



April 15, 2019

Ms. Kimberly Bose
Federal Energy Regulatory Commission
Office of the Secretary
888 1st Street, NE
Washington, DC 20428

Re: Docket No. CP19-78-000: Comments Regarding Notice of Intent to Prepare an Environmental Assessment for the Proposed PennEast Pipeline Project Amendment, and Request for Comments on Environmental Issues

Dear Ms. Bose,

The Delaware Riverkeeper Network (“DRN”) is providing the following comments to be considered by the Federal Regulatory Commission (“FERC” or “Commission”) with respect to the proposed PennEast Pipeline Project Amendment involving the construction and operation of facilities by PennEast Pipeline Company, LLC (“PennEast”) for the PennEast Pipeline Project (“Project”).

The size and scope of the construction activity for this pipeline, stream crossings, and other water resources impacts associated with the project will have a damaging effect on the health and vitality of the Delaware River Watershed. Through the submission of this comment, the Delaware Riverkeeper Network identifies crucial issues the Commission needs to fully evaluate as a result of the proposed route changes and the impact of the PennEast Pipeline Project as a whole, and demands that, given the Project’s numerous significant impacts, an Environmental Impact Statement be created in order to ensure a full and fair review of the Projects impacts. As the current PennEast Application and Amendment Application materials are missing information and misrepresenting impacts resulting in analysis that have so far been unacceptable and/or have not been properly considered or addressed.

Project Summary

The original PennEast Pipeline Route involves:

- 115.1 miles 36-inch diameter pipeline from Luzerne County, PA to Mercer County, NJ
- 2.1 mile Hellertown lateral, a 12 inch diameter pipe in Northampton County, PA
- 0.1 mile Gilbert lateral, a 12 inch diameter pipe in Hunterdon County, NJ
- 1.5 mile Lambertville lateral, a 36 inch diameter pipe in Hunterdon County, NJ
- 47,700 horsepower compressor station in Kidder Township, Carbon County, PA driven by 3 gas powered Solar Mars 100 units rated at 15,900 hp each

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- 8 meter and regulator stations for interconnects
- 11 mainline valve sites
- 4 pig launcher/receiver sites

Construction of the originally proposed Project was estimated to impact 1,613.5 acres of land (1,065.2 acres for pipeline facilities, 110.1 acres for access roads; 372.3 acres for pipe and contractor ware yards, 31.1 acres for above ground facilities). Cutting through 255 waterbodies (including 159 perennial, 45 intermittent, 40 ephemeral, 11 open water), 633 acres of forest, 91 acres of wetlands, impact “several” vernal pools, and infringe upon and damage habitat for threatened and endangered species of bat, sturgeon, snake, turtle, mussels and more.

On February 15, 2019, the Federal Energy Regulatory Commission issues a Notice of Application for Amendment to amend the Certificate of Public Convenience and Necessity for the PennEast pipeline. Per this Notice of Application, PennEast proposes to amend their Certificate Order issued January 19, 2018 with four modifications outside the certificated route. The route changes consist of:

- Saylor Avenue Realignment, Plains Township (Twp.), Luzerne County (MP 8.5R3 to MP 8.9R3);
- Interstate 81 Workspace Adjustment Plains Twp., Luzerne County (MP 10R2 to 10.4R2);
- Appalachian Trail PPL Electric Utilities Crossing Realignment, Lower Towamensing Twp. Carbon County, Eldred Twp. Monroe County, and Moore Twp. Northampton County (MP48.6R2 to 53.6R3); and
- Freemansburg Ave. Realignment Bethlehem Twp., Northampton County (MP 69.7R3 to 70.8).

For this Scoping Period Specifically, DRN would like to highlight the following issues that need to be addressed:

- To ensure a full environmental review, FERC needs to prepare an EIS that will account for all impacts along the Right of Way for the full length the Project incorporating the changes that will occur due to route modifications
- Threatened and Endangered Species Surveys are Incomplete for the Amended Application Materials
- PennEast is yet to fully account for and examine impacts from the New Alignments
- Bog Turtle Occupied Wetlands Should be Identified and Assessed as Exceptional Value Wetlands
- FERC and PennEast must include an analysis of impacts to all wetland along the full length of the proposed route plus the modifications, especially EV wetlands specifically protected under PA Regulations
- Cumulative Environmental Impacts of Project along the full length of the proposed route plus the modifications, must be analyzed in context of past, current, and foreseeable future projects.
- Cumulative Impacts analysis must account for the impacts the Project will have on Climate Change and Greenhouse Gas emissions that will result from construction and operation of the project, as well as reasonably foreseeable upstream and downstream uses of natural gas the will be transported by the Project.
- FERC and PennEast must adequately analyze the public health and safety impacts and risks for communities along the route.
- Economic Impacts of the project should be analyzed giving due consideration to known losses and benefits of the Project.
- FERC must re-evaluate whether actual need for the Project still exists.

I. FERC Must Assess the Full Project with the Modifications In Route and Cannot Simply Analyze the Impacts of the Route Amendments.

If FERC fails to adequately assess the impact of this Project through segmenting the route modification impacts from the rest of the project, it will be continuing the illegal practice of segmentation. NEPA demands a thorough environmental review of a project's impacts. As FERC has already stated that the modifications on this new route are outside of the Certification, this means that FERC must also start the environmental review process required by NEPA from scratch and analyze these impacts in the context of the full project to ensure it is abiding by the procedural mandates put forth under the National Environmental Policy Act.

It is clear that the PennEast pipeline will inflict irreparable harm on the environments and communities of both Pennsylvania and New Jersey. Yet, PennEast has repeatedly submitted inadequate information and been rubberstamped the FERC review and certification process. FERC must stop this practice and ensure that the environmental assessment is not plagued with misinformation, missing information, inaccuracies and false information which cannot support complete and accurate decisionmaking.

II. Because FERC has Already recognized that PennEast will a detrimental impact on the environment, by Creating an Environmental Impact Statement for the Original Project, FERC must again analyze these impacts with an EIS in order to ensure they are not illegal segmenting the Project.

NEPA is our "basic national charter for protection of the environment." 40 C.F.R. § 1500.1(a). As such, it makes environmental protection a part of the mandate of every federal agency. *See* 42 U.S.C. § 4332(1). NEPA requires that federal agencies take environmental considerations into account in their decision-making "to the fullest extent possible." 42 U.S.C. § 4332. Federal agencies must consider environmental harms and the means of preventing them in a "detailed statement" before approving any "major federal action significantly affecting the quality of the human environment." *Id.* § 4332(2)(C).

This Project requires an environmental impact statement under NEPA and Natural Gas Act Regulations. Under 18 C.F.R. § 380.6(3), any "[m]ajor pipeline construction projects under section 7 of the Natural Gas Act using rights of way in which there is no existing natural gas pipeline," require an environmental impact statement. Moreover, there is no doubt that this project will significantly impact the surrounding environment during construction and operation. Additionally, this pipeline will encourage and continue the unhealthy reliance on natural gas, which when extracted and consumed destroys landscapes and releases greenhouse gases (GHGs) and other toxic emissions.

Given the already known impacts of the Project, the certain environmental degradation that will come as a result of it, and the inadequate analysis that has occurred so far, FERC must create an Environmental Impact Statement to ensure a meaningful and informative review of the Project's actual impacts is able to take place.

III. FERC Needs to Extend the Comment Period and Hold Hearings to Ensure the Public has an Opportunity to Meaningfully Review and Comment on the Project.

There is no doubt that the breadth of harm to be inflicted by the proposed PennEast pipeline on waterways, wetlands, groundwater, habitats, species, people, and communities is significant and severe. The goal of the public comment process is to provide an opportunity for the public to provide complete and meaningful review and comment. A fair period of time is not just beneficial to the public but is beneficial to FERC as

well, to ensure the Commission's ability to fully and fairly review the amended application materials provided and render a fully informed decision.

While FERC has allowed for a 30 day comment period, that is insufficient time for all impacted and interested parties to meaningfully review and comment on the materials provided. Additionally, given the significant changes, public hearings should have been held in locations that were accessible for those who live in or near impacted and interested communities. FERC needs to afford those who live in communities that will be impacted by this pipeline the opportunity to voice their concerns by providing public hearings in convenient locations along the proposed route and in downstream communities and allowing the public a full 90 days to submit their scoping comments.

IV. Threatened and Endangered Species Surveys are Incomplete, FERC and PennEast Need to Ensure this is Remedied in the Environmental Assessment

Although most of the route changes are within 0.25 mile of the previously certified route (with the exception of the Appalachian Trail Crossing Realignment), the action area of the construction has shifted and therefore the impacts to state and federally threatened and endangered species need to be reexamined. While PennEast states that it is in the process of having new surveys completed and is in consultation with state and federal agencies, the surveys nevertheless remain incomplete and therefore valuable information regarding the affected species are unknown. For example, there are outstanding eastern small-footed bat surveys along the Revised PA Route, which includes five small areas of potential roost habitat within the Saylor Ave Realignment workspace. In fact, Phase 2 emergence surveys are only 82.8% complete for the Revised PA Route. PennEast indicates that if mitigation is pursued in lieu of or in response to emergence survey results, it would include removing the roost habitat from the workspace (between November 15 and March 31) or excluding bats from the potential habitat areas using impermeable covering (e.g., tarp, landscape fabric) prior to April 1 to prevent bats from using the roost.

Summer roosts for this bat species include caves and mines, hollow trees and under bark, cracks and crevices in rock walls, and ridge-top talus fields. It is assumed that "removing the roost habitat from the workspace" would involve cutting down hollow trees or removing loose bark. Removing trees and bark, even in the winter, would destroy any future summer roosting habitat and could have severe long-term detrimental effects on the natural behavior of the bats. Similarly, blocking the roosts with an impermeable tarp could confuse or disorient bats attempting to access the crevices that they are used to utilizing. These serious and significant impacts to bat species that are already impacted by so many threats and harms will be compounded by the proposed construction and activities of PennEast. In addition, PennEast conducted Phase 1 eastern small-footed bat and Allegheny woodrat surveys along the Appalachian Trail PPL Crossing Realignment in 2017 and 2018. Potential habitat for both species were identified between MP 51.3R3 and MP 52.5R3. While these surveys did not document Allegheny woodrat occupancy at that time, PennEast was instructed to coordinate with the Pennsylvania Game Commission's (PGC) right-of-way (ROW) liaison, Nate Havens, in order to determine whether mitigation will be necessary for impacts to unoccupied suitable habitat for Allegheny woodrat on State Game Lands. This consultation is ongoing and the final determination regarding Allegheny woodrat presence remains incomplete.

Furthermore, the PGC asked PennEast to reduce the ROW in areas of forested wetlands to less than 45 feet near MP 27.7 and MP 32.1 so northern flying squirrels can cross. However, PennEast asserted that they are unable to reduce their workspace to 45 feet in areas of forested wetland due to constructability constraints and so this important concern and requested modification remains outstanding at this time. While PennEast has co-located their proposed ROW with an existing pipeline ROW in this area to reduce fragmentation of habitat and total tree clearing, primarily for safety reasons, PennEast asserts that they are not able to operate

heavy construction equipment on the maintained 40-foot ROW of the existing utility. Therefore, PennEast takes the position that in order to complete their wetland crossings, they would be working from one side of the trench and thus would require the full 75-foot corridor to build their pipeline in this area. As a result, the requested workspace reduction is being denied by PennEast and will have ramifications for the northern flying squirrel. The wider corridor PennEast is insisting upon would increase habitat fragmentation and would make it too wide for flying squirrels to cross as they can only glide for short distances.

The PennEast failure to provide for protection of the northern flying squirrel as requested by the state agency and experts requires FERC to deny this proposed modification. PennEast could in fact reduce their workspace as requested, they are simply choosing not to do so – we have seen many workspace accommodations during pipeline construction in order to protect natural resources and species; there is no reason why PennEast cannot do the same other than they don't want to. In addition, it is unclear why HDD through this forested wetland is not being considered since increased clearing of mature trees will lead to thermal impacts, exacerbating the opening beyond the electric utility line. In other pipeline ROW's, technical advancements to work within an existing ROW have been accomplished; PennEast should be required to do the same here in order to avoid harm to the sensitive forested wetland habitat at risk. At the very least, more information and elaboration needs to be provided pertaining to the "safety reasons" PennEast currently states to justify such an expansion of the ROW in sensitive public and forested wetland areas in order to allow more informed evaluation of this unsupported and untenable position.

There are also areas newly affected by the proposed route modifications that have not been studied under previous PennEast surveys. The Appalachian Trail PPL Crossing Realignment crosses into Eldred Township, Monroe County, a township and county that were not previously affected by the Project. During wetland delineation surveys, PennEast biologists observed one dead timber rattlesnake within the Project study area in Monroe County. The rattlesnake appeared to have been killed by an all-terrain vehicle (ATV), as it was partially crushed and found within the tire tracks of a frequently utilized ATV/Jeep trail. This finding demonstrates how easily timber rattlesnakes can be crushed by vehicles such as the numerous trucks and construction equipment that would be present at this site. In addition, if PennEast is allowed to be constructed, it will create a new preferred pathway for ATVs providing permanent and ongoing impacts to timber rattlesnake habitat and likely resulting in ongoing ATV-caused deaths to the species. In addition, PennEast delineated two areas of potential timber rattlesnake denning habitat totaling 43 acres and 28 acres of potential gestating habitat, all of which is vulnerable to construction impacts despite the best mitigation measures. Studies indicate rattlesnakes are very reliant on their home ranges and den sites and any disturbance to these areas can mean subsequent harm to the species. If HDD were employed, less harm may result to this sensitive species. But HDD has not received due consideration. In the absence of consideration of this less harmful approach to construction and its ramifications for the timber rattlesnake, FERC cannot agree to these proposed modifications.

V. The Environmental Review Must Account For the Project's Threats to Water Quality

There are a variety of threats to water quality that will result from the PennEast pipeline, including from construction, operation, and maintenance over the lifetime of the project.

Below are some areas that DRN wants to highlight in considering the impacts of the pipeline on water quality. Other threats that are not properly addressed in the materials provided include a necessary review of the karst geology the Project will be constructed over and its implications for water quality.(see Section VII of comment for more detail)

a. Effects of Sediment Pollution on Streams

Studies documenting the effects of stream crossing construction on aquatic ecosystems identify sediment as a primary stressor for construction on river and stream ecosystems.¹ During the construction of pipeline stream crossings, discrete peaks of high suspended sediment concentration occur due to blasting, trench excavation, and backfilling.² 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 road construction increases the risk of erosion and sedimentation.⁵

For Open Trench burial of gas pipelines, sedimentation results from the actual crossing activity itself as well as the removal of vegetation and activity that takes place on the stream-adjacent (riparian) lands. While dam and pump methods, can reduce sediment loadings associated with a wet cut method, there are still sediment releases at levels of concern and impact, and the diversion of the water creates impediments to fish and flows that also have impacts on waterways. Additionally, this method of crossing takes longer, and so it results in longer-term direct impacts to the stream and sediment releases over a prolonged period. Sediment carried in the water column is abrasive and can result in increased erosion downstream.⁶ Deposited sediment from construction activities can fill in the interstitial spaces of the streambed, changing its porosity and composition, and thereby increasing embeddedness and reducing riffle area and habitat quality.⁷ Furthermore, deposited sediment has the potential to fill in pool areas and reduce stream depth downstream of the construction area.⁸

Sediment pollution is a known and demonstrated impact that needs to be seriously considered for a project of the size and magnitude of PennEast. Increased sedimentation in streams causes well-known negative impacts to fish such as trout. In an experimental study in 1983, researchers introduced bedloads of sand sediment to a brook trout stream in Michigan over a period of five years. They found that increasing the bedload 4 to 5-fold resulted in a significant reduction of trout and trout habitat and even small sediment concentrations of 80 to 100 ppm had profound effects on the trout and their habitat.⁹ These effects included a decrease in survival rates, particularly from the egg to fry and/or the fry to fall fingerling stage of the life cycle.¹³ Additionally, sand deposition aggravated the streambed and eliminated most pools, and both water velocity and summer water temperature increased.

Increased turbidity impacts fish by direct mortality or by reducing their growth rate, lessening their resistance to disease, preventing successful development of eggs and larvae, modifying natural movements

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, at 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.

⁶ Pipeline Associated Watercourse Crossings, 3rd Edition, publication prepared for CAPP, CEPA, and CGA by Tera Environmental Consultants.

⁷ Read, *supra* note 1, at 235-251.

⁸ Norman, at 9-10.

⁹ Alexander, G.R., & Hansen, E.A. (1983). Effects of sand bedload sediment on a brook trout population. Michigan Department of Natural Resources Fisheries Division, Fisheries Research Report No. 1906.

and migrations, and reducing the amount of food available. Turbidity also affects the growth rate of algae and other aquatic plants in streams and lakes because increased turbidity causes a decrease in the amount of sunlight for photosynthesis. Without enough sunlight, aquatic plants cannot grow properly and will eventually die. Turbidity can also increase water temperature because suspended particles absorb more heat. Increased water temperature may cause stress to fish and other aquatic benthic organisms, particularly in the summer months. These factors may lead to a decrease in dissolved oxygen, creating stagnant water conditions detrimental to aquatic life and potentially a change in structure to benthic diversity.

Finally, rain events could help transport drilling fluids into streams and other nearby waterbodies. Erosion and sediment control measures such as silt fences, compost socks, mulching, hay bales, sand bags, fiber rolls, and gravel berms frequently fail and cannot be relied upon as effective protection. The Delaware Riverkeeper Network has documented countless occasions during pipeline construction projects where sediment control structures were damaged, insufficient, overwhelmed, not functioning correctly, or where sediment was directly discharging offsite into adjacent lands, nearby streams, wetlands, or storm drains that connect to a body of water.

