ENCLOSURE D
PROJECT IMPACTS

A. Impacts on Designated Resources

Construction and operation of linear infrastructure Projects, including the proposed Atlantic Sunrise Project (Project) inevitably impact designated resources, including wetlands and ~~**waterbodies**~~*watercourses*. The Project has been designed to avoid and minimize impacts to environmental as well as recreational resources. The following discussion, as well as the Alternatives Analysis provided in Attachment P-1, details the Project's potential impacts and the avoidance and minimization measures that Transco has taken thus far and will take in during construction and operation of the Project to protect designated resources. *Additionally, the Comprehensive Environmental Evaluation for the Central Penn Line provided in Appendix L-1 presents a summary of the alternatives analysis for the Project as whole.*

Transco has sited the proposed compressor, meter and regulating stations, and other minor aboveground appurtenances, such as main line valves (MLVs) and pig launcher and receiver facilities and communications towers, outside of wetlands and ~~**waterbodies**~~*watercourses*. Therefore, no direct impacts or losses to wetlands or ~~**waterbodies**~~*watercourses* are expected to result from construction and operation of the aboveground facilities.

Potential impacts associated with the Project on national and/or state forests, park lands, wildlife refuges, game lands, and/or wildlife sanctuaries were identified for the construction and operation of the Project within Lancaster County. Information regarding potential impacts to national, state, or local historic sites and cultural or archaeological landmarks within the Project area was coordinated through the Pennsylvania Historical Museum Commission (PHMC). Threatened and endangered species coordination effort was conducted through the applicable federal and state agencies. Field studies were conducted on the portions of the line for which survey access was granted by landowners. Additional portions of the line, which are currently designated as no-access parcels, will be surveyed in the future.

A1. National, State or Local Park, Forest or Recreation Area

No impacts to National, State or Local Park, Forest or Recreation Areas are expected to occur within Lancaster County. Impacts to recreational resources such as hiking trails are discussed in Section B4b and e of this attachment.

A2. Natural, Wild, or Wilderness Area

One ~~**waterbody**~~*watercourse* to be crossed by the Project, Tucquan Creek, is designated as scenic by the Pennsylvania Scenic Rivers Act ~~**(DCNR)**~~. Transco is proposing to use a dam-and-pump method with a reduced construction *right-of-way* (ROW) of 75 feet to minimize impacts on the surrounding woody riparian vegetation at the Tucquan Creek crossing. To further reduce impacts, Transco has selected as its proposed crossing location a site that is within the footprint of an existing farm lane that crosses the waterway. Constructing the pipeline within the footprint of the farm lane will eliminate the need to clear riparian vegetation areas along the stream and will not require disturbance of the stream beyond the existing footprint of disturbance. Furthermore, the stream width at this location, while having perennial flow, is only 5 feet across, and, therefore construction will not adversely affect recreational navigation within the stream. The crossing will be restored to pre-construction conditions. *Transco submitted a Memorandum to the Pennsylvania Department of Conservation and Natural Resources (PA DCNR) requesting a consistency determination with the Pennsylvania Scenic Rivers Act regarding the crossing at Tucquan Creek. Any related correspondence received from PA DCNR will be provided to Pennsylvania Department of Environmental Protection (PA DEP) upon receipt.*

A3. National, State, or Local Historic Site

Section A6 provides a summary of potential impacts to historic, cultural and archaeological resources.

A4. National Natural Landmark

There will be no impacts to national natural landmarks as a result of the portion of the Project within Lancaster County.

A5. National Wildlife Refuge

There will be no impacts to national wildlife refuges as a result of the portion of the Project within Lancaster County.

A6. Cultural or Archeological Landmarks

On May 1, 2014, Transco met with staff of the PHMC to discuss the Project, cultural resource impacts, and proposed cultural resources investigations. Transco also requested that for the purpose of facilitating review of archaeological resources, a process developed for other natural gas Projects in Pennsylvania, aimed at providing regular Determinations of Eligibility ~~*(DOEs)*~~ for archaeological resources, be implemented. This process involves routine updates on the eligibility status of archaeological resources identified during Phase I surveys. Since this initial meeting, Transco's coordination and consultation with the PHMC has been on-going.

An open house for the Project in Lancaster County was held at Millersville University on June 11, 2014, and at the Acorn Farms Reception & Conference Center on July 29, 2014. Public comment was received from several landowners and interested members of the public concerning the increased potential for cultural issues in the Lancaster County portion of the Project, particularly with regard to 17th and 18th century Late Prehistoric, Protohistoric and Contact period resources, and the 19th/20th century historic-era occupation of the county. These concerns were examined and addressed during the cultural resources field reconnaissance and archival research conducted for the Project.

In addition to the open house, consultation was initiated with the Conestoga Area Historical Society and the Lancaster Historical Society concerning cultural resources in Lancaster County. Members of the Conestoga Area Historical Society expressed concerns for Native American archaeological sites and met with Transco to present results of their recent work in recording new archaeological sites, data which would be presented to the PHMC. The Lancaster Historical Society had no comment with regard to the proposed Project.

The Phase I archaeological field reconnaissance of the CPL-South study corridor in Lancaster County resulted in the identification of 86 archaeological resources. Site 36LA1566 (an historic-era cemetery) has been recommended by Transco for avoidance,

and subsequently removed from the proposed LOD. Site 36LA0001 is listed on the NRHP and 36LA1541 was determined to be Potentially Eligible by the PHMC; both of these resources will be avoided by the HDD method of construction. The remaining 83 archaeological resources have either been recommended as Not Eligible or not evaluated, generally isolated finds, by the PHMC, and no further investigation is necessary.

A total of 234 aboveground resources were identified during the Architectural History survey conducted for Project land requirements in Lancaster County; 120 of these resources are currently located within the Project, while an additional 114 resources were identified on parcels subsequently removed from the Project APE (due primarily to changes in the Project alignment). Four resources had been previously determined Eligible by PHMC, while an additional two resources were determined to be rural historic districts identified by Transco; only one of these rural historic districts were found to be Eligible by PHMC. Transco recommended 18 of the resources as Potentially Eligible and nine of the resources as Eligible for the NRHP. PHMC review concluded that 10 of the resources submitted as Potentially Eligible were not Potentially Eligible, and the additional eight Potentially Eligible resources were folded into rural historic districts. Transco submittal of the nine resources recommended as Eligible resulted in PHMC determination of seven Eligible resources and two Not Eligible resources. PHMC also determined there were no anticipated effects to the remaining 89 resources as a result of the Project.

The geomorphological desktop study identified two drainage crossings in Lancaster County which displayed a potential for deeply buried cultural deposits: the Conestoga River and Chiques Creek. Deep testing was completed on the west bank of the Conestoga River, and an HDD is planned for that section of the Project. Geomorphology field investigations determined that deep testing was not warranted for the east bank of the Conestoga River or Chiques Creek.

Attachments D-1 and D-2 provide a summary of consultation with PHMC and copies of correspondence, respectively.

~~Transco-sponsored open houses were held for the Project facilities in Lancaster County at Millersville University on June 11, 2014 and at the Acorn Farms Reception & Conference Center on July 29, 2014. Public comments were received from several landowners and interested members of the public raising concerns about the increased potential for Project-related impacts on cultural resources in Lancaster County, particularly with regard to 17th and 18th century prehistoric and contact period resources and the 19th/20th century historic-era occupation of the county. These concerns were examined and addressed during the cultural resources field reconnaissance and archival research conducted for the Project. Field surveys for cultural resources were conducted from May-December 2014 and resumed in March 2015.~~

~~A Phase I archaeological field reconnaissance was conducted in Lancaster County and focused on the proposed pipeline alignment. The field survey investigated a 300-foot-wide study corridor, in addition to full survey coverage of ancillary work areas, which resulted in the examination of 15,337 study locations (SL) in Lancaster County. The field survey recorded 2,076 SL as occurring on steep slopes, 389 SL as wet (in either a waterbody or wetland), 5,347 SL within agricultural fields displaying sufficient ground surface visibility to meet PHMC guidelines, and 1,196 SL were determined to have been subjected to modern ground disturbance (most commonly underground pipeline utilities). The field crew also visually inspected 129 SL in residential properties. The visual inspection was supplemented by the hand excavation of 6,238 shovel tests. These investigations resulted in the identification of 74 archaeological resources within the limits of the field survey, as outlined in the section below.~~

~~The architectural history field reconnaissance of the Project in Lancaster County resulted in the identification of 117 historic-era aboveground resources located within the viewshed of the Project, as indicated in Table D-1 located in Attachment D.~~

~~The geomorphological desktop study identified three drainage crossings in Lancaster County which displayed a high potential for deeply-buried cultural deposits: the Conestoga River, Chiques Creek and Swatara Creek. Geomorphological fieldwork was completed at these locations in the summer of 2015, and the results are pending review by PHMC.~~

~~The Phase I archaeological field reconnaissance of the CPL-South study corridor in Lancaster County resulted in the identification of 74 archaeological resources. One of these resources, 36LA0001, represents additional materials found in association with a previously-identified eligible resource, while two sites encountered during the archaeological fieldwork have subsequently been recommended as potentially eligible for the NRHP; all three of these resources will be avoided by construction. The remaining 71 archaeological resources have been recommended as not eligible for the NRHP; the PHMC concurred that no additional archaeological investigations would be warranted at 36 of these locations, with the remainder pending formal review by the PHMC (as indicated in Table D-1 in Attachment D).~~

~~A total of 117 aboveground resources were identified during the historic architecture survey conducted for Project land requirements in Lancaster County. Two resources had been previously determined eligible by PHMC. Transco's consultant, AECOM recommended 28 of the 117 resources as potentially eligible for the NRHP. PHMC review concluded that only 19 resources were potentially eligible for the NRHP and additional documentation was requested for those 19 resources. One resource is currently under review by PHMC but was recommended not eligible for the NRHP. PHMC also determined there were no anticipated effects to the remaining 97 resources as a result of the Project. Attachment D further describes these efforts and findings.~~

A7. State Game Lands

There will be no anticipated impacts to state game lands as a result of the portion of the Project within Lancaster County.

A8. Federal, State, Local or Private Plant or Wildlife Sanctuaries

There will be no anticipated impacts to federal, state, local or private plant or wildlife sanctuaries as a result of the portion of the Project within Lancaster County.

A9. Areas Identified as Prime Farmland

In an effort to identify the extent and location of important farmlands, the *Natural Resources Conservation Service* (NRCS), in cooperation with other interested federal, state, and local government organizations, has inventoried land that can be used for production of the nation's food supply. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. It should be noted that not all important farmland soils are used for farming. NRCS makes important farmland designations based on soil properties, not on current or past use.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, (e.g., tree nuts, cranberries, and other fruits and vegetables). It has the unique combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed.

Farmlands of statewide importance generally include those areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Farmland locations that are not identified as having national or statewide importance can be designated by local agricultural agencies as farmland of local importance for the production of food, feed, fiber, forage, and oilseed crops.

Agricultural lands crossed by the Project are primarily large tracts of row and field crops such as corn, soybeans, wheat, and hay. There are also several ~~Christmas tree farms and~~ organic farms that will be affected *in Lancaster County*. Approximately 27.~~43~~ miles *of the Project*~~of the total 36.8 miles in Lancaster County~~ will cross Prime Farmlands or Farmlands of Statewide Importance *in Lancaster County*. Pipeline construction may result in temporarily removing farmland soils from agricultural production if construction occurs

during the growing season. Pipeline construction and operation will not result in any long-term loss of prime and important farmland. Soils that are currently designated as prime farmland and farmland of statewide importance will retain their designation both during and after construction. Effects on agricultural soils, including prime and important farmland soils, will be mitigated according to the Transco Agricultural Plan and the *Transco Project-specific Upland Erosion Control, Revegetation, and Maintenance Plan* (Transco Plan), provided respectively as Attachments 6 and 17 of the Transco *Environmental Construction Plan* (ECP) (Attachment M). While some short-term decreases in agricultural productivity may result because of the disturbance of soil during construction, those effects can be mitigated over time by the restoration measures previously discussed and by resumption of proper soil management by landowners.

Construction of the River Road Regulator Station will permanently affect approximately 2.0 acres of prime farmland and soils of statewide importance by converting them to nonagricultural land uses. The permanent loss of designated prime farmlands and farmlands of statewide importance at aboveground facilities cannot be mitigated.

Transco conducted title searches to identify all easements crossed by the Project. The Project crosses multiple agricultural conservation easements Lancaster County including NRCS Farm and Ranch Land Protection Program (FRPP) easements, Agricultural Security Areas (ASA), and Agricultural Conservation Easements.

A conservation easement is a type of contract that functions like a deed restriction and restricts real property to uses and improvements that are compatible with the stated conservation purposes of the conservation easement. The existence of a conservation easement recorded against the title to a tract of land does not necessarily prohibit all development of the land. A typical conservation easement, even if intended to protect agricultural use, may specifically allow one or more residences, farm buildings, driveways, aboveground and belowground utilities, and other structures, even though these activities and improvements will convert some of the land to nonproduction use and reduce some of the agricultural production potential of the property. Uses that are not prohibited by a conservation easement are also permitted.

Farm and Ranch Land Protection Program

The FRPP provided matching funds to help purchase development rights to keep productive farm and ranchland in agricultural uses. State, tribal, or local governments and non-governmental organizations, as well as other entities that could become certified, had more flexibility and a shorter process to acquire easements (USDA n.d.). The Agricultural Act of 2014 repealed the FRPP; however, the Act does not affect terms or validity of any FRPP contract, agreement, or easement entered into prior to the date of enactment (February 7, 2014) or any associated payments required to be made in connection with an existing FRPP contract, agreement, or easement (USDA 2014).

To be eligible for the FRPP, lands must be privately owned, and:

- *Contain at least 50 percent prime, unique, statewide or locally important farmland or contain historical or archeological resources or land that furthers a state or local policy that is consistent with FRPP purpose;*
- *Be subject to a pending offer by an eligible entity; and*
- *Be cropland, grassland, pastureland or forest land (forest land not more two-thirds of easement) that contributes to the viability of an agricultural operation or serves as a buffer to protect an agricultural operation from development.*

Transco conducted title searches to identify all easements crossed by the Project facilities, including FRPP easements, and these easements are identified in Table L(d)-1.

Table L(d)-1
Properties with NRCS Easements Crossed by the Project in Lancaster County

Facility / County	Tract	Easement Type	Mileposts
CPL South			
Lancaster	PA-LA-139-B.000	FRPP	12.7 – 12.7
Lancaster	PA-LA-372-B.000	FRPP	M-0164 0.0 – 34.5
Key: CPL = Central Penn Line FRPP = Farm and Ranchland Protection Program			

NRCS conservation easements are addendums to agricultural preservation easements granted either to the Commonwealth of Pennsylvania or to a county Agricultural Lands Preservation Board. All of the underlying easements, whether to the Commonwealth or to a county board contain a provision specifically permitting the landowner to continue to grant easements for natural gas pipelines across the preserved land. Each of the underlying easements for the properties listed above contain the following provision:

> *The granting of rights-of-way by the Grantor [the landowner] … in and through the subject land for the installation, transportation, or use of lines for …gas, oil or oil products is permitted. The term "granting of rights-of-way" includes the right to construct or install such lines.*

In addition, the property owners for both of these tracts have entered into agreements to grant the rights-of-way needed for the Project. Each of these conservation easements also contain a paragraph about utilities which states:

> *3. Utilities. The granting of rights of way by the Grantor…. in and through the subject land for the installation, transportation, or use of, lines for ….gas, oil or oil products is permitted, provided the location of activities and structures, permitted under this provision, is consistent with the agricultural viability and the protection of soils purposes as articulated in this Agricultural Conservation Easement. The granting of rights of way includes the right to construct or install such lines, provided any excavation of soils to install such lines is returned to the original topography promptly upon completion of the construction or installation, and methods are taken to control soil erosion. To the greatest extent practicable, such utility rights-of-ways shall be sited to protect the impact to prime, unique and important soils.* ***After the Agricultural Conservation Easement is recorded, granting of utility rights-of-way on the subject land may only occur through the condemnation process****, which is subject to the review by the Agricultural Lands Condemnation Approval Board in accordance with 3 P.S. Section 913****, unless the condemnation is exempt from review under that section.*** *If the proposed condemnation is exempt from review by the Agricultural Lands Approval Board [sic],* ***the Grantees shall give notice of this fact*** *to the United States Department of Agriculture….*

Since the landowners of the three tracts with this provision in the conservation easements have all agreed to grant the rights-of-way for the Project, no condemnation will occur. Further, the granting of ROWs for federal natural gas pipeline projects approved by FERC is specifically exempted from review by the Agricultural Lands Condemnation Approval Board in accordance with 3 P.S. Section 913, which provides:

> *3 P.S. §913(b). Approval required for condemnation by a political subdivision, authority, public utility or other body. --No political subdivision, authority, public utility or other body having or exercising powers of eminent domain shall condemn any land within any agricultural security area for any purpose, unless prior approval has been obtained from Agricultural Lands Condemnation Approval Board …. **The condemnation approvals specified by this subsection shall not be required** for an underground public utility facility that does not permanently impact the tilling of soil or for any facility of an electric cooperative corporation or **for any public utility facility the necessity for and the propriety and environmental effects of which has been reviewed and ratified or approved by the Pennsylvania Public Utility Commission or the Federal Energy Regulatory Commission,** regardless of whether the right to establish and maintain such underground or other public utility facility is obtained by condemnation, or by agreement with the owner.*

The Addendum to each of the conservation easements also requires the "Grantees" to provide notice to the USDA of the exemption of the tracts from review by the Agricultural Lands Condemnation Approval Board. "Grantees" is defined in each of the conservation easements as the county Agricultural Security Board. While Transco does not know if such notices were made to the USDA by the county Agricultural Security Boards, the USDA has been receiving notices regarding the Project since its inception, and has been on the list of stakeholders since May 2, 2014.

Agricultural Security Areas and Agricultural Conservation Easements
An Agricultural Security Area (ASA) is a unit of land of 250 or more acres reserved for agricultural production of crops, livestock, or livestock products that have been designated as such under Pennsylvania Code 1967 P. L. 992, No. 442 and 32 P. S. § § 5001–5012. ASA lands are provided protection from laws prohibiting agricultural activities. An ASA designation does not prohibit the landowner from developing oil or gas on the land. Therefore, construction and operation of the pipeline facilities will not affect the classification of the ASA parcels.

An agricultural conservation easement is a protection placed on a land that provides the landowner the right to prevent development or improvement of a parcel for any purpose outside of agricultural production (PFPA 2012). Such easements may be sold or donated

by a landowner to the state, county, local government, or local land trust. For a parcel to qualify for an agricultural conservation easement, it must first be designated as an ASA. ASA lands are designated by local municipalities upon the request of landowners to promote permanent and viable farming operations. Owners of ASA lands may apply for the purchase of an agricultural conservation easement to receive preferential zoning treatment. The ASA designation does not restrict the use of the property, which can be developed in any manner authorized by local ordinances and regulations. The existence of utility facilities does not prevent land from being designated as an ASA or agricultural conservation easement.

Agricultural conservation easement programs are administered individually by local boards and staff within the 57 counties across Pennsylvania. Transco is currently consulting with the counties crossed by the Project to identify agricultural conservation easements within the Project area. In addition, Transco has conducted title searches on all parcels crossed by the Project to identify easements. Agricultural conservation easement programs crossed by the Project include the Lancaster Agricultural Preserve, the Lancaster County Conservancy, and the Lancaster Farmland Trust. Agricultural conservation easements crossed by the Project are listed in Table L(d)-2.

