Enterprise Products

ENTERPRISE PRODUCTS PARTNERS L.P.
ENTERPRISE PRODUCTS HOLDINGS LLC
(General Partner)

ENTERPRISE PRODUCTS OPERATING LLC

October 2, 2012

Federal Express

Mr. Ric Queen, Environmental Manager
Environmental Mitigation/Special Permitting
Ohio Environmental Protection Agency
50 West Tow Street, Suite 700
P.O. Box 1049
Columbus, OH 43216-1049

Re: ATEX Express Project
Application for Ohio EPA Section 401 Water Quality Certification

Dear Mr. Queen,

Enterprise Products Operating LLC (Enterprise), as operator for Enterprise Liquids Pipeline LLC (Enterprise), is submitting this 401 Water Quality Certification application to permit construction of the the proposed ATEX Express pipeline and ancillary facilities. Enterprise is proposing to construct approximately 355 miles of 20-inch-diameter natural gas liquids pipeline and associated aboveground facilities in Pennsylvania, West Virginia, Ohio, and Indiana. The pipeline route begins at the MarkWest fractionating facility in Washington County, Pennsylvania, extends west through northern West Virginia and Ohio, and terminates in Jackson County, Indiana.

The application package includes:

- Application for Ohio EPA Section 401 Water Quality Certification
- Project Route Overview Maps
  - Aerial Photo-Based Route Maps
  - 1:24,000-Scale Topographic Maps
- Wetland & Waterbody Crossing Table
- Waters of the U.S. Assessment Report
- Waters of the U.S. Maps, Photographs, and Data Sheets
- Typical Cross Sectional Drawings and Crossing Plans
- Horizontal Directional Drill (HDD) Frac-Out Mitigation Plan
- Conceptual Mitigation Plan
- Compliance with the Endangered Species Act
- Wetland Revegetation Plan

Please call me at (713) 381-6595 or Jimmy White at (713) 392-2458 if you have questions about this submittal or need additional information to complete your review. Thank you for your assistance.

Sincerely,

Kevin C. Bodenhamer
Sr. Vice President, Environmental, Health, Safety & Training

/bjm
enclosures: Hard copy and CD
cc: Mr. Josh Schaffer, U.S. Army Corps of Engineers, Pittsburgh District
Ms. Susan Fields, U.S. Army Corps of Engineers, Huntington

P. O. BOX 4324
HOUSTON, TX 77210-4324
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401 Certification

ATEX Express Project

VOLUME 1 OF 13

Submitted to

Ohio Environmental Protection Agency

Submitted by

Enterprise Products Operating LLC

on behalf of

Enterprise Liquids Pipeline LLC

October 2012

Enterprise Liquids Pipeline LLC
ATEX Express Project
Application for Section 401 Water Quality Certification

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APPLICATION FOR OHIO EPA SECTION 401 WATER QUALITY CERTIFICATION

Effective October 1, 1996
Revised August, 1998

This application must be completed whenever a proposed activity requires an individual Clean Water Act Section 401 Water Quality Certification (Section 401 certification) from Ohio EPA. A Section 401 certification from the State is required to obtain a federal Clean Water Act Section 404 permit from the U.S. Army Corps Engineers, or any other federal permits or licenses for projects that will result in a discharge of dredged or fill material to any waters of the State. To determine whether you need to submit this application to Ohio EPA, contact the U.S. Army Corps of Engineers District Office with jurisdiction over your project, or other federal agencies reviewing your application for a federal permit to discharge dredged or fill material to waters of the State, or an Ohio EPA Section 401 Coordinator at (614) 644-2001.

The Ohio EPA Section 401 Water Quality Certification Program is authorized by Section 401 of the Clean Water Act (33 U.S.C. 1251) and the Ohio Revised Code Section 6111.03(P). Ohio Administrative Code (OAC) Chapter 3745-32 outlines the application process and criteria for decision by the Director of Ohio EPA. In order for Ohio EPA to issue a Section 401 certification, the project must comply with Ohio's Water Quality Standards (OAC 3745-1) and not potentially result in an adverse long-term or short-term impact on water quality. Included in the Water Quality Standards is the Antidegradation Rule (OAC Rule 3745-1-05), effective October 1, 1996, revised October, 1997 and May, 1998. The Rule includes additional application requirements and public participation procedures. **Because there is a lowering of water quality associated with every project being reviewed for Section 401 certification, every Section 401 certification applicant must provide the information required in Part 10 (pages 3 and 4) of this application.** In addition, applications for projects that will result in discharges of dredged or fill material to wetlands must include a wetland delineation report approved by the Corps of Engineers, a wetland assessment with a proposed assignment of wetland category (ies), official documentation on evaluation of the wetland for threatened or endangered species, and appropriate avoidance, minimization, and mitigation as prescribed in OAC 3745-1-50 to 3745-1-54. Ohio EPA will evaluate the applicant's proposed wetland category assignment and make the final assignment.

Information provided with the application will be used to evaluate the project for certification and is a matter of public record. If the Director determines that the application lacks information necessary to determine whether the applicant has demonstrated the criteria set forth in OAC Rule 3745-32-05(A) and OAC Chapter 3745-1, Ohio EPA will inform the applicant in writing of the additional information that must be submitted. The application will not be accepted until the application is considered complete by the Section 401 Coordinator. An Ohio EPA Section 401 Coordinator will inform you in writing when your application is determined to be complete.

Please submit the following to "Section 401 Supervisor, Ohio EPA/DSW, P.O. Box 1049, Columbus, Ohio 43216-1049:

- Four (4) sets of the completed application form, including the location of the project (preferably on a USGS quadrangle) and 8-1/2 x 11" scaled plan drawings and sections.
- One (1) set of original scaled plan drawings and cross-sections (or good reproducible copies).

(See Application Primer for detailed instructions)

1. The federal permitting agency has determined this project: (check appropriate box and fill in blanks)

   a.____ requires an individual 404 permit/401 certification- Public Notice # (if known)_____

   b.__X__ requires a Section 401 certification to be authorized by Nationwide Permit #_12_____

   c.____ requires a modified 404 permit/401 certification for original Public Notice #_____

   d.____ requires a federal permit under _____jurisdiction identified by #_____

   e.____ requires a modified federal permit under_____jurisdiction identified by #_____

Click to clear all entered information (on all 4 pages of this form) CLEAR

2. Application number (to be assigned by Ohio EPA):

3. Name and address of applicant:
Enterprise Products Operating LLC
ATTN: Kevin C. Bodenhamer
1100 Louisiana Street
Houston, TX 77002

Telephone number during business hours:
(_____)_____(Residence)
(713) 381-6595 (Office)

3a. Signature of Applicant: [signature] Date: 11-15-12

4. Name, address and title of authorized agent:
Jim Thompson
Blanton & Associates, Inc.
5 Lakeway Centre Court
Austin, TX 78734

Telephone number during business hours:
(_____)_____(Residence)
(512) 264-1095 (Office)

4a. Statement of Authorization: I hereby designate and authorize the above-named agent to act in my behalf in the processing of this permit application, and to furnish, upon request, supplemental information in support of the application.

Signature of Applicant: [signature] Date: 11-15-12

5. Location on land where activity exists or is proposed. Indicate coordinates of a fixed reference point at the impact site (if known) and the coordinate system and datum used.

Address:

Linear Project: 265 mile underground, natural gas liquids pipeline crossing the state of Ohio. (See Project Maps)
Street, Road, Route, and Coordinates, or other descriptive location

Watershed	County	Township	City	State	Zip Code
Multiple	(see Attachment A)				

6. Is any portion of the activity for which authorization is sought complete? ____ Yes _X_ No
If answer is "yes," give reasons, month and year activity was completed. Indicate the existing work on the drawings.

7. List all approvals or certifications and denials received from other federal, interstate, state or local agencies for any structures, construction, discharge or other activities described in this application.

Issuing Agency	Type of Approval	Identification No.	Date of Application	Date of Approval	Date of Denial
USACE	404-Nationwide 12				

8. DESCRIPTION OF THE ACTIVITY (fill in information in the following four blocks - 8a, 8b, 8c & 9)

8a. Activity: Describe the Overall Activity:
Enterprise Liquids Pipeline LLC proposes to construct a 20" diameter, underground, natural gas liquids pipeline to transport liquid ethane from Marcellus and Utica Shale production areas to storage and processing facilities in SE TX. The pipeline originates at the MarkWest fractionating facility in PA, and continues west into WV, OH, and IN. The total pipeline length in Ohio is 265 miles, entering the state in Jefferson County proceeding southwest, and exiting the state in Butler County. Approximately 71% of the pipeline is collocated with existing utility line easements which will limit the overall footprint of the project. The construction easement will be 90', and the permanent post-construction easement will be 50'. Where collocated, the permanent easement will overlap the existing easement by 20'. All areas disturbed by construction will be returned to preconstruction grades (see Attachment A and accompanying Appendices for supplemental details).

8b. Purpose: Describe the purpose, need and intended use of the activity:

As one of the nation's most prolific areas of liquids-rich natural gas, the Marcellus and Utica Shale formations represent an important new source of domestic energy and economic growth potential for the region and the nation. However, transportation capacity of the area of the U.S. is insufficient to meet market demands for product processing plants and storage. The 1,230 mile Appalachia-to-Texas (ATEX) Express Pipeline will provide takeaway capacity for ethane from PA, WV, and OH to the TX Gulf Coast petrochemical market. Ethane is a natural gas liquid (like butane and propane) and is used as feedstock in the production of a variety of consumer plastics (see Attachment A and accompanying Appendices for supplemental details).

8c. Discharge of dredged or fill material: Describe type, quantity of dredged material (in cubic yards), and quantity of fill material (in cubic yards).

All dredge and fill material will be native soil. Within the 228 wetlands crossed by the project, 6,366.1 cubic yards of native soil will be dredged and filled. Within the 648 waterbodies crossed by the project, 5,279.2 cubic yards of native soil will be dredged and filled.

(also see Attachment A and accompanying Appendices for supplemental details)

9. Waterbody and location of waterbody or upland where activity exists or is proposed, or location in relation to a stream, lake, wetland, wellhead or water intake (if known). Indicate the distance to, and the name of any receiving stream, if appropriate.

See Attachment A and accompanying Appendices (esp. Appendix A--Project Overview Maps and Appendix D--Waters of the U.S. Maps, Photographs and Data Sheets)

10. To address the requirements of the Antidegradation Rule, your application must include a report evaluating the:

- Preferred Design (your project) and Mitigative Techniques
- Minimal Degradation Alternative(s) (scaled-down version(s) of your project) and Mitigative Techniques
- Non-Degradation Alternative(s) (project resulting in avoidance of all waters of the state)

At a minimum, item a) below must be completed for the Preferred Design, the Minimal Degradation Alternative(s), and the Non-Degradation Alternative(s), followed by completion of item b) for each alternative, and so on, until all items have been discussed for each alternative (see Primer for specific instructions).

10a) Provide a detailed description of any construction work, fill or other structures to occur or to be placed in or near the surface water. Identify all substances to be discharged, including the cubic yardage of dredged or fill material to be discharged to the surface water.

10b) Describe the magnitude of the proposed lowering of water quality. Include the anticipated impact of the proposed lowering of water quality on aquatic life and wildlife, including threatened and endangered species (include written comments from Ohio Department of Natural Resources and U.S. Fish and Wildlife Service), important commercial or recreational sport fish species, other individual species, and the overall aquatic community structure and function. Include a Corps of Engineers approved wetland delineation.

10c) Include a discussion of the technical feasibility, cost effectiveness, and availability. In addition, the reliability of each alternative shall be addressed (including potential recurring operational and maintenance difficulties that could lead to increased surface water degradation.)

10d) For regional sewage collection and treatment facilities, include a discussion of the technical feasibility, cost effectiveness and availability, and long-range plans outlined in state or local water quality management planning documents and applicable facility planning documents.

10e) To the extent that information is available, list and describe any government and/or privately sponsored conservation projects that exist or may have been formed to specifically target improvement of water quality or enhancement of recreational opportunities on the affected water resource.

10f) Provide an outline of the costs of water pollution controls associated with the proposed activity. This may include the cost of best management practices to be used during construction and operation of the project.

10g) Describe any impacts on human health and the overall quality and value of the water resource.

10h) Describe and provide an estimate of the important social and economic benefits to be realized through this project. Include the number and types of jobs created and tax revenues generated and a brief discussion on the condition of the local economy.

10i) Describe and provide an estimate of the important social and economic benefits that may be lost as a result of this project. Include the effect on commercial and recreational use of the water resource, including effects of lower water quality on recreation, tourism, aesthetics, or other use and enjoyment by humans.

10j) Describe environmental benefits, including water quality, lost and gained as a result of this project. Include the effects on the aquatic life, wildlife, threatened or endangered species.

10k) Describe mitigation techniques proposed (except for the Non-Degradation Alternative):

- Describe proposed Wetland Mitigation (see **OAC 3745-1-54** and Primer)
- Describe proposed Stream, Lake, Pond Mitigation (see Primer)

11. Application is hereby made for a Section 401 Water Quality Certification. I certify that I am familiar with the information contained in this application and, to the best of my knowledge and belief, such information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities or I am acting as the duly authorized agent of the applicant.

Signature of Applicant	Date	Signature of Agent
	11-15-12	

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in Block 3 has been filled out and signed.

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ATEX Express Project

Application for Section 401 Water Quality Certification

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1.0 PROJECT PURPOSE AND NEED [RESPONSE TO BLOCK 8B]

As one of the nation's most prolific areas of liquids-rich natural gas, the Marcellus and Utica Shale formations represent an important new source of domestic energy and economic growth potential for the region and the nation. The Appalachia-to-Texas (ATEX) Express Project will provide much needed transportation for increasing natural gas liquid supplies being produced in the Marcellus and Utica Shale formations to demand-intensive markets in the Texas Gulf Coast petrochemical region. Currently, transportation capacity from the area is insufficient to meet existing and growing market demands. The proposed ATEX Express pipeline system will address this need by providing a dedicated, natural gas liquids pipeline system to transport up to 190,000 barrels/day efficiently and safely to storage and processing facilities.

Enterprise Products Operating LLC (Enterprise), as the operator for Enterprise Liquids Pipeline LLC (Enterprise), hereby submits this application to permit construction of the pipeline and ancillary facilities.

2.0 PROJECT LOCATION [RESPONSE TO BLOCK 5]

The portion of the ATEX Express Project located within Ohio includes approximately 265 miles of new 20-inch-diameter pipeline, crossing 13 counties (**Table 1**). Other facilities that will be constructed within Ohio include 38 mainline valves, all of which will be located in upland areas and within the proposed 50-foot operational easement. The overview maps in **Appendix A** provide an overview of the pipeline facilities and counties crossed in Ohio.

Table 1 ATEX Express Project Miles Crossed by the 20-Inch-Diameter Pipeline in Ohio

County	Begin Milepost [a]	End Milepost [a]	Miles Crossed
Jefferson	25.7	41.4	15.64
Harrison	41.4	67.8	26.47
Tuscarawas	67.8	83.4	15.76
Coshocton	83.4	108.2	24.24
Muskingum	108.2	117.0	9.12
Licking	117.0	143.5	26.96
Fairfield	143.5	169.9	26.42
Pickaway	169.9	192.2	24.26
Fayette	192.2	215.5	23.28
Greene	215.5	219.0	2.62
Clinton	219.0	231.7	14.63
Warren	231.7	255.9	24.41
Butler	255.9	288.0	30.87
TOTAL – OHIO			**264.61**

[a] Mileposts are used for reference and may not reflect actual distances.

