



Equitrans Expansion Project

Docket No. CP16-\_\_-000

## **Resource Report 11 – Reliability and Safety**

October 2015

## Equitrans Expansion Project Resource Report 11 – Reliability and Safety

<b>Resource Report 11 Filing Requirements</b>	
<b>Information</b>	<b>Location in Resource Report</b>
<b>Minimum Filing Requirements</b>	
1. 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 as well as a result of accidents or natural catastrophes. (§ 380.12(m))	Section 11.0 through 11.3
2. Describe measures proposed to protect the public from failure of the proposed facilities (including coordination with local agencies). (§ 380.12(m)(1))	Section 11.3
3. Discuss hazards, the environmental impact, and service interruptions which could reasonably ensue from failure of the proposed facilities. (§ 380.12(m)(2))	Section 11.1
4. Discuss design and operational measures to avoid or reduce risk. (§ 380.12(m)(3))	Section 11.3
5. Discuss contingency plans for maintaining service or reducing downtime. (§ 380.12(m)(4))	Section 11.3.11
6. Describe measures used to exclude the public from hazardous areas. Discuss measures used to minimize problems arising from malfunctions and accidents (with estimates of probability of occurrence) and identify standard procedures for protecting services and public safety during maintenance and breakdowns. (§ 380.12(m)(5))	Section 11.1

<b>FERC Environmental Information Request for Resource Report 11 Dated September 28, 2015</b>	
<b>Request</b>	<b>Location in Resource Report</b>
1. Describe potential risks to public health from leakage, venting, compressor stations, or any other Project component, along with any plans to avoid, minimize, or mitigate potential impacts.	This response is addressed throughout this resource report.
2. Include in table 11.1-1 data for proposed pipelines H-305 and H-319, or explain why they are not applicable. In addition, clarify which Project components are represented by lines 1 and 2.	Table 11.1-1 has been corrected.
3. Clarify in section 11.1.3 whether both methods to calculate high consequence areas (HCA) would be used and that all applicable sites would be reported, in order to provide the most comprehensive listing possible. Section 11.1.3 states the final HCA analysis is pending. Include a timeline for when this analysis will be complete and provided to the FERC. Include HCA and potential impact radius data for proposed	Equitrans utilized the second method for determining HCAs along the EEP pipelines. No HCAs were found along any of the proposed pipelines using the second method; the remaining portion is presented in 11.1.3 and Table 11.1-2.

pipelines H-305 and H-319, or explain why they are not applicable.	
4. Identify in section 11.3.11 where the pipeline control center and secondary pipeline control center (if necessary) would be located.	The primary Gas Control Center is in Pittsburgh. The secondary Gas Control Center is in Jefferson Hills, PA at the Tepe Station.

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## RESOURCE REPORT 11 RELIABILITY AND SAFETY

### LIST OF ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
Equitrans	Equitrans, L.P.
ESD	Emergency Shutdown
FERC	Federal Energy Regulatory Commission
HCA	High Consequence Area
IMP	Integrity Management Plan
MAOP	maximum allowable operating pressure
O&M	Operations & Maintenance
PHMSA	Pipeline and Hazardous Materials Safety Administration of the USDOT
Project	Equitrans Expansion Project
psig	pounds per square inch gauge
ROW	right-of-way
SCADA	Supervisory Control and Data Acquisition
USDOT	U.S. Department of Transportation

## RESOURCE REPORT 11 RELIABILITY AND SAFETY

### Introduction

Equitrans, L.P. (Equitrans) is seeking a Certificate of Public Convenience and Necessity from the Federal Energy Regulatory Commission (FERC or Commission) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the Equitrans Expansion Project (Project) located in three counties in Pennsylvania and one county in West Virginia. Equitrans plans to construct approximately 7.87 miles of pipeline (at multiple separate locations), a new compressor station, an interconnect with the proposed Mountain Valley Pipeline (MVP), and ancillary facilities. In addition, Equitrans is seeking authorization pursuant to Section 7(b) of the Natural Gas Act to abandon an existing compressor station following the construction of the new compressor station.

The Project is designed to transport natural gas from the northern portion of the Equitrans system south to the new interconnect with MVP, as well as to existing interconnects with Texas Eastern Transmission, LP (Texas Eastern), Dominion Transmission, Inc., and Columbia Gas Transmission, LLC. The Project will provide shippers with additional flexibility to transport natural gas produced in the central Appalachian Basin to meet the growing demand by local distribution companies, industrial users, and power generation facilities located in local, northeastern, Mid-Atlantic, and southeastern regions of the United States. The Project will also increase system reliability, efficiency, and operational flexibility for the benefit of all Equitrans customers. The Project is designed to add up to 600,000 dekatherms per day of north-south firm capacity on the Equitrans system.

