ADELPHIA GATEWAY, LLC

RESOURCE REPORT NO. 2

Water Use and Quality

ADELPHIA GATEWAY PROJECT

January 2018

SUMMARY OF FILING INFORMATION			
INFORMATION	**Data Sources[a]**	**Found in Section**	**To be Filed**
Minimum Requirements to Avoid Rejection:			
1. Identify all perennial surface waterbodies crossed by the proposed Project and their water quality classifications - Title 18 CFR § 380.12(d)(1)	L, DD	2.3.1, Appendix 2A	N/A
2. Identify all waterbody crossings that may have contaminated waters or sediments - 18 CFR § 380.12(d)(1)	N/A	N/A	N/A
3. Identify watershed areas, designated surface water protection areas, and sensitive waterbodies crossed by the proposed Project - 18 CFR § 380.12(d)(1)	J, DD	2.3.1	N/A
4. Provide a table (based on NWI maps if delineations have not been done) identifying all wetlands, by milepost and length, crossed by the proposed project (including abandoned pipeline), and the total acreage and acreage of each wetland type that would be affected by construction - 18 CFR § 380.12(d)(1&4)	N/A	N/A	N/A
5. Discuss construction and restoration methods proposed for crossing wetlands, and compare them to the FERC's *Wetland and Waterbody Construction and Mitigation Procedures* - 18 CFR § 380.12(d)(2)	N/A	N/A	N/A
6. Describe the proposed waterbody construction, impact mitigation, and restoration methods to be used to cross surface waters and compare to the FERC's *Wetland and Waterbody Construction and Mitigation Procedures* - 18 CFR § 380.12(d)(2)	N/A	N/A	N/A
7. Provide original NWI maps or the appropriate state wetland maps, if NWI maps are not available, that show all proposed facilities and include milepost locations for proposed pipeline routes - 18 CFR § 380.12(d)(4)	D, O	Appendix 2A	N/A
8. Identify all U.S. Environmental Protection Agency - or state-designated aquifers crossed - 18 CFR § 380.12(d)(9)	J, OO	2.2.1	N/A

CFR = Code of Federal Regulations
FERC = Federal Energy Regulatory Commission
N/A = Not applicable
NWI = National Wetlands Inventory

[a] D = Applicant
J = U.S. Environmental Protection Agency
L = Field Surveys
O = NWI maps
DD = State Agencies
OO = U.S. Geological Survey

Source: FERC, 2017

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ACRONYMS AND ABBREVIATIONS

Adelphia	Adelphia Gateway, LLC
ATWS	additional temporary workspace
CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FERC Plan	*Upland Erosion, Control, Revegetation, and Maintenance Plan*
FERC Procedures	*Wetland and Waterbody Construction and Mitigation Procedures*
HDD	horizontal directional drill
Marcus Hook CS	Marcus Hook Compressor Station
milepost	MP
MLV	mainline valve
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PEM	palustrine emergent
PFO	palustrine forested
Project	Adelphia Gateway Project
PSS	palustrine scrub-shrub
Quakertown CS	Quakertown Compressor Station
SPCC Plan	*Spill Prevention, Control, and Countermeasures Plan*
SSA	sole source aquifer
SWPPP	*Stormwater Pollution Prevention Plan*

2 WATER USE AND QUALITY

This resource report describes the potential effects of construction and operation of the proposed Adelphia Gateway Project (Project) on water use and quality. The Project consists of the following primary components: the approximately 4.4-mile 20-inch Mainline; the approximately 84-mile 18-inch Mainline consisting of the Southern Segment and the Northern Segment that will both transport solely natural gas; two new compressor stations (the Marcus Hook CS and the Quakertown CS); two laterals, including an approximately 0.25-mile 16-inch pipeline lateral (the Parkway Lateral) and an approximately 4.5-mile 16-inch pipeline lateral (the Tilghman Lateral); four existing meter and regulator (M&R) facilities that do not require any modifications and accordingly do not have any environmental impacts for review in this resource report; eight new M&R facilities at receipt and delivery interconnects located along the 18-inch Mainline and the laterals; eight new blowdown assemblies located at existing mainline valves; one new mainline valve; and use of an existing disturbed site as a wareyard. In accordance with 18 Code of Federal Regulations (CFR) 380.12(d), Resource Report 2 describes the groundwater, surface water, and wetland resources associated with the Project. Direct and indirect impacts resulting from construction and operation also are discussed.