TABLE L(d)-2
Pennsylvania Conservation Easements Crossed by the Atlantic Sunrise Project in Lancaster County

Facility	Easement Type	Begin Milepost	End Milepost	Land Affected During Construction (acres)	Land Affected During Operation (acres)
CPL South					
Lancaster County					
PA-LA-002-B.000	ASA/Lancaster Agricultural Preserve	0.0	0.1	6.4	0.5
PA-LA-009-B.000	Lancaster Agricultural Preserve	0.5	0.7	5.9	1.6
PA-LA-018-B.000	ASA	0.6	1.9	7.5	2.8
PA-LA-050-B.000	ASA/Lancaster Agricultural Preserve	M-0184 0.0	M-0184 0.4	6.3	2.4
PA-LA-052-B.000	Lancaster Agricultural Preserve	M-0184 0.4	M-0184 0.9	6.9	2.7
PA-LA-071-B.000	Lancaster Farmland Trust	5.3	5.5	3.7	1.5
PA-LA-078-B.000	ASA/Lancaster Agricultural Preserve	6.2	6.6	7.9	2.9
PA-LA-083-B.000	Lancaster County Conservancy	6.9	7.0	0.7	0.2

TABLE L(d)-2
Pennsylvania Conservation Easements Crossed by the Atlantic Sunrise Project in Lancaster County

Facility	Easement Type	Begin Milepost	End Milepost	Land Affected During Construction (acres)	Land Affected During Operation (acres)
PA-LA-084-B.000	Lancaster County Conservancy	7.0	7.0	0.4	0.1
PA-LA-095-B.100	Lancaster Farmland Trust/Lancaster County AG Preserve Board	7.9	8.1	3.3	1.4
PA-LA-099-B.000	Lancaster Agricultural Preserve	8.2	8.7	6.8	2.5
PA-LA-101-B.000	ASA	8.7	8.8	2.4	0.9
PA-LA-004-C.000	ASA	9	9.3	1.2	0.4
PA-LA-007-C.000	Lancaster Farmland Trust	10.4	10.8	5.7	2.1
PA-LA-115-B.000	ASA/Lancaster Farmland Trust	9.6	9.9	3.5	1.4
PA-LA-123-B.000	ASA/Lancaster Farmland Trust	10.3	10.6	4.8	1.9
PA-LA-124-B.000	ASA/Lancaster Farmland Trust	10.7	11.1	7.0	2.6
PA-LA-126-B.000	ASA/Lancaster Farmland Trust	11.2	11.3	1.9	0.8
PA-LA-139-B.000	ASA/FRPP	12.4	12.4	0.1	<0.1
PA-LA-140-B.000	ASA/FRPP	12.4	12.7	4.2	2.1
PA-LA-145-B.000	Lancaster Agricultural Preserve/ Lancaster Farmland Trust	M-0152 0.0	13.1	7.3	2.4
PA-LA- 187.000	Lancaster Agricultural Preserve	13.8	14.2	6.0	2.4
PA-LA- 191.000	Lancaster Agricultural Preserve	14.6	14.9	4.4	1.7
PA-LA-195.001	ASA	15.3	15.5	3.1	1.3
PA-LA- 202.000	ASA/Lancaster Agricultural Preserve	15.6	15.9	5.3	2.0
PA-LA- 205.000	Lancaster Agricultural Preserve	15.9	16.1	2.6	1.0
PA-LA-209.100	ASA/Lancaster Agricultural Preserve	16.1	16.3	1.3	0.8
PA-LA- 213.000	ASA/Lancaster Agricultural Preserve	M-0185 0.1	16.6	5.6	2.1
PA-LA-215.000	ASA	16.7	16.9	4.0	1.6
PA-LA-216.000	ASA	16.9	17.2	5.2	2.0
PA-LA- 224.000	Lancaster Agricultural Preserve	17.9	18.3	6.9	2.6
PA-LA- 225.000	ASA	18.3	18.8	8.6	3.3
PA-LA- 227.000	ASA/Lancaster Agricultural Preserve	18.8	19.3	7.6	2.9
PA-LA- 236.000	Lancaster Agricultural Preserve	19.3	19.6	3.8	1.5
PA-LA- 236.002	ASA/Lancaster Agricultural Preserve	19.6	19.9	4.0	1.5
PA-LA-251.000	Lancaster Agricultural Preserve & Lancaster Farmland Trust	21.1	21.5	6.3	2.2
PA-LA-254.000	ASA/Lancaster Agricultural Preserve & Lancaster Farmland Trust	21.9	22.1	3.8	1.6
PA-LA-294.100	Lancaster Agricultural Preserve	24.2	24.4	4.9	1.7

TABLE L(d)-2
Pennsylvania Conservation Easements Crossed by the Atlantic Sunrise Project in Lancaster County

Facility	Easement Type	Begin Milepost	End Milepost	Land Affected During Construction (acres)	Land Affected During Operation (acres)
PA-LA-295.100	Lancaster Agricultural Preserve	24.45	24.45	0.4	0.2
PA-LA-334.000	ASA	29.7	29.9	3.8	1.3
PA-LA-357-B.100	ASA/Lancaster Agricultural Preserve	31.5	32.2	12.1	4.3
PA-LA-372-B.000	ASA/Lancaster Agricultural Preserve/FRPP	M-0164 0.0	34.5	7.5	2.8
PA-LA-374-B.000	ASA	34.45	34.58	1.6	0.7
PA-LA-375-B.000	Lancaster Agricultural Preserve	34.6	34.8	3.8	1.4
PA-LA-376-B.000	Lancaster Agricultural Preserve	34.8	35.1	4.1	1.6
PA-LA-377-B.000	ASA/Lancaster Agricultural Preserve	35.1	35.5	6.8	2.5
PA-LA-379-B.000	ASA/Lancaster Agricultural Preserve	35.5	35.6	1.8	0.7
PA-LA-381-B.000	ASA/Lancaster Agricultural Preserve	36.1	36.2	2.8	1.0

Transco will restore agricultural properties with conservation easements in accordance with the methods described the Transco Agricultural Plan provided as Attachment 6 of the Transco ECP (Attachment M).

B. Impacts on the Aquatic Environment

B1. Aquatic Habitats

All temporary impacts to aquatic resources are related to the construction of the pipeline. All permanent impacts to aquatic resources are related to the removal of vegetative cover for operation. No fill or impervious cover will be added to aquatic resources as part of this Project. Operational ROW will be maintained for a width of 10-feet at ~~**waterbody**~~*watercourse* approaches and through *palustrine emergent* (PEM) and *palustrine scrub-shrub* (PSS) wetlands, and for a width of 30-feet through *palustrine forested* (PFO wetlands). Transco is proposing the construction ROW widths to provide for safe and efficient construction of large-diameter pipeline facilities in accordance with *Occupational Safety and Health Administration* (OSHA) regulations (29 CFR 1926.650-1926.652, Subpart P) and Interstate Natural Gas Association of America's (INGAA) workspace guidelines (INGAA 1999). Reductions of the construction ROWs will be made,

where practicable, at various locations to address specific environmental or residential issues along the proposed pipelines. The impact analysis included in this section is related to resources associated with PA DEP Chapter 105 jurisdictional areas.

The proposed Project extends through 46 special protection watersheds (e.g., High Quality or Exceptional Value) and watersheds that are considered siltation impaired. As a result, an anti-degradation analysis was prepared for the Project and a detailed listing of each watershed, cause of siltation, and location it will be crossed is provided for Lancaster County within Attachment M. Additionally, the Comprehensive Environmental Evaluation for the Central Penn Line provided in Appendix L-1 presents a summary of the anti-degradation consistency analysis for the Project as whole.

The Project will affect ~~38~~ *48* streams, ~~34~~ *50* floodways, and 1~~68~~ wetlands within Lancaster County. Per PA DEP guidance, the installation of a pipe under streams is considered a permanent impact. ***Please note that the total count of wetlands affected is based on cover types, such that a single wetland complex could have multiple wetland counts. For example, a single wetland complex comprised of PEM, PSS, and PFO cover types was counted as three wetland crossings for the purpose of impact presentation in this Application. Tables summarizing the overall impacts on waterbodies and wetlands for the Project as a whole are included in the Comprehensive Environmental Evaluation for the Central Penn Line in Appendix L-1.***

Through the implementation of the ~~**Environmental Construction Plan (**~~ECP~~)~~, including the Best Management Practices (BMPs), water quality impacts are expected to be minimized to the extent practicable during construction, and no long term water quality impacts are expected to occur. Prior to conducting any in-stream work, all associated BMPs shall be installed and functional. BMPs will be installed at the edge of work areas, as necessary, to prevent siltation into wetlands in the vicinity of construction activities and will be maintained throughout the period of the construction activities. Wetland and ~~**waterbody**~~*watercourse* boundaries will be clearly marked prior to construction activities.

Restoration of streams will involve, at a minimum, restoring each stream to pre-construction contours ***revegetating surface water banks and riparian areas in accordance with the Riparian Area Impact Assessment and Restoration Plan for the Project area in Lancaster County provided within Appendix L-2.*** ~~.~~

In wetland areas, restoration activities will involve returning wetlands to pre-construction contours and seeding in non-inundated areas with an approved wetland seed mix. In general, hydrologic conditions are not anticipated to be impacted as a result of Project construction.

Transco has incorporated the following avoidance and minimization measures to reduce impacts to aquatic resources.

Erosion and Sediment Controls

Construction activities can disturb surface soils and cause subsequent sediment transport into adjacent wetlands. Sedimentation will be minimized by the installation of temporary sediment control measures between the upland construction areas and the wetlands. Permanent erosion controls, including slope breakers, trench breakers, and vegetative cover, will be used in adjacent upland areas to minimize long-term sedimentation into the wetlands. Energy dissipation devices may be installed at the down-slope end of slope breakers to minimize erosion of soil off the ROW into wetlands. Trench plugs will be installed in upland slopes adjacent to wetlands to prevent trench erosion. Trench plugs also will be spaced in accordance with the applicable state and federal regulations and installed at the edges of the wetland and on either side of ~~**waterbody**~~*watercourse* crossings to prevent subsurface drainage along the pipeline.

To minimize erosion and promote revegetation within the wetland, removal of the root mats for woody vegetation will be allowed only directly over the trench area or where required to ensure safe working conditions. This serves to enhance regeneration of vegetation on the construction and permanent ROW. Permanent erosion control structures that could alter hydrology (e.g., slope breakers) will not be installed within wetlands, but these structures will be used in the adjacent upland areas to control erosion and sedimentation. Transco

will employ BMPs as specified in erosion and sediment control permits and approved by PA DEP to further minimize the potential for soil compaction.

Turbidity and sedimentation could result from in-stream construction activities, trench dewatering, and/or construction-related stormwater runoff. In slow-moving waters, increases in suspended sediments could increase the biological oxygen demand and reduce levels of dissolved oxygen in localized areas during construction. Suspended sediments also could alter the chemical and physical characteristics of the water column on a temporary basis.

Transco will cross surface waters with flowing water present at the time of construction using dry-ditch construction methods to the greatest extent practicable. Dry-ditch crossing and trenchless ~~**waterbody**~~*watercourse* crossing methods can dramatically reduce downstream sediment transport effects compared to wet open-cut crossings (Reid and Anderson 1999~~**; Reid et al. 2002**~~). Transco will employ ~~**best management practices**~~ ~~(~~BMPs~~)~~ as specified in its Erosion and Sediment Control General Permit 2 (ESCGP-2) application, which contains a site-specific erosion and sediment control plan to further minimize the potential for soil compaction ***(see Attachment M - provided under separate cover)***.

Transco will also install temporary equipment bridges across surface waters to reduce the potential for turbidity caused by movement of construction equipment and vehicular traffic. Equipment bridges will be constructed of ~~**clean rock or gravel and culverts,**~~ timber mats~~,~~ or portable prefabricated bridges, depending on surface water conditions (e.g., if excessively soft soils are encountered in the surface water bed, or if high water flows occur, portable bridges will be used at minor surface water crossings ~~**instead of rock and culverts**~~). Typical drawings for equipment bridges are provided in Attachment 2 of the Transco ECP (Attachment M). Equipment bridges will be maintained until the pipe is installed and they are no longer needed. The bridges will then be removed. Equipment bridges will be designed to accommodate normal to high surface water flow and will be maintained to prevent flow restriction during the period of time the bridge is in use during construction.

To minimize sedimentation during pipeline construction across ~~**waterbodies**~~*watercourses*, trench spoil will be placed at least 10 feet away from water's edge, unless impractical due to topography, as specified in the Transco *Project-Specific Wetland and Waterbody Construction and Mitigation* Procedures *(Procedures)* (Attachment 18 of the Transco ECP [Attachment M]). Erosion controls will be placed around spoil piles to prevent sediment from flowing into surface waters. Additional Temporary Workspace (ATWS) will typically be set back 50 feet from the water's edge unless otherwise approved by *Federal Energy Regulatory Commission* (FERC) and the *United States Army Corps of Engineers* (USACE) *(see Attachment P-1, Appendix P-1)*.

Once the pipe is placed in the trench, the excavated material will be replaced immediately, and the surface water banks and bed will be restored to preconstruction contours. To stabilize the banks, the surface water banks and riparian areas will be revegetated using approved seed mixes and/or erosion control blankets or matting *in accordance with the Riparian Area Impact Assessment and Restoration Plan for Lancaster County within Appendix L-2.*

Compaction

Compaction of wetland soils and rutting within wetlands will be minimized by using low-ground-pressure equipment and temporary equipment mats. In general, rutting of soils, which is a sign of compaction, in wetlands or in other areas during wet conditions will be avoided or minimized through the use of timber mats as deemed necessary during construction or by postponing work until soils have dried. In addition, Transco will minimize compaction of soils within agricultural lands, residential areas, and not saturated or inundated wetlands by stripping, segregating, and stockpiling topsoil separately from subsoil during construction. ***The Transco Procedures (ECP Attachment 18, provided within Attachment M of this Application) (Transco Procedures) and Agricultural and Construction Monitoring Plan (ECP Attachment 6, provided within Attachment M of this Application) indicate that the top 12 inches of topsoil from wetland and agricultural areas disturbed by trenching will be segregated from subsoil, except in areas where standing water is present, soils are saturated, or where shallow depth***

to bedrock conditions exist. These exceptions will be identified via visual assessment during grading and documented in the field with the Environmental and/or Agricultural Inspector. Immediately after backfilling is complete, the segregated topsoil will be restored to its original horizon location. ~~**Transco will segregate 12 inches of topsoil or the entire topsoil layer if it is less than 12 inches.**~~ Restoration of the soil surface elevations and contours and revegetation will be performed in accordance with Transco's ECP (Attachment M). ~~**In areas where topsoil has been segregated, the subsoil will be placed back in the trench first and the topsoil will be placed over the subsoil.**~~ Backfilling will occur to approximate grade; however, a soil crown may be placed above the trench to accommodate future soil settling.

If compaction occurs during construction, Transco will also use subsurface decompaction techniques, as described in the Transco ~~**Draft**~~ Agricultural Construction and Monitoring Plan within Attachment 6 of Transco's ECP (Attachment M). Transco will employ BMPs as specified in erosion and sediment control permits and approved by the PA DEP to further minimize the potential for soil compaction.

Hydrology

Stream crossings are to be performed during low flow conditions with oversight from an environmental inspector. Storm event weather forecasts will be monitored prior to and during the stream crossing. The contractor will be required to maintain an adequate number of pumps on-site to facilitate an unanticipated increase in stream flow.

Per the Transco Procedures, provided as Attachment 18 of the ECP (Attachment M), the following additional measures for dam-and-pump ~~**waterbody**~~*watercourse* crossings will be implemented:

- *Use* ~~**S**~~*s*ufficient pumps, including on-site backup pumps, ~~**will be used**~~ to maintain downstream flows;
- Pumps will be properly aligned to prevent surface water bed scour at the pump discharge;

- Dams will be constructed with materials that prevent sediment and other pollutants from entering the ~~**waterbody**~~*watercourse*;
- Pump intakes will be screened to minimize entrainment of fish; and,
- Dams and pumps will be continuously monitored to ensure proper operation throughout the ~~**waterbody**~~*watercourse* crossing.

~~**Per the Transco Procedures, provided as Attachment 18 of the Transco ECP (Attachment M), the following additional measures for wet open-cut crossings of minor and intermediate surface waters will be implemented:**~~

- ~~**In-stream construction activities (including trenching, pipe installation, backfilling, and surface water bed restoration) will be completed within 24 to 48 hours, except for areas that require blasting or other rock-breaking measures; and,**~~
- ~~**Operation of equipment in the surface water will be limited to that needed to construct the crossing.**~~

Per the Transco Procedures, provided as Attachment 18 of the ECP (*Attachment M*~~**Volume 3**~~), the following additional measures for flume crossings of ~~**waterbodies**~~*watercourses* will be conducted:

- Sand bags, sand bag and plastic sheeting diversion structures, or the equivalent will be used to develop an effective seal and to divert stream flow through the flume pipe;
- Flume pipes will remain in place until trenching, pipe laying, backfilling, and initial streambed restoration efforts are complete;
- Flume pipes will be properly aligned to prevent bank erosion and streambed scour; and
- All flume pipes and dams that are not part of the equipment bridge will be removed as soon as final cleanup of the streambed and bank is complete.

Permanent changes in surface and subsurface hydrology along the pipeline alignment through a wetland can have a long-term effect on hydrology and associated function and

value. Trench plugs will be installed at the entrance and exit of the pipeline through each wetland to ensure that the subsurface hydrology remains intact. Restoration of each wetland will include returning contours to preconstruction levels (within 6 inches) and removing temporary erosion control measures.

Trench Dewatering

During construction, the open trench could accumulate water, either from the seepage of groundwater or from precipitation. This water must be removed from the trench to allow construction to proceed. During trench dewatering, water will be pumped from the trench and discharged into vegetated upland areas after first being filtered through a straw bale structure and/or filter bag. The rate of flow from the pump will be regulated to prevent scouring from runoff. Dewatering will be conducted in a manner designed to prevent the flow of heavily silt-laden water directly into adjacent surface waters or wetlands and will be performed in accordance with the PA DEP and USACE permit requirements and the FERC Order.

Blasting

Transco anticipates the use of blasting in bodies of water or watercourses, however, Transco will not know for certain until construction activities commence. Watercourses with a higher potential for blasting are those with shallow depth to bedrock, as presented within Table L(d)-3. Transco's construction contractor will be required to demonstrate that blasting is necessary by first attempting to remove bedrock material using mechanical means, such as a hydraulic ram or splitter, rock trenching machine, or rock saw. Transco has submitted an Application for use of Explosives in Commonwealth Waters to the Pennsylvania Fish and Boat Commission (PFBC) for each proposed stream crossing in the event that blasting of bedrock is required to properly install the pipe.

Table L(d)-3
Watercourses with Shallow Depth to Bedrock Crossed by the Atlantic Sunrise Project in Lancaster County

Waterbody ID	Waterbody Name[a]	Approximate Milepost[b]	Latitude	Longitude	Municipality	Stream Type	Crossing Length (feet)	Water Quality Classification[c]	Fishery Classification[d]	Crossing Method[e]
WW-T10-003A	UNT to Muddy Run	MOC-0147 0.59	39.85557	-76.26258	Drumore	Ephemeral	10.35	TSF, MF	Approved Trout Waters	II
WW-T31-3003	UNT to Back Run	30.13	40.14099	-76.46777	Rapho	Perennial	10.62	TSF, MF	N/A	II
WW-T31-3005	Brubaker Run	32.99	40.17062	-76.49677	Rapho	Perennial	10.65	TSF, MF	N/A	II
WW-T10-003	Muddy Run	MOC-0147 0.59	39.85550	-76.26253	Drumore	Perennial	12.80	TSF, MF	Approved Trout Waters	II
WW-T10-004	Tucquan Creek	MOC-0184 0.849	39.88144	-76.27503	Martic	Perennial	10.01	HQ-CWF, MF	Wild Trout Waters	II

a: UNT: Unnamed Tributary. UNT name was identified based on review of USGS topographical mapping.
b: Milepost provided for access roads indicate the point at which the access road meets the proposed pipeline.
c: PA Water Quality Classification Definition: TSF = Trout stocked fishery, MF = Migratory Fishery (Chapter 93 Pennsylvania Code). Water quality classifications were identified through a desktop review of available GIS data layers. A waterbody that was not assigned a water quality classification on the GIS data layer was given the same classification as the waterbody it drains into. All water quality classifications shown are designated uses, no existing uses are present in the Project area.
d: N/A = Not Applicable, no state fishery classification; PA Fishery Classifications: Approved trout waters; Wild Trout Waters (PFBC 2014a, 2014b, and 2014c).
e: II = Dry Crossing Method, including Flume, Dam and Pump, or Dry Open Cut for waterbodies that are dry at the time of crossing.

~~**Transco will make every effort to remove rock using mechanical means and avoid blasting within surface water crossings; however, if conditions are encountered that warrant the use of controlled blasting, the appropriate permits and approvals will be obtained and regulatory requirements will be met prior to blasting. In general, if blasting is required at a waterbody crossing, the preparation of the rock for blasting (i.e., drilling shot holes) will cause sufficient disturbance to displace most aquatic organisms from the immediate vicinity of the blast and temporarily increase surface water turbidity. If in-water blasting is deemed necessary, Transco will implement its Blasting Plan, provided as Attachment 10 of the Transco ECP (Attachment M), and the site-specific blasting plan that will be produced for each area requiring blasting, which specifically addresses in-water blasting. In addition, Transco will obtain the required permits, licenses, and approvals and notify agencies in accordance with permit requirements. The Blasting Plan outlines proper precautions and necessary pre-blast planning to be implemented to minimize potential effects. Transco's contractor will also create a detailed, site-specific blasting plan for each area proposed for blasting; each site-specific blasting plan will be consistent with the provisions of the Project-specific Blasting Plan. Immediately following blasting, Transco will remove rock that impedes surface water flow. These steps will minimize the effects of blasting on aquatic organisms.**~~

*In general, if blasting is required at a **watercourse** crossing, the preparation of the rock for blasting (i.e., drilling shot holes) will not cause sufficient disturbance to displace aquatic organisms and will not increase surface water turbidity, since dry crossing methods will be utilized at each crossing. If in-water blasting is deemed necessary, Transco will implement its Blasting Plan, provided as Attachment 10 of the Transco ECP (Attachment M), and the site-specific blasting plan that will be produced for each area requiring blasting, which specifically addresses in-water blasting. In addition, Transco will obtain the required permits, licenses, and approvals and notify agencies in accordance with permit requirements. The Blasting Plan outlines proper precautions and necessary pre-blast planning to be implemented to minimize potential effects. Transco's contractor will also create a detailed, site-specific blasting plan for each area proposed for blasting; each site-specific blasting plan will be consistent with the provisions of the Project-specific Blasting*

Plan. Immediately following blasting, Transco will remove rock that impedes surface water flow. ***Furthermore, Transco will implement a two-foot depth of cover within consolidated rock to minimize the amount of blasting required and the duration of construction activity within the affected watercourse.***

Spill Control

Inadvertent spills of fluids used during construction, such as fuels, lubricants, and solvents, could contaminate wetland soils and have adverse impacts on wetland vegetation. The Spill Plan for Oil and Hazardous Materials *(Transco Spill Plan)*, provided as Attachment 9 of the Transco ECP (Attachment M), will be implemented to minimize the potential for spills and minimize effects from spills. In general, storage of equipment, hazardous materials, chemicals, fuels, lubricating oils, will occur at least 100 feet from wetlands, ~~and waterbodies~~*watercourses, and bodies of water*. *The Horizontal Directional Drill (HDD) Contingency Plan in Attachment 3 of the ECP (Attachment M) addresses inadvertent returns.*

Fuel spills that occur during construction, although unlikely, could result in toxicity to aquatic organisms and associated modifications of aquatic habitat, as well as decreased oxygen concentrations. ~~Transco has developed a Spill Plan for Oil and Hazardous Materials (Transco Spill Plan), included as Attachment 9 of the ECP (Attachment M), that~~*The Transco Spill Plan* describes measures that will be implemented by Transco personnel and its contractors to prevent and, if necessary, control any inadvertent spill of hazardous materials that could affect water quality. The Transco Spill ~~Plan for Oil and Hazardous Materials~~ will be updated with site-specific information prior to the initiation of construction activities. Hazardous materials, chemicals, lubricating oils, and fuels used during construction will be stored in upland areas at least 100 feet from surface waters unless otherwise approved by applicable regulatory agencies, and refueling of construction equipment will be conducted at least 100 feet from surface waters unless otherwise approved by applicable regulatory agencies. Additional precautions such as continual monitoring of fuel transfer and use of spill kits will be employed. Disposal of hazardous materials will also be conducted in accordance with the Transco Spill ~~Plan for Oil and Hazardous Materials~~.

