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Carol Collier, Executive Director
DRBC
25 State Police Drive
P.O. Box 7360
West Trenton, NJ 08628-0360

Fax No. 609 883 9522

Email: carol.collier@drbc.state.nj.us

Dear Ms. Collier,

Inergy Midstream, L.P., UGI Energy Services, Inc. and Capitol Energy Ventures, a subsidiary of WGL Holdings, Inc., are proposing construction of a new interstate natural gas pipeline they call the Commonwealth Pipeline. The Commonwealth Pipeline project would span approximately 120 miles in order to lay a 30-inch pipeline. The pipeline project is proposed to begin in Lycoming County, PA and to cut through Columbia, Montour, Northumberland, Schuylkill, Berks and Chester Counties, also in Pennsylvania. The Pipeline as proposed would transport an estimated 800,000 dekatherms per day of gas drilled and fracked from the Marcellus shale.

According to the Delaware River Basin Commission's Rules of Practice and Procedure section 2.3.5.A.12, natural gas pipelines are subject to DRBC review and docket requirements if they:

"... pass in, on, under or across an existing or proposed reservoir or recreation project area as designated in the Comprehensive Plan;"

or they

"... would involve significant disturbance of ground cover affecting water resources."

The Commonwealth Pipeline project triggers both reasons for requiring DRBC review.

DELAWARE RIVERKEEPER NETWORK
925 Canal Street, Suite 3701
Bristol, PA 19007
Office: (215) 369-1188
fax: (215) 369-1181
drm@delawareriverkeeper.org
www.delawareriverkeeper.org

First: While the final route for the Commonwealth pipeline project being proposed is not finalized, there is a high likelihood it will cross through the following areas that have been included in the DRBC Comprehensive Plan:

- ✓ Weiser State Forest as per DRBC Resolution 2000-22
- ✓ Blue Marsh Reservoir project as per DRBC Resolution No. 62-4
- ✓ French Creek State Park as per DRBC Resolution 2000-22
- ✓ The Hopewell Furnace National Historic Park as per section III Part A of the DRBC Comprehensive Plan.

Therefore the Commonwealth Pipeline will require Commission review in accordance with Section 3.8 of the Delaware River Basin Compact and Article 3 of the Rules of Practice and Procedure.

Second: The 120 mile length of the project overall, and the portions that span the Delaware River watershed counties of Schuylkill, Berks and Chester, will require a significant level of disturbance of ground cover that will affect the water resources of the Delaware River watershed.

Pipeline construction activities result in four primary impacts to groundcover affecting water resources, including: erosion and sedimentation, loss of riparian vegetation, forest and habitat loss and fragmentation, and cumulative impacts. Compaction and changes to soils and hydrologic changes to wetlands are additional impacts that affect water resources.

Studies documenting the effects of stream crossing construction on aquatic ecosystems identify sediment as the primary stressor for construction on river and stream ecosystems.¹ During the pipeline stream crossings construction, discrete peaks of high suspended sediment concentration occur during activities such as blasting, trench excavation, and backfilling.² The excavation of streambeds can generate persistent plumes of sediment concentration and turbidity.³ This sedimentation has serious consequences for the benthic invertebrates and fish species whose vitality is crucial for healthy aquatic ecosystems. There have been documented reductions in benthic invertebrate densities, changes to the structure of aquatic communities, changes in fish foraging behavior, reductions in the availability of food, and increases in fish egg mortality rates.⁴ In addition to the stream crossing construction activity itself, the associated new access road construction increases the risk of erosion and sedimentation.⁵ Heavy rains during two tropical storms in August and September 2011 caused extensive failures to erosion and sediment controls on pipelines under construction in north central Pennsylvania resulting in sedimentation plumes

¹ Scott Read, *Effects of Sediment Released During Open-cut Pipeline Water Crossings*, Canadian Water Resources Journal, 1999, 24: (3) 235-251.

² *Id.*

³ *Id.*

⁴ James Norman, et al., *Utility Stream Crossing Policy*, ETOWAH Aquatic Habitat Conservation Plan, July 13, 2008, 9-10.