2.1 INTRODUCTION

Adelphia Gateway, LLC (Adelphia) conducted wetland and waterbody field surveys of portions of the Project area in June through December of 2017. Specifically, Adelphia completed surveys for the Marcus Hook CS, the wareyard (which would be within the fence line of the Marcus Hook Pump Station), the Parkway Lateral, the Quakertown CS and associated Quakertown Meter Station, the Skippack Meter Station, and the Martins Creek Station. Adelphia has not completed surveys for the Tilghman Lateral, the Transco Meter Station, the new MLV (there are currently two locations being evaluated), or the blowdown assembly sites. No surveys were required at the Delmarva Meter Station, the Monroe Meter Station, or the PECO Meter Station, because these sites are entirely located within the fence line of existing, active natural gas meter stations. Adelphia is working to gain access to these areas and will conduct surveys once access is acquired. For areas in which Adelphia does not have survey access, Adelphia performed a desktop analyses using the Pennsylvania Department of Environmental Protection's eMapPA database (PADEP, 2017) to determine where wetlands and waterbodies could be located. The eMapPA database contains the following relevant data:

- U.S. Geological Survey topographic maps;

- U.S. Geological Survey's National Hydrography Dataset; and
- U.S. Fish and Wildlife Service's National Wetland Inventory maps.

Adelphia also informed its desktop review with U.S. Department of Agriculture, Natural Resource Conservation Service soils maps and Google Earth aerial photography. The results of the field surveys and desktop analyses are summarized in this resource report and in the *Wetland and Waterbody Identification and Delineation Report* provided in appendix 2A.

2.2 GROUNDWATER RESOURCES

Groundwater is water found under the earth's surface in the cracks and pore spaces of soil, sand and rock. If a subsurface is sufficiently permeable it can become saturated with groundwater. The upper limit of this saturated zone is called the water table, and the area of the saturated zone itself is called the aquifer. If the aquifer is shallow and permeable enough to allow for sufficient groundwater flow, groundwater can be extracted using wells. If the amount of water being extracted exceeds the amount of water infiltrating into the aquifer (i.e., recharge) the aquifer will eventually be depleted. Aquifer recharge may occur naturally through infiltration of surface water or artificially, such as through injection wells. Natural recharge of an aquifer occurs in areas where the overlying land is permeable enough to allow surface water to seep through the surface and into the aquifer. An aquifer can also naturally release, or discharge, groundwater through discharge areas such as seeps and springs that are generally found at lower elevations than recharge areas. Aquifers are a natural resource and can be a source of water for drinking, irrigation, recreation, and industry (USGS, 2016a; TGF, 2017).

2.2.1 Existing Groundwater Resources

2.2.1.1 Principal Aquifers

The USGS defines a principal aquifer as a regionally extensive aquifer or aquifer system that has the potential to be used as a source of potable water. The Project crosses through three principal aquifers: Piedmont and Blue Ridge, crystalline-rock aquifers; Piedmont and Blue Ridge, early Mesozoic basin aquifers; and Valley and Ridge, sandstone aquifers (USGS, 2016b). Table 2.2-1 identifies the locations at which principal aquifers would be crossed by the Project.

Table 2.2-1
Principal Aquifers Crossed by the Adelphia Gateway Project

Site	County/State	Aquifer Type	Begin MP[a]	End MP[a]
Marcus Hook CS[b]	Delaware/PA	Piedmont and Blue Ridge (crystalline-rock)	0.0	0.0

Table 2.2-1
Principal Aquifers Crossed by the Adelphia Gateway Project

Site	County/State	Aquifer Type	Begin MP[a]	End MP[a]
Parkway Lateral[c]	Delaware/PA	Piedmont and Blue Ridge (crystalline-rock)	PW 0.0	PW 0.1
Parkway Lateral[c]	New Castle/DE	Piedmont and Blue Ridge (crystalline-rock)	PW 0.1	PW 0.2
Tilghman Lateral[c]	Delaware/PA		TL 0.0	TL 4.4
MLV and Blowdown Assemblies	Delaware, Chester, Montgomery/PA	Piedmont and Blue Ridge (crystalline-rock, Early Mesozoic basin aquifers)	Various	Various
Skippack Meter Station	Montgomery/PA	Piedmont and Blue Ridge (early Mesozoic basin)	36.0	36.0
Quakertown CS[c]	Bucks/PA	Piedmont and Blue Ridge (early Mesozoic basin)	49.4	49.4
Martins Creek Station	Northampton/PA	Valley and Ridge (sandstone)	84.4	84.4

Notes: Laterals include associated interconnects/meter stations.