Revegetation

Some wetland vegetation will be cut, removed, or crushed during construction. After the completion of construction, wetland areas within the ROW will be restored to preconstruction contours and revegetated ~~with annual ryegrass~~ where standing water is not present to stabilize disturbed soils. ***For the pipeline construction ROW and ancillary facilities, Transco proposes to utilize either winter wheat or annual ryegrass as a nurse crop on the ROW from January 1 through May 15 and August 15 through December 31. During the summer months (May 15 through August 15), it is recommended that browntop millet be utilized as the nurse crop. The use of cereal (winter) rye is highly discouraged due to the allopathic effects it could have on the establishment of the permanent crop. It is recommended that annual rye be planted at a nurse rate of 4 pounds per acre and winter wheat at a rate of 10 pounds per acre, individually. Browntop millet should be seeded at a rate of 5 pounds per acre.***

Annual ryegrass, winter wheat, and browntop millet are is intended to be a temporary cover to enhance soil stability. *In wetland areas, restoration activities will involve returning wetlands to pre-construction contours and seeding in non-inundated areas with an approved wetland seed mix. The* ***Seed mixes for the Project are included in the Riparian Area Impact Assessment and Restoration Plan for Lancaster County (Appendix L-2), and in the BMPs and Quantities Plan Set, included within Attachment M of the revised Application.*** ~~**Affected wetland areas will be allowed to revegetate naturally from existing adjacent seed banks.**~~ PEM wetlands, dominated primarily by low-growing sedges, rushes, and other herbaceous vegetation will revert to emergent vegetation following construction, resulting in no permanent change to wetland type. Wetland areas will not be amended with fertilizer, lime, or mulch unless required by applicable federal and state agencies.

Wetlands will be monitored post-construction in accordance with the Transco Procedures (Attachment 18 of the Transco ECP [Attachment M]). ~~**Wetlands will be monitored for a period of 3 to 5 years after the completion of construction to ensure successful revegetation of the Project area.**~~ Revegetation will be considered successful when the

vegetative cover returns to at least 80 percent of the type, density, and distribution of the native vegetation in adjacent, undisturbed portions of the wetland. *Within three years after construction, Transco will file a report with FERC identifying the status of the wetland revegetation efforts and documenting success as defined in the Transco Procedures.*

For any wetland where revegetation is not successful at the end of three years after construction, Transco will develop and implement (in consultation with a professional wetland ecologist) a remedial revegetation plan to actively revegetate wetlands. Transco will continue revegetation efforts and file a report annually documenting progress in these wetlands until wetland revegetation is successful.

Additional avoidance and minimization measures are described in the Transco Procedures, which is included as Attachment 18 of the Transco ECP (Attachment M). To minimize adverse impacts at ~~**waterbody**~~*watercourse* crossings, the Transco Procedures will be implemented during construction, post-construction restoration, and operation of the Project. In addition, construction activities at ~~**waterbody**~~*watercourse* crossings will be performed in accordance with the USACE permit requirements, PA DEP permit requirements, and the FERC Order. ***The Transco Procedures also outline the plan for correction of deficiencies identified during post-construction monitoring.***

Cleanup and Restoration

Upon completion of wetland crossings, Transco will promptly restore wetlands to their original configurations and contours and promptly stabilize disturbed adjacent upland areas. ***Final wetland elevations will be determined using civil survey (sub-centimeter accuracy) data collected prior to construction.*** Through these activities, Transco seeks to protect wetlands from sediment transport and restore as quickly as possible. Following construction, Transco will monitor disturbed wetlands and adjacent uplands until restoration and long-term stabilization is documented.

Upon completion of in-stream construction, Transco will ~~**stabilize**~~ *restore* the ~~**surface water**~~*stream bed and* banks to minimize erosion, ~~**and**~~ washouts, and associated turbidity and sedimentation. Transco will stabilize the ~~**surface water banks and**~~*stream* bed *and*

banks to preconstruction contours~~.~~ *such that they are similar to banks at the limits of disturbance. Transco will also utilize pre-construction photographs. Banks will be stabilized using geotextile fabric. Appendix L-3, Table 1 identifies each watercourse and the stream restoration detail to be utilized on either bank. A* ***typical detail for streambed restoration is included in the BMPs and Quantities Plan Set within Attachment M. The streambed will be restored to grade using native streambed material.*** ~~**Depending on surface water conditions, the banks and bed may be stabilized using erosion control fabric, clean fill or native cobbles, riprap, and/or permanent slope breakers.**~~ To further stabilize the surface water banks, Transco will re-vegetate the banks and riparian areas using approved seed mixes *in accordance with the Riparian Area Impact Assessment and Restoration Plan for Lancaster County within Appendix L-2*. ~~**The temporary vegetation will stabilize the area until indigenous riparian species are re-established.**~~ If inclement weather limits the effectiveness of reseeding efforts, temporary erosion control measures will be implemented to minimize erosion until conditions are suitable for reseeding. The temporary erosion control measures will be monitored and maintained until conditions are suitable for completion of restoration. No fertilizers, lime, or mulch will be utilized in riparian areas unless required in writing by the PA DEP and USACE permit requirements and the FERC Order.

Following construction, disturbed areas will be reseeded with approved seed mixes in accordance with the Transco ~~**Project-specific Upland Erosion Control, Revegetation, and Maintenance Plan (**~~Plan~~)~~ and Transco Procedures (Attachments 17 and 18 of the Transco ECP (Attachment M)), *and the Riparian Area Impact Assessment and Restoration Plan for Lancaster County (Appendix L-2)*. Trees and other woody vegetation will be allowed to reestablish naturally within the temporary ROWs and other temporary workspaces that were cleared for construction of the pipeline. The use of soil conservation techniques will avoid and/or minimize erosion and runoff that could potentially affect surface water quality.

Temporary alteration of the ROWs and construction areas is expected to be relatively insignificant compared to the size of drainage areas and sub-watersheds of surface water systems across the Project area. Considering the Project's BMPs for erosion and sediment

control measures provided in Attachment 2 of the Transco ECP (Attachment M), such as the use of slope breakers, silt fence, and sediment traps, site stabilization during construction, and revegetation, changes in the type of the vegetative cover and shading of surface waters will vary by crossing. Areas with forested riparian zones may experience temporary or permanent reduction/loss of shading and thermal effects in the vicinity of areas where tree clearing occurs. The construction ROWs will be as narrow as practicable to construct safely, and the area of increased light penetration and increased water temperatures ~~***should***~~ *will* be limited to a relatively short length of the surface water; therefore, habitat changes within the channel will be minimal. In areas where the forested buffer can regenerate naturally (in the construction ROW outside the permanent ROW), the effect will decrease over time as trees grow and mature and shading increases.

Wetlands

There are ~~**1**.0857~~***1.0338*** acres of temporary wetland impacts to PEM wetlands, ~~**0.0047 acres of temporary impacts to PSS wetlands,**~~ and ~~**0.3299**~~*0.2529* acre~~s~~ of *temporary impacts to* PFO wetlands associated with the construction of the pipeline, which will be restored upon completion of construction, allowing the wetlands to revert to the pre-construction vegetation type. The Project will result in ~~**0.**1243~~ ***0.****1478* acre~~s~~ of permanent impacts to PEM wetlands and ~~**0.**1542~~ ***0.****2544* acre~~s~~ of *permanent impacts to* PFO wetlands. There are no PSS wetland impacts as a result of this Project. There will be no fill placed in wetlands and no permanent loss of wetlands as a result of the Project. Construction workspace has been ~~**generally**~~ reduced to 75 feet *at most*~~**in**~~ wetland ***crossings***, unless necessary due to site specific constraints. ***Attachment P-1, Appendix P-1 provides a table of locations and justifications where ROWs in certain wetlands exceed the 75 foot maximum width recommended by the FERC.*** Permanent impacts to wetlands are associated with those wetlands located within the new permanent easement which is to be maintained during operation of the pipeline, as directed by the PA DEP. For PFO wetlands, this is considered to be a vegetative class change. Table L(d)-~~1~~4 details the anticipated impacts to wetlands as a result of the Project.

Table L(d)-~~41~~
Wetland Impacts Associated with the Atlantic Sunrise Project in Lancaster County

Resource Name	Chapter 105.17 Wetland Classification	Wetland Cowardin Classification	Temporary Impact area (acres)[a]	Permanent Impact area (acres)	Latitude	Longitude
W-T62-001A	*EV*	*PEM*	*<0.0001*	*0.0000*	*39.89275*	*-76.29153*
W-T10-101A	Other	PEM	0.1117	0.0127	39.91224	-76.30853
W-T35-1001	Other	PEM	0.0750	0.0105	39.93640	-76.36306
W-T36-1002	Other	PEM	~~0~~.~~0320~~ *0.0296*	~~0~~.~~0043~~ *0.0037*	~~39.95159~~ *39.9515*~~6~~	~~-76.40369~~ *-76.4037*~~4~~
~~W-T36-1003A~~	~~Other~~	~~PEM~~	~~0.0316~~	~~0.0000~~	~~39.95234~~	~~-76.40513~~
W-T36-1004 / W-T36-1004-1 / W-T36-1004-2	Other	PEM	~~0~~.~~1161~~ *0.1049*	~~0~~.~~0035~~ *0.0067*	~~39.95639~~ *39.9563*~~5~~	~~-76.41431~~ *-76.4146*~~3~~
W-T36-1005	*Other*	*PEM*	*0.112*~~4~~	*0.0231*	*39.95727*	*-76.4177*~~8~~
~~W-T32-2001~~	~~Other~~	~~PEM~~	~~0.0387~~	~~0.0083~~	~~40.03728~~	~~-76.46693~~
~~W-T32-2002~~	~~Other~~	~~PEM~~	~~0.0025~~	~~0.0003~~	~~40.03735~~	~~-76.46742~~
W-T31-3003	Other	PEM	~~0~~.~~2091~~ *0.1771*	~~0~~.~~0224~~ *0.0257*	40.14494	-76.46730
W-T31-3006	Other	PEM	~~0~~.~~1250~~ *0.1237*	0.0200	40.15320	-76.47622
W-T31-3004	Other	PEM	~~0~~.~~0640~~ *0.0559*	~~0~~.~~0098~~ *0.0089*	~~40.16497~~ *40.1649*~~4~~	~~-76.48571~~ *-76.4857*~~4~~
W-T31-3002 / W-T31-3002-1	Other	PEM	~~0~~.~~2096~~ *0.1732*	~~0~~.~~0226~~ *0.0266*	~~40.17547~~ *40.1754*~~4~~	~~-76.50630~~ *-76.5063*~~2~~
W-T31-3001	Other	PEM	0.0002	0.0004	40.17980	-76.51086
W-T30-4001	Other	PEM	0.0701	0.0095	40.20342	-76.52505
Total PEM Wetland Impacts			~~1.0357~~ *1.0338*	~~0.1243~~ *0.1478*		
~~W-T31-001B~~	~~Other~~	~~PSS~~	~~0.0042~~	~~0.0000~~	~~39.85528~~	~~-76.26223~~
~~W-T20-002~~	~~EV~~	~~PSS~~	~~0.0005~~	~~0.0000~~	~~39.91612~~	~~-76.31081~~
Total PSS Wetland Impacts			~~0.0047~~ *0.0000*	0.0000		
W-T10-003*C*	EV	PFO	~~0.0574~~ *0.0464*	~~0.0335~~ *0.0458*	~~39.85557~~ *39.8555*~~8~~	~~-76.26271~~ *-76.2627*~~0~~
W-T62-001C	*EV*	*PFO*	*0.0399*	*0.0429*	*39.89276*	*-76.29138*
W-T10-101C	Other	PFO	~~0.2036~~ *0.1652*	~~0.1193~~ *0.1577*	39.91189	-76.30856
~~W-T10-100~~	~~Other~~	~~PFO~~	~~0.0021~~	~~0.0000~~	~~39.91257~~	~~-76.30869~~
~~W-T36-1003C~~	~~Other~~	~~PFO~~	~~0.0621~~	~~0.0000~~	~~39.95258~~	~~-76.40567~~
W-T32-2004	Other	PFO	~~0.0047~~ *0.0014*	~~0.0014~~ *0.0080*	~~40.02546~~ *40.0254*~~5~~	~~-76.45892~~ *-76.4589*~~5~~
Total PFO Wetland Impacts			~~0.3299~~ *0.2529*	~~0.1542~~ *0.2544*		

Source: http://www.pacode.com/secure/data/025/chapter105/s105.17.html
https://www.fws.gov/wetlands/Data/Wetland-Codes.html

Table L(d)-~~41~~
Wetland Impacts Associated with the Atlantic Sunrise Project in Lancaster County

Resource Name	Chapter 105.17 Wetland Classification	Wetland Cowardin Classification	Temporary Impact area (acres)[a]	Permanent Impact area (acres)	Latitude	Longitude
Key:						
PEM = Palustrine Emergent						
PSS = Palustrine Shrub-Shrub						
PFO = Palustrine Forested						
EV = Exceptional Value						
a: Temporary impacts to PFO wetlands include temporal conversion from forested to scrub-shrub or emergent wetland. Within this wetland, a 30-foot-wide corridor centered over the pipeline will be permanently converted from forested to scrub-shrub or emergent wetland; the remainder of the wetland will be allowed to fully revert back to PFO.						

Transco will use the conventional open-cut pipeline crossing method in wetlands where soils are unsaturated and able to support construction equipment at the time of crossing. This method requires segregation of topsoil from subsoil along the trench line. Where present, ***The Transco Procedures (ECP Attachment 18, provided within Attachment M of this Application) and Agricultural and Construction Monitoring Plan (ECP Attachment 6, provided within Attachment M of this Application) indicate that the top 12 inches of topsoil from wetland and agricultural areas disturbed by trenching will be segregated from subsoil, except in areas where standing water is present, soils are saturated, or where shallow depth to bedrock conditions exist. These exceptions will be identified via visual assessment during grading and documented in the field with the Environmental and/or Agricultural Inspector.*** ~~**Transco will segregate 12 inches of topsoil from the area disturbed by trenching and the spoil side, if necessary.**~~ Once this is done Transco will conduct trench excavation, pipe laying, backfilling, and grade restoration. Immediately after backfilling is complete, Transco will replace the segregated topsoil ***to its original horizon location*** and install applicable erosion control measures. Transco will use the conventional open-cut wetland construction method for crossing wetlands with saturated soils or soils unable to support construction equipment without considerable soil disturbance. Prior to crossing and movement of construction equipment through these wetlands, Transco will stabilize the ROW using equipment mats to allow for a stable, safe working condition and to prevent significant rutting/soil disturbance. Transco will temporarily store trench spoil in a ridge along the pipeline trench, leaving gaps as appropriate intervals to provide for natural circulation or

drainage of water. Topsoil will not be segregated where standing water is present or soils are saturated.

While excavating the trench, Transco will attempt to assemble the pipeline in a staging area located in an upland area unless the wetland is dry enough to support skids and pipe. Transco will then move the pipe to the ROW. Pipe stringing and fabrication may occur within the wetland adjacent to the trench or adjacent to the wetland in an approved ATWS. After lowering the pipeline into the trench, Transco will work from equipment mats to perform backfilling, final cleanup, and grading.

Construction in inundated wetland areas may require the push-pull technique. The push-pull technique can be used in large inundated wetland areas (>300 feet crossing length) where sufficient water is present to float the pipeline in the trench and where grade elevation over the length of the push-pull area will not require damming to maintain adequate water levels for flotation of the pipe. Transco will use this technique when inundated conditions prevent the use of conventional open-cut wetland construction techniques.

Operation of construction equipment through wetlands will be limited to only that necessary for each stage of pipeline installation (e.g., clearing, trenching). Topsoil segregation techniques will be used in wetlands that are not saturated or inundated to preserve the seed bank and to facilitate successful restoration. Wetland crossing methods will be determined based on site-specific conditions at the time of crossing. Wetlands with soils that can support construction equipment may be crossed using the conventional open-cut method, as described below, with the use of timber mats to prevent soil rutting. In forested wetlands, Transco will minimize tree clearing to the extent practicable while maintaining safe construction conditions. Typical drawings for the wetland crossings are provided in Attachment 2 of the Transco ECP (Attachment M).

Some wetland vegetation will be cut, removed, or crushed during construction. After the completion of construction, wetland areas within the ROW will be restored to preconstruction contours and revegetated with annual ryegrass where standing water is

not present to stabilize disturbed soils. Annual ryegrass is intended to be a temporary cover to enhance soil stability. ***In wetland areas, restoration activities will involve returning wetlands to pre-construction contours and seeding in non-inundated areas with an approved wetland seed mix.*** ~~**Affected wetland areas will be allowed to revegetate naturally from existing adjacent seed banks.**~~ PEM wetlands, dominated primarily by low-growing sedges, rushes, and other herbaceous vegetation will revert to emergent vegetation following construction, resulting in no permanent change to wetland type. Wetland areas will not be amended with fertilizer, lime, or mulch unless required by appropriate federal and state agencies.

Upon completion of wetland crossings, Transco will restore wetlands to their original configurations and contours and stabilize disturbed adjacent upland areas. Through these activities, Transco seeks to protect wetlands from sediment transport and restore native hydrophytic vegetation as quickly as possible. Following construction, Transco will monitor disturbed wetlands and adjacent uplands until restoration and long-term stabilization is documented per the requirements of the FERC Order and other applicable regulatory approvals.

Revegetation will be considered successful when the vegetative cover returns to at least 80 percent of the type, density, and distribution of the native vegetation in adjacent, portions of the wetland not disturbed by construction of the Project.

Additional wetland avoidance and minimization measures are described in the Transco Procedures, which is included as Attachment 18 of the Transco ECP (Attachment M) as well as the Alternatives Analysis for this application (Attachment P-1).

Compensatory Mitigation for Wetland Impacts

No permanent fill will be placed in wetlands as a result of this Project. Mitigation will be required for permanent conversion of vegetation cover type for PFO and PSS wetlands and for temporary conversion of vegetation cover type for PFO wetlands. The following impact mitigation ratios were determined in coordination with the PA

DEP and USACE: 2.5:1 for EV PFO wetlands, 2:1 for non-EV PFO wetlands, 1.75:1 for EV PSS wetlands, and 1.5:1 for non-EV PSS wetlands.
No permanent fill will be placed in wetlands as a result of this Project. However, there will be permanent conversion of PFO wetlands to PEM or PSS vegetation types within the permanent ROW; therefore all PFO wetland impacts not classified as Exceptional Value (EV) are being compensated for at a ratio of 2:1, while EV wetlands will be compensated for at a 2.5:1 ratio.
Construction and operation of the Project will *impact*

The Project will result in **0.3932***0.18* acre**s** of *impacts to* **other** *EV* PFO wetlands *and 0.33 acre of impacts to non-EV PFO wetlands in Lancaster County. No non-EV or EV PSS impacts are anticipated in Lancaster County. Mitigation will be required for the 0.51-acre of wetland impacts within Lancaster County* which will be compensated for at the Hibred Farms Mitigation Site as detailed in Attachment*s* Q*-1 and Q-2*. **There will also be 0.0909 acres of EV PFO wetland impacts that have been identified in Lancaster County.** ***Transco proposes to provide*** **O***o*ff-site mitigation **will be provided** for **a total of 1.0137 acres of PFO wetlands affected in Lancaster County.** *[(0.33 acre*2 ratio = 0.66 acre) + (0.18 acre*2.5 ratio = 0.45 acre) = 1.11 acres]. The mitigation site will provide sufficient acreage to compensate for the above-listed impacts, with additional ecological benefits beyond the required mitigation.* ***Some of the temporary and permanent PFO impact areas are also being replanted on-site, providing double mitigation for these areas.***

The mitigation site is oversized to account for potential Project-related wetland impacts within parcels that currently do not have access for surveys. *For mitigation planning purposes remote sensed features on the remaining no-survey parcels are included on the impact table in Attachment E-3 and are depicted on the impact mapping in Attachment H-2. Remote sensed features are identified with an RS prefix (e.g., WW-RS-1009) within the impact tables and mapping.* **[(0.3932 acres*2 ratio = 0.7864 acres) + (0.0909 acres*2.5 ratio = 0.2273 acres) = 1.0137 acres]**

Transco has provided a Mitigation Master Plan and a Site Specific Mitigation Plan for the Hibred Farms Permittee Responsible site in Lancaster County. Under the authorization of

this Chapter 105 permit application, Transco is seeking authorization to construct the Mitigation Site for this Project. ~~**Currently, no impacts**~~*Impacts* to regulated resources ~~**are**~~ expected as a result of construction and use of this site for Atlantic Sunrise Project ~~**mitigation**~~*are included in this revised Application (see Attachment E-2)*.

