

Exhibit A



October 8, 2017

District Engineer,
U.S. Army Corps of Engineers
Baltimore District, State College Pennsylvania Field Office
1631 South Atherton Street, Suite 101,
State College, PA 16801

RE: Comment Letter: Public Notice 17-42 Re CENAP-OP-2015-00581-P12 – PennEast Pipeline Company’s PennEast Pipeline Project

To Whom It May Concern:

The Delaware Riverkeeper Network, and the Delaware Riverkeeper (collectively “DRN”) submit the following comments on the application for a Department of Army permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act with respect to the PennEast Pipeline Project (the "Project") proposed by PennEast Pipeline Company, LLC (“PennEast”). According to the United States Army Corps of Engineers’ (“Corps”) Public Notice and the Federal Energy Regulatory Commission’s (FERC) Final Environmental Impact Study (FEIS), PennEast is requesting to construct 120.2 miles of natural gas pipeline and associated equipment and facilities in order to provide about 1.1 million dekatherms per day (MMDth/d) of year-round natural gas transportation service from northern Pennsylvania to markets in New Jersey, eastern and southeastern Pennsylvania, and surrounding states. The Project will begin with two interconnects with existing intrastate natural gas pipelines (the Wyoming Interconnect at Mile Post 0.0 connects to an Energy Transfer Partners, L.P pipeline and the Springville Interconnect at Mile Post 0.3 connects to a Williams Partners pipeline) in Dallas Township, Luzerne County, Pennsylvania and ends at a terminal point along the existing Transco Pipeline in Hopewell Township, Mercer County, New Jersey. The proposed Pipeline Project consists of the following facilities:

- 116.0 miles of new 36-inch-diameter pipeline,
- 2.1 mile Hellertown lateral consisting of 24-inch diameter pipe in Northampton County, PA,
- 0.6 mile Gilbert lateral consisting of 12-inch diameter pipe in Hunterdon County, NJ,
- 1.5 mile Lambertville lateral consisting of 36-inch diameter pipe,
- 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,
- 8 meter and regulator stations for interconnects,
- 11 mainline valve sites, and
- 4 pig launcher/receiver sites.

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The project includes multiple stream and wetland crossings in the Susquehanna River and Delaware River watersheds. PennEast's 404 permit application to the Army Corp's Baltimore District, as noticed in the September 8, 2017 Public Notice **17-42 Re CENAP-OP-2015-00581-P12**, includes one separate Individual Permit for the Single and Complete crossings of waters and/or wetlands associated with the PennEast project that occurs within the Corps Baltimore District area of operation. Within the Baltimore District, the applicant proposes to install the pipeline across the Susquehanna River via open-cut installation. The Corps Public Notice also remarks that approximately 14.5 miles of the pipeline is proposed within the Corps of Engineers Baltimore District area of responsibility in Luzerne County (Susquehanna River Drainage), Pennsylvania. The adverse impacts on from the proposed open cut crossing of the Susquehanna River alone poses great enough risks and adverse impacts for the Corps to deny the 404 permit on that alone. However, the Corp's cannot adequately evaluate the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest, on the 22 factors that it is required to consider as part of its public interest review per 33 C.F.R. § 320.4(a)(1)., including "conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people," without considering this individual permits as part of the Project as a whole. Additionally, the Corp's relies heavily on the Project information provided by FERC's FEIS which includes information for the Project as a whole, not just one individual permit area described in this Public Notice. As such, this comment largely addresses the project-wide impacts of proposed pipeline. We also speak directly to the deficiencies of, and errors in, the EIS, (both the FEIS and the DEIS which was transformed into the FEIS without significant and needed alteration) thereby demonstrating that the Corps was not justified in relying upon this document for its decisionmaking.

PennEast's Section 404 application for a permit from the United States Army Corps of Engineers ("Corps") must be denied because:

- 1) The adverse effects of the proposed Project outweigh its potential benefits and do not meet the standards for the Corps' public interest review
- 2) the Project conflicts with the requirements of a Clean Water Act Water Quality Certification,
- 3) the Corps has failed to establish a baseline for its public interest review,
- 4) FERC's FEIS and the materials provided by PennEast continue to include inaccurate, false and misleading information and that the information provided is incomplete in significant and substantively important ways, and as such the Corps does not have the information it needs for informed or accurate decisionmaking.

The information that has been garnered from the Corps' Public Notice, the FEIS materials, the filed resource reports, filings with other regulatory agencies, that were then vetted, analyzed and in some cases field verified by third party experts and DRN, demonstrates that this project will inflict substantial adverse environmental and community impacts regardless of implementation of the supposed mitigation recommended by PennEast or by FERC. In addition to the comments specifically discussed here, the expert reports filed herewithin include a number of factual and legal deficiencies that are provided and adopted by DRN and incorporated by reference. We note from the outset that while a number of our expert reviews and comments were directed to the Draft EIS (DEIS) as that was the FERC document subject to public comment, the comment referenced in those reports and included in this comment are just as relevant to final EIS documents, and other materials submitted by PennEast and/or relied upon by the Corps in making its assessments to date.

According to the FEIS, construction of the project will 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). According to the FEIS the project will at least cut through 255 waterbodies (including 159 perennial, 45 intermittent, 40 ephemeral, 11 open water), 633 acres of forest, 91 wetlands, impact “several” vernal pools, and infringe upon and damage habitat for threatened and endangered species of bat, sturgeon, snake, turtle, mussels and more. This comment and others will prove that these impacts are sorely understated, incomplete, and misrepresent the footprint and damage that would be inflicted if the PennEast pipeline were built.

I. The adverse effects of the proposed Project (even as deficiently described) outweigh its potential benefits and do not meet the standards for the Corps’ public interest review necessary to issue a 404 permit.

The Corps must deny a Section 404 permit when issuing the permit would be “contrary to the public interest,” 33 C.F.R. § 320.4(a)(1). During a public interest review, the Corps must consider “all the facts” and then deny a permit if “the costs of the project outweigh[] its potential benefits and . . . the public interest would best be served by denying the permit.” *Buttrey v. United States*, 690 F.2d 1170, 1185 (5th Cir. 1982). To evaluate the project's effects on the public interest, the Corps must balance the “benefits which reasonably may be expected to accrue from the proposal” against the “reasonably foreseeable detriments.” 33 C.F.R. § 320.4(a)(1). This “careful weighing” considers “[a]ll factors which may be relevant to the proposal . . . including the cumulative effects thereof.” *Id.* As in any such analysis, “[s]imple logic, fairness, and the premises of cost-benefit analysis . . . demand that a cost-benefit analysis be carried out objectively.” *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983). For example, the Corps' public interest review may not “mention the positive anticipated impact of the proposal on jobs and municipal taxes” but “sidestep [] any consideration of adverse economic effects.” *Hough v. Marsh*, 557 F. Supp. 74, 86 (D. Mass. 1982).

The Corps' regulations list over twenty (including “conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people,”) factors to evaluate during a public interest review, including “conservation, economics, aesthetics, general environmental concerns, [and] wetlands.” 33 C.F.R. § 320.4(a)(1). Every permit decision must also consider “the public and private need” for the work, “the practicability of using reasonable alternative locations and methods to accomplish the objective of the . . . work,” and “[t]he extent and permanence of the beneficial and/or detrimental effects” of the proposed project. *Id.* § 320.4(a)(2).

Even with the immense deficiencies and inaccuracies in the information found in the Corps Public Notice and the FERC FEIS, it is clear that the PennEast Pipeline will result in extremely adverse effects to almost every category that the Corps is required to consider, with or without the mitigation the Corps postures, given the reality of the harms to be inflicted. The probable adverse impacts, including cumulative impacts, of the proposed PennEast Pipeline and its intended use on the public interest, which are generally absent from the Corps’ Public Notice and FERC FEIS, are outlined below. These reasonably foreseeable adverse impacts far outweigh any benefits which reasonably may be expected to accrue from the proposal, making clear that the proposed project would be contrary to the public interest.

a. The adverse Economic effects of the Project on the public far outweigh any reasonably foreseeable benefit.

In its public interest review, the Corps is required to consider “all the facts” and then deny a permit if “the costs of the project outweigh[] its potential benefits and . . . the public interest would best be served by denying the permit.” *Buttrey v. United States*, 690 F.2d 1170, 1185 (5th Cir. 1982). To evaluate the project's effects on the public interest, the Corps must balance the “benefits which reasonably may be expected to accrue from the proposal” against the “reasonably foreseeable detriments.” 33 C.F.R. § 320.4(a)(1). This “careful weighing” considers “[a]ll factors which may be relevant to the proposal . . . including the cumulative effects thereof.” *Id.* As in any such analysis, “[s]imple logic, fairness, and the premises of cost-benefit analysis . . . demand that a cost-benefit analysis be carried out objectively.” *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983). For example, the Corps' public interest review may not “mention the positive anticipated impact of the proposal on jobs and municipal taxes” but “sidestep [] any consideration of adverse economic effects.” *Hough v. Marsh*, 557 F. Supp. 74, 86 (D. Mass. 1982).

According to a robust and thorough analysis of the economic impacts of the proposed Project conducted by Key Log Economics,¹ the adverse economic impacts (or costs to the public) would outweigh the economic benefits claimed by PennEast by up to \$54.3 billion:

“Adding up all one-time recurring costs, and discounting those future costs to 2017, we estimate the total external costs of PennEast Pipeline to be between \$13.3 and \$56.6 billion. By contrast, the pipeline would in the words of FERC’s DEIS provide only “minor” benefits in the form of economic impact during construction and operation of the pipeline. Using PennEast LLC’s own estimates (Econsult Solutions & Drexel University School of Economics, 2015) and applying the same methods to calculate the present value of all future benefits, the pipeline promises a total of \$2.3 billion in economic impact over 30 years of operation. This means for every dollar of benefit promised, the PennEast Pipeline would impose between \$5.85 and \$24.97 in costs.”

This disparity at the expense of the public interest, while likely greatly underestimated (as explained below), clearly demonstrates that the adverse impacts from the Project far outweigh the potential economic benefits of the Project and as such mandate that the Corps to deny the permit.

As outlined below and explained in further detail in the accompanying expert analyses,² the construction and operation of the Project would greatly adversely impact the economic resources of the area, in both the near and long-term. The potential adverse environmental-economic effects include: effects on ecosystem service value, effects on property value, the social cost of carbon, effects on economic development, and other impacts not quantified such as public health impact and impact on county community services.

For each of these categories with quantifiable economic data available, expert analysis conducted by Key Log Economics found that the one-time and annual costs to the public that would result from the proposed Project would be:

¹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

² *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

; See also letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

Lost ecosystem service value (“the benefits nature provides to people for free”), such as for water and air purification, aesthetics, and recreation “that will become less available and/or less valuable due to the PE’s construction and operation.”

- Over the one-year construction period (a one-time cost): **\$6.3 to \$22.1 million**
- In the ROW and in other permanent infrastructure (annual): **\$2.6 to \$9.8 million**

Property value: “loss of private property value as owners and would-be owners choose properties farther from the pipeline’s right-of-way, evacuation zone, compressor station, and viewshed.”

- Total property value lost (a one-time cost): **\$159.7 to \$177.3 million**
- Resulting loss in property tax revenue (annual): **\$2.7 to \$3.0 million**

The social cost of carbon (the economic cost of harm associated with carbon emissions):

- “The project would contribute to an equivalent of 21.3 million metric tons of carbon dioxide a year. Using a 5% discount rate, the social cost of carbon ranges from \$291.9 to \$608.1 million per year between 2019 and 2048. Using a 2.5% discount rate for the same time period, the social cost of carbon ranges between **\$1.5 and \$2.3 billion per year.**”³

Economic activity that depends on the region’s scenic, recreational, and quality-of-life:

(We consider scenarios in which visitor spending declines by 10% from current levels, and the rate of growth in retirement and proprietor’s income slows by 10%)

- Annual loss of recreation tourism expenditures of \$448.0 million that would otherwise support 4,090 jobs and generate \$38.8 million in state and local tax receipts
- Annual loss of personal income of \$55.6 million due to slower growth in the number of retirees
- Annual loss of personal income of \$16.3 million due to slower growth in sole proprietorships

The analysis found that the total the one–time and annual costs to the public that would result from the proposed Project would be:

“Total estimated costs:

- One-time costs (lost property value plus lost ecosystem service value during construction) would total between \$166.0 and \$199.4 million
- Annual costs (costs that recur year after year) would range from \$5.3 to \$12.8 million PLUS the social cost of carbon, which varies by year, and ranges between \$291.9 million and \$2.3 billion per year
 - Present discounted value of all future annual costs (including the social cost of carbon): \$13.1 to \$56.4 billion
- One-time costs plus the discounted value of all future annual costs: \$13.3 to \$56.6 billion”⁴

These estimates are conservative. These estimates are conservative because they do not represent all potential costs as several categories of cost cannot be directly quantified, such as value of preserving the

³ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

landscape, damages to human and environmental health and property in the event of leaks and explosions, and the lack of sufficient data to quantify the cost increase of community services such as emergency response and road maintenance. Additionally, many of the adverse economic impacts that would result from the Project have not been quantified but also must be considered by the Corps. These include community service costs, such as provisions of public and private water, roads and traffic, emergency services, and law enforcement; as well as effects on economic development, tourism, recreation, retirement income, and jobs.

According to the Key-Log Economics analysis:

“If PE is built, there will likely be increases in the costs of community service, such as for traffic control and extra law enforcement capacity needed during construction and for emergency preparedness/emergency services during operation. As borough, township, city, and county governments, as well as volunteer fire companies meet these needs, costs for services would increase.”