Resource Report 1 provides a complete summary of the Project facilities (see Tables 1.2-1 and 1.2-2) and a general location map of the Project facilities (Figure 1.2-1).

### Environmental Resource Report Organization

Resource Report 11 includes descriptions of natural gas pipeline industry safety issues, corporate risk management procedures, and measures to protect the public and is prepared and organized according to the FERC *Guidance Manual for Environmental Report Preparation* (FERC 2002). This report is organized into three major sections and a separate section listing the sources used to prepare this report. Section 11.1 includes an overview of natural gas pipeline industry safety issues. Section 11.2 includes a safety overview. Section 11.3 includes a description of measures to protect the public.

#### 11.1 NATURAL GAS PIPELINE INDUSTRY SAFETY OVERVIEW

Natural gas pipelines present a number of potential safety issues, which are minimized via regulatory standards that have been adopted to prevent accidents, avoid hazards, improve safety, and minimize impacts. This section provides a summary of these hazards, safety standards, high consequence areas, pipeline accident data, and impacts on public safety.

##### 11.1.1 Hazards

For pipelines that transport natural gas, pipeline ruptures that result in a fire or explosion are the greatest hazard, although this risk is very low.

According to the United States Department of Transportation's (USDOT) Pipeline and Hazardous Materials Safety Administration (PHMSA), there are approximately 302,000 miles of transmission pipelines, and these pipelines are the safest and most cost-efficient way to transport natural gas and hazardous materials. Natural gas transmission pipelines are an integral part of the country's infrastructure network necessary to transport natural gas to satisfy a large portion of the country's growing energy needs, and it is imperative that they be safe and reliable. PHMSA has established and enforces industry regulations for transmission pipelines and related facilities that are intended to provide for public safety and reliability and minimize the risk of system failure.

The natural gas transmission industry has an excellent track record of public safety and reliability. Nevertheless, the transportation of natural gas by pipeline involves some incremental risk to the public in the event of an accidental release of natural gas. The predominant hazard is a fire or explosion following a major pipeline rupture.

The Project is designed to transport natural gas. Methane, the primary component of natural gas, is colorless, odorless and tasteless. It is not toxic, but is classified as an asphyxiant. If breathed in high concentration, oxygen deficiency can result in serious injury or death. Methane is flammable when concentrations are between 5 and 15 percent with an auto ignition temperature of over 1,100 degrees Fahrenheit. When unconfined, methane is not explosive; however, if confined in a closed space with an ignition source present, an explosion can occur.

### 11.1.2 Safety Standards

The USDOT's "Minimum Federal Safety Standards" (49 Code of Federal Regulations (CFR) Part 192) provide the standards pursuant to which the Project will be designed, constructed, operated, and maintained. The Project facilities will be designed, constructed, operated, and maintained to meet or exceed the safety requirements set forth in 49 CFR Part 192. The intent of the USDOT regulations for pipeline facilities is to provide the public with adequate protection from pipeline failures. Included in 49 CFR Part 192 are specifications for material selection and qualification, minimum design and construction requirements, and protection from internal, external, and atmospheric corrosion. These federal safety standards, together with pipeline integrity management programs and recent advances in pipeline manufacture, construction, and inspection techniques, minimize the potential for pipeline failure. These measures include improved public awareness initiatives, such as the "811" program, "Call Before You Dig," and other one-call programs that promote public awareness. These programs are intended to reduce third-party damage to underground utilities including buried high pressure natural gas pipelines.

Areas near a pipeline are defined in 49 CFR §192.5 based on population densities. The definition for "class location unit" is the area that extends 220 yards (660 feet) on either side of the centerline of any continuous one-mile length of pipeline (sliding mile). Areas are broken down into four classifications:

- Class 1 – Class location unit with 10 or fewer buildings intended for human occupancy.
- Class 2 – Class location unit with more than 10 but fewer than 46 buildings intended for human occupancy.
- Class 3 – Class location unit with 46 or more buildings intended for human occupancy, or where the pipeline lies within 100 yards of a building, or small, well-defined outside area (such as a playground, outdoor theater, or other place of public assembly) occupied by 20 or more people on

at least five days a week for 10 weeks in any 12-month period (the days and weeks need not be consecutive).

- Class 4 – Class location unit where buildings with four or more stories aboveground are prevalent.

