

## Environmental Assessment

Texas Eastern Transmission, LP  
Schuylkill River HDD Project  
Revised January 2024





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## Acronyms and abbreviations

ABACT	Antidegradation best available combination of technologies
BMPs	Best Management Practices
DBH	Diameter at Breast Height
E&SCP	Erosion and Sediment Control Plans
EV	Exceptional Value
HDD	Horizontal directional drill
LOD	Limits of disturbance
MF	Migratory fish
PEM	Palustrine emergent
PFO	Palustrine forested
PSS	Palustrine scrub-shrub
PA Code	Pennsylvania Code
DCNR	Pennsylvania Department of Conservation and Natural Resources
PADEP	Pennsylvania Department of Environmental Protection
PFCB	Pennsylvania Fish & Boat Commission
Project	Schuylkill River HDD Project
Texas Eastern	Texas Eastern Transmission, LP
UNT	Unnamed tributary
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WWF	Warm Water Fishery

## S1: Project Summary

### S1.A Project Description

Texas Eastern Transmission, LP (Texas Eastern) is proposing the Schuylkill River HDD Project (Project) to maintain their existing natural gas pipeline system. The Project is in Spring City and Upper Providence Townships, Chester and Montgomery Counties, Pennsylvania, and is within the Phoenixville USGS 7.5 Quadrangle.

At this location, Texas Eastern has two parallel existing pipeline systems which cross under the Schuylkill River: Line 1, a 20-inch diameter pipeline, and Line 2, a 36-inch diameter pipeline. The existing easement ranges from approximately 75 feet to 110 feet in width. Texas Eastern during a routine survey conducted in 2020, identified an approximately 18-foot exposure of the Line 1 pipeline in the Schuylkill River.

The Project proposes to install a new 20-inch diameter pipe with a horizontal directional drill (HDD) of approximately 1,111 linear feet. The new pipeline will be parallel and offset approximately 20 feet from the existing Line 1 within the existing easement. Additionally, the existing 20-inch diameter Line 1 pipeline will be removed. Temporary workspace consists of the existing easement and additional temporary workspace parallel to the easement. Access to the site will be along existing roads. Hydrostatic test water will be acquired from a municipal source and following testing will be disposed of offsite at an appropriate facility.

A PNDI Project Environmental Review was completed for the Project (PNDI-776177). Further review was requested with the U.S. Fish and Wildlife Service (USFWS) and Pennsylvania Fish and Boat Commission (PFBC). A qualified bog turtle surveyor completed a Phase I Bog Turtle Habitat survey with negative results. The negative results were provided to the USFWS completing the USFWS component. A Phase 1 Habitat Assessment was completed for the Northern red-bellied cooter and the assessment findings were submitted to the PFBC. A Species Impact Review letter was received from PFBC on June 21, 2023 requesting avoidance measures. The requested measures will be implemented and are discussed in more detail in Module S2.C.

Texas Eastern proposes to begin HDD construction activities in March 2024 with an in-service date of late April 2024. The removal of Line 1 will occur following the HDD activities, with in-stream work not beginning prior to April 15.

#### Line 1 HDD Impacts

##### *S1-1 (Schuylkill River)*

- Approximately 398 feet stream x 20-inch pipeline = 663 square feet (below the river), *Permanent Indirect Impact*
- Approximately 398 feet by 215 feet of the river is included in the workspace = 1.96 acre, *Temporary Impact*
- Floodplain: approximately 713 feet by 215 feet is included in the workspace = 3.52 acre, *Temporary Impact*
  - Approximately 243 feet on the north side = 1.2 acres
  - Approximately 470 feet on the south side = 2.32 acres

##### *W1-1 Wetland (PEM) – Temporary Impacts:*

- HDD entry pit, excavation 6 feet by 6 feet (this is within the identified workspace of 0.50 ac)

##### *W1-2 Wetland (PEM) – Temporary impacts*

- Identified Workspace with the potential to use timber mats 372 feet by 58 feet = 21,780 square feet (0.50 acre)

##### *W1-4 Wetland (PFO)*

- Identified Workspace with the potential to use timber mats 279 feet by 50 feet = 13,939 square feet (0.32 acre), *Temporary Impact*

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- PFO Wetland W1 northwest of easement = 0.04 acres
- PFO Wetland W1 southeast of easement = 0.28 acres

### *W1-5 Wetland (PFO)*

- Workspace requiring tree cutting 109 feet by 20 feet = 2,180 square feet (0.05 acre), *Permanent Indirect Impact*

### **Line 1 Removal Impacts**

Upon successful completion of the HDD and tie in between the new and old piping system, crew activities will transition to the out of service line removal. Prior to any additional cuts on the pipeline a launcher and receiver will be installed on either end to perform additional cleaning and purging runs to ensure the pipeline is free of potential liquid products or debris. A series of poly and foam pigs will be moved with nitrogen at a slow rate to push product/debris to the receiver at which time it will be captured in a vacuum truck and disposed of in accordance with environmental permits.

Excavation will be performed on both sides of the river and the decommissioned segment of pipe removed on either side up to the river, the trench backfilled with clean fill added as needed to bring to grade.

Removal of the existing Line 1 within the Schuylkill River will be completed using Portadams (a type of cofferdam) to create a dry ditch within the river. Due to the width of the Schuylkill River, the work will occur in two segments covering half of the river, executed one at a time.

The Portadam will be installed with divers and equipment support, an excavator. Steel channels/brackets will be pinned to the river bottom, then a dam liner installed and secured to the brackets and rolled onto the river bottom with sandbags placed to prevent movement. Once the section is isolated from the river, the water will be pumped out and excavation of the pipe will commence. A temporary cap will be placed on the pipe at the outer limit. The excavated trench will be backfilled and clean fill added as needed to reach existing grade. Each side is anticipated to take approximately 1 week to install the Portadam and 2-3 days for pipe removal.

Following completion of the work, the Portadam will be rotated to the second segment and the sequence repeated.