Roads, traffic, and community services may be adversely impacted. As outlined in the Key-Log Economics Report:

“Damaged or worn-out roads, an increase in traffic volume involving those heavy vehicles, and an influx of out-of-area workers unfamiliar with local roads are also associated with increases in motor vehicle accidents (Muehlenbachs & Krupnick, 2014). Motor vehicle accidents impose a range of costs, from emergency response, medical care, time off of work, premature death, property damage, and the cost of time lost to traffic jams at accident scenes (National Highway Traffic Safety Administration, 2015).”

PennEast Pipeline Company has stated it will pay to restore roads damaged during construction, but it is up to individual municipalities to survey the state of their roads prior to construction to ensure that PennEast meets this promise. This cost of securing baseline information, then identifying the damage, and then pursuing and securing repair is all on local communities, as are the costs of the damage to vehicles inflicted by the damage while in disrepair.

Pipelines also pose new challenges to emergency responders, with fire and rescue teams devoting more time and resources to training, planning, and response to pipeline incidents. An investigation into a California pipeline rupture that killed eight people, injured several others, and destroyed 38 homes revealed that local responders were not prepared.⁵ There are significant time and resource costs in pursuing this training and planning that are not accounted for. In addition, the costs of actual response when there is an accident, incident or explosion are also not accounted for.

Law enforcement costs will also increase. In addition to responding to any increase in motor vehicle accidents due to increased traffic, research has shown an increase in crime in gas drilling areas. This kind of community and economic impact will translate to pipeline construction areas. As Key-Log Economics⁶ states:

“Furthermore, a multi-state analysis found that counties with high drilling had statistically significant increases in violent crime and property crime (Multi-State Shale Research

⁵ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁶ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

Collaborative, 2014). Temporary out-of-state workers have been associated with increased arrests, traffic violations, protection-from-abuse orders, and warrants for people failing to appear in court (Associated Press, 2011).

PennEast expects 60% of their 2,400 person workforce to consist of non-local, temporary hires (Federal Energy Regulatory Commission, 2016b). While pipeline construction jobs will come and go more quickly than gas field jobs, it is reasonable to assume, prepare for, and expect higher costs for additional law enforcement needs.”

The Project will also have detrimental impacts in the areas of economic development, tourism, recreation, retirement income, and jobs.

Clean, high-quality environments are important to tourism and wildlife-related recreational activities and businesses in the communities that will be impacted by PennEast construction, operation and maintenance. In addition, several counties and regions include the importance of a clean environment and scenic and recreational amenities in their economic development plans – as a result PennEast will be an adverse impact to the businesses and recreational enjoyment present today as well as adversely impact and depress economic and recreational uses in the future. The adverse impacts of a pipeline in a region that depends on tourism and outdoor recreation would not be in the public interest. In the Pocono Mountains, partially located in Carbon County, a study reported 25 million person-trips, totaling in about \$1.3 billion in spending.⁷

Because of community concern about the pipeline project, it is important to consider what impact this would have on retirement income. Key-Log Economics⁸ found that even a 10% growth rate reduction would mean a loss of \$55.6 million in investment income and age-related transfer payments.

This community concern also applies to people starting a new business or moving an existing business to the area. Jobs will be adversely affected by the pipeline project. Using the same 10% example as in the previous retirement income scenario, that 10% reduction in the rate of growth would mean 791 fewer jobs and \$16.3 million less in personal income.⁹

The Key-Log economic report describes how the economic impacts are not in the public interest, stating, “A loss of scenic and recreational amenities, the perception and the reality of physical danger, and environmental and property damage resulting from the PE could discourage people from visiting, relocating to, or staying in the region. Workers, businesses, and retirees who might otherwise choose to locate along the PE’s proposed route will instead pick locations that have retained their character, their productive and healthy landscapes, and their promise for a higher quality of life.”

The community service costs for public and private water are discussed under “water supply and conservation” below.

Available estimates of the Project’s economic benefits are flawed, biased, and imbalanced. The economic benefits asserted by PennEast and FERC are indefensible and unsupported, and the economic harms are entirely overlooked.

⁷ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁸ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

In addition to the fact that the estimates of the adverse impacts or economic costs to the public provided here are conservatively calculated, it is also important for the Corps to consider, as part of its cost-benefit analysis required for a public interest review, that the estimated potential benefits of the project provided by PennEast and the FERC FEIS are inherently biased and imbalanced.

The economic analysis provided in FERC's materials should not be relied on by the Corps in order to carry out the objective cost-benefit analysis required for a public interest review as FERC policy relies on applicants to provide information about benefits and costs, incentivizing the applicant "to be generous in counting benefits and parsimonious in counting the costs of its proposal." This is reflected in the EIS, where "FERC has made no effort itself to ensure a full accounting of economic costs to landowners or the broader community despite the wealth of comments placed on the docket that could support such an assessment."¹⁰

In addition, Key Log Economics' analysis determined the estimates provided by PennEast to be based on flawed research and assumptions, and to avoid the inclusion of costs or adverse impacts to the economy necessary for a balanced review.

"PE LLC has published estimates of economic benefits in the form of employment and income stemming from the construction and operation of the PE (PennEast Pipeline Company, LLC, 2015b). These studies suffer from errors in the choice and application of methods and in assumptions made regarding the long-run economic stimulus represented by the PE. Most significantly, the studies make no mention of likely economic costs, and their projections of long-term benefits extend far beyond the time period (of a year or so) within which economic impact analysis is either useful or appropriate."¹¹

FERC accepts this deficient and imbalanced analysis:

While the DEIS considers all presumed benefits advanced by PennEast, it ignores the economic damage inflicted to public health, property values, jobs, businesses and from the loss of ecosystem services.¹²

As determined in a careful analysis by Key-Log Economics,¹³ in short, the FERC EIS;

- Overestimates short term impacts due to inherent issues with the models used and the choice of the size of the study region.

¹⁰The policy's stated objective "is for the applicant to develop whatever record is necessary, and for the Commission to impose whatever conditions are necessary, for the Commission to be able to find that the benefits to the public from the project outweigh the adverse impact on the relevant interests" J. J. Hoecker, et al. *Certification of New Interstate Natural Gas Pipeline Facilities*, 88 FERC, para 61, 227. 1999.

¹¹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017 and Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹² Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹³ In addition to the Key-Log Economics analyses attached see *Review of PennEast Pipeline Project Economic Impact Analysis*, Jannette Barth, Pepacton Institute, April 4, 2016 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 they ignored.

- 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.”

In addition to providing exaggerated and false claims of benefit, the EIS ignores the economic harms inflicted by construction and operation of PennEast. Among its many deficiencies, the EIS analysis does not consider the adverse impacts to recreation and ecotourism so vitally important to the impacted region; the analysis fails to consider the implications for future investment in open space preservation and the adverse impacts thereof as communities realize that preserved lands are not protected from pipeline construction; the economic damage to agricultural crop production is overlooked as are harms to other businesses;¹⁴ the impact on market values and marketability of properties are misrepresented; the costs to the community to respond to emergencies, to the increased stormwater runoff, pollution inputs, and other adverse impacts that could result from this project and be foisted upon the shoulders of local towns and residents are given short shrift if they are mentioned at all; and the DEIS does not consider the health impacts to the residents who will be impacted by construction and operation of this project.

By way of more specific examples, the EIS analysis ignores the many and varied economic harms that would result from the construction, operation and maintenance of the PennEast pipeline. Attached is a detailed analysis of the many deficiencies provided by Key-Log Economics. Among the deficiencies highlighted in that report, and in other resources provided as part of this comment, the EIS fails to consider:

- **Public health costs:** “Based upon experience with other pipelines it can be anticipated that, for example, just in Carbon County where 560 people live within 2 miles of the proposed compressor station (US Census Bureau, 2015), there will be on the order of “504 people experiencing odor events, 398 people experiencing respiratory impacts, 325 people experiencing sinus problems, and 218 people experiencing sleep disturbances and/or severe headaches.”¹⁵
- **Reduced property values:** Of the comments reviewed by the Delaware Riverkeeper Network in partnership with Key-Log Economics (which includes the majority filed to date) “35% mention concerns about the effect on property value. Of this group, 99.6% believe the effect on property value will be negative.”¹⁶

“68% of Realtors believe the presence of a pipeline would decrease residential property value.”¹⁷

¹⁴ We have learned from farmers, and it has been documented on the record, that crop production has gone down by as much as 30% when a pipeline cuts through farm crop lands. DEIS figures do not consider harms to other local businesses, such as the 7th generation nursery business reported in the press that said their ability to continue to operate would be harmed if PennEast passes through their property as is under consideration.

¹⁵ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹⁶ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹⁷ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

“Of these Realtors, 56% believe the decrease in value would be between 5% and 10%. (Kielisch does not report the magnitude of the price decrease expected by the other 44%.)”¹⁸

“70% of Realtors believe a pipeline would cause an increase in the time it takes to sell a home. This is not merely an inconvenience, but a true economic and financial cost to the seller.”¹⁹

“In a survey of buyers presented with the prospect of buying an otherwise desirable home with a 36 inch diameter gas transmission line on the property, 62.2% stated that they would no longer buy the property at any price. Of the remainder, half (18.9%) stated that they would still buy the property, but only at a price 21%, on average, below what would otherwise be the market price. The other 18.9% said the pipeline would have no effect on the price they would offer.

Not incidentally, the survey participants were informed that the risks of “accidental explosions, terrorist threats, tampering, and the inability to detect leaks” were “extremely rare” (Kielisch, 2015, p. 7). Considering only those buyers who are still willing to purchase the property, the expected loss in market value would be 10.5%. This loss in value provides the midlevel impact in our estimates. A much greater loss (and higher estimates) would occur if one were to consider the fact that 62% of buyers are effectively reducing their offer prices by 100%, making the average reduction in offer price for all potential buyers 66.2%.”²⁰

“Based on five “impact studies” in which appraisals of smaller properties with and without pipelines were compared, “the average impact [on value] due to the presence of a gas transmission pipeline is 11.6%”(Kielisch, 2015, p. 11). The average rises to a range of 12% to 14% if larger parcels are considered, possibly due to the loss of subdivision capability.”²¹

Research has also “found that properties within the “emergency plan response zone” of sour gas wells and natural gas pipelines faced an average loss in value of 3.8%, other things being equal.”²²

Proximity to compressor stations has inflicted health harms, quality of life impacts and property damage, as well as lost property value, and has had impacts so severe that in at least one documented case it forced a family to abandon their \$250,000 investment in their home rather than suffer the health, safety and other harms they were experiencing.”²³

“In Hancock, another New York town with a much smaller (15,000 hp) compressor station, three homeowners have had their property assessments reduced, two by 25% and one by 50%, due to the

¹⁸ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

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²¹ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²² Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis..

²³ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

impact of truck traffic, noise, odors, and poor air quality associated with the compressor station (“Proximity of Compressor Station Devalues Homes by as Much as 50%” 2015).”²⁴

The experts at Key-Log Economics estimate that “properties within one half mile of the Kidder Township compressor station would lose 25% of their value if the station is built.” ... “[T]he Kidder compressor station would reduce the value of 43 properties by a total of \$1.9 million dollars.”²⁵

- **Damage caused by air pollution to agriculture and infrastructure:** “One study found that shale gas air pollution damages in Pennsylvania already amount to between \$7.2 and \$30 million, with compressor stations responsible for 60-75% of this total (Walker & Koplinka-Loehr, 2014). Using the low estimate of 60%, that is between \$4.32 and \$18 million in damages associated with compressor stations.”²⁶
- **Loss of Ecosystem Services** The ecosystem services, “benefits that flow from nature to people”, that will be lost, for example, “tangible physical quantities, such as food, timber, and clean drinking water, life support functions like assimilating waste that ends up in air and water or on the land, as well as aesthetics, recreational opportunities, and other benefits of a more cultural, social, or spiritual nature.”²⁷

In addition there is no recognition in the EIS for the decrease in property values associated with increased ecological impacts to the environment from PennEast. For example, 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.²⁸ 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.

The impacts to the market value and marketability of homes that will result from the removal of mature vegetation to make way for the pipeline (both permanent ROW and temporary construction areas that will not be fully restored) must also be fully and fairly considered. Healthy, mature, vegetated buffers along waterways are known to enhance property market values. For example, "Pennypack Park in Philadelphia is credited with a 38% increase in the value of a nearby property."

²⁴ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

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²⁸ *Review of INGAA Foundation Report, “Pipeline Impact to Property Value and Property Insurability”,* Key-Log Economics, March 11, 2015.

In addition, "[t]wo regional economic surveys documented that conserving forests on residential and commercial sites enhanced property values by an average of 6 to 15% and increased the rate at which units were sold or leased."²⁹ And in a survey conducted by the National Association of Home Builders, 43% of home buyers paid a premium of up to \$3,000, 30% paid premiums of \$3,000 to \$5,000, and 27% paid premiums of over \$5,000 for homes with trees.³⁰ To the extent the PennEast project will be cutting down forests and buffers and replacing them with low growing grasslands, and to the extent that the forest fragmentation caused by pipeline construction and maintenance will result in additional forest degradation as far as 300 feet back on either side of the ROW, the impacts to home market values and marketability must be considered.

In addition, the economic analysis included in the EIS fails to consider the potentially superior economic benefits and values of a clean energy alternative for fulfilling energy needs in Pennsylvania, New Jersey and the unnamed surrounding states PennEast asserts it is seeking to serve. For example, investments in clean energy strategies are known to result in far superior job creation for every million dollars invested as compared to the oil and gas industry, including pipeline projects.