3.0 PROJECT DESCRIPTION [RESPONSE TO BLOCK 8A]

Enterprise proposes to construct and operate pipeline and ancillary facilities to transport natural gas liquids produced in the Marcellus and Utica Shale formations of the western Appalachian Mountains basins for delivery primarily to storage and processing facilities located in southeast Texas. The ATEX Express Project, will consist of:

- approximately 355 miles of new 20-inch-diameter pipeline in Pennsylvania, West Virginia, Ohio, and Indiana
- approximately 57 miles of new 20-inch-diameter pipeline in southeast Texas
- 38 mainline valves situated along the pipeline route in accordance with 49 CFR, Part 195, requirements for this pipeline system and administered by the U.S. Department of Transportation (USDOT) Pipeline and Hazardous Materials Safety Administration (PHMSA). No mainline valves or other above ground structures will be placed in waters of the U.S.
- approximately 789 miles of existing pipeline infrastructure in Indiana, Illinois, Missouri, Arkansas, Louisiana, and Texas

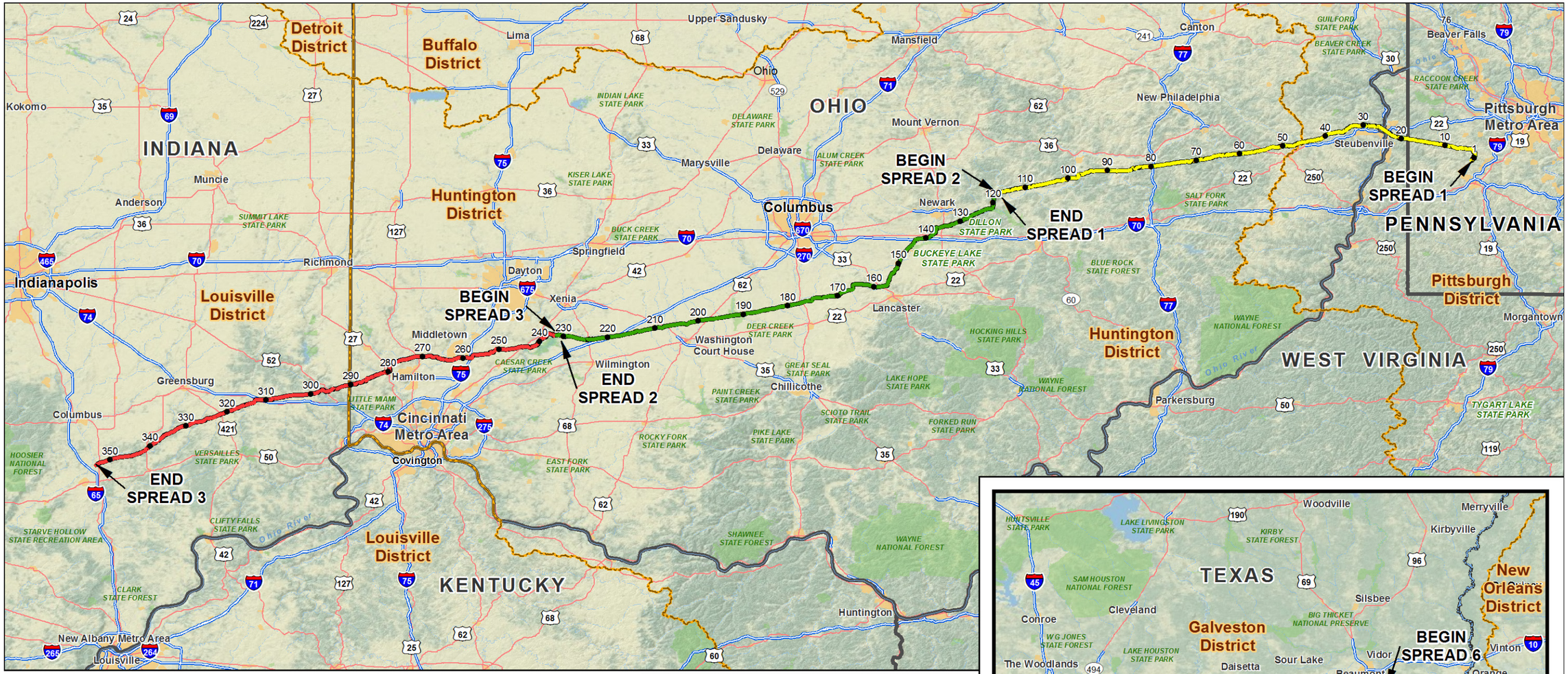
The ATEX Express route map (**Figure 1**) depicts the states crossed by new construction for the ATEX Express pipeline. Within Ohio, ATEX Express consists of approximately 265 miles of new pipeline (**Figure 2**). The typical project construction corridor will consist of a 90-foot-wide right-of-way, of which 50 feet will be maintained as the permanent, or operational easement, 40 feet will be temporary work space (TWS), and additional temporary workspace (ATWS) as required (e.g., roads, railroads, water body crossings) for construction purposes. The project overview maps in **Appendix A** show the details of the proposed pipeline route, including county boundaries, waters of the U.S. identified along the route, and right-of-way and workspaces for the proposed construction. Project overview maps are provided on both aerial photography and topographical maps.

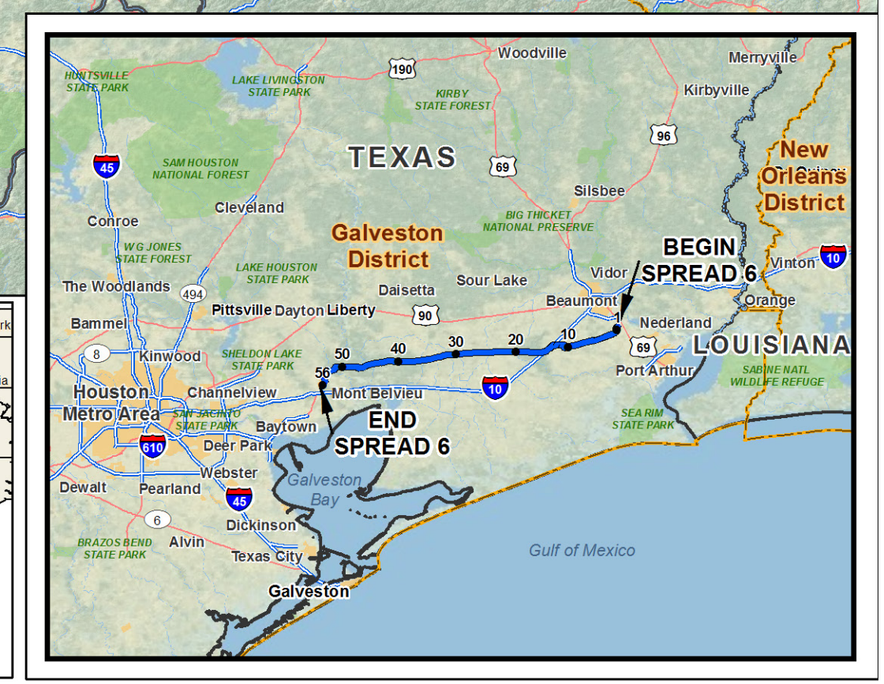
Enterprise proposes to commence construction of the ATEX Express Project in March 2013. The pipeline and its related facilities are expected to be in service by January 2014.

The following sections describe the proposed construction methods within waters of the U.S., anticipated impacts to waters of the U.S., and proposed mitigation measures to avoid, minimize, and offset the anticipated impacts of the ATEX Express Project.

3.1 Waters of the United States Crossings within Ohio

Construction of the ATEX Express pipeline will require the installation of an underground, steel pipeline beneath the substrates of waters of the U.S. Waters of the U.S. include features commonly referred to as waterbodies (i.e., streams, rivers, ponds, lakes, etc.) and wetlands. Enterprise conducted surveys in the project area from November 2011 through July 2012 in accordance with the methods described in the *Corps of Engineers Wetland Delineation Manual* (USACE 1987), the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (USACE 2010), *the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)* (USACE 2012), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (USACE 2010). These surveys along the proposed pipeline route identified **876** waters of the U.S. features within the state of Ohio. No waters of the U.S. were identified at proposed pipe storage yards, contractor storage yards, or other project locations (e.g., company field offices). Survey methods and findings of the waters of the U.S. investigations are described in the *Waters of the U.S. Assessment* (**Appendix C**). Based on the





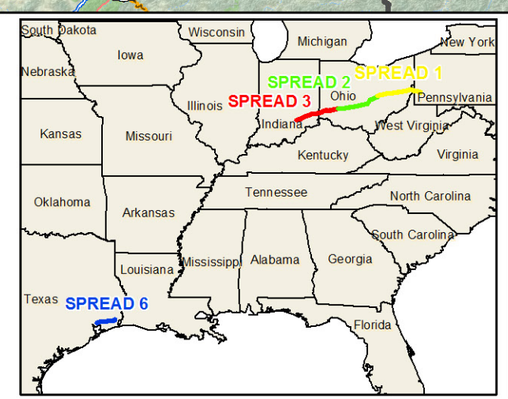


Figure 1
Enterprise Liquids Pipeline LLC
ATEX Express Project
Overview Map

- Milepost
- Proposed ELPC NGL 20" Pipeline
  - Spread 1
  - Spread 2
  - Spread 3
  - Spread 6
- U.S. Army Corps of Engineers District
- State Boundary
- Interstate
- State Highway
- National and State Parks/Forest
- Urban Areas

1:1,850,000

0 10 20 40
Miles

Figure 2
Project Location Map
Enterprise Liquids Pipeline LLC
ATEX Express Project
within Spread 1, 2 and 3, Ohio

findings in the assessment, waters of the U.S. were assigned a single and complete crossing number. Crossing numbers represent areas where the linear project's corridor intersects with a single water of the U.S. feature or multiple hydrologically associated waters occurring in close proximity. The ATEX pipeline will include **527** single and complete crossings of waters of the U.S. within Ohio. The crossing summary table can be found in **Appendix B**. Site-specific information (including maps, photographs and data sheets) for each wetland and waterbody feature crossed is located in **Appendix D.**

In order to initiate Section 401 Water Quality Certification from the Ohio Environmental Protection Agency (OEPA), Enterprise requested preliminary jurisdictional determinations from the USACE Pittsburgh and Huntington Districts based on the *Waters of the U.S. Assessment* for the crossings identified in **Appendix B**. Copies of these requests are located in **Appendix E**.

3.1.1 General Construction Procedures

Enterprise will construct the proposed pipeline to conform with or exceed the requirements of Title 49 CFR, Part 195, Transportation of Natural and Other Gas by Pipeline: Minimum Safety Standards; 18 CFR, 380.15, Siting and Maintenance Requirements; and other applicable federal and state regulations.

Construction of the proposed pipeline will incorporate conventional overland construction techniques for pipelines. In general, construction will involve staking the construction right-of-way, including flagging sensitive areas and wetland boundaries. The construction right-of-way will be cleared of vegetation and graded as necessary to provide a safe, level working area. Where feasible prior to, but immediately upon completion of any ground disturbing activities, temporary erosion and sedimentation control measures will be installed as appropriate to minimize impacts to nearby resources. The proposed pipeline trench will be excavated with a rotary ditching machine or track hoe depending on topography and/or soil type. The trench will be excavated to a sufficient depth to typically allow a minimum of 3 feet of cover over the pipeline, with a minimum of 5 feet of cover in waterbodies and agricultural lands. In non-saturated wetlands, the top 12 inches of soil will be segregated from the subsoil over the trench to preserve native plant seed bank. The pipe will be lowered into the trench, and the trench backfilled with the excavated native materials in the order in which they were removed. That is, the subsoil will be placed in the trench first and any segregated topsoil applied last. Following pipe installation, the construction area will be re-contoured to approximate, as closely as possible, pre-construction contours. Decompaction will be completed as necessary, permanent and temporary erosion and sediment control devices will be installed, and reseeding or other forms of revegetation will be conducted as required.

The general construction techniques will be modified to special pipeline construction techniques for crossings of waters of the U.S. Typical waterbody and wetland construction profile and plan view drawings are included as drawing numbers 35 and 36 in **Appendix F**. While a detailed description of wetland and waterbody construction methods is provided in Section 5.0 (response to question 10a), a brief overview is provided below.

3.1.2 Wetland Crossing Methods

Pipeline construction across wetlands will be similar to typical conventional upland construction procedures, with several modifications to reduce the potential for pipeline construction to affect wetland hydrology and soil structure. These modifications include: (1) clearing of vegetation to ground level but not the removal of root systems except for the pipeline ditch and where unsafe conditions would warrant; (2) use of wooden mats across the travel lane to minimize compaction; (3) removal and storage of the upper 12 inches of topsoil in unsaturated wetlands over the pipeline ditch to maintain existing seed banks; and (4) installation of trench plugs to avoid draining wetlands. Furthermore, in many areas where the ATEX Express pipeline will collocate with other utilities, approximately 25 feet of the proposed 50-foot-wide permanent easement will overlap the existing, adjacent utility easement, thereby reducing the new clearing impacts significantly (**Figure 3**). In other areas, the easements will abut one another but remain collocated (**Figure 4**). Wetland crossings will be completed in accordance with all applicable permit conditions.

3.1.3 Waterbody Crossing Methods

Waterbody crossings will be completed in accordance with applicable permit conditions. Enterprise will cross each waterbody along the pipeline route using one of four methods: conventional open cut, flume, dam and pump, or horizontal directional drill (HDD). Enterprise anticipates that the open-cut method will be used for all ephemeral and intermittent waterbodies and the majority of perennial waterbodies, unless precluded by engineering considerations or environmental sensitivities and associated regulatory requirements. For certain environmentally sensitive minor or intermediate waterbodies, the dry flume or dam and pump methods may be feasible. Waterbodies that are large or have especially sensitive resources associated with them will be crossed using the HDD method. A summary description of each waterbody crossing method is provided below.

Open-Cut Method

As noted above, the open-cut method would be used for all ephemeral and intermittent waterbodies and the majority of perennial waterbodies, unless precluded by engineering considerations or environmental sensitivities and associated regulatory requirements. Open-cut crossings involve trench excavation within the stream channel with no containment or redirection of water flow, should water be present. A backhoe, clam dredge, dragline, or similar equipment will be used for trench excavation. The following stipulations will apply to open-cut waterbody crossings:

- all spoil material excavated from waterbody crossings must be placed in the construction right-of-way at least 5 feet from the water's edge or in ATWS areas as depicted on attached drawings (**Appendices D and F**). Sediment barriers will be installed at spoil piles near waterbodies to prevent runoff from entering the waterbody.
- excavated trench material will generally be used as backfill unless federal or state permits specify otherwise
- any excess material will be removed from the waterbody and deposited in upland areas
- the stream bed will be returned to its pre-construction contours to the extent practicable