Prior to initiating the Portadam installation, weather and river levels will be monitored. If high water levels are predicted, there will be a delay of removal activities until water levels and forecasts are favorable. With minor water level changes, the Portadam system could be overtopped with no damage to the dam, only requiring it to be pumped out again.

### *S1-2 (Schuylkill River) – Temporary Impacts*

- Approximately 398 feet stream x 20-inch pipeline = 663 square feet (excavation of trench within identified workspace of 1.96 acre)

### *W1-3 Wetland (PEM) – Temporary Impacts:*

- Trench excavation, 327 feet by maximum 20 feet wide = 6,540 square feet (0.15 acre) (this is within the identified workspace of 0.50 ac)

## **S1.B Additional Information**

### **Purpose and Need**

The purpose and need of the Project is the partially exposed Line 1 pipeline in the Schuylkill River. The Project's maintenance and replacement activities are necessary towards providing adequate cover over the pipeline.

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The Project activities propose to temporarily affect Exception Value (EV) wetlands and Other wetlands as described under §105.18a. Since the Project proposes a maintenance activity within the existing Texas Eastern pipeline easement, there are no other reasonable alternatives to safely and efficiently update the Line 1 pipeline to current standards and conditions outside of the existing easement location. The Project is necessary to abate a substantial threat to the public health or safety. The conditions of §105.18a(c) and the requirements of subsection §105.18a(b)(2) - (7) are met.

### **Water Dependency**

As the purpose of the Project is to address the exposure concerns of the Line 1 pipeline crossing under the Schuylkill River, work will occur within the Schuylkill River (Stream S1) itself. Additionally, wetlands were identified within and adjacent to the existing Texas Eastern easement and will be temporarily impacted by the Project activities. An existing valve setting and railroad prevent moving construction activities out of the wetland on the north side of the river. Project activities will take place within and in close proximity to these water features.

### **Summary Water Resources Table**

Refer to Module S2.B for wetland and water resources located at the Project site.

### **Summary Impact Table**

Refer to Module S3.A for a summary of impacts table.

## S2: Resource Identification and Characterization

### S2.A Standard Resource Identification Information

#### Qualifications

Jacobs Project Management Group  
2001 Market Street, Suite 900  
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**Keith D'Angiolillo, PWS**  
Keith.DAngiolillo@jacobs.com

Project work completed: Wetland Delineation and Phase 1 Bog Turtle Survey

Keith has more than 20 years of diverse experience in environmental policy and permitting for a wide range of clients in the northeast. He is a Professional Wetland Scientist and a United States Fish and Wildlife Service (USFWS) Qualified Bog Turtle Surveyor.

**Rei-Hua Wang**  
ReiHua.Wang@jacobs.com

Project Work completed: Wetland Delineation

Ms. Wang has 10 years of technical experience in environmental permitting, impact assessments, natural resource inventory surveys, wetland delineations, and habitat assessments for various linear and large scale projects throughout the northeast region.

**Jack Harper**  
Jack.Harper@jacobs.com

Project work completed: Wetland Delineation and Phase 1 Bog Turtle Survey

Jack has more than 2 years of experience in environmental permitting, wetland delineations, habitat assessments, and ecological restoration for a variety of projects throughout the northeast region.

#### Wetlands and Watercourses

Jacobs conducted wetland delineations for the Project on November 18, 2022, and on March 31, 2023. A total of three wetlands and two watercourses were identified during these field surveys. Wetlands included: W1 a combination palustrine emergent (PEM) and palustrine forested (PFO) wetland, W2 a PFO wetland, and W3 a palustrine scrub/shrub (PSS) wetland while watercourses included: one perennial (stream S1) and one ephemeral (S2).

Refer to the enclosed Wetland and Waterbody Delineation Technical Memorandum and Addendum (Appendix A to this EA) for field data sheets, photos, sample locations, size of wetlands, brief narrative of the delineation process, and supporting materials. The features identified were within an environmental survey area which is larger than the overall Project workspaces where impacts will occur.

The Schuylkill River (stream S1) is mapped as a State Scenic River, River Segment 4, Modified Recreational. Jacobs reached out to the Pennsylvania Department of Conservation and Natural Resources (DCNR) to confirm that the segment of the Schuylkill River is classified as a State Scenic River under the Pennsylvania Scenic River Act. DCNR confirmed this classification in the Scenic River Reviews letter dated, October 10, 2023, and requested construction measures to be integrated into the Project.

In reviewing PADEP's eMap and coordination with the PADEP Southeast Regional Office – Safe Drinking Water group, the Schuylkill River (stream S1) is noted as a public water supply. There are two public water intake structures located downstream of the Project area: the Phoenixville Water Department structures (ID: 1150077) located 1.39 miles and 2.0 miles downstream.



### Location Map

Refer to mapping within the Wetland and Waterbody Delineation Technical Memorandum (Appendix A).

### Recreation Area

As mentioned, the Schuylkill River is in the Commonwealth's Scenic Rivers System, a State Scenic River, River Segment 4, Modified Recreational.

The Schuylkill River Trail, owned and operated by Schuylkill River Greenways, is crossed by the Project workspace on the southwest side of the river. The workspace has been limited to the existing easement only where it crosses the trail, resulting in approximately 90 feet of the trail within the temporary workspace. During construction activities, the Project will install appropriate safety signage on both sides of the trail and fencing, provide social media notifications, and use flaggers to notify the public of construction crossing and activities. The Project will provide 48-72 hour notification prior to any trail closure.

## S2.B Aquatic Resources On-site

### Watercourses

Stream S1 (Schuylkill River) is a perennial stream that is designated by Pennsylvania Code (PA Code) Chapter 93 as a warm water fishery (WWF), migratory fish (MF) water, a PA Historic Stream, and a State Scenic River.

- Channel length within the Project workspace: 215 feet
- Channel width (average ordinary high-water mark): 387 feet
- Floodplain: Zone AE (100 year floodplain)

Stream S2 is a small, ephemeral unnamed tributary (UNT) to the Schuylkill River (Stream S1), and therefore is designated as a WWF and MF water.