The USACE Highway Methodology Workbook Supplement: Wetland Functions and Values (Supplement 1993) was used to evaluate the functions and values of the wetlands at the impact site and the PRM Sites. The Supplement is a qualitative approach to describing the physical characteristics of and identifying the functions and values exhibited by a wetland.

The Wetland Function-Value Evaluation Form in the Supplement was completed at the PRM Sites in order to capture the existing or pre-restoration conditions at the PRM Sites as well as the anticipated ecological lift the site will experience as a result of the restoration activities. The baseline conditions of the existing wetlands at the PRM Sites already represent a functional uplift with respect to the functions and values as compared to the impacted wetlands for which the PRM Sites will be providing mitigation. The functional uplift will further be improved through the proposed restoration efforts. The wetland functions and values assessments performed at the Project impact locations and the PRM Sites indicate that the mitigation site, once restored, will compensate for and replace the functions and values impacted as a result of the Project by providing improved wildlife habitat, flood flow alteration, and nutrient removal/retention (the top three functions and values lost as a result of Project construction) at comparatively high levels (see Attachment Q-1).

Hibred Farms PRM Site

The proposed mitigation addresses current impairments to the Hibred Farms PRM sites existing hydrology. Upon review of the 1939 aerial imagery, the PRM Site exists in its natural state as a mixed PEM, PSS, PFO wetland. By 1959, aerial imagery indicates clearly that an intensive ditching system was installed to lower the water table in the area for agricultural practices. Since that time the main stem has continued to incise, creating a

zone of depression adjacent to the incised channel, negatively affecting the hydrology of the wetlands on-site, while also creating instability and downstream sedimentation impacts. When compared to the bog turtle core habitat map, it can be seen that very little core habitat occurs adjacent to the main stem, further confirming the influence of the incision on the PRM Site's hydrology. Lastly these headcuts and the systems overall instability will continue to incise the side ditches, ultimately resulting in a reduction of core bog turtle habitat at the PRM Site.

The proposed mitigation addresses the incision of the main stem, stabilizing the stream, increasing stream and floodplain interaction, reducing downstream sedimentation, and raising the water table adjacent to the channel. This improved hydrology will enhance the bog turtle habitat on-site.

The proposed woody PSS species are non-aggressive species, many of which are currently present within the PRM Site. All selected species and planting rates were approved by the USFWS in consultation with bog turtle specialists from agencies in other states. In addition, species in adjacent bog turtle wetlands were inventoried as part of the species list selection. These plantings are proposed to be planted only in limited non-core habitat areas. Long-term, Transco is providing the long-term easement holder with a long-term maintenance and monitoring fund. This money can be used to ensure that there is no encroachment of any woody tree species into the core bog turtle habitat areas.

Overall the restored main stem improves the hydrology of the site, addresses the current causes of instability, and when combined with the structure of the Projects proposed long-term maintenance and management provides a sustainable enhancement to the existing bog turtle habitat on-site.

~~Waterbodies~~*Watercourses and Bodies of Water*

~~Forty-one~~*Forty-eight* **~~waterbodies~~***watercourses* will be crossed during construction of the pipeline in Lancaster County. The centerline of the pipeline will cross each **~~waterbody~~***watercourse* utilizing the construction method indicated in the table below.

Temporary construction bridges will be used to cross the streams with equipment, as necessary, during construction. Temporary stream impacts total ~~**1.**6300~~ *1.6485* acres of perennial streams, and approximately ~~**0.**4196~~ ***0.3506*** acre~~s~~ of intermittent and ephemeral streams. Permanent stream impacts are defined by the placement of the pipeline and permanent operation easement as directed by PA DEP, and total ~~**0.**2407~~ ***0.2412*** acre~~s~~ of perennial streams and ~~**0.**0366~~ ***0.****0451* acre~~s~~ of intermittent and ephemeral streams. Transco is proposing to cross all ~~**waterbodies**~~*watercourses* of the Project using either a dam-and-pump or flume construction method, except for the Conestoga River *and one UNT to Conestoga River* which will be crossed by HDD.

No fill or water obstructions will be added to streams as a part of this Project, therefore no loss of stream functions and values is expected to occur. Impacts are detailed in Table L(d)-~~5~~2.

Table L(d)-52
Stream Impacts Associated with the Atlantic Sunrise Project in Lancaster County

Resource ID	Resource Name	Chapter 93 Classification[a]	Stream Type	Stream PFBC Trout Status	Temporary Impact Dimensions (Length x Width) (Feet)[b]		Temporary Impact area	Permanent Impact Dimensions (Length x Width) (Feet)[b]		Permanent Impact area (Acres)	Latitude	Longitude	Waterbody Crossing Method
WW-T10-001	UNT to Fishing Creek	HQ-CWF, MF	Perennial	None Wild Trout Waters	92.58 82.60	24.45	0.0384 0.0353	10.30	24.45	0.0056	39.83912 39.83913	-76.25591 -76.25590	Flume
WW-T10-001A	UNT to Fishing Creek	CWF, MF	Perennial	None	19.83	4.98	0.0023	12.80	43.25	0.0099	39.83915	-76.25567	Temporary Construction Crossing
WW-T10-003	Muddy Run	TSF, MF	Perennial	Approved Trout Waters	104.05 104.08	43.25	0.0625	0.0000 12.80	0.0000 43.25	0.0000 0.0099	39.85550	-76.26253	FlumeDam-and-Pump
WW-T10-004	Tucquan Creek	HQ-CWF, MF	Perennial	Wild Trout Waters	65.96 65.98	4.99	0.0106	10.01	4.99	0.0011	39.88144	-76.27503	Dam-and-Pump
WW-T10-100	UNT to Climbers Run	CWF, MF	Perennial	Approved Trout WatersNone	98.13 88.07	12.13	0.0228 0.0206	11.56	12.13	0.0030	39.91245	-76.30849 -76.30851	FlumeDam-and-Pump
WW-T10-1002	UNT to Pequea Creek	WWF, MF	Perennial	None	102.16	5.13	0.0116	10.30	5.13	0.0012	39.92941	-76.34843	Flume
WW-T10-1003	UNT to Pequea Creek	WWF, MF	Perennial	None	96.85 85.99	5.11	0.0111 0.0098	10.26	5.11	0.0012	39.93031 39.93030	-76.35103	FlumeDam-and-Pump
WW-T10-2002	UNT to Chiques Creek	WWF, MF	Perennial	None	86.20 97.91	21.07	0.0464 0.0527	11.68	21.07	0.0048	40.05457 40.05456	-76.48927 -76.48928	Dam-and-PumpFlume
WW-T10-2004	Shawnee Run	WWF, MF	Perennial	None	96.44 107.22	24.02	0.0453 0.0489	10.61	24.02	0.0055	40.04890	-76.48104 -76.48103	Dam-and-PumpFlume
WW-T10-2005	UNT to Strickler Run	WWF, MF	Perennial	None	80.12 90.20	12.61	0.0238 0.0267	10.00 10.01	12.61	0.0029	40.03696 40.03695	-76.46127 -76.46128	Dam-and-PumpFlume
WW-T11-2001	Stamans Run	WWF, MF	Perennial	None	83.34 93.79	25.72	0.0504 0.0570	10.42	25.72	0.0059	40.00033 40.00032	-76.45297 -76.45299	Dam-and-PumpFlume
WW-T11-2002	UNT to Stamans Run	WWF, MF	Perennial	None	94.36 154.59	11.68	0.0201 0.0246	13.17 13.18	11.68	0.0026	40.01029	-76.45831 -76.45834	Dam-and-PumpFlume
WW-T20-002	Climbers Run	CWF, MF	Perennial	Approved Trout Waters; Trout Stocked Stream; Wild Trout WatersNone	94.16 83.58	24.86	0.0509 0.0458	10.55	24.86	0.0057	39.91624	-76.31068 -76.31070	FlumeDam-and-Pump
WW-T20-1001	Conestoga River	WWF, MF	Perennial	None	0.00 40.04	0.00 174.02	0.0000 0.1613	10.01	174.02	0.0400	39.94399 39.94399	-76.38196 -76.38197	HDD
WW-T20-1005	UNT to Indian Run	WWF, MF	Perennial	None	114.96 125.54	26.93	0.0627 0.0673	10.50	26.93	0.0062	39.96712	-76.42772 -76.42771	Dam-and-PumpFlume
WW-T24-1001	Witmers Run	WWF, MF	Perennial	None	89.30 99.56	8.90	0.0206 0.0231	10.26	8.90	0.0021	39.98618 39.98617	-76.44503 -76.44505	Dam-and-PumpFlume

Table L(d)-52
Stream Impacts Associated with the Atlantic Sunrise Project in Lancaster County

Resource ID	Resource Name	Chapter 93 Classification[a]	Stream Type	Stream PFBC Trout Status	Temporary Impact Dimensions (Length x Width) (Feet)[b]		Temporary Impact area	Permanent Impact Dimensions (Length x Width) (Feet)[b]		Permanent Impact area (Acres)	Latitude	Longitude	Waterbody Crossing Method
WW-T24-2001	Strickler Run	WWF, MF	Perennial	None	82.01 91.91	42.87 42.40	0.0814 0.0902	10.46 10.22	42.87 42.40	0.0098 0.0097	40.02600 40.02600	-76.45894 -76.45893	Dam-and-PumpFlume
WW-T24-3001	Little Chiques Creek	TSF, MF	Perennial	Approved Trout Waters, Trout Stocked Stream	80.90 91.02	15.78	0.0359 0.0401	10.05 10.06	15.78	0.0037	40.18316 40.18315	-76.51801 -76.51802	Dam-and-Pump
WW-T24-3001A	UNT to Little Chiques Creek	TSF, MF	Perennial	Approved Trout Waters, Trout Stocked Stream	15.74	3.77	0.0010	0.0000	0.0000	0.0000	40.18322	-76.51788	Dam-and-Pump
WW-T30-4001	Shells Run	TSF, MF	Perennial	None	65.11 65.12	16.22	0.0245	10.00 10.01	16.22	0.0037	40.20334	-76.52487	Dam-and-PumpFlume
WW-T31-002	UNT to Pequea Creek	WWF, MF	Perennial	None	93.58 83.55	19.87	0.0373 0.0328	10.59	19.87	0.0047	39.91953	-76.31703 -76.31701	FlumeDam-and-Pump
WW-T31-003	Pequea Creek	WWF, MF	Perennial	None	91.81 91.78	104.03	0.2059	10.20 10.19	104.03	0.0238	39.92076	-76.31997	Dam-and-Pump
WW-T31-3002	UNT to Little Chiques Creek	TSF, MF	Perennial	None	84.37 95.90	21.85	0.0274 0.0315	10.76	21.85	0.0050	40.17472 40.17471	-76.50572 -76.50573	Dam-and-PumpFlume
WW-T31-3003	UNT to Back Run	TSF, MF	Perennial	None	83.97 94.61	10.63	0.0262 0.0297	10.62	10.63	0.0026	40.14099 40.14100	-76.46777 -76.46779	Dam-and-Pump
WW-T31-3004	Back Run	TSF, MF	Perennial	None	76.59 97.23	14.91 16.20	0.0246 0.0328	10.97	14.91 16.20	0.0034 0.0037	40.14477 40.14476	-76.46731 -76.46729	Dam-and-Pump
WW-T31-3005	Brubaker Run	TSF, MF	Perennial	None	83.18 99.20	39.40	0.0553 0.0653	10.65	39.40	0.0089	40.17062 40.17060	-76.49677 -76.49679	DamPumpFlume
WW-T31-3006	UNT to Brubaker Run	WWF, MF	Perennial	None	30.01	5.02 1.16	0.0118 0.0037	5.00	5.02 1.16	0.0014 0.0006	40.16493 40.14696	-76.48578 -76.48587	Dam-and-PumpFlume
WW-T31-3007	UNT to Back Run	TSF, MF	Perennial	None	75.17 92.46	65.15	0.0996 0.1121	13.03	65.15	0.0150	40.15719 40.15717	-76.48056 -76.48055	Dam-and-PumpFlume
WW-T31-3008	UNT to Back Run	TSF, MF	Perennial	None	67.68 67.69	16.29	0.0263	10.00	16.29	0.0038	40.15315	-76.47603	Dam-and-PumpFlume
WW-T31-3009	UNT to Back Run	TSF, MF	Perennial	None	81.43 92.06	5.05	0.0093 0.0105	10.14	5.05	0.0012	40.14757 40.14755	-76.46930 -76.46931	Dam-and-PumpFlume
~~WW-T32-2002~~	~~UNT to Strickler Run~~	~~WWF, MF~~	~~Perennial~~	~~None~~	~~65.50~~	~~15.43~~	~~0.0261~~	~~10.14~~	~~15.43~~	~~0.0035~~	~~40.03732~~	~~-76.46739~~	~~Flume~~
WW-T35-1002	UNT to Conestoga River	WWF, MF	Perennial	None	103.01 90.44	35.44	0.0416 0.0373	39.03 39.04	35.44	0.0080	39.93644 39.93643	-76.36094 -76.36095	FlumeDam-and-Pump
WW-T35-1002A	UNT to Conestoga River	WWF, MF	Perennial	None	98.81 91.90	11.12	0.0182 0.0159	10.88 10.89	11.12	0.0024	39.93639	-76.36317	FlumeDam-and-Pump

Table L(d)-~~5~~2
Stream Impacts Associated with the Atlantic Sunrise Project in Lancaster County

Resource ID	Resource Name	Chapter 93 Classification[a]	Stream Type	Stream PFBC Trout Status	Temporary Impact Dimensions (Length x Width) (Feet)[b]		Temporary Impact area	Permanent Impact Dimensions (Length x Width) (Feet)[b]		Permanent Impact area (Acres)	Latitude	Longitude	Waterbody Crossing Method
WW-T36-1001A	UNT to Conestoga River	WWF, MF	Perennial	None	0~~.00~~47.45	0~~.00~~45.69	0~~.00000~~0.0437	12.03	45.69	0.0105	39.94444	-76.38330	HDD
~~WW-T36-1002~~	~~UNT to Witmers Run~~	~~WWF, MF~~	~~Perennial~~	~~None~~	~~92.67~~	~~20.53~~	~~0.0459~~	~~10.06~~	~~20.53~~	~~0.0047~~	~~39.94952~~	~~-76.39730~~	~~Flume~~
~~WW-T36-1002A~~	~~UNT to Witmers Run~~	~~WWF, MF~~	~~Perennial~~	~~None~~	~~100.57~~	~~24.77~~	~~0.0117~~	~~0.0000~~	~~0.0000~~	~~0.0000~~	~~39.94963~~	~~-76.39870~~	~~Flume~~
WW-T36-1004	UNT to Witmers Run	WWF, MF	Perennial	None	~~8~~1.77 ~~118.14~~	~~1~~8.53 ~~26.29~~	~~0~~.0442 ~~0.0539~~	~~1~~0.00 ~~10.33~~	~~1~~8.53 ~~26.29~~	~~0~~.0043 ~~0.0061~~	~~3~~9.95226 ~~39.95233~~	~~-~~76.40550 ~~-76.40545~~	~~F~~lume~~Dam-and-Pump~~
~~WW-T36-1004B~~	~~UNT to Witmers Run~~	~~WWF, MF~~	~~Perennial~~	~~None~~	~~29.74~~	~~17.34~~	~~0.0065~~	~~0.0000~~	~~0.0000~~	~~0.0000~~	~~39.95229~~	~~-76.40556~~	~~Temporary Construction Crossing~~
~~WW-T36-1004C~~	~~UNT to Witmers Run~~	~~WWF, MF~~	~~Perennial~~	~~None~~	~~12.20~~	~~12.08~~	~~0.0026~~	~~0.0000~~	~~0.0000~~	~~0.0000~~	~~39.95229~~	~~-76.40561~~	~~Temporary Construction Crossing~~
WW-T36-1007	Indian Run	WWF, MF	Perennial	None	~~9~~2.82 ~~104.78~~	23.36	~~0~~.0500 ~~0.0551~~	11.19	23.36	0.0054	39.95996	~~-~~76.41894 ~~-76.41892~~	~~D~~am-and-Pump~~Flume~~
WW-T42-2003	Chiques Creek	WWF, MF	Perennial	None	~~8~~1.59 ~~91.79~~	70.53	~~0~~.1305 ~~0.1472~~	10.10	70.53	0.0162	40.06610	-76.49043	Dam-and-Pump
~~WW-T49-1001~~	~~UNT to Witmer Run~~	~~WWF, MF~~	~~Perennial~~	~~None~~	~~94.86~~	~~5.01~~	~~0.0109~~	~~10.02~~	~~5.01~~	~~0.0012~~	~~39.94813~~	~~-76.39660~~	~~Flume~~
~~W-T65-001~~	~~UNT to Pequea Creek~~	~~WWF, MF~~	~~Perennial~~	~~None~~	~~101.77~~	~~11.00~~	~~0.0264~~	~~10.01~~	~~11.00~~	~~0.0025~~	~~39.92028~~	~~-76.31868~~	~~Dam-and-Pump~~
~~WW-T25-2001~~	~~UNT to Strickler Run~~	~~WWF, MF~~	~~Perennial~~	~~None~~	~~0.00~~	~~0.00~~	~~0.0000~~	~~19.26~~	~~17.82~~	~~0.0072~~	~~40.02514~~	~~-76.45585~~	~~Temporary Construction Crossing~~
~~WW-T42-2003~~	~~Chiques Creek~~	~~WWF, MF~~	~~Perennial~~	~~None~~	~~52.09~~	~~70.53~~	~~0.0124~~	~~0.00~~	~~0.00~~	~~0.0000~~	~~40.06623~~	~~-76.49063~~	~~Water Withdrawal~~
Perennial Stream Impacts							~~1~~.6300 ~~1~~.6485			~~0~~.2407 ~~0~~.2412			
WW-T10-003A	~~F~~loodway to UNT to Muddy Run	TSF, MF	Ephemeral	Approved Trout Waters	~~4~~7.69 ~~47.68~~	11.46	~~0~~.0152 ~~0.0136~~	10.35	11.46	0.0026	39.85557	-76.26258	~~F~~lume~~Dam-and-Pump~~

Table L(d)-~~5~~2
Stream Impacts Associated with the Atlantic Sunrise Project in Lancaster County