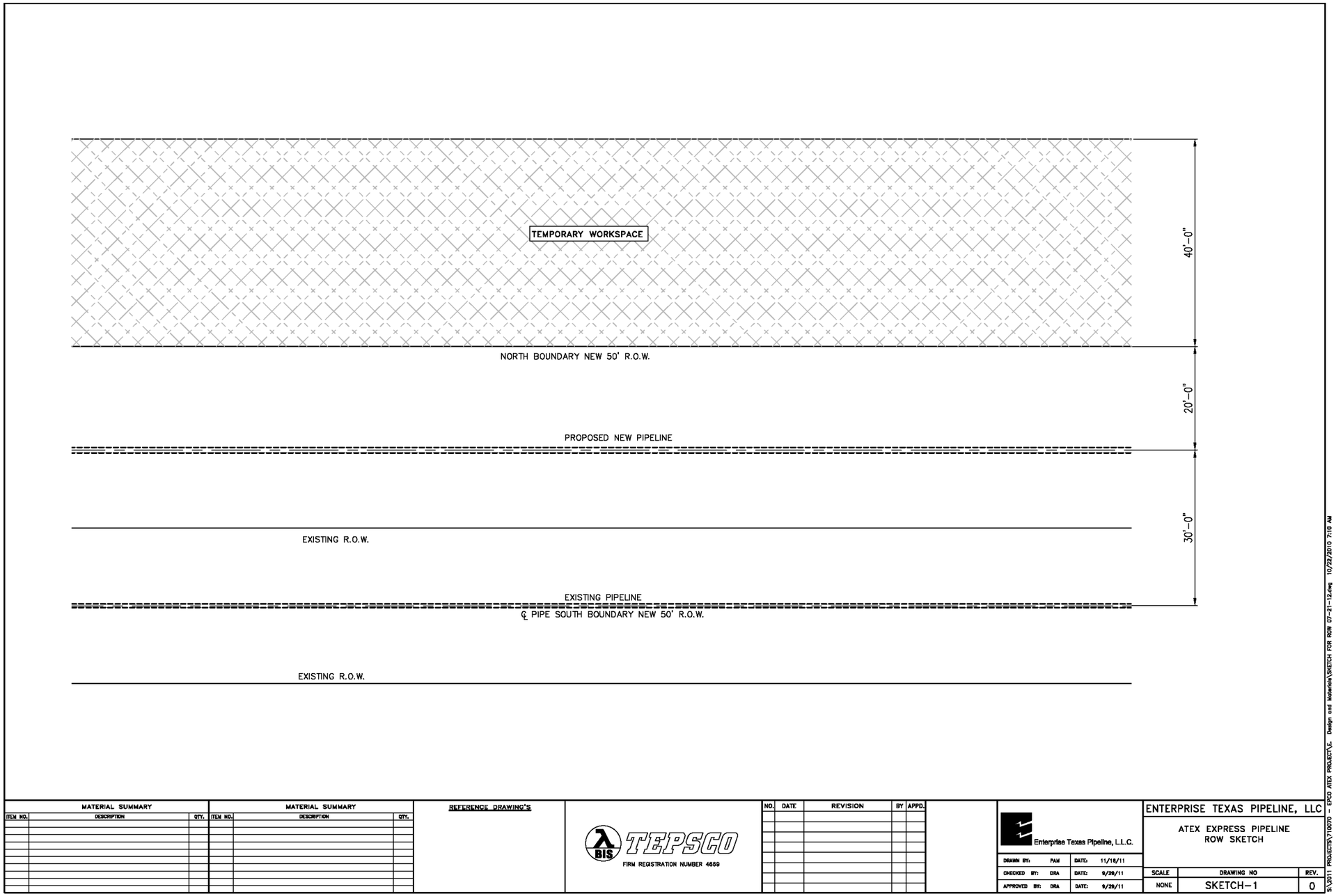


Figure 3 ATEX Express Project Collocated Right-of-Way Sketch

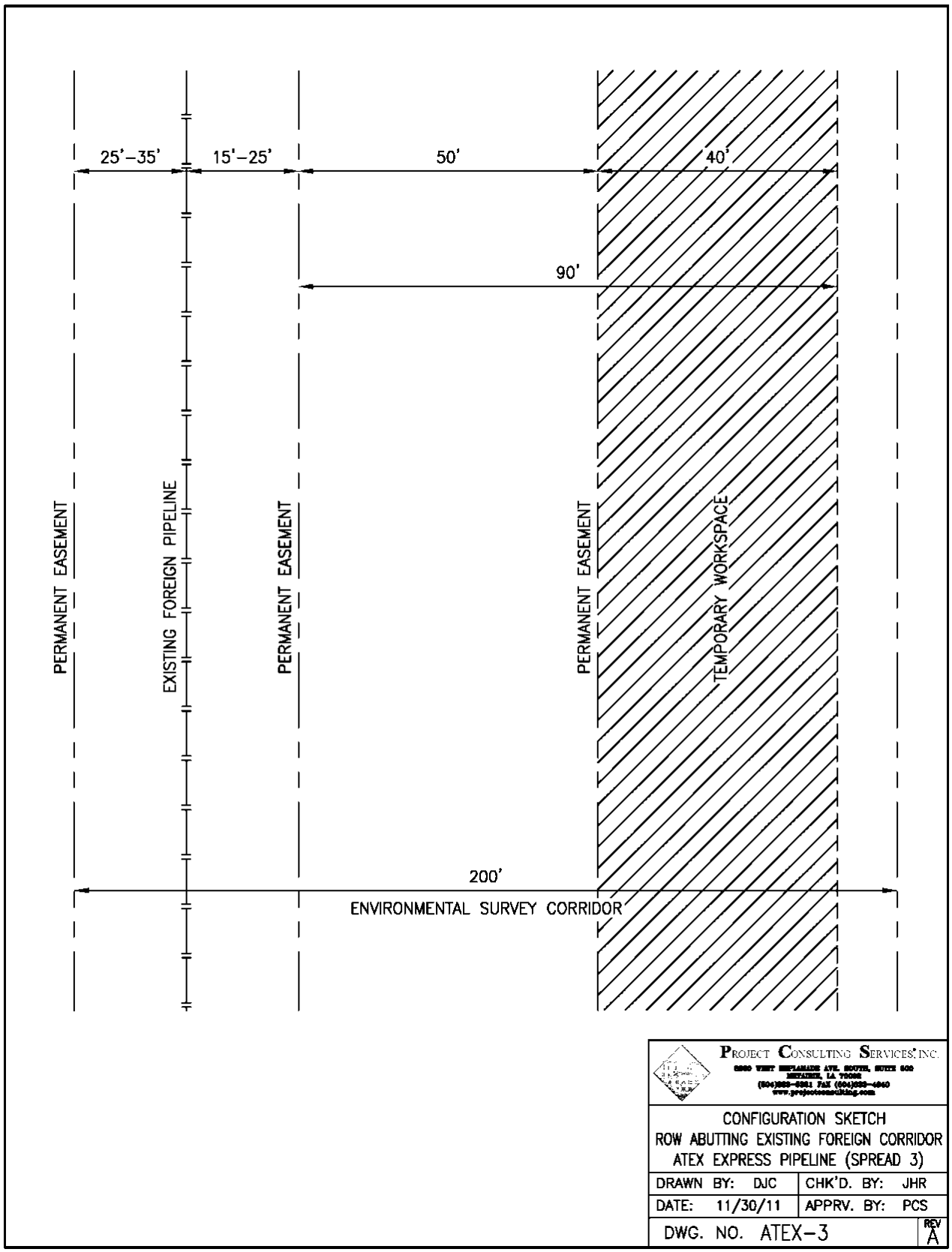


Figure 4 ATEX Express Project Abutting Right-of-Way Sketch.

Where feasible, pipe segments may be welded together and temporarily strung above and across the waterbody feature until the pipeline is installed. The pipeline will not obstruct the highest expected flow of the waterbody. Otherwise, the pipe will be welded together in the staging areas and then carried by equipment or floated into position at the crossing. The pipe used for waterbody crossings and in floodplains will be weighted to prevent flotation, as required. After the pipe is lowered into the trench, excavated material will be used as backfill, unless precluded by permit requirements. The pipeline will be installed to provide a minimum of 5 feet depth of cover under the stream provided rock is not encountered, in which case a minimum of 3 feet depth of cover will be provided. Adequate flow rates will be maintained to protect aquatic life, and to prevent the interruption of existing downstream uses. No alteration of the stream's capacity to carry its flow is anticipated as a result of pipeline construction. To the extent practicable, crossings will be perpendicular to water flow.

The construction procedures described above will ensure that potential impacts at waterbody crossings are minimized or avoided. To limit the time required for in-stream activities, the construction right-of-way will be prepared on either side of the waterbody prior to in-stream construction. Where banks are wooded, trees will be preserved where possible. In-stream construction activities (except for blasting and other rock-breaking measures) will generally be completed within 24 hours at minor waterbodies and within 48 hours at intermediate waterbodies. Temporary erosion and sedimentation control measures will be used as appropriate if the construction of a waterway crossing is appreciably delayed.

After the completion of construction, streambeds will be restored to their preconstruction contours. Excavated material, debris, piling, cofferdams, construction materials, and any other obstructions resulting from or used during construction of the pipeline will be removed upon completion of construction to prevent interference with normal water flow and use. Any excavated material not used as backfill will be disposed of in a manner and at locations satisfactory to the applicable jurisdictional agencies. Following grading and in accordance with permit requirements, stream banks will be restored to prevent subsequent erosion. Stream bank restoration will typically employ soft-armor (e.g., erosion control fabric, vegetation) to stabilize the disturbed banks. In some cases due to flows or other conditions, hard armor methods (e.g., rock rip rap) may be employed. Enterprise will notify the Ohio Environmental Protection Agency of these locations prior to installing the hard armor material. In any case, the stabilization materials will be installed at grade with adjacent, undisturbed banks.

Isolated or "Dry" Crossing Methods

There are two typical methods, *flume* and *dam and pump*, employed to install the pipeline at waterbody crossing locations that isolate the construction activities from the waterbody flow, both of which are both referred to as "dry crossing" methods.

Flume Method

The flume method of pipe installation may be used for certain environmentally sensitive minor or intermediate waterbodies where conditions make this method feasible. The flume method is an isolated crossing technique that maintains and isolates waterbody flows during in-stream construction activities. This method involves redirecting upstream flow through a flume pipe or pipes at the crossing. This allows for trenching, pipe installation, and restoration in relatively dry conditions, while maintaining continuous

downstream flow. Soil characteristics must be very stable and stream flow should be low to moderate for this method to be used successfully and safely. The flume pipe(s) must be long enough to accommodate a potential increase in trench width due to sloughing during excavation. Ideally, the flume pipe(s) will extend from the inlet side of the equipment crossing to the opposite side of the construction right-of-way. An effective seal will be created around the flume pipe(s) so that water will not penetrate and possibly wash out channelized dams on both the inlet and outlet ends. The flume will not be removed until the pipeline has been installed and the stream channel and banks have been restored and stabilized. In some situations due to site-specific limiting factors (e.g., steep slopes adjacent to waterbody), the flume must be temporarily removed to accommodate placement in the stream. In these situations, alternative methods, such as dam and pump, will be implemented to maintain downstream water flows until the flume(s) can be replaced.

Dam and Pump Method

The dam and pump method of pipe installation may also be used for certain environmentally sensitive minor or intermediate waterbodies where conditions make this method feasible. The dam and pump method is an isolated crossing technique that maintains and isolates waterbody flows during in-stream construction activities. Initially, a dam will be created upstream of the pipe crossing. The water will be transferred downstream to the downstream side of the work area using a pump(s) and hose(s). A dam may be placed downstream of the trench location to prevent backflow from entering the construction area. Under this method, if a sudden increase in stream flow occurs during the pipe installation, backup pumps will be employed to manage the increased flows. Once the waterbody crossing site is relatively dry, the trench will be excavated, and the pipe lowered into the trench. The crossing pipe will be tied into the upland construction and water flow restored.

Horizontal Directional Drill (HDD) Method

The HDD method will be used for waterbodies that are large or have especially sensitive resources associated with them. This method allows the installation of the pipe under the feature without directly impacting the waterbody or adjacent sensitive areas (e.g., riparian zones). HDD installation involves drilling a pilot hole along a predetermined path, enlarging the drilled hole to a finished diameter by reaming along the path, and pulling the prefabricated section of pipe into the finished hole. Drilling equipment, materials, and entrance/exit pits will be deployed only in approved workspace.

A primary advantage to using HDD is that it is a trenchless method that avoids disturbance of the streambed, stream banks, and upland areas in the immediate vicinity of the crossing. Hence, the need for re-contouring is avoided, as is the need to re-establish vegetation adjacent to these features. Additionally, routine maintenance of the right-of-way between the entry and exit points of the HDD is avoided. However, construction using the HDD method could result in an inadvertent release of drilling fluid (also referred to as a frac-out) directly or indirectly into the waterbody or wetland being crossed. Drilling fluid may leak through previously unidentified fractures in the material underlying the feature, in the area of the fluid pits or tanks, or along the path of the drill due to unfavorable ground conditions. Although drilling fluid consists of naturally occurring nontoxic materials, such as bentonite clay and water, the release of large quantities of drilling fluid into a waterbody could affect fisheries or other aquatic

organisms by settling and temporarily inundating the habitats used by these species. This impact would be less likely in waterbodies with fast moving water, which would disperse and dilute the drilling fluid.

Drilling mud containment and disposal will be in accordance with applicable permit requirements. In the event of an inadvertent release of drilling mud during drilling operations, Enterprise will implement its HDD Frac-Out Mitigation Plan (**Appendix G**).

Furthermore, due to existing land uses (e.g., roads, buildings, railroads, etc.), topography (e.g., steep slopes), or underlying geology (e.g., glacial outwash, cobble or boulders) the HDD method is not always feasible.

3.2 Construction-related Impacts

Because the ATEX Express Project is a linear project of considerable length, by nature construction and operational impacts to waters of the U.S. are unavoidable. Enterprise has made a concerted effort to minimize these impacts through the location, or siting, of the new pipeline segments adjacent to, or collocated with, existing utilities; minimizing the amount of tree clearing necessary to safely install the pipeline; overlapping existing utility easements in many areas thereby reducing the amount of new clearing that would be otherwise necessary; avoiding the placement of above ground facilities in wetlands; and, implementing various construction methods, such as dry crossings and HDD, to avoid in-stream impacts.

Though construction-related impacts are unavoidable to waters of U.S., they are temporary and not permanent. Underground pipeline installation temporarily disturbs the ground surface and associated vegetation while the pipe is being installed. Afterwards, depending upon the annual expected precipitation that influences revegetation rates, the disturbed areas will revegetate and function similarly as they did prior to the pipeline installation. **There will be no permanent loss of waters of the U.S. associated with the construction and operation of the ATEX Express Project.** In some instances, such as at forested wetland crossings, there will be both a temporary and long-term operational impact as described below.

Temporary work space areas, access roads, ATWS areas, pipe yards, and contractor yards will all either be allowed to revegetate or will be actively revegetated by Enterprise to pre-construction conditions. In non-forested areas, this is expected to be relatively short term (two to four years at most). In forested areas the recovery time is expected to be 20 years or more for the establishment of trees sizable enough to be considered a functional forest.

Along the 50-foot permanent, or operational, easement Enterprise will maintain the right-of-way in a non-forested condition throughout the life of the project. In areas that are not presently forested, revegetation will be allowed to proceed similar to that described above, with the exception being a periodic mowing of the operational easement right-of-way in accordance with company and USDOT requirements. Because Enterprise is overlapping existing utilities' currently maintained easements by up to 25 feet in many areas of the route, this reduces the overall amount of new clearing and maintenance by up to 50 percent that would otherwise be done.

In-stream impacts associated with construction in waterbodies will be temporary and are expected to be negligible within one year of the construction taking place.

Enterprise has identified the crossing locations and temporary and long-term impacts associated with the proposed construction. These are described below and in **Appendix B**.

3.2.1 Wetlands

Construction of the pipeline facilities will result in temporary impacts on wetlands, and operation of the facilities will result in long-term impacts on forested wetland habitat. There are 228 total wetlands within the project corridor in Ohio (**Table 2**). Of this total, 200 are emergent, 14 are scrub-shrub, and 14 are forested wetlands. Approximately 17.809 total acres of wetlands will be affected within the proposed pipeline construction right-of-way, including ATWS areas. Emergent wetlands account for 15.249 acres of the affected wetlands. Scrub-shrub wetlands account for 1.523 acres of the affected wetlands, and forested wetlands account for 1.037 acres. When only the area of the permanent easement is considered, the total area affected is 10.164 acres. Of that total, 8.693 acres is emergent wetlands, 0.973 acre is scrub-shrub, and 0.498 acre is forested wetlands. Trenching will involve the temporary excavation of 6,366 cubic yards of native soil for all wetlands. Of that total, 5,441 cubic yards is within emergent wetlands, 600.6 cubic yards within scrub-shrub wetlands, and 324.5 cubic yards within forested wetlands. **In all cases, there will be no net loss of wetlands associated with the construction and operation of the ATEX Express Project.**

Table 2 ATEX Express Project Wetland Impacts in Ohio

Wetland Type	Number of Features	Area of Impact (acres)			Excavated Volume (yd^3)
		Permanent Easement	Temporary Easement	Total	
Emergent	200	8.693	6.557	15.249	5,441.0
Scrub-Shrub	14	0.973	0.550	1.523	600.6
Forested	14	0.498	0.539	1.037	324.5
Totals	**228**	**10.164**	**7.646**	**17.809**	**6,366.1**

All wetlands were categorized using the Ohio Rapid Assessment Method (ORAM). The completed 10-page ORAM forms for each wetland can be found in **Appendix D**: Waters of the U.S. Maps, Photographs, and Data Sheets.

Additionally, 178 wetlands have been preliminarily identified as jurisdictional and 50 as isolated wetlands (**Table 3**). The U.S. Army Corps of Engineers (USACE) will make the final determination regarding wetland jurisdictional status. A copy of Enterprise's request for preliminary jurisdictional determination from USACE Pittsburgh and Huntington Districts can be located in **Appendix E**.

Table 3 ATEX Express Project Jurisdictional and Isolated Wetland Breakdown

Wetland Type		Number of Features	Area of Impact (acres)			Excavated Volume (yd^3)
			Permanent Easement	Temporary Easement	Total	
Jurisdictional Wetlands	Emergent	157	7.891	5.889	13.781	4,910.9
	Scrub-shrub	13	0.733	0.394	1.128	441.0
	Forested	8	0.235	0.228	0.463	178.0
	Total Jurisdictional	**178**	**8.859**	**6.512**	**15.371**	**5,529.9**
Isolated Wetlands	Emergent	43	0.802	0.667	1.469	530.1
	Scrub-shrub	1	0.240	0.156	0.396	159.6
	Forested	6	0.263	0.311	0.574	146.5
	Total Isolated	**50**	**1.304**	**1.134**	**2.438**	**836.2**
Total		**228**	**10.163**	**7.646**	**17.809**	**6,366.1**

Temporary impacts will occur outside of the maintained portions of the permanent easement where wetlands will be restored and allowed to return to pre-construction conditions to the extent practicable. Although no wetlands will be permanently lost as a result of pipeline construction, permanent conversion of forested wetland habitat to non-forested conditions will occur over the maintained portions of the permanent easement.

3.2.2 Waterbodies

Construction related impacts on waterbodies crossed by the project will be temporary. Enterprise will attempt to complete all in-stream work within 24 hours for minor waterbody crossings and within 48 hours for intermediate waterbody crossings. For dry crossing methods, streambed and bank stabilization will be completed before returning flow to the waterbody channel. Waterbody banks will be returned to preconstruction contours or to a stable angle of repose. All materials and equipment, including temporary bridges, will be removed following completion of construction.