MP = Milepost

N/A = Not applicable

[a] Locations of aboveground facilities are provided for the nearest Project MP.

[b] The proposed wareyard is located at the Marcus Hook Pump Station along with the Marcus Hook CS, and it crosses the same Principle Aquifers.

[c] Includes associated interconnects/meter stations.

Source: USGS, 2016b

Piedmont and Blue Ridge Aquifers

Piedmont and Blue Ridge Aquifers are dense, almost impermeable bedrock that yield water primarily from secondary porosity and permeability provided by fractures. Piedmont and Blue Ridge Aquifers consist of three principal types of bedrock aquifers: crystalline-rock aquifers; aquifers in early Mesozoic basins; and carbonate-rock aquifers. Water quality from the aquifers that occur in these different rock types is similar and generally suitable for drinking and other uses. Piedmont and Blue Ridge Aquifers have recharge areas that typically occur in interstream areas (Trapp and Horn, 1997).

Valley and Ridge Aquifers

Valley and Ridge Aquifers consist of permeable rocks within a sequence of folded and faulted sedimentary formations that form a series of parallel valleys separated by ridges that rise

from about 100 to 2,000 feet above the valley floors. Valley and Ridge Aquifers are mostly composed of sandstone, shale, and carbonate rocks. Most of the more productive aquifers are in carbonate rocks, primarily limestone, and most are in valleys. The chemical quality of water in these aquifers is somewhat variable but is generally suitable for municipal supplies and other purposes (Trapp and Horn, 1997).

2.2.1.2 Sole-Source Aquifers

The U.S. Environmental Protection Agency (EPA) defines a sole source aquifer (SSA) as one that supplies 50 percent or more of the drinking water for its service area and for which there are no reasonably available alternative drinking water sources should the aquifer become contaminated. Under the Safe Drinking Water Act of 1974, the EPA has the authority to designate an aquifer as an SSA. The SSA program provides limited protection of ground water resources that serve as drinking water supplies and is not a comprehensive ground water protection program. The Parkway and Tilghman Laterals would cross the Delaware River Streamflow Zone/New Jersey Coastal Plain SSA. Adelphia did not identify any restrictions associated with proposed Project activities within this SSA. No other Project Sites would cross or be located within designated SSAs (EPA, 2016).

2.2.1.3 Private and Public Water Supply Wells and Springs

Adelphia conducted Phase I Environmental Site Assessments for existing facilities acquired by Adelphia as part of its purchase of Interstate Energy Company (see Resource Report 1). Specifically, Adelphia conducted Phase I Environmental Site Assessments for the Marcus Hook Pump Station (which includes the proposed locations of the Marcus Hook CS and the wareyard), the existing Quakertown M&R Station (which includes the proposed locations of portions of the Quakertown CS and Quakertown Meter Station), and the Martins Creek Terminal (which includes the proposed location of the Martins Creek Station). Adelphia identified one potable water supply well within the Project area. The well is located onsite at the Martins Creek Terminal Site and is owned by Interstate Energy Company. The well would be used for potable water and fire suppression water at both Martins Creek Terminal and Martins Creek Station.