⁵ *En Banc* Hearing of the Pennsylvania Public Utility Commission on Jurisdictional Issues Related to Marcellus Shale Gas Development, Docket No. I-2010-2163461.

in nearby waterbodies.⁶ Persistent and repeated violations and issued NOV's from field inspections by Pike County Conservation District E&S specialists for the Tennessee Gas 300 Line that cut across Exceptional Value and High Quality streams of the Upper Delaware Basin also indicate the persistent problems of sediment discharges into waterbodies, failure to maintain and implement E&S control devices, and other water pollution issues over time. It is important to note that the TGP 300 line, over a year and three months since the new pipeline has been carrying gas (line went into operation November, 2011), still has areas, like in the Delaware State Forest and areas surrounding Craft Brook and the Savantine wetland complex, and the Lackawaxen crossing, that are still only under "temporary stabilization" due to lagging restoration practices and persistent problems with re-vegetating the pipeline ROW and adjacent temporary and additional temporary work spaces. In December 2012, Delaware Riverkeeper Network secured sampling of what TGP calls "temporary work spaces" along the 300 Line within Delaware State Forest and results indicate major compaction issues with these areas where TGP has deemed grading complete. This compaction means changes to the soil structure, changes to the hydrology of the springs and wetlands that are located nearby, increased runoff, and poor vegetation growth which is evident along many sections of the pipeline corridor.

Pipeline construction also results in the loss of riparian vegetation.⁷ For each pipeline construction technique, there is a resulting loss of foliage associated with clearing the stream banks. This reduction in foliage increases stream temperature and reduces its suitability for fish incubation, rearing, foraging and escape habitat.⁸ The loss of vegetation also makes the stream more susceptible to erosion events, as the natural barrier along the stream bank has been removed. Deposited sediment from construction activities can also fill in the interstitial spaces of the streambed, changing its porosity and composition, and thereby increasing embeddedness and reducing riffle area and quality.⁹ Furthermore, deposited sediment has the potential to fill in pool areas and reduce stream depth downstream of the construction area.¹⁰

Water temperatures collected by Delaware Riverkeeper Network in an impacted headwater wetland along the TGP 300 Line located in Delaware State Forest (W038) were as high as 87.6 °F (measured July 14, 2012). In July and August, water temperatures exceeded air temperatures, indicating that W038 was acting like an open pond and heat sink rather than like a palustrine forested/palustrine shrub-scrub/palustrine emergent wetland located at the headwaters of Sawkill Creek – its condition before the pipeline cut through it. These thermal impacts and changes to vegetation cover will likely impact the life cycle of the amphibians that had relied on this forested wetland during the breeding season. With TGP's 300 Line project, in many areas, diverse and healthy canopy, mid-story, and groundcover vegetation species and intact, porous forest soils were disturbed, compacted and cut through with this project. Compacted soils and

⁶ Craig R. McCoy and Joseph Tanfani, *Similar Pipes, Different Rules*, PHILADELPHIA INQUIRER, available at, http://articles.philly.com/2011-12-12/news/30507185_1_hazardous-materials-safety-administration-pipeline-safety-rules

⁷ Norman at 8.

⁸ Canadian Association of Petroleum Producers, Canadian Energy Pipeline Association, and Canadian Gas Association, *Pipeline Associated Water Crossings*, Prepared by TERA Environmental Consultants and Salmo Consulting, Inc. (2005), 1-4.

⁹ Read at 235-251.

¹⁰ Norman at 9-10.

deer browse in the area will surely make restoration difficult at best and sparse plantings observed to date on Delaware State Forest lands of what appears to be bare root red-osier dogwoods is far from the compensation the forest needs to begin to recover.