Research has demonstrated that investment in clean energy generates a greater number of long term jobs that bring greater capacity for worker earning and advancement. Every million dollars invested in clean energy, including wind, solar, eco-friendly water, and efficiency, generates 6 to 8 times the number of direct jobs, and 3 times the number of direct, indirect and induced jobs collectively as compared to oil, gas or coal.³¹

FERC wrongly concentrates its determinations regarding pipeline certificate approvals largely on the contracts and the alleged reliability accessibility proposed by the applicant without considering the economic costs articulated above –given that improper review, FERC’s failure to fully consider economic harms renders a decision flowing therefrom as arbitrary and capricious.

Overall, Key Log Economic’s analysis found the PennEast DEIS “to be greatly lacking both in the scope of economically relevant environmental effects considered and in the quality of the analysis of those few effects considered.”³²

While the Corps regulations state that “it will generally be assumed that appropriate economic evaluations have been completed, the proposal is economically viable, and is needed in the market place” when reviewing the permit application of a private enterprise, “**in appropriate cases [the district engineer], may make an independent review of the need for the project from the perspective of the overall public interest,**” recognizing that the economic impacts of many projects are “important to the local community [...] affecting such factors as **employment, tax revenues, community cohesion, community services, and property values.**” 33 C.F.R. § 320.4(q). (emphasis added).

²⁹ Center for Watershed Protection, *Better Site Design: A Handbook for Changing Development Rules in Your Community*, Citing two studies by Morales and Weyerhauser, August, 1998.

³⁰ Cheryl Kollin, *Designing with Nature and Showing the Benefits*, Land Development, National Association of Home Builders, Winter, 1997.

³¹ See *The Economic Benefits of Investing in Clean Energy*, by the Center for American Progress & PERI University of Massachusetts Amherst.

³² Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

Given that independent economic analysis found that the adverse economic impacts of the Project could outweigh the company's claimed benefits by over \$50 billion³³; the economic evaluations and estimates provided by PennEast and the FEIS are shown to be biased, flawed, and unbalanced; and the extensive qualitative analysis provided here and in the abundance of public comments demonstrating adverse impacts to **employment, tax revenues, community services, and property values**, the proposed PennEast Pipeline project is clearly an appropriate case for the district engineer to undertake an independent review of the need for the project for the protection of the public interest.

In fact, in this case, there is significant evidence on the record challenging the claim of need for the project. (See comments below)

Additionally, the Corps is required to "independent[ly] verif[y]" the applicant's data and conclusions. *Utahns for Better Transp.*, 305 F.3d at 1186; *Sierra Club v. Van Antwerp*, 362 F. App'x 100, 106 (11th Cir. 2010) ("[T]he Corps may rely on information submitted by the applicant but must *independently verify such information.*" (emphasis added)). The Corps' duty of independent verification is especially strong when the Corps "receives particularized objections to material upon which it importantly relied in its review." *Van Abbema v. Fornell*, 807 F.2d 633, 640 (7th Cir. 1986) *49 (considering a challenge to a Corps permit under NEPA). If the Corps bases its permitting conclusions on insufficient, unverified, or false information, the Corps' conclusions are "arbitrary and capricious." *Id.* at 639 (holding the Corps may not base its conclusions on "entirely false premises or information"); *Utahns for Better Transp.*, 305 F.3d at 1187 (holding the Corps may not rely on insufficient information or unverified cost estimates).

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, and that those costs are being advanced for a project for which there is no genuine need. The Corps must deny the Projects 404 permits as the project is clearly contrary to the public interest.

a. The Project would offer only adverse impacts to the Conservation of a variety of resources important to the public good.

The proposed project offers no net benefits to conservation in the area of the project and greatly disrupts the conservation of a variety of resources, such as established forest ecosystems and habitats, wetlands, aquatic ecosystems, vulnerable or high value habitats and species, including many swaths of lands thought to be permanently preserved through both public and private means in the deliberate and concerted effort to conserve the resources of the region.

The adverse impacts to the conservation of these resources that would result from the Project are serious and often permanent. Ecological destruction and/or irreparable damage results from tree clearing, land clearing, soil compaction, crossing of wetlands and waterbodies, and from construction and maintenance activities. These adverse impacts have cascading detrimental effects on the environment and public good.

According to PennEast and the FEIS, construction of the project will 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). According to the FEIS the project will at least cut through 255

³³*Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

waterbodies (including 159 perennial, 45 intermittent, 40 ephemeral, 11 open water), 633 acres of forest, 91 wetlands, impact “several” vernal pools, and infringe upon and damage habitat for threatened and endangered species of bat, sturgeon, snake, turtle, mussels and more. However, as demonstrated in this comment, these impacts are sorely understated, incomplete, and misrepresent the footprint and damage that would be inflicted if the PennEast pipeline were built.

By way of illustrating resources of high public value whose conservation will be adversely affected, Key Log Economics’ technical report³⁴ found that:

The route would cross important waterways such as the Delaware—the longest undammed river east of the Mississippi, Lehigh, and Susquehanna rivers, pristine streams, the Appalachian Trail, wetlands, forests, and established public and private conservation lands. The D&R Greenway Land Trust estimates that the proposed route in New Jersey “will touch lands that have been preserved over time with public funding totaling over \$37 million” (D&R Greenway Land Trust, 2015). In addition, the project would potentially harm the habitat of several federally listed endangered species (Federal Energy Regulatory Commission, 2016b).

The variety of harms that would result from the proposed cuts through preserved open space must be fully and fairly considered—whether the open space is preserved by purchase or conservation easement. The protection of open space is necessary to preserve the remarkable resources of the Lower Delaware River corridor. Natural areas are critical for water quality, have more stable soils, provide habitat for plants and animal species, prevent invasive species spread, and help maintain the value of historical sites. Loss of open space adversely impacts water quality, aquatic habitat, and the intact ecological health that is otherwise benefitted by the preserved open space. Pipeline passage through open space significantly reduces scenic character and recreational opportunities thereby adversely impacting jobs and economic benefits associated with recreation, vacation and other related industries. Realtors in the region have asserted at public meetings that the presence, or even the potential presence, of an interstate transmission pipeline of the size proposed by PennEast adversely impacts the marketability of nearby homes. The Corps must fully and fairly consider these harms and require quantifiable and documented data to support any assertions/findings.

There are impacts from the fragmentation of the forest by PennEast as well as by other cuts in the same region by other pipelines and/or linear projects. Over the life of the pipeline maintenance of the ROW will result in new impacts as well as perpetuate ongoing harms. Operation and maintenance of the pipeline will include the prevention of tree growth and maintenance of low growing vegetation only – this will be accomplished by periodic mowing and the use of herbicides. The mowing will disturb the vegetation and habitats that were allowed to encroach on the ROW. The herbicides will include impacts for non-target species, and could have implications for soil microbes and nearby wetland, vernal pool and stream ecosystems. Maintenance activities will involve periodic trimming, pruning, cutting back and removal of trees and woody vegetation growing along the perimeter of the ROW. “The inspection and maintenance of the ROW means the repetitive access and traverse of the ROW by inspection vehicles and maintenance equipment. This increases overall soil compaction and because there are no stabilized access-ways, it also creates repeated opportunity for soil erosion.”³⁵

³⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017. \

³⁵ See the FERC Draft EIS.

Forest ecological systems would experience enduring but also fresh impacts throughout the life and presence of the pipeline. The initial impact will include the removal of the forest and understory vegetation, coupled with the changes in light, moisture, wind, etc. impacting 300 feet into the forest on either side of the ROW footprint. There will be enduring compacted soils, and dramatically altered vegetative composition along the ROW and along that forest edge that will increase volume and alter the timing of stormwater runoff, reduce groundwater recharge, and change/take habitats for species of all kinds. There will then be the influx of invasive plant and animal species that will have cascading impacts on the forest ecosystem, which will spread along the ROW and back into the core of the adjacent forest.

The loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain) and exacerbating the sedimentation impacts of construction. As noted by experts, the deforestation caused by the PennEast pipeline will result in increased stormwater runoff; this will result in increasing flows in the stream with stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Increased erosion means loss of habitat; channel migration that can have serious implications for riparian lands and vegetation over long stretches and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel; and increased instream sedimentation which is considered a pollutant both legally and scientifically. Additionally, 44 dry stream crossings will impact Conservation Areas and Public Lands, and 14 dry stream crossings will impact areas held in private conservation easement.³⁶

The PennEast Pipeline will be cutting down hundreds of acres of forest. “Fifty-seven percent of the pipeline right-of-way area, or approximately 446 acres, is currently forested and will permanently be altered from forest during pipeline operation. An additional 139 acres of forest will be removed for construction.”³⁷ In forested areas the habitat loss will not just be in the immediate footprint of the pipeline, but it will impact an additional 300 feet of forest on either side of the ROW.³⁸ This means that for every mile of pipeline cut through a forest an additional 72 acres of forest will be harmed. In addition, the pipeline will irreparably alter a tremendous number of wetlands (how many is unclear, as this comment and our attached reports document the incredibly inaccurate, misleading and deficient job PennEast and FERC, through the EIS, did on assessing wetland impacts), including their changing functions and values. The result will be to reduce available bird habitat, nesting grounds and feeding grounds, to impact bat species as well as a number of amphibians and mammal species.

PennEast’s minimal mitigation measures will not come close to negating the adverse impacts to conservation. PennEast will only be required to “ensure that the soils are stable and is under no regulatory obligation to restore soil to pre-construction conditions.” “[T]hese changes in the properties of the soils along the pipeline and within the pipeline ROW will contribute to the predicted increases in the volume and rate of runoff. Along the entire length of the 115.1-mile long pipeline, these changes in the post-construction hydrology of the affected lands (especially the steeper sloped areas) will invariably alter runoff

³⁶ *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.

³⁷ *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.

³⁸ *Pennsylvania Energy Impacts Assessment*, Nels Johnson, the Nature Conservancy, November 15, 2010; 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.

properties. The end result will be impacts to the streams, wetlands and riparian areas traversed by the pipeline and pipeline ROW and increased opportunity for erosion along the steeper segments of the pipeline and pipeline ROW. Because PennEast is not required to implement any of the conventionally utilized best management measures to collect, treat and control ROW runoff, there is no way to mitigate for these changes other than to revegetate. However, once again the cover type will be different pre to post-construction (e.g. trees to grass) and PennEast is only obligated to achieve 80% post-revegetation coverage with the vegetation type it is using.”

This is only an overview of the many and cumulative adverse impacts that will affect the conservation of resources in the area. The attached expert reports provide further details and specificity of these impacts—although it is impossible to quantify them all given the lack of survey access along the proposed route and the deficient information provided by PennEast, FERC, and the Army Corps on the record. However, based on the scale of the project, the magnitude of severe, unavoidable, unmitigatable, and irreversible adverse impacts to greenfield land, forests, wetlands, waterways and other resources of great importance to the public interest—it is clear that any benefit from the minimal mitigation, compensation, and restoration plans offered by PennEast will be outweighed by the adverse impacts to conservation of vital resources.

b. The Project will adversely impact the Aesthetics of the region.

There are no conceivable aesthetic benefits that could result from the proposed Project. However, many detrimental impacts to the regional aesthetics have been identified and in some cases quantified or mapped.

The Project would adversely affect the public’s viewshed along the pipeline corridor:

Beyond the areas where the proposed pipeline would alter land use and present the risk of physical danger, the pipeline would change the aesthetic qualities of the region. Residents and visitors will see the pipeline corridor as a break in a once completely forested hillside, and the lower aesthetic quality would translate into further loss of value for properties from which the corridor is visible.³⁹

In measuring its ecosystem value, aesthetic value is defined as “the role that beautiful, healthy natural areas play in attracting people to live, work, and recreate in a region.” The monetary effect of lost aesthetic value, an ecosystem service enjoyed by the public, along the pipeline corridor can be quantified. Below are excerpts from the attached Key Log report demonstrating the value of aesthetic losses due to construction and operation of the pipeline.:

Ecosystem Service	Study Region			
	Baseline (low) (2015\$)	Loss (low) (2015\$)	Baseline (high) (2015\$)	Loss (high) (2015\$)
Aesthetic Value	4,074,427	(4,074,427)	16,294,264	(16,294,264)

³⁹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

Table 1. Ecosystem Service Value Lost to the Construction Corridor, New Temporary Roads, Pipeyards, and Temporary Aboveground Infrastructure, Relative to Baseline, by Ecosystem Service.⁴⁰

Ecosystem Service	Study Region			
	Baseline (low) (2015\$)	Loss (low) (2015\$)	Baseline (high) (2015\$)	Loss (high) (2015\$)
Aesthetic Value	1,770,919	(1,707,351)	7,092,570	(7,013,190)

Table 2. Ecosystem Service Value Lost Each Year Post Construction in Right-Of-Way, Relative to Baseline, by Ecosystem Service.⁴¹

Ecosystem Service	Study Region			
	Baseline (low) (2015\$)	Loss (low) (2015\$)	Baseline (high) (2015\$)	Loss (high) (2015\$)
Aesthetic Value	150,016	(150,016)	603,428	(603,428)

Table 3. Ecosystem Service Value Lost Each Year Post Construction in Permanent Infrastructure, Relative to Baseline, by Ecosystem Service⁴²

The visual effects felt by the adverse aesthetic impact of the pipeline corridor have far-reaching effects on the surrounding region. For the purpose of this study, the economic loss from adverse aesthetic impacts was calculated only within the footprint of the pipeline corridor. However, the visual effects felt by the surrounding community are also considered:

Utility corridors from which power lines are visible decrease property values (by 6.3% in one study) (Bolton & Sick, 1999). This suggests that a pipeline corridor reduces property value either by impairing a good view or, like power lines, by simply being unattractive. It is reasonable to conclude that the proposed PE would have effects on property value due to the visual effects⁴³

The *Visibility of the Proposed PennEast Pipeline* map below illustrates the places where the pipeline would be visible in the study region that might suffer a portion of lost aesthetic value. This analysis shows that:

- “there are places in the study region where 30 km, or 18.6 miles, of the pipeline corridor could be visible”⁴⁴
- “it would be possible to see at least one point (representing 100m) along the ROW from 36% of the six-county study region. For this 36% of the region, an average of 1.8 km (1.1 miles) of the PE

⁴⁰ Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

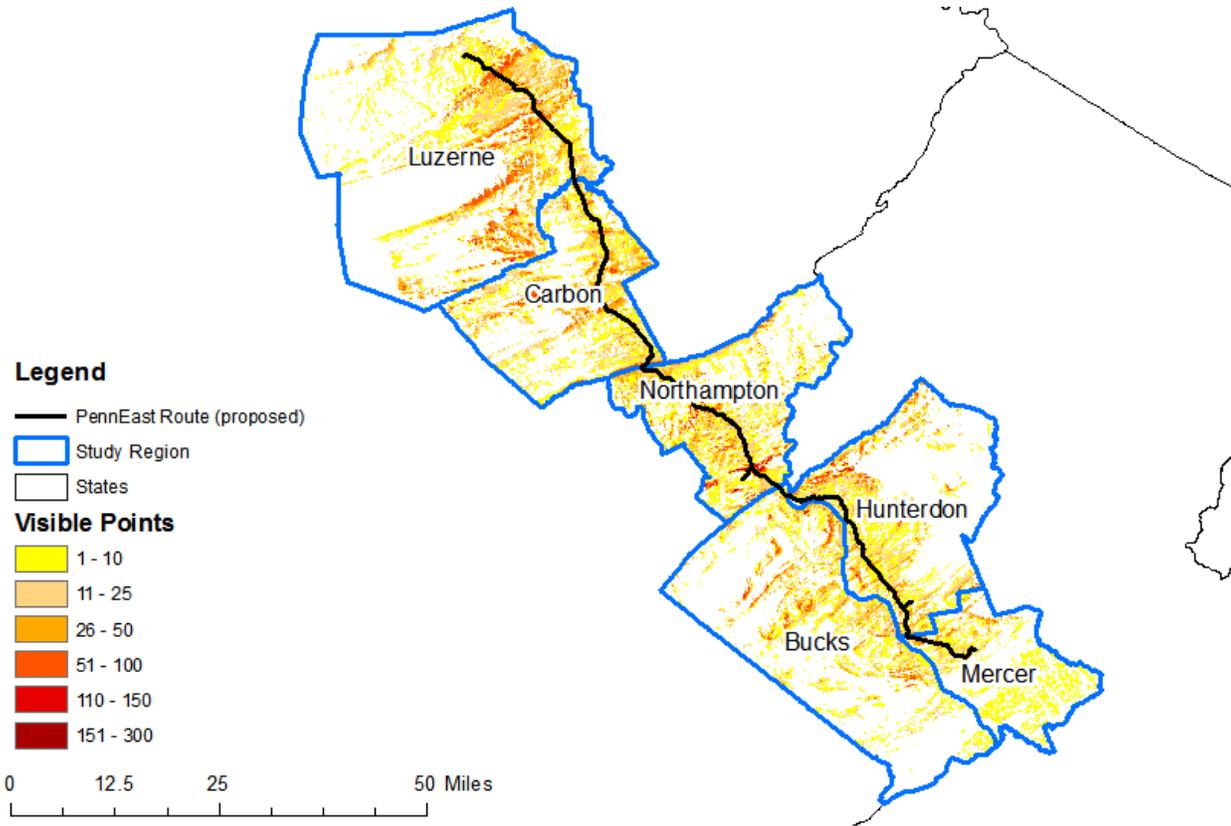
⁴¹ Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴² Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴³ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

ROW would be visible. For 20% of the study region, seeing 10 or more points, or 1 km (0.62 miles) of the ROW is possible.”⁴⁵



Visibility of the Proposed PennEast Pipeline⁴⁶

The color of each point on the map indicates the number of waypoints, spaced 100m apart, along the PE route and within 25 miles that could be seen from each point. Note that the analysis is based on elevation only and does not take into account the extent to which buildings or trees may mask views of the pipeline corridor.

Sources: PE route obtained from the Delaware Riverkeeper Network; Counties from USGS (U.S. Department of Interior & U.S. Geological Survey, 2015).

Diminished aesthetic value has clear and cascading region-wide effects on the public interest and human wellbeing:

Beyond the loss of ecosystem services stemming from the conversion of land in the ROW, the loss of property value resulting from the chance of biophysical impacts (leaks and explosions), or the certainty of impacts on aesthetics, the proposed PE would also diminish physical ecosystem services, scenic amenity, and passive use value that are realized or enjoyed beyond the evacuation zone and out of sight of the pipeline corridor. The people affected include residents, businesses, and landowners throughout the study region, as well as past, current, and future visitors to the region. The impacts on human well-being would be reflected in economic decisions such as whether to stay in or migrate to the study region,

⁴⁵ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴⁶ Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

whether to choose the region as a place to do business, and whether to spend scarce vacation time and dollars near the PE instead of in some other place.⁴⁷

Economic impacts of the cascading detriments to the public interest from the loss of aesthetic impacts of the Project are predicted to include:

- Economic activity that depends on the region’s scenic, recreational, and quality-of-life:
 - Annual loss of recreation tourism expenditures of \$448.0 million that would otherwise support 4,090 jobs and generate \$38.8 million in state and local tax receipts
 - Annual loss of personal income of \$55.6 million due to slower growth in the number of retirees
 - Annual loss of personal income of \$16.3 million due to slower growth in sole proprietorships⁴⁸

Additional examples of adverse aesthetic impacts that would result from the proposed Project include:

- 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. Property values are demonstrably harmed by the presence of a pipeline.⁴⁹ 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.
- The crossing of the Appalachian Trail by the proposed route is in a section that is only feet away from a scenic overlook and cliff outcropping – it is hard to imagine a more damaging location for harming this important recreational and cultural resource. This area is also prime rattlesnake habitat.

The adverse impacts to the aesthetics of the region created by the Project are not caused by the appearance of the pipeline itself, “but rather the gap or break in otherwise intact forests, farm fields, or other more natural features through which the ROW passes.”⁵⁰ As a result, the adverse impacts to aesthetics are impossible to mitigate as long as the pipeline ROW is maintained, and likely long after. Claims that aesthetic impacts can be mitigated by measures such as allowing temporary work spaces to revert to pre-construction conditions are misleading as this would do nothing to actually do anything to mitigate the visual impact of the unavoidable ROW.

The adverse and unmitigatable impacts on aesthetics that would result from the proposed Project would clearly be a detriment to the public interest and are reason enough for the Corps to deny the Project 404 permits.

c. The proposed Project would adversely affect a significant number of General Environmental Concerns that would have a detrimental impact on the public interest.

The proposed Project would have extremely adverse impacts on many general environmental concerns that are crucial to the public interest. There are no beneficial impacts to general environmental concerns that

⁴⁷ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴⁸ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017..

⁴⁹ *Review of INGAA Foundation Report, “Pipeline Impact to Property Value and Property Insurability”*, Key-Log Economics, March 11, 2015

⁵⁰ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

would result from the proposed project. While there are too many adverse impacts to the environment generally to list them all here, the following are a sample of the many detriments the project would have on the environment. Many more examples can be found in the export reports attached to this comment, although not all of the adverse impacts from the project can be identified because of the substantial data gaps and deficiencies in the Project materials.

Project construction and maintenance activities, including clearing, grading, trench excavation, backfilling, and movement of construction equipment along the ROW and access roads would lead to a large number of adverse impacts on the environment including soil compaction, removal of vegetation, increased stormwater runoff and decreased groundwater recharge. These can cause an increased soil erosion in and into waterways and wetlands, reduced stream baseflow, reduced wetland baseflow, lost habitat, increased invasive species, polluted runoff into waterways and wetlands, disruptive noise pollution, air pollution, nuisance recreational users of the pipeline such as ATVs, among many other adverse impacts to the environment. All of these impacts are directly harmful in the locations where construction, operation and maintenance occur, but also create much more significant adverse harms when considered cumulatively. The Corps is required to consider cumulative impacts in its 404 evaluation.

All of these adverse environmental effects would have a directly negative impact on the public interest through the loss of vital resources and ecosystem services we rely on, as well as the cascading effects that would result.

- 75% of the stream crossings will be undertaken using open cut methods. Many of the streams that will be open cut have the highest quality designations available in Pennsylvania and New Jersey.⁵¹⁵²
- Compacted soils in and around the pipeline right of way, accompanied by low growing plants (to the degree they are able to grow in the compacted soils or under PennEast's ROW management protocols) will result in increased runoff to nearby streams, thereby increasing flows that impact downstream communities in terms of flooding, erosion, habitat and water quality impacts.
- Compacted soils and lost or altered vegetation will decrease groundwater recharge. In addition the presence of the pipeline will alter the flow path of some groundwater systems. The result will be to reduce and/or diverting water from streams and wetlands diminishing and denying needed base flow. Reduced baseflow will adversely impact water quality, habitat, and recreation. The cumulative impact of these harms across the pipeline and multiple pipelines for affected waterways and wetlands could be significant depending on the harm being evaluated. In addition to adversely impacting stream and/or wetland base flows, drinking water supplies/aquifers could be adversely impacted, losing the historic water recharge they receive.

Additionally, blasting activities used for the construction of the Project leave behind "nitrogen which can run off with stormflow and enter streams as nitrate or ammonia."⁵³

⁵¹

⁵² *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.

PennEast and FERC suggest that compliance with standard regulatory requirements and/or mitigation measures will avoid anticipated harms. But we know from experience this is not the case, and so the Corps needs to more intentionally and carefully consider proposed plans. For example, PennEast and FERC state that completed Erosion & Sediment (“E & S”) Control Plans by agencies will adequately avoid harms but this is a false conclusion as can be seen on other pipeline projects where severe sediment pollution harmed local waterbodies, many of which had special protection designations⁵⁴. Most agencies require quick establishment of groundcover to stabilize soils which takes the place of establishing more desired and diverse native habitats, biodiversity and soil health is lost. Once soil chemistry, soil porosity, and soil layering (horizons) that took eons to form are destroyed by the construction process, erosion control measures usually require lime and fertilizer to be applied so that seed mixes grow rapidly. The addition of lime and fertilizer are like poison to what were once forest soils of low pH and low nutrients. This essentially ruins the chance that the soil will ever revert to a native plant community again. Alien invasive weeds of all kinds thrive on the nutrient-enriched, topsy-turvy soil layers in the aftermath of construction. Native herbaceous plants and shrubs almost never outcompete weeds in these altered, nutrient-enriched, high pH soils. Just like on abandoned farmland, these construction sites act as “post-agricultural soils,” and just like our abundant forests on post-agricultural soils, the herbaceous and shrub layers will be dominated by alien weeds virtually forever, especially with over-abundant deer in the equation.⁵⁵

By way of further example, FERC and PennEast presume “that there is no difference between the hydrologic response of a forested woodland and the compacted, post-construction pipeline right-of-way.” As a result, there is no consideration of construction practices to avoid or mitigate the harms inflicted on these natural resources and thereby prevent the ecological harm that will result in the form of lost habitat, increased stormwater runoff, reduced groundwater infiltration and recharge, inability of vegetation to regrow etc. The mitigation measures proposed by the PennEast Pipeline will not negate these serious adverse effects to environment. As explained by Meliora Design”

“Compaction in construction work spaces will not be restored by simply regrading to pre-existing contours, retilling at the surface, and reseeded the area as currently outlined in the permit application materials. Heavy equipment used in the construction of the pipeline will inherently compact work areas to depths deeper than conventional surface tilling can reach. Compaction creates conditions that inhibit the germination of plants and plant root growth. Existing topsoil will not be segregated and restored, but will be lost in the construction process. The establishment of vegetative cover within the pipeline ROW will be more difficult once surface soils are compacted, and forested woodland will not be restored.”⁵⁶

“When vegetation regrowth is limited, the likelihood of accelerated erosion is increased. When runoff cannot infiltrate, is not slowed at the surface by vegetation, and has direct contact with exposed soils, sediments are much more likely to be transported to downhill streams and wetlands. This is of specific concern on significant portions of the pipeline right-of-way in proximity to stream crossings, where soils to be disturbed by pipeline construction are classified as Severe Erosion Potential (79), Poor Vegetation (122), and Rugged Terrain with slopes greater than 30% (28). These areas are especially prone to erosion and sediment transport to waterbodies.”⁵⁷

Tennessee Gas Pipeline practices. July 14, 2015.

uments Related to Surface Water Impacts of the Proposed PennEast Pipeline Project, September 2016

Cumulative Impacts Must be Considered on a Sub Watershed Scale.

The Corps cumulative impacts assessment should be considered across a broad range of environmental and community harms (e.g. air, water, wetlands, habitat, forest, floodplain, water quality, drinking water supplies, health, safety, climate change, economics). Consideration of the multiple cuts proposed by PennEast on a subwatershed scale is required. FERC has not assessed the cumulative impact of multiple cuts on a subwatershed scale. Therefore the Corps will need to conduct its own independent analysis and subject that analysis to public comment.