Adelphia also reviewed the Pennsylvania Department of Conservation and Natural Resources' (PADCNR) Pennsylvania Groundwater Information System database and the Delaware Department of Natural Resource and Environmental Control's Environmental Navigator (NavMap) database for additional information about water supply wells and springs near the Project area. The search identified two monitoring wells located approximately 80 feet from the Project work area near

milepost (MP) TL-1.2. Nine commercially owned water wells that are likely used for industrial or monitoring purposes are located within 150 feet of the Tilghman Lateral near MP TL 2.9; two of these wells would be crossed by the Lateral's additional temporary work space (ATWS), and the rest would be at least 50 feet from the construction right-of-way. There are three monitoring wells owned by Sunoco located about 15 feet from the Tilghman Lateral construction workspace on the south side of Route 291 near MP TL 3.9. There are an additional four test wells, also owned by Sunoco, located approximately 50 feet away from the same construction workspace at MP TL 3.9. No other active water wells were identified within 150 feet of any proposed Project facilities. Locational information for some wells is not available in the PADCNR's Groundwater Information System database. The NavMap database did not indicate the presence of any active water supply wells or springs within 150 feet of the Project construction workspace in Delaware (DNREC, 2017). No public or private water supply wells, seeps, or springs were observed during Adelphia's field investigations.

The Safe Drinking Water Act requires each state to develop a Wellhead Protection Program and define wellhead protection areas, which are the protected surface and subsurface zones surrounding a well or well field supplying a public water system to keep contaminants from reaching the well water (TGF, 2017). A review of Pennsylvania and Delaware geospatial data indicated that no wellhead protection areas are located within the vicinity of the proposed Project facilities (DNREC, 2017; PGS, 2017).

2.2.1.4 Contaminated Groundwater

Adelphia conducted searches of federal and state government databases to identify contaminated sites within the vicinity of the proposed Project. According to the EPA Cleanups in My Community website, two sites with existing groundwater contamination occur within 0.5 mile of the Project (U.S. Environmental Protection Agency, 2017). The Monroe Energy, LLC Site (formerly a BP Oil Refinery) and the Metro Container Corporation Site are both currently being monitored for contaminated groundwater. Both sites have undergone cleanup and remediation activities to remove the contamination (see Resource Report 8 – *Land Use, Recreation, and Aesthetics*). No sites were identified within one mile of the proposed new MLV (both location options) or blowdown assembly sites.

2.2.2 Groundwater Construction Impacts and Mitigation

2.2.2.1 Clearing

Clearing and grading is a process necessary for the establishment of a construction workspace. This process typically involves the removal of vegetation, which would serve as a filter

during water infiltration and recharge of shallow aquifers. Vegetation clearing would be required at the Parkway Lateral, Tilghman Lateral (including the associated meter stations), Skippack Meter Station, and Quakertown CS to create a safe and level working space. Any areas that would not be permanently converted to industrial-use land would be reseeded during Project cleanup and restoration and allowed to revegetate. In areas where permanent facilities would be installed at the Quakertown CS Site, stormwater would be managed in a manner that protects groundwater and in accordance with the FERC Plan and a site-specific *Stormwater Pollution Prevention Plan* (SWPPP).

Vegetation clearing and grading would not be required at the Marcus Hook CS, wareyard, or Martins Creek Station Sites, because Project activities would occur entirely within industrial/commercial-use areas that are not vegetated and are covered with gravel or asphalt. Minor vegetation clearing and grading would be required at the MLV and blowdown locations in order to safely excavate the existing pipeline and install modifications to the existing pipeline. Once modifications are complete, the existing right-of-way easement will be allowed to revegetate to its current condition.

2.2.2.2 Excavation and Dewatering

Under standard conditions, trenches would be dug to a depth of approximately six feet for pipeline installation. For the construction of the compressor station and meter stations, shallower trenches would be excavated in order to construct building foundations and footers. In areas containing soils with a shallow depth to water table (i.e., < 60 inches [5 feet]), trenching and excavating activities could intercept the aquifer, which could create the need to dewater the trench. Project Sites containing soils with shallow depth to water table include the Tilghman Lateral, the Quakertown CS, the new MLV (Option 1), and several of the blowdown assembly sites (USDA, 2017).

Trench dewatering has the potential to cause temporary reductions in groundwater levels but would not cause long-term adverse effects to groundwater resources. Any effects on groundwater due to dewatering would be temporary and localized in nature. If local groundwater levels were temporarily lowered due to dewatering activities, they would quickly return to preconstruction levels following the completion of dewatering. Adelphia would conduct all dewatering activities in accordance with the FERC Procedures to prevent erosion and silt-laden water from entering nearby waterbodies or wetlands.