- Channel length within the Project workspace: 0 feet
- Channel width (average ordinary high-water mark): 2 feet
- Floodplain: Within the floodplain of Stream S1

### Wetlands

Wetland W1 consisted of a combination of PEM and PFO wetland and is characterized as a wetland complex. The PEM wetland is located entirely within the existing utility easement while the PFO wetland is located in the forested area adjacent to and as transitional area of the utility easement. The PFO wetland was mapped open ended and extends outside the surveyed area. Based on aerial photography it appears the wetland complex extends both north and south within the riparian floodplain bounded on the northeast by a railroad which parallels the river. The PFO portion of Wetland W1 within the workspace is 0.37 acres, and the PEM portion within the workspace is 0.50 acres. Wetland W1 is located in the northeast extent of the Project area, on the north side of the Schuylkill River. The PFO wetland vegetation included red maple (*Acer rubrum*, FAC) and silver maple (*Acer saccharinum*, FACW). The PEM wetland vegetation included Pennsylvania smartweed (*Polygonum pennsylvanicum*, FACW), switchgrass (*Panicum virgatum*, FAC), and common reed (*Phragmites australis*, FACW). Wetland hydrology indicators included microtopographic relief, drainage patterns, water marks and moss trim lines. Hydric soil characteristics observed consisted of low chroma soils with redox features. Wetland W1 is considered an Exceptional Value (EV) wetland, as it within the corridor of the Schuylkill River (Stream S1) which is designated as scenic under the Pennsylvania Scenic Rivers Act (32 P. S. § § 820.21—820.29)

Wetland W2 is a PFO wetland that receives water from the Schuylkill River during flooding events. It is located southwest of the Schuylkill River and eventually drains back into the Schuylkill River. Wetland W2, 0.03 acre delineated, is open ended and extends outside the surveyed area to the southeast. The PFO wetland vegetation included silver maple (*Acer saccharinum*, FACW) and red maple (*Acer rubrum*, FAC). Wetland hydrology indicators included water marks, moss trim lines, and sparsely vegetated concave surface.

Hydric soil characteristics observed consisted of low chroma soils with redox features. Wetland W2 is considered an EV wetland, as it is within the corridor of the Schuylkill River (Stream S1) which is designated as scenic under the Pennsylvania Scenic Rivers Act (32 P. S. § § 820.21—820.29).

Wetland W3 is a PSS wetland, located southwest of the Schuylkill River trail. This concave wetland feature is between the paved Schuylkill River trail and a gravel lot to the south, collecting drainage from both areas. Wetland W3, 0.08 acre delineated, is open ended and extends outside the surveyed area to the southeast, adjacent to the paved Schuylkill River Trail. The PSS wetland vegetation included silky dogwood (*Cornus amomum*, FACW) and American elm saplings (*Ulmus americana*, FACW). The PEM wetland vegetation included flat-top goldentop (*Euthamia graminifolia*, FAC). Wetland hydrology indicators included high water table, saturation, water-stained leaves, and microtopographic relief. Hydric soil characteristics observed consisted of low chroma soils with redox features.

## S2.C Threatened and Endangered Species

A PNDI (receipt 776177) review was completed for the Project. The PNDI review resulted in potential species under the jurisdiction of the USFWS, and requested additional information, a Bog Turtle Habitat Phase I survey. A USFWS-qualified bog turtle surveyor, Keith D'Angiolillo of Jacobs, conducted Phase I habitat surveys on behalf of Texas Eastern. The wetlands identified on the Project site were determined not to be potential bog turtle habitat. Since the Bog Turtle Phase 1 habitat surveys were conducted by a qualified bog turtle assessor, no letter response is provided from the USFWS for negative survey results.

Additionally, the PNDI review resulted in potential species under the jurisdiction of PFBC, and requested additional information, a habitat assessment for the state threatened, Northern Red-bellied Cooter (*Pseudemys rubriventris*). A qualified biologist, who possesses the necessary Scientific Collector's Permit issued by the PFBC conducted a habitat assessment. The Northern Red-bellied Cooter Survey Report was provided to PFBC and the agency provided a Species Impact Review (SIR) response on June 21, 2023.

The SIR response from PFBC confirmed that the project site contains accessible potential nesting habitat for Northern red-bellied cooter. As a result, the following measures are necessary in order to avoid impacts to the species.

1. A silt fence barrier should be installed during the inactive period of the turtle (October 15–April 15) so that active turtles or their nests do not get trapped in the work zone.
2. A qualified herpetologist should be on-site to clear the area of turtles prior to fence installation and construction activities.

A silt fence barrier will be installed at the two identified nesting areas during the inactive period and a qualified herpetologist will be on-site to monitor the work area, prior to construction activities. These avoidance measures are displayed on the Project's E&SC Plan.

3. Construction that involves the use of dams, dewatering or excavation or other in-stream disturbances should only be performed during the active season of the red-bellied cooter (approximately April 15–October 15). This allows non-dormant turtles to move away from active construction.
4. Dewatering should be monitored by a qualified biologist who can capture and relocate any turtles that are present within the affected area. Monitoring should proceed until the area is completely dewatered, or such time that the biologist determines that the affected area is free of turtles.

The Line 1 removal is scheduled for late April of 2024; therefore, the project will comply with these avoidance measures. If Line 1 removal activities were to occur prior to April 15<sup>th</sup>, consultation with PFBC will be re-initiated to confirm appropriate measures.

## S2.D Aquatic Resource Characterization

### Riverine Resources

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Stream S1 (Schuylkill River) has a gradient class of 1 (low gradient) with slopes ranging below 0.5 percent and a watershed size 4 (large stream/river) with a drainage area of approximately 2,000 square miles. Due to the small size of Stream S2 and its location within the floodplain of Stream S1, it is not characterized separately.

