-0.5 | GL-0.6 | 9/15/2015 | 1,3 |
| Lambertville Lateral – New Jersey | | | | |
| Hunterdon | LL-1.4 | LL-1.4 | 9/15/2015 | 3 |

Notes:

1. PIR calculated to be 956 feet for a 36" OD pipeline operating at 1480psig
2. Based upon aerial data dated 2015
3. HCA Categories:
 - A Class 3 location under CFR 192.5
 - Any area in a Class 1 or Class 2 location where the potential impact radius is greater than 660
 - The area within a potential impact circle contains 20 or more buildings intended for human occupancy
 - Any area in a Class 1 or Class 2 location where the potential impact circle contains an identified site
4. Mileposts included in this table are rounded

11.3.2.1 Class and Population

HCA means an area established by one of the methods described in paragraphs (1) or (2) as follows:

- (1) An area defined as:
 - (i) A Class 3 location under §192.5; or
 - (ii) A Class 4 location under §192.5; or
 - (iii) Any area in a Class 1 or Class 2 location where the potential impact radius is greater than 660 feet (200 meters), and the area within a potential impact circle contains 20 or more buildings intended for human occupancy; or (iv) Any area in a Class 1 or Class 2 location where the potential impact circle contains an identified site.
- (2) The area within a potential impact circle containing:
 - (i) 20 or more buildings intended for human occupancy, unless the exception in paragraph (4) applies; or
 - (ii) An identified site.
- (3) Where a potential impact circle is calculated under either method (1) or (2) to establish a HCA, the length of the HCA extends axially along the length of the pipeline from the outermost edge of the first potential impact circle that contains either an identified site or 20 or more buildings intended for human occupancy to the outermost edge of the last contiguous

- potential impact circle that contains either an identified site or 20 or more buildings intended for human occupancy.
- (4) If in identifying a HCA under paragraph (1)(iii) of this definition or paragraph (2)(i) of this definition, the radius of the potential impact circle is greater than 660 feet (200 meters), the operator may identify a HCA based on a prorated number of buildings intended for human occupancy with a distance of 660 feet (200 meters) from the centerline of the pipeline. If an operator chooses this approach, the operator must prorate the number of buildings intended for human occupancy based on the ratio of an area with a radius of 660 feet (200 meters) to the area of the potential impact circle.
- 5) Identified site means each of the following areas:
- (a) An outside area or open structure that is occupied by twenty (20) or more persons on at least 50 days in any twelve (12)-month period. (The days need not be consecutive.) Examples include but are not limited to, beaches, playgrounds, recreational facilities, camping grounds, outdoor theaters, stadiums, recreational areas near a body of water, or areas outside a rural building such as a religious facility; or
- (b) A building that is occupied by twenty (20) or more persons on at least five (5) days a week for ten (10) weeks in any twelve (12)-month period. (The days and weeks need not be consecutive.) Examples include, but are not limited to, religious facilities, office buildings, community centers, general stores, 4-H facilities, or roller skating rinks; or
- (c) A facility occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate. Examples include but are not limited to hospitals, prisons, schools, day-care facilities, retirement facilities or assisted living facilities.

Pipeline safety regulations require ongoing integrity assessments for pipelines located in HCAs. The identification of HCA and class locations work together to ensure the safe operation of the pipeline. In accordance with 49 CFR 192.903, PennEast determined the locations of HCA locations along the proposed pipeline routes.

11.3.2.2 Unusually Sensitive Areas

The office of Pipeline Safety (OPS) defines unusually sensitive areas (USAs) in 49 CFR 195.6 as:

- (a) A USA drinking water source:
- (1) Water intake for a Community Water System (CWS) or a Non-transient Non-community Water System that obtains its water supply primarily from a surface water source and does not have an adequate alternative.
- (2) A Source Water Protection Area (SWPA) for a CWS that obtains its water supply primarily from a Class I or Class IIA aquifer and does not have an adequate alternative drinking water source. Where a state has not yet identified the SWPA, the Wellhead Protection Area (WPA) will be used.
- (3) A sole source aquifer recharge area where the sole source aquifer is a karst aquifer in nature.
- (b) A USA ecological resource is:
- (1) An area containing a critically imperiled species or ecological community
- (2) A multi-species assemblage area
- (3) A migratory waterbird concentration area
- (4) An area containing an imperiled species, threatened or endangered species; depleted mammal species or an imperiled ecological community

A detailed analysis of drinking water sources can be found in Resource Report 2 and ecological resource in Resource Report 3 and associated Appendices.

The Project area crosses through the Riegelsville Borough WHPA in Bucks County, Pennsylvania and Holland Township, Hopewell Township and Alexandria Township WHPAs in New Jersey (See Table 2.2-6 in Resource Report 2). The Project goes through habitat known to support federally-listed threatened bog turtle and northern long-eared bat (see Table 3.5-1 in Resource Report 3). The Project also passes in the vicinity of several migratory waterbird concentration areas, but no direct impacts are anticipated in these areas.