Meliora's March 2019 expert report notes the Construction Sequence for the PennEast pipeline is described as an "assembly line flow" where there are separate crews conducting different portions of the pipeline installation process.¹⁰ This means steps in the construction are sequential and are not happening all at once. This leaves large gaps in time where one process may lag behind another in the pipeline assembly flow. This is critically important with how and when erosion and sediment control procedures are implemented. By disturbing the CWA and not immediately installing the pipeline, the construction sequence allows for long periods of earth disturbance to be exposed to weather and erosive conditions. DRN has observed this phenomenon along multiple pipelines in the past first-hand. Previous experience with oil and gas pipeline construction projects has shown that as much as 6 months can pass between site clearing and grading and pipeline trenching. This allows for an excessive amount of time for the site to be left disturbed. The minimum design requirement for E&S practices is to control runoff from the 2-year 24-hour storm. It is likely that a storm that exceeds the design standards for the temporary E&S controls will occur during this time and cause practices to fail, which leads to sediment pollution leaving the CWA and entering wetlands and waterbodies. The likelihood of a storm that exceeds design standards for the temporary E&S controls is magnified by the weather instability caused by climate change. NOAA has documented the extreme weather events plaguing the U.S., including Pennsylvania, the increase in flood severity is a missing part of the PennEast analysis and data.

b. Pipeline Construction Impacts on Trout

Pipelines often cite temporary and permanent work spaces near and adjacent streams and wetlands, and the same is being proposed by PennEast in their application and Final EIS, which leads to increased stormwater runoff and soil compaction which in turn can impact water quality and temperatures for trout. Trout require cold stream temperatures and pipeline cuts often denude and cut down the riparian buffer of streams they cross unless horizontal directional drilling (HDD) or another trenchless crossing method is employed. PennEast is only proposing 16 HDD crossings for its entire pipeline project. Alternatives such as HDD drilling should be considered in sensitive areas and cumulative impacts of pipeline construction and maintenance on stream and stream ecosystems needs to be considered. As employing HDD can offset long-term impacts to the forest, riparian area, soils and streambed in many ways if conducted with stream and upland forest health in mind.

¹⁰ *Review of PennEast Pipeline Application for Chapter 102 and 105 Permits*, Michele Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, March 2019.

c. Impacts on Special Protection Streams

According to Meliora's March 2019 expert report, PennEast plans do not adequately protect sensitive environmental resources such as EV wetlands and HQ/EV streams within Pennsylvania.¹¹ The pipeline traverses through 37.7 miles of HQ and 9.5 miles of EV watersheds in PA, which include impacts to 22.25 acres of PEM, PSS, and PFO wetlands, 86 crossings of HQ streams, and 18 crossings of EV streams. Many of these features are shown to be impacted by construction practices despite narrative and details suggesting alternative practices to minimize these impacts. This lack of coordination between the narratives, details, and plans will cause confusion in the field for the contractor and best practices will not be followed.

d. Groundwater Impacts

Pipelines can serve as conduits for diverting groundwater from its natural path. According to expert observation, pipeline trenches can divert groundwater and as a result "permanently alter the hydrologic cycle in the vicinity of the pipeline right-of-way. This alteration will decrease the water resources available to support wetland hydrology and stream base flow in the summer and fall dry season."¹² For example, observations of the Tennessee Gas Pipeline's 300 Line Upgrade project by a hydrologist determined that "pipeline trenches intercepted shallow groundwater in places, creating preferential paths for dewatering shallow groundwater not just in the disturbed construction areas, but also in areas surrounding the right-of-way, further negatively impacting ground water resources and wetlands."¹³ As a result, it was observed that the 300 Line Upgrade pipeline project had "already resulted in permanent changes to wetlands..."¹⁴

As also recognized by an expert report by Princeton Hydro:

"often overlooked impact caused by pipelines (whether wastewater, stormwater or gas/oil) is that their construction can actually alter the movement of groundwater. Essentially, when the pipe and pipe trench intercept the shallow aquifer, groundwater flows can be prevented from flowing normally leading to changes in base flow conditions or the hydrologic properties of adjacent wetlands. The pipeline and pipeline trench can function as a subsurface diversion forcing groundwater away from vital stream and wetland resources."

Groundwater is also impacted by soil compaction associated with pipeline construction and maintenance. The compacted soils resulting from pipeline construction increase rainfall runoff and reduce groundwater infiltration. This can cause further negative impacts on wetland hydrology and stream baseflow in the area of the pipeline.¹⁵ "Increased runoff as a result of compacted soils, and increased drainage of shallow ground water" around a pipeline, due to previous and proposed construction practices, can increase "surface water flow and groundwater discharge in the wet winter and spring seasons and decrease summer and fall groundwater discharge which supports wetland hydrology and stream base flow."¹⁶ The result of reduced groundwater discharge during the dry summer and fall months can be to decrease the size of supported wetlands. So the result is too much or too little depending on the time of year. Another result of the altered flows can be to decrease stream base flow that supports aquatic life and trout habitat in headwater streams in the dry summer and fall period.

¹¹ *Review of PennEast Pipeline Application for Chapter 102 and 105 Permits*, Michele Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, March 2019.

¹² Affidavit of Peter M. Demicco, DRN v. PA DEP an TGP NEUP, 2012.

¹³ Affidavit of Peter M. Demicco, DRN v. PA DEP an TGP NEUP, 2012.

¹⁴ Affidavit of Peter M. Demicco, DRN v. PA DEP an TGP NEUP, 2012.

¹⁵ Affidavit of Peter M. Demicco, DRN v. PA DEP an TGP NEUP, 2012.

¹⁶ Affidavit of Peter M. Demicco, DRN v. PA DEP an TGP NEUP, 2012.

Expert reports done on the impact of the PennEast pipeline have noted this issue, even though FERC and PennEast are yet to fully analyze the impacts of it.

“Pipeline construction will affect groundwater recharge and flow, thereby affecting surface water flow and wetlands water balances. It can affect water quality by providing transport pathways for contaminants to reach wetlands or surface water. PennEast does not analyze any of these impacts as required by 25 Pa. Code § 105.15(e)(1)(x). Specifically, proposed project could affect “water quality” by transport contaminants into streams or nearby groundwater, “stream flow” by diverting groundwater or preventing recharge, “aquatic habitat” by decreasing flow during baseflow conditions which would eliminate aquatic habitat, and “instream and downstream water use” by decreasing flow or contaminating it.”¹⁷

The attached expert report from Tom Myers discusses in detail the failure of PennEast to provide necessary information regarding geology and groundwater. As noted in Myer’s report:

- “The PennEast application completely failed to consider how pipeline construction will affect water availability for recharge into bedrock by not considering how compaction will prevent water from accessing fracture zones.”
- PennEast’s materials “should provide a table of bedrock aquifers that includes relevant properties, including specific capacity statistics or well yields, and conductivity where available. If properties for a given bedrock aquifer have not been published, it is reasonable for PennEast to complete the analyses for existing wells.”
- “The application did not consider how pipeline construction and operations could affect recharge and shallow groundwater flow in aquifers near the proposed pipeline. Areas where the pipeline compacts soils over critical recharge areas, especially on ridge tops and valley bottoms, would increase runoff and decrease recharge.”¹⁸

e. Impacts to Benthic Invertebrates, Fish Communities, Aquatic Ecosystems, Wildlife

Benthic invertebrates can have higher drift rates during stream crossing construction and reduced densities following open trench cut methods of crossing. Reduced densities can be the result of both the higher drift and the increased sedimentation that affects suitability of habitat resulting from the pipeline installation.¹⁹ Changes in downstream diversity and structure of benthic invertebrate communities can also result. While, in time, the benthic community generally restores, that does not diminish or negate the ecosystem effects during the time of damage including the other cascading effects to other ecosystem services otherwise provided by the invertebrates – including as food for other dependent species, the water quality benefits provided by invertebrates helping with nutrient breakdown, and the breakdown of instream detritus creating food for other species.²⁰

f. Open Trench Cut and Stream Impacts

There are numerous environmental risks associated with open trench burial of gas pipelines (wet, dry, slurry). Open trench burial involves the excavation of sediments for pipeline installation perpendicular to or across streams and their sometimes wide floodplains, along with removal of riparian vegetation and well-

¹⁷ See Attachment of Tom Myers Technical Report for full discussion.

¹⁸ See Tom Myers Technical Report for full discussion.

¹⁹ Pipeline Associated Watercourse Crossings, 3rd Edition, publication prepared for CAPP, CEPA, and CGA by Tera Environmental Consultants at 235 – 251.

²⁰ See e.g. Sweeney, B. W., et al. 2004. Riparian deforestation, stream narrowing, and loss of stream ecosystem services, PNAS, September 2004; 101: 14132-14137

established ecosystems. Disruption of the stream channel and banks can cause destabilization of the stream's natural flows, causing channel migration and erosion that are harmful to the stream.²¹ The open trench cut method of crossing streams results in sedimentation, impacts to benthic habitat, and can result in changes to stream morphology that can further affect downstream habitats.²²

Using the open trench cut method of crossing can also affect fish, including direct harm but also by reducing the suitability of habitat including for eggs, juveniles and overwintering.²³ Fish exposed to elevated suspended solids levels can experience reduced feeding rates, physical discomfort or damage from the abrasive materials on their gills, decreased instream visibility, reduced food supply, and increased competition as fish attempt to move to cleaner waters.²⁴ Many of the streams to be cut by the pipeline are designated Class A or wild trout streams which are an important natural and recreational resource for the state – as such many of these streams with native Class A or Wild Trout designations have EV wetlands hydrologically connected to their flow.

The filling of riffles not only can have adverse impacts for invertebrates and fish, in terms of taking important habitat, but it can also diminish the ability of the riffles to help create oxygen important for aquatic life.²⁵ Over time these impacts can depress the immune system of fish, result in lower growth rates, result in increased stress on individuals and populations, cause damage to the gills – all of which can result in a decline in fish and population health and survival rates.²⁶ This of course all gets compounded by adverse effects to the suitability of habitat for eggs and juveniles necessary to support the overall community and population.²⁷ Additionally, downstream sedimentation and also disruption of flows during crossing activities can result in areas of the stream that are shallower or dewatered, thereby taking preferred habitat.²⁸

“Pipeline construction could affect hydrology in ways that could affect vegetation or aquatic life, in addition to the simple construction impacts. The application does not analyze how the pipeline would affect any specific area with important vegetation types or aquatic species. There are broad statements about temporary impacts during construction, but there is no analysis of the change in groundwater flow patterns as described herein.”²⁹ In addition, impacts to aquatic life and wildlife are discussed throughout the expert reports attached and are the result of the many impacts discussed in this cover comment as well.

VI. Impacts from New Alignments are not Fully Examined

The route modifications present several new implications for waterways and natural resources that are not fully examined. For example, PennEast is in the process of identifying the locations of water wells and springs that were not previously crossed by the Certificated Route in both Pennsylvania and New Jersey. Until these new wells and springs are identified, this information is incomplete. Additionally, the Revised

²¹ Expert Report from HydroQuest, attached.

²² See Effects of Sediments Released During Open-Cut Pipeline Water Crossings, Canadian Water Resources Journal, Vol. 24, No. 3, 1999.

²³ Id 1.

²⁴ Pipeline Associated Watercourse Crossings, 3rd Edition, publication prepared for CAPP, CEPA, and CGA by Tera Environmental Consultants.

²⁵ Ibid.

²⁶ Ibid.

²⁷ Pipeline Associated Watercourse Crossings, 3rd Edition, publication prepared for CAPP, CEPA, and CGA by Tera Environmental Consultants

²⁸ Ibid.

²⁹ Technical Report, Tom Myers, June 2016

PA Route would also cross 13 additional Wild Trout Waters compared to the Certificated PA Route – this is a significant increased adverse impact.

Cumulative impacts are also not fully understood. The Appalachian Trail PPL Crossing Realignment extends approximately 3.3 miles from the Certificated PA Route, which exceeds the Cumulative Impact Assessment Area for several types of resources. This particular realignment would also expand the existing ROW by approximately 20 feet, further increasing the negative impacts associated with the harmful footprint of this project. The Project as a whole would already affect 220.6 acres of interior forest during construction and 63.6 acres during operation. The proposed changes will expand that footprint of harm. Expert analysis demonstrates that for every cut through an interior forest, there are an additional 300 feet of impact on either side³⁰ to the adjacent forest that must be considered. Additionally, the Project would have an indirect impact (through edge effects, potentially resulting in avoidance of habitats or decreased habitat quality) on 1,725 acres of interior forest.

PennEast maintains that most of the impacts are temporary and that they will restore disturbed areas. However, PennEast admits that all impacts on forested habitats will be considered long-term because of the time required to restore woody vegetation to preconstruction conditions (i.e., more than 30 years, and possibly hundreds of years for some forested areas). Hundreds of years of lost habitat would have a permanent effect on generations of local wildlife. Compaction of soils and soil disturbance of “temporary work spaces and alternate temporary work spaces”, scalding of adjacent forest trees from opening additional areas with clearing, thermal changes, soil changes, wind throw, invasive species, and other forest fragmentation impacts must be fully weighed and considered when PennEast proposes to disrupt interior forest in such a detrimental way.

VII. FERC Must Ensure That The Environmental Assessment Fully Accounts For The Impacts On The Right Of Way Along The Full Length Of The Project.

The list of potential impacts to stream quality and health includes, but is not limited to: erosion and sedimentation, loss of riparian vegetation, habitat loss and fragmentation, air quality impacts, safety concerns, groundwater impacts, soil compaction, increased stormwater runoff, stream quality impacts, wetland degradation, lost groundwater recharge, and cumulative environmental impacts along the length of the project. These impacts to the environment are not limited to the time period in which the right-of-way is disturbed, but can result in long lasting consequences. To the degree FERC has or anticipates considering these issues it must be done cumulatively. A cut here or there perhaps can be mitigated, but the huge multitude of cuts, mass areas of compacted soils, thousands of acres of earth disturbance and lost trees etc., cannot be remedied and will have unavoidable impacts. In the case of PennEast we are talking about a massive pipeline project with a wide geographic and physical footprint that directly and indirectly impacts a huge number of ecological systems – the cumulative impacts are significant and long lasting and yet in previous analysis this remains largely ignored, with the proposed route changes, the cumulative impacts on the regiment and ecology of the water courses and waterways it cuts through must be considered.

Melioras’s expert report notes that PennEast’s E&S narrative only specifies topsoil segregation during pipeline construction for residential, agricultural, or wetland land uses. This limits the reestablishment of vegetation within all other land uses as topsoil is disregarded and stockpiled with mineral subsoils. When the ROW area is reestablished following pipeline construction, plant growth is inhibited due to a lack of topsoil which contains the organic matter, nutrients, and microbial/fungal communities necessary for plant reestablishment. Limited revegetation leads to more pollution events possibly entering nearby streams in the

³⁰ Nels Johnson, et al., Natural Gas Pipelines, The Nature Conservancy, 1 (December 2011).

form of sediment laden water. The attached Meliora expert report notes the Recommended Seed Mixtures for Stabilizing Disturbed Areas (Table 11.5) proposed in the PCSM and Site Restoration Plan General Notes is identical to the Recommended Seed Mixtures for Stabilizing Disturbed Areas (Table 11.5) in the E&S General Notes. While this seeding will eventually establish coverage and reduce active erosion of soils, it will not establish the hydrologic conditions of a native meadow, as required by Pennsylvania Law and as should be required by FERC.³¹

Open cuts are long lasting since part of the pipeline ROW is required to remain clear for maintenance, according to pipeline company claims. These cuts bring with it management strategies that involve killing woody growth along the pipeline every few years – often adding herbicides to the mix of contaminants impacting these tributaries. Invasive plants often colonize along these stream corridors with pipeline cuts and studies on benthic health conducted by Stroud Water Research show that many benthics, like mayflies, do not thrive where plants like multiflora rose reside along the stream buffer. These stands of monotypic invasive plants can translate to less food variety for benthic macroinvertebrates which impacts diversity in the stream and in turn this impacts nutrient cycling conducted by these stream animals.

It is important to note in regard to required restoration, that along a Delaware County section of Sunoco pipeline/ME2 located on NLT preserved lands, a variety of native shrubs were planted throughout the entire pipeline Right of Way bordering a High Quality stream and along the entire hillside adjacent the stream. The ROW and all of the temporary work spaces were planted with container sized native trees and shrubs, mulched with fabric to control weeding naturally and preserve moisture, and protected with wire shrub shelters and planted on top of the pipes themselves. These native shrubs are shallow rooted species that could be required to be planted on other pipeline ROWs instead of the standard grass mixes often employed, especially when trees and natural shrubs are cut during pipeline construction.

Vii. The Environmental Assessment Must Be Sure To Account For Land Transformation Effects That Will Result From Construction And Operation Of The Pipeline.

A Princeton Hydro Whitepaper examining land impacts noted that:

- The massive land clearing and alteration, including loss of vegetation as well as soil compaction, is among the very egregious elements of the proposed pipeline project. This land transformation causes immediate harms, as well as inflicting “major changes to the overall condition of the affected areas and set the stage for other acute impacts....”³²
- “The literature suggests at a minimum once cleared of native vegetation it will take five (5) years for recovery of pre-existing vegetation cover and diversity for grassland communities. The recovery time for shrubland forest communities is at least ten (10) years. But it must be stressed that although cover densities may approach pre-site-clearing conditions, some of the native grasses and understory vegetation may never recover due to changes in sunlight exposure, soil porosity, soil compaction and changes in soil moisture content. Also, none of the trees once growing within the ROW will ever be replanted. Thus as noted above, the acute impact of land clearing sets the stage for longer-term impacts that trigger multiple negative effects on the area’s biota and ecological functionality.”³³

³¹ Chapter 102.