More stringent pipeline design, wall thickness, testing, and operation characteristics are required in more populated areas. Specifically, for a Class 1 location, pipelines must be installed at a minimum depth of 30 inches in normal soil and 18 inches in consolidated rock, whereas Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches of coverage in consolidated rock (49 CFR §192.327). Design pressures, wall thickness, maximum allowable operating pressures (MAOPs), hydrostatic test pressures, weld testing and inspection, as well as frequency of leak surveys and patrols of the pipeline, are required to conform to higher standards in areas of greater population density. The Project incorporates these requirements. Table 11.1-1 provides the class locations crossed by the Project.

<b>State</b>	<b>Line</b>	<b>Class Location</b>	<b>Beginning Milepost</b>	<b>Ending Milepost</b>
PA	H-318	1	0.00	2.53
PA		2	2.53	3.00
PA		1	3.00	3.25
PA		2	3.25	4.26
PA	H-316	2	0.00	0.40
PA		1	0.40	0.53
PA		2	0.53	0.80
PA		1	0.80	2.99
PA	M-80	1	0.00	0.24 (entire length)
PA	H-158	1	0.00	0.24 (entire length)
PA	H-305	1	0.00	0.10 (entire length)
WV	H-319	1	0.00	0.04 (entire length)

Additionally, 49 CFR Part 192 provides the minimum standards for operation and maintenance of pipeline facilities, which includes a requirement for a written plan to govern these activities. The pipeline operator must also establish an Emergency Plan with written procedures to minimize the hazards from a natural gas pipeline emergency. The Emergency Plan will include:



- Establishing and maintaining communications with appropriate fire, police, and public officials.
- Prompt and effective response to a notice of each type of emergency.
- Providing for personnel, equipment, tools, and materials available at the scene of an emergency.
- Protection of people first and then property, and making safe any actual or potential hazards to life or property.
- Emergency shutdown and pressure reduction in any section of the system necessary to minimize hazards to life or property.
- Notifying appropriate fire, police, and other public officials of gas pipeline emergencies and coordinating with them during an emergency.
- Safely restoring any service outage.

Equitrans has an existing Emergency Response Plan (ERP) covering existing pipeline systems. Prior to placing the Project in-service, Equitrans will update the current ERP as described in Section 11.3.3 to include the Project's facilities and implement a Project-specific Emergency Plan in accordance with all requirements of 49 CFR Part 192 and in coordination with local emergency management. Equitrans has already initiated discussions with various emergency response units in the Project area during the open house time period. More extensive discussions will continue for the development of the Emergency Plan. In the unlikely event of an incident, Equitrans will work with emergency response agencies to maintain access to and from residences and businesses during potential emergency situations. Equitrans will implement its ERP to bring the incident under control, and work with local responders to maintain access to residences and businesses via existing roads.

### 11.1.3 High Consequence Areas

A rule for Pipeline Integrity Management in High Consequence Areas (HCAs) for Gas Transmission was promulgated by the USDOT PHMSA, which was incorporated into 49 CFR Part 192, Subpart O. This rule requires that an Integrity Management Plan (IMP) be developed for each facility to provide procedures for monitoring and maintaining pipeline integrity in areas where the pipeline traverses lands or facilities that are considered HCAs as defined in 49 CFR §192.903.

Integrity management is the systematic application of management policies, procedures, resources, and practices to the tasks of analyzing, assessing, and controlling pipeline system integrity in order to protect employees, the general public, and the environment. It includes threat identification measures such as:

- Incorporation of formal risk assessment;
- Decision justification recordkeeping; and
- Prescribed inspection and testing requirements.

The HCAs may be defined in one of two ways. In the first method, an HCA includes:

- Current Class 3 and 4 locations in accordance with 49 CFR §192.5;

- Any area in Class 1 or 2 locations where the potential impact radius is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle; or
- Any area in Class 1 or 2 locations where the potential impact circle includes an identified site.

An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate. The potential impact radius as defined by 49 CFR §192.903 is determined by the following formula:

$$r = 0.69 \times \sqrt{(p \times d^2)}$$

where:

r = the radius of a circular area surrounding the point of failure (feet)

p = the MAOP in the pipeline segment (pounds per square inch gauge [psig])

d = the nominal diameter of the pipeline (inches)

Table 11.1-2 shows the formula results.

<b>Table 11.1-2</b>				
<b>Potential Impact Radius</b>				
<b>State</b>	<b>Line</b>	<b>MAOP (psig)</b>	<b>Pipe Diameter (inches)</b>	<b>Potential Impact Radius(feet)</b>
PA	H-316	1,200	30	717
PA	H-318	1,200	20	478
PA	M-80	1,000	6	262
PA	M-158	1,000	12	131
PA	H-305	1,200	24	574
WV	H-319	1,200	16	382

In the second method, an HCA includes any area within a potential impact circle that contains:

- 20 or more buildings intended for human occupancy; or
- An identified site as defined above.