Operational impacts on waterbodies will be limited to the maintenance of a non-forested corridor at the crossing location of up to 50 feet, if there was a forested riparian zone prior to construction at this location. Otherwise, the area will be allowed to revegetate to pre-construction conditions. At HDD crossings there will be no routine maintenance done between the entry and exit points of the HDD.

Table 4 summarizes the projected impacts of construction of the ATEX pipeline to waterbodies of the U.S. Of the 648 waterbodies affected by the project in Ohio, 646 are streams (including 309 perennial, 210 intermittent, and 127 ephemeral) and 2 are ponds**.** Trenching will involve the temporary excavation of 5,279.2 cubic yards of native soil in streams. The total crossing length at the centerline is approximately 5,107.5 feet. Stream crossing length within the entire construction corridor is 76,302.6 feet.

Table 4 ATEX Express Project Waterbody Impacts in Ohio

Waterbody Type	Number of Features	Crossing Length (feet)		Area of Impact (acres)			Excavated Volume (yd^3)
		Within Construction Corridor	At Centerline	Permanent Easement	Temporary Easement	Total	
Perennial	309	36,072.7	3,601.9	4.242	3.926	8.168	3,735.3
Intermittent	210	25,059.3	898.2	1.055	0.951	2.006	931.4
Ephemeral	127	15,170.6	548.6	0.572	0.516	1.088	568.9
Ponds	2	n/a	58.8	0.049	0.000	0.049	43.6
Totals	**648**	**76,302.6**	**5,107.5**	**5.918**	**5.393**	**11.311**	**5,279.2**

3.3 Wetland and Waterbody Mitigation Measures

Enterprise attempted to avoid and minimize impacts to waters of the U.S. during the design, construction, and post-construction planning phases of the ATEX Express pipeline. Examples of these measures are provided below.

3.3.1 Mitigation Measures Implemented During Design

During the design phase, the following mitigation measures were considered and implemented:

- collocating with existing utility corridors to minimize clearing of the trees and additional fragmentation in forested areas
- overlapping the ATEX Express operational easement in collocated areas with that of existing utility easements by up to 25 feet, thereby reducing new operational impacts to forested areas by up to 50 percent over non-collocated areas
- attempting to design the crossings as close to perpendicular as possible to the feature orientation while maintaining the collocation with existing easements
- placing ATWS areas in upland areas outside of the feature boundary to minimize overall crossing impacts
- avoiding placement of aboveground facilities or other permanent fills in waters of the U.S. features and the 100 year floodplain
- minimizing the width of the permanent maintenance easement where the pipeline is collocated

3.3.2 Mitigation Measures Implemented During Construction

During pipeline construction, the following mitigation measures will be used to minimize impacts to wetlands and waterbodies:

- restoring and stabilizing efforts of the bed and banks will begin immediately following installation of the pipeline

- replanting the disturbed areas as soon as practical depending on season with a stabilization seed mix recommended by either a landowner or land managing agency that will facilitate the native plant revegetation at the site
- using temporary crossing bridges at waterbody features
- operating equipment on wooden mats in wetland areas
- installing and maintaining sediment barriers to prevent silt-laden water from entering wetland and waterbodies
- using HDD at selected crossings
- restoring original contours and revegetating disturbed areas
- completing all in-stream work within 24 hours for minor waterbody crossings and within 48 hours for intermediate waterbody crossings, and minimizing duration of construction-related disturbance within wetlands
- prohibiting storage of hazardous materials, chemicals, fuels, and lubricating oils within a wetland or within 100 feet of a wetland or waterbody boundary
- requiring that native vegetation in the right-of-way within wetlands be cut at ground level, leaving existing root systems in place to promote regrowth
- segregating the uppermost 12 inches of wetland topsoil in non-saturated wetlands
- limiting the operation of construction equipment within wetlands to that equipment essential for clearing, excavation, pipe installation, backfilling, and restoration activities; and providing travel lanes (timber mats if saturated or prone to rutting) for equipment and vehicles not involved with the installation of the pipeline in the wetland

In addition, Enterprise requires each construction subcontractor to provide their individual Spill Prevention, Control, and Countermeasure (SPCC) Plans. The SPCC Plan describes preventive measures such as personnel training, equipment inspection, and refueling procedures to reduce the likelihood of spills, as well as mitigative measures, such as containment and cleanup, to minimize potential impacts should a spill occur.

To mitigate construction-related impacts on wetlands and waterbodies, Enterprise will implement the above listed mitigation measures, and will conduct on-site restoration of all disturbed areas following construction. Proposed offsite mitigation measures are described further in the ATEX Express Conceptual Mitigation Plan (**Appendix H**).

3.3.3 Mitigation Measures Implemented Post-Construction

All wetlands affected by construction will be restored to a functional wetland system. **There will be no permanent loss of wetlands associated with the ATEX Express Project**.

Emergent Wetlands
Following construction, emergent wetlands within the temporary workspace and permanent easement will be seeded or otherwise revegetated in accordance to the ATEX Express Wetland Revegetation Plan **(Appendix J)**. These emergent wetlands will be allowed to return to their pre-construction conditions.

Scrub - Shrub Wetlands
Following construction, scrub-shrub wetlands within the temporary workspace and permanent easement will be seeded or otherwise revegetated in accordance to the ATEX Express Wetland Revegetation Plan **(Appendix J)**. These wetlands will be allowed to return to their pre-construction conditions.

Forested Wetlands
Following construction in forested wetlands, the temporary workspace and a portion of the permanent easement will be seeded, replanted with bare-root seedling trees or otherwise revegetated and allowed to return to preconstruction conditions **(Appendix J)**. Depending upon whether the pipeline is collocated with other existing utilities that maintain a non-forested easement, Enterprise will maintain the 50-foot wide permanent easement in forested wetlands in an herbaceous state, resulting in conversion of some forested wetland habitat to emergent or scrub-shrub wetland habitat. Otherwise, in many areas Enterprise will overlap existing easements by up to 25 feet and thus reduce its new forested wetland impact by up to 50 percent. Enterprise will perform compensatory mitigation for these areas as described in the Conceptual Mitigation Plan (**Appendix H**).

Waterbodies
Following pipeline construction and restoration of the streambed and banks, non-forested riparian vegetation will be restored at streams where riparian vegetation was present prior to construction. In forested areas, a corridor up to 50 feet wide will be maintained in a non-forested condition to facilitate USDOT aerial observation requirements. All areas disturbed by construction will be revegetated. For streams crossed by the HDD method, no vegetation clearing or vegetation maintenance will be conducted over the drill path.

4.0 ALTERNATIVES

Enterprise believes that its proposed project is the best alternative to meet the project need, while avoiding a variety of sensitive environmental features and remaining technically feasible and economically viable. Enterprise has evaluated numerous project alternatives including the no action alternative, system alternatives, and route alternatives/route variations. A summary of these alternatives is provided below.

4.1 No Action Alternative

Under the No Action Alternative the ATEX Express Project would not be constructed. The No Action Alternative would preclude the significant benefits that would result from construction of the ATEX Express Project. Supplies of natural gas liquids in the Marcellus and Utica Shale-producing region currently are effectively trapped with no cost-effective infrastructure to transport these supplies to processing and storage facilities located in the southeastern U.S. Construction of the ATEX Express Project would provide the necessary pipeline infrastructure by providing a direct link between Marcellus and Utica Shale natural gas liquid supplies and the existing infrastructure to process or store these products.

Consequences of the No Action Alternative could include the curtailment of production and delivery from existing wells located in the western Appalachian Mountain basin. The No Action Alternative would result in the loss of significant numbers of jobs, both short and long term, associated with the project and across the regional oil and gas industry, and even reaching into nationwide and worldwide manufacturing sectors relying on oil and gas commodities. The No Action Alternative could result in the need to construct new processing and storage facilities in areas other than southeast Texas where existing facilities currently reside. This would result in further delays of developing the natural gas liquid resources due to extended time frames required for the permitting and construction of these new facilities. It would also result in additional air emissions from these new facilities that do not currently exist.

4.2 System Alternatives

System alternatives involve the use of other existing or modified pipeline systems that could achieve the same or similar results to the proposed action. Currently, there is not an alternative, large-volume, high-pressure pipeline system to transport natural gas liquids to existing processing and storage facilities in southeast Texas. The ATEX Express Project will however, utilize existing pipeline infrastructure for more than 790 miles of the overall 1,200 mile length.

4.3 Route Alternatives/Route Variations

During the development of the base pipeline route (Base Route), Enterprise followed the recommendations of many regulatory agencies that new pipelines be sited, to the extent practicable, adjacent to existing rights-of-way (i.e., collocated) to minimize environmental impacts. Common beginning and ending points used in determining the base pipeline route include the delivery point into the proposed ATEX Express Project pipeline at the existing MarkWest fractionation plant near Houston, Pennsylvania, and the interconnect location with existing Enterprise infrastructure in Jackson County, Indiana. Based on a desktop review of existing pipeline corridors between these two points, Enterprise identified the existing Panhandle Eastern Pipeline, the Texas Eastern Transmission Company (TETCO) pipeline, and the Enterprise Company pipeline corridors as potential major segments of its Base Route between western Pennsylvania and central Indiana. These existing pipeline systems formed the Base Route for the ATEX Express Project pipeline routing.

Following the identification of the Base Route, Enterprise evaluated potential routing constraints (e.g., public lands, environmentally sensitive or protected areas, congested residential or commercial areas) using publicly available information. The evaluation involved review of National Wetland Inventory (NWI) maps, National Land Cover Database (NLCD) information, and aerial photography taken in 2006. In addition, Enterprise completed field investigations to identify obvious siting constraints (e.g., commercial and residential development) and then focused routing efforts to identify existing utility corridors that could be utilized to minimize the creation of new right-of-way.

In many areas, where collocated with existing pipeline utility corridors, Enterprise has been able to further reduce its impact by overlapping the existing utility easements by 25 feet. As such, the typical, new 90-foot construction corridor is effectively reduced and can be considered to be only 65 feet wide in many collocated areas. In Ohio, the ATEX Express pipeline is collocated along 70% of the route.

In Ohio, multiple major and minor route variations were evaluated and incorporated into what is now the proposed route (**Figure 5** and **Table 5**). An analysis of the base route compared with the proposed route indicates that careful planning has resulted in the crossing of fewer individual waterbody and wetland systems.

5.0 REPORT ADDRESSING THE REQUIREMENTS OF THE ANTIDEGRADATION RULE [RESPONSES TO BLOCK 10]

10a) Provide a detailed description of any construction work, fill, or other structures to occur or to be placed in or near the surface water. Identify all substances to be discharged, including the cubic yardage of dredged or fill material to be discharged to the surface water.

Construction of the ATEX Express Project will cross 228 wetlands (**Table 6**). The majority of the wetlands (200) that will be crossed are emergent wetlands. Of the remainder, 14 are scrub-shrub wetlands and 14 are forested wetlands. The total wetland excavated volume of native soil is 6,366.1 cubic yards. Additionally, 178 wetlands have been preliminarily identified as jurisdictional and 50 as isolated wetlands. The U.S. Army Corps of Engineers (USACE) will make the final determination regarding wetland jurisdictional status. A copy of Enterprise's request for preliminary jurisdictional determination from USACE Pittsburgh and Huntington Districts is in **Appendix E**. Construction of the ATEX Express Project will also involve the crossing of a total of 648 waterbodies in Ohio, including 309 perennial streams, 210 intermittent streams, 127 ephemeral streams, and 2 ponds. The total waterbody excavated volume of native soil will be 5,279.2 cubic yards. The Crossing Summary Table in **Appendix B** lists the waterbodies and wetlands that will be crossed by the ATEX Express Project.

The Preferred Alternative

The preferred alternative for the ATEX Express Project includes the pipeline route depicted on **Figure 1** and the topographic and aerial maps in **Appendix A**, and is identical to the route followed by the Minimal-Degradation and Non-Degradation Alternatives. The major differences between these three alternatives are the construction methods to be implemented and the right-of-way configuration.

- Milepost
- Original Base Route
- Proposed Route
- State Boundary
- County Boundary
- Interstate
- US Highway
- National and State Parks/Forest
- Urban Areas

PRIVILEGED AND CONFIDENTIAL

N W E S

0 20 40 80
Miles

Figure 5
Ohio Reroutes
Spreads 1, 2, and 3
Enterprise Liquids Pipeline LLC
ATEX Express Project

Enterprise Products

DATE: 9/18/2012

Table 5 ATEX Express Project Route Alternative and Variations Adopted in Ohio

County Alternative Name	Begin Milepost	Length (miles)	Reason for Alternative
Jefferson County Reroutes			
ATEX_S1_RCR_0006	26.7	8.84	Reroute avoids constructing new pipeline through a housing development, playgrounds, backyards and city streets. No significant change to waters impacts.
ATEX_S1_RCR_0009	39.0	9.92	Constructability issues. Reroute avoids three waterbodies.
ATEX_S1_RCR_0019	34.9	4.29	Constructability and terrain issues. This reroute has three fewer potential wetland crossings and one additional stream crossing.
Harrison County Reroutes			
ATEX_S1_RCR_0014	57.6	0.95	Constructability issues. Reroute avoids one spring.
ATEX_S1_RCR_0035	65.0	1.36	Landowner access denial. Reroute avoids one potential wetland.
ATEX_S1_RCR_0038	62.3	0.43	Constructability issues. Reroute avoids one additional stream crossing.
Tuscarawas County Reroutes			
ATEX_S1_RCR_0005	74.9	2.72	Constructability issues. Reroute avoids one potential wetland and one stream crossing.
ATEX_S1_RCR_0011	79.2	4.02	Rerouted to avoid a creek bed. Reroute avoids one creek.
ATEX_S1_RCR_0032	67.9	1.51	Reroute avoids rough terrain and ravines and avoids one potential wetland.
ATEX_S1_RCR_0033	71.7	1.14	Reroute avoids difficult access, several rock shelters, and a cave (i.e. potential Indiana bat habitat).
Coshocton County Reroutes			
ATEX_S1_RCR_0004	86.3	9.96	Reroute avoids multiple mitigated wetland crossings through the Simco Peabody Mine in Conesville, Ohio.
ATEX_S1_RCR_0027	99.0	1.57	Constructability issues. Reroute impacts less forested area than the original alignment.
ATEX_S1_RCR_0017	105.9	7.97	Constructability issues.
Licking County Reroutes			
ATEX_S2_RCR_0023	115.3	25.09	This group of Licking County reroutes is primarily the result of working around hard denials from private landowners and the City of Granville. Additional landowner and construction logistical issues facilitated in the remainder of the reroutes within this grouping. This alternative reroute resulted in avoiding at least 45 stream crossings.
ATEX_S2_RCR_0027		1.36	
ATEX_S2_RCR_0029	127.76	0.55	
ATEX_S2_RCR_0030	115.42	0.95	
ATEX_S2_RCR_0031	117.7	1.01	
ATEX_S2_RCR_0033	131.2	1.29	
ATEX_S2_RCR_0036	134.42	1.95	
ATEX_S2_RCR_0037	127.43	0.38	
ATEX_S2_RCR_0039	121.76	0.72	
ATEX_S2_RCR_0041	126.91	0.66	
ATEX_S2_RCR_0042	117.56	0.83	
ATEX_S2_RCR_0045	118.57	0.35	
ATEX_S2_RCR_0046	128.44	0.31	
ATEX_S2_RCR_0047	126.78	0.34	
ATEX_S2_RCR_0050	121.95	1.12	
Fairfield County Reroutes			
ATEX_S2_RCR_0009	154.34	0.32	Alternative route avoids impacts to many houses that align the existing pipeline easement on the south eastern side. This reroute avoids impacting one small pond.
ATEX_S2_RCR_0013	153.8	0.13	Alternative route avoids impacting a house that is directly adjacent to the existing easement. No significant change to waters impacts.