Forest fragmentation and habitat loss is a serious and inevitable consequence of increased pipeline construction activity. While the right of way for a pipeline construction zone ranges from 25-200 feet, on average, the right of way extends its edge impacts about 100 feet into the surrounding landscape.¹¹ The Nature Conservancy has determined that “[t]he expanding pipeline network could eliminate habitat conditions needed by “interior” forest species on between 360,000 and 900,000 acres as new forest edges are created by pipeline right-of-ways.” In addition, the right of way will need to be maintained and kept clear throughout the lifetime of the pipeline and issues like ATV use are persistent disturbance problems through wetlands and streams that often come with pipeline corridors. This is evident in Delaware State Forest along the old TGP 300 Line (Pinchot Brook wetland/stream complex has rutting and pooling due to frequent ATV use over the years), for example. The proposed existing ROW of the Commonwealth line across Stone Mountain in Schuylkill County also has evidence of erosion, ATV use, and lack of vegetation on steep slopes on this old line installed in decades past.

The clearing of forest for pipelines routinely results in the introduction of invasive species (such as Japanese knotweed, *Phragmites australis*, and hay scented fern); native wildlife species decline, and there is the creation of microclimates that degrade forest health through sunscald and wind-throw. Habitat fragmentation also deprives interior forest species of the shade, humidity, and tree canopy protection that well-developed deep forest environments provide.¹²

A report just released by the U.S. Geological Survey, titled “Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010” (Open-File Report 2012-1154), documents the significant impacts on forest cover resulting from the construction of unconventional fossil fuel extraction infrastructure, particularly pipelines.¹³ Taking Bradford and Washington Counties as the basis for its study, this report documents the massive landscape changes that are reshaping forest and farm lands in Pennsylvania through the construction of gas wells, impoundments, roads, and pipelines. The report documents the overall loss of forest habitat as well as the increase in forest fragmentation that shale gas and coalbed methane development has caused over a very short time period. In Bradford County, 0.12 percent of the county’s forest was lost to gas development, contributing to a 0.32 loss of interior forest and a gain of 0.11 percent in edge forest. In Washington County, the USGS report documented a 0.42 percent forest loss, contributing to a 0.96 percent loss of interior forest and a gain of 0.38 percent in edge forest. USGS Report at 28-29.

According to the USGS data, pipeline construction and associated road construction had the greatest effect on the increase in forest fragmentation, patchiness, and forest edge. *Id.* Of particular concern, “[t]his type of extensive and long-term habitat conversion has a greater impact on natural ecosystems than activities such as logging or agriculture, given the great dissimilarity

¹¹ Nels Johnson, et al., *Natural Gas Pipelines*, THE NATURE CONSERVANCY, 1 (December 2011) at 6.

¹² *Id.* at 7.

¹³ Available at <http://pubs.usgs.gov/of/2012/1154/of2012-1154.pdf>

between gas-well pad infrastructure and adjacent natural areas and the low probability that the disturbed land will revert back to a natural state in the near future (high persistence).” *Id.* at 10.

Forests play an essential role in water purification.¹⁴ The relationship between forest loss, degraded water quality, and increased runoff is well-established in the scientific literature, as the USGS Report recognizes. *Id.* at 8. The Commission is well aware of the links between forest cover and water quality, as summarized by Drs. Jackson and Sweeney in the expert report submitted on the Commission’s behalf in the exploratory wells administrative hearing process.¹⁵ The Jackson and Sweeney report shows that reductions in forest cover are directly correlated with negative changes in water chemistry, such as increased levels of nitrogen, phosphorus, sodium, chlorides, and sulfates as well as reduced levels of macroinvertebrate diversity. Reducing forest cover decreases areas available for aquifer recharge, increases erosion, stormwater runoff, and flooding, and adversely affects aquatic habitats.¹⁶ In Pennsylvania, researchers have correlated areas of high natural gas well density with decreased water quality, as indicated by lower macroinvertebrate density and higher levels of specific conductivity and total dissolved solids.¹⁷

The cumulative impact of multiple construction sites for water crossings on a stream or river has the potential to significantly degrade the quality and flow rate of the water body. The capacity of a water system to recover from a multitude of impacts may be exceeded with the detrimental effects of crossing construction becoming permanent.¹⁸ Recurrent stresses on fish, such as those originating from elevated suspended sediment concentrations, will have negative effects on fish health, survival and reproduction.¹⁹ For a more expansive overview of potential cumulative environmental impacts please see, *Utility Stream Crossing Policy*, by James Norman, et al.²⁰

Further exacerbating the above referenced problems, the Commonwealth Pipeline will not be collocated with an existing pipeline right of way. While portions of the project may correspond to some existing utility corridors, much of the project will involve the destruction and development of previously undisturbed lands.