Resource ID	Resource Name	Chapter 93 Classification[a]	Stream Type	Stream PFBC Trout Status	Temporary Impact Dimensions (Length x Width) (Feet)[b]		Temporary Impact area	Permanent Impact Dimensions (Length x Width) (Feet)[b]		Permanent Impact area (Acres)	Latitude	Longitude	Waterbody Crossing Method
~~WW-T10-1001~~	~~UNT to Pequea Creek~~	~~WWF, MF~~	~~Ephemeral~~	~~None~~	~~94.02~~	~~20.76~~	~~0.0529~~	~~10.75~~	~~20.76~~	~~0.0047~~	~~39.92548~~	~~-76.34393~~	~~Flume~~
WW-T25-1001	*UNT to Pequea Creek*	*WWF, MF*	*Intermittent*	*None*	*72.43*	*5.12*	*0.0083*	*10.28*	*5.12*	*0.0012*	*39.93053*	*-76.34426*	*Dam-and-Pump*
WW-T31-002A	UNT to Pequea Creek	WWF, MF	Ephemeral	None	~~1~~15.53 *103.90*	5.78	~~0~~.0132 *0.0119*	~~1~~1.60 *11.59*	5.78	0.0013	39.91946	*-76.3169*~~4~~ *-76.3169*~~6~~	F~~lume~~*Dam-and-Pump*
WW-T31-3001	UNT to Little Chiques Creek	TSF, MF	Ephemeral	None	*1*~~04.26~~ ~~142.97~~	44.92	*0 0975* ~~0.1541~~	15.47	44.92	0.0112	*4*~~0.17975~~ ~~40.17971~~	*-*~~76.51078~~ ~~-76.51068~~	*Dam-and-Pump*~~Flume~~
~~WW-T35-1001~~	~~UNT to Pequea Creek~~	~~WWF, MF~~	~~Ephemeral~~	~~None~~	~~112.35~~	~~59.51~~	~~0.0129~~	~~0.0000~~	~~0.0000~~	~~0.0000~~	~~39.92268~~	~~-76.33776~~	~~Temporary Construction Crossing~~
~~WW-T42-2004~~	~~UNT to Chiques Creek~~	~~WWF, MF~~	~~Ephemeral~~	~~None~~	~~100.38~~	~~4.92~~	~~0.0157~~	~~11.69~~	~~4.92~~	~~0.0012~~	~~40.06264~~	~~-76.49220~~	~~Conventional Bore~~
WW-T92-1002	UNT to Witmers Run	WWF, MF	Ephemeral	None	~~5~~2.32 *16.74*	*9.16* ~~31.66~~	*0*.0033 ~~0.0223~~	*0.00* ~~0.~~00	*0.00* ~~0.~~00	0.0000	*3*~~9.95196~~ ~~39.95195~~	*-*~~76.40444~~ ~~-76.40439~~	Temporary Construction Crossing
WW-T31-3002A	UNT to Little Chiques Creek	TSF, MF	Intermittent	None	~~63.37~~ *63.36*	3.17	0.0108	4.60	3.17	0.0007	40.17480	-76.50559	*Dam-and-Pump*~~Flume~~
~~WW-T35-1001A~~	~~UNT to Pequea Creek~~	~~WWF, MF~~	~~Intermittent~~	~~None~~	~~91.70~~	~~5.08~~	~~0.0105~~	~~10.20~~	~~5.08~~	~~0.0012~~	~~39.92255~~	~~-76.33747~~	~~Dam-and-Pump~~
WW-T36-1006	UNT to Witmers Run	WWF, MF	Intermittent	None	*8*~~1.15~~ ~~91.46~~	36.73	*0*.0603 ~~0.0678~~	*1*0.11 ~~10.11~~	36.73	0.0084	*3*~~9.95355~~ ~~39.95354~~	*-*~~76.40845~~ ~~-76.40847~~	*Dam-and-Pump*~~Flume~~
WW-T49-2001	*UNT to Chiques Creek*	*WWF, MF*	*Ephemeral*	*None*	*84.49*	*17.14*	*0.0253*	*10.59*	*17.14*	*0.0039*	*40.05876*	*-76.49350*	*Dam-and-Pump*
~~WW-T42-1005~~	~~UNT to Witmers Run~~	~~WWF, MF~~	~~Intermittent~~	~~None~~	~~101.61~~	~~22.47~~	~~0.0412~~	~~11.76~~	~~22.47~~	~~0.0052~~	~~39.94944~~	~~-76.39586~~	~~Flume~~
WW-T62-001	*UNT to Trout Run*	*HQ-CWF, MF*	*Intermittent*	*Class A Wild Trout*	*66.19*	*15.38*	*0.0224*	*10.00*	*15.38*	*0.0035*	*39.98267*	*-76.29137*	*Dam-and-Pump*
WW-T65-1002	*UNT to Pequea Creek*	*WWF, MF*	*Ephemeral*	*None*	*97.08*	*32.31*	*0.0583*	*12.33*	*32.31*	*0.0074*	*39.93013*	*-76.34808*	*Dam-and-Pump*
WW-T92-1003	*UNT to Witmer Run*	*WWF, MF*	*Ephemeral*	*None*	*85.65*	*21.48*	*0.0389*	*10.51*	*21.48*	*0.0049*	*39.95288*	*-76.40712*	*Dam-and-Pump*
~~WW-T93-1001~~	~~UNT to Witmers Run~~	~~WWF, MF~~	~~Intermittent~~	~~None~~	~~24.12~~	~~5.33~~	~~0.0030~~	~~0.0000~~	~~0.0000~~	~~0.0000~~	~~39.95188~~	~~-76.40404~~	~~Temporary Construction Crossing~~
Ephemeral and Intermittent Stream Impacts							~~0.~~4196 *0.3506*			~~0.~~0366 *0.0451*			

Source:
http://www.pacode.com/secure/data/025/chapter93/chap93toc.html

Table L(d)-52
Stream Impacts Associated with the Atlantic Sunrise Project in Lancaster County

Resource ID	Resource Name	Chapter 93 Classification[a]	Stream Type	Stream PFBC Trout Status	Temporary Impact Dimensions (Length x Width) (Feet)[b]	Temporary Impact area	Permanent Impact Dimensions (Length x Width) (Feet)[b]	Permanent Impact area (Acres)	Latitude	Longitude	Waterbody Crossing Method
http://www.fishandboat.com/waters_trout.htm											

a: CWF = Cold Water Fishery; MF = Migratory Fishes; WWF = Warm Water Fishery; TSF = Trout Stocked.
b: Widths are reported as the maximum width for the feature. Stream lengths are reported on the impact maps as the sum of the permanent and temporary lengths.

Dam-and-Pump Crossing Method

The dam-and-pump method for crossing surface waters temporarily diverts flow around the construction workspace while maintaining downstream flow. Transco will install dams upstream and downstream of the proposed trench and then use pumps and hoses to convey flow around the in-stream workspace to create a dry work area. The pumped water will be discharged downstream of the construction workspace. Pumps will be sized to accommodate flow based on the size of the tributary watershed. Spare pumps will be on-site for use in case the in-use pump mechanically fails during construction. Once the dam-and-pump equipment is in place and active, Transco will excavate the trench and install the pipeline in the dry ditch.

Flume Crossing

When using a flume crossing, Transco will install flume pipe(s) over the crossing location prior to trenching. Transco will maintain these pipes until restoration of the ~~***waterbody***~~ *watercourse is complete. Transco will use flumes of a size and quantity sufficient to maintain the maximum anticipated downstream flows per the applicable regulations. Transco will then thread the natural gas pipe under the flume pipe(s), and backfill the ditch while flows are maintained through the flume pipe(s) and downstream.*

Unless otherwise approved, Transco will adhere to time of year restrictions on in-stream construction for those streams with trout designations as set by the PFBC ~~**Transco will adhere to time of year restrictions on in-stream construction for those streams with trout designations as set by the PFBC**~~**.** For streams identified by PFBC for having stocked sections within the Project, no in-stream work will occur from March 1 to June 15. For wild trout waters, no in-stream work will occur between October 1 through December 1, and, for Class A Wild Trout Streams, between October 1 and April 1. Transco *has coordated*~~**is coordinating**~~ with the PFBC to confirm the time of year restrictions that are applicable to the streams crossed by the Project.

Horizontal Directional Drill Crossing Method (HDD)

The only HDD crossing proposed for the Project within Lancaster County is for the crossing of the Conestoga River. The HDD method allows for trenchless construction across an area by drilling a hole significantly below conventional pipeline depth, and pulling the pipe through the predrilled hole. HDD is typically used to install pipeline in areas where traditional open-cut excavations are not feasible due to sensitive resource areas or logistical reasons. While overall disturbance within a sensitive area may be minimized by HDD, a greater amount of equipment staging is typically required. The amount of workspace at the drill entry and exit locations can vary significantly based on site-specific conditions. The entry side of the drill usually consists of the drilling rig and entry hole, control cab, drill string pipe storage, site office and storage trailers, power generators, bentonite storage, bentonite slurry mixing equipment, slurry pump, cuttings separation equipment, cutting return/settlement pit, water trucks and water storage, and the heavy construction equipment necessary to support the operation.

The exit side consists of the exit hole and slurry containment pit, cuttings return/settlement pit, cuttings separation and slurry reclamation equipment, drill string pipe storage, and heavy construction equipment necessary to support the operation. In addition to the drilling operations to be conducted within the exit side workspace, ATWS is often needed adjacent to the construction ROW to provide a straight corridor for handling pipe at HDD locations where the ROW changes direction. This allows the pipe to be prefabricated into one or more sections in preparation of the pull-back operation. Once assembled, the pipe is placed on rollers so it can be conveyed into the drill hole.

To facilitate HDD, an electric guide wire coil is typically placed along the ground surface between each HDD entry and exit point, where possible. This guide wire is used to assist in tracking the location of the down-hole drilling equipment and to determine steering inputs during advancement of the pilot bore. Wireline guidance systems typically require two guide wires for HDD crossings that parallel the centerline of an installation, with a variable spacing or offset on each side of the centerline, depending on the depth of the HDD installation.

Following completion of the pilot hole, reaming tools are used to enlarge the hole to accommodate the pipe diameter. The reaming tools are attached to the drill string at the exit point and then rotated and drawn back to incrementally enlarge the pilot hole. During this

process, drilling mud consisting of bentonite clay and water is continuously pumped into the pilot hole to remove cuttings and maintain the integrity of the hole. When the hole has been sufficiently enlarged, a prefabricated segment of pipe is attached behind the reaming tool on the exit side of the crossing and pulled back through the drill hole towards the drill rig.

During construction, Transco will not clear any trees between the workspaces for HDD entry and exit sites. The only planned activity between HDD entry and exit points would be foot traffic to place electric guide wires that would be used to track the progress of the drilling operation. During operation Transco will not conduct any routine vegetation maintenance between HDD entry and exit sites.

If the HDD is unsuccessful, Transco will implement its HDD Contingency Plan for the Conestoga River, which is included in Attachment 3 of the Transco ECP (Attachment M).

~~Waterbody~~*Watercourse Restoration and Compensatory Mitigation*

Upon completion of in-stream construction, Transco will ***~~stabilize~~*** *restore* the *stream bed and* banks to minimize erosion*, washouts,* and associated turbidity and sedimentation. Transco will stabilize the *stream bed and banks****~~surface water banks and bed~~*** to preconstruction contours*, such that they are similar to banks at the limits of disturbance. Transco will also use pre-construction photographs.* Depending on surface water conditions, the banks and bed may be stabilized using erosion control fabric, clean fill or native cobbles, and/or permanent slope breakers. *Banks will be stabilized using geotextile fabric. Appendix L-3, Table 1 identifies each watercourse and stream restoration detail to be utilized on either bank.* ***A typical detail for streambed restoration is included in the BMPs and Quantities Plan Set within Attachment M. The streambed will be restored to grade using native streambed material.*** To further stabilize the surface water banks, Transco will revegetate the banks and riparian areas ***~~using approved seed mixes~~****in accordance with the Riparian Area Impact Assessment and Restoration Plan for Lancaster County within in Appendix L-2*. ***~~The temporary vegetation will stabilize the area until indigenous riparian species are re-established.~~*** If inclement weather limits the effectiveness of reseeding efforts, temporary erosion control measures will be implemented to minimize erosion until conditions are suitable for reseeding. The temporary erosion control measures will be monitored and maintained until conditions are

suitable for completion of restoration. No fertilizers, lime, or mulch will be utilized in riparian areas unless required in writing by *PA* DEP *and USACE permit requirements and the FERC order*.

Following construction, disturbed areas adjacent to ~~**waterbodies**~~*watercourses and bodies of water* will be reseeded with approved seed mixes in accordance with the ~~**Transco Project-specific Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and Transco Procedures (Attachments 17 and 18 of the Transco ECP (Attachment M)).**~~*Riparian Area Impact Assessment and Restoration Plan for Lancaster County within Appendix L-2.* Trees and other woody vegetation will be allowed to reestablish naturally within the temporary ROWs and other temporary workspaces that were cleared for construction of the pipeline. The use of soil conservation techniques will avoid and/or minimize erosion and runoff that could potentially affect surface water quality.

No permanent fill will be placed in any ~~**waterbodies**~~*watercourses* as a result of this Project, and no stream relocation is expected. Therefore, no stream mitigation is proposed for this Project.

Floodplains

Climbers Run, *Conestoga River*, Strickler Run, Back Run, Brubaker Run, Little Chicques Creek, *Chiques Creek, UNT to Pequea Creek, UNT to Back Run,* and Pequea Creek have *Federal Emergency Management Agency* (FEMA) designated floodplains that are located within the construction workspace. PA DEP defines a regulatory floodway as a 50-foot buffer, which is established 50 feet from the delineated boundary of streams that do not have FEMA mapped 100-year floodplains (32 P.S. § 679.302 Chapter 106). Temporary impacts to floodways are expected from construction activities, but there will be no permanent loss of flood storage capacity as all pre-construction surface elevations will be re-established during restoration. Temporary floodway impacts will be ~~**18.5099**~~ *17.6124* acres. Of the total temporary impacts, ~~**10.**~~*10.2404* ***10.5109 acre*** will be to FEMA mapped floodplains. Permanent floodway impacts will be ~~**2.0210**~~ *1.7672* acres as a result of operation of the pipeline ROW. Of the total permanent impacts ~~**0.**~~*0.9263* ***0.****9587* acre will be to FEMA mapped floodplains. These impacts are associated with vegetation management only and do not represent a permanent modification of ground elevation or

loss of flood storage capacity. Impact details are included in Table L(d)-6~~3~~. ***As stated above, A Riparian Area Impact Assessment and Restoration Plan for Lancaster County is provided in Appendix L-2. The Riparian Area Impact Assessment and Restoration Plan for Lancaster County includes measures for replanting and reestablishing the riparian buffer within the regulated floodplain (FEMA mapped 100-year floodplain or 50-foot-wide floodway if no FEMA-mapped floodplain is present, whichever is greater) (see Appendix L-2).***

Table L(d)-~~63~~
Floodplain Impacts Associated With the Atlantic Sunrise Project in Lancaster County

Resource ID	Resource Name	Floodway Type	Temporary Impact Dimensions (Length x Width)[a] (Feet)		Temporary Impact area (Acres)	Permanent Impact Dimensions (Length x Width)[a] (Feet)		Permanent Impact area (Acres)	Latitude	Longitude
Floodway to WW-T30-4001	Floodway to Shells Run	Assumed 50 Feet	~~2~~1.90 *112.90*	107.26	~~0.~~1489 *0.1377*	~~1~~7.61 *89.19*	10.00	~~0.~~0229 *0.0165*	40.20334	-76.52487
~~Floodway to UNT to Strickler Run~~	~~Floodway to UNT to Strickler Run~~	~~Assumed 50 Feet~~	~~N/A~~	~~N/A~~	~~0.2400~~	~~0.0000~~	~~0.0000~~	~~0.0000~~	~~N/A~~	~~N/A~~
Floodway to WW-T10-001	Floodway to UNT to Fishing Creek	Assumed 50 Feet[b]	168.21	102.68	~~0.~~2507 *0.2420*	144.21	10.00	0.0255	*39.8391*~~2~~ ~~39.8391~~3	*-76.2559*~~1~~ ~~-76.2559~~0
Floodway to WW-T10-003 / WW-T10-003A	Floodway to Muddy Run / UNT to Muddy Run	Assumed 50 Feet[b]	~~4~~7.92 *288.42*	~~0~~0.00 *92.53*	~~0.~~2400 *0.1511*	*186.3*~~4~~ ~~186.3~~1	10.00	0.0170	39.85550	-76.26253
Floodway to WW-T10-004	Floodway to Tucquan Creek	Assumed 50 Feet	116.11	111.00	0.1630	107.42	17.03	0.0234	39.88144	-76.27503
Floodway to WW-T10-100	Floodway to UNT to Climbers Run	Assumed 50 Feet	185.06	~~0.00~~ *89.99*	~~0.~~1992 *0.1818*	101.94	10.00	0.0191	39.91245	*-76.308*~~49~~ ~~-76.308~~51
~~Floodway to WW-T10-1001~~	~~Floodway to UNT to Pequea Creek~~	~~Assumed 50 Feet~~	~~572.68~~	~~109.62~~	~~0.3600~~	~~125.36~~	~~10.00~~	~~0.0234~~	~~39.92548~~	~~-76.34393~~
~~Floodway to WW-T10-1002~~	~~Floodway to UNT to Pequea Creek~~	~~Assumed 50 Feet~~	~~148.25~~	~~108.76~~	~~0.2316~~	~~118.66~~	~~10.00~~	~~0.0243~~	~~39.92941~~	~~-76.34843~~
Floodway to WW-T10-1003	Floodway to UNT to Pequea Creek	Assumed 50 Feet	~~5~~9.83 *138.48*	~~2~~5.00 *100.00*	~~.~~2246 *0.2146*	110.02	10.00	0.0236	*39.9303*~~1~~ ~~39.9303~~0	-76.35103
Floodway to WW-T10-2002	Floodway to UNT to Chiques Creek	Assumed 50 Feet	~~6~~6.18 *170.14*	~~5~~4.31 *100.00*	~~0.~~2359 *0.2139*	130.12	10.00	0.0244	*40.0545*~~7~~ ~~40.0545~~6	*-76.4892*~~7~~ ~~-76.4892~~8
Floodway to WW-T10-2004	Floodway to Shawnee Run	Assumed 50 Feet	~~1~~56.97 *77.14*	~~1~~34.17 *100.00*	~~0.~~2436 *0.2294*	146.62	10.00	0.0265	40.04890	*-76.4810*~~4~~ ~~-76.4810~~3
Floodway to WW-T10-2005	Floodway to UNT to Strickler Run	Assumed 50 Feet	~~2~~44.67 *116.38*	~~1~~11.82 *100.68*	~~0.~~2460 *0.1948*	108.66	10.00	0.0218	*40.0369*~~6~~ ~~40.0369~~5	*-76.4612*~~7~~ ~~-76.4612~~8
Floodway to WW-T11-2001	Floodway to Stamans Run	Assumed 50 Feet	~~1~~69.50 *169.12*	~~1~~14.77 *100.00*	~~0.~~2232 *0.2147*	139.62	10.00	0.0251	*40.0003*~~3~~ ~~40.0003~~2	*-76.4529*~~7~~ ~~-76.4529~~9
Floodway to WW-T11-2002	Floodway to UNT to Stamans Run	Assumed 50 Feet	~~1~~86.64 *174.42*	~~1~~34.40 *100.00*	~~0.~~2713 *0.2489*	143.66	10.00	0.0290	40.01029	*-76.4583*~~1~~ ~~-76.4583~~4
Floodway to WW-T20-002	Floodway to Climbers Run	FEMA Detailed[b]	1403.96	302.38	~~0.~~6367 *3.6354*	1280.78	*194.3*~~4~~ ~~194.3~~5	0.3279	39.91624	*-76.3106*~~8~~ ~~-76.3107~~0
Floodway to WW-T20-1001	Floodway to Conestoga River	FEMA Detailed	~~0~~.00 *414.54*	~~0~~.00 *50.00*	~~0~~.0000 *0.2137*	412.11	10.00	0.0543	39.94399	*-76.3819*~~6~~ ~~-76.3819~~7
Floodway to WW-T20-1005	Floodway to UNT to Indian Run	Assumed 50 Feet	198.57	~~1~~24.58 *100.00*	~~0.~~2950 *0.2792*	176.05	10.00	0.0332	39.96712	*-76.4277*~~2~~ ~~-76.4277~~1
Floodway to WW-T24-1001	Floodway to Witmers Run	Assumed 50 Feet	~~1~~37.22 *140.31*	~~1~~37.18 *100.00*	~~0.~~2372 *0.2222*	111.44	10.00	0.0232	*39.9861*~~8~~ ~~39.9861~~7	*-76.4450*~~3~~ ~~-76.4450~~5
Floodway to WW-T24-2001	Floodway to Strickler Run	FEMA Detailed	~~2~~23.36 *227.63*	*157.*~~35~~ ~~157.~~89	~~0.~~3328 *0.3174*	~~1~~49.24 *150.71*	10.00	0.0244	40.02600	*-76.4589*~~4~~ ~~-76.4589~~3
Floodway to WW-T24-3001	Floodway to Little Chiques Creek	FEMA Detailed[b]	220.05	*157.8*~~7~~ ~~157.8~~6	~~0.~~3958 *0.3912*	183.54	10.00	0.0381	*40.1831*~~6~~ ~~40.1831~~5	*-76.5180*~~1~~ ~~-76.5180~~2
Floodway to WW-T31-002	Floodway to UNT to Pequea Creek	FEMA Detailed[b, c]	367.44	~~1~~52.32 *134.85*	~~0.~~3144 *0.2814*	148.60	10.00	0.0228	39.91953	*-76.3170*~~1~~ ~~-76.3170~~3
Floodway to WW-T31-003	Floodway to Pequea Creek	FEMA Detailed	~~1~~154.43 *1129.03*	~~4~~19.41 *447.20*	~~3~~.0817 *2.9977*	1050.68	*255.3*~~3~~ ~~255.3~~4	~~0~~.2220 *0.2151*	39.92076	-76.31997

Table L(d)-~~63~~
Floodplain Impacts Associated With the Atlantic Sunrise Project in Lancaster County