HCA analysis for the Project was determined in accordance with the second method described above. Equitrans has identified no HCAs along any of the proposed pipeline routes. If during the final analysis, additional HCAs are identified along any of the proposed pipelines, they will be incorporated into the Project IMP as required by 49 CFR Part 192, Subpart O, Pipeline Integrity Management.

#### 11.1.4 Pipeline Markers

PHMSA also requires pipeline operators to place pipeline markers at frequent intervals along the pipeline rights-of-way (ROWs), particularly at prominent points along the route, such as where a pipeline intersects a street, highway, railway, waterway, or other significant feature. Pipeline ROW markers can help prevent encroachment and excavation-related damage to pipelines. Since the pipeline ROW is much wider than the pipeline itself, and a pipeline can be located anywhere within the ROW, state laws require excavators to call their state One-Call center well in advance of digging to locate underground utilities, to ensure it is safe for the contractor to dig in that location.

#### 11.1.5 Aboveground Facilities

Compressor facilities will be equipped with an emergency shutdown (ESD) system to protect the public and operating personnel during an emergency, such as a fire or ruptured station piping. The ESD system will be designed to shut down the compressor units, close the station isolation valves, and vent gas from the station piping to reduce the possibility of gas ignition and fire. The ESD system could be activated automatically by sensors that continuously monitor for the presence of fire and explosive mixtures in the compressor building. They could also be activated manually by station personnel in emergency events or remotely by Gas Control.

Measurement and pressure control stations are continuously monitored by Gas Control. They are designed with a remote station isolation valve to terminate flow in the event of an emergency. They are secured, lighted, fenced areas with man gates containing panic bars for emergency exit.

#### 11.1.6 Pipeline Accident Data

Since 1984, operators are required to report incidents that involve facility property damage of more than \$50,000 (in 1984 dollars), injury requiring in-patient hospitalization, release of gas, or those incidents considered significant by the operator. For the most recent 20-year period (1995–2014), there were 1,604 onshore gas transmission pipeline incidents meeting these criteria reported on the more than 261,000 total miles of onshore natural gas transmission pipelines nationwide (PHMSA 2015a). Incident rates during this time period have been relatively flat to trending slightly up.

The category accounting for the most frequent cause of all reportable gas transmission incidents is material failure (approximately 49 percent). Material failure-related incidents typically involve pipeline material failure, weld and/or equipment failure, or malfunctioning equipment. Corrosion is the cause of approximately 24 percent of the total number of gas transmission incidents since 1995. Corrosion-related incidents usually result from internal corrosion. While pipelines installed since 1950 exhibit a fairly constant frequency of corrosion incidents, pipelines installed before that time have a significantly higher rate. Older pipelines have a higher frequency of corrosion incidents because corrosion is a time-dependent process, and design standards at the time did not mandate certain corrosion controls, such as advanced coatings and cathodic protection. Since July 1971, new pipelines are required to use both external coating and cathodic protection systems, which significantly reduces the rate of failure when compared to an unprotected or partially protected pipe.

Damage caused by excavation accounts for approximately 17 percent of total reported incidents since 1995. These incidents are a result of heavy construction equipment, such as bulldozers and excavators, encroaching into pipeline rights-of-way. To minimize these types of incidents, pipeline operators have been

required to participate in “One Call” public utility programs to help identify where these buried pipelines are located prior to excavation work. Approximately 12 percent of incidents are caused by natural or other outside forces, such as from soil settlement, washouts, or geologic hazards that may result from weather effects. A discussion of these outside forces is included in Resource Report 6, Geological Resources.

**11.1.7 Impact on Public Safety**

Table 11.1-3 provides the number of fatalities annually that were a result of pipeline accidents on natural gas transmission lines from 1995 to 2014. There were an average of two fatalities annually during this time period. There were zero fatalities from natural gas transmission pipeline incidents in 1995, 2004, 2005, 2008, 2009, 2011, 2012, and 2013. The two highest years of fatalities from natural gas transmission pipeline incidents were 2000 and 2010. The majority of fatalities from pipelines involve local distribution pipelines. These are natural gas pipelines that are not regulated by FERC and that distribute natural gas to homes and businesses after transportation through interstate natural gas transmission pipelines. In general, these distribution lines are smaller diameter pipes, often made of plastic or cast iron rather than welded steel, and tend to be older pipelines that are more susceptible to damage. In addition, distribution systems do not have large rights-of-way and pipeline markers common to the FERC-regulated natural gas transmission pipelines.