The Schuylkill River is listed in the 2022 Pennsylvania Integrated Water Quality Report as impaired (Category 5-waters impaired for one or more uses by a pollutant that requires the development of a TMDL) for aquatic life. Impairment sources include urban runoff, municipal point source discharges, and agriculture.

### PA Riverine Condition Level 2 Rapid Assessment

Jacobs scientists conducted a Riverine Condition Level 2 Rapid Assessment on the Schuylkill River (Stream S1) to assess the aquatic resource condition. The assessment encompasses the stretch of the Schuylkill River within the Project workspace. The Riverine Condition Index (RCI) score is 0.55. Stream S2 is an ephemeral stream feature, therefore, does not require a Riverine Condition Level 2 Rapid Assessment. The results of the assessment including the datasheets and riparian condition maps are provided in Appendix C.

### **Wetland Resources**

Wetland W1 is the only wetland that will be impacted by Project activities. Refer to Appendix A for the Wetland Delineation Technical Memorandum and Addendum, which provides datasheets, photographs, and a detailed description of the wetland features delineated in the project area. Table 1 details the wetland resource characteristics of each wetland.

<b>Wetland ID</b>	<b>HGM Classification<sup>1</sup></b>	<b>Cowardin Classification<sup>2</sup></b>	<b>Palustrine Community Classification</b>	<b>PA Wetland Condition Level 2 Assessment Protocol</b>	<b>Wetland Conditions</b>
Wetland W1	RIVERENE & DEPRESS <sup>3</sup>	PEM/PFO	Red Maple – Elm – Willow Floodplain Forest	Overall Condition Index Score: 0.76  (Refer to <b>Appendix C</b> for Assessment form and mapping. Refer to <b>Appendix A</b> for additional information on wetland feature)	Wetland W1 is located within the floodplain of the Schuylkill River and likely receives hydrology from groundwater flow and occasional flooding events of the Schuylkill River. Since Wetland W1 has the diversity of PEM and PFO wetland cover types and is in close proximity to the Schuylkill River, it likely provides habitat for mammals, birds, reptiles, amphibians, and invertebrates.
Wetland W2	RIVERINE	PEM	Red Maple – Elm – Willow Floodplain Forest	Wetland W2 will not be impacted by project activities, therefore, this assessment does not apply.	Wetland W2 is located within the floodplain of the Schuylkill River. Wetland W2 likely receives water from rain events and occasional flooding events of the Schuylkill River. Since Wetland W2 is in close proximity to the Schuylkill River, it likely provides habitat for a variety mammals, birds, reptiles, amphibians, and invertebrates.
Wetland W3	DEPRESS	PSS	Circumneutral Mixed Shrub Wetland	Wetland W3 will not be impacted by project activities, therefore, this assessment does not apply.	Wetland W3 is a concave wetland feature located between the paved Schuylkill River Trail and a gravel lot to the south, collecting drainage from both areas. Wetland W3 is significantly disturbed, as it was likely created from previous construction activities of the trail and

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					parking area. Wetland W3 may provide habitat for small rodents, reptiles, amphibians, and invertebrates; however, likely on a small scale.
<p>1 RIVERINE = characterized by a water source of overbank flow from a channel; DEPRESS = characterized by a water source consisting of return flow from groundwater and interflow with primarily vertical hydrodynamics.</p> <p>2 Defined by Cowardin et al 1979</p> <p>3 The Wetland Delineation Technical Memorandum noted a HGM classification of DEPRESS. After further analysis and based on limited observations of the hydrologic conditions of Wetland W1, the HGM classification was revised to include both RIVERINE &amp; DEPRESS for this submittal.</p>					

### Lacustrine Resources

There are no lacustrine resources associated with the Project.

### Other Environmental Factors

No additional studies or surveys were undertaken for the Project.

## S3: Identification and Description of Potential Project Impacts

### S3.A Summary Table of Impacts

Feature ID	Permanent Impacts		Temporary Impacts	
	Direct Impacts	Indirect Impacts	Direct Impacts	Indirect Impacts
Schuylkill River S1-1 S1 -2		663 sq ft = 398 ft stream channel x 20-in pipe (HDD below channel)	1.96 ac 85,570 sq ft = 398 ft x 215 ft (workspace within river)  0.18 ac 7,960 sq ft = 398 ft stream channel x 20 ft (trench excavation within workspace)  3.52 ac 713 ft x 215 ft (floodplain in the workspace)	663 sq ft = 398 ft stream channel x 20-in pipe (removal of pipe)
PEM Wetland W1 W1-1 W1-2 W1-3			0.50 ac 21,780 sq ft = 372 ft x 58.5 ft (workspace timber mats)  36 sq ft = 6 ft x 6 ft (excavation HDD entry pit within workspace)  0.15 ac 6,540 sq ft = 327 ft x max 20 ft (trench excavation within workspace)	
PFO Wetland W1 W1-4 W1-5		0.05 ac 2,178 sq ft = 20 ft x 109 ft (tree cutting)	0.32 ac 13,950 sq ft = 279 ft x 50 ft (workspace timber mats)	
Totals		663 sq ft (river)  0.05 ac (W1)	1.95 ac (river) 3.52 ac (floodplain) 0.50 ac (PEM W1) 0.32 ac (PFO W1)	663 sq ft (river)
Note: Dimensions of wetland features are estimated.				

### S3.B Standard Information Responses

The Schuylkill River (S1) is classified as State Scenic River, River Segment 4, Modified Recreational and additionally, the entire stretch of the Schuylkill River is considered a public water supply. Potential impacts to the river from the Project include localized turbidity during in-stream work (use of Portadams to remove Line 1) and general construction activities near the recreational waterbody.

Texas Eastern will minimize impacts to the river through use of an HDD to install the new Line 1 and has developed and will implement an Inadvertent Return Contingency Plan. Construction activities associated with the removal of the Line 1 pipeline within the Schuylkill River will be completed with the use of Portadams to isolate the work in the dry. Best management practices (BMP) such as turbidity curtains will be implemented and the duration of construction will be minimized to the extent possible. An Aid to Navigation (ATON) plan approved by the PFBC will be implemented to notify users of the river and minimize impact to the Schuylkill River’s recreational activities.