Table 5 ATEX Express Project Route Alternative and Variations Adopted in Ohio

County Alternative Name	Begin Milepost	Length (miles)	Reason for Alternative
ATEX_S2_RCR_0007	158.07	7.67	These three alternative routes combine to replace the original route which passed through a densely populated suburban area and included up to five additional pipelines at points. Additionally there is a property listed on the Ohio Cemetery Registry to have cultural and historical features. These reroutes avoid cultural resources and five stream crossings.
ATEX_S2_RCR_0034	159.87	0.72	
ATEX_S2_RCR_0040	161.04	0.94	
ATEX_S2_RCR_0043	151.5	0.37	Alternative route avoids a foreclosure property and an uncooperative landowner. This reroute avoids one potential wetland.
ATEX_S2_RCR_0049	150.85	0.34	
ATEX_S2_RCR_0048	163.45	1.73	This proposed reroute is being implemented at the land owner's request. This reroute avoids two stream crossings.
Pickaway County Reroutes			
ATEX_S2_RCR_0008	164.9	4.16	Alternative route will bypass four denied tracts as well as avoid one house and three driveway crossings one of which is paved. No significant change to waters impacts.
ATEX_S2_RCR_0024	184.08	0.85	Alternative route avoids the front yard of a house, as well as a very bad angle for the road crossing that would initiate a high risk bore of Township HWY 192. No significant change to waters impacts.
Fayette County Reroutes			
ATEX_S2_RCR_0028	201.53	1.74	Alternative route avoids a farm. No significant change to waters impacts..
Clinton County Reroute			
ATEX_S2_RCR_0015	221.7	1.25	Alternative route avoids an uncooperative landowner. This alternative route will avoid impacting three stream crossings.
ATEX_S2_RCR_0010	223	12.4	Alternative route avoids Caesar Creek Lake and most of Caesar Creek State Park. Additionally this reroute will be collocated with another pipeline for the entire 12.4 miles minimizing the construction corridor impacts.
ATEX_S2_RCR_0025	233.15	1.07	Alternative route avoids a farm. No significant change to waters impacts.
ATEX_S2_RCR_0044	231.24	0.36	Alternative route avoids the front yard of a private residence. This alternative route will avoid impacts to one potential wetland.
Warren County Reroutes			
OH-WA-0001.00100FCR	232	3.38	Alternative route avoids uncooperative landowners, an orchard, and a horse ranch. Route also avoids several streams and potential wetlands.
OH-WA-0001.02300FCR	233	.4	Alternative route avoids difficult terrain and one pond.
OH-WA-0001.03000FCR	233	0.1	Alternative route avoids a home. No significant change to waters impacts.
OH-WA-0035.00000FCR	239	1.27	Alternative route avoids several homes; avoids impacts to two streams and one potential wetland; adds impacts to five streams and one wetland.
OH-WA-0080.00800FCR	248	1.5	Alternative route to avoid several homes. No significant change to waters impacts.
OH-WA-0122.00300FCR	254	0.6	Alternative route to avoid foreign pipeline compressor station. No significant change to waters impacts.
OH-WA-0134.00000FCR	256	0.5	Alternative route avoids a parking lot and large trees. No significant change to waters impacts.

Table 5 ATEX Express Project Route Alternative and Variations Adopted in Ohio

County Alternative Name	Begin Milepost	Length (miles)	Reason for Alternative
Butler County Reroutes			
OH-BU-0001.00700Shift	258	0.72	Alternative route avoids a cell tower. No significant change to waters impacts.
OH-BU-0019.00100FCR	259	2.72	Alternative route minimizes impacts to residential lots in a subdivision. Route avoids impacts to two streams; adds impacts to eight streams.
OH-BU-0019.03600FCR	262	3.38	Alternative route shortens pipeline and avoids a landfill, ball field, a cemetery, and others. Avoids impacts to five streams and one potential wetland. Adds impacts to three streams and one small wetland.
OH-BU-0081.01800FCR	270	0.4	Alternative route to avoid transmission lines. No significant change to waters impacts.
OH-BU-0081.02100FCR	270	0.2	Alternative route to avoid homes and elongated transmission line crossing. No significant change to waters impacts.
OH-BU-0081.02300FCR	271	0.6	Alternative route avoids tree impacts and two potential wetlands.
OH-BU-0185.00000FCR	278	1.27	Alternative route avoids structures and impacts to residential lots. No significant change to waters impacts.
OH-BU-0224.00000FCR-R1	281	0.24	Alternative route avoids impacts to one pond.
OH-BU-0226.00000FCR	283	1.87	Alternative route avoids impacts to structures and residential lots.
OH-BU-0255.00000FCR	286	0.9	Alternative route avoids impacts to homes and residential lots. Route avoids impacts to one pond; adds impacts to one stream.
OH-BU-0268.00000FCR	288	0.37	Alternative route avoids impacts to homes and a pond. Route avoids one pond; adds impacts to one stream.

Table 6 Summary of ATEX Express Construction Impacts by Feature Type

Feature Type	Number of Features	Crossing Length (feet)		Area of Impact (acres)			Excavated Volume (yd^3)
		Within Construction Corridor	At Centerline	Permanent Easement	Temporary Easement	Total	
WETLANDS							
Emergent	200	n/a	7,345.4	8.693	6.557	15.249	5,441.0
Scrub-Shrub	14	n/a	810.8	0.973	0.550	1.523	600.6
Forested	14	n/a	348.1	0.498	0.539	1.037	324.5
Wetland Total	**228**	**n/a**	**8,594.2**	**10.164**	**7.646**	**17.809**	**6,366.1**
WATERBODIES							
Perennial	309	36,072.7	3,601.9	4.242	3.926	8.168	3,735.3
Intermittent	210	25,059.3	898.2	1.055	0.951	2.006	931.4
Ephemeral	127	15,170.6	548.6	0.572	0.516	1.088	568.9
Pond	2	n/a	58.8	0.049	0.000	0.049	43.6
Waterbody Total	**648**	**76,302.6**	**5,107.5**	**5.918**	**5.393**	**11.311**	**5,279.2**
Feature Total	**876**		**13,701.7**	**16.082**	**13.039**	**29.120**	**11,645.3**

The preferred alternative for the ATEX Express Project involves crossing all wetlands and waterbodies using the open-cut trenching technique and a typical 90-foot construction corridor for wetlands and waterbodies. A brief description of the various types of open-cut crossing strategies is provided below.

- Open-Cut Wet Crossing Method at Waterbody Crossings – The open-cut construction method involves trench excavation, pipeline installation, and backfilling in a waterbody without controlling or diverting stream flow (i.e., the stream would flow through the work area throughout the construction period). With the open-cut method, the trench would be excavated across the stream using track hoes or draglines working within the waterbody, on equipment bridges, and/or from the stream banks. For smaller streams, the trench spoil would be typically stored in an upland area adjacent to the stream. For larger waterbodies where excavated spoil cannot be readily stored in an upland area, the excavated trench material would be stored within the stream on the downstream side of the trench to reduce additional handling or relaying of the spoil and minimize the duration of in-stream activities.

  The spoil would be stored in piles with breaks in between to allow for water passage. As necessary and to reduce turbidity during construction, ATEX Express may use downstream turbidity curtains and/or flocculent materials.

  Throughout in-stream excavation operations, typically a trench plug (consisting of compacted or unexcavated native soil) would be left in place between the upland trench and the waterbody to prevent the migration of stream water into upland portions of the pipeline trench and keep any accumulated trench water out of the waterbody. The trench plugs would be left in place until the pipe is ready for installation. Once trench excavation across the entire waterbody is complete, a prefabricated section of pipe would be promptly lowered into the trench. The trench would then be backfilled with the previously excavated material, and the pipe section welded to the previously installed mainline pipeline. **Figure 6** depicts the typical pipe trench detail for waterbody crossings. Following pipe installation and backfilling, the stream banks and channel would be reestablished and stabilized. Stream banks will be restored to their former elevations and grades or to a stable angle of repose. Erosion and sediment control measures would be installed across the right-of-way to reduce stream bank and upland erosion and sediment transport into the waterbody.

- Open-Cut Method at Wetland Crossings – Pipeline construction across wetlands would typically be completed using a 90-foot-wide construction right-of-way and would be similar to typical conventional upland cross-country construction procedures. Where the ATEX Express easements abut adjacent utility corridor easements, clearing of the entire 90-foot-wide construction right-of-way would be done. **Figure 7** depicts the typical construction right-of-way for wetland crossings.

Temporary extra workspaces may be required on both sides of wetlands to stage construction, fabricate the pipeline, and store materials. Temporary extra workspaces for wetland crossings would be located in upland areas a minimum of 5 feet from the wetland edge.

During trenching operations, native materials will be excavated within waterbodies and wetlands, temporarily stored within the construction right-of-way, and then be backfilled into the trench. In total, approximately 5,279.2 cubic yards of native materials will be excavated within waterbodies, and

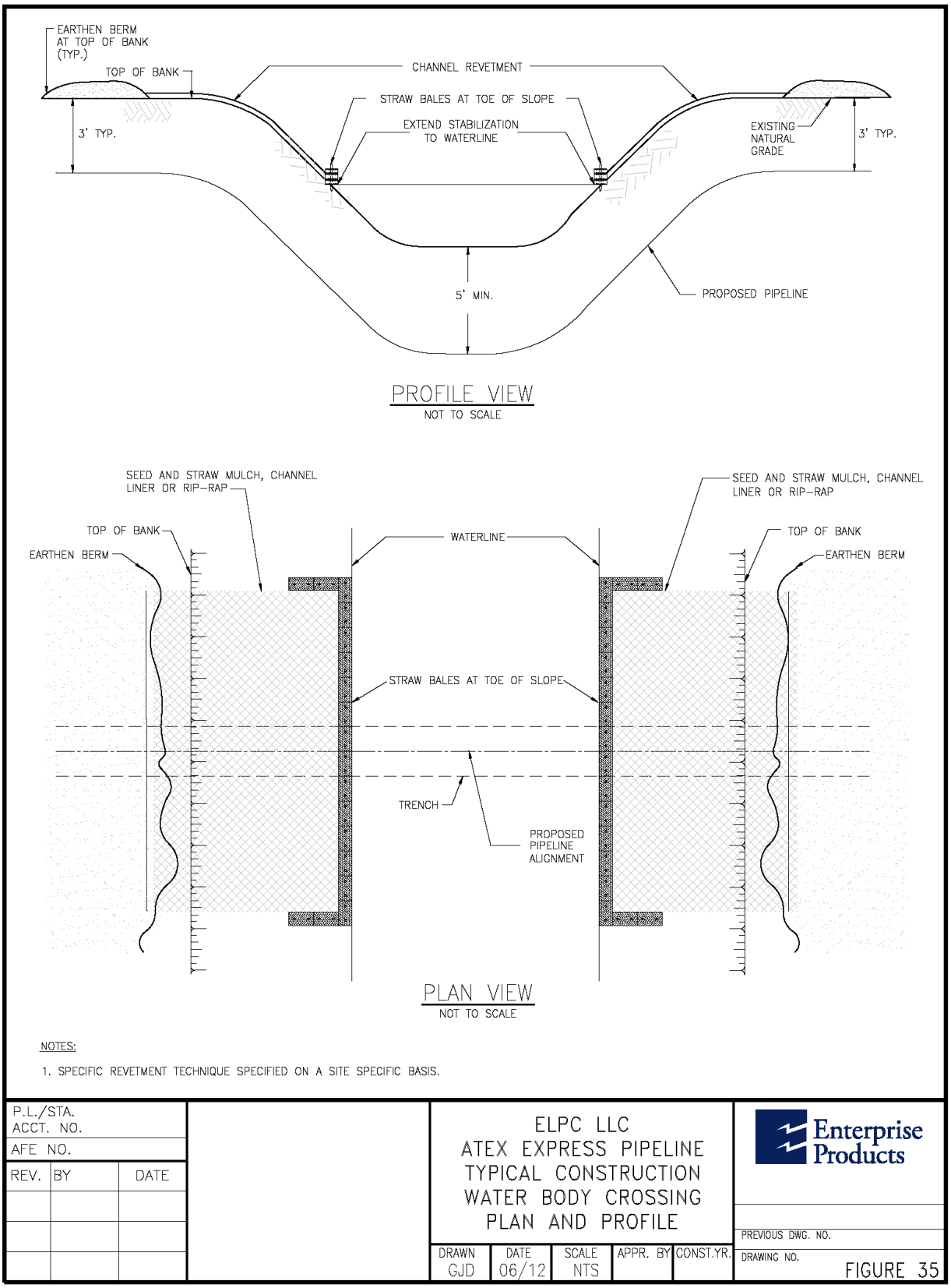
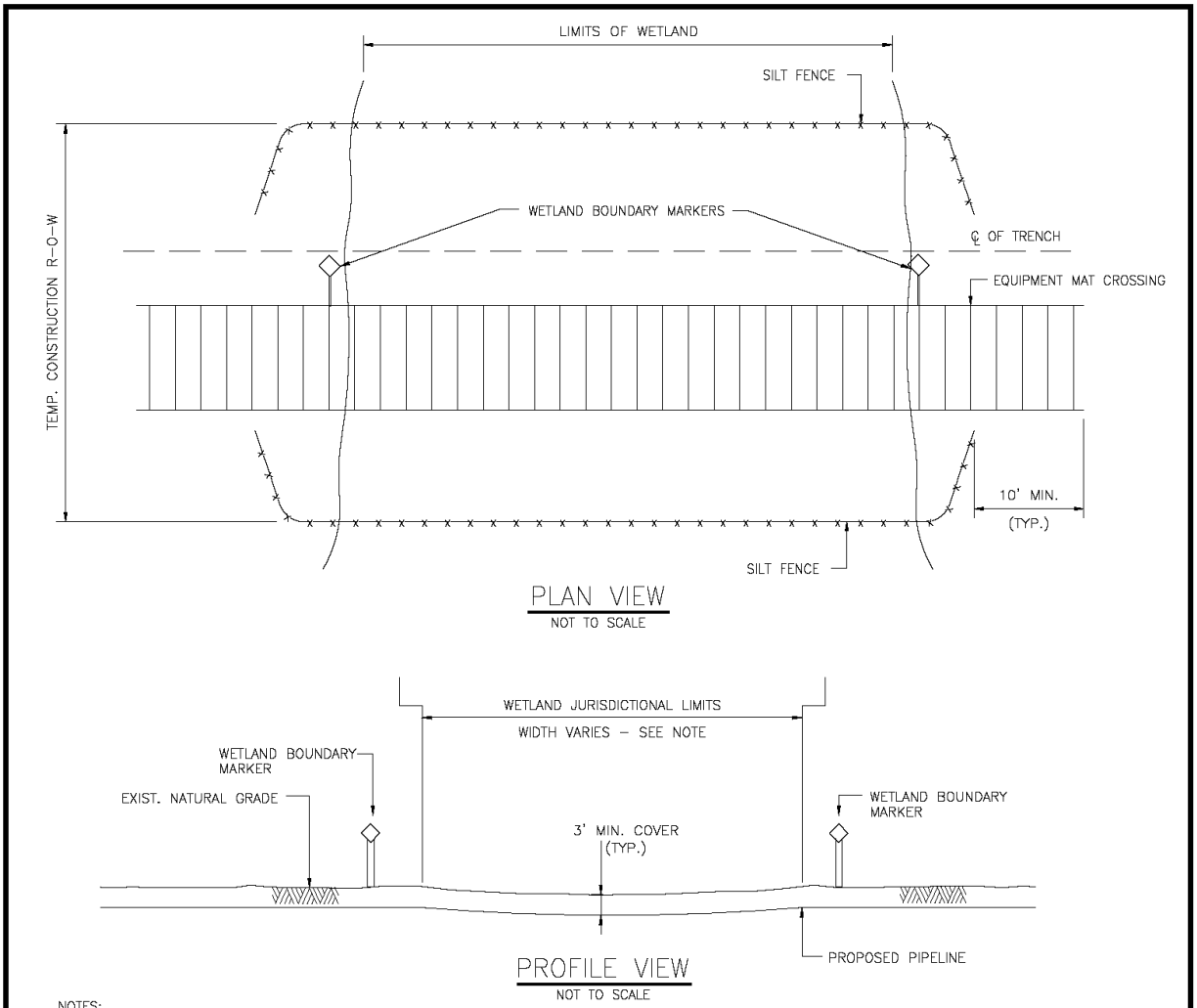


Figure 6 ATEX Express Project Typical Pipe Trench Detail for Waterbody Crossings



NOTES:

1. ACTUAL HORIZONTAL DISTANCE FOR EACH WETLAND CAN BE FOUND ON THE APPROPRIATE CONSTRUCTION DRAWINGS.
2. KEEP DISTURBANCE CONFINED TO MINIMUM NECESSARY TO CONSTRUCT PIPELINE.
3. WETLAND TOPSOIL SEPARATED UPPER 12" OVER DITCHLINE WHERE NOT INUNDATED WITH WATER.
4. WIDTH OF TEMPORARY CONSTRUCTION R-O-W BASED ON PERMITTED WIDTHS.