The Commonwealth Pipeline project, when considered individually for the length that spans the watershed, and when considered cumulatively with the at least one dozen other pipeline projects DRN has identified as being pursued within the boundaries of this watershed, will have both short- and long-term impacts to the Basin’s water resources through the significant disturbance of

¹⁴ Robert A. Smail & David J. Lewis, Forest Service, U.S. Dep’t of Agric., Forest Land Conversion, Ecosystem Services, and Economic Issues for Policy: A Review 12 (2009), available at <http://www.fs.fed.us/openspace/fote/pnw-gtr797.pdf>

¹⁵ “Expert Report on the Relationship Between Land Use and Stream Condition (as Measured by Water Chemistry and Aquatic Macroinvertebrates) in the Delaware River Basin,” November 2010, available at <http://www.nj.gov/drbc/library/documents/Sweeney-Jackson.pdf>

¹⁶ State of N.J. Highlands Water Prot. and Planning Council, *Ecosystem Management Technical Report 39* (2008).

¹⁷ Academy of Natural Sciences of Drexel University, “A Preliminary Study of the Impact of Marcellus Shale Drilling on Headwater Streams,” available at <http://www.ansp.org/research/pcer/projects/marcellus-shale-prelim/index.php>

¹⁸ CAPP (2005) at 1-4.

¹⁹ *Id.*

²⁰ Norman at 11-13.

ground cover affecting water resources. Therefore, because the construction of the Commonwealth Pipeline on its own as well as cumulatively with other pipeline projects being proposed to occur partially or totally within the boundaries of the Delaware River Watershed “will involve significant disturbance of ground cover affecting water resources” it must be subject to Commission review in accordance with Section 3.8 of the Delaware River Basin Compact and Article 3 of the Rules of Practice and Procedure.

However, Section 2.3.5.A.12 of the RPP is not the only source of jurisdictional authority for the Commission to take jurisdiction over the Commonwealth Pipeline project. Other sources of jurisdictional authority include the following RPP sections:

- Article 3, Section 2.3.5.B(5) (“Deepening or widening of existing stream beds . . . or the dredging of the bed of any stream or lake and the disposal of the dredged spoil, where the nature or location of the project would affect the quantity or quality of ground or surface waters, or fish and wildlife habitat”);
- Article 3, Section 2.3.5.B(6) (“Discharge of pollutants into surface or ground waters of the Basin”);
- Article 3, Section 2.3.5.B(7) (“[P]ipelines and electric power and communication lines”);
- Article 3, Section 2.3.5.B(9) (“Projects that substantially encroach upon the stream or upon the 100-year flood plain of the Delaware River or its tributaries”);
- Article 3, Section 2.3.5.B(10) (“Change in land cover on major ground water infiltration areas”);
- Article 3, Section 2.3.5.B(13) (“Draining, filling, or otherwise altering marshes and wetlands”);
- Article 3, Section 2.3.5.B(18) (“Any other project that the Executive Director may specially direct by notice to the project sponsor or land owner as having a potential substantial water quality impact on waters classified as Special Protection Waters”).

Natural gas pipeline construction projects implicate many of the impacts enumerated in RPP Article 3, Section 2.3.5.B covering projects that must by default be submitted for Commission review – the Commonwealth Pipeline is no exception.