2.2.2.3 Groundwater Contamination

Groundwater contamination could occur from an inadvertent spill of fuel or hazardous liquids during refueling or maintenance of construction equipment, or during operation of aboveground facilities. Adelphia would store and handle hazardous liquids according to the FERC Plan to minimize potential spills. Adelphia would not refuel vehicles/equipment or store hazardous materials within 400 feet of wells. In addition, Adelphia would develop and implement an SPCC Plan prior to beginning construction. The procedures within the SPCC Plan would be followed in the event of an inadvertent release of hazardous materials to prevent groundwater contamination.

Historical groundwater contamination is known to exist at two sites near the Tilghman Lateral but the proposed Lateral has been routed to avoid these sites. Both sites have undergone cleanup and remediation activities to remove the contamination, and additional discussion of these sites is provided in Resource Report 8. Adelphia would develop an *Unanticipated Discovery of Contamination Plan* prior to construction that would provide the procedures to be followed in the unlikely event that previously unknown contaminated sediments, soils, or groundwater are identified during construction of the Project. Measures outlined in the plan would include:

- stop work immediately upon notice of groundwater with a distinct odor or unusual visual appearance;
- notify the appropriate state and federal agencies; and
- proceed in accordance with federal, state, and local regulations.

Prior to new MLV construction and blow down assembly modification, the pipeline would be cleaned to remove any residual product and hydrostatically tested to verify the pipe integrity. Construction of the proposed MLV along the existing 18-inch pipeline and modifications at blowdown assembly sites would involve clearing and grading the work area to create a safe and stable working environment, and excavation of the existing pipeline (approximately a depth of six feet). The existing line would be cut and the new MLV or blowdown assembly would be installed. The trench would be backfilled and the area would be restored according to the FERC Plan. Adelphia would adhere to the measures provided in the FERC Plan and Procedures as well as the measures indicated in its SPCC Plan in order to minimize the risk of potential groundwater contamination.

In 2017 the existing mainline was flushed and cleaned prior to performing a hydrostatic test. Upon completion of the test, it was dewatered, cleaned and dried. Installation of the new

MLV and modifications required at several existing MLVs should not pose a potential risk for leaks or contamination. Measures to capture liquids or contaminants would be used during the construction activities and Adelphia would dispose of such substances in accordance with applicable laws and regulations.

2.2.2.4 Water Supply Well Testing

Adelphia would develop and implement plans for monitoring water quality and public/private supply well yields of existing wells before and after construction to determine whether water supplies have been affected by the Project construction activities. In the event of damage, Adelphia would mitigate damage associated with Project construction, including possible installation of a new well, and conducting restoration, repair or replacement of water supplies (if applicable).

2.3 SURFACE WATER RESOURCES

FERC Procedures define a waterbody as "…any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes..." The FERC further defines waterbody crossings as minor, intermediate, or major. Minor waterbodies are less than or equal to 10 feet wide at the water's edge at the time of crossing, intermediate waterbodies are greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing, and major waterbodies are greater than 100 feet wide at the water's edge at the time of crossing (FERC, 2013).

Waterbodies can also be classified according to their flow type. Ephemeral waterbodies have flowing water only during, or for a short duration after, precipitation events in a typical year. Intermittent streams have flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from precipitation is a supplemental source of water for intermittent stream flow. Perennial streams have flowing water year-round during a typical year. The water table is located above the streambed of perennial streams for most of the year, and groundwater is the primary source of water for stream flow. Runoff from precipitation is a supplemental source of water for perennial stream flow (Zollich and Christie, 2014).

2.3.1 Existing Surface Water Resources

2.3.1.1 Watersheds

The Project facilities intersect or are located within three watersheds (8-digit Hydrologic

Unit Codes [HUCs]) (EPA, 2017). Table 2.3-1 lists the watersheds that would be crossed by the Project.