The likelihood that the Project will threaten human life is extremely remote.

Year	Fatalities
1995	0
1996	1
1997	1
1998	1
1999	2
2000	15
2001	2
2002	1
2003	1
2004	0
2005	0
2006	3
2007	2
2008	0
2009	0
2010	10
2011	0
2012	0
2013	0
2014	1
<b>Total</b>	<b>40</b>
Annual Average (1995–2014)	2
Source: PHMSA 2015a, 2015b	

## 11.2 SAFETY OVERVIEW

Equitrans is committed to safely operating and maintaining the Project and will instill the existing corporate risk management philosophies of its parent companies to efficiently identify and control or eliminate hazards throughout the life of the pipeline. The Project facilities will fully adhere to USDOT Minimum Federal Safety Standards in 49 CFR Part 192. These safety regulations will be reinforced by the comprehensive and strictly enforced practices of Equitrans. The effectiveness of the federal and corporate requirements in ensuring reliability and safety is illustrated by the following operating experience profile of the Equitrans companies. The empirical information presented illustrates that the potential for public hazard from accidents associated with the operation of the proposed facilities is low.

### 11.2.1 System Overview

EQT Corporation, of which Equitrans is a part, is an integrated energy company with emphasis on Appalachian area natural gas production, gathering, and transmission. EQT Corporation has been in operation for over 125 years, and together, the EQT Corporation companies operate more than 10,400 miles of gathering and transmission pipeline and 17 storage pools (EQT 2015).

### 11.2.2 Historical Operating Record

Generally, the natural gas transmission industry has an excellent record of public safety. Pipelines and related facilities are designed and maintained with strict adherence to 49 CFR Part 192 standards to ensure public safety and reliability and to minimize the opportunity for system failure. Equitrans has an excellent record of public safety and an established record operating natural gas pipelines and will continue to employ proper system design, construction, operation, and maintenance practices to ensure this excellent record is maintained.

## 11.3 MEASURES TO PROTECT THE PUBLIC

With the continuing advancements in materials and pipeline operating and maintenance practices, the chances of a failure of the Project are extremely low. The safety and reliability of the Project will be based on safe design, appropriate equipment selection, code compliance, thorough review, careful construction, post-construction testing, and competent maintenance and operation. Measures will be incorporated according to approved design practices and standards that have been developed through industry-wide experience of pipeline construction projects.

Measures to protect the public from inadvertent natural gas releases due to accidents or natural catastrophes can be grouped into three categories: passive protection, active controls, and procedural controls. These measures are described below in Section 11.3.1. Further information on some of the specific measures is provided in Sections 11.3.2 through 11.3.12.

### 11.3.1 General Protective Measures and Controls

#### 11.3.1.1 Passive Protection

Passive protection minimizes the hazards by incorporating process and equipment design features, which will reduce either the frequency or consequence of a hazard without the active functioning of a device. The inherent design of modern pipeline systems affords protection for all but the most severe natural hazard events or inadvertent human actions, such as excavation damage by backhoe. Modern pipelines are made

of high carbon steel with full penetration welds, resulting in a system with substantial, inherent strength and ductility. Passive protection will include:

- Pipeline design, construction, commissioning, and operation will be conducted in strict accordance with applicable USDOT regulations found in 49 CFR Part 192.
- In accordance with USDOT regulations, the pipeline design factor, wall thickness, location of mainline valves (MLVs), and other parameters will be established according to a classification system based on the number, proximity to the pipeline, and occupation levels of buildings intended for human occupancy located along the right-of-way.
- Equitrans will comply with the applicable sections of the American Society for Mechanical Engineers /American National Standards Institute B31.8, Gas Transmission and Distribution Piping Systems, the most widely used industry code, for the design, operation, maintenance, and repair of its natural gas transmission pipeline.
- The pipeline will be externally coated with a fusion-bonded epoxy and cathodically protected to protect against external corrosion.
- Temporary erosion controls will be utilized to manage stormwater and groundwater, protecting the integrity of the pipeline during and following construction.
- Upon completion of construction, permanent erosion control measures will be installed and maintained throughout operations to manage stormwater and groundwater, protecting the integrity of the pipeline.