Approximately 90 feet of the Schuylkill River Trail is crossed by the Project’s temporary workspace. During construction activities, the Project will install appropriate safety signage on both sides of the trail and fencing, provide social media notifications, and use flaggers to notify the public of construction crossing and activities. The Project will provide 48-72 hour notification prior to any trail closure.

### S3.C Subfacility Details Tables

<b>Subfacility Type</b>	PIPE	Pipe or Conduit			
<b>Id</b>	L1	Line 1 Pipeline installation			
<b>County</b>	Chester/ Montgomery	<b>Municipality</b>		Spring City/Upper Providence Twp	
<b>Latitude Degrees</b>	40	<b>Latitude Minutes</b>	10	<b>Latitude Seconds</b>	22.25
<b>Longitude Degrees</b>	75	<b>Longitude Minutes</b>	32	<b>Longitude Seconds</b>	3.27
<b>Pipe Conduit Type</b>	DB	Directional Bore/Drill		<b>Attached Water Obstruction?</b>	Yes
<b>Product</b>	PETRO		Petroleum, Nat Gas, Oil, etc		
<b>Diameter</b>	20 inches	<b>ROW Width</b>	110 ft	<b>Pipe Length</b>	1,111 feet
<b>Cover Depth</b>	5-10 feet	<b>Line Encased</b>	No	<b>Shut off Controls</b>	Yes

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<b>Subfacility Type</b>	PIPE	Pipe or Conduit			
<b>Id</b>	L1	Line 1 Pipeline removal			
<b>County</b>	Chester/ Montgomery	<b>Municipality</b>	Spring City/Upper Providence Twp		
<b>Latitude Degrees</b>	40	<b>Latitude Minutes</b>	10	<b>Latitude Seconds</b>	24.02
<b>Longitude Degrees</b>	75	<b>Longitude Minutes</b>	31	<b>Longitude Seconds</b>	59.31
<b>Pipe Conduit Type</b>	TRNC	Open Trench		<b>Attached Water Obstruction?</b>	Yes
<b>Product</b>	PETRO Petroleum, Nat Gas, Oil, etc				
<b>Diameter</b>	20 inches	<b>ROW Width</b>	110	<b>Pipe Length</b>	327 feet
<b>Cover Depth</b>	5-10 feet	<b>Line Encased</b>	No	<b>Shut off Controls</b>	Yes

<b>Subfacility Type</b>	TFIM	Temporary Floodway Impacts			
<b>Id</b>	S1-1	Schuylkill River			
<b>County</b>	Chester/ Montgomery	<b>Municipality</b>	Spring City/Upper Providence Twp		
<b>Latitude Degrees</b>	40	<b>Latitude Minutes</b>	10	<b>Latitude Seconds</b>	25
<b>Longitude Degrees</b>	75	<b>Longitude Minutes</b>	31	<b>Longitude Seconds</b>	57
<b>Impact Area</b>	3.52 acres	<b>Classification</b>			
<b>Reg Classification</b>	WWF, MF				

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<b>Subfacility Type</b>	TSIM	Temporary Stream Impacts			
<b>Id</b>	S1-1	Schuylkill River			
<b>County</b>	Chester/ Montgomery	<b>Municipality</b>		Spring City/Upper Providence Twp	
<b>Latitude Degrees</b>	40	<b>Latitude Minutes</b>	10	<b>Latitude Seconds</b>	22.0
<b>Longitude Degrees</b>	75	<b>Longitude Minutes</b>	32	<b>Longitude Seconds</b>	03.4
<b>Impact Area</b>	1.96 acres	<b>Classification</b>			
<b>Reg Classification</b>	WWF, MF				

<b>Subfacility Type</b>	TMPWI	Temporary Wetland Impact			
<b>Id</b>	W1	Wetland 1 (PEM)			
<b>County</b>	Chester/Montgomery	<b>Municipality</b>		Spring City/Upper Providence Twp	
<b>Latitude Degrees</b>	40	<b>Latitude Minutes</b>	10	<b>Latitude Seconds</b>	23.63
<b>Longitude Degrees</b>	75	<b>Longitude Minutes</b>	31	<b>Longitude Seconds</b>	59.78
<b>Impact Area</b>	0.50 acres	<b>Classification</b>		PEM	Palustrine Emergent
<b>Reg Classification</b>	EV	Exceptional Value			

<b>Subfacility Type</b>	TMPWI	Temporary Wetland Impact			
<b>Id</b>	W1	Wetland 1 (PFO)			
<b>County</b>	Chester/Montgomery	<b>Municipality</b>		Spring City/Upper Providence Twp	
<b>Latitude Degrees</b>	40	<b>Latitude Minutes</b>	10	<b>Latitude Seconds</b>	23.79
<b>Longitude Degrees</b>	75	<b>Longitude Minutes</b>	31	<b>Longitude Seconds</b>	57.98
<b>Impact Area</b>	0.32 acres	<b>Classification</b>		PFO	Palustrine Forested
<b>Reg Classification</b>	EV	Exceptional Value			



<b>Subfacility Type</b>	WTIIM	Permanent Indirect Wetland Impact			
<b>Id</b>	W1	Wetland 1 (PFO)			
<b>County</b>	Chester/Montgomery	<b>Municipality</b>		Spring City/Upper Providence Twp	
<b>Latitude Degrees</b>	40	<b>Latitude Minutes</b>	10	<b>Latitude Seconds</b>	24.3
<b>Longitude Degrees</b>	75	<b>Longitude Minutes</b>	31	<b>Longitude Seconds</b>	59.60
<b>Impact Area</b>	0.05 acres	<b>Classification</b>	PFO		Palustrine Forested
<b>Reg Classification</b>	EV	Exceptional Value			

### S3.D Resource Function Effects

Construction activities that will impact the Schuylkill River (Stream S1) include the replacement of Line 1 (Subfacility type: PIPE, Pipe Conduit Type: DB) via a 1,111 ft HDD and the removal of the existing pipeline through installation of Portadams and trenching of the channel bed (Subfacility type: PIPE, Pipe Conduit Type: TRNC) resulting in temporary floodway impacts (TFIM), temporary stream impacts (TSIM), and permanent indirect impacts (pipe under the channel).