11.3.3 Pipeline Markers

The PHMSA requires pipeline operators to place pipeline markers at frequent intervals along the pipeline right-of-way (ROW), such as where a pipeline intersects a street, highway, railway, or waterway, and at other prominent points along the route. Pipeline ROW markers can help prevent encroachment and excavation-related damage to pipelines. The pipeline ROW is much wider than the pipeline itself and, as a result, the pipeline can be located anywhere within the ROW. State laws require excavators to call the “811” call system, “Call Before You Dig,” or other One Call programs well in advance of digging to locate underground utilities and ensure it is safe for the contractor to dig in that location.

11.3.4 Mainline Valves

In addition to meeting or exceeding the minimum requirements of Main Line Valve (MLV) spacing specified by the PHMSA (see Section 11.3.1), PennEast will install remotely operated valves at each new MLV site; the MLV sites will be monitored and controlled by Gas Control through PennEast’s Supervisory Control and Data Acquisition (SCADA) system. Pipeline pressure and valve status will be transmitted from each MLV site to PennEast Gas Control in regular intervals to monitor the overall condition of the pipelines. In the event of an upset condition, Gas Control will have the ability to isolate a segment by sending commands to close the remotely operated MLVs. Table 1.2-4 in Resource Report 1 provides a list of the locations of all new MLV sites that will be installed for the Project.

11.4 Safety Standards for Aboveground Facilities

11.4.1 Compressor Station

The Kidder Compressor Station will be designed and constructed to meet or exceed the 49 CFR Part 192 requirements.

The compressor station will be equipped with automatic detection and emergency shutdown systems, including:

- Flame detection that uses ultraviolet sensors;
- Gas detection for detecting flammable concentrations of natural gas;
- Emergency shutdowns to isolate the gas piping, stop equipment, and safely vent station gas; and
- Individual unit shutdown systems in case of mechanical or electrical failure of a compressor unit system or component.

Redundant high-pressure transmitters, switches, or venting systems for safe blowdown of gas will protect compressor station piping from over-pressurization. The firefighting equipment maintained at

the compressor station sites will be hand-held or wheeled dry chemical fire extinguishers in accordance with National Fire Prevention Association (NFPA) 17 Dry Chemical Extinguishing Systems (2002).

11.5 Contingency Plans

PennEast will implement an Emergency Response Plan for the PennEast pipeline system. In an emergency, PennEast's operating personnel will implement the appropriate Emergency Response Plan depending upon the compressor station or pipeline involved.

PennEast's Emergency Response Plan will include the following information:

- Local field headquarters to contact;
- Company personnel, local police, and fire authorities to contact;
- Equipment available at field locations;
- Roles of field supervisors, gas control operators, field crews, and support personnel during an emergency;
- Procedures to maintain communications between Gas Control Operations and local fire, police, and government authorities;
- Procedures for securing additional help from non-company resources if needed; and
- Requirements for logging emergency events and responding to company and regulatory authorities.

PennEast will continue to develop and expand its liaison program with public authorities, local utilities, and adjacent landowners to include all of the locations affected by the proposed facilities.

11.6 Public Awareness Program

PennEast will implement a comprehensive Public Awareness Program that will comply with the requirements outlined in 49 CFR Part 192.616 following the guidance provided by the American Petroleum Institute's (API) Recommended Practice (RP) 1162. The program will include provisions to educate the public, appropriate government organizations, and persons engaged in excavation related activities on:

- Use of a one-call notification system prior to excavation and other damage prevention activities
- Possible hazards associated with unintended releases from a gas pipeline facility
- Physical indications that such a release may have occurred
- Steps that should be taken for public safety in the event of a gas pipeline release
- Procedures for reporting such an event

The program will include activities to advise affected municipalities, school districts, businesses and residents of pipeline facility locations. The program and the media used will be as comprehensive as necessary to reach all areas in which the operator transports gas. The program will be conducted in English and in other languages commonly understood by a significant number and concentration of the non-English speaking population in the PennEast Project area.

PennEast is committed to supporting the communities of all the locations of the proposed facilities. As such, PennEast will implement a supplemental training program for first responders to pipeline and facility emergencies.

11.7 Integrity Management Program

PennEast will implement a comprehensive integrity management program (IMP) and leak detection procedures that meet or exceed USDOT regulations under 49 CFR Part 192. Under PennEast's IMP, the pipelines will be inspected at intervals specified by USDOT regulations (typically 7 year intervals) with in-line inspection tools capable of detecting anomalies that have the potential to become leaks.

All gas received into the pipeline must be odorized with mercaptan to provide an added level of safety and security to the gas system by providing a warning mechanism for the public.

Anomalies identified by the in-line inspections will be investigated and repaired in accordance with USDOT regulations and PennEast's IMP. In addition, PennEast's Gas Control will monitor the operating pressure of the pipelines 24 hours per day, 7 days per week.

11.8 References

- U.S. Department of Transportation (USDOT). 1993. *Annual Report on Pipeline Safety*. Research and Special Programs Administration.
- USDOT. 1999. 49 CFR 192, “Transportation of Natural and Other Gases by Pipeline.” *Minimum Federal Safety Standards*.