Table 2.3-1
Watersheds Crossed by the Adelphia Gateway Project

Project Facility	Watershed (8-digit HUC/Name)	County/State
Marcus Hook CS[a]	020240202 / Lower Delaware	Delaware/PA
Parkway Lateral[b]	020240202 / Lower Delaware	New Castle/DE, Delaware/PA
		Delaware/PA
Tilghman Lateral[b]	020240202 / Lower Delaware	Delaware/PA
Quakertown CS[b]	020240203 / Schuylkill	Bucks/PA
Martins Creek Station	02040104 / Middle Delaware-Mongaup-Brodhead	Northampton/PA
Skippack Meter Station	02040203 / Schuylkill	Delaware/PA
MLV Option1, MVL Option 2, Blowdown Assemblies	020240203 / Schuylkill – 020240202 / Lower Delaware	Delaware, Chester, Montgomery, Bucks, Northampton/PA

[a] The Marcus Hook CS includes the proposed wareyard.

[b] Facilities include associated interconnects and/or meter stations.

Source: EPA, 2017

2.3.1.2 Waterbodies

A total of two waterbodies, Marcus Hook Creek and Stoney Creek, would be crossed by the Project. Both would be crossed by the Tilghman Lateral. Marcus Hook Creek would be crossed near MP TL 1.9, and Stoney Creek would be crossed near MP TL 2.7. Marcus Hook Creek would be crossed using horizontal directional drill (HDD) methods. Adelphia would cross Stoney Creek either using the open-cut (dry or wet) method or HDD method. Adelphia will decide on the crossing method for Stoney Creek once field surveys of the Tilghman Lateral are complete and will file the decision and any associated documentation with the FERC at that time. Resource Report 1 and Resource Report 6, *Geological Resources*, provide discussions of the proposed HDD crossings and construction methods. Additional information about Marcus Hook Creek and Stoney Creek is provided in Resource Report 3, *Fish, Wildlife, and Vegetation*. There are no surface water intakes located within three miles downstream of these waterbody crossings (PADEP, 2000).

One additional waterbody, which was identified during Adelphia's field surveys, is located adjacent to the Project area. This waterbody is located about 10 feet north of the Quakertown CS

Site and is associated with a wetland that was also identified near the Site. Based on local topography, this waterbody is likely a tributary to Morgan Creek (Google Earth, 2016). Based on visual observations made in the field, it is a minor, intermittent stream that did not have flow at the time of observation. Due to its small size, no online information was available for this waterbody.

The proposed new MLV (both location options), the Skippack Meter Station, and the majority of the blowdown assembly sites would not be located near any waterbodies. However, the Paoli Pike Gate Blowdown is located approximately 50 feet from Ridley Creek, and the Chester Creek Gate Blowdown is located approximately 150 feet from Chester Creek. Work at these facilities would be limited to clearing and grading the area to create a safe work environment, excavation of the existing MLV, installation of blowdown assemblies, and restoring the sites. Work performed at both the new and existing MLVs would be within the existing pipeline right-of-way and sites would be accessed via access roads that were established as part of the Existing System's right-of-way maintenance.

Adelphia would adhere to BMPs outlined in the FERC Procedures as well as its SPCC Plan to avoid potential impacts to the tributary to Morgan Creek, Ridley Creek, Chester Creek, and any other nearby waterbodies. Therefore, Adelphia does not expect that Project activities would disturb the waterbodies located in proximity to these sites.

2.3.2 Floodplains and Hazard Zones

Adelphia assessed the Flood Insurance Rate Maps issued by the Federal Emergency Management Agency to identify crossings of areas subject to flooding and high-volume flows. These areas, identified as Special Flood Hazard Areas, are located within the 100-year floodplain. Part of the temporary work space for the Tilghman Lateral HDD would be located within the 100-year floodplain and within a regulatory floodway (FEMA, 2017). Adelphia would acquire all applicable state and federal permits required to conduct work within the floodway.

2.3.3 Construction Impacts and Mitigation

Adelphia would perform at least one, and potentially both of the waterbody crossings via HDD, which would minimize potential adverse impacts to the waterbodies. Drilling mud from the HDD process has to the potential to be released at the surface should a pathway of low resistance exist between the drilling depth and the surface. An inadvertent return of drilling mud could potentially cause turbidity within waterbodies crossed via the HDD method should one occur. A

geotechnical analysis of the proposed HDDs and a discussion of the measures that would be used should an inadvertent return of drilling mud occur will be provided to the FERC in a supplemental filing and are addressed briefly in Resource Report 6. Adelphia would use a commercial or municipal source of water to create the drilling mud and also for dust suppression, as required; no surface water or groundwater supplies would be used.