³² Princeton Hydro White Paper

³³ Princeton Hydro White Paper

Given the significant and long term effects of the land, vegetation and habitat transformation that would result from construction and maintenance of the PennEast pipeline project, FERC must be sure these impacts are properly identified and accounted for in its Environmental Assessment.

VIII. Given the Issues that Have Arisen During Construction of Sunoco’s Mariner East 2 Pipeline in Pennsylvania, FERC’s Analysis Must Also Consider if the Project will Encounter Karst Terrain and the Potential for Sinkholes.

Sinkholes are a serious risk for pipeline construction in Pennsylvania. Sinkholes can be related to underlying karst terrain in which a pipeline is installed or mine subsidence—both of which are present along the proposed route of PennEast.

Mapping subterranean voids can be a major process, and it requires extensive on-the-ground surveying work. Starting construction without doing the proper surveying can lead to catastrophe. For example, the Department approved Sunoco’s plans for horizontal directional drilling at Lisa Drive in West Whiteland Township, Chester County for the Mariner East 2 pipelines. Sunoco estimated in its risk assessment for the HDD site that the risk of drilling fluid spills was “low” and the bedrock was “silty sand.”³⁴ No mention was made in any application materials of subsurface voids at the site. Nonetheless, after Sunoco began construction at the site, multiple drilling fluid spills occurred, and eventually a series of sinkholes opened up in the suburban backyards of the site. These sinkholes rendered a house unlivable and undermined and exposed an operating highly volatile liquids pipeline. The threat this posed led the Pennsylvania Public Utility Commission to have to take the unprecedented step of shutting down the lines to prevent catastrophe.³⁵

This was by no means the sole instance of sinkholes merely from this one construction project. At another residential HDD site in Cumberland County, for example, Sunoco’s construction “caused a massive sinkhole to collapse part of” Appalachian Drive.³⁶ This was one of a series of sinkholes at the site, “eventually causing the road to be closed during the summer and into the fall.” At the Appalachian Drive HDD crossing, Sunoco in fact *had* noted that the ground was limestone—therefore possibly void-bearing. It wrote in its risk assessment that “Additional inspection is recommended due to the limestone substrate.”³⁷ Still, that was not enough.

Work on Mariner East 2 has also opened up the earth in areas of underground mining. The *Post-Gazette* recently did an in-depth article profiling some of those instances, which have caused massive problems in parts of Western Pennsylvania.³⁸

³⁴ See risk assessment for HDD PA-CH-0256.0000-RR at:

<http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/Chester/12%20-%20E&S%20Plan/Tab%2012C%20-%20IR%20Assess%20PPC%20Plan/Appendix%20C/App%20C%20IR%20Risk%20CH/PA-CH-0256.0000-RR.pdf>.

³⁵ See Emergency Order of March 7, 2018, Pennsylvania Public Utility Commission Docket No. P-2018-3000281.

³⁶ Zack Hoopes, “Silver Spring Township road to be closed 2 months for pipeline installation,” *The Sentinel*, March 4, 2019, available at https://cumberlink.com/news/local/communities/mechanicsburg/silver-spring-township-road-to-be-closed-months-for-pipeline/article_fabdd8b1-1a6c-5d86-b06d-cd206159507b.html.

³⁷ See risk assessment for HDD PA-CU-0136.0020-RR at:

<http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/Chester/12%20-%20E&S%20Plan/Tab%2012C%20-%20IR%20Assess%20PPC%20Plan/Appendix%20C/App%20C%20IR%20Risk%20CU/PA-CU-0136.0020-RR.pdf>.

³⁸ Anya Litvak, “Unstable Ground,” *The Pittsburgh Post-Gazette*, October 22, 2018, available at <https://newsinteractive.post-gazette.com/mariner-east-2-pipeline-subsidence/>.

The PennEast route includes what it has documented as 13.8 miles of potential karst terrain.³⁹ Though PennEast has generated a Karst Mitigation Plan, it is incomplete.⁴⁰ The purpose of the plan is spelled out in its introduction: “The Karst Mitigation Plan reported herein has been prepared to identify areas of karst terrain across the pipeline alignment, identify all current desktop and field surveys completed to investigate these areas, and to address potential impacts and hazards related to local karst formations crossed by the proposed Project.”⁴¹ However, large areas of potential karst remain uninvestigated.⁴² As of the date of FERC’s certificate issuance, only about 50% of the surveying in identified karst areas had been completed.⁴³ Without knowing whether there are voids at the sites, PennEast cannot responsibly plan to build there.

The PennEast route also contains significant areas of abandoned underground coal mines. As the Final EIS explains, “In the Wyoming Valley of Luzerne County, Pennsylvania, there are a number mapped [sic] underground mines and there is potential that many more small mines exist that are unmapped and unknown, as they predate accurate records kept on the subject. Other pipelines, like Transco’s Atlantic Sunrise Pipeline also experienced these problems when cutting through unmapped anthracite mining areas. Old abandoned mines are expected to be of the room and pillar type. Based on the long and extensive history of underground coal mining in the Wyoming Valley area, localized surface subsidence caused by mine collapse is a potential hazard.” Along a six-mile stretch toward the northeast end of the planned PennEast route, PennEast has identified 27 abandoned or reclaimed mines within a quarter mile of the alignment.⁴⁴ Two are directly under the workspace.⁴⁵

The only physical investigation that PennEast has said it will do to better understand the risk from mine subsidence near identified mines is to do borings at the location of *working* mines.⁴⁶ Almost all of the identified mines have been retired and are not working mines. Moreover, as noted above, “there is potential that many more small mines exist that are unmapped and unknown.” PennEast’s plans to avoid mine subsidence are inadequate and present a looming pipeline integrity threat.

IX. The Environmental Assessment Must Adequately Assess the Projects Impacts on All Wetlands identified as EV according to Pennsylvania Department of Environmental Regulations as EV Wetlands Are Given Additional and Specific Protections Under Pennsylvania Law.

Pennsylvania provides additional protections for waterbodies that have been identified as exceptional value by the state. If FERC and PennEast fail to identify and account for any existing uses of EV wetlands, as required by Pennsylvania Code Chapter 93, there is no way to make a reasonable determination that the EV wetlands’ existing uses can be “maintained and protected” as required by Pennsylvania law.⁴⁷ Moreover, these protections mandate that only “water dependent” projects may encroach upon exception value wetlands and that an exceptional value wetland that is destroyed from a project must be mitigated by providing/creating a similar wetland that can help to deter the loss of ecosystem services from the original wetland.

³⁹ FERC Final Environmental Impact Statement at page 4-10, available at <http://penneastpipeline.com/wp-content/uploads/2017/04/PennEast-FERC-Final-EIS.pdf>.

⁴⁰ See PennEast Karst Mitigation Plan, attached.

⁴¹ *Id.* at page 3.

⁴² See *id.* at Attachment 1.

⁴³ FERC Order Issuing Certificates, 162 FERC ¶ 61,053 (Jan. 19, 2018), at ¶ 106, available at <https://www.ferc.gov/CalendarFiles/20180119195524-CP15-558-000.pdf>

⁴⁴ FERC Final Environmental Impact Statement at Table 4.1.4.1.

⁴⁵ *Id.*

⁴⁶ *Id.* at page 4-11.

⁴⁷ See 25 Pa. Code § 93.4a(b).

Pennsylvania regulations identify exceptional value (“EV”) wetlands and afford them special protections as part of the State’s antidegradation laws and regulations. EV wetlands are categorized as such based on having one of the following characteristics:⁴⁸

- (i) Wetlands which serve as habitat for fauna or flora **listed as “threatened” or “endangered” under the Endangered Species Act of 1973** (7 U.S.C.A. § 136; 16 U.S.C.A. §§ 4601-9, 460k-1, 668dd, 715i, 715a, 1362, 1371, 1372, 1402 and 1531—1543), the Wild Resource Conservation Act (32 P. S. §§ 5301—5314), 30 Pa.C.S. (relating to the Fish and Boat Code) or 34 Pa.C.S. (relating to the Game and Wildlife Code).
- (ii) Wetlands that are hydrologically connected to or located within 1/2-mile of wetlands identified under subparagraph (i) and that maintain the habitat of the threatened or endangered species within the wetland identified under subparagraph (i).
- (iii) Wetlands that are located in or along the floodplain of the reach of a wild trout stream or waters listed as exceptional value under Chapter 93 (relating to water quality standards) and the floodplain of streams tributary thereto, or wetlands within the corridor of a watercourse or body of water that has been designated as a National wild or scenic river in accordance with the Wild and Scenic Rivers Act of 1968 (16 U.S.C.A. §§ 1271—1287) or designated as wild or scenic under the Pennsylvania Scenic Rivers Act (32 P. S. §§ 820.21—820.29).
- (iv) Wetlands located along an existing public or private drinking water supply, including both surface water and groundwater sources, that maintain the quality or quantity of the drinking water supply.
- (v) Wetlands located in areas designated by the Department as “natural” or “wild” areas within State forest or park lands, wetlands located in areas designated as Federal wilderness areas under the Wilderness Act (16 U.S.C.A. §§ 1131—1136) or the Federal Eastern Wilderness Act of 1975 (16 U.S.C.A. § 1132) or wetlands located in areas designated as National natural landmarks by the Secretary of the Interior under the Historic Sites Act of 1935 (16 U.S.C.A. §§ 461—467).

The wetland mitigation put forth so far by PennEast failed to identify and account for the destruction of these specific EV uses. During this second review process, FERC must include a proper assessment of these impacts in the environmental assessment, as EV wetlands are the most ecologically important wetlands, and provide irreplaceable functions protecting and improving human health and the environment.

a. A Proper Environmental Analysis Must Ensure that the EV Wetlands Are Not Harmed by the Project As Only “Water Dependent” Projects May be Constructed in EV Wetlands.

Under Pennsylvania law, the Pennsylvania Department of Environmental Protection may not approve a water obstruction or encroachment into “exceptional value” wetlands where the project is not “water-dependent.”⁴⁹ The language of this critical provision provides a threshold for whether a project may obstruct or encroach EV wetlands—water dependency. The law and courts of Pennsylvania have established that if this water dependent threshold cannot be met, the Project cannot be constructed.⁵⁰

Pipeline projects are not “water dependent” activities as contemplated by the Pennsylvania Code, or any other body of law within the Commonwealth. “A project is water-dependent when the project requires

⁴⁸ <https://www.pacode.com/secure/data/025/chapter105/s105.17.html>

⁴⁹ 25 Pa. Code § 105.18a(a)(2).

⁵⁰ See *Eagle Environmental, L.P. v. DEP*, 1998 EHB 896, 937 (Pennsylvania Environmental Hearing Board recognized Chapter 105 permits are properly denied when a project is proposed in an EV wetland but **not** “water dependent.”) (emphasis added); see also *Hatchard v. DER*, 612 A.2d 621, fn. 2 (Pa. Commw. 1992) (finding that a “dock” would be an example of a water-dependent project).

access or proximity to or siting within the wetland to fulfill the basic purposes of the project.”⁵¹ The purpose of a pipeline project is to “simply move product from one location to another.”⁵² They do not require to be near a wetland in order to fulfill this purpose. Indeed, many projects have seen pipelines take steps to avoid wetlands and waterways through routing around them and drilling under them. Therefore, similarly to a residential dwelling, which the department has determined is not water-dependent as it “does not need to be built in wetlands to fulfill the purpose of a dwelling,”⁵³ a pipeline does not need to be built on wetlands to fulfill the purpose of transporting.

Even if pipeline projects could in some instances be classified as “water dependent,” due to product or the need to reach a certain destination, this specific Project does not require such access or proximity water resources, and therefore is not water dependent.⁵⁴

b. If, regardless the fact that the project should not be allowed, the permitting process and review continues, FERC Must Accurately Account for All Effects on EV Wetlands.

FERC’s environmental analysis must assess the impacts of the Project on EV wetlands in Pennsylvania. A failure to do so mischaracterizes and fails to properly analyze the actual impacts of the Project.

Pennsylvania’s antidegradation program applies to all surface waters.⁵⁵ Surface waters include perennial and intermittent streams, rivers, lakes, reservoirs, ponds, springs, natural seeps, estuaries, **and wetlands**.⁵⁶ Specifically, Section 93.1 identifies that a “[s]urface water of exceptional ecological significance” is covered by the antidegradation program, which specifically includes “[w]etlands which are exceptional value wetlands under § 105.17(1).”⁵⁷ One component of Pennsylvania’s anti-degradation program requires the “maint[enance] and protect[ion]” of the water quality of exceptional value waters (“EV”).⁵⁸ And states that one way in which degradation may be found with regard to an EV water is when “there is **any** lowering of water quality.”⁵⁹ Therefore, PennEast is required to identify existing uses of EV Wetlands and how the Project will avoid and/or mitigate harms to them.

The PennEast Project will have an adverse impact on numerous EV wetlands and other wetlands in Pennsylvania. The Project will result numerous acres of wetlands permanent or temporary conversion from Palustrine Forested Wetlands or Scrub-Shrub Wetlands to Emergent Wetlands, resulting in a significant loss to the values and functionality of those EV wetlands.

So far, the information provided by PennEast about the Projects Impacts on wetlands incorrect, missing, misleading, and sourced from unreliable methods. A review of the materials from Schmidt & Company found that the classification of wetlands as “exceptional value” or “other” by PennEast is neither consistent nor credible. Due to inaccuracies and gaps in the data, the report concluded that while most (69%) of the wetlands to be affected by the PennEast project in Pennsylvania are acknowledged to be “exceptional value” wetlands. It is likely that the number of exceptional value wetlands along the PennEast route actually is higher than the applicant currently acknowledges.

⁵¹ 25 Pa. Code § 105.18a(a)(2).

⁵² CAC v. DEP, Sunoco, *See* transcript of the Deposition of Ken Murin (“Murin Dep.”) at 103, lines 22-23 (“a pipeline is to generally transport some material from point A to point B”)

⁵³ CAC v DEP, Sunoco Environmental Assessment, E45-501, Murin 0305 (Exhibit 2)

⁵⁴ Cite to regulation defining this

⁵⁵ *See* 25 Pa. Code § 93.4a(a).

⁵⁶ 25 Pa. Code §§ 92.1 and 93.1.

⁵⁷ 25 Pa. § Code 93.1.

⁵⁸ 25 Pa. Code § 93.4a(d).

⁵⁹ *Id.* at *16 (citing 25 Pa. Code § 93.4a(d)) (emphasis original).

For example, only two wetlands identified along the entire route are classified as “exceptional value” because of criterion “iv” (located along an existing public or private drinking water supply).⁶⁰ PennEast reportedly relied on the Pennsylvania Groundwater Information System database (PAGWIS) for identifying private wells near the proposed PennEast pipeline routes. PAGWIS is known to be a partial and incomplete dataset. For example, the PAGWIS database currently available from PASDA (Pennsylvania Spatial Data Access) contains about 123,000 separate features statewide, yet it is estimated that there are more than 1 million private water wells across the Commonwealth. Given the known inadequacies of the PAGWIS data, it is reasonable to assume that there may be many hundreds more private water wells in close proximity to wetlands along the PennEast pipeline.

c. Bog Turtle Occupied Wetlands Need to be identified as Exceptional Value

Phase 2 bog turtle surveys have been completed on 31 of the 33 wetlands (93.9%), meaning there are two wetlands that are entirely unsurveyed at the present time. The Appalachian Trail PPL Crossing Realignment crosses an occupied bog turtle habitat in Carbon County as discussed in the 2017 USFWS Biological Opinion (BO), but the realignment does not result in avoidance of bog turtle habitat, it simply changes the location where the cut through and harm will be inflicted. Through surveys and consultation with the USFWS, PennEast identified one previously documented bog turtle population in Northampton County along the proposed Project route. In August 2018, PennEast delineated a new wetland complex within Northampton County as a result of route revisions that had physical characteristics suitable for bog turtles. Because the Phase 1 habitat assessment of this wetland complex was completed in August and surpassed the spring Phase 2 survey season, Phase 2 surveys have not been completed. PennEast stated that it intends to complete the Phase 2 surveys in spring 2019; if a new population is identified, or if PennEast elects to forego Phase 2 surveys and assume presence, then PennEast will adhere to the avoidance and minimization measures presented in the BO. Due to the documented presence of the federally threatened bog turtle at these sites, all of these wetlands should be considered Exceptional Value (EV) wetlands, but this is never mentioned by PennEast.

At the Northampton County site, PennEast has proposed minor pipeline adjustments in this area that they assert would avoid wetland impacts and route the pipeline through narrower crossing points and what they consider to be marginal habitat. However, no maps or alignment sheets were provided that reflects these adjustments unlike those provided for the four route modifications. Although these adjustments in Northampton County may be, according to PennEast, minor, they still differ from the alignment that was previously approved and should be viewed as another route modification like the other four. Alignment sheets and maps should be made available as well.