Impacts to wetland W1 PEM and PFO will include temporary wetland impacts (TMPWI) associated with minor excavations (HDD entry pit and trenching), use of timber mats, and side trimming of trees, and permanent indirect wetland impact (WTIIM) for tree cutting within the PFO.

#### Hydrologic

Effects to hydrology of the Schuylkill River are not anticipated. The Project's HDD activities will occur below the channel bed and Texas Eastern has developed and will implement an Inadvertent Return Contingency Plan (provided in Appendix E). The installation of Portadams and associated construction activities will temporarily shift the flow of the river by obstructing one half of the river. The activities are not intended to impair the hydrologic conditions of the river stretch.

Hydrologic conditions of wetland W1 may be affected by construction activities. Cutting of trees in a PFO can affect the amount of water available through the change in root uptake, evapotranspiration, and canopy cover. Texas Eastern has limited tree cutting in the PFO to 0.05 acre and includes only one tree greater than 12 inches diameter at breast height. Trimming of tree limbs and scrubby transition areas within the PFO wetland will have less of an impact on the hydrology and is limited to 0.32 acre. During construction, a temporary impact is expected to the drainage patterns of the wetland from minor excavations and use of timber mats and other BMPs. Following construction, the site will be graded to pre-construction levels and revegetated to re-establish the drainage patterns and hydrology. A trench plug will be installed at the wetland boundary where the new Line 1 will be installed.

#### Biogeochemical

Within the Schuylkill River, it is expected that there would be short-term, temporary increases in turbidity that would impact water quality by increasing the amount of suspended solids. The work is proposed to occur within a Portadam so increases in turbidity should be of short durations and given the volume and flow of the Schuylkill River, dissipate downstream. To minimize impacts to water quality, BMPs will be implemented including a turbidity curtain within the river and compost filter sock along the banks. Following construction

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activities and establishment of vegetation, water quality is anticipated to return to pre-construction conditions.

Within wetland W1, temporary water quality impacts may result from an increase in sediment movement associated with construction activities. The PFO wetland may also be affected with the loss of canopy cover.

### Habitat

Aquatic habitat in the Schuylkill River may be temporarily affected by installation/removal of the Portadam, short-term increases in turbidity, and general construction activity in the area. Fish and other mobile species will likely move to avoid the area of activity. Dewatering of the Portadam may require relocating any fish or aquatic species caught inside. Given the area is habitat for the Northern red-bellied cooter, in-stream work will not occur until after April 15 during the active season to allow non-dormant turtles to move away. A qualified biologist will be on-site during dewatering. BMPs will also be implemented including a turbidity curtain to minimize turbidity increases.

During construction, riparian habitat and vegetation along the Schuylkill River and within wetland W1 will be impacted. Most impacts to habitat and vegetation are expected to be minor and short-term as the majority of the workspace is the existing, maintained easement. Clearing of woody shrubs and trees will have a longer term impact, because shrubs and trees take longer to re-establish than herbaceous vegetation. Post-construction, disturbed areas will be seeded and mulched per the Project's E&SC Plan. In addition, shrubs/trees will be planted within the temporary workspace adjacent to the Schuylkill River.

The riparian habitat supports a variety of widespread and tolerant mammals, birds, reptiles, amphibians, and invertebrates, likely at low densities. Direct and indirect impacts to wildlife resources are anticipated to be minor and limited mostly to temporary impacts on food, cover, and water resources during construction. Clearing and grading of the construction area will result in loss of some vegetative cover and may result in the mortality of less mobile fauna, such as small rodents, reptiles, and invertebrates. Construction disturbance will likely cause the temporary displacement of more mobile wildlife from the construction workspace and adjacent areas. Disruption of habitat will be temporary in nature. Post-construction, the individuals will be able to utilize the area in subsequent seasons.

### Recreation

During Project construction activities, there may be temporary impacts to recreational activities within the Project stretch of the Schuylkill River. DCNR recommended actions will be implemented.

- **Construction should be done either in late fall or early spring when recreational use of the river is minimal.** The Project construction activities are scheduled for March and April of 2024. In-stream work per PFBC will occur after April 15<sup>th</sup>.
- **Construction staging areas should be screened by vegetative buffer and/or set back as far away as possible from the rivers edge.** Since the Project is within an existing natural gas pipeline easement which is maintained regularly by Enbridge, a vegetative buffer will be limited. Construction will not clear areas adjacent to the river until work is ready to commence.
- **Once construction is underway, appropriate safety signage should be used at the construction crossing on the Schuylkill River Trail to notify trail users that they are entering a construction crossing area.** The Schuylkill River Trail crosses the Project workspace on the southwest side of the river. During construction activities, the Project will install appropriate safety signage on both sides of the trail and fencing, provide social media notifications, and use flaggers to notify the public of construction crossing and activities. The Project will provide 48-72 hour notification prior to any trail closure.
- **During construction and cleanup, debris entering the waterway shall be removed.**
- **Minimize ROW width in riparian zones as much as possible. Cross streams at a perpendicular angle.** The Project does not propose to widen the existing easement/ROW and the existing pipeline crosses at a perpendicular angle.

- **Native vegetation shall be incorporated in the disturbed areas to maintain the natural character and scenic qualities of the waterway. Vegetated buffers should be planted along the riparian area consisting of a combination of native grasses, forbs, shrubs and trees.** The Project's Site Restoration Plan includes a riparian seed mix for along the river as well as supplemental shrub plantings within the additional temporary workspaces.