For example, stream crossings, whether via open cut or dry ditch methods, involve actions that may deepen or widen stream beds and/or require dredging and the disposal of dredged spoil materials. Either individually or cumulatively, such stream crossings may have impacts on the quantity or quality of ground or surface waters and on fish and wildlife habitat. *See* RPP Article 3, Section 2.3.5.B(5) (“Deepening or widening of existing stream beds . . . or the dredging of the bed of any stream or lake and the disposal of the dredged spoil, where the nature or location of the project would affect the quantity or quality of ground or surface waters, or fish and wildlife habitat”).

The discharge of pollutants from pipeline construction clearly implicates RPP Article 3, Section 2.3.5.B(6) (“Discharge of pollutants into surface or ground waters of the Basin”). Pipeline construction projects discharge pollutants both in the routine course of construction as well as through accidents. Studies documenting the effects of stream crossing construction on aquatic ecosystems identify pollution discharges of sediment as the primary stressor from pipeline construction on river and stream ecosystems.²¹ During construction of pipeline stream crossings, discrete peaks of high suspended sediment concentration occur during activities such as blasting, trench excavation, and backfilling.²² The excavation of streambeds can generate persistent plumes of sediment concentration and turbidity.²³ In addition to the stream crossing construction activity itself, new access road construction associated with pipeline construction also increases the risk of erosion and sedimentation.²⁴ Pollutant discharges may also result from unintended discharges of drilling muds such as when blowouts occur during horizontal directional drilling to install pipelines under streambeds.²⁵ This sedimentation has serious consequences for the benthic invertebrates and fish species whose vitality is crucial for healthy aquatic ecosystems. Pipeline construction projects have been documented to cause reductions in benthic invertebrate densities, changes to the structure of aquatic communities, changes in fish foraging behavior, reductions in the availability of food, and increases in fish egg mortality rates.²⁶ Heavy rains during two tropical storms in August and September 2011 caused extensive failures to erosion and sediment controls on pipelines under construction in north central Pennsylvania, resulting in sedimentation plumes in nearby waterbodies.²⁷ Deposited sediment from construction activities can also fill in the interstitial spaces of the streambed, changing its porosity and composition, and thereby increasing embeddedness and reducing riffle area and quality.²⁸ Furthermore, deposited sediment has the potential to fill in pool areas and reduce stream depth downstream of the construction area.²⁹

Further, open trench pipeline crossings raise risks of serious water contamination if there is a rupture, discharging into the stream hydro-carbon laced liquids such as benzene that are part of the gas being delivered by the pipeline. Open trench cuts can alter both stream bank and stream bed stability and increase the likelihood of scouring and exposing the buried pipe. The open trench cut method is likely to set the pipeline shallowly enough that exposure by scour is a real

²¹ Scott Read, *Effects of Sediment Released During Open-cut Pipeline Water Crossings*, Canadian Water Resources Journal, 1999, 24: (3) 235-251.

²² *Id.*

²³ *Id.*

²⁴ *En Banc* Hearing of the Pennsylvania Public Utility Commission on Jurisdictional Issues Related to Marcellus Shale Gas Development, Docket No. I-2010-2163461.

²⁵ See, e.g., “1,500 gallons of drilling mud spills into Pa. waterways: 3 accidents in 3 weeks during construction of pipeline,” Aug. 10, 2011, available at http://www.pressconnects.com/article/20110810/NEWS01/108100412/1-500-gallons-drilling-mud-spills-into-Pa-waterways?nclick_check=1

²⁶ James Norman, et al., *Utility Stream Crossing Policy*, ETOWAH Aquatic Habitat Conservation Plan, July 13, 2008, 9-10.

²⁷ Craig R. McCoy and Joseph Tanfani, *Similar Pipes, Different Rules*, PHILADELPHIA INQUIRER, available at, http://articles.philly.com/2011-12-12/news/30507185_1_hazardous-materials-safety-administration-pipeline-safety-rules

²⁸ Read at 235-251.