Cumulative impacts must be assessed by ecological system type – e.g. forests, wetlands, species habitat.

Cumulative impacts of the pipeline construction, operation, and maintenance on impacted ecological systems must also be considered. The Corps should evaluate the cumulative impacts to key ecological systems, over the lifetime of the pipeline, from construction through operation and including maintenance activities. For example, forest ecological systems would experience enduring but also fresh impacts throughout the life and presence of the pipeline. The initial impact will include the removal of the forest and understory vegetation, coupled with the changes in light, moisture, wind, etc. impacting 300 feet into the forest on either side of the ROW footprint. There will be enduring compacted soils, and dramatically altered vegetative composition along the ROW and along that forest edge that will increase volume and alter the timing of stormwater runoff, reduce groundwater recharge, change/take habitats for species of all kinds. There will be the influx of invasive plant and animal species that will have cascading impacts on the forest ecosystem, which will spread along the ROW and back into the core of the adjacent forest, and may introduce invasives into a region that could spread to other intact forest systems in the area but not directly on the PennEast pipeline route. There are the impacts of the fragmentation of the forest by PennEast but also by other cuts in the same region by other pipelines and/or linear projects. Over the life of the pipeline will be the maintenance of the ROW which will include the prevention of tree growth and maintenance of low growing vegetation only – this will be accomplished by periodic mowing and the use of herbicides. The mowing will disturb the vegetation, habitats and species along and nearby the ROW. The herbicides will include impacts for non-target species, and could have implications for soil microbes and nearby wetland, vernal pool and stream ecosystems. Maintenance activities will involve periodic trimming, pruning, cutting back and removal of trees and woody vegetation growing along the perimeter of the ROW. “The inspection and maintenance of the ROW means the repetitive access and traverse of the ROW by inspection vehicles and maintenance equipment. This increases overall soil compaction and because there are no stabilized access-ways, it also creates repeated opportunity for soil erosion.” PennEast will only be required to “ensure that the soils are stable and is under no regulatory obligation to restore soil to pre-construction conditions.” “[T]hese changes in the properties of the soils along the pipeline and within the pipeline ROW will contribute to the predicted increases in the volume and rate of runoff. Along the entire length of the 115.1-mile long pipeline, these changes in the post-construction hydrology of the affected lands (especially the steeper sloped areas) will invariably alter runoff properties. The end result will be impacts to the streams, wetlands and riparian areas traversed by the pipeline and pipeline ROW and increased opportunity for erosion along the steeper segments of the pipeline and pipeline ROW. Because PennEast is not required to implement any of the conventionally utilized best management measures to collect, treat and control ROW runoff, there is no way to mitigate for these changes other than to revegetate. However, once again

the cover type will be different pre to post-construction (e.g. trees to grass) and PennEast is only obligated to achieve 80% post-revegetation coverage with the vegetation type it is using.”⁵⁸

As documented in the comment from Meliora Design,⁵⁹ the EIS fails to consider cumulative impacts in an ecological system and fails to consider the multiple elements of specific site conditions that impact one another synergistically to determine what will be the impact that results from development of that site, with and/or without mitigation – e.g. pre and post vegetation composition, soils, slope etc. (While they comments were originally directed at the DEIS, they apply equally to the final EIS.) This missing component of the EIS is massive and seriously undermines any of the conclusions reached regarding ecological impacts.:

- “The DEIS and supporting materials provided by PennEast fail to consider the unique, site specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts associated with stream crossings, including open cut crossings. The DEIS fails to comprehensively evaluate each stream crossing with regards to conditions such as water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting. Lacking consideration of the site specific conditions at each crossing, the DEIS fails to require adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing. The proposed stream and wetland crossing locations, methods of construction, and long-term land use conditions appear to be based on the needs and preferences of PennEast and not informed by site specific conditions.”
- “Importantly, the supporting documentation provided by PennEast fails to provide stream and wetland crossing information in a manner that allows FERC and other reviewing agencies to evaluate the site specific conditions at each stream crossing, including information discussed further in this memo. Important site specific information is located in different Resource Report volumes and other documents, and not easily correlated or evaluated. Much of the information discussed in this memo was compiled from multiple volumes, documents, and updates and is not readily reviewed by FERC or other reviewing agencies in a comprehensive manner. The project selection of stream and wetland crossing locations and construction methods cannot be clearly evaluated in the form in which it is presented in the DEIS and supporting documents.”

These cumulative assessments, considering near term and long term impacts, cumulative impacts resulting from the damage done near term and long term to a resource, including the lasting implications even with mitigation measures undertaken and full compliance with the law (let alone acknowledgement of the violations that are documented to take place as a matter of course during pipeline construction, operation and maintenance) need to be evaluated by the Corps and are not included in the FERC EIS. The forest example above is but one kind of resource that experiences these multi-pronged impacts in need of

⁵⁸ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

⁵⁹ *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

cumulative assessment – vernal pools, wetlands, streams, aquatic life, avian life, amphibian life, soil life, and wildlife all need an assessment of the cumulative impacts that will be visited upon them by PennEast if it were to be constructed.

Based upon the lack of information, the misrepresentations regarding cumulative impacts, and the reality of the extent and breadth of the harms which can be determined even from the information provided, the Corps can and must reject the 404 permit.

Consideration of cumulative impacts that will result to ecological resources and recreational and cultural assets resulting from PennEast as well as other existing, proposed or anticipated infrastructure projects is required but does not appear to have been well considered on the record. Each project individually depletes the natural and scenic resources of the region, and the combined impact becomes increasingly severe, unavoidable, unmitigatable, and irreversible.

The Corps evaluation of cumulative impacts must consider reasonably foreseeable shale gas extraction/production as well as its end uses. Pursuant to 33 C.F.R. § 320.4(a)(1), in evaluating the 404 permit for the proposed Project, the Corps must include an “evaluation of the probable impacts, including **cumulative impacts**, of the proposed activity and its intended use on the public interest.” Additionally, the “benefits which reasonably may be expected to accrue from the proposal must be balanced against its **reasonably foreseeable detriments**.” 33 C.F.R. § 320.4(a)(1)(emphasis added). As such, the Corps must consider in its cumulative impact analysis the reasonably foreseeable shale gas extraction activities (including drilling and fracking operations) that will result, as well as impacts from the end uses of the gas including at powerplants and LNG exports (given that the PennEast gas could be directed to export facilities such as Cove Point, a potential outcome identified throughout the FERC docket and the PennEast record).

All direct, cumulative, and foreseeable impacts must be considered. Documentation of these cumulative impacts is included as attachments to this comment, including evidence that:

- The PennEast pipeline will induce the drilling of on or about 3,000 new wells in Pennsylvania (from a combination of wells that have been drilled but are not yet producing and wells not yet drilled) in Northeast Pennsylvania, in Bradford, Susquehanna, Lycoming, and Tioga counties.

The cumulative review of PennEast must include the water, air, forest, habitat, soil, climate change and other impacts of the shale gas extraction that will be induced, supported and/or advanced by construction of the PennEast pipeline. Attached to this comment are multiple reports documenting the harms that will result from the shale gas extraction activities.

Use of standard constructions practices will result in environmental violations and degradation.

PennEast and the EIS assert in multiple ways that the project will be constructed in full compliance with all applicable laws and that in temporary work spaces 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 pointed this out in great detail in our comments to date. The fact that FERC fails to consider the reality of pipeline construction, and that construction is fraught with environmental violations and a failure of mitigation/restored areas to return to ecological health is a significant deficiency.

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. We 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 of these pipelines, it is clear that:

- 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 technical documents, reports and observations compiled as the result of field monitoring which support, inform and expand upon these conclusions. DRN's 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.

Additionally, we attach new information documenting the significant violations and environmental damage inflicted most recently by construction of the Mariner East 2 pipeline. While this is a liquids pipeline, the implications documented in the attached materials are equally applicable to PennEast, perhaps moreso given that PennEast will not be subject to the same breadth of state legal requirements that the Mariner East Project it.

For the reason stated above as well as the extensive adverse impacts that would result from the Project that are included in the attachments to this comment, including the many cascading impacts to the public interest—as well as the evidence demonstrating that these adverse impacts largely cannot be mitigated—the proposed Project would be contrary to the public interest and the Corps should deny its 404 permit.

d. The proposed Project would adversely affect a significant number of wetlands that are of considerable value to the public interest.

The Project includes multiple wetland crossings in the Delaware River and Susquehanna River watersheds that would have both temporary and permanent adverse effects on wetlands and the vital services that they provide for the public.

Sections 320.4(b)(1) and 320.4(b)(3) specifically contemplate a robust review of wetlands in the public interest review process, as the protection of vulnerable wetlands is a distinct priority in the Corps' review. The Corps is required to apply a presumption during the public interest review that “[m]ost wetlands constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest.” *Id.* § 320.4(b)(1). The Corps also is required to evaluate applications with the recognition that individual wetland sites “may be part of a complete and interrelated wetland area.” *Id.* § 320.4(b)(3). Although alterations at individual sites “may constitute a minor change, the cumulative effect of numerous piecemeal changes can result in a major impairment of wetland resources.” *Id.* These requirements give effect to the Clean Water Act's statutory purpose and ensure that “wetlands will [not] be destroyed simply because it is more convenient than not to do so.” *Buttrey*, 690 F.2d at 1180.

The expert reports attached provide a general description of the way in which the permanent conversion of forested wetlands to emergent wetlands constitutes an adverse impact on the functions and values of those wetlands. The attached expert reports address the way in which wetland functions are disrupted, decreased, or lost as a result of a permanent conversion from forested to emergent wetland cover type. The Corps' Public Notice provides details on the acreage of wetlands –that will be permanently converted from forested wetlands to emergent wetlands as a result of the proposed Project.⁶⁰

Additionally, a series of the attached reports detail the way in which the functional conversion of wetlands – specific to the portion of the proposed Project in Pennsylvania – will result in adverse impacts to the

⁶⁰ As noted later, these calculations of impacts have been grossly undercounted.

functions and values of those wetlands. The report breaks down the harms to each of the wetlands and measures the intensity and scope of the ground disturbance. In addition to detailing the adverse impacts as a result of wetland conversion, attached reports also detail the ways in which the mitigation techniques and site location are insufficient to satisfy the requirements of a 404 permit. The reports attached to this comment, irrefutably demonstrate that the permanent conversion of wetlands called for by this project will result in adverse impacts to those wetlands.

The Corps has vastly undercut or excluded consideration of the full acreage of impacts resulting from construction activity for the Project in its Public Notice. The Corps has also failed to properly account for the value, functionality, and acreage that will be impacted as a result of construction activity.

Corp's Public Notice quantifies only the following distinct permanent wetland impacts resulting from the Project:

- “Approximately 0.01 acre (604 square feet) of palustrine emergent wetlands will be filled to accommodate construction and operation of the Kidder Compressor Station in Carbon County (USACE Philadelphia District)”;
- “Total permanent wetland impacts resulting from the Project, in Pennsylvania, include the permanent functional conversion of 5.70 acres of PSS wetlands and 0.80 acres of PSS wetlands to an emergent cover”; and
- “Within the Baltimore District, approximately 0.14 acres of PFO wetlands and 0.38 acres of PSS wetlands will be converted to PEM wetlands within the 30-foot wide maintained ROW.”

This information conflicts with the wetland impacts presented in the FERC FEIS, which states that:

“Construction of the Project would temporarily impact about 36 acres of wetlands (20 acres in Pennsylvania and 16 acres in New Jersey) and permanently impact about 20 acres of wetlands (12 acres in Pennsylvania and 8 acres in New Jersey).”

It is unclear whether the Corps intended to say that the total permanent wetland impacts resulting from the Project, in Pennsylvania, include the permanent functional conversion of “5.70 acres of *PFO* wetlands and 0.80 acres of PSS wetlands to an emergent cover”, instead of listing PSS acreage twice. It is also unclear whether the Corps Notice is asserting that these are the total permanent wetland impacts in Pennsylvania or if they have just neglected to include other wetland categories in the Public Notice. Either way, the acreage of wetland impacts in Pennsylvania reported by the Corps are significantly lower than those reported by FERC, as is also demonstrated by this table from the FEIS:

TABLE 4.4.2-1			
Summary of Wetland Classifications Affected by Construction and Operation of the Project			
Cowardin Classification (PA)/ NJDEP Classification	Length Crossed (feet)	Wetland Area Affected During Construction (acre) <u>a/</u>	Wetland Area Affected During Operation (acre) <u>a/</u>
PennEast Mainline – Pennsylvania <u>b/</u>, <u>c/</u>			
PEM	6,327	2.95	1.80
PFO	10,343	13.97	8.88
PSS	4,452	2.63	1.33
PUB	0	0	0.00
Vernal Pools	151	0.16	0.12

Table 4. Taken from the FERC FEIS.⁶¹

If the Corps undercut and mischaracterized the total wetland impacts in Pennsylvania by such a degree, it should also be expected the reported wetland impacts within the Baltimore District are also under reported.

The Corps’ regulations specifically prohibit the issuance of a permit that involves the alteration of “important” wetlands unless the Corps determines that “the benefits of the proposed alteration outweigh the damage to the wetlands resource.” 33 C.F.R. §320.4(b)(4). The Corps cannot possibly begin to balance the twenty different factors as required in its public interest review without first properly classifying, characterizing, and counting the ground disturbance and impacts that will result from the proposed project, including to the full array and acreage of wetlands that will be harmed.