CONSTRUCTION PROCEDURE NOTES:

1. FLAG ACCESS ROAD WETLAND BOUNDARIES PRIOR TO INSTALLING MATS.
2. NO REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 100 FEET OF WETLAND. REFUEL STATIONARY EQUIPMENT AS PER SPCC PLAN.
3. CONSTRUCTION TRAFFIC IS TO MOVE SINGLE FILE ACROSS WETLANDS USING ESTABLISHED TRAVEL LANE.
4. MINIMIZE SOIL COMPACTION BY UTILIZING EQUIPMENT MATS.
5 INSTALL MATS ACROSS ENTIRE ACCESS ROAD WITHIN WETLAND WHERE NECESSARY DUE TO TOPOGRAPHIC AND SITE CONDITIONS AT TIME OF CONSTRUCTION. MATS TO EXTEND A MINIMUM OF 10 FEET PAST WETLAND BOUNDARY.
6. REMOVE ANY MATS FROM WETLANDS UPON COMPLETION.
7. RESTORE GRADE TO PRE-CONSTRUCTION TOPOGRAPHY.
8. GENERALLY, SEEDING IN WETLANDS WILL NOT BE NECESSARY SINCE WETLANDS REVEGETATE QUICKLY AND SOD WILL REMAIN INTACT EXCEPT OVER TRENCH. THE CONTRACTOR SHALL SEED ANY WETLANDS THAT MAY REQUIRE SEEDING AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.
9. EQUIPMENT MATS SHOULD EXTEND AT LEAST 5' WIDER THAN THE WIDEST PIECE OF EQUIPMENT THAT WOULD CROSS THE WETLAND.
10. MINIMIZE CLEARING AND STUMP REMOVAL IN WETLAND TO THAT NECESSARY TO SAFELY CONSTRUCT PIPELINE.

P.L./STA. ACCT. NO.			ELPC LLC ATEX EXPRESS PIPELINE TYPICAL CONSTRUCTION TYPICAL WETLAND PROFILE					Enterprise Products
AFE NO.								
REV.	BY	DATE	DRAWN GJD	DATE 06/12	SCALE NTS	APPR. BY	CONST.YR.	PREVIOUS DWG. NO.
								DRAWING NO. FIGURE 36

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Figure 7 ATEX Express Project Typical Construction Right-of-way at Wetland Crossings

approximately 6,366.1 cubic yards of native materials will be excavated within wetlands. Discharged substances will consist of sediment incidentally transported downstream during in-stream trenching activities when flowing water is present.

Additional details of the mitigation measures that would be implemented during an open-cut crossing method are discussed below in section 10k.

The Minimal-Degradation Alternative

While the Minimal-Degradation Alternative would follow the same route as the Preferred Alternative, under this alternative Enterprise would use alternative waterbody and wetland crossing methods, an overlapping construction right-of-way in wetlands, and additional mitigation measures to avoid or reduce impacts on both waterbody and wetland features. For example, ATEX Express would cross 25 single and complete crossings using the HDD crossing method (**Table 7**). Implementing HDD at these 25 crossings will avoid impacts to 36 different waters of the U.S. features.

Table 7 ATEX Express Project Waterbodies Crossed by HDD Method in Ohio

Crossing Number	County	Begin Milepost	Feature ID[a]	Waterbody Name	Justification for Using HDD
WV-14	Brooke	26.5	N/A	Ohio River	Section 10 Permit Required, Federally Navigable River, Listed on Nationwide Rivers Inventory
OH-54	Harrison	46.0	ST-OH-HA-0026.00000-A	Conotton Creek	Designated Warmwater Habitat; Avoid mechanized land clearing in a forested wetland
		46.0	WD-OH-HA-0027.00000-A		
OH-192	Coshocton	90.1	ST-OH-CO-0034.00130-A	Tributary to Bacon Run	Cultural resources identified in project area. Potentially Eligible for listing on the National Register
OH-208	Coshocton	98.3	ST-OH-CO-0050.00000-A	Tributary to Muskingum River	Class 3 Primary Headwater Stream; Cultural resources identified in project area. Potentially Eligible for listing on the National Register
		98.3	WD-OH-CO-0050.00000-C		
OH-210	Coshocton	99.5	ST-OH-CO-0052.00000-A	Muskingum River	Federally Navigable River; Designated Warmwater Habitat; Superior High Quality Water
OH-259	Muskingum	114.3	ST-OH-MU-0031.00000-M	Wakatomika Creek	Designated Exceptional Warmwater Habitat; Outstanding State Resource Water
OH-285	Licking	124.6	n/a	Licking River	Associated with Blackhand Gorge HDD; Designated Warmwater Habitat
		124.6	ST-OH-LI-0007.04900-A	Brushy Fork Creek	
OH-309	Licking	140.1	PD-OH-LI-0007.14200-B		Large Waterbody; Designated Warmwater Habitat
	Licking	140.1	ST-OH-LI-0007.14300-A	South Fork Licking River	
	Licking	140.1	WD-OH-LI-0007.14300-A		
OH-311	Licking	142.4	MC-OH-LI-0243.00000-A	Tributary to South Fork Licking River	Associated with Interstate 70 HDD

Table 7 ATEX Express Project Waterbodies Crossed by HDD Method in Ohio

Crossing Number	County	Begin Milepost	Feature ID[a]	Waterbody Name	Justification for Using HDD
OH-314	Fairfield	145.0	ST-OH-FF-0007.00000-A	Reservoir Feeder to Buckeye Lake	Avoid impacts to Buckeye Lake
OH-335	Fairfield	158.9	ST-OH-FF-0109.00000-A	Tributary to Hocking River	Large Waterbody; Designated Warmwater Habitat
		158.8	WD-OH-FF-0105.00000-A		
OH-336	Fairfield	159.1	WD-OH-FF-0109.00000-A		Avoid impacts to scrub-shrub wetland
		159.1	WD-OH-FF-0109.00000-B		
		159.0	WD-OH-FF-0109.00000-C		
OH-348	Fairfield	167.0	ST-OH-FF-0185.00000-A	Little Walnut Creek	Designated Coldwater Habitat; Cultural resources identified in project area. Potentially Eligible for listing on the National Register
OH-359	Pickaway	177.8	ST-OH-PI-0062.00000-A	Scioto River	Federally Navigable River; Designated Warmwater Habitat; Superior High Quality Water; Listed on Nationwide Rivers Inventory
OH-364	Pickaway	182.9	ST-OH-PI-0087.00000-B	Big Darby Creek	Designated Exceptional Warmwater Habitat; Outstanding State Resource Water; Component of the National Wild and Scenic River System; Ohio State Scenic Rivers Program
OH-375	Pickaway	191.6	ST-OH-PI-0128.00000-A	Tributary to Clark Run	Avoid mechanized land clearing in a forested wetland
		191.6	WD-OH-PI-0127.00000-A		
		191.6	WD-OH-PI-0128.00000-A		
OH-378	Fayette	192.7	ST-OH-FA-0003.00000-A-1	Deer Creek	Avoid impact to Deer Creek Lake and riparian habitat
	Fayette	192.8	ST-OH-FA-0004.00000-A	Tributary to Deer Creek	
OH-413	Clinton	231.5	ST-OH-CL-0031.03400-A	Caesar Creek	Avoid impact to Caesar Creek Lake and riparian habitat; Designated Exceptional Warmwater Habitat
OH-429	Warren	240.9	ST-OH-WA-0051.00000-A	Little Miami River	Federally Navigable River; Designated Exceptional Warmwater Habitat; Outstanding State Resource Water; Component of the National Wild and Scenic River System
OH-430	Warren	241.0	ST-OH-WA-0053.00000-A	Tributary to Little Miami River	Associated with Little Miami River HDD
	Warren	241.1	ST-OH-WA-0053.00000-D	Tributary to Little Miami River	
OH-460	Butler	262.3	ST-OH-BU-0019.03600-A	Great Miami River	Federally Navigable River; Designated Warmwater Habitat; Avoid mechanized land clearing in a forested wetland; Listed on Nationwide Rivers Inventory
		262.2	WD-OH-BU-0019.03500-A		

Table 7 ATEX Express Project Waterbodies Crossed by HDD Method in Ohio

Crossing Number	County	Begin Milepost	Feature ID[a]	Waterbody Name	Justification for Using HDD
OH-469	Butler	269.5	ST-OH-BU-0081.01700-A	Sevenmile Creek	Designated Exceptional Warmwater Habitat; Superior High Quality Water
OH-472	Butler	270.4	ST-OH-BU-0081.02300-A	Four Mile Creek	Designated Exceptional Warmwater Habitat; Listed on Nationwide Rivers Inventory

[a] Feature IDs correspond to Waters of the U.S. Crossing Summary Table (Appendix B) and Maps, Photographs, and Data Sheets (Appendix D)

- HDD Method – The HDD method involves drilling a pilot hole under the waterbody and banks, then enlarging that hole through successive reamings until the hole is large enough to accommodate the pipe. The drill rig would be staged in a large extra workspace set back from the waterbody banks. Pipe sections long enough to span the entire crossing would be staged and welded along the construction work area on the opposite side of the waterbody and then pulled through the drilled hole.

  Drilling a pilot hole is the first phase of the HDD and establishes the ultimate position of the installed pipeline. Typically, the pilot hole would be directed downward at an angle until the proper depth is achieved, then turned and directed horizontally for the required distance, and finally angled upward back to the surface. Throughout the process of drilling and enlarging the hole, a slurry made of naturally occurring, non-toxic bentonite clay and water would be pressurized and pumped through the drilling head to lubricate the drill bit, remove drill cuttings, and hold the hole open. Once the drill hole is enlarged to the proper diameter, the pipe would be pulled back through the reamed hole. The HDD method would avoid disturbance to the bed and banks of the waterbody, and there would be no excavation required within these waterbodies. Implementation of the HDD method would reduce the amount of native materials excavated from waterbodies by 2,589 cubic yards.

In addition to the HDD technique, Enterprise may implement "dry ditch" crossing techniques at waterbodies with suitable flow, substrate and channel characteristics to avoid or minimize impacts on sensitive resources. The use of these methods are limited based on existing flows at the time of crossing and substrate (i.e. blasting may be required in several of these).

- Flume Construction Method – The flume method is a standard, open cut, dry waterbody crossing construction method that involves diverting the flow of water across the trenching area through one or more flume pipes placed in the waterbody (see **Figure 37** in **Appendix F**). The first step in the flume crossing method would involve placing a sufficient number of adequately sized flume pipes in the waterbody to accommodate the highest anticipated flow during construction. In-stream preparation of the stream bed for placement of the flume and supporting dams is required. After placing the pipe in the waterbody, sand or pea gravel bags, water bladders, or metal wing deflectors would be placed in the waterbody upstream and downstream of the trench area. These devices would serve to dam the stream and divert the water flow through the flume pipes, thereby isolating the water flow from the construction area between the dams.

Track hoes located on both banks of the waterbody would excavate a trench under the flume pipe in the dewatered streambed. Spoil excavated from the waterbody trench would be placed or stored a minimum of 5 feet from the edge of the waterbody. Once the trench is excavated, the prefabricated segment of pipe would be installed beneath the flume pipes. The trench would then be backfilled with native spoil from the waterbody bed. Immediately following pipe installation and backfilling, and before removing the dams and flume pipes and returning flow to the waterbody channel, the streambanks and channel would be reestablished and stabilized.

- Dam and Pump Construction Method – The dam and pump method is another open cut, standard dry waterbody crossing construction method that may be used as an alternative to the flume method for waterbodies (see **Figure 39** in **Appendix F**). This method is similar to the flume crossing method except that pumps and hoses would be used instead of flumes to move water across the construction work area. The technique involves damming of the waterbody with sandbags and/or steel plates upstream and downstream of the trench area. In-stream preparation of the stream bottom will also be required for this procedure. Pumps would be set up at the upstream dam with the discharge line routed through the construction area to discharge water immediately downstream of the downstream dam. All pumps and fuel would be managed in accordance with the ATEX Express Spill Prevention, Containment and Clean-Up Plan. An energy-dissipation device would be used to prevent scouring of the streambed at the discharge location. Water flow would be maintained through all but a short reach of the waterbody at the actual crossing. The pipeline would be installed and backfilled. As discussed above for the open-cut method, where the stream banks were in good condition before installation of the pipeline, the banks would be restored to preconstruction contours or to a stable angle of repose as approved by the Environmental Inspector.

- Open-Cut Method at Wetland Crossings - Under the Minimal-Degradation Alternative, the construction right-of-way width would again be 90 feet within wetlands. However, under this scenario the operational easement in many of the crossing locations would overlap existing utility easements. This would result in a reduction of the new construction footprint by as much as thirty-three percent, depending upon the width of the maintained easement being overlapped. Construction equipment working in wetlands would be limited to that essential for right-of-way clearing, excavating the trench, fabricating and installing the pipeline, backfilling the trench, and restoring the right-of-way. Equipment would be allowed to travel through wetlands only if the ground is firm enough or has been stabilized (e.g., with timber riprap, prefabricated equipment mats, or terra mats) to avoid rutting. Clearing of vegetation in wetlands would be limited to trees and shrubs, which would be cut flush with the surface of the ground and removed from the wetland. Stump removal, grading, topsoil segregation, and excavation would be limited to the area immediately over the trenchline to avoid excessive disruption of wetland soils and the native seed and rootstock within the wetland soils. A limited amount of stump removal and grading may be conducted in other areas if dictated by safety-related concerns.

  Immediately after clearing, sediment barriers, such as silt fence and staked straw bales, would be installed and maintained adjacent to wetlands and within temporary extra workspaces as necessary to

minimize the potential for sediment runoff. Sediment barriers would be installed across the full width of the construction right-of-way at the base of slopes adjacent to wetland boundaries.

The method of pipeline construction used in wetlands would depend largely on the stability of the soils at the time of construction. If wetland soils are not excessively saturated at the time of construction and can support construction equipment on equipment mats or timber riprap, construction would occur in a manner similar to conventional upland cross-country construction techniques.

In unsaturated wetlands, the top 12 inches of topsoil from the trenchline would be stripped and stored separately from subsoil. Topsoil segregation generally would not be possible in saturated soils. Prior to backfilling, trench breakers would be installed where necessary to prevent the subsurface drainage of water from wetlands. Where topsoil has been segregated from subsoil, the subsoil would be backfilled first followed by the topsoil. Topsoil would be replaced to the original ground level leaving no crown over the trenchline. Equipment mats, timber riprap, and/or straw mats would be removed from wetlands following backfilling, and any drivable berms would be removed and the ground surface returned to original contours.

Where wetland soils are saturated and/or inundated, the pipeline may be installed using the drag section technique or the push-pull technique. The drag section technique involves carrying a prefabricated section of pipe into the wetland. The push-pull technique would involve stringing and welding the pipeline outside of the wetland and excavating the trench through the wetland using a backhoe supported by equipment mats. The water that seeps into the trench would be used as the vehicle to "float" the pipeline into place together with a winch and flotation devices, which would be attached to the pipe. After the pipeline is floated into place, the floats would be removed and the pipeline would sink into place. Most pipe installed in saturated wetlands would be coated with concrete or equipped with set-on weights to provide negative buoyancy. After the pipeline sinks to the bottom of the trench, the track hoe, working on equipment mats, would backfill the trench and complete cleanup.

The Non-Degradation Alternative

The Non-Degradation Alternative would follow the same route as the Preferred Alternative and Minimal Degradation Alternative although it would avoid all waterbody and wetland impacts by implementing the HDD crossing method beneath each of these resources. Assuming each HDD crossing is successfully installed, there would be no excavation, and no material discharged into wetlands or waterbodies. Enterprise believes the use of HDD installation at each waterbody is not feasible due to surface limitations (e.g., roads, houses, railroads) for the drill pull-back section of pipe, underlying geology, economic factors **($1,300** per linear foot using HDD versus **$200-$300** per linear foot using open cut methods), and potential additional surface disturbance (forested areas, wetlands, etc.) required for stringing pull-back sections that would fall outside of the typical easement.

10b) Describe the magnitude of the proposed lowering of water quality. Include the anticipated impact of the proposed lowering of water quality on aquatic life and wildlife, including

threatened and endangered species (include written comments from Ohio Department of Natural Resources (ODNR) and U.S. Fish and Wildlife Service(USFWS), important commercial or recreational sport fish species, other individual species, and the overall aquatic community structure and function. Include a Corps of Engineers approved wetland delineation.

The Preferred Alternative

Under the Preferred Alternative, the open-cut crossing is the only method that would be employed requiring in-stream excavation at each of the 648 waterbodies affecting 9,891 linear feet (current crossing length of 5,107 feet plus the 4,784 feet of the 25 HDD crossings Enterprise will implement) (**Table 7**). The open-cut crossing would also be used across all 228 wetlands, resulting in 8,594 feet of impacts, as well as 10.1 acres permanently impacted and 7.6 acres temporarily impacted by construction (see **Table 6** and **Appendix B**). **Appendix D** contains the waters of the U.S. maps, photographs and wetland delineation data sheets. Further, under the Preferred Alternative the right-of-way configuration, adjacent but not overlapping, would impact more previously undisturbed acreage in collocated areas of the route.