On May 7, 2018, PennEast bog turtle consultants met with representatives from USFWS, PFBC, and USACE to discuss the known bog turtle population at the Appalachian Trail PPL Crossing Realignment. There is a section of mucky soil at this site which, it is asserted, makes mitigation more difficult. It is asserted that silt fencing and exclusion barriers are not a good option due to the depth of the muck and the 3-dimensional (hummocked) nature of the wetland. Constructing the fence in such deep muck would be more challenging, and bring with it a high risk of failure. There is also a high chance of flooding due to the fact that the wetland is in a floodplain, which would destroy the silt fencing barrier. Options were discussed that would allow turtles to pass through rather than being diverted into the creek or having their travel along the wetland interrupted. Among these options was the potential to cross the core habitat and streams using aerial

⁶⁰ *Impacts of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania Supple, Supplemental Report, Prepared for the Delaware Riverkeeper Network, Schmid and Company, March 2019.*

spans to the greatest extent possible. However, aerial spans would likely not be feasible for all the required aspects of the construction. The heavy operating equipment hoisting the aerial spans would also likely sink in the mud even with matting. During this meeting, it was explained that the old crossing location had less suitable habitat than the new crossing. Due to the open-ended nature of the 2017 BO issued by USFWS, PennEast's consultants believed, incorrectly, that the new activities were still covered because they do not represent a significant change in the type or amount of impacts to a federally listed species. However, USFWS has since recommended that FERC re-initiate consultation to modify the 2017 BO under the minor change process. Re-initiation will result in a consultation update letter which addresses route amendments and updated survey results. The recommendation of re-initiation was made due to the changed action area resulting from proposed route modifications.

Because FERC and PennEast cannot rely on the 2017 BO and the new crossing location has more suitable bog turtle habitat than the previous location, data gaps exist that make it impossible for FERC and the public and sister agencies to accept these route modifications without more detail, information, understanding, and assessment. In addition to the incomplete bog turtle and EV wetland information, there are incomplete surveys for other threatened and endangered species, unresolved consultations between PennEast and state and federal agencies, incomplete surveys for water wells and springs, 13 additional Wild Trout Waters crossed, a widened ROW, missing alignment sheets, and new implications for additional cumulative impacts. NJDEP rejected PennEast's permit applications due to incomplete information, and this FERC application, as well as the Chapter 105 permit application with PADEP, has the same missing information and more due to the new route changes in PA.

d. FERC Must Demand A Mitigation Plan that Actually Restores Actual Wetland Losses, Regardless of Whether or Not They Are Classified as EV.

Construction and operational activity for the proposed Project will result in the permanent conversion of numerous "Exceptional Value" forested wetlands to emergent (nonforested) wetlands. Such a conversion will result in significant adverse impacts across the state.

For example, certain waterfowl and other wildlife will inhabit a forested wetland but not a scrub shrub or emergent wetland. Additionally, the environmental review must consider loss of trees in a watershed and the impacts to EV wetlands. Even when there exists a buffer between the tree cuts and the creek, can still have direct impacts on water quality. A seven-year long hydrological study on water quality demonstrates that cutting trees can increase turbidity in nearby water bodies even if the trees and vegetation are left in place.⁶¹ Another study, also involving leaving cut trees/vegetation in place, demonstrates that even five months after deforestation, nitrates had increased and pH was altered in a water body, adversely impacting water quality.⁶² For example, temperature study by Delaware Riverkeeper Network along the TGP pipeline route located in Delaware State Forest lands documented sustained thermal temperature increases in wetlands after pipeline construction.⁶³

As observed by Meliora Engineering in their attached report:

⁶¹ See Marryanna, L. et al, "Water Quality Response To Clear Felling Trees For Forest Plantation Establishment At Bukit Tarek F.R., Selangor," Vol. 18[1] Journal of Physical Science 33-45 (2007) (experimental plot was clear cut, left in place with a 65.6 foot wide buffer next to river, and river's turbidity increased on-average by 279%).

⁶² See Likens, G.L. et al., "Effects of Forest Cutting and Herbicide Treatment on Nutrient Budgets in the Hubbard Brook Watershed-Ecosystem" 40 Ecol. Monogr. 23-47 (1970) (study also showed large increases for all major ions, except for ammonium, bicarbonate, and sulfate).

⁶³ See *Thermal Impacts to Exceptional Value Waterbodies in Pennsylvania Cut by Gas Pipeline Projects*, Delaware Riverkeeper Network, September 25, 2016, attached.

“Construction activities of this pipeline such as clearing, grading, trenching, and backfilling, all could adversely affect soil resources by causing accelerated erosion, compaction, and introduction of rock or fill material to the surface. Current regulations rely upon construction plans that focus on temporary erosion and sedimentation controls to protect water quality standards. While temporary erosion and sedimentation measures may help to limit the transport of eroded soils during construction activities, they cannot fully eliminate the acceleration of erosion or soil compaction caused by construction over the long-term operation of a pipeline project. Once sediment reaches a stream or wetland, changes to the habitat of plants, fish, and insects will take place. Sediment from accelerated erosion smothers fish eggs and covers spawning areas with fine sediments, thus inhibiting fish reproduction. Increased turbidity in streams and wetlands prevents light penetration into the water column and increases water temperatures. All of these impacts make meeting water quality standards and the Clean Streams Law nearly impossible. Environmental damage to surface waters does not stop when construction ends if soils are severely damaged and their function in the natural environment is destroyed by compaction.”⁶⁴

PennEast is proposing to mitigate wetland impacts through replacement. But it has not ensured that this replacement will actually be of high enough quality and in a good enough location to actually replace the wetland that is being destroyed. PennEast’s proposal so far fails to replace area and function and value of the wetlands permanently altered at the appropriate ratio. As Meliora’s March 18, 2019 expert report indicates of the 22.25 acres of PEM, PSS, and PFO wetlands impacted by the PennEast pipeline construction, PennEast has proposed 10.37 acres of wetland mitigation, about 47% of the wetland impacts.⁶⁵ The wetlands will be addressed on a County-scale, so the wetland mitigation could occur anywhere within the county, which means that it could occur within a different watershed. As a result, the impacted habitat is degraded and the wetland function is removed from the HQ and EV watersheds.

Certified wetlands specialists have found a measurable “decrease” or “loss” in functionality as a result of the permanent conversion of forested wetlands to emergent wetlands.⁶⁶ For example, a functional conversion of wetlands from forested wetlands to emergent wetlands generally results in decreases to above ground biomass, structural diversity of the wetland, and local climate amelioration.⁶⁷ The conversion will also result in a loss of forest interior habitat, visual and aural screening from human activity, suitability of shade-loving plant species, and the production of mast (such as acorns) for wildlife.⁶⁸ Moreover, these conversions also result in increased wetland exposure to wind, ice and sun, as well as the localized effects of global warming on biota.⁶⁹

Wetland functions involving drainage patterns, water quantity, and water quality will also be adversely impacted by a functional conversion of forested wetlands to emergent wetlands. Specifically, emergent wetlands provide decreased soil stabilization, streambank anchoring against erosion, nutrient storage, and temperature maintenance when compared to forested wetlands.⁷⁰ As a result, erosion and sedimentation can be expected to increase as a result of the conversion.⁷¹ The function of storm damage shielding can also be

⁶⁴ Meliora Design Memorandum.

⁶⁵ *Review of PennEast Pipeline Application for Chapter 102 and 105 Permits*, Michele Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, March 2019.

⁶⁶ See, *The Effects of Converting Forest or Scrub Wetlands into Herbaceous Wetlands in Pennsylvania: A Report to the Delaware Riverkeeper Network*, Schmid and Company, Inc., Consulting Ecologists (2014). (Hereafter Schmid Wetlands Report)

⁶⁷ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016 (hereinafter “Schmid Wetlands Report”)

⁶⁸ Schmid Wetlands Report

⁶⁹ Schmid Wetlands Report

⁷⁰ Schmid Wetlands Report

⁷¹ Schmid Wetlands Report

expected to decrease as a result of this conversion.⁷² For more information on these impacts, the attached wetlands reports demonstrate the ways in which permanent, or even temporary, conversions of wetlands results in adverse impacts to those wetlands.

Additionally, a supplemental report by Schmid & Company found that:⁷³

- In the current PennEast pipeline route, only 9 wetland crossings involve trenchless methods (5 HDD crossings and 4 conventional bores), and none of those necessarily is proposed primarily to avoid wetland impacts.
- While avoidance of wetlands is mentioned as a general consideration in the pipeline siting and alternatives analysis, specific areas where identified exceptional value wetlands were avoided is nowhere discussed.
- PennEast is unclear and inconsistent when calculating how much permanent conversion of PSS and PFO wetlands is proposed to occur (they fluctuate between 30 feet and 10 feet; see PennEast statements below).
 - “A 30’ wide ROW will be maintained through PFO and PSS wetlands, resulting in the conversion of PFO and PSS to PEM wetlands.”
 - “In accordance with FERC guidelines PennEast will maintain a 10-foot-wide corridor centered on the pipeline for operational purposes.”
 - “A permanent 10-foot wide cleared corridor will be maintained through wetland resource areas in accordance with FERC’s Plan and Procedures.”

X. FERC must ensure that the Environmental Assessment Accounts for Impacts and Losses of Forest Along the Full Path of the Project.

PennEast maintains that most of the impacts are temporary and that they will restore disturbed areas. However, PennEast admits that all impacts on forested habitats will be considered long-term because of the time required to restore woody vegetation to pre-construction conditions (i.e., more than 30 years, and possibly hundreds of years for some forested areas). Hundreds of years of lost habitat would have a permanent effect on generations of local wildlife. Compaction of sensitive forest soils and soil disturbance of “temporary work spaces and alternate temporary work spaces”, scalding of adjacent forest trees from opening additional areas with clearing, thermal changes, soil changes, wind throw, invasive species, and other forest fragmentation impacts must be fully weighed and considered when PennEast proposes to disrupt interior forest in such a detrimental way.

The Project as a whole would already affect 220.6 acres of interior forest during construction and 63.6 acres during operation. The proposed changes will only expand that footprint of harm. Expert analysis demonstrates that for every cut through an interior forest, there are an additional 300 feet of impact on either side⁷⁴ to the adjacent forest that must be considered. Additionally, the Project would have an indirect impact (through edge effects, potentially resulting in avoidance of habitats or decreased habitat quality) on 1,725 acres of interior forest. FERC must ensure that this environmental assessment will examine the full impacts PennEast’s construction and maintenance will have due to loss of riparian Forests, disturbances along the ROW, and consequences the losses will have across the whole watershed.

⁷² Schmid Wetlands Report

⁷³ *Impacts of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania Supple, Supplemental Report, Prepared for the Delaware Riverkeeper Network, Schmid and Company, March 2019.*

⁷⁴ Nels Johnson, et al., *Natural Gas Pipelines*, The Nature Conservancy, 1 (December 2011).

a. Environmental Assessment Must Evaluate the Impacts that Will Result due to the Loss of Riparian Forest.

Pipeline construction results in the loss of riparian (streamside) vegetation.⁷⁵ No matter the technique involved in constructing the pipeline, there is always a resulting loss of vegetation and foliage associated with clearing the stream banks.

Riparian vegetation is an important part of a healthy ecosystem and protects the land adjoining a waterway which in turn directly affects water quality, water quantity, and stream ecosystem health. A reduction in healthy and mature streamside vegetation reduces stream shading, increases stream temperature and reduces its suitability for incubation, rearing, foraging and escape habitat.⁷⁶ While horizontal directional drilling may move the construction footprint further away from the stream, it too results in vegetative losses and soil compaction that can have direct stream impacts. The body of scientific research indicates that stream buffers, particularly those dominated by woody vegetation that are a minimum 100 feet wide, are instrumental in providing numerous ecological and socioeconomic benefits.⁷⁷

The loss of vegetation also makes the stream more susceptible to erosion events, exacerbating the sedimentation impacts of construction. In crossings that result in open forest canopies, increases in channel width, reduced water depth, and reduced meanders have persisted in the years after using an open cut method of installation.⁷⁸ In addition, according to Princeton Hydro speaking directly to the PennEast Pipeline project and the streams targeted for crossing:

“Clearing of the forest canopy and vegetation growing adjacent to these streams alters their thermal properties and nutrient and sediment loading dynamics thereby threatening their ability to sustain a trout fishery. These changes to the adjacent stream corridors can also affect the food chain dynamics of the system by altering the composition of the benthic and aquatic insect communities and increasing the propensity for algae blooms.”⁷⁹

b. The Environmental Assessment Must Evaluate the Impact of Forest Loss Along the ROW which Results in the Loss of Vegetation and Soil Compaction

When a pipeline cuts its path through a forest there are impacts in the direct footprint of the right of way (ROW) of the pipeline as well as impacts 300 feet into the forest on either side of the ROW.⁸⁰ Therefore, damage to the forest ecosystem for a 1 mile section of a 50 foot wide pipeline ROW will directly impact 6 acres of forest, and it will damage an additional 72 acres of adjacent forest by transforming it from interior habitat to that of forest edge habitat⁸¹ (i.e. an additional 300 feet of forest on either side of the ROW is impacted). This means that when a forest cut is made, for every 1 mile of pipeline (assuming a 50 foot ROW as PennEast has asserted it will primarily rely upon) at least 78 acres of forest habitat are impacted. In areas with a construction footprint that is wider, the impacts are, of course, greater. Temporary and additional temporary work spaces used by the pipeline company also need to be included in this harm since they are so

⁷⁵ James Norman, et al., *Utility Stream Crossing Policy*, ETOWAH AQUATIC HABITAT CONSERVATION PLAN, July 13, 2008 at 8.

⁷⁶ Canadian Association of Petroleum Producers, Canadian Energy Pipeline Association, and Canadian Gas Association, *Pipeline Associated Water Crossings*, 1-4 (2005).

⁷⁷ *Ibid.*

⁷⁸ *Ibid.*

⁷⁹ *Ibid.*

⁸⁰ Cara Lee, Brad Stratton, Rebecca Shirer, Ellen Weiss, *An Assessment of the Potential Impacts of High Volume Hydraulic Fracturing (HVHF) on Forest Resources*, The Nature Conservancy, Dec. 19, 2011.

⁸¹ Nels Johnson, et al., *Natural Gas Pipelines*, The Nature Conservancy, 1 (December 2011).

abundant throughout the area of the pipeline and are often located near sensitive habitats, streams and wetlands.

The destruction of forest, including riparian habitat, results in increased stormwater runoff to neighboring streams and wetlands. In addition, the construction of the project will result in soil compaction, which based on testing, experience and review of proposed project documents will not be properly mitigated, and as a result will result in increased stormwater runoff and prevent vegetation regrowth, both of which will have stream and groundwater impacts.

“Heavy equipment used in the construction of the pipeline will inherently compact work areas to depths deeper than conventional surface tilling will reach. These lasting impacts include increased runoff to streams and wetlands due to a reduction in infiltration capacity and difficulty in re-establishing vegetation. Infiltration capacity becomes limited when soils lose their porosity and soil structure, resulting in increased runoff volumes to streams. Excessive runoff changes stream geomorphology due to an increase in both volume and velocity. Streambanks and riparian areas are impacted by changes to the stream channel due to the increases in peak flow volume and rate. Streams with more flow also have higher energy. More energy means more in-stream erosion and sediment transport. Compaction also creates conditions where bulk densities of soils are so high that the soils inhibit the germination of plants and plant root growth. The establishment of vegetative cover within the pipeline ROW will be more difficult once surface soils are compacted. If vegetation regrowth is limited within both the temporary and permanent ROW, the likelihood of accelerated erosion will be increased.”⁸²

PennEast’s application and materials proposes, among other things, an unnecessarily oversized set of ROWs both for construction as well as for operation and maintenance. Both during construction as well as in terms of the permanent ROW maintained for the project, ROWs significantly smaller than those proposed by PennEast are viable and available options. In addition to the oversized footprint, PennEast proposes typically invasive construction practices, such as open stream cuts, that also maximize adverse impact and minimize the opportunity for successful mitigation and/or restoration. If HDD is not employed in sensitive areas, FERC should require minimization of the ROW to the greatest extent possible to minimize fragmentation, soil compaction and other impacts. As stated earlier, PennEast asserts that it is unable to reduce the ROW to less than 45 feet for northern flying squirrels, but other pipelines have demonstrated that this is possible. Pipelines located in residential areas and highly developed and urban areas operate in minimal with ROWs; there is no reason that natural forests and communities that are more rural and less urbanized should be sacrificed when they clearly do not need to be, especially in light of the ecological value these rural landscapes provide.

For example in Morris County, NJ, a pipeline company was required to limit its ROW to 34 feet to avoid and minimize harm and to run the ROW along an existing road to decrease fragmentation. Stove piping, HDD, smaller side booms, wood chips to cushion equipment, and sod pillows can all be deployed by PennEast to greatly minimize harm and the amount of time to have the site restored on a faster timeframe, but this appears to be completely ignored by PennEast.⁸³

The additional runoff and permanent loss of vegetation can contribute to erosion, higher damaging peak flows, habitat impacts/loss, loss of shade for protecting stream temperatures, and direct contributions of pollution particularly from pipeline rights of way where herbicides have been used to keep vegetation down.

⁸² Memorandum from Meliora Design *re*: Proposed State Water Quality Certification – PennEast Pipeline Project, June 9, 2016 (hereafter Meliora Design Memorandum).

⁸³ Achieving Higher Quality Restoration Along Pipeline Rights of Way, Leslie Sauer

Even in temporary rights of way where, post construction conditions are supposed to restore both in terms of soil compaction and vegetation, compacted soils and denuded landscapes can and do persist.