Additionally, expert analysis and field monitoring have clearly demonstrated the information provided by PennEast and reported by FERC on the Project’s impact to wetlands is full of inconsistencies, regularly undervalues or misrepresents impacts, and is full of information gaps. As such, the Corps should not rely on the information provided by PennEast or FERC to evaluate the project’s impacts to wetlands.

As documented in the comment from Meliora Design,⁶²

“The DEIS and supporting materials provided by PennEast fail to consider the unique, site specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts associated with stream crossings, including open cut crossings. The DEIS fails to comprehensively evaluate each stream crossing with regards to conditions such as water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting. Lacking consideration of the site specific conditions at each crossing, the DEIS fails to require adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing. The proposed stream and wetland crossing locations, methods of construction, and long-term land use conditions appear to be based on the needs and preferences of PennEast and not informed by site specific conditions.”

⁶¹ FERC FEIS.

⁶² *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

“Importantly, the supporting documentation provided by PennEast fails to provide stream and wetland crossing information in a manner that allows FERC and other reviewing agencies to evaluate the site specific conditions at each stream crossing, including information discussed further in this memo. Important site specific information is located in different Resource Report volumes and other documents, and not easily correlated or evaluated. Much of the information discussed in this memo was compiled from multiple volumes, documents, and updates and is not readily reviewed by FERC or other reviewing agencies in a comprehensive manner. The project selection of stream and wetland crossing locations and construction methods cannot be clearly evaluated in the form in which it is presented in the DEIS and supporting documents.”

Spot checks and field-truthing indicate inadequate and incomplete mapping of sensitive wetlands along the proposed ROW. For example:

- Along one 0.5 mile of the proposed route in sensitive State Gamelands, at least 12 vernal pool complexes or groundwater seeps were identified while PennEast tables only indicate 2 vernal pool habitats along the same proposed route and no groundwater seeps.⁶³
- “72% of the proposed pipeline alignment in New Jersey and 23% in Pennsylvania has not yet been field investigated for wetlands and other water resources.”⁶⁴

A report on *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania* by Schmid and Company⁶⁵ found that:

- The size (acreage) of some wetlands along the proposed pipeline were undermapped significantly.
- Most wetlands within and along the proposed pipeline right-of way (ROW) are not visibly flagged in the field making field verification and ground truth difficult.
- Many of the wetlands in the Project area are not appropriately classified pursuant to the Pennsylvania Code and the requirements therein, thus preventing FERC and the public from considering the quality of the wetlands impacted. Indeed, there is no data in the DEIS analyzing wetland quality outside of this classification system, therefore it is critical that these classifications are exactly accurate (which they are not).
- Some wetlands which should be classified as "exceptional value" pursuant to Pennsylvania law were incorrectly identified by the applicant as "other"
- No "existing use" analysis of affected streams has been done, possibly leading to an undercount of the number and extent of Exceptional Value Wetlands.
- An assessment of the functions and values of existing wetlands has not been done, and no evaluation of proposed impacts on the functions and values of wetlands has been done.

⁶³ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network..

⁶⁴ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016; Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

⁶⁵ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016

- Additional wetlands exist within approximately 19.4 miles of right-of-way (24% of the proposed pipeline Study Area) that have not been investigated because access was not (initially) granted. Impacts to those wetlands have not been acknowledged, calculated, or mitigated for.
- [Neither the Corps nor] FERC can develop an appropriate mitigation plan based on the information and analysis in the EIS with regard to wetlands because the EIS “provides no evidence that the functions and values of each wetland proposed to be impacted have been determined or evaluated.”
- Most of the wetlands data is unreliable because it is largely “based on available remote sensing mapping, and not on field-based investigations.”

For a full analysis of the adverse impacts to wetlands that would result from the proposed Project, as well as the resulting harms to the public interest, see the expert reports attached.⁶⁶

PennEast proposes to mitigate the Project’s wetland impacts by “enhance[ing] 17.84 acres of PEM wetlands by the planting of trees and shrubs and protecting 0.49 acre of streams.” The Corps Public Notice states that this approximately 3 to 1 ratio adequately addresses the temporal loss associated with the mitigation until it becomes established. However, it is important to the Corps public interest evaluation of the Project to note that Compensatory Mitigation measures, such as the three offsite wetland mitigation areas within the Upper Central Susquehanna River Sub basin and the Central Delaware River Sub basin proposed by PennEast, do not negate the loss of ecosystem function and resulting impacts to the public interest felt elsewhere.

The FERC suggests that “emergent vegetation regenerates quickly (in wetlands), typically within one to three years and in scrub shrub and forested wetlands, PE would maintain a 10 foot wide corridor centered over the pipeline in an herbaceous state and would selectively cut trees within a 30-foot-wide corridor centered over the pipeline. The remainder of forested and scrub-shrub vegetation would be allowed to return to preconstruction conditions and would not be affected during operation. No permanent fill or loss of wetland area would result from construction and operation of the Project.” But DRN has documented continued and irreversible impacts to wetlands from pipeline crossings that are sustained beyond this short term view, especially in forested wetlands where tree regrowth can take decades to recover.⁶⁷ In light of deer browse and other impacts to changed soils, trees may never establish as they had prior to the ROW

⁶⁶ *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

Table A Attachment to Professional Review & Comment..., Meliora Design, LLC, September 5, 2016

The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network, Schmid and Company, July 2016 Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

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

Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project, Princeton Hydro, September 2016. Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

⁶⁷ Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

impact in these forested wetlands. Invasive plant species often move into these wetlands and impact the wetland ecology long term.⁶⁸

Wetlands provide various ecosystems services such as carbon storage, flood abatement, water quality maintenance, and biodiversity support. Wetland mitigation and other “offset” policies rely on restoration as a form of compensation for the loss of ecosystem function and structure, with the assumption that the entire suite of ecosystem services that have been lost will be replaced.⁶⁹ Research over the past decade indicates that there are many cases where wetland restoration, including compensatory mitigation, leads to the creation of wetlands that are not ecologically equivalent to naturally occurring wetlands, which calls into question the level to which ecosystem services can be replaced. It is unlikely that any mitigation will fully restore each ecosystem service equally.

Tradeoffs occur when one service is changed at the expense of another. For example, studies have shown that optimizing restored wetlands for nutrient cycling and removal comes at the expense of less biodiversity.¹ There are currently no standard requirements for measuring ecosystem functions at impacted wetlands prior to impact or after mitigation or restoration. The performance standards used to evaluate mitigation wetlands are based on vegetation and provide little indication of whether other ecosystem functions are being replaced in any capacity. Therefore, it is unknown which ecosystem services are being provided through wetland mitigation and their level of effectiveness. It is likely that many ecosystem services will be impaired compared to what the natural wetland provided.

As such, the Corps cost-benefit analysis of the “benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments” should not consider the proposed compensatory mitigation measures to have the same net positive impact on wetlands and the public interest as the unavoidable negative impacts that would result to wetlands from the Project. This abundance of evidence makes clear that the effect of the Project on wetlands would ultimately be adverse and detrimental to the public interest and that the 404 permit should be denied.

e. The Project will inflict only adverse impacts to the historical properties of the region and provide no benefits.

There are no conceivable benefits to the historic properties of the region that could result from the proposed Project. While here too there are issues of missing information that need to be address, the information on the record and concerns expressed by relevant agencies already demonstrate there will be adverse impacts from the Project.

The Corps’ Public Notice for the Project states that:

“FERC is the lead federal agency responsible for the Section 106 process. The permit areas are within the Area of Potential Effect for the Overall Project as reviewed by FERC, and the results of the cultural resources investigations will be coordinated with the SHPO and the

⁶⁸ Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

⁶⁹ Jessop, Jordan, et al. “Tradeoffs Among Ecosystem Services in Restored Wetlands” *Biological Conservation*, vol. 191, 2015, pp. 341–348.

Tribes. If any significant resources exist within the permit area, the USACE will work with the FERC, the SHPO and the Tribes to avoid, minimize or mitigate impacts.”

However, the information provided by FERC lacks documentation of PA and NJ State Historic Preservation Offices (SHPOs) regarding proposed avoidance, resource identification, recommendations, updated documentation, avoidance plans, evaluation reports, treatment plans and mitigation for National Register of Historic Places – eligible archaeological sites that cannot be protected from project impacts.

Additionally, the National Park Service (NPS) expressed concern about the proposed PennEast pipeline crossing of the North Branch of the Susquehanna River which includes part of the river-based Captain John Smith Chesapeake National Historic Trail. NPS’ prime concern involves effects to archaeological resources and cultural landscapes that may be of importance to tribes. However, FERC materials have failed to identify of NPS concerns with regards to effects to trails and cultural resources or provide a vibration monitoring plan and modification of blasting plan that include a review of potential effects to cultural resources.

The Corps cannot consider the impacts to historic properties included in the FERC materials to be adequate to base its own public interest review. Many impacted community members have commented on the destruction of historic resources that would result from the Project at the expense of the public’s interest.

f. The proposed Project would significantly adversely affect Fish and Wildlife Values throughout the region and would result in a detrimental impact on the public interest.

The proposed Project would have many significant and adverse effects on Fish and Wildlife Values throughout the region and would result in a detrimental impact on the public interest. The extent of these adverse impacts is not included in the Corps Public Notice.

The Corp’s Public Notice States:

“A preliminary review of this application indicates that the proposed work would not affect listed species or their critical habitat pursuant to Section 7 of the Endangered Species Act as amended. The following Threatened or Endangered Species are known to exist within the portion of the Overall Project being reviewed within the Baltimore District's Area of Operation; Northern Long Eared Bat and Indiana Bat. As a result, to ensure protection of the Indiana and Northern Longeared Bat time of year work restrictions will be implemented. As the evaluation of this application continues, additional information may become available which could modify this preliminary determination.”

As demonstrated in earlier sections of this comment, the Corp’s cannot adequately evaluate the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest, on the 22 factors that it is required to consider as part of its public interest review per 33 C.F.R. § 320.4(a)(1), including “fish and wildlife values” without considering this individual permit as part of the Project as a whole. Additionally, given the rampant deficiencies in surveys used to determine the presence of endangered species and critical habitat, outlined below, the Corps should not accept the applicant’s claim that the Northern Long Eared Bat and Indiana Bat are the only Threatened or Endangered Species are known to exist within the portion of the overall Project being reviewed within the Baltimore District's Area of Operation.

The following examples of false, inaccurate, misleading and/or deficient information regarding Endangered Species and Critical Habitat and other fish and wildlife values from the FERC EIS demonstrate that the presence of protected wildlife is far greater than reported by PennEast or FERC. This deficient and often false information cannot be used as a basis for the Corps to evaluate the true effects of the Project on the public interest. However, the information gathered through independent expert analysis and field-truthing demonstrate that the Project's impacts on fish and wildlife values would be adverse and that no public benefit to fish and wildlife values would result. As such, the Corps must reject the Projects' 404 permit applications.

False, inaccurate, misleading and/or deficient information regarding Endangered Species and Critical Habitat and other fish and wildlife values from the FERC EIS:

- A total of 8 NJ state threatened, endangered, or special concern mussel species are completely left out of the EIS. These species are as follows: triangle floater (threatened), brook floater (endangered), yellow lampmussel (threatened), eastern lampmussel (threatened), green floater (endangered), tidewater mucket (threatened), eastern pondmussel (threatened), and creeper (species of special concern). All eight of these species may potentially occur in various waterbodies crossed by the project, based on the GIS range maps created by the Conserve Wildlife Foundation of New Jersey found at:
<http://conservewildlife.maps.arcgis.com/apps/MapJournal/index.html?appid=093a625e6fa044e191595e57dceee027&webmap=7fc0d5a9cd0f419a8fdd3d254b316752>
- The DEIS notes that surveys resulted in "no suitable habitat" in regards to the red-shouldered hawk, however, the surveys missed two red-shouldered hawk nests and multiple adult and juvenile red-shouldered hawks that were observed in the area of MP 93.5 and MP 93.6 by Dennis and Joann Kager in Kingwood Township, NJ. The nests were adjacent to the ROW where the pipeline would go, and photographs and observational data were submitted to NJDEP.
- The conclusion of "absence" as a result of the Phase 2 presence/absence bog turtle surveys does not carry much weight when it is admitted that the project may affect the species and is likely to adversely affect the species because not all areas have been surveyed. The same can be said for the Indiana bat, northern long-eared bat, dwarf wedgemussel, and northeastern bulrush. FERC's failure to evaluate the areas where there is likely to be an adverse impact to these species renders the DEIS factually deficient.
- The EIS notes that 7 wetlands in PA are considered suitable bog turtle habitat. However, Save Carbon County hired an independent USFWS qualified bog turtle surveyor (Jason Tesauro) who identified 9 properties containing one or more suitable bog turtle wetlands in the Hunters Creek drainage (part of Aquashicola Creek watershed) alone. Tesauro's report was posted on the FERC docket and also filed with the USFWS.
- Bog turtle searches did not encompass the entire area requested by USFWS.
- The habitats that are listed in the DEIS as being surveyed for timber rattlesnakes and copperheads are not complete. DRN documented optimum timber rattlesnake habitat during assessments conducted in SGL 168 from at least MP 52.9 to 51.0 along Blue Mountain near Danielsville, PA. DEIS states that 51.1 to 51.6 was surveyed for timber rattlesnake but this only includes one section of this habitat and does not include all of the optimal habitat areas in that area of SGLs. There are

other areas that should have been/should be the subject of Phase 1 and/or Phase 2 surveys but have not been.⁷⁰

- The maintenance of the ROW will include the prevention of tree growth and maintenance of low growing vegetation only – this will be accomplished by periodic mowing and the use of herbicides. The mowing will disturb the vegetation and habitats that were allowed to encroach on the ROW. The herbicides will include impacts for non-target species, and could have implications for soil microbes and nearby wetland, vernal pool and stream ecosystems. Openings in the canopy and vegetation along the ROW will encourage the influx of invasive plant and animal species that will have cascading impacts on the forest ecosystem, which will spread along the ROW and back into the core of the adjacent forest.
- The habitat of Ruffed Grouse includes deciduous and mixed forest, dense undergrowth, overgrown pasture, scrub oak, thick shrubland, young forest, and understory and can be found in Carbon, Luzerne, Northampton, Bucks, Hunterdon, and Lehigh Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.
- The habitat of White-throated Sparrow includes coniferous and mixed forest, dense thickets, secondary growth areas, adjacent to ponds or openings, and forest edge in Hunterdon, Luzerne, Northampton, Carbon, Lehigh, and Bucks Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.
- The habitat of Magnolia Warbler includes coniferous and mixed forest, especially young spruces, nests in trees, deciduous shrubs or low trees (during migration) in Luzerne, Northampton, Carbon, Lehigh, Bucks, and Hunterdon Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.
- The habitat of Yellow-Rumped Warbler includes mature coniferous and mixed coniferous/deciduous forest and forest edge and includes Luzerne, Northampton, Carbon, Lehigh, Bucks, and Hunterdon Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.
- FERC falsely states that vernal pools to be cut by the pipeline will only have temporary impacts or not significant sustaining impacts yet it fails to consider the 1,000 feet of upland forest that amphibians using vernal pools require for parts of the year when they are not in their breeding vernal pool habitats. A pipeline cut adjacent and through a vernal pool or within 1,000 feet of a vernal pool can be a death sentence for migrating amphibians who may not be able to successfully cross the dry compacted pipeline route to reach their seasonal vernal pool.⁷¹ Predation also increases with these pipeline cuts.