#### 11.3.1.2 Active Controls

Active (or engineering) controls use instruments, valves, safety interlocks, and emergency shutdown systems to detect and correct process deviations (e.g., overpressure protection). Active controls will include:

- Applicable overpressure protection systems at receipt / delivery interconnect points where MAOPs differ.
- To protect the integrity of the pipeline system, an impressed current cathodic protection system will be installed as a corrosion control measure.
- A Supervisory Control and Data Acquisition (SCADA) system will provide for and enable continuous pipeline monitoring and the control of pressure and flow along the gas pipeline.
- Remote terminal units for the SCADA system will be located on every receipt / delivery interconnect at those points on the pipeline.
- MLVs will be installed at regular intervals as specified by 49 CFR Part 192 based on class location.
- All of the field girth welds will be tested via x-ray or ultrasonic inspection (non-destructive examination).
- The pipeline and associated facilities will be hydrostatically tested for structural integrity before commencing operation.

- The pipeline will be equipped with facilities to accommodate inline inspection tool (smart pigging) operations for the purpose of locating anomalies in the pipeline wall thickness that may indicate corrosion, and out-of-roundness that may indicate the pipe has been subjected to external forces.
- The pipeline will be inspected with a geometry pig prior to placing in service, to verify the absence of any unacceptable geometric deviations.
- Compressor stations will be equipped with gas detection systems, fire suppression systems and emergency shutdown systems capable of depressurizing all station piping.

### 11.3.1.3 Procedural Controls

Procedural (or administrative) controls use operating procedures, administrative checks, emergency response, and other management approaches to prevent incidents, or to minimize the effects of an accident (e.g., operating procedures, safe work practices, inspections and testing, and training). The Emergency Plan for the Project will be provided to USDOT and will address the following procedural controls:

- Procedures for testing, start-up, operation, purging, and training of operations and maintenance staff on operational procedures.
- Regularly scheduled preventative maintenance programs to meet government regulations for pipeline segments, metering stations and compressor stations.
- Pig launchers and receivers capable of accommodating inline inspection tools (smart pigs) will be installed at the beginning of the line, the end of the line and at the compressor station and will be used to smart pig the pipeline at intervals not exceeding the requirements in the pipeline safety regulations. These inspections are intended to detect corrosion and third-party damage.
- The Emergency Plan will be developed for reference during a response to hazardous conditions caused by the pipeline. The plan will include measures to ensure an ongoing liaison with the appropriate fire, police, and public officials to coordinate mutual assistance should an emergency occur.
- Procedures for aerial surveillance flights, on-ground leak detection surveys, internal pipeline inspection with smart pigging equipment, and cathodic protection system inspection and maintenance.
- An IMP will be developed to provide procedures for monitoring and maintaining pipeline integrity in areas where the pipeline traverses lands or facilities that are considered HCAs as defined in 49 CFR §192.903 (see Section 11.1.3 above). The IMP will include threat identification measures such as, incorporation of formal risk assessment, selection of direct assessment methodologies, and prescribed inspection and testing requirements.
- A Public Awareness Plan will be prepared and implemented to enable customers, the public, government officials, and those engaged in excavation to recognize a natural gas pipeline emergency and report it to appropriate public officials and the company.
- Since April 1982, operators have been required to participate in "One Call" public utility programs in populated areas to minimize unauthorized excavation activities near pipelines.

### 11.3.2 Public Safety

Equitrans is committed to safety, protecting the environment, preventing accidents/incidents, and maintaining the highest standards for its pipeline operation and maintenance and will accomplish this goal through routine preventative maintenance, pipeline patrols, solid emergency response plans, and a strong pipeline integrity management program. Equitrans has established and will maintain strict operating and maintenance policies and procedures that will be audited periodically by the PHMSA and are in compliance with 49 CFR Part 192.

Trained and qualified pipeline personnel will operate and maintain the pipeline in accordance with Subpart N of 49 CFR Part 192. The training program will ensure all personnel possess the knowledge and competency necessary to efficiently operate and maintain the pipeline in a manner that protects the environment, the public, and the health and safety of all employees. More specifically, personnel are trained to: execute normal operating and maintenance procedures; recognize abnormal conditions and take appropriate corrective actions; predict consequences of malfunctions or failures; recognize conditions likely to cause emergencies; respond to emergency situations; control accidental releases of gas; and recognize characteristics and hazards of natural gas.

During construction, special care will be taken in residential and commercial areas to minimize neighborhood and traffic disruption, to control noise and dust to the extent practicable, and to protect the public at large. Measures to be implemented where the pipeline is near residential areas include, but are not limited to, fencing the construction work area boundary to ensure construction equipment, materials, and spoil remain in the construction right-of-way; ensuring piping is installed as quickly as reasonably possible consistent with prudent pipeline construction practices to minimize construction time affecting a neighborhood; backfilling the trench as soon as possible after the pipe is laid; and completing cleanup and installation of permanent erosion control measures as soon as reasonable, weather conditions permitting.