Resource ID	Resource Name	Floodway Type	Temporary Impact Dimensions (Length x Width)[a] (Feet)		Temporary Impact area (Acres)	Permanent Impact Dimensions (Length x Width)[a] (Feet)		Permanent Impact area (Acres)	Latitude	Longitude
Floodway to WW-T31-3001	Floodway to UNT to Little Chiques Creek	Assumed 50 Feet	~~355.~~*14* ~~355.48~~	~~107.73~~ *100.00*	~~0.3550~~ *0.3404*	275.52	10.00	0.0485	~~40.1797~~*5* ~~40.1797~~*1*	~~-76.5107~~*8* ~~-76.5106~~*8*
Floodway to WW-T31-3002	Floodway to UNT to Little Chiques Creek	Assumed 50 Feet[b]	~~232.16~~ *232.27*	~~107.71~~ *100.00*	~~0.2559~~ *0.2490*	136.09	10.00	0.0246	~~40.1747~~*2* ~~40.1747~~*1*	~~-76.5057~~*2* ~~-76.5057~~*3*
Floodway to WW-T31-3003	Floodway to UNT to Back Run	Assumed 50 Feet	~~157.37~~ *152.03*	~~128.90~~ *100.00*	~~0.2257~~ *0.2128*	123.87	10.00	0.0248	~~40.14~~*099* ~~40.14~~100	~~-76.4677~~*7* ~~-76.4677~~*9*
Floodway to WW-T31-3004	Floodway to Back Run	FEMA Detailed	~~197.~~*34* ~~197.79~~	100.00	~~0.0908~~ ~~0.0909~~	~~176.56~~ *178.84*	10.00	~~0.0139~~ *0.0115*	~~40.1447~~*7* ~~40.1447~~*6*	~~-76.4673~~*1* ~~-76.4672~~*9*
Floodway to WW-T31-3005	Floodway to Brubaker Run	FEMA Detailed	285.24	~~171.48~~ *100.00*	~~0.5583~~ *0.4760*	278.40	10.00	0.0545	~~40.1706~~*2* ~~40.1706~~*9*	~~-76.4967~~*7* ~~-76.4967~~*9*
Floodway to WW-T31-3006	Floodway UNT to Brubaker Run	Assumed 50 Feet	111.96	101.08	0.1238	110.00	10.00	0.0146	~~40.1649~~*8* ~~40.1649~~*6*	~~-76.4857~~*8* ~~-76.4858~~*7*
Floodway to WW-T31-3007	Floodway to UNT to Back Run	Assumed 50 Feet	~~310.29~~ *257.81*	~~130.42~~ *100.00*	~~0.2729~~ *0.2306*	190.91	10.00	0.0276	~~40.1571~~*9* ~~40.1571~~*7*	~~-76.4805~~*6* ~~-76.4805~~*5*
Floodway to WW-T31-3008	Floodway to UNT to Back Run	FEMA Detailed	363.06	180.10	~~0.4121~~ *0.4056*	274.08	10.00	0.0381	40.15315	-76.47603
Floodway to WW-T31-3009	Floodway to UNT to Back Run	Assumed 50 Feet	~~123.99~~ *123.86*	~~106.95~~ *100.00*	~~0.2115~~ *0.2055*	109.98	10.00	0.0235	~~40.1475~~*7* ~~40.1575~~*5*	~~-76.4693~~*0* ~~-76.4693~~*1*
~~**Floodway to WW-T32-2002**~~	~~**Floodway to UNT to Strickler Run**~~	~~**Assumed 50 Feet**~~	~~**136.72**~~	~~**100.00**~~	~~**0.2089**~~	~~**116.27**~~	~~**10.00**~~	~~**0.0227**~~	~~**40.03732**~~	~~**-76.46739**~~
~~**Floodway to WW-T35-1001**~~	~~**Floodway to UNT to Pequea Creek**~~	~~**Assumed 50 Feet**[3]~~	~~**242.12**~~	~~**177.07**~~	~~**0.4607**~~	~~**257.42**~~	~~**31.80**~~	~~**0.0575**~~	~~**39.92268**~~	~~**-76.33776**~~
Floodway to WW-T35-1002	Floodway to UNT to Conestoga River	Assumed 50 Feet	~~386.75~~ *366.63*	~~140.04~~ *122.66*	~~0.3170~~ *0.2697*	171.18	10.00	0.0297	~~39.9364~~*4* ~~39.9364~~*3*	~~-76.3609~~*4* ~~-76.3609~~*5*
Floodway to WW-T35-1002A	Floodway to UNT to Conestoga River	Assumed 50 Feet	~~291.62~~ *235.16*	~~100.38~~ *100.00*	~~0.2187~~ *0.1985*	156.27	10.00	0.0214	39.93639	-76.36317
Floodway to WW-T36-1001A	Floodway to UNT to Conestoga River	Assumed 50 Feet[b]	~~0.00~~ *356.35*	~~0.00~~ *50.00*	~~0.0000~~ *0.1167*	146.09	10.00	0.0213	39.94444	-76.38330
~~**Floodway to WW-T36-1002**~~	~~**Flooway to UNT to Witmers Run**~~	~~**Assumed 50 Feet**~~	~~**121.97**~~	~~**10.00**~~	~~**0.0231**~~	~~**546.35**~~	~~**156.55**~~	~~**0.2276**~~	~~**39.94952**~~	~~**-76.39730**~~
~~**Floodway to WW-T36-1002A**~~	~~**Flooway to UNT to Witmers Run**~~	~~**Assumed 50 Feet**~~	~~**546.35**~~	~~**156.55**~~	~~**0.2058**~~	~~**527.93**~~	~~**82.01**~~	~~**0.0162**~~	~~**39.94963**~~	~~**-76.39870**~~
~~**Floodway to WW-T36-1003**~~	~~**Floodway to UNT to Pequea Creek**~~	~~**Assumed 50 Feet**~~	~~**95.55**~~	~~**31.79**~~	~~**0.0313**~~	~~**0.0000**~~	~~**0.0000**~~	~~**0.0000**~~	~~**39.9343**~~2	~~**-76.353**~~76
Floodway to WW-T36-1004	Floodway to UNT to Witmers Run	Assumed 50 Feet[b]	~~206.64~~ *178.68*	~~100.00~~ *119.08*	~~0.2216~~ *0.2312*	~~148.56~~ *129.35*	10.00	~~0.0264~~ *0.0249*	~~39.952~~*26* ~~39.952~~*33*	~~-76.4055~~*0* ~~-76.495~~*45*
Floodway to WW-T36-1006	Floodway to UNT to Witmers Run	Assumed 50 Feet	~~192.97~~ *162.28*	~~148.14~~ *100.00*	~~0.2537~~ *0.2272*	~~156.02~~ *156.02*	10.00	0.0265	~~39.9535~~*5* ~~39.9535~~*4*	~~-76.4084~~*5* ~~-76.4084~~*7*
Floodway to WW-T36-1007	Floodway to Indian Run	Assumed 50 Feet	194.50	~~125.00~~ *100.00*	~~0.2650~~ *0.2493*	145.72	10.00	0.0266	39.95996	~~-76.4189~~*4* ~~-76.4189~~*2*
Floodway to WW-T42-1005	Floodway to UNT to Witmers Run	Assumed 50 Feet	~~141.90~~ *46.61*	~~137.32~~ *5.63*	~~0.2323~~ *0.0040*	~~131.44~~ *0.00*	~~10.00~~ *0.00*	~~0.0245~~ *0.0000*	~~39.94~~*889* ~~39.94~~944	~~-76.395~~*99* ~~-76.395~~*86*
Floodway to WW-T42-2003	Floodway to Chiques Creek	FEMA Detailed	666.13	175.00	~~1.4177~~ *1.6261*	641.02	10.00	~~0.1301~~ *0.1301*	40.06610	-76.49043

Table L(d)-~~63~~
Floodplain Impacts Associated With the Atlantic Sunrise Project in Lancaster County

Resource ID	Resource Name	Floodway Type	Temporary Impact Dimensions (Length x Width)[a] (Feet)		Temporary Impact area (Acres)	Permanent Impact Dimensions (Length x Width)[a] (Feet)		Permanent Impact area (Acres)	Latitude	Longitude
~~**Floodway to WW-T42-2004**~~	~~**Floodway to UNT to Chiques Creek**~~	~~**Assumed 50 Feet**~~	~~**1**~~76.29	~~**1**~~00.00	~~**0**~~.2399	~~**1**~~29.11	~~**1**~~0.00	~~**0**~~.0273	~~**40.0626**~~4	~~**-76.492**~~20
Floodway to WW-T92-1002	Floodway to UNT to Witmers Run	Assumed 50 Feet[b]	~~**2**~~24.17 *224.26*	~~**1**~~00.00 *79.31*	~~**0**~~.3366 *0.2297*	~~**2**~~00.42 *83.35*	10.00	~~**0**~~.0410 *0.0165*	***39.9519***~~**6**~~ ~~**39.9519**~~5	***-76.40444*** ~~**-76.404**~~39
Floodway to WW-T61-001	Floodway to UNT to Muddy Run	Assumed 50 Feet	76.06	14.04	0.0159	0.00	0.00	0.0000	39.86218	-76.27387
Floodway to WW-T62-001	Floodway to UNT to Trout Run	Assumed 50 Feet	136.75	100.00	0.1090	121.16	10.00	0.0126	39.89267	-76.29137
Floodway to WW-T25-1001	Floodway to UNT to Pequea Creek	Assumed 50 Feet	138.96	118.06	0.2091	113.88	10.00	0.0239	39.93053	-76.34426
Floodway to WW-T65-1002	*Floodway to UNT to Pequea Creek*	*Assumed 50 Feet*	*194.11*	*100.00*	*0.2372*	*156.52*	*10.00*	*0.0273*	*39.93013*	*-76.34808*
Floodway to WW-T49-1001	*Floodway to UNT to Witmer Run*	*Assumed 50 Feet*	*134.46*	*100.00*	*0.2173*	*106.76*	*10.00*	*0.0231*	*39.94813*	*-76.39660*
Floodway to WW-T92-1003	*Floodway to UNT to Witmer Run*	*Assumed 50 Feet*	*170.91*	*100.12*	*0.2181*	*136.57*	*10.00*	*0.0255*	*39.95288*	*-76.40712*
Floodway to WW-T53-1001	*Floodway to UNT to Indian Run*	*Assumed 50 Feet*	*100.14*	*26.99*	*0.0416*	*0.00*	*0.00*	*0.0000*	*39.96813*	*-76.42843*
Floodway to WW-T49-2001	*Floodway to UNT to Chiques Creek*	*Assumed 50 Feet*	*737.32*	*111.42*	*0.2620*	*130.82*	*10.00*	*0.0252*	*40.05876*	*-76.49350*
Floodway to WW-T24-3001A	*Floodway to UNT to Little Chiques Creek*	*Assumed 50 Feet*	*209.18*	*23.55*	*0.0836*	*0.00*	*0.00*	*0.0000*	*40.18322*	*-76.51788*
Floodway to WW-T31-003	*Floodway to Pequea Creek*	*FEMA Detailed*	*115.12*	*50.75*	*0.0718*	*96.31*	*67.85*	*0.0419*	*39.92043*	*-76.31842*
Floodway to WW-T25.2001	*Floodway to UNT to Strickler Run*	*Assumed 50 Feet*	*143.57*	*24.31*	*0.0021*	*135.21*	*21.35*	*0.0321*	*40.02514*	*-76.45585*
Floodway to WW-T25-4002	*Floodway to Shells Run*	*Assumed 50 Feet*	*343.36*	*39.24*	*0.1239*	*0.00*	*0.00*	*0.0000*	*40.19440*	*-76.52621*
Floodway to WW-T42-2003	*Floodway to Chiques Creek*	*FEMA Detailed*	*25.57*	*10.00*	*0.0038*	*0.00*	*0.00*	*0.0000*	*40.06623*	*-76.49063*
Floodway Impacts					~~**18.5099**~~ *17.6124*			~~**12.0210**~~ ***1.7672***		

a: *Widths are reported as the maximum width for the feature. Stream lengths are reported on the impact maps as the sum of the permanent and temporary lengths.*
b: Multiple streams are included in these calculations as the floodways overlap.
c: Includes both FEMA Detailed and Assumed 50 Foot Buffers.

B1a. Food Chain Production

Most of the ~~**waterbodies**~~*watercourses* crossed by the Atlantic Sunrise Project are minor and intermediate streams, which have food chains that are driven by detrital input from riparian vegetation, rather than phytoplankton. Therefore, temporary increases in sediment load will not have an adverse effect on the trophic structure of the streams. It is unlikely that temporary increases in turbidity will have an adverse effect on aquatic biota of the area, especially since many of these ~~**waterbodies**~~*watercourses* may already be turbid and/or are subjected to higher turbidity levels from precipitation-based run-off. As such, the existing in-stream communities are adapted to living in turbid conditions. Oxygen levels will begin to return to normal within hours of the completion of in-stream construction as the sediment settles. Effects will generally be limited to the short period of in-stream construction, and conditions are expected to return to normal following stream restoration activities. To minimize these effects, Transco will implement BMPs to control erosion and sediment run-off from workspaces.

In particular, the following measures specific to ~~**waterbody**~~*watercourse* crossings will be implemented, as appropriate:

- Sediment barriers will be installed across the entire construction ROW at all ~~**waterbody**~~*watercourse* crossings where necessary to prevent the flow of sediments into the ~~**waterbody**~~*watercourse*. In the travel lane, these may consist of removable sediment barriers or drivable berms. Removable sediment barriers may be removed during the construction day, but will be re-installed after construction has stopped for the day or when heavy precipitation is imminent;
- Where ~~**waterbodies**~~*watercourses* are adjacent to the construction ROW, sediment barriers will be installed along the edge of the construction ROW as necessary to contain spoil and sediment within the construction ROW;
- Trench plugs will be used at all ~~**waterbody**~~*watercourse* 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**~~*watercourse*, unless otherwise approved by the on-site environmental inspector to allow natural flow of water into the ~~**waterbody**~~*watercourse*; and
- Applicable ~~**waterbody**~~*watercourse* setbacks will be maintained until construction-related ground- disturbing activities are complete. The setback distances vary based on the type

of activity being performed, but all will be clearly marked in the field with signs and/or highly visible flagging prior to pipeline construction.

B1b. General Habitat (including Nesting, Spawning, Rearing, Resting, Migration, Feeding, and Escape Cover)

Within the Atlantic Sunrise Project area throughout Pennsylvania, general temporary construction-related impacts on wildlife species will be related to habitat disturbance and human activities, while permanent impacts are those associated with the conversion of forest habitats to open or scrub-shrub areas because of construction and maintenance of the permanent ROW. Indirect impacts on wildlife include those associated with increased human activity. Construction of the Project likely will result in the temporary displacement of or stress on animals in areas adjacent to construction and cause movement of some wildlife away from the Project area. Stress on wildlife could affect general health, reproduction, and viability of young, depending on the sensitivity of a particular species, season of the year, and other factors. Other temporary impacts on wildlife species include those from pipeline trenching activities and associated spoil piles, which could result in a short-term barrier to movement to some species. During clearing and grading activities, more mobile wildlife species (e.g., larger mammals, birds, and reptiles) will be able to avoid the construction area, and many are expected to leave the area during construction. Construction activity will be temporary and will stay in a given area for only a few weeks, at most. Habitat recovery will occur to the maximum extent possible, aided by the use of the impact minimization and restoration measures outlined in the ECP (Attachment M).

Direct and long-term impacts on wildlife habitat resulting from construction and operation of the proposed Project will include the clearing of uplands, wetlands, and riparian areas required for temporary workspace and new permanent easement. Where feasible, Transco has routed the pipeline to follow existing corridors (and thus follow existing forest edges). The direct removal of vegetation has the potential to reduce the amount of available habitat, food resources, and cover. An important effect of vegetation removal is habitat fragmentation. Habitat fragmentation occurs as larger areas of habitat are reduced and/or split into smaller non-contiguous areas by development. Besides the direct loss of habitat, habitat fragmentation can also cause change in habitat vegetation composition (which could include the introduction of noxious and/or invasive species). It is not anticipated that wildlife populations that utilize the Project area will be

permanently adversely affected by the proposed Project. While temporary impacts on food, cover, and water sources may occur, none of the species located within the Project area are specialized in such a way that construction of the Project will inhibit the overall fitness or reproductive output of the populations as a whole.

Temporary habitat alteration at the crossing location, and increased suspended solids concentrations and sedimentation downstream from the crossing may temporarily degrade fish spawning and nursery areas, resulting in a temporary reduction in reproductive potential. Transco expects these effects to be temporary in nature because the suspended sediments will be flushed by the existing currents or settle out, and aquatic communities will subsequently recolonize the affected area.

Permanent impacts to spawning, however, are not anticipated as a result of this Project. Impacts to spawning should be mitigated by Project construction outside of the restricted October 1 through December 31 time period for Wild Trout streams and from October 1 through April 1 for Class A Wild Trout Streams. There are no Class A Wild Trout streams crossed by the Project within Lancaster County. Transco ~~**is coordating**~~*has coordinated* with the PFBC to confirm the time of year restrictions that are applicable to the streams crossed by the Project.

B1c. Habitat for Threatened and Endangered Plant and Animal Species

Transco has consulted with the PA DCNR, PA Game Commission~~PGC~~, PFBC, and United States Fish and Wildlife Service (USFWS) regarding federal and state-listed threatened and endangered species in the Project area. A summary of this correspondence is included in Attachment G of this permit application package.~~**As previously discussed, Transco is coordinating with the PA DCNR, PGC, PFBC, and USFWS. Resource agency coordination resulted in the identification of several species as potentially occurring in the Project area. A list of these species is provided in Table L(c)-1in Enclosure C. A final determination of impacts, avoidance, and mitigation measures have not been finalized with all agencies for all species at this time.**~~

B1d. Environmental Study Areas

The Project will not affect any locations in which environmental studies are known to be taking place.

B1d1. Sanctuaries

The Project will not affect sanctuaries in Lancaster County.

B1d2. Refuges

The Project will not affect refuges in Lancaster County.

B2. Water Quantity and Streamflow

B2a. Natural Drainage Patterns

It is anticipated that the Project will not impact natural drainage patterns. The stormwater management controls included in the Project (discussed in Attachment M ECP) have been designed to maintain natural or current drainage characteristics, as appropriate.

B2b. Flushing Characteristics

It is not anticipated that the Project will impact flushing characteristics.

B2c. Current Patterns

The Project may have minor, localized temporary effects on current patterns in the immediate vicinity of the proposed stream crossings during construction but will be minimized where possible through the appropriate implementation of BMPs based upon calculations completed in accordance with PA DEP Chapter 102. Permanent impacts to current patterns are not anticipated as all disturbed areas will be restored to pre-construction conditions.

B2d and e. Groundwater Discharge for Baseflow and Natural Recharge Area for Ground and Surface Waters

~~Through a file review with the PA DEP Southcentral Regional Office, Transco identified a potable water intake on the Susquehanna River approximately 1.9 miles from MP 22.0 of CPL South. The intake is operated by the City of Lancaster.~~

~~Transco will minimize the effects on this potable water intake using the identified dry-ditch crossing methods and by implementing the Transco Procedures (Attachment 18 of the Transco ECP (Volume 3)) during construction, post-construction restoration, and operation of the Project. Given these construction measures, the distance of the proposed waterbodywatercourse crossings from the intakes, and the buffering effect of the lake in the case of WW-T12-19002, Transco does not expect any measurable effect on water quality or quantity at the intake structures.~~

~~The PA DEP Southeast Regional Office identified two Zone II WHPAs within 150 feet of the Project in Lancaster County: Fallas Italian American and Columbia Drive-In. The PA DEP classifies the groundwater wells associated with the WHPAs above as transient non-community water systems. PA DEP requires the lowest level of regulation for these wells, and PA DEP staff do not consider the Project to be a risk to these water supplies.~~

~~SWPAs and their respective surface water intakes that are downstream of the Project may be susceptible to increased turbidity and contamination from equipment fuel spills during the construction and post-construction restoration phases of the Project. However, implementation of the Transco Procedures (Attachment 18 of the Transco ECP (Attachment M)), will minimize the potential for turbidity to impact these SWPAs.~~

The Project is not expected to impact any potable water intakes or public water supplies which rely on groundwater recharge. Transco identified potable and non-potable surface water intake structures in proximity to the Project using eMapPA. Across the Project, nineteen surface water intakes were identified less than 3 miles downstream of Project watercourse crossings using eMapPA. Of the 19 surface water intakes identified, the primary uses were identified as agriculture (12), commercial (1), industrial (2), mineral (1), and oil/gas (3). Based on their primary uses, it is unlikely that the 18 non-commercial surface water intakes are used for potable water. Transco verified that these 18 intakes are not listed in Pennsylvania's Drinking Water Reporting System, indicating these intakes are not public water supplies and are, therefore, not used as community potable water sources. The single commercial surface water intake is located in Wyoming County.

Through a file review with the PADEP Southcentral Regional Office (PADEP 2015), Transco identified a potable water intake on the Susquehanna River approximately 1.9 miles from MP 22.0 of CPL South (see the Pennsylvania Project Location Map, Attachment I-2). The intake is operated by the City of Lancaster. PADEP records identify this operator as a community water supplier serving a population of 120,000. CPL South crosses Shawnee Run (WW-T10-2004 / WW-RS-2003) and an unnamed tributary to Shawnee Run (WW-RS-2002) within 3 miles upstream of the City of Lancaster intake. Transco proposes to complete these watercourse crossings using the flume method.

In addition to public water supplies within three miles downstream from the Project, Transco additionally solicited public water supplies with Zone A Source Water Protection Areas (SWPAs) crossed by the Project. The PADEP Southcentral Regional Office indicated that the Project crosses within 0.25 miles of five Zone A SWPAs within Lancaster County, as identified in Table L(d)-7 and shown on the Project Location Map (Scheetz 2015). Zone A SWPAs are located within 0.25 miles on either side of a river or stream, from 0.25 miles downstream of the potable water intake to all upstream reaches that flow to the intake within five hours, given an average flow velocity.