Should Adelphia cross Stoney Creek using the open-cut method, construction activities, including excavation; dewatering; backfilling; and operation, storage, or refueling of heavy machinery, could result in impacts to aquatic resources. Potential impacts on surface water resources include modification of aquatic habitat, increased sedimentation and turbidity, decreased dissolved oxygen concentrations, inadvertent release of chemical and nutrient pollutants from sediments, and introduction of chemical contaminants, such as fuel or lubricants. Whenever possible, construction activities at stream crossings would be conducted during low-flow periods to minimize sedimentation and turbidity and stream bank disturbances and to limit the time it would take to complete in-stream construction.

Potential Project-related impacts on waterbodies would be minimized through Adelphia's implementation of measures outlined in the FERC Plan and Procedures, as well as Adelphia's SPCC Plan and Site-specific E&SCP and SWPPP, which would be developed prior to the beginning of construction. Measures from these plans that would be implemented include, but are not necessarily limited to:

- installing, inspecting, and regularly maintaining erosion and sediment control devices, as necessary;
- reseeding temporary work space, as applicable, during Project restoration;
- discharging pumped trench water through hay/straw bale structures or filter bags and into vegetated upland areas (if dewatering is required); and
- storing hazardous materials, chemicals, lubricating oils, and fuels used during construction in secondary containment structures at least 100 feet from surface waterbodies or wetlands.

The proposed Project will be constructed in compliance with applicable specifications, federal regulations and guidelines, and Project-specific permit conditions. Adelphia selected the proposed Project area to avoid and minimize effects to waterbodies to the greatest extent

practicable while maintaining the economic and safety standards of the Project. The Project's Alternatives Analysis is provided in Resource Report 10, *Alternatives*.

2.3.4 Hydrostatic Test Water Withdrawal and Discharge

In compliance with the U.S. Department of Transportation regulations, Adelphia would perform hydrostatic testing on all new high pressure gas containing pipe components, including the pipeline laterals; meter, regulation and delivery station piping; compressor suction, discharge, and engine auxiliary piping; and interconnect piping. Table 2.3-1 provides the details of the hydrostatic testing activities that would be required for the Project. Interstate Energy Company would conduct hydrostatic testing of the existing pipeline and facilities to be purchased prior to commencement of any Project construction, therefore no hydrostatic testing would be needed at the Martins Creek Station or MLV/blowdown assembly sites.

Table 2.3-1
Hydrostatic Testing Activities Required for the Adelphia Gateway Project

Site	Water Source	Withdrawal Location (MP)	Discharge Location (MP)	Testing Date (Month/Year)	Estimated Water Usage (gallons)
Marcus Hook CS	Truck	N/A	N/A	4/2019	8,505
Parkway Lateral[a]	Truck	0.2	0.0	4/2019	216,767
Tilghman Lateral[a]	Truck	0.0	4.4	4/2019	16,928
Quakertown CS[a]	Pond	N/A	N/A	4/2019	9,781
Skippack Station	Truck	N/A	N/A	4/2019	3,000
				Project Total	**253,981**

[a] Includes associated interconnects and/or meter stations.

Following testing, each test section would be depressurized, and the water would either be hauled offsite to an approved disposal facility or discharged into a storm sewer after passing through an energy-dissipating device. Adelphia would follow all applicable federal, state, and local permit requirements with regard to water discharge. No water quality impacts are anticipated because of the discharge from hydrostatic testing. The Project facilities would be constructed of new steel pipe that would be free of chemicals and lubricants.

2.3.5 Operation Effects and Mitigation

The Project facilities would be operated and maintained in a manner to ensure that a safe, continuous supply of natural gas reaches each of the delivery points. No herbicides or pesticides would be used for the clearing or maintenance of the temporary or permanent workspace or within 100-feet of a waterbody. New pipeline lateral rights-of-ways would be located in previously

disturbed, industrial areas, which would be returned to pre-construction conditions. All work associated with the MLV and blowdown assemblies would be conducted within the existing maintained 18-inch and 20-inch-diameter pipeline right-of-way and existing access roads. New aboveground facilities have been sited to avoid surface water resources. A conscious effort has been made to maintain existing vegetation where possible and limit the extent of earth disturbance to the area necessary to construct the proposed facilities. In the event of an inadvertent release, and in order to protect all water resources, Adelphia would follow the measures outlined in its *Spill Prevention Control and Countermeasures Plan* (SPCC Plan), the FERC *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and the FERC *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures) to protect water resources.