On July 14, 2017, FERC submitted a Biological Assessment to the USFWS and requested that the Service develop a Biological Opinion as to whether authorizing the proposed pipeline project is likely to jeopardize the continued existence of any federally listed species. FERC's Biological Assessment concluded that the

⁷⁰ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.*

⁷¹ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network..*

project “may affect and is likely to adversely affect the northern long-eared bat, Indiana bat, bog turtle, and northeastern bulrush.” Additionally, it concluded that the project “may affect, but is not likely to adversely affect dwarf wedgemussels” and that there would be “no effect on the rusty patched bumble bee.” The Delaware Riverkeeper Network offers the following comments on FERC’s Biological Assessment, as it has bearing on the Corps assessment of fish and wildlife impacts resulting from the project:

Northern long-eared bat and Indiana bat: At the admission of FERC and by their own recommendation in their Biological Assessment, there is the potential for adverse impacts to these two bat species. See attached report for a more complete discussion of potential impacts to bats from both the pipeline and the reasonably foreseeable gas drilling that will result. In its Final EIS, FERC states that,

“Construction of the Project would disturb a total of approximately 601 acres of forested habitats, which could potentially support these bat species.”

“Young bats or those that are unable to fly could be killed if tree clearing activities occur while the trees are occupied by bats. In addition, bats are sensitive to disturbance and may abandon disturbed roosts trees if the trees are occupied at the time of construction. If this occurs, then the disturbance and subsequent abandonment could have energetic repercussions on affected bats, potentially decreasing the likelihood of successful reproduction and survival.”

“The Project also has the potential to impact listed bat species during operation. Noise, visual, and ground-vibration disturbance would occur during certain operation and maintenance-related activities (e.g., during routine inspections of the line). Potential disturbance to listed bat species could occur during ongoing maintenance activities, and disturbances to bats can result in individuals fleeing the area, thereby using up critical limited energy reserves, which can potentially result in mortality.”

“Because all potentially suitable habitats for the Indiana bat and northern long-eared bat have not been surveyed to-date, it is possible that unidentified habitats for these bat species occur along the Project’s proposed disturbance footprint. . . . In addition, the Project would have long-term impacts on forested habitats that are used as foraging or roosting habitats by listed bats.”

Bog turtle: Only 80% of bog turtle surveys have been completed in PA and 31% in NJ at the time the Final EIS was submitted. Additionally, the proposed pipeline has been re-routed several times to avoid potential bog turtle habitat. This includes the deviation at MP 49.3 near the Blue Mountain Ski Resort in Carbon County, PA. Although the purpose of this deviation is to avoid the wetland area, it still comes within 250 feet of it at its closest point. A similar deviation was made at MP 73.5 in Northampton County, PA to avoid the large wetland complex where Phase 3 trapping surveys were conducted. In this case, the edge of the right-of-way in the deviation still clips the edge of the wetland complex. Furthermore, these deviations would not alleviate groundwater contamination concerns because they are still too close to the wetlands. Any contamination to groundwater would impact a larger area and particularly any nearby spring-fed emergent wetlands that bog turtles prefer. With the amount of unsurveyed wetlands and by FERC’s own statements, it’s clear that adverse impacts to bog turtles are likely. In its Final EIS, FERC states that,

“Construction of the Project within wetland habitats has the potential to impact bog turtles. If present during construction, bog turtles could be directly injured or killed by construction equipment, or disturbed due to the presence of humans and machines in the area. In addition, construction and operation of the Project could alter wetland habitats that support this species. As discussed in detail

within Sections 4.4 and 4.5, construction of the Project has the potential to alter wetland hydrology, increase the risk of invasive plant establishment/spread, and can fragment habitats.”

“Although no bog turtles have been found during Project-specific surveys, the Project would cross through and impact potential bog turtle habitat (including habitats in unsurveyed areas), and bog turtles could be present in unsurveyed areas.”

Northeastern bulrush: As with the other species, there is a great degree of uncertainty about the presence of northeastern bulrush within the project corridor and FERC statements reflect this in addition to their conclusion in their Biological Assessment. Regarding northeastern bulrush, FERC states in their Final EIS that,

“Not all potential habitat for this species has been surveyed to date, and the unsurveyed wetlands along the Project’s disturbance footprint may support this species. As a result, the Project has the potential to impact this listed species. If this species cannot be avoided by the Project, then potential impacts could include direct removal of individual northeastern bulrush plants during trenching or clearing, crushing of plants by equipment, or alternations to their wetland habitats (e.g., altered wetland hydrology and increased risk of invasive plant establishment/spread).”

Dwarf wedgemussel: In its Biological Assessment, FERC concludes that the project “may affect, but is not likely to adversely affect” dwarf wedgemussels. This conclusion is puzzling when specific dwarf wedgemussel surveys have not been conducted. According to the Final EIS,

“No Project-specific surveys for the dwarf wedgemussel have been conducted (beyond a general habitat assessments conducted for freshwater mussels; see table 4.6-1); however, the dwarf wedgemussel is known to occur in the Delaware River.”

“Individual mussels could be crushed by construction equipment and killed during the proposed conventional open-cut crossing method that may be used at the upstream tributaries to the Delaware River. In addition, construction of the Project could impact this species if activities increase the sedimentation levels found in occupied waterbodies. Increased sedimentation could impact this mussel through burial of eggs or mortality of their food supplies. These effects would impact species living both at the point where sedimentation increased and at points farther downstream.”

Based on these statements, it’s more likely that the project would affect and adversely affect this species. Unless surveys were conducted between the time the Final EIS was submitted and the present time, it’s difficult to understand how any other conclusion can be reached.

Rusty patched bumble bee: FERC concludes that there would be “no effect” on the rusty patched bumble bee in its Biological Assessment. However, the Final EIS states that,

“No Project-specific surveys for the rusty patched bumble bee have been conducted or are planned by PennEast; however, data from the FWS indicates that this species can occur in all four Pennsylvania counties crossed by the Project.”

“If present during construction, rusty patched bumblebee colonies could be destroyed, and direct mortality of bees could occur during vegetation clearing and right-of-way and road construction. In addition, impacts could occur due to the loss of suitable habitat or as a result of habitat fragmentation.”

Once again, it's difficult to understand how FERC can be so certain that there would be no effect if surveys have not been conducted. Based on FERC's statements on the direct mortality of bees and habitat loss, it seems that the project would likely adversely affect the species as is the case with the rest of the species in the Biological Assessment.

The inconsistencies within each of these individually—the DEIS, the FEIS, and statements made to other federal agencies including USFWS -- undermine FERC's claims regarding the likelihood that adverse impacts will occur to fish and wildlife species as well as the extent of those species and the impacts. In light of FERC's own admissions outlined above, the Corps must recognize the huge threat to all of these protected species that would result from this project.

Claims that adverse impacts will be temporary in nature or that permanent losses and conversion of ecosystems will still have value to wildlife as habitat, foraging and nesting areas fails to recognize the sensitivity and particularity, especially of already endangered species, in the region. The Corps should find that the proposed Project would significantly adversely affect Fish and Wildlife Values throughout the region and would result in a detrimental impact on the public interest and should deny the project 404 certification.

g. The proposed Project would adversely affect Flood Hazards and would have a detrimental impact on the public interest.

The proposed Project would have potential detrimental impacts to Flood Hazards in the region, particularly as result of potential rain and flooding events during construction of waterbody crossings that are dewatered in order to install the pipeline.

“The Project crosses 255 waterbodies (159 perennial, 45 intermittent, 40 ephemeral, and 11 open water), with eleven (11) of these water courses classified by FERC as major waterbodies that are over 100 feet in width.”⁷² Of these, the Project will include 165 stream crossings in Pennsylvania and 90 in New Jersey.⁷³ “HDD techniques will be used to bore under a few of these waterbodies (Beltzville Lake, the Lehigh River/Lehigh Canal the Delaware River/Delaware Canal , two locations along Lockatong Creek, and an unnamed tributary to Woolsey Brook).”⁷⁴

According to analysis by Tom Myers, Ph.D⁷⁵:

“All dry stream crossing construction methods would involve development of a trench across the stream with subsequent backfill. Dry stream crossing techniques involve temporarily diverting the stream from the streambed so that trenching occurs without flowing water, using either a flume or a dam and pump method (RR2, p 2-28; RR1, p 1-84, -85). The method used to trench and install the proposed pipeline would not influence the effect that

⁷² *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

⁷³ DEIS, p 2-9.

⁷⁴ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

⁷⁵ *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

trench and streambed crossing could have on groundwater/surface water relations near the crossing.”

“As such, the vast majority of the stream crossings require the diversion of stream flow around the construction zone or actively pumping water out of the construction zone. Even when the work area is segregated from the stream by some type of diversion measure, the shallow depth to groundwater relative to the required depth of the pipe trench will require the constant dewatering of the trench. Similar types of acute impacts will also occur in the wetland and riparian areas traversed by the pipeline again due to shallow depth to seasonal highwater (groundwater), standing water or saturated soil conditions.”⁷⁶

“PennEast concludes that the dry crossing method can be conducted in a manner that minimizes potential in-stream turbidity impacts. FERC’s review of the conventional channel cut, flume crossing, and dam-pump crossing techniques reach a similar conclusion. It is FERC’s position that after the pipe is installed and the trench backfilled, the streamchannel and stream banks will be adequately restored and the ecological properties of the stream returned to pre-construction conditions.”⁷⁷

According to Princeton Hydro:

“None of the conclusions reached by either PennEast or FERC are supported by any data. Again the finding of no significant impact is largely based on the assumption that the proposed mitigation measures can be successfully implemented and will lessen the Project’s impact to surface waters. [...] PennEast’s position that impacts can be minimized is inconsequential as the quality, ecological functions, aesthetics and recreational potential of Exceptional Value and Category-1 streams cannot be decreased in any manner.”⁷⁸

These open trench crossing would pose may potential adverse impacts for flooding hazards, as the Myers’ report further explains:

“Trench backfill would have different conductivity than the surrounding alluvium, usually lower if the trench backfill is compacted and the surrounding is alluvium. The trench therefore would hydraulically impede groundwater flowing parallel to the stream and force it to surface into the stream. Depending on conditions downstream of the trench, the surface water would either percolate back into the alluvium or continue flowing as surface water, leaving less water stored in the alluvium than would otherwise be stored there. This could result in lower baseflow downstream of the trench because the trench effectively dams the groundwater flow so that groundwater discharges to the stream at times when the aquifer should be filling with percolating surface water. Each crossing is a different circumstance, but the DEIS has not analyzed the groundwater hydrology near any of the crossings.”⁷⁹

⁷⁶ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

⁷⁷ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

⁷⁸ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

⁷⁹ *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

The choice of PennEast to rely on open-trench crossing methods has much higher risk for adverse flood hazard impacts than HDD would, “which would affect the groundwater flow and groundwater/surface water interactions much less than trenches with backfill.”⁸⁰ This is simply because the bores have less effect on the overburden above the pipeline and do not interrupt the groundwater flow. This is not to say that there are no risks with HDD, there certainly are as the information from Mariner East 2 we provided indicates. But, when implemented properly and conscientiously, the impacts should be less.