After reviewing the impacts of the Tennessee Gas Pipeline Company's construction of the 300 line, engineering expert Michelle Adams determined

"It is my opinion, given with a reasonable degree of scientific and engineering certainty that the conditions created as a result of the completed 300 Line Upgrade construction have resulted in significant and permanent increases in stormwater runoff volumes, rates, pollutant discharges, and frequencies of discharge, and a corresponding decrease in infiltration volumes. As a result, existing streams and wetlands, including exceptional value streams, have been adversely impacted by stormwater discharges and the discharge of sediment."⁸⁴

There is every reason to believe that the same impacts will result here. Yet, PennEast has not undertaken the data collection, review or planning necessary to support Chapter 105 decision-making:

"The PennEast Pipeline Project needs to fully evaluate conditions that may increase the likelihood of compaction for the most common land uses found along the pipeline. Areas that contain specific fine textures and high water tables are highly susceptible to compaction. Without identifying these areas for both the ROW and temporary ROW and across all land use categories, no determination during project review of potential impacts can be made due to a lack of information being provided. Extensive areas being crossed by this pipeline will fall into the category of susceptible to compaction."⁸⁵

"Impacts to resources located outside of the permanent ROW are often ignored or characterized as being temporary and short-term. This conclusion is not supported by experience with soil compaction investigations performed by Meliora Design within pipeline work areas. Once a soil's structure is disturbed with heavy equipment, compaction, and removal of surface vegetation, it is very difficult to regain structure that allows for infiltration of surface water or the regrowth of healthy vegetation following construction."⁸⁶

As noted by Princeton Hydro:

"PennEast has used post-development TR-55 runoff curve numbers in an attempt to support their contention that there will not be an increase in runoff following the completion of the pipeline. However, it is well established that following land development, especially development on steep slopes and resulting in forest clearing, peak flows and total runoff volumes will increase. In addition, the time of concentration will decrease. Undoubtedly, there will be both a greater volume of runoff and velocity as the result of pipeline construction. In addition to increasing the volume and velocity of runoff entering stream systems, these conditions will increase the mobilization and transport of pollutants (including sediments and nutrients), increase the likelihood of scour and erosion and decrease the total volume of precipitation infiltrated back into the soil leading to a decrease in the recharge of the surficial aquifer."⁸⁷

XI. FERC Must Ensure the EA Fully Evaluates the Cumulative Impacts Along the Full Length of The Project.

⁸⁴ Affidavit, Michelle Adams, Meliora Design

⁸⁵ Meliora Design Memorandum

⁸⁶ Meliora Design Memorandum

⁸⁷ Princeton Hydro White Paper

FERC needs to account for the actual cumulative impacts of the proposed project. NEPA defines cumulative impacts as “impact[s] on the environment which result[] from the incremental impact of the action *when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.*”⁸⁸ Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”⁸⁹ CEQ has emphasized that cumulative effects analysis includes a “[f]ocus on truly meaningful effects of “past, present, and future actions” as well as “all federal, nonfederal, and private actions.”⁹⁰ For the current project, this means that a cumulative assessment done properly needs to account and evaluate the effects the project will have on climate change, the increase in natural gas acquisition and usage, as well as the cumulative impact of the construction alongside other pipeline infrastructure projects and burdens it will place on environmental justice communities.

a. Cumulative impacts of the pipeline construction, operation, and maintenance on impacted ecological systems must be Considered as part of the Environmental Assessment Process

Impacts which need to be considered cumulatively along the length of the PennEast Pipeline and cumulatively across the many pipelines passed, passing, or anticipated to pass through this same impacted region with future pipeline expansions and which must be considered as part the environmental assessment include, but are not limited to:

- Sediment pollution,
- Erosion,
- Impacts to wildlife,
- Impacts to waterways, wetlands, marshes and vernal pools
- Loss of forest, forest fragmentation, changes in forest ecology and increased edge effect,
- Soil compaction,
- Increased surface water runoff,
- Reduced groundwater recharge,
- Reduced nutrient cycling capacity and increased algae growth,
- Release of hydrocarbons from heavy equipment leaks and re-fueling,
- Thermal impacts,
- Redirection of groundwater and surface water flows,
- Release of drilling muds,
- Creation of sinkholes,
- Air pollution resulting from methane, pipeline construction equipment, compressor stations, and other air contaminants,
- Failure of remediation/mitigation efforts including efforts to revegetate construction zones,
- Increased acidification of streams from methane pollution and construction equipment and potential decreased buffering capacity of waterbodies,
- Impacts to recreation, aesthetics, property values and property rights,
- Impacts to health, safety and the environment.

⁸⁸ Council on Env'tl. Quality, Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions 5, 9-10 (Feb. 18, 2010) (emphasis added), available at http://ceq.hss.doe.gov/nepa/regs/Consideration_of_Effects_of_GHG_Draft_NEPA_Guidance_FINAL_02182010.pdf (notice of availability published at 75 Fed. Reg. 8,046 (Feb. 23, 2010)).

⁸⁹ 40 C.F.R. § 1508.7 (2010) (emphasis added)

⁹⁰ Council on Env'tl. Quality, Considering Cumulative Effects Under the National Environmental Policy Act 11(1997), available at <http://ceq.hss.doe.gov/nepa/ccenepz/sec2.pdf>

It is critical that the FERC consider the full cumulative impacts along the entire pipeline path as well as pipeline cuts that are within the same watersheds and regions with multiple companies vying for various markets and competing with one another with no concern over the multiple cuts they propose.

b. Cumulative Impact Analysis Must Include An analysis of GHG emissions and consequential Climate Change Effects

FERC needs to consider the cumulative impacts of the Project's direct and indirect greenhouse gas ("GHG") emissions. It is a common consensus that climate change is "a result of human activity" where the "combustion of fossil fuels (coal, petroleum, and natural gas), combined with agriculture and clearing of forests, is primarily responsible for the accumulation of GHG."⁹¹ Numerous significant environmental impacts are a result of climate change including: an increase in the number of days areas will fail to meet federal air quality standards due to ozone; severe flooding and heavy downpours, a change in the life cycle events of vegetation and wildlife species; and an increase in health risks for vulnerable populations due to heat stress and poor air quality.⁹²

The Council on Environmental Quality ("CEQ") draft guidance has noted that "for Federal actions that require an EA or EIS the direct and indirect GHG emissions from the action should be considered in scoping," and these GHG impacts should be considered in the context of the "aggregate effects of past, present, and reasonably foreseeable future actions."⁹³ Moreover, to reject that notion that climate change does not need to be considered in the EA is a violation of decision rendered by the Court of Appeals for the DC Circuit in which the court determined: "greenhouse-gas emissions are an indirect effect of authorizing this [pipeline] project, which FERC could reasonably foresee, and which the agency has legal authority to mitigate. *See* 15 U.S.C. § 717f(e)."⁹⁴ Therefore, in order to conduct a thorough EA, as required under NEPA, FERC must look at the indirect and direct effects of climate change from production of the pipeline materials to the eventual end use of natural gas flowing through it.

While FERC has tried to skip over this responsibility, through asserting that the threshold is not whether it is an "indirect effect" as found by the D.C. Circuit, but a "causal relationship." In a recent decision FERC states that in order to consider GHG emissions of a project a "causal relationship" must exist such that "if the proposed pipeline would transport new production from a specified production area and that production would not occur in the absence of the proposed pipeline (i.e., there would be no other way to move the gas)."⁹⁵ Aside from the fact that such a stance is contradictory to NEPA law and recent judicial decisions.⁹⁶ There is no doubt that PennEast falls into this category. If not for construction of the PennEast Pipeline, there would be no way to transfer the natural gas. Therefore FERC must consider the GHG emissions and consequential effects on climate change this project will have.

Finally, the EA must account for the indirect effects that will occur to frack the natural gas and burn it for fuel. A request to build a pipeline is evidence that natural gas will be fracked, transported, and converted to energy. These facts can be taken as given because otherwise FERC would not find that such projects are

⁹¹ Adelphia Gateway, LLC, Adelphia Gateway Project Resource Report 1 at 41, FERC Docket No. CP18-46, January 2018.

⁹² Adelphia Gateway, LLC, Adelphia Gateway Project Resource Report 1 at 42, FERC Docket No. CP18-46, January 2018.

⁹³ Council on Envtl. Quality, Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions 5, 9-10 (Feb. 18, 2010) (emphasis added), available at http://ceq.hss.doe.gov/nepa/regis/Consideration_of_Effects_of_GHG_Draft_NEPA_Guidance_FINAL_02182010.pdf (notice of availability published at 75 Fed. Reg. 8,046 (Feb. 23, 2010)).

⁹⁴ *Sierra Club v. FERC*, 867 F.3d 1357, 1373 (D.C. Cir. 2017)

⁹⁵ Order Denying Rehearing Request, Dominion Transmission, Inc., Docket No. CP14-497.

⁹⁶ *Sierra Club v. FERC*, 867, F.3d 1357, 1373 (D.C. Cir. 2017).

required by public convenience and necessity and satisfy the criteria to receive their certification.⁹⁷ Since NEPA analyses of GHG sources must take into account all phases of the proposed action, such certain downstream effects of a gas pipeline should be assessed. Moreover, cumulative impact analysis requires that these GHG emissions be considered in the context of GHGs emitted from the aggregate of natural gas that have been and will reasonably foreseeably be extracted from the Marcellus Shale region.

With regards to upstream impacts, increased and ongoing extraction of gas from shale using hydraulic fracturing technology, is not just reasonably foreseeable, it is a known and demonstrable effect of FERC approved pipeline infrastructure that is obvious to any person of ordinary prudence. A request to build a pipeline is evidence that natural gas will be fracked, transported, and converted to energy. These facts can be taken as given because otherwise, there would be no need for FERC to allow for/certify projects.⁹⁸ New pipeline capacity enables, supports, and induces operators to advance, accelerate, and complete natural gas drilling and production. In fact, the industry itself recognizes the relationship between pipelines and drilling and relies on new pipeline capacity to accommodate new shale gas extraction.⁹⁹ As do those who are looking to expand natural gas production.¹⁰⁰ Finally, but for the construction of an interstate pipeline – whose approval is entirely controlled by the Commission – natural gas producers would simply be unable to access markets across state lines without access to interstate transmission lines. Therefore, there can be no doubt whatsoever that the construction of an interstate natural gas transmission line is causally related to the development of shale gas resources in the Project area.

A proper NEPA analysis then must include foreseeable related activities that occur in natural gas exploration, production, and consumption, including the construction and operation of well pads, access roads, gathering lines, compressor stations, and other infrastructure. FERC cannot ignore this responsibility on the basis that it is indeterminate. Publicly available maps of permitted gas wells in Pennsylvania show the locations of wells already drilled in the Pennsylvania counties to be crossed by the Project as well as the locations of newly-permitted well sites. Additionally, there is data available on the emissions from conversion of natural gas to energy and estimates of its usage, there is no reason that a reasonably, scientifically-based estimate in order to understand the burdens this project will put on the environment and on public health cannot be provided.

The PennEast pipeline, like other pipelines carrying Marcellus Shale gas and liquids, will be a direct source of methane emissions, in addition to supporting and inducing additional shale gas development and end uses, which are themselves a significant source of methane emissions. Methane is a major contributor to climate change. The September 2018 Revolution Pipeline explosion was the result of massive floods

⁹⁷15 U.S.C. § 717f(e). (“the proposed service, sale, operation, construction, extension, or acquisition, to the extent authorized by the certificate, is or will be required by the present or future public convenience and necessity; otherwise such application shall be denied.”)

⁹⁸15 U.S.C. § 717f(e).

⁹⁹ A subsidiary of the Natural Fuel Gas Company, Seneca Resources, stated in a presentation to its investors in 2016 that it had “[l]imited development drilling [in its Eastern Development Area in northeastern Pennsylvania] until firm transportation on [the proposed] Atlantic Sunrise (190 MDth/d) is available in late 2017” and that it had “50-60 remaining Marcellus [drilling] locations” and “100-120 [Geneseo shale] locations” that could not be developed until that pipeline project was underway. National Fuel. Investor Presentation: Q2 Fiscal 2016 Update April 2016. Slide 10. Available at: http://s2.q4cdn.com/766046337/files/doc_presentations/2016/April/20160428_NFG-IR-Presentation.pdf (more examples in dominion comment if wanted)

¹⁰⁰ Greater Philadelphia Energy Action Team, *A Pipeline for Growth*, March 30, 2016. (a report issued by the Greater Philadelphia Energy Action Team advocates for more pipelines in order to induce and support more and new shale gas production finding that “[e]ncouraging the industry to invest in new pipelines and in new distribution system infrastructure ... provides additional capacity for increased volumes of gas.”)

recognized to be among the recent spate of unpredicted storms caused by our changing climate.¹⁰¹ PennEast has failed to consider how unpredicted and unpredictable weather events such as floods events, could impact its proposed pipeline route and what steps can and should be taken in response. Protection of waterways, natural resources and communities depend upon the construction of pipelines that will not fail and induce accidents, incidents and explosions -- proper planning must consider the impacts of climate change on proposed construction and management practices.

c. Proper Cumulative Impact Analysis Must Analyze Foreseeable Cumulative Impacts of Current, Pending, and Future Pipeline Projects

In addition to looking at cumulative impacts across the length of the PennEast project, FERC must examine cumulative impacts that may stem from “other potential or existing projects”.¹⁰²

“The cumulative impacts arise due to the accumulation and synergistic effects of harms across the length of the proposed project, as well as the cumulative and synergistic impact of the proposed pipeline with other past and future pipeline and power transmission projects occurring in the same general region and affecting the same environments as the PennEast Pipeline. Each of the projects has caused, or will cause, similar alterations and impacts to the upland, water, riparian and wetland resources of the Delaware River and its tributaries that have a compounding effect which magnifies the damage inflicted by any one individually.”¹⁰³

As Delaware Riverkeeper Network has noted in the past, it is clear that the footprint of the PennEast pipeline within Pennsylvania is larger than captured by the PennEast submittal. Spectra’s Texas Eastern Marcellus to Market project and its Greater Philadelphia Expansion project are clearly part and parcel of the PennEast pipeline footprint and the plan that must be fully evaluated under FERC’s environmental assessment. In addition, there needs to be a review to determine any associated export from Philadelphia ports that are already under discussion and associated with these pipelines.

FERC should also examine the cumulative impact of the multiple utility and other linear projects that are being proposed or constructed in the Delaware River watershed in the vicinity of the project. For example, there are significant concerns related to the cumulative impacts of the continuous water crossings and wetlands disturbance that pipeline construction activity has on the health and vitality of the Delaware River basin and its tributaries. This is particularly a concern with the PennEast Pipeline, as many of the same subwatersheds subject to development as a result of PennEast were recently, or could be in the future, impacted by construction activity from other pipelines.

Among the pipeline projects that are, will, or have impacted the same subwatersheds as PennEast, are Transco’s Leidy line system upgrade projects which include the Northeast Supply Link project, the Southeast Leidy Expansion project and the Atlantic Sunrise project. These projects all upgrade portions of Transco’s Leidy line system, which parallels PennEast’s proposed project. In addition to the Transco’s previous and proposed pipeline projects, there are several other pipeline projects that have been concentrated in the same sub watersheds as the PennEast line, such as: Texas Eastern’s TEAM 2014 Project

¹⁰¹ *Mariner East 2: Sunoco’s incidents, fines and shutdowns fuel residents’ safety concerns*, Jon Hurdle, StateImpact, September 15, 2018, available at: <https://stateimpact.npr.org/pennsylvania/2018/09/25/mariner-east-2s-incidents-fines-and-shutdowns-fuel-residents-safety-concerns/>; *PA DEP halts new pipeline permits for Mariner East, cites ongoing violations with Revolution pipeline*, Susan Phillips, StateImpact, February 8, 2019, available at: <https://stateimpact.npr.org/pennsylvania/2019/02/08/pa-dep-halts-new-pipeline-permits-for-mariner-east-cites-ongoing-violations-with-revolution-pipeline/>.

¹⁰² 25 Pa. Code § 105.14(b)(14).

¹⁰³ Princeton Hydro White Paper

and Columbia's East Side Expansion Project. These projects do not occur in a vacuum. Each project individually depletes the natural and scenic resources of the region, and the combined impact becomes increasingly more severe, unavoidable, unmitigatable, and irreversible.

Furthermore, by creating an entirely new ROW for this Project PennEast is creating a new industrial corridor that will foreseeably be used in the future by the PennEast pipeline company for upgrades. A quick review of other major pipeline corridors in the region support this assertion as natural gas pipeline operators including Columbia, Tennessee Gas Pipeline, Texas Eastern, Millennium and Transcontinental have all within the last three years added looping segments to their pipelines and in some cases additional compression as well.

Streams, riparian native forested buffers, wetlands, soils, and forests adjacent to streams would not only be directly cut and destroyed by this pipeline, but they would also be indirectly harmed by the exacerbated climate change impacts this pipeline would cause, induce and support. At the same time, these habitats are essential, if preserved, in limiting climate harms and serving ecosystem functions that must be fully accounted for in the pipeline review process. These calculations must be part of the review of this project instead of putting resources in boxes – we live in an ecosystem – it is all connected.

d. A Proper Cumulative Impacts Assessment Will Also Consider the Threats And Harms To Life And Property To Residents that Will Reside or Be in Proximity to the Project.

The “potential threats to life or property created by” the PennEast project demand that the permits not be issued as there is serious risks in locating pipelines in populated areas.¹⁰⁴ Through Accidents, construction and operation impacts to land cover, and impacts on the climate, among others.

- i. Assessment Must Account for the Likelihood and Extent of Damage a Pipeline Explosion, Fire, or similar incident Could Occur as a Result of the Project.