In areas near residences, Equitrans will work to minimize leaving overnight open excavations by backfilling the installed pipeline to near the end of the section, and covering the remaining open trench with temporary steel plating. The work will be accomplished so emergency vehicles will be able to pass at all times and to limit disruption of access to residential driveways. Equitrans has developed a residential mitigation plan for residences located within 50 feet of the construction workspace (refer to Resource Report 8).

### 11.3.3 Emergency Response

Consistent with 49 CFR §192.615, Equitrans will update its existing Emergency Response Plan that provides written procedures to minimize the hazards from a pipeline emergency to incorporate the new facilities. Key features will include:

- Receiving, identifying, verifying and classifying emergency events – leaks, fires, explosions, or natural disasters;
- Managing communications with emergency responders and public officials to establish incident command and coordinate response efforts;
- Emergency evacuation routes, emergency helicopter landing areas, hospital locations, and contact numbers;
- Making personnel, equipment, tools, and materials available for emergencies;



- Ensuring that response efforts focus on public safety first; and
- Ensuring emergency shutdown actions are taken in a timely manner.

Should the need arise, Equitrans will have field service personnel and repair contractors available who are capable of completing emergency repairs and restoration.

#### **11.3.4 Public Awareness Program**

Equitrans will update its existing Public Awareness Program as outlined in 49 CFR Part 192.616, which will provide outreach measures to the affected public, emergency responders, public officials, and excavation businesses. This program will use multi-media channels (direct mail, e-mail, social networking, public service announcements, print advertisement, and public meetings, etc.) to engage these core audiences.

Equitrans' objective is to educate the public on how to recognize the presence of pipelines; understand the potential hazards and safe actions they should take; recognize and report abnormal conditions; and encourage the safe behavior of calling for buried facility location before digging.

#### **11.3.5 One Call Response**

When Equitrans receives notification from a One Call Center that someone intends to dig near its pipeline facilities, personnel will be dispatched to mark the location of the facilities in the vicinity of the proposed digging or other earth disturbance activities and, if necessary, company employees will be on-site when the excavation occurs.

#### **11.3.6 Pipeline Safety Brochures**

Equitrans will mail information brochures to homeowners, businesses, potential excavators, and public officials along the pipeline system each year to inform them of the presence of the pipeline and instruct them on how to recognize and react to unusual activity in the area. These brochures will provide emergency contact phone numbers available 24 hours a day, 7 days a week, and reinforce the need for excavators to "call before you dig."

In addition to these outreach efforts, Equitrans will also provide pipeline location information in the National Pipeline Mapping System to inform the public and others as to the general location of its pipeline facilities.

#### **11.3.7 Interactions with Federal Authorities**

Equitrans will continue to maintain frequent contact with PHMSA. PHMSA routinely exercises its oversight authority to ensure that facilities under its jurisdiction are safely designed, constructed, and operated. With regard to its role in public safety for natural gas pipelines:

- PHMSA develops regulations and other approaches to risk management to assure safety in design, construction, testing, operation, maintenance, and emergency response of pipeline facilities; and
- PHMSA administers a national regulatory program to assure the safe transportation of natural gas, petroleum, and other hazardous materials by pipeline. PHMSA will routinely inspect Equitrans' pipeline facilities and records for compliance with design, construction, testing, operations, maintenance, and integrity regulations.

Equitrans' procedures and practices will meet or exceed the pipeline safety regulations and related risk management requirements administered by PHMSA.

### **11.3.8 Liaison Procedures with Local Authorities**

Equitrans' personnel involved with public awareness will continue to ensure that appropriate liaisons and public education is established and maintained in the communities within which Equitrans operates. Equitrans will continue its open relationships with local fire, police, and other governmental leaders in order to efficiently respond in a cooperative manner to pipeline emergencies. To accomplish this, Equitrans will, on an annual basis:

- Have informational meetings and training with local fire and police departments, and other concerned government agencies at their request;
- Conduct periodic emergency response drills and table top exercises to build familiarity with emergency response personnel and response measures to be taken; and
- Provide literature listing emergency contact phone numbers and other pertinent information.

In addition to maintaining contact with local governmental and emergency response agencies along the pipeline route, Equitrans' liaison efforts will allow Equitrans to:

- Determine how local officials may be able to assist Equitrans during an emergency with the determination of jurisdiction and resources that may be involved in responding to an emergency;
- Familiarize local officials with how Equitrans responds to an emergency on its pipeline system;
- Verify notification preferences for pipeline emergencies; and
- Review with local officials the use of an incident command system to cooperate and assist with response to an emergency.