Table L(d)-7
Source Water Protection Areas Within 0.25 Mile of the Project within Lancaster County

Surface Water Intake PWSID	***Operator***	***Surface Water Source(s)***	***Distance from Crossing to Intake (river miles downstream)***	***Source Water Protection Plan***
1230004	*Chester Water Authority*	*Octoraro Reservoir, Susquehanna River*	*>11*	*No*
7360058	*City of Lancaster Water Authority*	*Susquehanna River, Conestoga Creek*	*2*	*NP*
7360123	*Columbia Water Authority*	*Susquehanna River*	*>5.8*	*NP*
7360124	*Elizabethtown Area Water Authority*	*Conewago Creek, Back Run, Raw Reservoir, Cornwall Quarry*	*>6.1*	*Yes*

Table L(d)-7
Source Water Protection Areas Within 0.25 Mile of the Project within Lancaster County

Surface Water Intake PWSID	Operator	Surface Water Source(s)	Distance from Crossing to Intake (river miles downstream)	Source Water Protection Plan
7360136	Safe Harbor Power Corporation	Susquehanna River	>7.3	NP

Key:
NP = Not provided by PWS operator
PWSID = Public water system identification number

Transco corresponded directly with the water intake operators, as summarized in Table L(d)-8. Through correspondence with the Chester, City of Lancaster, Columbia, and Elizabethtown Area Water Authorities, Transco obtained the location of their surface water intakes, which are located on the Susquehanna River, downstream from the Project (Sabler 2015, Katzenmoyer 2015, Lewis 2015, Bixler 2015). Transco was unable to obtain the surface water intake location from Safe Harbor Power Corporation, and assumes it is located in the vicinity of the power generation facility located at the confluence of the Susquehanna and Conestoga Rivers.

Table L(d)-8
Lancaster County Water Intake Operator Communication Summary

Date	Communication Initiated	Result
Chester Water Authority		
January 28, 2015	Transco completed a phone conversation with Patricia Sabler, Chief of Treatment and Pumping at Chester Water Authority	Ms. Sabler provided the location of the surface water intake to be on the Susquehanna River, in Lancaster PA.
October 17, 2016	Transco provided the Notification Plan to the City of Lebanon Water Authority for comment	Pending
City of Lancaster Water Authority		
January 21, 2015	Transco completed a phone conversation with George Craddick, staff at the City of Lancaster Water Authority	Mr. Craddick provided the location of the surface water intake to be on the Susquehanna River, in Lancaster PA.
January 21, 2015	Transco contacted the Water Authority's director, Charlotte Katzenmoyer by phone for additional information	Transco did not receive a response from Mrs. Katzenmoyer

Table L(d)-8
Lancaster County Water Intake Operator Communication Summary

Date	Communication Initiated	Result
October 17, 2916	Transco provided the Notification Plan to the City of Lebanon Water Authority for comment	Pending
Columbia Water Authority		
January 21, 2015	Transco contacted David Lewis, General Manager at the Columbia Water Authority by phone	Transco did not receive a response from Mr. Lewis
February 12, 2015	Transco contacted Mr. Lewis by phone	Transco received a voicemail from Mr. Lewis identifying the location of the surface water intake to be on the Susquehanna River, in Lancaster PA
October 17, 2016	Transco provided the Notification Plan to the Columbia Water Authority for comment	Pending
Elizabethtown Area Water Authority		
January 21, 2015	Transco contacted Mike Skelly at Elizabethtown Area Water Authority by phone	Mr. Skelly requested additional information regarding the Project
January 21, 2015	Transco provided Mr. Skelly with the requested Project information via e-mail	Transco did not receive a response
February 11, 2015	Transco contacted Steve Bixler at Elizabethtown Area Water Authority by phone	Mr. Bixler provided the surface water intake location
February 11, 2015	Transco contacted Mike Skelly by e-mail	Mr. Skelly provided the Source Water Protection Report via e-mail
October 17, 2016	Transco provided the Notification Plan to the Elizabethtown Area Water Authority for comment	Pending
Safe Harbor Power Corporation		
January 21, 2015	Transco contacted Mike Denlinger at the Safe Harbor Power Corporation by phone. On February 11, 2015 Mr. Denlinger requested additional information by e-mail.	Transco provided the additional requested information on February 11, 2015. Transco did not receive a response from Safe Harbor Power Corporation.
October 17, 2016	Transco provided the Notification Plan to the Safe Harbor Power Authority for comment	Pending

Transco has prepared notification plans to be used in the event of a spill upstream from the each of the water intakes. These plans detail Transco's procedures in the event of a spill, including emergency response and reporting. Transco has provided a copy of the corresponding notification plan to each operator.

Potential impacts to the water intakes will be avoided by implementing Transco's Spill Plan (ECP Attachment 9, provided within Attachment M of this Application) and the

notification plans in the event of a spill upstream from the intakes. Transco will follow the spill prevention practices enumerated in the Spill Plan, which include proper container and tank storage and inspection instructions, loading/unloading procedures, and spill response kit specifications. Refueling and transferring of liquids will occur only in pre-designated locations that are on level ground and at least 100 feet from any wetland or waterway, thereby preventing contamination of watercourses. As stated in the Spill Plan, Transco will maintain and immediately respond to spills as appropriate to the situation, with responses ranging from the use of absorbent pads to the employment of an emergency spill response contractor.

Transco will avoid potential impacts to distal public water supplies within Lancaster County by using dry-ditch crossing methods and implementation of all erosion and sediment control plans as specified in the Transco Procedures.

During construction, Transco will adhere to all measures in the Transco Procedures (ECP Attachment 18, provided within Attachment M of this Application), which will minimize sedimentation and turbidity, minimize streambed and bank disturbance, and limit the time it takes to complete in-stream construction. Transco will cross watercourses with flowing water present at the time of construction using dry-ditch or trenchless construction methods to the greatest extent practicable. To minimize sedimentation during pipeline construction across each watercourse, trench spoil will be placed at least 10 feet away from water's edge, unless impractical due to topography. Erosion controls will be placed around spoil piles to prevent sediment from flowing into watercourses.

B2f. Storm and Flood Water Storage and Control

It is not anticipated that the Project will adversely impact storm and flood water storage and control. Transco has developed a Post Construction Stormwater Management Plan in accordance with PA DEP Chapter 102 to prevent impacts to stormwater discharges and control.

There will be no loss of flood storage capacity within designated floodways as pre-construction surface contours will be restored.

B3. Water Quality

B3a. Preventing Pollution

Construction activities can disturb surface soils and cause subsequent sediment transport into adjacent wetlands. Sedimentation will be minimized by the installation of temporary sediment control measures between the upland construction areas and the wetlands. Permanent erosion controls, including slope breakers, trench breakers, and vegetative cover, will be used in adjacent upland areas to minimize long-term sedimentation into the wetlands. Energy dissipation devices may be installed at the down-slope end of slope breakers to minimize erosion of soil off the ROW into wetlands. Trench plugs will be installed in upland slopes adjacent to wetlands to prevent trench erosion and siltation

To minimize erosion and promote revegetation within the wetland, removal of the root mats for woody vegetation will be allowed only directly over the trench area or where required to ensure safe working conditions. This serves to enhance regeneration of vegetation on the construction and permanent ROW. Permanent erosion control structures that could alter hydrology (e.g., slope breakers) will not be installed within wetlands, but these structures will be used in the adjacent upland areas to control erosion and sedimentation. Transco will employ BMPs as specified in erosion and sediment control permits and approved by PA DEP to further minimize the potential for soil compaction.

Turbidity and sedimentation could result from in-stream construction activities, trench dewatering, and/or construction-related stormwater runoff. In slow-moving waters, increases in suspended sediments could increase the biological oxygen demand and reduce levels of dissolved oxygen in localized areas during construction. Suspended sediments also could alter the chemical and physical characteristics of the water column on a temporary basis.

Transco will cross surface waters with flowing water present at the time of construction using dry-ditch construction methods to the greatest extent practicable. Dry-ditch crossing methods

can dramatically reduce downstream sediment transport effects compared to wet open-cut crossings. Transco will employ ~~best management practices (~~BMPs~~)~~ as specified in Transco's Erosion and Sediment Control General Permit 2 (ESCGP-2) application, which contains site-specific erosion and sediment control plan to further minimize the potential for soil compaction.

Transco will also install temporary equipment bridges across surface waters to reduce the potential for turbidity caused by movement of construction equipment and vehicular traffic. Equipment bridges will be constructed ~~of clean rock or gravel and culverts,~~ timber mats~~,~~ or portable prefabricated bridges, depending on surface water conditions (e.g., if excessively soft soils are encountered in the surface water bed, or if high water flows occur, portable bridges will be used at minor surface water crossings ~~instead of rock and culverts~~). Typical drawings for equipment bridges are provided in Attachment 2 of the Transco ECP (Attachment M). Equipment bridges will be maintained until the pipe is installed and they are no longer needed. The bridges will then be removed. Equipment bridges will be designed to accommodate normal to high surface water flow and will be maintained to prevent flow restriction during the period of time the bridge is in use during construction.

To minimize sedimentation during pipeline construction across each ~~waterbody~~*watercourse*, trench spoil will be placed at least 10 feet away from water's edge, unless impractical due to topography, as specified in the Transco Procedures (Attachment 18 of the Transco ECP (Attachment M)). Erosion controls will be placed around spoil piles to prevent sediment from flowing into surface waters. ATWS will typically be set back 50 feet from the water's edge unless otherwise approved by applicable regulatory agencies.

Once the pipe is placed in the trench, the excavated material will be replaced immediately, and the surface water banks and bed will be restored to preconstruction contours. To stabilize the banks, the surface water banks and riparian areas will be revegetated using approved seed mixes and/or erosion control blankets or matting *in accordance with the Riparian Area Impact Assessment and Restoration Plan for Lancaster County within Appendix L-2*.

B3b. Sedimentation Control and Patterns

The Project ECP and associated plans describe techniques that will be used to minimize erosion and release of sediments during and following Project construction. The ECP is included as Attachment M.

Post-construction stormwater management measures will also be implemented for water quality in areas where it is required. For the pipeline portion of the Project, no new impervious surfaces are proposed. The Post Construction Stormwater Management Plan is designed to manage stormwater runoff associated with new impervious areas (gravel) for the proposed aboveground facilities. With the implementation of the E&S Pollution Control Plan and the stormwater management measures, water quality impacts are not anticipated.

B3c. Salinity Distribution

This section is not applicable to the proposed Project in Lancaster County.

B3d. Natural Water Filtration

~~**Waterbodies**~~*Watercourses* and wetlands in the Project area have some function in water filtration; however, impacts to these features will be temporary and natural water filtration capabilities will be restored.

B4. Recreation

B4a and b. Game and Non-Game Species

Within the Atlantic Sunrise Project area throughout Pennsylvania, construction of the pipeline facilities will negatively affect wildlife and wildlife habitat short-term within the immediate vicinity of open land along the pipeline route, which predominantly consists of existing ROWs. Effects will include disturbance due to clearing and trench excavation. This will affect less mobile species, including those that hide within burrows along the route, to a greater degree than those that can quickly flee the Project area. Following construction activities, the existing ROWs will be restored to preconstruction conditions to the extent practicable, and it is expected that wildlife will quickly return to the vicinity of the ROWs, using them as corridors for travel, refuge, foraging, and nesting. Following construction, these ROWs will be maintained in a manner similar to current conditions.

Construction within forested land will cause temporary effects on local wildlife populations, because forested habitat will be converted to successional stages of open herbaceous and scrub-shrub habitat for several years to decades until a mature forest community redevelops. During this time there is a risk of intrusion by invasive or noxious species. To mitigate against this risk, Transco will manage invasive and noxious species according to the Noxious and Invasive Management Plan included as Attachment 11 of the ECP (Attachment M). ~~**Some wildlife species that rely on forested habitat may be negatively affected by the loss of forest, while other species that prefer open land and scrub-shrub habitat will benefit from the temporary habitat conversion.**~~

Some wildlife species that rely on forested habitat may be negatively affected by the temporary loss of forest. Removal of vegetation within forested land could cause long-term displacement of some local wildlife populations. However, any such impacts, while adverse, are expected to be highly localized and unlikely to have any population-level impacts based on the presence of suitable adjacent habitat for use. In addition, other wildlife species that prefer open land and scrub-shrub habitat will benefit from the temporary habitat conversion. As referenced in Attachment L, Enclosure C, Section A2a through A2g, Transco is developing a Memorandum of Agreement (MOA) with the USFWS addressing conservation measures for migratory birds in the Project area. The MOA includes compensatory mitigation for removal of upland forest and forest fragmentation.

Transco does not expect significant direct mortality of wildlife to occur as a result of construction activities. Transco anticipates that the majority of wildlife will disperse from the vicinity of construction activities in response to disturbance from construction vehicles and equipment. Construction vehicles will adhere to low speed limits along all access roads to avoid wildlife mortality.

Following construction, the temporary workspaces outside the aboveground facility fence lines will be maintained in a manner similar to preconstruction conditions. Therefore, effects on wildlife in agricultural lands and open lands that are within temporary workspaces for

aboveground facilities will be temporary, and these habitats are expected to recover within weeks to months following construction.

B4c. Fishing

Temporary impacts to streams during construction activities may temporarily affect fishing opportunities; however, no permanent impacts are anticipated within Lancaster County.

B4d and e. Hiking and Observation (wildlife)

Enola Low-Grade Trail

The proposed pipeline alignment crosses the Enola Low-Grade Trail at approximate MP 7.1 in Lancaster County. Transco proposes to construct the pipeline parallel to and adjacent with an existing overhead transmission line at this crossing. This will minimize long-term alteration of the surrounding landscape. Transco met with Martic Township officials in February and July 2015 to identify suitable measures to minimize disturbance to the Trail and its use. *Transco's site-specific crossing plan includes details on the measures that Transco will implement to minimize impacts on recreational use of the Enola Low-Grade Trail, and this plan is provided in Appendix L-4.* ~~Martic Township officials indicated that the section of the Trail crossed by the Project is not open at this time; however, the township has secured funding to pave the entire length of the Trail within the township. This is scheduled to be completed before Transco's anticipated start of construction. Transco will continue to coordinate with the township to develop a crossing plan that will minimize impacts on the trail.~~

Camp Andrews

The pipeline alignment is located 0.2 mile northeast of Camp Andrews at approximate MP 0.0 in Lancaster County. Due to the distance between CPL South and Camp Andrews, construction and operation of CPL South will not directly affect the current use of this area.

Conestoga Trail

The pipeline alignment crosses the Conestoga Trail at MP 8.2 in Lancaster County. Transco is requesting a new permanent ROW where the Project crosses the Trail; however, current land use at the trail crossing is agricultural, so there will be no permanent effects on the Conestoga

Trail. *Transco's site-specific crossing plan includes details on the measures that Transco will implement to minimize impacts on recreational use of the Conestoga Trail, and this plan is provided in Appendix L-4.* ~~Construction activities may require temporary closure of the Trail, and Transco is developing a site-specific crossing plan for the Conestoga Trail. Transco met with the Lancaster Hiking Club on December 10, 2014. The hiking club indicated that this section of the trail is located within Pequea Creek Road and that the trail will be closed while Transco is constructing the road crossing.~~

B4f. Other

Transco has initiated coordination with PFBC regarding the need to prepare site-specific Aids to Navigation (ATON) plans for each of the crossings which have been identified by PFBC as being recreationally navigable. Within the Project limits of Lancaster County, these include: Pequea Creek, Conestoga River, Chiques Creek and Little Chiques Creek. Transco ~~will~~ prepare*d and submitted* ATON plans in accordance with PFBC guidelines including the use of buoys, signage, and portage, as necessary. ***Transco submitted the ATON plans to PFBC on October 4, 2016 and will provide copies of the ATON approvals to PA DEP as received.*** Transco will implement the approved plans during construction in order to minimize impacts to recreational boaters within the Project area.

B5. Upstream and Downstream Property

The implementation of the Project-specific ECP will minimize the impacts to properties upstream and downstream of the Project. The ECP is included in Section M.

B6. Other Environmental Factors

Selection of the proposed pipeline route was partially based on landowner preference, as well as avoidance of environmental impacts to resources such as ~~waterbodies~~*watercourses* and wetlands. The route minimized impacts to these features as much as possible and still fulfills the purpose and needs of the Project. Specific routing criteria is discussed in the Alternatives Analysis (Attachment P-1).

C. Environmental Impacts on Other Adjacent Land and Water Resources

Construction impacts to adjacent properties and water resources will be minimized through the use of the Project-specific ECP. This plan will conform to federal, state, and local regulations and prevent movement of sediment off the construction site. Stormwater generated on-site during construction will also be managed and released in a manner that conforms to applicable federal, state, and local regulations.

D. Cumulative Environmental Impacts

Cumulative effects may result when the environmental effects associated with construction and operation of a proposed Project are added to the environmental effects of other Projects or activities occurring in the same area. The *United States Environmental Protection Agency* (USEPA) guidelines state:

> *"Cumulative impacts result when the effects of an action are added to or interact with other effects in a particular place and within a particular time. It is the combination of these effects, and any resulting environmental degradation, that should be the focus of cumulative impact analysis. While impacts can be differentiated by direct, indirect, and cumulative, the concept of cumulative impacts takes into account all disturbances since cumulative impacts result in the compounding of the effects of all actions over time." (USEPA 1999)*.

To identify and assess potential cumulative effects of the Project, Transco is considering other past, present, and reasonably foreseeable Projects and other human-related activities near the Project facilities. *The Comprehensive Environmental Evaluation for the Central Penn Line provided in Appendix L-1 includes a summary of cumulative impacts for the Project as whole.*

The existing conditions in the Project area reflect changes from past and present activities. Although much of the area is rural and relatively undeveloped, substantial alterations to the natural environment have occurred due to agriculture, mining, transportation Projects, and other development. The potential for cumulative effects from the Project exists for the following resources: groundwater, consumptive water use, surface water, vegetation, wildlife (federally

and state-protected species of flora and fauna), cultural resources, socioeconomics, geology, soils, land use, air quality, and noise.

Transco has identified past, present, and reasonably foreseeable Projects and other human-related activities occurring in the vicinity of the Project (within 10 miles) that may result in cumulative effects when combined with the effects of the Project. Transco consulted with the affected municipal and county planning agencies to identify Projects in the vicinity of the Project. Transco also identified other activities, such as residential Projects located within a 0.5-mile radius of the Project, as well as transportation and energy development Projects located within a 10-mile radius of the Project.

The assessment of cumulative effects assumes that Project effects are minimized by the successful implementation of the environmental protection and mitigation measures described in the Transco ECP and compliance with applicable standard practices and federal, state, and local regulations and permit requirements.

The assessment area for potential cumulative effects includes the area directly affected by construction of the Project facilities in addition to the anticipated area of effect the Project may have on each resource. This assessment area varies for each resource, based on the potential for effects to extend beyond the area of direct effect. For example, effects on air quality have the potential to extend beyond the Project boundaries, but effects on geologic and soil resources would likely not extend beyond the construction boundaries. Cumulative effects are considered in the context of the appropriate geographic area of potential effect (e.g., watershed boundaries for water quality and use, and county boundaries for socioeconomics).

Water Use and Quality

This section addresses past, present, and reasonably foreseeable actions that, when taken into consideration with the Project, could result in cumulative effects on water quality and use. Potentially affected water resources include groundwater, surface water crossings, groundwater and surface water withdrawals, ~~**waterbodies**~~*watercourses*, and wetlands. The geographic area considered in the evaluation includes the watershed basin within the Project effect area.

Potential cumulative effects resulting from construction activities and operations and maintenance have been considered as part of this analysis.

This analysis considered effects from other Projects within the same watershed (8-digit Hydrologic Unit Code [HUC]) and within 10 miles of the Project activities. The Project pipeline facilities cross two major watershed subregions (i.e., 4-digit HUCs) as defined by the *United States Geological Survey (*USGS) (USGS 2013): the Susquehanna River subregion in Pennsylvania and the Potomac River subregion in Virginia. The Project pipeline facilities cross four major watershed basins (i.e., 6- digit HUCs): the Upper Susquehanna, the Lower Susquehanna, and the West Branch Susquehanna in Pennsylvania, and the Potomac in Virginia. The Project pipeline facilities cross eight watershed subbasins (i.e., 8-digit HUCs): the Upper Susquehanna-Lackawanna, the Upper Susquehanna-Tunkhannock, the Lower Susquehanna, the Lower Susquehanna- Swatara, the Lower Susquehanna-Penns, the Middle West Branch Susquehanna, and the Lower West Branch Susquehanna in Pennsylvania, and the Middle Potomac-Anacostia- Occoquan in Virginia.

Shallow (perched) aquifers could sustain effects from temporary changes in overland water flow and recharge caused by clearing and grading of the ROWs and temporary workspaces. In forested areas, water infiltration, which is normally enhanced by vegetation, will be reduced until vegetation is reestablished. In areas where groundwater is encountered within the open trench, dewatering may result in a minor, temporary fluctuation in local groundwater levels. On occasion, blasting can cause adverse effects on groundwater flow and potentially reduce or eliminate the amount of groundwater supplied to nearby wells and/or springs.