Pipelines are a serious source of human harm and property damage. Between 1986 and 2012, “pipeline accidents have killed more than 500 people, injured over 4,000, and cost nearly seven billion dollars in property damages.”¹⁰⁵ Looking at this 28-year period, on average pipelines kill or injure 173 people a year causing over \$269 million a year (\$269,230,769) in property damage. Further, according to the Pipeline and Hazardous Materials Safety Administration¹⁰⁶, in the most recent six years found on PHMSA’s data portal for gas transmission lines (onshore) there have been over 100 fatalities or injuries requiring hospitalization and over \$880 million in damage as the result of 622 pipeline incidents. When explosions happen, the harm to people, property and the environment can be severe and costly. In addition to the actual physical harm that happens when there is an accident or incident, there is the ongoing psychological burden inflicted by the fear of accident, incident or explosion for those who are forced to live next to a gas pipeline, including those who are forced to live with a pipeline because of the power of eminent domain exercised by a pipeline company. And the hazards of pipelines for human safety and property damage is increasing. According to a report by Pipeline Safety Trust, “The gas transmission lines installed in the 2010s had an annual average incident rate of 6.64 per 10,000 miles over the time frame considered, even exceeding that of the pre-1940s pipes. Those installed prior to 1940 or at unknown dates had an incident rate of 6.08 per 10,000 miles.”¹⁰⁷

¹⁰⁴ 25 Pa. Code §105.14(b)(1).

¹⁰⁵ ProPublica, *Pipelines Explained: How Safe are America's 2.5 Million Miles of Pipelines?*, available at <https://www.propublica.org/article/pipelines-explained-how-safe-are-americas-2.5-million-miles-of-pipelines>.

¹⁰⁶ <https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trendss>.

¹⁰⁷ <https://www.snl.com/InteractiveX/Article.aspx?cid=A-33791090-11060>

ii. A Proper Environmental Review Will Consider the Public Safety Threats Due to Scour and Resulting Degradation of Piping

In addition, pipelines, like PennEast, that traverse through waterbodies create even more likelihood of incidents due to their location. Pipelines are known to rupture as the result of scour from high flow and flood events, and when they rupture the impacts are severe as demonstrated by the recent Revolution Pipeline explosion.¹⁰⁸ The PennEast pipeline is proposing to cross hundreds of streams and wetlands totaling over 1,500 linear feet of waterways in the Commonwealth of Pennsylvania, mostly through open cut methods. This means there will be over 1,500 linear feet of waterways with the PennEast pipeline buried in their bed bringing the real potential of scour and rupture releasing dangerous chemicals into our waterways and on nearby and downstream properties and their owners.

Pipeline construction also creates additional hazards increasing the likelihood of scouring. Because open trench pipeline installations may unnaturally alter both stream bank and streambed (i.e., channel) stability, there is an increased likelihood of scouring within backfilled pipeline trenches. This is because open trenches themselves, when backfilled, may not be compacted to stable pre-trench sediment permeability conditions. Flooding rivers can scour river bottoms and expose pipelines to powerful water currents and damaging debris. Additionally, unusually heavy rains including those associated with climate change, threaten to increase overall stream degradation and channel migration – thereby exposing shallowly buried pipelines. Scour hole development proximal to pipelines is well-documented in both stream and seabed settings.¹⁰⁹ Stream-based pipe “(f)ailures [have been] caused not only by vertical scour of the streambed but also by bank erosion, lateral channel migration, avulsions, bridge scour, and secondary flows outside the main channel. ... Several of the pipelines in [a] study failed as a result of a meander migration or avulsion of the stream into previously less active or nonexistent channels.”¹¹⁰ Based on field observations and hydraulic modeling for the 100-year design flood, researchers documented maximum vertical scour to 26.6 feet (8.1 meters) and lateral scour to 6,274 feet (2,050 meters) at some failed pipeline crossings.

An expert at HydroQuest¹¹¹ has determined that, at a minimum, any pipeline installed using the open trench cut method needs to be installed at least 24 feet below the stream bed in order to prevent exposure from scour.¹¹² While bridge piers are more readily exposed to stream scouring than pipelines, it is telling that bridge failure analyses have determined that channel scour occurs to depths of up to three times that of maximum river floodwater depth (e.g., scour to 30 feet with a 10 foot floodwater depth).

In addition, a significant health, safety, property and environmental risk associated with both wet and dry trench methods of gas pipeline crossings of rivers and streams has the potential of releasing hydrocarbons or other contaminants directly into surface water and fragile downstream ecosystems, including hydrocarbon laced liquids such as benzene that are part of the gas being delivered by the pipeline.

¹⁰⁸ Reid Frazier, *DEP orders ETP to fix Revolution Pipeline erosion problems*, October 30, 2018, StateImpact, available at <https://stateimpact.npr.org/pennsylvania/2018/10/30/dep-orders-etp-to-fix-revolution-pipeline-erosion-problems/>.

¹⁰⁹ Fogg, J. and Hadley, H., 2007, Hydraulic Considerations for Pipelines Crossing Stream Channels. Technical Note 423. BLM/ST/ST-07/007+2880. U.S. Department of the Interior, Bureau of Land Management, National Science and Technology Center, Denver, CO. 20 pp. <http://www.blm.gov/nstc/library/techno2.htm>.

¹¹⁰ Doeing, B.J., Williams, D.T. and Bradley, J.B., 1997, Gas Pipeline Erosion Failures: January 1993 Floods, Gila River Basin, Arizona. In Storm - Induced Geologic Hazards, Case Histories from the 1992 - 1993 Winter in Southern California and Arizona; Geological Society of America; Reviews in Engineering Geology, Volume XI (ed. Robert A. Larson).

¹¹¹ HydroQuest Memorandum re: Hydrologic and Environmental Rationale to Bury Gas Pipelines using Horizontal Directional Drilling Technology at Stream and River Crossings, 6/8/2012 (Hereafter HydroQuest Report)

¹¹² HydroQuest Report.

e. FERC Must be Sure the Environmental Analysis Considers the Impacts of ALL Forest Cuts From The Project

As indicated in past comment and expert reports submitted by DRN, forested wetlands are especially vulnerable to thermal impacts and permanent changes with pipeline cuts. Stream science clearly indicates that when forests (and forested streams) are cut for a pipeline and soils compacted etc. impacts watershed health. The Final EIS indicates that 220.6 acres of interior forest would be affected during construction and 63.6 acres during operation. Science and reports submitted to the DEP by Delaware Riverkeeper Network shows that with these pipeline cuts through forests comes an additional 300 feet on either side of the pipeline cut that impacts that sensitive interior forested habitat. DRN does not believe these numbers are fully nor adequately reflected or included in the current application.

f. FERC Must Ensure a Full and Adequate Analysis of the The Cumulative Impacts of Air Emissions in the Environmental Assessment

Emissions that will occur during the operation of the pipeline must be fully evaluated. Direct emissions may include but are not limited to carbon dioxide (CO₂) and nitrous oxide (N₂O) emissions from compressor engines, line heaters, and generators, as well as fugitive methane emissions from compressors and pipelines; and black carbon emissions from diesel vehicles and equipment.¹¹³ Additionally the operation of eight blowdowns, will lead to sporadic, intense releases of methane and other chemicals into the air.¹¹⁴ Such releases can and should be accounted for when looking at GHG emissions.

g. Cumulative Impacts of this Project and Others in the Area and Impacts on Water Degradation.

The scientific community has published over 400 peer reviewed papers indicating harm that stems from gas wells, it is critical that FERC consider these beginning of pipe and end of pipe impacts that fracking and related infrastructure is causing. As this issue will only will worsen if these additional pipelines are constructed. According to Physicians for Safe Energy, 72% of these original research studies on water quality indicate potential, positive association, or actual incidence of water contamination; and 95% of all original research studies on air quality indicate elevated concentrations of air pollutants. In addition groundwater contamination of potable water supplies are a key concern.¹¹⁵

Since 2011, there has been at least twenty intensive pipeline projects that have crisscrossed the Delaware River Basin and been put into service, with no indication that that the rate of constriction will slow in the coming years. EV and HQ streams and wetlands that remain in Pennsylvania should not be sacrificed for a gas pipeline project like PennEast that exacerbates climate change and causes irreparable direct harm to streams that the path would cut.

XII. The Economic Benefits Asserted By Penneast Are Indefensible And Unsupported, And The Economic Harms Are Entirely Overlooked Ferc Must Use This Environmental Assessment Period To Reevaluate Them.

¹¹³ “The U.S. natural gas transmission network contains more than 279,000 pipeline miles. Along this network, compressor stations are one of the largest sources of fugitive emissions, producing an estimated 50.7 billion cubic feet (Bcf) of methane emissions annually from leaking compressors and other equipment components such as valves, flanges, connections, and open-ended lines.” Env’tl. Prot. Agency, Lessons Learned from Natural Gas STAR Partners 1 (Oct. 2003), available at http://www.epa.gov/gasstar/documents/ll_dimcompstat.pdf.

¹¹⁴ Summary on Compressor Stations and Health Impacts, Southwest Pennsylvania Environmental Health Project, February 24, 2015.

¹¹⁵ The fifth edition of the Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking was published March 2018 and is available here: <https://concernedhealthny.org/compendium/>.

FERC's section 7 duty to consider the public interest is broader than promoting a plentiful supply of cheap gas.¹¹⁶ Rather, FERC must ensure "the [public] benefits of the proposal outweigh the adverse effects on other economic interests."¹¹⁷ Here, it is clear that the record shows that the net costs resulting from the construction of this pipeline outweigh the alleged public benefits of the Project.

As demonstrated in the attached report by Key-Log Economics, this comment and the comments of others on the docket, the claims of economic benefit advanced by PennEast and adopted by FERC are flawed and indefensible.¹¹⁸ In short, thus far PennEast

- Overestimates short term impacts due to inherent issues with the models used and the choice of the size of the study region.
- Overestimates long term job "creation" and other impacts due to use of a model empirically proven to have no value as a predictor of economic activity occurring more than a year into the future."

Below DRN has highlighted some specific examples of economic impacts that should be accounted for:

a. The Environmental Assessment Must Consider the Economic Impacts In Terms of Ecosystem Services Lost as Well as PennEast's False Claims of Economic Growth

Since this pipeline would operate for decades in the state and require continual company oversight for safety and health and the environment and wellbeing of PA waterways and wetlands, it is important that the Department consider the long term health of the operators looking to impact the state and their long term viability as businesses. An April 4, 2016 expert report enclosed here and conducted by Jannette M. Barth, Ph.D., Pepacton Institute LLC, "Review of PennEast Pipeline Project Economic Impact Analysis" cites some of the many considerations needed for these large infrastructure projects and lays out claims made by the operators that are often far from accurate on many accounts citing various pipelines considered in the recent years. The Spencer Philips, Ph.D. report (enclosed), "Economic Costs of the Atlantic Coast Pipeline," February 2016 cites ecosystem services lost and taxpayer expenses over the life of a project from a similar pipeline project in Western and Central Virginia that is being considered by the agencies. In this report findings included:

- Lost ecosystem service value, such as for water and air purification, recreational benefits, and others accounted for: Over the two-year construction period: between \$16.9 and \$61.0 million (a one-time cost); and annually for the life of the pipeline: between \$4.9 and \$17.8 million.
- Annual loss of recreation tourism expenditures of \$41.3 million that supports 387 jobs and \$7.4 million in payroll and generates \$1.8 million in state and \$1.3 million in local taxes.

b. FERC Must Evaluate the Economic Claims Put Forth by PennEast, as there is numerous false and misleading economic and job claims for the Project.

As discussed in the attached expert analysis from Dr. Jannette Barth with the Pepacton Institute, the analyses upon which PennEast bases its economic and jobs claims is carefully crafted to exaggerate benefits and ignore costs. A second expert report prepared by The Goodman Group finds similar exaggerations of economic and job claims. With regards to gas prices, in fact, for many customers, the construction of

¹¹⁶ See *Fla. Gas Transmission Co. v. FERC*, 604 F.3d 636, 649 (D.C. Cir.2010).

¹¹⁷ *AES Ocean Express, LLC*, 103 F.E.R.C. ¶ 61,030 at ¶ 19.

¹¹⁸ In addition to the Key-Log Economics analysis attached she attached report by Jannette Barth challenging the Econsult Analysis. This report was provided on the FERC docket as public comment prior to completion of the DEIS, but FERC clearly chose to ignore this report along with all the other comments you ignored.

PennEast may result in an increase in gas prices, thereby increasing the economic burden of this new pipeline rather than creating any sort of economic gain.¹¹⁹

As revealed by the expert reports included in the attachments to this comment, the assertion that the PennEast pipeline is going to spur economic growth, significant and sustainable jobs, and low energy prices is false and misleading

c. Economic Impacts on Property Owners

Finally, FERC must consider the detrimental economic impact pipelines have on the surrounding community. One of the benefits of living next to a stream or other natural body of water is the increased property value those riparian rights bring as well as the recreational and quality of life benefits that can be enjoyed. But the cut of a pipeline diminishes all of these rights and benefits of living near a waterway. Property values are demonstrably harmed by the presence of a pipeline.¹²⁰ Aesthetic qualities, ecological health of a stream and instream populations such as fish are diminished due to a pipeline's stream cuts and permanent loss of riparian vegetation essential for healthy riparian and instream habitat. Ecological and aesthetic harm translates into diminished recreational enjoyment and opportunities as well as a diminished ability to enjoy the environment and one's property.

XIII. FERC must require a thorough Systems Alternatives Analysis, including a No Action Alternative.

FERC is also required to consider alternatives to the proposed project prior to issuing a Certificate. This analysis should include, but not be limited to, examining differences in impacts to wildlife species, wetlands and waterbodies, steep slope topography, land disturbance, forest reduction, re-vegetation potential, and health and safety risks. Such a study ensures that the pipeline expansion projects proceed in the most logical sequence, with the least amount of environmental impact. FERC must also seriously consider viable existing and proposed alternatives in its balancing of the likely public benefit against the adverse impacts associated with the project. If the purpose of the project can be met by existing alternatives, the project provides no public benefit.

For this environmental assessment's alternative analysis, FERC must include a No Action alternative, as well as alternatives that would result in less environmental impact, including an alternative that would avoid Pennsylvania regulated EV wetlands and an alternative that would not cross the Appalachian Trail, among other alternatives recognized by the public and other agencies.

a. FERC Must Consider a No Action Alternative.

Pipeline crossings like those proposed by PennEast inflict significant impact on water quality, health and habitat, and inflict impact and threats to people and property, both at the site of the crossing and downstream. Given the significant and long term effects of the water, land, vegetation and habitat transformation that will result from maintenance and construction of the project, FERC is required to consider alternatives, including a No Action alternative under NEPA.

b. FERC Must Consider Alternatives and Other Construction Practices that Would Limit the Impact of the Project.

¹¹⁹ *Analysis of Public Benefit Regarding PennEast*, Skipping Stone, March 9, 2016

¹²⁰ *See e.g.* Review of INGAA Foundation Report, "Pipeline Impact to Property Value and Property Insurability", Key Log Economics 3/11/2015.

Attached is an expert report by Leslie Sauer¹²¹ that lays out numerous construction practices that would limit the construction footprint and impact of the project, limit the permanent and temporary ROW footprints of the project, and that would remediate impacts inflicted during construction. These are available alternatives that have not been given due consideration. Rather than find a way to minimize or altogether avoid wetlands, PennEast relies on mitigation measures and construction modifications, neither of which follows the mandate of the regulations, which is to establish “no practicable alternative.”

c. FERC Must Require An Alternative Analysis that Avoids Crossing EV Wetlands, As Recognized by Pennsylvania Environmental Regulations.

FERC must conduct an alternative route that avoids EV wetlands in the state of Pennsylvania, as according to the letter of PA state law, a pipeline cannot be constructed in an EV wetlands, as such activities do not require the use of water of the location to operate. For further information on EV wetland regulations in Pennsylvania see section on wetland impacts in prior section of the comment. PennEast’s Project, as well as other pipeline projects, are not water dependent as they do not require proximity to or siting within water to fulfill the basic purposes of the project because the purpose of a pipeline project is to “simply move product from one location to another.”¹²² Because the Project crosses numerous EV wetlands throughout Pennsylvania, FERC and PennEast must show that there is no way to avoid citing the Project in EV wetlands in order to proceed with the current route.

d. PennEast alternative must consider not passing through Appalachian trail as national parks service is not yet permitted to issue such Approval under the MLA

Recent case law has suggested that if a oil or gas project is crossing the Appalachian Trail, the National Parks Service is required to approve of the project crossing the Trail. Yet, the Mineral Leasing Act provides no means for the National Park Service to grant such approval. Therefore, FERC and PennEast should include an alternative analysis that avoids crossing the Appalachian Trail or mitigates the effects of doing so, to ensure that they are minimal. For a further explanation on how the National Parks Approval is now needed see above section concerning the Appalachian Trail.

XIV. PennEast’s Assertion of Need is Contradicted by the Preponderance of the Evidence and is Largely a Statement of Industry Desires Rather than Public Need.

NEPA requires that an environmental assessment “[s]hall include brief discussion of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.” 40 CFR 1508.9(b). Not only is there no need for the Project, contrary to PennEast’s Claims, but data shows we are in a state of pipeline overbuild, with costs that will be passed on to consumers. FERC must assess whether the claims of need given this evidence of overbuild.

a. PennEast’s Claims of Need Are Unfounded.

¹²¹ Achieving Higher Quality Restoration Along Pipeline Rights of Way, Leslie Sauer.