An ATON plan approved by the PFBC will be implemented to minimize impacts to users of the river. No long-term impacts to recreation are expected, as the construction activities involve replacing the pipeline under the Schuylkill River. Short-term impacts to recreation will be minimized through the implementation of DCNR's actions and the ATON.

### S3.E Antidegradation Analysis

As discussed in section S2.B, Wetlands W1 and W2 are designated as EV wetlands. Wetland W2 will not be impacted by the Project. Wetland W1 will be temporarily impacted by the Project, therefore, antidegradation practices are required to minimize accumulated erosion and sedimentation during earth disturbance activities and limit the change from pre-development to post-development in runoff volume, rate, and pollutant concentration. Antidegradation best available combination of technologies (ABACT) erosion and sediment controls will be implemented throughout construction including compost filter sock, timber matting, protection of wetland vegetation where possible, and immediate stabilization following construction activities.

### S3.F Alternatives Analysis

As discussed in Sections S1.A and S1.B, the purpose and need of the Project is the maintenance of the partially exposed Line 1 pipeline in the Schuylkill River. The Project's maintenance and replacement activities are necessary towards providing adequate cover over the pipeline.

Under a **no-action alternative**, Texas Eastern would not replace the existing Line 1. The no-action alternative would avoid the temporary/short-term environmental impacts but would not provide the permanent/long-term benefits associated with the work. Under a no-action alternative, Texas Eastern would not be able to meet the objectives of the Project of providing adequate cover over the pipeline and updating to current standards and conditions. This no-action alternative would not resolve the deficiencies of the 18-feet of exposure along the pipeline within the Schuylkill River which pose a threat to the integrity of the pipeline system. For these reasons, the no-action alternative was not considered.

**Route and system alternatives** were not considered for the Project since the work is to occur on an existing natural gas pipeline system. Utilizing the existing easement keeps the majority of impacts to previously disturbed areas and minimizes environmental impacts.

**Design alternatives**, or alternatives that are able to meet the objectives of the Project but use different methods of addressing the proposed work, were considered.

**Cover in Place.** One design alternative to address the exposed Line 1 is to cover the exposed areas of the pipe. This method would involve adding soil and rock around the exposed areas to fully cover the pipeline. This is not a preferred method, as it would only temporarily mitigate the exposure. Since the Schuylkill River is a large perennial waterbody with significant flow and frequent flooding events, it is likely that scouring of Line 1 would continue in the future. Additionally, providing sufficient cover of 3-feet of soil/rock over the pipeline would create a mound on the channel bed. This alternative was rejected from further consideration.

**Open-Cut Wet-Ditch.** Another potential design alternative to address the exposed Line 1 is replacement of the pipeline using an Open-Cut Wet-Ditch method within the Schuylkill River. This method would involve excavating a trench around the existing pipeline in the bottom of the Schuylkill River, removing the existing pipeline, laying the new Line 1 pipe bank to bank, and then backfilling the trench. For this method, equipment would be required to directly work in the river and potential sedimentation and turbidity within the river would be a concern.

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Excavating a trench around the existing Line 1 pipe would not be sufficiently deep to ensure sufficient coverage of a new pipe. Therefore, the trench would need to be excavated further. Geotechnical borings depict rock below the riverbed which would require either a rock hammer or blasting in order to get the trench to a sufficient depth. This would increase the time work occurred in the river and clean fill would be required to backfill the trench. Additionally, removing and installing the pipeline within the same trench would require an extended outage on the natural gas system. This alternative was rejected from further consideration.

The need to keep the outage on the natural gas system limited necessitates the installation of the new pipe in a new alignment adjacent to the existing pipe.

**Open-Cut Dry Ditch/Portadams.** An alternative to install the new Line 1 in a new trench alignment with the use of Portadams, a type of coffer dam, to conduct the work in the dry, both removing the existing Line 1 and trenching a new Line 1. However as mentioned previously, with the potential for rock below the riverbed, the use of a rock hammer or blasting would likely be required for the new trench alignment. This would increase the time work occurred within the Portadams increasing the potential for leaks and discharge of water within the Portadams. Additionally, the depth of cover over the new pipe would not be as great as with a HDD.

**Removal of Existing Line 1 by Pulling.** Removing the existing pipe by pulling with a rig was considered. Excavation would be completed on both sides of the river and a pull head then welded onto the end of one side of the crossing and the drill rig attached. The drill rig would extract the existing pipe from the instream river in a similar manner as to how the HDD product pipe is pulled through. In the event the drill rig is unable to break the suction and friction forces holding in the decommissioned pipe in place a large air hammer would be installed over the opposite end, and both push/pull forces applied until the static friction force is broke free. This method was rejected following discovery that the pipe below the Schuylkill River has 17 bolted on weights which would impede the pulling of the pipe.

**Abandon in Place.** A system alternative considered for the existing Line 1 was to fill the pipe with grout within the segment, cap the pipeline on either side of the Schuylkill River, and abandon it in place. Due to the exposure of the pipeline in the river, this alternative was rejected for safety and the recreational use of the river.

For these reasons identified above, Texas Eastern determined that the HDD installation method and removing the existing pipe within Portadams were the preferred alternatives for this Project. The HDD installation avoids direct impacts to the Schuylkill River, limits surficial excavations, avoids a gas outage, and provides sufficient depth of cover for the new pipe. The removal of the existing Line 1 with an open cut on land and within Portadams in the Schuylkill River completes the work in the dry, minimizes the duration of construction within the river, and removes the existing exposed pipeline.

The site layout or required workspace evolved as the design methods were determined. On the north side of the river, the extent of available workspace along and within the existing easement was limited by a railroad crossing and existing valve site. Due to this limited space, additional temporary workspace (ATWS) outside of the existing easement was required. Originally, approximately 130 feet of ATWS split to the north and south of the existing easement was proposed, resulting in approximately 0.78 acre PFO wetland impact including 0.36 acres of tree cutting. Following further design considerations, the ATWS was narrowed to approximately 45 feet split to the north and south of the existing easement, resulting in approximately 0.37 acre forested wetland impact of which only 0.05 acre of trees require cutting.