Implementation of this crossing method, particularly under flowing conditions, could cause the dislodging and transport of channel bed sediments, which could result in changes to downstream bottom contours, aquatic habitat, and streamflow dynamics. Turbidity resulting from suspension of sediments could reduce light penetration and photosynthetic oxygen production. Resuspension of deposited organic material and inorganic sediments could cause an increase in biological and chemical oxygen demands, resulting in a decrease of dissolved oxygen concentrations in the affected area and downstream areas. Lower dissolved oxygen concentrations could cause temporary displacement of motile organisms and may kill non-motile organisms within the affected area. The highest peak of turbidity usually occurs during trench excavation and backfilling. These peaks decline rapidly when the streambed disturbance ceases. Because an open-cut crossing is typically one of the quickest crossing methods, the associated water quality impacts related to sedimentation and turbidity will be temporary and of short duration. In addition, it should be noted that many of the intermittent or ephemeral streams may not be flowing during construction and therefore the potential impacts on water quality would be of lesser magnitude as compared with perennial streams that are flowing at the time of construction.

The clearing and grading of streambanks would expose bare soil to erosional forces and would reduce riparian vegetation along the cleared section of the waterbody. Fine silts and colloids that cloud waterbodies could result in diminished visual aesthetics for anglers and other recreational users.

Construction of the pipeline across wetlands could include temporary changes in wetland hydrology and water quality. During construction, failure to segregate topsoil over the trenchline in non-saturated wetlands could result in the mixing of the topsoil with the subsoil. This disturbance could result in altered biological activities and chemical conditions in wetland soils and could affect the re-establishment and natural recruitment of native wetland vegetation after restoration. In addition, inadvertent compaction and rutting of soils during construction could result from the movement of heavy machinery and the transport of pipe sections. The resulting alteration of the natural hydrologic patterns of the wetlands could inhibit seed germination or increase the potential for siltation. The discharge of trench water, or hydrostatic test

water could result in silt-laden water entering a wetland to overland transport of soil particles from the discharge site, and the release of chemical and nutrient pollutants from sediments. Construction clearing activities and disturbance of wetland vegetation could also temporarily affect the wetland's capacity to buffer flood flows and/or control erosion.

ATEX Express would implement Best Management Practices (BMP) during construction and afterwards to reduce the potential for erosion and sediment control impact on wetlands and waterbodies.

Refueling of vehicles and storage of fuel, oil, or other hazardous materials near surface waters and wetlands, and spills from equipment working in waterbodies and wetlands could also impact water quality. If a spill were to occur, immediate downstream users of the water could experience degradation in water quality. Acute and chronic toxic effects on aquatic organisms could also result from such a spill. Subcontractors would implement their Spill Prevention, Control, and Countermeasure Plan during construction to reduce the potential for impacts associated with fuel spills to occur.

Enterprise has consulted with the U.S. Fish and Wildlife Service (USFWS) and the Ohio Department of Natural Resources (ODNR) regarding potential impacts on wildlife and water quality resulting from construction of the ATEX Express Project. Correspondence with ODNR and the USFWS, as well as the ATEX Express DRAFT Biological Evaluation for Ohio, is included in **Appendix I**.

Enterprise has developed the list of species included in **Table 8** of those federally listed endangered, threatened, and candidate species potentially occurring within the project area. In addition, the project lies within the range of the bald eagle, which is protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Of the thirteen species identified as special status species, no impacts to the Scioto madtom, purple cat's paw pearly mussel, and running buffalo clover are expected to occur as a result of the proposed project (see USFWS correspondence, **Appendix I**). Additional field surveys are in progress for other special status mussel species in all areas where they have potential to occur. If mussel surveys identify individuals, Enterprise will consult with the USFWS to discuss the need to develop conservation measures to avoid or minimize impacts on the species. Because no winter hibernacula for Indiana bats are known or identified during field survey efforts, Enterprise will implement fall/winter tree clearing to avoid impact to Indiana bats during the spring/summer.

Table 8 ATEX Express Project Federally Listed Endangered, Threatened and Candidate Species Potentially Occurring in the Proposed Proect Area in Ohio

Species	Status [a]	Potential Occurrence [b]	Basic Habitat Association
MAMMALS			
Indiana bat (*Myotis sodalis*)	E	Forested stands along entire route	Roosts in snags or trees with sloughing bark, split tree cavities. Forages within open forest corridors, along forest edges, and in floodplain forests, wetlands, and other waterbodies.
MUSSELS			
Sheepnose (*Plethobasus cyphyus*)	E	Ohio and Muskingum Rivers	Shallow shoal habitats with moderate to swift currents over coarse sand gravel, mud, cobble, and boulders.
Snuffbox (*Epioblasma triquetra*)	E	Ohio, Muskingum, Little Miami Rivers and Big Darby Creek	Swift currents of riffles and shoals over gravel and sand with occasional cobble and boulders.

Species	Status [a]	Potential Occurrence [b]	Basic Habitat Association
Clubshell (*Pleurobema clava*)	E	Scioto River, Big Darby and Walnut Creeks	Stream areas with sand or gravel substrate, and areas with riffles and runs.
Fanshell (*Cyprogenia stegaria*)	E	Muskingum River	Stream areas with sand or gravel substrate, and areas with riffles.
Rabbitsfoot (*Quadrula cylindrical*)	C	Big Darby Creek and Muskingum River	Medium-sized streams and larger rivers. Shallow areas along the bank and adjacent runs and shoals where the water velocity is reduced, as well as deep water runs. Bottom substrates generally include sand and gravel.
Northern riffleshell (*Epioblasma torulosa rangiana*)	E	Big Darby Creek and Scioto River	Stream areas with sand or gravel substrate, and areas with riffles and runs.
Rayed bean (*Villosa fabalis*)	E	Any stream in Coshocton, Fairfield, Pickaway, Fayette, Greene, Clinton, Warren, and Butler Counties where potential habitat exists	Smaller headwater creeks and larger rivers. Found in or near shoal or riffle areas, and in the shallow, wave-washed areas of lakes. Substrates typically include gravel and sand, and they are often associated with and buried under the roots of vegetation, including water willow and water milfoil.
Purple cat's paw pearly mussel (*Epioblasma obliquata*)	E	Not expected within project area	
REPTILES			
Eastern massasauga (*Sistrurus catenatus*)	C	Licking, Fairfield, Fayette, Clinton, and Warren Counties	Crayfish burrows in wetlands and adjoining upland areas.
FISH			
Scioto madtom (*Noturus trautmani*)	E	Big Darby Creek, but not expected within project area	Riffles with decreasing water velocity and sandy gravel substrate
PLANTS			
Running buffalo clover (*Trifolium stoloniferum*)	E	Not expected within project area	

[a] Status as identified by the USFWS (E=Endangered; T=Threatened; C=Candidate)
[b] Potential Occurrence as identified by the USFWS. See Correspondence in Appendix I.

The Minimal-Degradation Alternative

Implementation of the HDD crossing method at the waterbodies listed in **Table 7** avoid impacts at 25 single and complete crossings reducing disturbance by 4,784 feet. Use of the HDD method would reduce the potential water quality impacts described above for the preferred alternative by avoiding in-stream activities, streambank grading and riparian vegetation clearing at 25 crossing locations. However, construction using the HDD method could result in an inadvertent release of drilling fluid (also referred to as a frac-out) directly or indirectly into the waterbody or wetland being crossed. Drilling fluid may leak through previously unidentified fractures in the material underlying the feature, in the area of the fluid pits or tanks, or along the path of the drill due to unfavorable ground conditions. Although drilling fluid consists of naturally occurring nontoxic materials, such as bentonite clay and water, the release of large quantities of drilling fluid into a waterbody could affect fisheries or other aquatic organisms by settling and temporarily inundating the habitats used by these species. This impact would be less likely in waterbodies with fast moving water, which would disperse and dilute the drilling fluid. Enterprise would implement its HDD Frac-out Mitigation Plan (**Appendix G**) to reduce potential impacts associated with a frac-out.

Water quality impacts on sensitive resources and recreational users would be reduced at crossings where either the flume or dam and pump crossing method is implemented. Other than the time needed to prepare the crossing, in-stream flow would be isolated from the construction area during the crossing such that the potential for increased turbidity during pipeline installation would be greatly minimized. These methods would reduce the period of contact between the streamflow and disturbed soils as compared with the open-cut method.

Use of an overlapping right-of-way at wetland crossings would reduce the amount of wetland area subject to new disturbance, which would avoid and minimize potential impacts on water quality at wetland crossings. Potential impacts on water quality would be minimized in wetlands that are saturated at the time of construction where the pipeline is installed using the "push-pull technique," or "drag section technique." These techniques minimize disturbance by restricting access in sensitive wetlands to equipment, vehicles, and workers needed for actual pipeline installation, and by limiting the number of crossing events. Depending upon the depth of saturation, a matted travel lane will be maintained to allow other equipment and vehicles to cross.

The Non-Degradation Alternative

As described above, implementation of the HDD crossing method at all waterbody and wetlands crossed by the project would avoid most of the potential waterbody and wetland impacts associated with the open-cut crossing. Assuming that an HDD crossing is technically feasible at each crossing, there remains the potential for frac-outs to occur during drilling operations. Unfavorable ground conditions at waterbody crossings could be conducive to frac-outs and detailed, site-specific, geotechnical testing and analysis are necessary to determine if conditions at each crossing location would be suitable for an HDD crossing. Impacts that could result from an in-stream frac-out during an HDD crossing are described above.

10c) Include a discussion of the technical feasibility, cost effectiveness, and availability. In addition, the reliability of each alternative shall be addressed (including potential recurring operational and maintenance difficulties that could lead to increased surface water degradation).

The Preferred Alternative

The preferred alternative includes using the open-cut crossing method for all wetland and waterbody crossings. In most situations, open-cut trenching represents the most cost effective, quick, and technically efficient means of crossing wetlands and waterbodies on the proposed route. The open-cut method is generally considered technically feasible for all waterbody and wetland crossings. It is considered one of the most reliable crossing methods and is often considered to be the alternate crossing method should an HDD crossing fail. During an open-cut crossing, disturbed material is continually flowing into the trench and some spoil material may wash downstream. However, downstream turbidity can be minimized by using turbidity curtains and/or flocculent. In certain cases, depending on the size of the crossing and the flow rate, it may be difficult to accurately verify the trench depth prior to pipeline installation. Streambed scour could result in exposure of the pipeline; however, Enterprise will install the pipeline a minimum of 5 feet below grade except in rock where the depth of cover will be 3 feet. In either case this depth will be below the anticipated scour depth. The ATEX Express Project pipeline will have an external fusion bonded epoxy protective coating and a cathodic protection system to prevent pipeline corrosion. At an

estimated cost of **$200-300 per linear foot**, implementation of the open-cut crossing method is typically the most cost effective crossing method.

The Minimal-Degradation Alternative

Under the minimal degradation alternative a majority of the waterbody and wetlands would be crossed by the open-cut method for which the feasibility, cost effectiveness and reliability are discussed above. However, the minimal degradation alternative would also incorporate the HDD crossing method and potentially the dry flume, and/or dam and pump methods at waterbody crossings and the push-pull technique and/or drag section techniques at wetland crossings.

For a successful HDD crossing, suitable geologic and surface conditions are necessary. Certain geologic conditions (e.g., gravel and boulder substrates along the drill path) are considered unfavorable for a successful HDD crossing. Detailed, site-specific geotechnical testing and analysis are necessary to determine if geologic conditions at each crossing are conducive to a successful HDD. Other conditions that need to be considered to determine the feasibility of an HDD crossing are the length crossing, which can be affected by the depth required and the pipeline diameter. Although an HDD crossing may be technically feasible, existing geologic conditions may be conducive to frac-outs, which depending on the sensitivity of the waterbody or wetland may pose an unacceptable risk. At an installation cost of approximately **$1,300 per linear foot**, the HDD method is generally the most expensive installation method and is therefore proposed only at sensitive and large waterbody crossings.

Use of the dry flume or dam and pump methods are dependent upon the size of the waterbody, flow characteristics and substrate and are generally recommended only for stream crossings 30 feet wide or less at the water's edge. The dry flume is typically used where the water flow rate is such that it cannot be adequately handled by pumps and hoses and/or where sensitive species passage is required. Alternatively, where the stream flow is less and can be accommodated via pumps and hoses and sensitive species passage is not an issue, the dam and pump method is preferred. In some cases blasting may be required due to rocky substrate and thus the flume method is not possible. Generally, these methods are not technically feasible for larger crossings because they cannot accommodate the stream flows typically associated with the larger streams. In terms of reliability, installation of a pipeline via the dry flume or dam and pump method would allow the trench depth to be more accurately determined and allow for better compaction of the backfill material than an open-cut crossing because there would be no stream flow across the work area. At a cost estimate of **$1,000 per linear foot**, both the dry flume and dam and pump methods are not as cost effective as an open-cut crossing.

The Non-Degradation Alternative

As discussed above, installation of all waterbody and wetland crossings using the HDD construction method may not be technically feasible due to the geology underlying the specific crossing and would require site-specific geotechnical testing and analysis at each crossing would to make the determination. Although installation of all waterbody and wetland crossings via the HDD method would result in no impact to the crossing, the high cost of installation would render the Non-Degradation Alternative economically infeasible. Crossing all waterbodies and wetlands using the HDD method assuming it was technically feasible is estimated to cost **$24,031,410** at a minimum.

10d) For regional sewerage collection and treatment facilities, including a discussion of the technical feasibility, cost effectiveness and availability, and long-range plans outlined in state or local water quality management planning documents and applicable facility planning documents.

Not Applicable – the ATEX Express Project does not include regional sewerage and treatment facilities.

10e) To the extent that information is available, list and describe any government and/or privately sponsored conservation projects that exist or may have been formed to specifically target improvement of water quality or enhancement of recreational opportunities on the affected water resource.

Enterprise is not aware of any government and/or privately sponsored conservation projects that exist or may have been formed to specifically target improvement of water quality or enhancement of recreational opportunities in the vicinity of the ATEX Express Project.

10f) Provide an outline of the costs of water pollution controls associated with the proposed activity. This may include the cost of best management practices to be used during construction and operation of the project.

The Preferred Alternative

Construction of the preferred alternative would result in the highest costs for pollution controls (i.e., sediment and erosion controls) because the amount of disturbed area would be greatest under this alternative. Erosion controls would be required at all stream and wetland crossings. Sediment barriers would be installed to prevent the flow of spoil or heavily silt-laden water into any waterbody. Flocculent materials may be used to reduce downstream turbidity. Equipment bridges would be constructed across waterbodies with designated fisheries and all intermediate waterbodies to maintain unrestricted flow, to prevent soil from entering the waterbody, and to limit in-stream disturbances. Sediment barriers will be installed across the entire width of the construction right-of-way at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. Where waterbodies are adjacent to the construction right-of-way, sediment barriers will be installed along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way. Trench plugs will be installed at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.

At wetland crossings, where the wetland soil is saturated and prone to rutting or the construction right-of-way will be appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats). Sediment barriers will be installed across the entire width of the construction right-of-way immediately upslope of the wetland boundary at all wetland crossings where necessary to prevent sediment flow into the wetlands. Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetlands sediment barriers will be installed along the edge of the construction right-of-way as necessary to prevent sediment flow into the wetlands. Sediment barriers will be installed along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way through wetlands. Because the construction footprint across wetlands

under the Preferred Alternative would be the largest of the alternatives considered, the amount of pollution controls required would be greater under this alternative. The material and installation costs of pollution control materials for the Preferred Alternative are estimated to be **$1,330,560** at a minimum.

The Minimal-Degradation Alternative
Costs of pollution controls under the Minimal Degradation Alternative would generally be less than the Preferred Alternative because of the number of HDD crossings that would be implemented. While there would be some pollution controls required at HDD entry and exit sites, the amount of material would be significantly less than for the other waterbody crossing methods. In addition, because the construction footprint across water bodies and wetlands would be reduced under the Minimal-Degradation Alternative, the amount of pollution control materials required to be installed would be less. The material and installation costs of pollution control materials for the Minimal Degradation Alternative are estimated to be **$1,292,760** at a minimum.

The Non-Degradation Alternative
As noted above, some pollution controls would be required at HDD entry and exit sites; however, the amount required would be much less than for the other stream crossing methods. Additionally, crossing all wetlands using the HDD method would greatly reduce the cost of the pollution controls required. The material and installation costs of pollution control materials for the Non-Degradation Alternative are estimated to be **$855,360** at a minimum.

10g) Describe any impacts on human health and the overall quality and value of the water resource.

Potential impacts on water quality for each alternative are described above under 10b. Impacts on water quality could negatively affect human health and value of the water resource as a source for potable water, food, and/or recreational use.