¹²² CAC v. DEP, Sunoco, *See* transcript of the Deposition of Ken Murin (“Murin Dep.”) at 103, lines 22-23 (“a pipeline is to generally transport some material from point A to point B”)

PennEast Pipeline company asserts its proposed pipeline is necessary to serve New Jersey and eastern Pennsylvania communities. In fact, there is no compelling public need for the gas. As noted in the attached expert report from Arthur Berman¹²³:

- “Natural gas consumption for New Jersey has been relatively flat for the past four years at average rate of 1.8 billion cubic feet of gas per day (Bcf/d), somewhat below the higher levels of the late 1990s. [] Although consumption increased slightly in 2013 compared to the three previous years, New Jersey cannot be called a growth market....”
- “The proposed PennEast Pipeline would deliver an additional 1 Bcf/d of natural gas to New Jersey potentially creating a 53% supply surplus above the current level of consumption.”
- and “...Pennsylvania has no unfulfilled demand...”
- “Because of the lack of demand for Marcellus gas in Pennsylvania and adjacent New Jersey, it is possible that PennEast and its committed suppliers have an unstated intent to send gas to other markets not specified in their proposal....”

A second report done by Skipping Stone similarly finds a lack of need for the capacity of PennEast. According to this report, PennEast obtains many of its clients by commitments to switch from one pipeline to the other, which means unfilled excess capacity, not more needed gas delivered. According to Skipping Stone, similar to Labyrinth Consulting:¹²⁴

“Local gas distribution companies in the Eastern Pennsylvania and New Jersey market have more than enough firm capacity to meet the needs of customers during peak winter periods. Our analysis shows there is currently *49.9% more capacity than needed to meet even the harsh winter experienced in 2013*”

This demonstration of a lack of need is complemented by the predictions and concerns of experts that the industry is proposing an “overbuild” of pipelines from the Marcellus and Utica shales:

- “Speaking to attendees at the 21st Annual LDC Gas Forums Northeast conference in Boston Tuesday, [RBN Energy LLC President Rusty] Braziel said an evaluation of price and production scenarios through 2021 suggests the industry is planning too many pipelines to relieve the region’s current capacity constraints.”
- “What we’re really seeing is the tail end of a bubble, and what’s actually happened is that bubble attracted billions of dollars’ worth of infrastructure investment that now has to be worked off,” Braziel said.¹²⁵

Given the high level of impacts that will be inflicted by the PennEast pipeline on the water resources of Pennsylvania and that the project will necessarily be inflicting unavoidable and unmitigatable harm that will result in a violation of water quality standards, this lack of need for the PennEast pipeline project is of high relevance and significance to the decisionmaking process.

b. There is Ample Evidence of Pipeline Overbuild.

An expert report by Cathy Kunkel and Tom Sanzillo in April 2016, “Risks Associated with Natural Gas Pipeline Expansion in Appalachia,” is another report that shines the light on considerations and habits such

¹²³ *Professional Opinion of Proposed PennEast Pipeline Project*, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015

¹²⁴ Analysis of Public Benefit Regarding PennEast, Skipping Stone, March 9, 2016

¹²⁵ *Marcellus/Utica on Pace for Pipeline Overbuild, Says Braziel*, Natural Gas Intelligence, June 8, 2016.

as overbuilding of this industry that need to be considered as FERC weighs more pipeline proposals bringing with it more wetland and stream cuts for this pipeline. To highlight, the report finds:

- *“Existing natural gas pipeline capacity is going underutilized, even as companies propose new pipelines. A 2015 report by the Dept of Energy found that from 1998 to 2013, existing pipelines in the US had an average capacity utilization of 54%”.*
- *“Southwestern Energy in the Fayetteville shale of Arkansas and in Appalachia, predicts overbuilt pipeline capacity by 2018. And vice president for Marketing and Midstream Operations for Range Resources, one of the largest Appalachian shale drillers, has stated that Range expects that “the Appalachian Basin’s takeaway capacity will be largely overbuilt by the 2016-2017 timeframe”.*
- *“FERC facilitates over building...there is a lack of comprehensive planning process for natural gas infrastructure which attracts more capital into pipeline development than is necessary.”*
- *“Kelcy Warren, CEO of Energy Transfer Partners (ETP), “the pipeline business will overbuild until the end of time. I mean that’s what competitive people do” In a subsequent earnings call, he provided the specific example of the Barnett shale in TX: “there is no question there are certain areas that are overbuilt. For example, we overbuilt in the Barnett shale. The production peaked and it’s now down.”*

XV. FERC’s Review of the Project Must Consider That This project Is Segmented and In Fact A Small Piece of A Bigger Plan

Piecemealing” or “segmentation” is the unlawful practice whereby a project proponent avoids the NEPA requirement that an EIS be prepared for all major federal actions with significant environmental impacts by dividing an overall plan into component parts, each involving action with less significant environmental effects.¹²⁶ Federal agencies may not evade their responsibilities under NEPA by “artificially dividing a major federal action into smaller components, each without a ‘significant’ impact.”¹²⁷

The general rule is that segmentation should be “avoided in order to insure that interrelated projects, the overall effect of which is environmentally significant, not be fractionalized into smaller, less significant actions.”¹²⁸ Without this rule, developers and agencies could “unreasonably restrict the scope of environmental review.”¹²⁹

DRN has submitted in the past various considerations to take into account about this project in regard to segmentation and related pipeline projects. It is important and critical with such a proposed build out of pipelines in the Commonwealth to move natural gas abroad and to other markets, and with FERC’s track record of this improper segmentation as evidenced in successful litigation brought by Delaware Riverkeeper Network,.

XVI. FERC Must Account for the Environmentally Important and Critical Lands that the Pipeline Will Go Through Accounting for Impacts in These Areas as Well as Additional Permits that Will be Required.

As stated in the attached expert report by Princeton Hydro:

...along its path in both Pennsylvania and New Jersey, the proposed PennEast Pipeline will cross through environmentally important and critical lands. These include Pennsylvania State Game Lands

¹²⁶ *Taxpayers*, 819 F.2d 294, 298 (D.C. Cir. 1987).

¹²⁷ *Coal. on Sensible Transp. v. Dole*, 826 F. 2d 60, 68 (D.C. Cir. 1987). *See also* 40 C.F.R. § 1508.27(b)(7)

¹²⁸ *Town of Huntington v. Marsh*, 859 F.2d 1134, 1142 (2d Cir. 1988).

¹²⁹ *Fund for Animals v. Clark*, 27 F. Supp. 2d 9, 16 (D.D.C. 1998) (“Fund”).

(#40 and #128), Hickory Run State Park, Boulder Field Natural Area (a National Natural Landmark), Mud Swamp Natural Area, Weiser State Forest, Beltsville State Park, the Kittatinny Ridge, the Appalachian Trail Corridor, the Sourland Mountain Preserve, other State and County parklands, preserved farmland, and areas of cultural significance. Along the route the pipeline traverses steeply sloped areas characterized by erosion prone soils. Many of the affected areas provide critical habitat to a number of threatened and endangered species and species of concern including Bald Eagle, Harrier Hawk, Bobolink and other grassland bird species, Wood Turtle, Bog Turtle, Indiana Bat, Northern Long-Ear Bat, Brook Snaketail Dragonfly and Dwarf Wedge Mussel.¹³⁰

Many of the streams to be cut by the pipeline are designated Class A or wild trout streams which are an important natural and recreational resource for the state. In addition, the game lands, parks and natural areas are important to Pennsylvania's recreation and ecotourism driven economy. The Delaware Riverkeeper Network's River values report, attached, provides facts and figures on the wealth of income that is generated by Pennsylvania, as the result of fishing, hunting and wildlife viewing, including in areas to be impacted by PennEast. The report also discusses costs avoided – such as water quality remediation, stream restoration, and stormwater management projects – because of healthy forests, streamside lands, wetlands, etc.¹³¹

The Delaware Riverkeeper Network's dedicated group of volunteer monitors have witnessed and documented habitats and state threatened and endangered species such as vernal pools and talus slopes throughout the proposed PennEast pipeline route. In Pennsylvania, a volunteer documented an osprey nest on a telephone pole near MP 76.7. Ospreys are a state threatened species in PA. Between MP 43.5 and 44, we had reports of several vernal pools, wood frog egg masses, and springs and seeps.

It is a concern that in early April of 2016, we reviewed a report that PennEast representatives were seeking to gain access to a property to conduct bog turtle trapping. Bog turtle trapping, or Phase 3 surveys, should only be conducted between April 15th and June 15th according to the U.S. Fish and Wildlife Service. In this case, the PennEast representative was seeking to access the property prior to April 15th. In addition, the Delaware Riverkeeper Network has received reports of unmarked vehicles parking near private landowner property and unidentified men near the property claiming they were doing bog turtle surveys. It is our understanding that these men must be accompanied by at least one USFWS qualified bog turtle surveyor at all times. We have confirmed that there is a qualified bog turtle surveyor working at this site, but it is unknown if he is present at all times. When approached by landowners, the unidentified men are largely uncooperative in providing identification. PennEast representatives and their consultants should be providing identification as well as their scientific collecting permit when asked. Unmarked vehicles should also have a sign in the windshield identifying them as contractors when parked. This lack of clear communication arouses suspicion to landowners as they are unable to tell if these unidentified people are legitimate employees or trespassers. Premature granting of permits and limiting public participation in the process emboldens this kind of bad behavior and risks abuses by the pipeline company.

a. PennEast Needs National Park Service Approval in Order to Construction on the Appalachian Trail

Contrary to the claims put forth in PennEast's response to comments filed on March 25, the *Cowpasture Case* states that the National Park Service approval is needed in ordered for a project to cross any portion of

¹³⁰ *The Short and Long-Term Consequences of the Construction of the PennEast Pipeline– A White Paper*, Princeton Hydro, LLC, July 2015.

¹³¹ *River Values: The Value of a Clean and Health Delaware River*, Delaware Riverkeeper Network, April 2010.

the Appalachian Trail.¹³² This indicates that Congress needs to pass legislation to allow PennEast to cross the Appalachian Trail, regardless of whether it is state owned or national owned land that the Appalachian Trail is on.

In *Cowpasture*, the court found that land owned by the National Forest System along the Appalachian Trail needs National Parks Service approval to allow construction of a pipeline. The court concluded that such approval was needed because the Appalachian Trail is managed under the oversight of the National Parks System and the Mineral Leasing Act specifically excludes lands in the National Parks System from the authority of the Secretary of the Interior, or of another agency head, to grant pipelines rights of way.

Here, it would mean that PennEast would still need National Parks Service approval to construct a the Project on Pennsylvania land. Therefore, PennEast and FERC cannot allow for Certification and construction to begin until the National Parks Service has been consulted and approves the Project.

b. The Penneast Pipeline Proposal Is Not Consistent With The Lower Delaware River Wild & Scenic Designation Or Management Plan.

While PennEast has carefully selected a reach of the Delaware River that does not yet have Wild & Scenic designation, it is a reach of river that is surrounded, upstream and downstream, by designated reaches. As a result, adverse impacts to the ecological and community health of the corridor and the River inflicted by the PennEast pipeline proposal will have direct impacts on the Lower Delaware River Wild & Scenic designation, which, contrary to PennEast's suggestion, cannot be simply ignored.¹³³

The Lower Delaware River Wild & Scenic Management Plan specifically asserts that protection of the non-designation stretches of the Lower Delaware Wild & Scenic Corridor need the same consideration and protection as the designated reaches in order to ensure the important resources of the designated corridor are properly protected:

“To assure the protection of important resources in the corridor, the Study Task Force concluded that the Management Plan should cover a broader reach of the lower Delaware than that included in the area considered for Wild and Scenic River designation. The Task Force decided that one management plan should be developed covering (1) areas eligible for Wild and Scenic designation, (2) the area south of Washington Crossing, PA, and (3) excluded sections.”¹³⁴

In addition, the protected area includes all area between the “prominent ridge lines on both sides of the lower Delaware River” not just the River waters and channel itself. Thus as the PennEast Pipeline crosses through the Lower Delaware Wild & Scenic River corridor between the prominent ridge lines in Pennsylvania and New Jersey, it is clear that protection of the Wild & Scenic Lower Delaware River requires that the PennEast pipeline comply with the guidance, goals and vision of the Lower Delaware River Management Plan.

Finally, while PennEast lightly dismisses the downstream stretches that are listed on the National Rivers Inventory of the National Park Service, it fails to give the level of consideration necessary to impacts on those downstream resources or potential future designations.

¹³² *Cowpasture River Pres. Ass'n v. Forest Serv.*, 911 F.3d 150 (4th Cir. 2018)

¹³³ 25 Pa. Code 105.14(b)(10)

¹³⁴ Lower Delaware River Eligibility Determination for DRBC Declaration of Special Protection Waters, Delaware River Basin Commission, August 2004.

XVII. Horizontal Directional Drilling Should be the Default Construction Method for Streams, Wetlands, Forests, and Communities Should be Required

Pipeline projects can use a construction technique called Horizontal Directional Drilling (“HDD”) to construct the pipeline underneath waterways and wetlands, avoiding impacts entirely. For this type of crossing, a specialized drill rig is used to advance an angled borehole below the stream or wetland to be crossed and, using a telemetry guidance system, the borehole is steered beneath the stream or wetland and then back to the ground surface. The hole is then reamed to a size, adequate for the pipe to pass through, and the pipeline is then pulled back through the bore hole.

The records are replete with examples of pipeline projects that have utilized this technology. For example, the Tennessee Gas Pipeline Company’s use of this technology to construct its Northeast Upgrade pipeline project under the Delaware River. *See* 42 Pa Bulletin 7478-7482. Additionally, the Columbia Gas Pipeline used HDD under Exceptional Value wetlands and at least seven streams for the Eastside Expansion Project. *See* Permit E15-846. Indeed, Tennessee Gas Pipeline Company recently described the viability of HDD technology in its application to the Department for Orion Pipeline Project.

In fact, the PennEast pipeline project will use HDD to avoid impacts to 74% of the 189 road crossings it will encounter, but for the stream crossings, 75% will be accomplished using open cut methods that have the greatest potential to inflict water quality harm, and long term damage to the creek and its riparian buffer. And, of the seventeen stream crossing locations to be accomplished by HDD, only four are not associated with a road crossing – making clear that the reason for the HDD alternative at those locations is the existence of the road, not an effort to protect the creek. Clearly FERC has prioritized protecting roadways over protecting streams.

Failing to mandate primary consideration and discussion of an HDD construction alternative for each and every wetland and waterway crossing fails to undertake the alternatives analysis mandated by NEPA. Indeed, in Pennsylvania HDD under exceptional value wetlands is required by the Pennsylvania Code.

Due to harm caused by open pipeline cuts, DRN believes that the use of horizontal directional drilling (HDD) or other trenchless crossing methods underneath the water resources and forests should be employed to greatly minimize harm and disturbance to the surrounding environment. The Final EIS only proposed HDD at 17 locations. The Revised Route removes one of the HDD locations so the total is now only 16. By requiring HDD or another method of trenchless crossing and limiting soil disturbance, there will ultimately be less potential for erosion and sediment violations to the surrounding waterbodies and less short and long term environmental problems including but not limited to: soil stabilization, increased stormwater runoff, hydrologic changes to wetlands, disturbed soil profiles, changes in micro-topography and micro-habitat, irreparable compaction of soils, destruction and disturbance of benthic and fish spawning habitat, thermal impacts from loss of tree cover, habitat loss, forest fragmentation, invasive species introductions, and disturbance of amphibian activity.

XVIII. PennEast Should be Required to Obtain a NPDES Permit For Construction of the Project

There are numerous instances of unlawful sediment discharges from pipeline construction projects across the US. These discharges trigger then need for pipeline applicants, such as PennEast, to obtain a National Pollutant Discharge Elimination System (“NPDES”) permit for construction of the project. Based on PennEast’s proposed construction activities, sediment discharges into waters of the United States is inevitable. As such, PennEast must apply for a NPDES permit prior to these construction activities or it is highly likely that it will violate the Clean Water Act, and be exposed to significant civil penalties.

A NPDES permit would provide greater protections for state wasters as opposed to the state permits PennEast is required to obtain for construction purposes. NPDES permits require additional environmental protections, more exact stormwater volume calculations, additional riparian buffer protections, more public participation opportunities, and higher enforcement penalties. NPDES permits also subject permittees to stricter and more publicly accessible record keeping requirements, allowing for the public to inspect and monitor a project's compliance with the Clean Water Act.

Finally, Given the plethora of unlawful discharges that plagued the Mariner East 2 pipeline project throughout Pennsylvania, and the failure of the Pennsylvania Clean Streams Law penalty provisions to deter such discharges. People of the state deserve assurance that such disastrous impacts to their community and recreational environment will not occur again.

XIX. There are Numerous Gaps in the Data on the Whole Project That Need to Be Remedied During the Environmental Assessment

As it currently stands, the information on the record regarding the proposed Project is completely inadequate for FERC to meaningfully assess, the true scope of environmental and community impacts that the project would inflict. PennEast's applications are missing a tremendous amount of information.