A tree count was conducted on the north side of the easement within the proposed ATWS to identify trees with diameter at breast height (DBH) greater than 12 inches. This tree count is depicted on the HDD plan drawings. In reducing the ATWS in the PFO wetland, the 0.05 acre of tree cutting only includes one tree with DBH greater than 12 inches.

To further minimize impacts to wetland W1, where it is necessary to stockpile soil (topsoil, subsoil, or clean fill) within the wetland, geotextile fabric and matting will be placed between the stockpile and existing ground.

Workspace within the Schuylkill River includes approximately 130 feet of ATWS split to the north and south of the existing easement (full workspace of 215 feet). The entire width will not be utilized the full length of the river, only at the riverbanks as the Portadam will be angled from the bank, so it will be wider at the banks and narrower at the working edge near the middle of the river. Additionally, a turbidity curtain will be within the workspace. To ensure sufficient space to safely and efficiently conduct the work, the 215 feet in the river is proposed.

### **S3.G Potential Secondary Impact Evaluation**

The Project is limited to the existing Texas Eastern pipeline easement and ATWS adjacent to the easement. On the north side of the Schuylkill River the land adjacent to the existing easement appears to be PFO wetland. Based on aerial photography it appears the wetland complex extends both north and south in the riparian floodplain bounded on the northeast by a railroad which parallels the river. The PFO Wetland W1 outside of the easement appears to be seasonally flooded. The Project proposes to cut trees within 0.05 acre of PFO wetland and side trim trees and cut scrubby transition area for 0.32 acre. There will be only one tree above 12 inch DBH cut. Clearing of woody shrubs and trees has a more significant, longer-term impact, as shrubs and trees take longer to re-establish and may have a greater change to hydrology in the area. The loss of trees may affect the amount of water available through the change in root uptake, evapotranspiration, and canopy cover. Given the adjacent PFO wetland complex to the north and south of the Project, it is anticipated that the adjacent PFO wetland will not be impacted by the proposed work. A larger PEM to PFO transition area may be present along the existing easement for several years following the work as the trees and woody shrubs re-establish themselves.

A short term increase in turbidity during construction could temporarily impact the Schuylkill River downstream of the Project. Given the size and flow of the river, it is anticipated that turbidity will dissipate relatively quickly. In-water work will be completed as quickly as possible limiting the time turbidity may be an issue. No long-term adverse effects on the river downstream are anticipated. The Project will not have a negative impact on stream hydraulics.

### **S3.H Cumulative Impacts to Wetland Resource**

The Project proposes temporary impacts to wetlands and the Schuylkill River, with minor permanent indirect impacts to 0.05 acre of PFO wetland. It will not result in a major impairment of the Commonwealth's wetland resources.

## **S4 Mitigation Plan**

### **S4.A Avoidance and Minimization**

The Project activities include the removal of the existing pipeline and installation of a replacement pipeline where the Line 1 system crosses under the Schuylkill River (Stream S1). The existing pipeline is partially exposed within the river, therefore, completely avoiding impacts to the waterbody will not be an option. Installation of the new pipeline will be completed via an HDD which avoids direct impacts to the Schuylkill River (S1). Removal of the existing Line 1 within the Schuylkill River will be completed using Portadams (a type of cofferdam) to create a dry ditch within the river. Due to the width of the Schuylkill River, the work will occur in two segments covering half of the river, executed one at a time. A turbidity curtain will also be installed around the Portadam to minimize impacts.

Wetland (W1), PFO and PEM, is located within and adjacent to the existing Texas Eastern easement. An existing valve setting and railroad located to the north of the workspace prevent moving construction activities out of the wetland, therefore, avoiding impacts to this wetland will not be possible. During the HDD, excavation within the PEM wetland will be minimized to the entry pit (6 feet by 6 feet) and during the removal of the pipeline, excavation will be limited to the previously disturbed trench area. Topsoil will be segregated and stockpiled for excavations within the wetland and restored following the work. For the remainder of the wetland located within the workspace, timber mats will be placed to minimize impacts to the wetland.

During final design, the ATWS within the PFO wetland was reduced from approximately 0.78 acre including 0.36 acres of tree cutting to approximately 0.37 acre PFO wetland impact including only 0.05 acre of tree cutting.

During construction Texas Eastern will implement BMP's and construction practices per the E&SCP including rock construction entrances, compost filter socks, and erosion control blankets to reduce the potential for movement of sediments within and from the workspace. Where it is necessary to stockpile soil (topsoil, subsoil, or clean fill) within the wetland, geotextile fabric and matting will be placed between the stockpile and existing ground.

As detailed in Module S2.C avoidance measures from the PFBC will be implemented to protect threatened and endangered species; specifically, the Northern Red-bellied Cooter.

### **S4.B Repair, Rehabilitation, or Restorative Activities**

Following the installation and removal of the pipelines the workspace will be restored per Texas Eastern's E&SC Plan and Site Restoration, including grading to pre-construction contours, seeding, and mulching or installation of erosion control blanket.

A riparian seed mix will be used adjacent to the Schuylkill River (both sides). Riparian shrub species will be planted in the ATWS adjacent to the Schuylkill River (both sides).

Topsoil will be segregated where excavation occurs in wetlands and will provide a seed mix upon restoration. Following a growing season, should overseeding of the wetland be needed, a wetland seed mix will be used.

The 0.05 acre of PFO wetland where tree cutting is needed, is located over an existing water line. The utility has stated that no trees should be re-planted in the water line easement (20 feet wide). Shrub species will be planted within PFO wetland W1 that is ATWS and outside of the water line easement. No tree or shrub planting can occur within the existing pipeline easement for pipeline integrity. Species selection will be based on the composition of the adjacent forested areas.

### **S4.C Compensatory Mitigation**

No compensatory mitigation is proposed for the Project.