To minimize potential effects associated with construction, Transco will implement mitigation measures during construction, including those described in the Transco Plan and the Transco Procedures, state-guidelines, and public and private well monitoring pre- and post-construction upon landowner request. For instance, waterbars will direct stormwater runoff from the construction ROW to well-vegetated areas or in accordance with state BMPs. Transco will also use sediment control measures such as filter bags, silt fences, and dewatering structures during dewatering and hydrostatic test water discharge activities. Where blasting is required, Transco will develop a site-specific blasting plan in addition to the general Blasting Plan provided in

Attachment 10 of the Transco ECP (Attachment M) prior to blasting activities, and will conduct full-scale blast tests where recommended by Transco's Project Engineer. If any wells are affected by construction activities, Transco will repair them and/or compensate landowners for Project-related damage to wells.

Implementation of the comprehensive BMPs presented in Attachment 2 of the Transco ECP (Attachment M) will ensure the Project-related effects on groundwater are temporary and occur within or very near the construction ROW. Based on Transco's review, none of the Projects identified will overlap the construction ROW during the time of the Project's influence on groundwater. Therefore, the Project will not cause a significant measurable cumulative effect on groundwater resources when considered in addition to other past, present, and reasonably foreseeable actions.

Surface water resources may be affected during various stages of construction. Clearing and grading of stream banks, in-stream trenching, trench dewatering, and backfilling, could result in temporary modification of aquatic habitat, increased sedimentation, turbidity, decreased dissolved oxygen concentrations, releases of chemical and nutrient pollutants from sediments, thermal effects, modification of riparian areas, and introduction of chemical contaminants such as fuel and lubricants.

The Project facilities cross or are located within two major watershed sub-regions as defined by the USGS (USGS 2013b). Transco will use ~~**waterbody**~~*watercourse* crossing methods based on site-specific conditions and resource sensitivity, which include dry-ditch, trenchless, and open-cut. Transco has routed the proposed pipeline facilities to avoid and minimize effects on ~~**waterbodies**~~*watercourses and bodies of water* to the greatest extent practicable while maintaining engineering standards and safety. Transco completed field routing surveys within a 600-foot-wide study corridor to identify a preferred alignment that, among other factors, avoided and minimized ~~**waterbody**~~*watercourse* effects. Environmental criteria used during the routing surveys specific to ~~**waterbodies**~~*watercourses* included: (1) crossing ~~**waterbodies**~~*watercourses* at 90 degree angles to minimize in-stream disturbance whenever practicable; and (2) avoiding or minimizing crossings of major ~~**waterbodies**~~*watercourses and bodies of water*). Construction of the Project across ~~**waterbodies**~~*watercourses* may result in temporary adverse effects as a

result of in-stream construction activities or construction on slopes adjacent to stream channels. Clearing and grading of stream banks, blasting, in-stream trenching, trench dewatering, and backfilling could result in temporary modification of aquatic habitat, increased sedimentation, turbidity, decreased dissolved oxygen concentrations, releases of chemical and nutrient pollutants from sediments, thermal effects, modification of riparian areas, and introduction of chemical contaminants such as fuel and lubricants.

Transco developed the ECP (Attachment M), including the Transco Procedures (Attachment 18 of the Transco ECP), in part to address temporary ~~**waterbody**~~*watercourse* effects associated with construction of the Project. The Transco ECP is intended to satisfy the ~~**waterbody**~~*watercourse* restoration requirements of resource protection agencies with applicable federal jurisdiction over areas affected by the Project. Construction activities at stream crossings will also comply with any additional measures detailed in applicable federal stream crossing permits.

Drilling for natural gas reserves in Pennsylvania is currently underway in several of the counties affected by the Project. Effects from drilling activities are associated with well pad development and improvement of existing dirt and paved roads. Similarly, several gathering line and natural gas well interconnect pipeline construction Projects were recently completed or are ongoing within the same watersheds crossed by the Project in Pennsylvania. Information on the exact locations and construction schedules for these Projects was not readily available; however, based on the general location of these Projects and the ongoing nature of their development, the potential exists for cumulative effects on surface waters affected within the same watersheds crossed by the Project.

Implementation of the Transco Procedures will limit the effects of crossings in duration and distance and limit the effect of construction activities to the stream being crossed. None of the other activities identified during the cumulative effect analysis will also affect the same ~~**waterbodies**~~*watercourses* in the same timeframe as the Project; therefore Transco believes there will be no significant measurable cumulative effects on these resources.

To conduct the hydrostatic testing for the Project facilities, Transco will obtain applicable regulatory approvals for water withdrawals, which will be based on regulatory withdrawal rates, volumes, and passby flow restrictions, prior to commencing surface water withdrawals. Up to 61 million gallons of water is anticipated to be withdrawn from surface ~~**waterbodies**~~*watercourses* within the Project area for use in hydrostatic testing. Transco will use withdrawal methods that will not reduce water flow to a point that will substantially affect base flow conditions, fish habitat and other aquatic wildlife or recreational uses. Transco will coordinate with local and state agencies, as necessary, to conduct water withdrawals in a manner that will not reduce water availability to a point that will affect public usage. Transco does not anticipate any significant water quality effects resulting from discharge of hydrostatic test water. New pipeline facilities will consist of new steel pipe, coated internally, that will be free of chemicals and lubricant, and Transco does not propose to use antifreeze or any chemical additives for drying or other purposes.

Transco will consult with the PADEP for a PAG-10 Hydrostatic Test Water Discharge Permit. In addition, Transco received water withdrawal permits on September 8, 2016 from the Susquehanna River Basin Commission for Chiques Creek in West Hempfield Township, the Conestoga River (Primary and Secondary) in Conestoga Township, Pequea Creek in Martic Township, Lancaster County. Site Plans and Cross Sections of the withdrawal locations is found in Appendix L-5 and Appendix L-6.

~~**Transco will consult with the PA DEP and the Susquehanna River Basin Commission regarding hydrostatic test water withdrawal and discharge permits within the jurisdictional areas of each agency. Transco will continue to update FERC on the progress of agency consultation and permit applications.**~~

HDDs will require the use of water during operation of the drill to cool the drill head, seal the walls of the hole, and process returns. For specific ~~**waterbody**~~*watercourse* crossings, where feasible and approved by the applicable regulatory agencies, Transco will draw the required water from the ~~**waterbody**~~*watercourse* that is being crossed via HDD. Withdrawal locations will be selected to minimize effects on ~~**waterbodies**~~*watercourses* in a similar manner as described above. Where drawing water from the ~~**waterbody**~~*watercourse* is unavailable, Transco will obtain water from an approved off-site source.

The state water withdrawal permitting processes ensure that concurrent Projects involving water withdrawals from the river basins crossed by the Project do not exceed acceptable levels or result in significant cumulative effects. Based on the temporary, localized effect of drawdown due to the relatively small quantities of water required for the Project, Transco expects that the hydrostatic testing and construction dewatering activities planned for the Project will not contribute to measurable cumulative effects on these water resources.

There will be no permanent loss of wetland area from construction of the Project. *Transco is proposing compensatory off-site mitigation for Project-related impacts to PFO wetlands for temporal conversion of PFO wetlands within the temporary construction easement and permanent conversion of PFO wetlands to PEM wetlands within a 15-foot wide operation and maintenance corridor on either side of the pipeline centerline within the permanent easement. Off-site mitigation will also provide compensation for temporal conversion of PSS wetlands to PEM wetlands within a 10-foot wide operation and maintenance corridor centered over the pipeline within the permanent easement.* ~~**The Project will have temporary effects on palustrine emergent (PEM) and palustrine scrub-shrub (PSS) wetlands and result in permanent conversion of palustrine forested (PFO) wetlands to PSS or PEM wetlands in proposed new permanent pipeline ROW. Transco will restore temporarily disturbed PEM and PSS wetlands. PFO wetlands within temporary construction workspace will be temporarily converted to PEM wetlands and will return to their original state over time. Within the 10-foot-wide operation corridor, PFO wetlands will be permanently converted to PEM or PSS wetlands. In addition, Transco will permanently maintain a 30-foot-wide corridor through PFO wetlands where trees taller than 15 feet will be selectively cut and removed. Additionally, Transco is providing off-site compensatory mitigation for PFO wetland impacts.**~~

Transco has routed the proposed pipeline facilities and associated workspaces to avoid and minimize effects on wetlands while maintaining engineering standards and safety. Transco completed field routing surveys within a 600-foot wide-corridor to identify proposed pipeline alignments that, among other factors, avoided or minimized wetland effects to the extent practicable. Environmental criteria used during the routing surveys specific to wetlands included:

(1) minimizing effects at ***wetland crossings to the maximum extent*** ~~**any single wetland crossing to 1 acre or less whenever**~~ practicable; and (2) avoiding or minimizing effects on forested wetlands.

Transco will implement the measures in its Procedures to minimize effects on wetlands from Project activities during the construction, post-construction restoration, and operation phases of the Project. In addition, the Project construction activities at wetland crossings will be performed in accordance with applicable federal regulatory requirements, such as the use of specialized construction techniques designed to minimize effects and reduce workspace area. Implementing these measures will help to limit adverse effects on wetlands from the Project to the construction ROW in each wetland. The Transco Procedures will result in no net loss of wetlands, although there will be some conversion of wetland value and type.

Based on the above analysis, Transco believes there will be no significant measurable cumulative effects from the Project on wetlands.

Fish, Vegetation and Wildlife

This section addresses past, present, and reasonably foreseeable actions that, when taken into consideration with the Project, could result in cumulative effects on fish, vegetation and wildlife. The geographic area considered in the evaluation of potential vegetation effects included the ecosystem within 0.5 mile of the Project effect area.

The majority of effects associated with Project pipeline construction will be temporary disturbances associated primarily with clearing the construction workspace of vegetation. Temporary effects will either be short-term, where restoration to preconstruction conditions will be completed following construction, or long-term, where restoration to preconstruction conditions will take place over several growing seasons and may result in a permanent change in the vegetation structure. Long-term, temporary disturbances will be associated primarily with areas where forested land is cleared within temporary workspaces. Construction of the new aboveground facilities and expansion of some existing facilities will result in the permanent loss of vegetation communities that are cleared and replaced with impervious surfaces or converted

from upland forest to open land. A summary of the temporary and permanent land that will be disturbed by the Project is provided as Attachment J.

Following construction, temporary workspaces on open land and agricultural land will be restored according to the Transco Plan (Attachment M). During operation, Transco will maintain additional ~~25~~*50*-foot-wide permanent ROWs along the ~~Unity Loop~~*CPL North and CPL South* In accordance with the Transco Plan, maintenance will include mowing the permanent ROW no more than once every 3 years. However, a 10-foot-wide corridor centered over the pipeline will be maintained annually in an herbaceous state that facilitates visual inspections. This maintenance will result in permanent conversion of existing upland and wetland forested areas to herbaceous or scrub-shrub vegetation communities.

Transco will implement specific measures to reduce these effects, including: (1) minimizing the footprint of the proposed work activities and the duration of disturbances to the extent practicable, (2) protecting topsoil in agricultural areas and mitigating subsoil compaction, (3) adhering to the Noxious and Invasive Species Management Plan (Attachment 11 of the Transco ECP (*Attachment M*~~Volume 3~~)), (4) co-locating with existing ROWs to the extent practicable, (5) installing erosion controls to prevent the loss of soils and reseeding to stabilize the soils and speed revegetation, and (6) monitoring the success of revegetation efforts and taking appropriate action to address areas that have not been fully revegetated with native seed mix.

The development Projects identified during the cumulative effects analysis are relatively small and in various stages of planning and completion. Therefore, Transco believes there will be no significant measurable cumulative effects on vegetation.

Also reviewed were past, present, and reasonably foreseeable actions that, when taken into consideration with the Project, could result in cumulative effects on wildlife, including threatened and endangered species and fisheries. The geographic area considered in the evaluation includes vegetative habitats that are used by wildlife (breeding grounds, migratory routes, range, etc.) within the Project area. These include forested areas, herbaceous habitats, wetlands, and other similar vegetative habitats used by wildlife and protected species. Potential

cumulative effects resulting from construction activities and operation and maintenance have been considered as part of this analysis.

Construction of the Project facilities has the potential to negatively affect wildlife and wildlife habitat within the immediate vicinity of the pipeline route and locations of the aboveground facilities. Effects may include disturbance due to clearing and trench excavation. Transco does not expect significant direct mortality of wildlife to occur as a result of construction activities. Transco anticipates that the majority of wildlife will disperse from the vicinity of construction activities in response to disturbance from construction vehicles and equipment, but limited mortality of slow-moving or sessile organisms could occur within the footprint of the aboveground facilities, partly as a result of construction vehicle traffic. Noise and ground disturbance generated by pipeline construction activities may temporarily affect wildlife behavior in the immediate vicinity of the facilities.

Following construction activities, the existing ROWs will be restored to preconstruction conditions to the extent practicable, and it is expected that wildlife will quickly return to the vicinity of the ROWs, using them as corridors for travel, refuge, foraging, and nesting. Following construction, these ROWs will be maintained in a manner similar to current conditions. Transco will also restore temporary workspaces outside agricultural areas using an herbaceous seed mix that will minimize competition with native woody plant species while offering additional wildlife habitat and food sources, or another type of seed mix agreed upon with the applicable agencies and the landowner. Habitat fragmentation and conversion of forested lands will occur as a result of this Project and the other Projects that involve clearing of forested land during construction and/or operation. However, Transco has sought to avoid and minimize forest clearing, to the extent practicable, through co-location with other utility corridors and long-term maintenance of ROW widths in forested wetlands. Restoration of vegetation in Project construction areas will be ensured by adherence to the Transco Plan and Procedures (Attachments 17 and 18 of the Transco ECP (Attachment M)), and other applicable federal permit conditions.

Other than the occasional presence of vehicles during inspections and maintenance, Transco does not anticipate any other disturbance to wildlife along the pipeline ROWs during operation.

Similarly, operation of the aboveground facilities is not expected to adversely affect wildlife populations.

Because the pipeline ROW will be revegetated and useable by wildlife following construction, and important habitats have been avoided to the greatest extent practicable, long-term effects on wildlife habitats will be minimized and avoided. Transco expects that similar restoration activities would be employed for the Projects identified in the cumulative effects analysis as well, along with the implementation of BMPs and other effect avoidance measures. Based on this, Transco believes there will be no significant measurable cumulative effects of the Project on wildlife.

Transco completed surveys for threatened and endangered species through the Project area and developed suitable avoidance, minimization, and mitigation measures to prevent adverse effects. Transco believes that through these agency consultations cumulative effects have been appropriately addressed. ~~**Transco initiated surveys for species with federal protection (or candidacy for federal-level protection). These surveys will be continued in 2015, as necessary.**~~

~~**Transco will continue to consult with the applicable agencies to identify and develop avoidance and mitigation measures to implement during construction if areas are identified as providing habitat for federally and state-listed species. Use of avoidance, minimization and mitigation measures would be expected to prevent adverse effects on threatened and endangered and other sensitive species. Transco believes that through agency consultations cumulative effects will be appropriately addressed.**~~

Transco consulted with the ~~**Pennsylvania Fish and Boat Commission (**~~PFBC~~)~~ to identify both game and non-game fishery species and determine fishery classifications for ~~**waterbodies**~~*watercourses* crossed by the proposed pipeline. Due to the Project route and location and the presence of downstream dams, Transco determined that consultation with NOAA Fisheries was not necessary for the Project.

Construction of the Project may include temporary effects on ~~**waterbodies**~~*watercourses* and associated fisheries crossed by the Project. Temporary effects on fisheries include disturbance of ~~**waterbody**~~*watercourse* banks, removal of bank vegetation, and in some instances, modification of flow during dry-crossing construction. Transco will minimize effects resulting from construction through adherence to the Transco Procedures in the ECP (Attachment M). Transco is also consulting with the PFBC on these and other fishery effect minimization and mitigation measures. No ~~**waterbodies**~~*watercourses* or fishery resources will be affected by construction of new and modified existing aboveground facilities. Transco does not anticipate that the operation and maintenance of the pipeline or aboveground facilities will have adverse effects on fishery resources.

The Project effect on fisheries will be similar to that described for surface waters. Implementation of the Transco Procedures will limit the effects of crossings in duration and distance and limit the effect of construction activities to the stream, and fishery, being crossed. None of the other activities identified in the cumulative effects analysis will also affect the same streams or fisheries within the same timeframe as the Project; therefore, there is no potential for cumulative effect on these fisheries.

Cultural Resources

Transco *has consulted with the PHMC*~~**is currently consulting with the Pennsylvania Historical and Museum Commission (PHMC)**~~ and applicable Tribal Historic Preservation Offices regarding potential effects on cultural resources resulting from the Project. Beginning in May 2014, ***and continued surveys into 2016 in Pennsylvania. Transco completed surveys for cultural resources through the majority of the Project area and developed suitable avoidance, minimization, and mitigation measures to prevent adverse effects (see Attachment D-1 and D-2). Use of avoidance and mitigation measures would be expected to prevent adverse effects. Transco believes that through these agency consultations cumulative effects have been appropriately addressed.***

~~**Transco commenced with Phase I cultural resources surveys in Pennsylvania. Survey in Pennsylvania will continue in 2015.**~~

~~**As part of the Section 106 review process, Transco will work with the PHMC on the appropriate avoidance or mitigation efforts for any identified resource listed or potentially eligible for listing on the National Register of Historic Places (NRHP). Where practicable, NRHP cultural resources will be avoided during construction of the Project. Where unavoidable, these resources will be addressed in accordance with review and approval from the state SHPOs for excavation, management, and mitigation.**~~

~~**Transco will continue to consult with the PHMC to identify and develop avoidance and mitigation measures including the implementation of its Unanticipated Discovery Plans if listed or eligible sites are identified. Use of avoidance and mitigation measures would be expected to prevent adverse effects. Transco believes through agency consultations cumulative effects will be appropriately addressed.**~~

Land Use, Recreation and Aesthetics

The geographic area considered in the evaluation of land use includes the community, metropolitan area, county, state, or region within the Project effect area. For recreation, the geographic area considered in this analysis includes rivers, lakes, geographic areas, or land management units within the Project effect area. For visual resources, the geographic area would be the viewshed within 0.5 mile of the Project study area. Potential cumulative effects resulting from construction activities and operations and maintenance have been considered as part of this analysis.

The primary pipeline-related effects on existing land uses for the Project will be associated with vegetation clearing during construction. Agricultural lands crossed by the Project include large tracts of row and field crops such as corn, soybeans, wheat, and hay. No commercial silviculture (i.e., timber production) operations have been identified along the pipeline route. A majority of the commercial and industrial land crossed by the Project is not currently in use and is located within contractor/pipe yards. Open land (e.g., nonforested and undeveloped land not classified for another use, including land maintained as utility ROWs) is also crossed by the Project.

Transco will allow forested areas affected within the temporary construction ROWs and other temporary workspaces to revert to forest through natural successional processes after

construction. Within the permanent ROW, Transco will maintain currently forested upland areas in an herbaceous vegetation state to facilitate inspection and operation of the Project facilities.

Transco will acquire road and railroad crossing permits from the appropriate state or local jurisdiction, as required by state and/or local road encroachment permits and regulations. By complying with these permits, Transco will not permanently affect any roads or railroads. Transco proposes to construct its pipeline facilities within or adjacent to existing utility corridors where practicable. Where co-located with existing corridors, Transco will seek to overlap the construction ROWs with existing utility ROWs to minimize new disturbance.

Transco identified public land, conservation land, recreational areas, and other designated or special use areas in the vicinity of the Project and obtained additional information for these areas by consulting with federal, state, county, and local agencies and private landowners; reviewing aerial photographs and maps of the Project area; and through field surveys conducted in 2014 *through 2016*. Transco *has coordinated* ~~**is coordinating**~~ with appropriate federal, state, and municipal agencies on proposed crossings on public lands to minimize effects on recreation.

Land use effects resulting from transportation and residential/commercial developments in the vicinity of the Project are expected to be minimal due to the scope and nature of the work (as in the case of the transportation Projects) or because of the minimal or lack of activity (as in the residential/commercial developments). Land use effects associated with other natural gas pipelines would be similar to those for the Project, with similar mitigation measures and effect avoidance measures being implemented. Based on the above analysis, Transco believes there will be no significant measurable cumulative effects of the Project on land use.

Visual effects associated with construction activities will result from the removal of vegetation, particularly in forested areas. These effects will be observed where the pipeline parallels or crosses roads and where vegetation is removed between the ROWs and residences. Potential mitigation measures may include planting visual screens along roadways and in residential areas in coordination with regulatory agencies, as necessary. While temporary visual effects on the landscape will occur during Project construction due to clearing, grading, and construction

activities, Transco will restore disturbed areas in accordance with the Transco Plan and Transco Procedures (Attachments 17 and 18 of the Transco ECP (Attachment M)).

In summary, Transco believes there will be no significant measurable cumulative effects of the Project on land use, recreation, or visual resources.

E. Other Impacts to Water Resources Required to fulfill the Purposes of the Project

As described in Attachment J – Project Description, the Atlantic Sunrise Project involves water obstructions and encroachments in 10 counties: Clinton, Lycoming, Susquehanna, Wyoming, Luzerne, Columbia, Northumberland, Schuylkill, Lebanon and Lancaster counties. This permit application package identifies all the water obstructions and encroachments required in Lancaster County, PA *on parcels that are accessible to date*. Transco is submitting separate applications that will identify the water obstructions and encroachments in the other counties, as applicable.

F. References

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