²⁹ Norman at 9-10.

threat. Exposure of the pipeline raises a greater risk of pipeline damage, breakage and pollution; with pipeline breakage resulting in the catastrophic discharge of its contents including hydrocarbons into the natural stream system. Stream scour can occur in depths up to 3 times that of the maximum river floodwater depth.³⁰

It is not clear how the RPP can be read to reconcile the provisions of RPP Article 3, Section 2.3.5.B(7), requiring submission of projects including “pipelines and electric power and communication lines” with the generalized exemption of RPP Article 3, Section 2.3.5.A(12). Nevertheless, given that individually and cumulatively all existing and proposed natural gas pipelines in the Basin satisfy the exception to the exemption stated in RPP Article 3, Section 2.3.5.A(12), we believe that Article 3, Section 2.3.5.B(7) confirms and reinforces that the Commission has jurisdiction under the current RPP to require pre-construction review of all natural gas pipeline projects, in light of these pipelines’ substantial effects on the water resources of the Basin whether through significant disturbance of ground cover affecting water resources or otherwise.

It is very clear, however, that both existing and proposed natural gas pipeline projects fall within the scope of RPP Article 3, Section 2.3.5.B(9) (“Projects that substantially encroach upon the stream or upon the 100-year flood plain of the Delaware River or its tributaries”). Natural gas pipeline projects, including the Commonwealth Pipeline, encroach upon the stream or 100-year flood plain of one or more tributaries to the Delaware River.

As discussed above, pipeline construction, maintenance and ongoing operation results in significant impacts on forest cover resulting in reduced infiltration, increased runoff and increased pollution discharges harming waterways, water quality and wetlands. The recent USGS report studying land use changes resulting from shale gas extraction (as well as coal bed methane extraction) demonstrates that pipeline construction is responsible for the lion’s share of the loss of forest cover and conversion of forest and farm lands to industrial uses in areas that have experienced intensive unconventional fossil fuel development. This loss of forest cover implicates the Commission’s jurisdiction under RPP Article 3, Section 2.3.5.B(10) (“Change in land cover on major ground water infiltration areas”).

In addition to direct impacts to surface water quality associated with natural gas pipeline projects that cross multiple streams and rivers, pipeline projects often cause significant impacts to marshes and wetlands, whether contiguous to waterways crossed by pipeline construction or not. These impacts implicate RPP Article 3, Section 2.3.5.B(13) (“Draining, filling, or otherwise altering marshes and wetlands”). Pipeline construction projects may block surface water flows or change surface water flow direction in wetlands and marshes through dredging, sedimentation and spoil deposition, and soil compaction during construction.³¹ Pipeline construction projects may also

³⁰ Hydrologic and Environmental Rationale to Bury Gas Pipelines using Horizontal Directional Drilling Technology at Stream and River Crossings, expert report submitted prepared for the Delaware Riverkeeper Network by Hydroquest, June 12, 2012

³¹ See, e.g., “Effects of Pipeline Construction on Wetland Ecosystems: Russia-China Oil Pipeline Project (Mohe-Daqing Section), Xiaofei Yu *et al.*, *Ambio*, July 2010, available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3357716/>; see also Lucie Levesque *et al.*, Review of the effects of in-stream pipeline crossing, *Environ. Monit. Assess.* 123: 395-409 (2007).

adversely affect groundwater flows and the hydrologic regime, leading to dewatering and other changes; these effects are likely to persist well beyond the project construction stage. As with rights-of-way through forest habitat, maintaining rights-of-way through wetlands areas can cause issues of invasive species and a shift in vegetation from native to non-native species.

Given the recognized importance of protecting wetlands and marshes to ensure water quality protection as well as to protect recharge areas that help ameliorate flooding, it is vital that the Commission take jurisdiction over natural gas pipeline projects not only because of the loss of forest cover and the direct impacts of stream crossings but also because of impacts to wetlands and marshes from pipeline construction.

And so, we request that you immediately notify Inergy Midstream, L.P., UGI Energy Services, Inc., Capitol Energy Ventures, and WGL Holdings, Inc. that the Commonwealth Pipeline will require DRBC review and a docket before it can proceed within the boundaries of the Delaware River watershed.

Respectfully submitted,



Maya K. van Rossum
the Delaware Riverkeeper