2.4 WETLANDS

2.4.1 Existing Wetland Resources

Wetlands are transitional areas situated between upland and aquatic communities where the vegetation and soil substrates are influenced by intermittent to permanent inundation or flooding (Cowardin et al., 1979). According to Cowardin et al. (1979), vegetative species present within a wetland determine its classification. Palustrine forested (PFO) wetlands are characterized by woody vegetation greater than 20 feet in height with more than 30 percent canopy cover. Palustrine scrub-shrub (PSS) wetlands are similar to PFO wetlands in that they are characterized by greater than 30 percent canopy cover of woody vegetation; however, dominant vegetation in a PSS wetland is less than 20 feet in height. Palustrine emergent (PEM) wetlands are characterized by dominance of rooted herbaceous (non-woody) wetland plants.

Wetland delineations were conducted at the Marcus Hook CS and wareyard, the Parkway Lateral, the Skippack Meter Station, the Quakertown CS, and the Quakertown Meter Station in accordance with applicable U.S Army Corps of Engineers' methods. According to the U.S. Army Corps of Engineers' Wetland Delineation Manual (1987), an area is a wetland if positive indicators for all of the three mandatory wetland criteria are identified in a given area, with special exceptions. These criteria include the presence of hydrophytic vegetation, wetland hydrology, and hydric soils. The specific wetland criteria observed within each area delineated during the field surveys are provided in Adelphia's *Wetland and Waterbody Identification and Delineation Report* as appendix 2A.

Adelphia is in the process of conducting wetland and waterbody surveys for the Tilghman Lateral, the Transco Meter Station, the new MLV (both location options), and blowdown assembly

sites and will provide the results of these surveys to the FERC and other applicable agencies once they are complete. In areas where surveys have not been conducted, Adelphia used online data to approximate locations of wetlands.

No wetlands were identified within the Project area. However, one PSS/PEM wetland was delineated within the environmental survey area at the Quakertown CS site. Adelphia adjusted the Project area so that this wetland would not be within the proposed workspace. Wetland data forms and photographs of the wetland are included in the *Wetland and Waterbody Identification and Delineation Report*. Representative wetland and upland data points were recorded during the wetland delineation to determine the wetland boundary and document site conditions.

2.4.2 Wetland Impacts and Mitigation

Adelphia does not anticipate temporary or permanent impacts on wetlands during construction or operation of the Project. If wetlands are encountered during future surveys of the Project area, Adelphia would either adjust the Project area to avoid the wetland or avoid impacts through the use of HDD methods. In addition, Adelphia would employ measures outlined in its SPCC Plan and the FERC Plan and Procedures to protect wetlands that may be located nearby.

2.4.2.1 Erosion and Sedimentation Controls

Prior to any grading activities, erosion controls would be placed along the downslope edge of the construction workspace to minimize impacts from runoff into adjacent and downstream wetlands. These controls would be properly installed, inspected, and maintained throughout construction to prevent disturbed soils and sediment from migrating into adjacent and downstream undisturbed wetland areas.

2.4.2.2 Potential Spills

Inadvertent spills of fluids used during construction, such as fuels, lubricants, and solvents, could contaminate wetland soils and vegetation. To minimize the potential for spills to affect wetlands, hazardous materials, chemicals, lubricating oils, and fuels used during construction would be stored in upland areas at least 100 feet from wetland boundaries. No equipment would be parked and/or refueled within at least 100 feet of wetland boundaries, and, whenever possible, additional precautions, such as continual monitoring of fuel transfer, secondary containment structures, and the use of spill kit readiness, would be employed.

Construction of the new MLV and blowdown assemblies would use the same measures to prevent inadvertent spills of fluids used during construction. The existing line would be cleaned

and hydrostatically tested by Interstate Energy Company prior to construction of the Project. Pipe removed from the existing line would be disposed of according to all applicable laws and regulations. Due to these measures the potential for an inadvertent spill to occur is low.

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