The Preferred Alternative
The Preferred Alternative would have the greatest potential to affect human health and value of the water resource. As discussed under 10b, in-stream construction can result in the resuspension of sediments that could potentially affect downstream potable water intakes and recreational users. According to GIS data provided by OEPA (Craig Smith, OEPA, personal email communication, August 2012) there is one potable surface water intake in Ohio within three miles downstream of a crossing. This crossing is the Ohio River which will be crossed using the HDD construction technique; therefore, no adverse surface water quality is expected.

A reduction in water quality could also indirectly affect the value of the water resource. As discussed under 10b, aquatic resources could be negatively affected by a reduction in water quality. To the extent that the affected wildlife is used for food and/or recreation (e.g., sport fishing), impacts on aquatic resources could indirectly affect the value of the waterbody as a food source and/or recreational resource. Impacts on water quality will be temporary, generally not lasting longer than the length of in-stream construction. The majority of the waterbody crossings are less than 100 feet wide, and as such, construction would typically be completed within 48 hours for intermediate streams (less than 100 feet wide and greater than 10 feet wide measured at water's edge) and within 24 hours for minor waterbody

crossing (less than 10 feet wide measured at water's edge). Enterprise would coordinate with the Ohio EPA and downstream water suppliers to protect water quality and minimize disruption of water service. Enterprise would also coordinate with the Ohio EPA to minimize the resuspension of contaminated materials at waterbody crossings where these materials are anticipated to be present.

The Minimal-Degradation Alternative

Construction of the Minimal-Degradation Alternative would reduce the potential effects of construction on water quality and value of the water resource. As shown in **Table 7**, Enterprise would implement the HDD crossing method at 25 single and complete crossings, which includes many streams identified as sensitive either for one or more of the following reasons: having high water quality; being listed on the Nationwide Rivers Inventory or included in the National Wild and Scenic Rivers and/or Ohio Scenic Rivers Programs; the presence of special status species; possessing exceptional warmwater habitat. While HDD crossings are generally considered to have less potential impacts on water quality and therefore human health and value of the water resource, there is the potential for frac-out to occur. Impacts on water quality associated with a frac-out are described in section 10b. Introduction of bentonite clay into a water source could result in a reduction of water quality. Although bentonite is naturally occurring clay material considered non-toxic to humans, a significant release could affect potable water intakes and aquatic resources which could indirectly affect the value of the water resource. Enterprise would implement its HDD Frac-out Mitigation Plan to avoid and reduce impacts on water quality associated with a frac-out (**Appendix G**). Additionally, Enterprise has conducted geological testing and analysis at the locations where HDD crossings are proposed to verify that a successful HDD crossing is likely. Subcontractors would also implement their SPCC Plan to minimize potential impacts associated with equipment leaks or fuel spills.

The Non-Degradation Alternative

The Non-Degradation Alternative would have the least potential to affect human health and value of the water resource. An HDD crossing of all waterbodies and wetlands would avoid impacts on water quality assuming that all streams and wetlands would be successfully crossed via HDD and without a frac-out occurring during the crossing.

10h) Describe and provide an estimate of the important social and economic benefits to be realized through this project. Include the number and types of jobs created and the tax revenues generated and a brief discussion on the condition of the local economy.

Potential impacts on the population, employment, and existing economy in the proposed project area will primarily be associated with the hiring of temporary construction personnel and permanent operation personnel. The most noticeable impacts on population will be temporary and short term, as they will result from the influx of temporary workers during the relatively short construction period of approximately 9 months. The ATEX Express Project is expected to begin construction in March 2013. Construction of the pipeline and related facilities is expected to be completed and the pipeline system in service by January 2014.

Enterprise anticipates that the project will be constructed using about **1,000 to 1,500 workers** in Ohio. Construction personnel will consist of Enterprise employees, contractor employees, construction inspection staff, and environmental inspection staff. The actual number of construction personnel at any given location and time will vary considerably during the construction period. During construction, personnel will typically work during daylight hours, 6 days per week, unless a modification of this work schedule is required to respond to site-specific situations or schedule constraints. At HDD sites, work will occur 24 hours per day until completion of the HDD.

The number of construction workers who will reside in the construction areas, as opposed to those who will temporarily relocate to those areas, is dependent to a large extent on whether the proposed pipeline and facilities are constructed by union or non-union contractors. Pipeline industry labor agreements typically stipulate that local labor unions provide 50 percent of the work force and the contractors may bring in the remaining 50 percent of the work force from outside the area. Due to the populous location of the pipeline and associated facilities, it is anticipated that about 50 percent of the workforce will reside in the general area and the remaining 50 percent will be non-local workers. Non-local workers will generally reside in the vicinity of the project for relatively short periods of time. As a result, the socioeconomic impacts associated with incremental increases in population will be short term and are not expected to be significant.

Current economic and employment conditions in the counties affected by the proposed project are listed in **Table 9**.

Table 9 ATEX Express Project Socioeconomic Conditions in Ohio

State/County	Per Capita Income (U.S. dollars) [a]	Civilian Labor Force (persons) [b, c]	Unemployment Rate (percent) [b, c]	Major Employment by Industry (percent) [d]
OHIO	36,162	5,800,000	7.2	Education, health, social services (23.4)
Jefferson	30,341	27,796	10.7	Education, health, social services (26.3)
Harrison	27,226	6,373	9.9	Education, health, social services (27.1)
Tuscarawas	28,757	42,254	8.7	Manufacturing (23.6)
Coshocton	28,627	15,021	11.3	Manufacturing (25.5)
Muskingum	29,528	37,950	11.7	Manufacturing (24.8)
Licking	34,774	78,059	8.4	Education, health, social services (22.1)
Fairfield	32,609	74,340	7.6	Education, health, social services (22.1)
Pickaway	30,343	24,265	9.4	Education, health, social services (19.3)
Fayette	32,197	15,895	9.6	Education, health, social services (18.9)
Clinton	30,639	17,924	13.3	Education, health, social services (19.7)
Greene	36,370	79,903	8.1	Education, health, social services (26.7)
Warren	40,536	110,093	7.5	Education, health, social services (20.7)
Butler	35,247	193,466	8.4	Education, health, social services (22.6)

[a] U.S. Bureau of Economic Analysis. 2010. State and Local Personal Income, Local Area Annual Estimates, Interactive Tables, CA1-3.

[b] U.S. Department of Labor, Bureau of Labor Statistics. 2011-2012. Regions, States, & Areas at a Glance. Civilian Labor. Statewide Data – 2011-2012 Annual Averages.

[c] U.S. Department of Labor, Bureau of Labor Statistics. 2011-2012. Regions, States, & Areas at a Glance. Civilian Labor. County Data - 2011-2012 Annual Averages.

[d] U.S. Department of Commerce, Bureau of the Census 2010: Selected Economic Characteristics. 2006-2010 American Community Survey Selected Population Tables, 5-year estimates. Table DP03.

The civilian labor force in Ohio was 5,800,000 persons in 2012 (U.S. Department of Labor, 2012). The counties affected by the proposed project account for approximately 11 percent of Ohio's statewide civilian labor force. Harrison County has the smallest civilian labor force of the affected counties with 6,373 persons and Butler County has the largest with 193,466 persons (U.S. Department of Labor, 2011). The 2010 unemployment rate in Ohio was 7.2 percent (U.S. Department of Labor, 2010). Of the affected counties, manufacturing and educational, health, and social services are the primary employment industries (U.S. Bureau of the Census, 2000).

Construction and operation of the project will provide benefits to the affected counties and communities through the generation of tax revenues. Sales tax revenues will be generated by the temporary influx of workers who will purchase local goods and services. Additionally, Enterprise and its contractors will make local general and construction materials purchases and will pay sales tax for the lease and/or rental of various office and construction equipment and space for field offices and the storage of construction equipment. Field offices include the Right-of-Way office located in St. Clairsville, OH, Columbus, OH, and Harrison, OH. Each Right-of-Way office employs between 30 and 50 people and will operate for the duration of construction.

Payroll taxes will also be collected from the workers employed on the project. As shown in **Table 10**, Enterprise anticipates that construction payroll costs associated with the proposed project will be approximately **$189,836,540**. This will temporarily increase the tax revenue for the state of Ohio. Payroll taxes from the permanent employees will comparatively have no effect on state, county or local tax revenues. In addition, local communities will benefit from the payroll paid to construction workers during the construction period. Assuming that workers spend approximately 30 percent of their incomes locally, approximately **$57 million** will be spent by workers in the project area during construction.

Table 10 ATEX Express Project Payroll and Sales Tax Revenues

State	Estimate Construction Payroll (dollars)	Estimate of Local Spending of Construction Payroll (dollars)	Estimate Sales Tax Revenues from Workforce Local Spending (dollars) [a]
Ohio	$189,836,540	$56,950,900	$3,872,662

[a] Estimated consumables sales tax revenue varies by municipality and county and is averaged when necessary. Ohio ranges from 6 to 7.5 percent (6.8 average). This is multiplied by 30 percent of construction payroll for a given state.

During the operation of the ATEX Express Project, Enterprise will be required to pay taxes on its facilities located in each county. Total taxes will vary by county based on where the project facilities are located. Enterprise will pay approximately **$300,000 per year** in taxes on the ATEX Express pipeline system within the state of Ohio. It is estimated that the proposed project will contribute approximately **$6 million dollars** in taxes to Ohio over the next 20 years.

The costs described above are particularly associated with the Minimal-Degradation Alternative; however, significant differences in social and economic impacts between the Preferred, the Minimal-Degradation, and the Non-Degradation Alternatives are not anticipated.

10i) Describe and provide an estimate of the important social and economic benefits that may be lost as a result of the project. Include the effect on commercial and recreational use of the water resource, including effects of lower water quality on recreation, tourism, aesthetics, or other use and enjoyment by humans.

The Preferred Alternative
It is unlikely that any important social or economic benefits would be lost as a result of constructing the Preferred Alternative. Because any impacts on water quality would be of short duration and limited to during construction, no significant commercial or recreational impacts are expected.

The Minimal-Degradation Alternative
Construction of the Minimal-Degradation Alternative would further reduce any potential for a loss of social or economic benefits because implementation of the HDD crossing method would reduce the potential for water quality impacts on waterbodies listed in **Table 7**, many of which have high recreational values.

The Non-Degradation Alternative
Assuming all waterbody crossing locations are considered suitable for an HDD crossing, construction of the Non-Degradation Alternative would have the least potential for or a loss of social or economic benefits because no instream activities would occur.

10j) Describe environmental benefits, including water quality, lost and gained as a result of this project. Include the effects on aquatic life, wildlife, or threatened and endangered species.

Potential impacts on water quality and aquatic wildlife are described in section 10b. Because any impacts on water quality will be temporary and of short duration, primarily associated with downstream sedimentation and turbidity in flowing water conditions, no permanent impacts on aquatic life, wildlife populations or recreational resources are anticipated to result from construction of the Preferred, Minimal-Degradation or Non-Degradation Alternatives.

Enterprise is continuing consultations with the USFWS and the ODNR regarding threatened and endangered species. If threatened and endangered species are encountered within the project area, additional project-specific conservation measures would be required, which would reduce impacts such that the project would not adversely affect special status species or would not jeopardize the continued existence of a species. Please refer to **Appendix J** for further details regarding seasonal tree clearing and mussel survey protocols that Enterprise is implementing.

10k) Describe mitigation techniques proposed.

Describe proposed wetland mitigation

The Preferred Alternative
The primary mitigation measures to be implemented during construction across wetlands are described below:

- limit the width of the construction right-of-way new impact to 90 feet in wetlands
- locate additional temporary workspaces at least 5 feet back from wetland boundaries
- revegetate wetland areas in accordance to the ATEX Express Project Wetland Revegetation Plan (**Appendix J**)

All wetlands affected by construction will be restored and replanted as described above. Although no wetlands will be permanently filled as a result of the ATEX Express Project, where permanent conversions occur due to vegetation type conversions (e.g., forested wetland vegetation converted to scrub-shrub or emergent vegetation) compensatory mitigation will be implemented in accordance with the methods and ratios listed in the Conceptual Mitigation Plan (**Appendix H**).

The Minimal-Degradation Alternative
Construction of the Minimal-Degradation Alternative would also require implementation of the procedures as described above under the Preferred Alternative as well as those described below;

- limit the operation of construction equipment within wetlands to that equipment essential for clearing, excavation, pipe installation, backfilling, and restoration
- segregate topsoil from the trenchline in non-saturated wetlands and returning it to the top of the trench, which would promote re-establishment of wetland species by preserving the vegetative propagules (e.g., seeds, tubers, rhizomes, bulbs) in the soil
- limit grading in wetlands to the area directly over the trenchline, except where necessary to ensure safety
- avoid compaction of wetland soils by using low ground weight construction equipment and/or operating equipment off of prefabricated timber mats in saturated or standing water wetlands
- install trench breakers or trench plugs at the boundaries of wetlands and seal the trench bottom as needed to prevent draining of a wetland and to maintain original wetland hydrology
- install temporary and permanent erosion and sediment control measures, such as silt fence, hay bales, slope breakers, interceptor diversion dikes, energy dissipation devices, and re-establishment of vegetative cover on adjacent upland areas to minimize erosion and sedimentation into wetlands
- remove stumps only from areas directly over the trench or where they would create a safety hazard to facilitate re-establishment of woody species by enabling sprouting from existing root systems
- return wetlands to their preconstruction contours to the extent practicable
- prohibit storage of hazardous materials, chemicals, fuels, and lubricating oils within a wetland or within 100 feet of a wetland boundary

- prohibit parking and/or fueling of equipment within a wetland or within 100 feet of a wetland boundary, unless the Environmental Inspector determines that no reasonable alternative exists and appropriate steps, including secondary containment structures, are taken to prevent spills and provide for prompt cleanup in the event of a spill

- consult with the appropriate land management or state and local agencies to develop plans for revegetating wetlands

- reseed non-agricultural wetlands with an agency-recommended and/or approved native seed mix where commercially available

- monitor the success of wetland revegetation annually until the wetland is successfully revegetated

In many areas the construction right-of-way's new impact would be reduced to 65 feet through wetlands where the pipeline is collocated with other utilities. Similar to the Preferred Alternative, compensatory mitigation will be implemented in accordance with the methods and ratios listed in Conceptual Mitigation Plan (**Appendix H**).

The Non-Degradation Alternative
Assuming all waterbody crossing locations are considered suitable for an HDD crossing and performed successfully with no frac outs, construction of the Non-Degradation Alternative would not require additional mitigation either onsite or offsite, as no impacts would result from implementing this alternative.

Describe proposed stream, lake, and pond mitigation

The Preferred Alternative
The primary mitigation measures to be implemented during construction across streams, lakes and ponds are described below:

- limit the size of the workspace at the waterbody crossing to the minimum needed to cross the waterbody, typically 90 feet

- locate extra workspaces at least 5 feet back from waterbody boundaries

- limit the clearing of vegetation between the extra work areas and the edge of the waterbody

- install sediment barriers/silt fences between spoil piles and the waterbody

- maintain flow downstream of the waterbody crossing to ensure protection of aquatic life

- route the pipeline in such a manner as to avoid, to the maximum extent possible, multiple crossings of meandering waterbodies. Where this is unavoidable, ensure downstream flows continue during construction and return waterbody contours to preconstruction conditions as near as possible during restoration.

- minimize to the maximum extent possible the number of equipment crossings at each waterbody
- restore stream banks and riparian areas to as near as possible pre-construction conditions or to a more stable condition after crossing is complete

Implementation of an SPCC Plan by each subcontractor would reduce potential impacts on water quality associated with fuel spill and leaks. The typical SPCC Plan includes the following requirements:

- inspection of storage areas for leaks
- replacement of deteriorating containers
- construction of containment systems around hazardous liquids storage facilities
- store hazardous materials such as fuel, chemicals, and lubricating oils at least 100 feet away from the waterbody
- restriction of refueling or other liquid transfer areas within 100 feet of wetlands and waterbodies
- prohibition of refueling within 100 feet of any private water supply well and within 300 feet of any municipal water supply wells, and provides additional precautions when specified setbacks cannot be maintained.

Mitigation for impacts on streams, lakes and ponds will include onsite restoration and planting and if necessary, as described in the Conceptual Mitigation Plan (**Appendix H**).

The Minimal-Degradation Alternative
Mitigation Measures to be implemented during construction of the Minimal-Degradation Alternative include those described above. In addition, at crossings where the HDD method is used, Enterprise would implement its HDD Frac-out Contingency Plan (**Appendix G**).

6.0 REFERENCES

U.S. Army Corps of Engineers (USACE). 1987. *Corps of Engineers Wetland Delineation Manual*. Environmental Laboratory Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

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