In addition to the missing and deficient information identified above, Delaware Riverkeeper Network experts have identified a multitude of deficiencies, inaccuracies, and missing information discussed in the attached reports including, but not limited to, the following missing information:

1. The layout of the proposed preferred route and the Bucks County Alternative fails to show the lateral pipeline to the proposed Gilbert Interconnect which requires crossing the Delaware River;
2. Full evaluation of alternatives given their watershed protection benefits;
3. The applications fail to consider the environmental ramifications of the open trenching method of wetland crossings, including impacts to groundwater flows that are so vital to the majority of wetlands impacted by this project;
4. The applications fail to disclose sufficient details about proposed water sources for hydrostatic testing;
5. HDD crossing plans including specific crossing area, specific methods to be used, location of mud pits, pipe assembly areas, all areas to be disturbed and/or cleared for construction, containment plans for spills, contingency plans, etc.;
6. HDD water discharge details including the specific volume of anticipated discharge, discharge method and impacts on receiving streams;
7. Standards used to guide HDD water withdrawals without preventing impacts on downstream ecological or human uses and needs;
8. The applications should provide a table of bedrock aquifers that includes relevant properties, including specific capacity statistics or well yields, and conductivity where available.
9. The applications needs to include map, analysis and evaluation of the recharge, runoff, pollution, vegetation, habitat, soil and erosion impacts resulting from the combination of soil type, slope, compaction potential and depth to bedrock for each section of pipeline along the proposed preferred route as well as alternatives.
10. The applications should include a complete inventory of springs and seeps within a quarter mile of the pipeline to adequately consider the changes which could occur due to pipeline construction.
11. The applications should present the result of a final karst study for the area and present plans for mitigating problems caused by constructing through karst or caused by rapid contaminant transport within karst.

12. The applications should include data or information regarding the mineral content of the soils to be crossed by the proposed pipeline and the results of leaching tests that should be required.
13. The applications should assess the potential for pipeline construction to generate acid generation or leach metals in all areas where it crosses mine spoil.
14. The applications should present avoidance and mitigation discussions focused on preventing the leaching and transport of acid and metals from the site.
15. The applications should provide a plume map of groundwater contamination and a map showing soils contamination from the Palmerton Zinc Pile Superfund site and assess the implications of the various proposed pipeline routes for water, groundwater and drinking water contamination.
16. The applications failed to consider: how pipeline construction and operations could affect recharge and shallow groundwater flow in aquifers near the proposed pipeline; preferential flow caused by trenching in the aquifer; potential contaminant transport enhanced by the trenching; groundwater drawdown caused by the trenching.
17. The applications fail to consider how the project construction would affect recharge rates, which are highly variable with the underlying geology, soil type and thickness, and topography controlling the actual recharge location.
18. The applications fail to consider the pipeline trench as a pathway for contamination.
19. The applications fail to define and analyze a reasonable range of alternatives.
20. The applications fail to account for the public health impacts of the proposed Project.
21. The applications fail to include an analysis of ecosystem services lost due to the construction, operation and maintenance of the pipeline.
22. The applications fail to require sufficient information to determine the potential extent of blasting at each stream or wetland crossing.
23. The applications fail to consider site-specific conditions to determine whether blasting in stream channels may be required.
24. The applications fail to address that proposed pipeline construction practices and long- term maintenance of the ROW in a non-forested condition will alter land surface conditions and result in greater stormwater impacts.

XX. FERC Must Demand More Evidence and Higher Standards to Ensure that Construction of PennEast Will Result in Minimal Destruction, As DRN Field Monitoring and Documentation of the Reality of Pipeline Construction, Operation & Maintenance – Both In Compliance with the Law and In Violation of the Law – Shows These Projects Irreparably Harm Rivers, Wetlands and Streams With the Current Standards.

FERC cannot rubber stamp another project on the basis that it will comply its plans and procedure book and will therefore not cause environmental damage or degradation. Such an assessment is presumptive that (1) the plans and procedures in place will actually prevent damaging environmental impacts and (2) the pipeline in construction and operation will always follow the plans without fail.

PennEast contends that the Project will be constructed in full compliance with all applicable state laws, and that in temporary workspaces and restored areas the natural landscape will return to its former, or some altered but healthy ecological status. In fact, experience shows that neither is true. The Delaware Riverkeeper Network has found that the construction methods proposed necessarily result in environmental harms and failures of mitigation/restored areas to return to ecological health.

As the result of document reviews and field investigations during construction of three sections of pipeline - the TGP 300 line upgrade, TGP Northeast Upgrade Project (NEUP), and Columbia 1278 pipeline -- in the Upper Delaware River Basin the Delaware Riverkeeper Network documented:

- over 60 instances where best management practices (BMPs) were not present, inadequate or not functioning or in need of repair, maintenance or reinforcement,
- 4 instances of fueling being conducted in wetlands or near waterbodies,
- dozens of instances of poor signage and staking and mapping errors which sometimes led to impacts off of the permitted Right of Way (ROW), loss of trees outside the ROW, and inaccurate mitigation calculations,
- thermal impacts, extreme (and unreversed) soil compaction, nutrient impacts, benthic invertebrate changes from pipeline cuts, including for streams with exceptional value, high quality and or C-1 anti-degradation classifications,
- discrepancies between pipeline company monthly compliance reports and what work and activities to meet compliance and avoid pollution were actually occurring or not occurring on the ground. We also noted excessive lag time in the filing and/or public release of construction reports making for difficult follow up in the field. DRN documented too few pipeline inspectors and a lack of oversight person-power for these extensive linear projects that spanned many miles and where work was going on simultaneously along the routes with little independent oversight.

Based on first hand observations and monitoring, the Delaware Riverkeeper Network has concluded:

- Interstate natural gas pipeline projects result in a multitude of environmental impacts that inflict high levels of unnecessary ecological damage – this damage is not avoided, nor properly mitigated, despite the resource reports that are drafted or the guidance provided by FERC or other federal or state agencies;
- Violations of environmental laws are common place and an accepted part of pipeline construction – and compliance outweighs penalties and violations to the detriment of the environment and the public;
- Construction problems and potential violations are not properly responded to by the company, by FERC or by other state or federal agencies and mitigation does not undo the harms inflicted -- as a result of both, pipelines inflict enduring and/or repetitive harms on natural resources; and
- Current or proposed guidance from FERC or other regulatory agencies do not prevent, avoid, or otherwise mitigate these ecological and public harms or the multitude of bad practices used by the pipeline companies.

Attached please find: *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Stream., Addendum to Comment for the PennEast Pipeline*, a compilation of Delaware Riverkeeper Network generated technical documents, reports and observations compiled as the result of field monitoring which support, inform and expand upon these conclusions. Our observations in the field demonstrate and document that construction, operation and maintenance practices like those being proposed by the PennEast pipeline company, even when followed in full compliance with regulatory standards, results in unavoidable, unmitigated and irreparable harm and violations of state water quality standards and wetlands protections. In addition, DRN monitoring has documented that over and above these impacts, violations of law are commonplace during pipeline construction, operation and maintenance and as a result the violations of law, including water quality standards and wetland protections, are further exacerbated. FERC's environmental assessment analysis needs to build in a consideration of the inevitable impacts and implications of construction activity for the project that will necessarily involve violations of the laws governing the construction activity.

It is impossible for the public or FERC to meaningfully assess the impacts of this project without knowing the actual scope of the project. It is unacceptable for FERC to allow this level of information to constitute the basis of the public scoping period.

Conclusion

In addition to the comment provided, the Delaware Riverkeeper Network requests that FERC consider and include in the current record DRN's previously submitted comments, expert reports, and DEP filings attached to this comment. We are enclosing comment and expert reports by Delaware Riverkeeper Network for similar large transmission pipeline projects that include additional data that should be considered – since the pipelines' construction techniques are similar in nature to other pipeline applications being considered and the regulations and policies are largely the same. Therefore, the questions, concerns, impacts and outcomes submitted regarding, and/or experienced by, other pipelines is of direct relevance and concern to the current PennEast pipeline proposal and should be considered in the context of PennEast -- i.e. we would anticipate that PennEast will suffer the same outcomes as these other pipeline projects given the parallels in construction practices proposed and the applicable laws in place.

Construction, operation, and maintenance of the PennEast pipeline would inflict significant, irreparable and long-term effects on waterways, wetlands, groundwater, floodplains, soils, plants, animals, habitats, and people. The PennEast pipeline also is facing severe scrutiny by NJDEP, and the Delaware River Basin Commission is still undertaking its review. Pipelines using the construction techniques proposed by PennEast, have inflicted stream, wetland, water quality and groundwater degradation even when they abide by FERC plans and procedures-- clearly it is not enough for PennEast to mimic the same failed practices. There is no need for FERC to once again rush through and rubber stamp an environmental assessment with the significant impacts this project will have.

Sincerely,



Maya K. van Rossum
the Delaware Riverkeeper
Delaware Riverkeeper Network

Attachments:

1. *Impacts of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania Supplemental Report, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, March 2019
2. *Review of PennEast Pipeline Application for Chapter 102 and 105 Permits*, Michele Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, March 2019.
3. *Docket No. CP15-558: Comments Regarding PennEast Pipeline Project*, Delaware Riverkeeper Network Comment to Federal Energy Regulatory Commission, February 11, 2016
4. *Comment on Proposed State Water Quality Certification by Section 401 of the PennEast Pipeline Company, LLC, PennEast Pipeline Project*, Delaware Riverkeeper Network to PA DEP, June 10, 2016
5. *Comments Regarding PennEast DEIS FERC Docket no. CP15-558*, Delaware Riverkeeper Network, September 12, 2016
6. Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.
7. Letter Dated November 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.
8. *Comment on Proposed PennEast Pipeline Project Proposed Route Modifications*, FERC Docket No.: CP15-558, Delaware Riverkeeper Network, December 5, 2016
9. *Docket No. PF15-1-000: Comments Regarding PennEast Pipeline Project, Scoping Period*, Delaware Riverkeeper Network to Federal Energy Regulatory Commission, February 13, 2014
10. *Delaware Riverkeeper Network Comment on PADEP 401 Water Quality Certification and Chapter 105 Permits*, Delaware Riverkeeper Network, September 26, 2016.
11. *Comment on PennEast Pipeline Company's PennEast Pipeline Project 404 Permit*, Delaware Riverkeeper Network, October 8, 2017
12. *Comment on Pending Pipeline Project Review Process in Pennsylvania to Governor Wolf and Acting Secretary McDonnell*, Delaware Riverkeeper Network, February 13, 2017
13. *Comment on PennEast Route Modifications*, FERC Docket No.: CP19-78, Delaware Riverkeeper Network, March 8, 2019.
14. *Pipeline Development – Strategies And Tools to Minimize Landscape Impacts*, Pennsylvania Pipeline Task Force, The Nature Conservancy, September 23, 2015
15. *Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking (Unconventional Gas and Oil Extraction)*, Physicians for Social Responsibility & Concerned Health Professionals of New York, 5th edition, March 2018.
16. *Effects of Converting Forest or Scrub Wetlands to Herbaceous Wetlands in Pennsylvania*, Prepared by Schmid Company, Inc., Consulting Ecologists, 2014
17. *The Short and Long-Term Consequences of the Construction of the PennEast Pipeline– A White Paper*, Princeton Hydro, LLC, July 2015.
18. *Proposed State Water Quality Certification –PennEast Pipeline Project*, Michele Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, June 9, 2016.
19. *Delaware Riverkeeper Network v. PADEP, Tennessee Gas*, Environmental Hearing Board, Michelle Adams affidavit, December 17, 2012.
20. *Technical Memorandum, Review Application Materials, Proposed PennEast Pipeline*, Dr. Tom Myers, June 6, 2016
21. *Technical Memorandum, Review of Surface water Withdrawal and Discharge Permit, Delaware River Basin Commission, Proposed PennEast Pipeline*, Dr. Tom Myers, November 30, 2016.
22. *White Paper: Pipelines A Significant Source of Harm*, Delaware Riverkeeper Network,

23. *Delaware Riverkeeper Network v. PADEP, Tennessee Gas*, Environmental Hearing Board, Peter Demicco affidavit, December 17, 2012.
24. *River Values: The Value of a Clean and Health Delaware River*, Delaware Riverkeeper Network, April 2010.
25. *Drinking Water, Arsenic, and Natural Gas Pipelines*, Julia L. Barringer, PhD.
26. *Effects of Forest Cutting and Herbicide Treatment on Nutrient Budgets in the Hubbard Brook Watershed Ecosystem*, Likens G.L., et al., 40 Ecol. Monogr. 23-47 (1970).
27. *Water Quality Changes on Highland Forest before, during, and after Timber Harvesting*, Marryanna, L. et al., International Conference on Environment, Energy, and Biotechnology IPCBEE vol. 33 (2012).
28. Delaware Riverkeeper Network comment to Federal Energy Regulatory Commission, regarding the Spectra M2M project, 6/3/2016
29. *Karst Mitigation Plan PennEast Pipeline Project*, PennEast Pipeline, Prepared by Hatch Mott MacDonald.
30. *In re: Sunoco Pipeline L.P. a/k/a Energy Transfer Partners*, Emergency Order, Pennsylvania Public Utility Commission Docket No. P-2018-3000281, March 7, 2018
31. Appendix 1: Table A-1. Active, proposed and reported natural gas wells in Pennsylvania, by county.
32. Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.
33. *Review of INGAA Foundation Report, "Pipeline Impact to Property Value and Property Insurability"*, Key Log Economics March 11, 2015
34. *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, September 5, 2016.
35. *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016.
36. *Technical Memorandum Review of Draft Environmental Impact Statement, Proposed PennEast Pipeline, Docket No. CP15-558-000, FERC\EIS: 0271D*, Tom Myers, Ph.D., August 31, 2016.
37. *Opinion on the PennEast Pipeline*, Arthur Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., September 11, 2016.
38. *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.
39. *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.
40. *Marcellus/Utica on Pace for Pipeline Overbuild, Says Braziel*, Natural Gas Intelligence, June 8, 2016.
41. *Achieving Higher Quality Restoration Along Pipeline Rights of Way*, Leslie Sauer, May 2014.
42. *Professional Opinion of Proposed PennEast Pipeline Project*, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2014.
43. *Analysis of Public Benefit Regarding PennEast*, Skipping Stone, March 9, 2016.
44. *Review of PennEast Pipeline Project Economic Impact Analysis*, Jannette Barth, Pepacton Institute, April 4, 2016.
45. *Expert Report on the PennEast Pipeline Project Economic Impact Analysis for New Jersey and Pennsylvania*, The Goodman Group Report, Nov 4, 2015.
46. *The Potential Environmental Impact from Fracking in the Delaware River Basin*, Steven Habicht, Lars Hanson, and Paul Faeth, August 2015.
47. *Report on Phase I Bog Turtle Survey for Wetlands Associated with Hunters Creek, Towamensing Township, Carbon County, Pennsylvania*, Jason Tesauro, September 5, 2015.

48. *Drilling Deeper: A Reality Check on U.S. Government Forecasts for a Lasting Tight Oil and Shale Gas Boom*, J. David Hughes, Post Carbon Institute, October 2014.
49. *A Bridge Too Far: How Appalachian Basin Gas Pipeline Expansion Will Undermine U.S. Climate Goals*, Oil International, July 2016.
50. *Climate Change in Pennsylvania: Impacts and Solutions for the Keystone State*, Union of Concerned Scientists, October 2008.
51. *Climate Change Impacts and Solutions for Pennsylvania*, Union of Concerned Scientists, 2008.
52. *The Changing Northeast Climate*, Union of Concerned Scientists, 2006.
53. *Cumulative Land Cover Impacts of Proposed Transmission Pipelines in the Delaware River Basin*, Lars Hanson and Steven Habicht, May 2016.
54. *Natural Gas Price Increase Inevitable*, Arthur Berman, The Petroleum Truth Report, February 21, 2016.
55. *Climate Change Impacts in the United States*, Radley Horton and Gary Yohe, May 2014.
56. *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews*, Christina Goldfuss, Council on Environmental Quality, August 1, 2016.
57. *Pennsylvania Energy Impacts Assessment*, Nels Johnson, the Nature Conservancy, November 15, 2010.
58. Key-Log Economics, LLC, *Economic Costs of the PennEast Pipeline*, January 2017.
59. Key-Log Economics, LLC, *Economic Costs of the Mountain Valley Pipeline*, May 2016.
60. Key-Log Economics, LLC, *Economic Costs of the Atlantic Coast Pipeline*, February 2016.
61. Key-Log Economics, LLC, *Economic Costs of the Eastern System Upgrade*, April 2017.
62. Key-Log Economics, LLC, *Atlantic Sunrise Project: FERC's Approval Based on an Incomplete Picture of Economic Impacts*, March 2017.
63. Key-Log Economics, LLC, *The Social Cost of Carbon and the Adelpia Gateway Project*, February 2019.
64. Delaware Riverkeeper Network, *Field-Truthing and Monitoring of the Proposed PennEast Pipeline*, FERC Draft EIS, September 2016.
65. *Clearcutting in Forested Wetlands*, Schmid & Company, Inc., Consulting Ecologists, May 1, 2017.
66. *Expert Report on the Environmental Impacts of the Millennium Eastern System Upgrade*, Princeton Hydro, November 28, 2016.
67. *Thermal Impacts to Exceptional Value Waterbodies in Pennsylvania Cut by Gas Pipeline Projects*, Delaware Riverkeeper Network, September 25, 2016.
68. Letter dated September 23, 2016 written by the US Environmental Protection Agency to Maya K. van Rossum, the Delaware Riverkeeper.
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71. *Citizen Input Regarding the Proposed PennEast Pipeline*, Key-Log Economics, LLC, March 2017.
72. *Citizen Input Regarding the Proposed Eastern System Upgrade Project*, Key-Log Economics, LLC, April 2017.
73. *Comment Regarding Adelpia Gateway Pipeline Project- Scoping Period*, Delaware Riverkeeper Network, June 1, 2018.
74. *Environmental and Geotechnical Considerations Regarding the Proposed Paulsboro Natural Gas Pipeline Crossing Beneath the Delaware River*, HydroQuest, February 16, 2016.
75. *Hydrologic and Environmental Rationale to Bury Gas Pipelines Using Horizontal Directional Drilling Technology at Stream and River Crossings*, HydroQuest, June 12, 2012.
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