Outreach to emergency responders will be conducted by Equitrans on a periodic basis. Equitrans' focus with these organizations is to review firefighting methods and techniques for natural gas fires and to conduct periodic emergency drills and exercises.

### **11.3.9 Utility Protection**

Prior to construction, existing utility lines and other sensitive resources, identified in easement agreements or by federal and state agencies, will be located and marked to prevent accidental damage during pipeline construction. Equitrans' contractors will contact the One Call system to verify and mark all utilities along the Project workspaces to minimize the potential for damage to other buried facilities in the area. Where there is a question as to the location of utilities (i.e., water, cable, oil, gas, product, and sewer lines), they will be located by field instrumentation and/or test pits.

### **11.3.10 Equipment Engineering and Design**

Equitrans' pipeline system will include many equipment features that are designed to increase the overall safety of the system and protect the public from a potential failure of the system due to accidents or natural catastrophes. Cathodic protection systems will be installed at various points along the pipeline to mitigate corrosion of the pipeline facilities. The cathodic protection system impresses a low voltage DC current to

the pipeline to offset natural soil and groundwater corrosion potential. The functional capability of cathodic protection systems will be inspected bi-monthly to ensure proper operating conditions for corrosion mitigation.

Equitrans' pipeline, including depth of cover, will be built according to 49 CFR Part 192. Specific site conditions, including earthquakes, are considered in the design of the pipeline. In general, earthquake-induced ground vibrations would not pose a problem for a modern welded-steel pipeline.

Equitrans' proposed pipeline will be equipped with remote control valves, which will allow the valves to be operated remotely in the event of an emergency, usually evidenced by a sudden loss of pressure or flow on the pipeline. Remotely closing the valve allows the section of pipeline to be isolated from the rest of the pipeline system. Data acquisition systems will be installed at the metering and regulation stations, as well as at sectionalizing block valves. If system pressures fall below predetermined ranges, alarms are activated alerting the pipeline operators.

### **11.3.11 Operations and Maintenance**

The pipeline control center for the Project will be located at Equitrans' headquarters in Pittsburgh, Pennsylvania and will be staffed continuously by qualified pipeline operators. Operators will monitor all aspects of the pipeline, including system pressures, temperatures, flows, and valve positions (open or closed). In case of an emergency at the pipeline control center, a secondary pipeline control center will be available at an Equitrans office located in Finleyville, Pennsylvania.

The pipeline will be monitored for leaks continuously using the data acquisition system. Operators will use pressures, flows and rate of change alarms to monitor for leaks or other abnormal operating conditions. In the unlikely case that a shutdown of the pipeline system is needed, the Equitrans pipeline system will be equipped with remotely controlled sectionalizing block valves to isolate the affected pipeline segment. In some cases, as a result of an emergency shutdown or operational equipment testing, some minor venting may occur at controlled points at either the compressor stations or mainline valves. Equitrans' Operating Procedures are developed, tested and continuously improved to protect the employees performing the work and the local public from any potential health risks. USDOT 49 CFR Part 192 prescribes the baseline standards for operating and maintaining pipeline facilities, including the establishment of a written plan governing these activities. Equitrans will develop an Operations & Maintenance (O&M) Manual for the facility during the construction phase, and this O&M Manual will be in effect prior to initially filling the pipeline system with natural gas. The O&M Manual will include contingency plans for maintaining service or reducing downtime.

Equitrans will have field services crews perform the 49 CFR Part 192 required operations, maintenance and inspection tasks along the pipeline. All personnel will have the proper training and qualifications as required by 49 CFR Part 192.

### **11.3.12 Corrosion Control**

The Equitrans pipeline will have cathodic protection and will be closely monitored and maintained in compliance with 49 CFR Part 192 and National Association of Corrosion Engineers International recommended practice RP-0169-96. The pipeline will have a high-quality, fusion-bonded epoxy coating system, which will be applied after the pipe has been manufactured. Girth welds will be sandblasted and

coated with a field applied epoxy coating. Together, the combination of cathodic protection and the epoxy coating system provide excellent corrosion control.

In addition to the other measures, Equitrans will also inspect the pipeline using devices known in the industry as “smart pigs” at least every 7 years, as required by 49 CFR Part 192, or more frequently if the baseline integrity assessment requires. These devices run inside the pipe and provide indications of internal and external metal loss; deformation; ovalities; dent detection; valve, fitting and casing locations; pipe repairs; casing ovalities; and external metal objects in the vicinity of the pipeline.

#### **11.4 REFERENCES**

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