The FERC EIS, “fails to disclose impacts to surface water resources due to pipeline construction.” As the Myer’s report explains, the EIS:⁸¹

“acknowledges that “clearing and grading of streambanks, in-stream trenching, blasting, trench dewatering, inadvertent returns from HDD operations, and potential spills or leaks of hazardous materials” (DEIS, p 4-55, p 5-6) could affect surface waters. It lists several potential impacts including (DEIS, p 455):

- Modification of aquatic habitat
- Increased runoff and in-stream sediment loading
- Decreased dissolved oxygen
- Releases of pollutants from sediments
- Modification of riparian areas
- Introduction of chemical contaminants to waterways⁸²

Instead of quantifying either the existing conditions or describing how the pipeline would affect the existing conditions, the EIS essentially repeats this

“noting that the “extent of the impact would depend on sediment loads, stream velocity, turbidity, bank composition, and sediment particle size” (DEIS, p 4-55). It does not quantify either the existing conditions or describe how the pipeline would affect the existing conditions. For each water crossing, the DEIS could easily describe the stream velocities, expected range of flows, bank composition, bed sediment sizes and contaminants present on those sediments, riparian conditions, and stream type (Rosgen and Silvey 1996). Using this information the DEIS could make at least semi-quantitative descriptions of the impacts pipeline construction will cause to the stream. HDD crossings would cause substantially fewer impacts to the stream, especially concerning changes in sediment transport and riparian vegetation (outlined at DEIS p 5-6).”⁸³

⁸⁰ *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.

⁸¹ *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

⁸² *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

⁸³ *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

In order for the Corps to properly assess the impacts to flood hazards that could result from the Project, there must be “detailed analyses for each stream crossing of the potential for the crossing to change flow velocities, sediment transport, and stream type.” There also needs to be discussion of “alternative crossings including underground borings.”⁸⁴ In the absence of this information, the Corps is unable to make a true assessment of these impacts that could support issuance of a 404 permit.

Another potential flood-related hazard that would be exacerbated by the Project is the increased risk of landslides within the Project area. *A Technical Review of Volume I*

FERC Draft Environmental Impact Statement Submitted For PennEast Pipeline Project conducted by Princeton Hydro explains this risk:⁸⁵

“The DEIS notes that in Pennsylvania, portions of the pipeline’s route traverses areas that are susceptible to landslides. This analysis is limited to areas prone to seismic events that could trigger a landslide. However, landslides often occur in the absence of any seismic event, especially in steeply sloped areas. Such landslides are more commonly associated with intense rain storms or major snows melts, and increase in likelihood when lands are denuded of vegetation and native soils are disturbed and exposed. The DEIS does not discuss how such events could result in the catastrophic transport of large quantities of soil, rock and debris into sensitive upland, wetland, riparian and water resources.

Within Appendix D of the DEIS (E&SCP), PennEast notes that:

“The primary cause of landslides is when colluvial (loose) soil and old landslide debris on steep slopes give way. The geologic instabilities that cause landslides are often exacerbated by highway projects in which the earth is cut and soil is loosened. Other primary causes of landslides are rainfall or rain-on-snow events that can weaken debris on steep mountain slopes (McCormick Taylor, 2009).”

The PennEast project will create exactly these types of conditions (cut earth and loosened soils) as part of the land clearing and pipeline trenching elements of the Project. The construction phase of the project, when soils are exposed, soils are stock piled and the vegetation has been stripped from the site, offers the greatest potential for the occurrence of a landslide. Neither Sub-Section 5 (Description of Erosion and Sediment Control BMPs) nor Sub-Section 6 (Project Site Runoff Prior to Site Restoration) of the E&SCP (Appendix D of the DEIS) identifies any special actions or measures that will be implemented when conducting work in steep slopes to prevent a landslide.

Additionally, the post-construction alterations of the ROW’s vegetative cover and the inevitable compaction of site soils will increase the rate and volume of runoff generated from the Project ROW. These changes to prevailing soil conditions and alteration in the type of

⁸⁴*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

⁸⁵ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

vegetated cover (trees and shrubs to grasses) increase the likelihood for post-construction landslides, especially in steeply sloped areas.”⁸⁶

Potential Flood Hazards to groundwater and surface waters.

“There always exists the possibility that during construction a spill will occur; for example fuel spill or that directional drilling, trenching or related construction operations will result in the improper management of drilling fluids or dewatering effluent. These actions, in particular construction related accidents, can pose a threat to local groundwater resources. FERC concludes that any groundwater impacts attributable to construction related operations will be minimized by PennEast’s adherence to and implementation of a Spill Prevention, Control, and Countermeasures Plan.”

“The Spill Prevention, Control, and Countermeasures Plan is contained in Appendix D of the DEIS (Erosion and Sediment Control Plan). It is part of an earlier document prepared by PennEast (Draft Erosion and Sediment Control Plan) dated September 2015. The subsection of the plan dealing with spill prevention and control is contained in Sub-Section 13 of the E&SCP, and is a single paragraph consisting of **five (5) simple bullet points**, none of which provide any direction of the actions that must be taken in the event of a spill. The Spill Prevention, Control, and Countermeasures Plan upon which FERC has based their findings is unreasonably simplistic, lacks any detail, and does not account for the highly sensitive and unique environments the pipeline will disturb.”

According to the FEIS, the Project would cross the following Flood Hazard Zones:

“The Federal Emergency Management Agency (FEMA) identifies areas subject to flooding and high-volume flows identified as Special Flood Hazard Areas which are located within the 100-year floodplain. The Project mainline would cross 4.9 miles of FEMA Special Flood Hazard Areas, including 3.4 miles in Pennsylvania and 1.4 miles in New Jersey. The Hellertown Lateral would cross less than 0.1 mile of FEMA Special Flood Hazard Areas while the Gilbert and Lambertville laterals would not cross any FEMA Special Flood Hazard Areas. In addition, the pipeline route would cross regulated flood hazard areas consisting of floodways and flood fringes of waters regulated under the New Jersey Flood Hazard Area Control Act Rules at N.J.A.C. 7:13. No tidally influenced waterbodies would be located within the Project area.”⁸⁷

The fact that the Project contains overlap with Flood Hazard Zones increases the potential for adverse impacts to flood hazards on areas of public interest. For all of these reasons, the Corps should find the Project to be contrary to the public interest and deny its 404 application.

h. The proposed Project would adversely impact Floodplain Values in the region, resulting in a detrimental effect on the public interest.

⁸⁶ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

⁸⁷ FEIS

The effect from the Project to floodplain values within the region would be wholly adverse and detrimental to the public interest. No beneficial impacts to floodplain values would result from the Project. Construction and maintenance activities would result in both temporary and permanent impacts to floodplain storage capacities through alteration of riparian vegetation at each stream and wetland crossing; soil compaction; and changes in elevation and contours.

The Project would result in Adverse Impacts to Floodplains, Including Their Permanent Alteration.

The project will permanently remove floodplain vegetation and result in compacted floodplain soils – both of these, particularly when considered cumulatively across the pipeline project as well as across the multiple projects in, or proposed for, the same region, is important. Floodplains vegetated with trees and shrubs can be four times as effective at retarding flood flows as grassy areas.⁸⁸ In addition, naturally vegetated floodplains provide breeding and feeding grounds for both fish and wildlife, they "create and enhance waterfowl habitat", and they "protect habitat for rare and endangered species."⁸⁹ Naturally vegetated floodplains are generally layered with leaf and organic matter which result in organic soils with high porosity and a greater capacity for holding water.⁹⁰ The floodplain, in this natural state, is a riparian ecosystem that needs the overbank flows that the natural watershed's hydrology provides in order to remain healthy and in balance.⁹¹ According to the U.S. Environmental Protection Agency, the number one source of pollution to our nation's waterways is from nonpoint sources, including pollution from floodwaters, washed from the land in stormwater runoff.⁹² Floodplains play a key role in reducing stormwater flows and containing floods, filtering out nonpoint source pollution, thereby reducing pollutant loading and protecting water quality.

The benefits of naturally vegetated and healthy floodplains includes:

- Stores and slows floodwaters;
- Intercepts overland flows, capturing sediment;
- Stabilizes streambanks, preventing erosion;
- Protects wetlands and other critical habitats;
- Replenishes groundwater aquifer;
- Filters out and/or transforms pollution;
- Provides recreation and education;

⁸⁸ DNREC and Brandywine Conservancy, Conservation Design for Stormwater Management: A Design Approach to Reduce Stormwater Impacts from Land Development and Achieve Multiple Objectives Related to Land Use, September, 1997, p. 2-11.

⁸⁹ DNREC and Brandywine Conservancy, Conservation Design for Stormwater Management: A Design Approach to Reduce Stormwater Impacts from Land Development and Achieve Multiple Objectives Related to Land Use, September, 1997, p. 2-11.

⁹⁰ DNREC and Brandywine Conservancy, Conservation Design for Stormwater Management: A Design Approach to Reduce Stormwater Impacts from Land Development and Achieve Multiple Objectives Related to Land Use, September, 1997, p. 2-11.

⁹¹ Poff, Allan, Bain, Karr, Prestergaard, Richter, Sparks, and Stromberg, "The Natural Flow Regime", BioScience, Vol. 47, No. 11

⁹² Chester L. Arnold Jr., and C. James Gibbons, "Impervious Surface Coverage, the Emergence of a Key Environmental Indicator", APA Journal, Spring 1996, p. 245

- Trees and other riparian vegetation: provide wildlife habitat; process nutrients and other would-be pollutants; shade and cool waterways; provide food for wildlife and stream insects (detritus); provide beauty and refuge.

The Delaware River's health and the health of its tributary streams are threatened by loss of its floodplain's function and the resulting increase in stormwater and floodwater. Adverse impacts to beneficial floodplain values must be considered. These include the accelerated runoff produced along the ROW that will result in more erosion and deposition within streams, increased transport and loading of contaminants, increase in flood peaks due to accelerated runoff (in turn reducing the amount of water entering the ground), decrease in groundwater recharge, blocked or diverted groundwater flow, soil compaction, and the removal of habitat and food sources for wildlife and aquatic life. These impacts can also produce a “ripple” effect by upsetting the balanced ecosystem of the landscape through construction activities. The Corps should consider the short term, long-term, and cumulative impacts of these alterations. Unnatural flood levels and flood damages are experienced by communities living along the Delaware River and tributary streams. In addition, removal of vegetation along water systems removes the natural armoring that helps prevent accelerated erosion from unnaturally high flood flows. The ramifications, individually and cumulatively, of the multitude of proposed stream crossings for flooding, flood peaks, flood damages and erosion must be considered.

The Project would result in The Destruction of Naturally Vegetated Buffers Along All Wetlands and Waterways. Healthy and vegetated streamside buffers serve our communities by:

- Providing flood storage,⁹³ reducing flood peaks,⁹⁴ and slowing the velocity of floodwaters,⁹⁵ and thereby reducing flooding and damaging flows in downstream and nearby communities;
- Protecting and enhancing water quality by preventing and filtering pollution⁹⁶ and enhancing the ability of the neighboring stream to process pollutants,⁹⁷ thereby protecting drinking water supplies, recreational uses of our waterways, commercial and recreational fisheries, ecotourism, and business operations that need clean water;
- Recharging aquifers that supply drinking water and base flow to streams;⁹⁸
- Providing and enhancing birding, fishing, hiking and other recreational opportunities that are so critical to our region’s aesthetic beauty and community quality of life;

⁹³ Tourbier, J. Toby "Open Space Through Stormwater Management, Helping to Structure Growth on the Urban Fringe".

⁹⁴ Army Corps of Engineers WRAP, “Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process”, ERDC-WRAP-01-6, May 2002, citing DeBano and Schmidt 1990; O’Laughlin and Belt 1995”.

⁹⁵ Army Corps of Engineers WRAP, “Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process”, ERDC-WRAP-01-6, May 2002, citing DeBano and Schmidt 1990; O’Laughlin and Belt 1995”.

⁹⁶ NJAC 7:8 NJDEP Agency Proposal Document at NJAC 7:8-5.5(h), USEPA, “Pesticide Tolerance Reassessment and Re-registration, Terbufos IRED Facts”, EPA 738-F-01-015, October 2001;Id.

⁹⁷ Sweeney & Blaine, “Resurrecting the In-Stream Side of Riparian Forests”, Journal of Contemporary Water Research & Education, Issue 136, June 2007.

⁹⁸ Castelle, Johnson, Conolly, “Wetland and Stream Buffer Size Requirements –A Review”, J. Environ. Qual. 23:878-882 (1994); NJAC 7:8 NJDEP Agency Proposal Document at NJAC 7:8-5.5(h), page 77; Ibid. 38

- Providing and enhancing the quantity and quality of habitat⁹⁹ to aquatic life, animals, birds and plants that are important to our watershed ecologically, economically, recreationally and psychologically;
- Providing organic matter critical for supporting aquatic organisms;¹⁰⁰
- Providing shading and thereby providing water temperature control¹⁰¹ important for the quality of the stream including the health of the habitats and aquatic organisms present;
- Reducing flood damages by ensuring structure-free zones devoid of structures to be harmed;
- Protecting public and private lands from erosion and helping streambanks maintain their integrity in order to prevent/minimize the costs and harms of sedimentation and restoration;¹⁰²
- Increasing the market value and marketability of nearby homes and communities;¹⁰³
- Increasing the opportunity for and success of ecotourism businesses dependent on the aesthetic beauty of the river and its ecological health; and
- Maintaining the unique ecological and historical qualities of our River and region that are an international draw.¹⁰⁴

The loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain). The deforestation caused by the PennEast pipeline will result in increased stormwater runoff which will result in increasing flows in the stream, making stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Loss of riparian protection can also cause channel migration that can have serious implications long stretches and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel. Extreme flow events will combine with the impacts inflicted by the construction and ongoing land management, including removal of riparian vegetation and forest, associated with the pipeline ROW to intensify the impacts of flooding.

⁹⁹ Army Corps of Engineers WRAP, “Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process”, ERDC-WRAP-01-6, May 2002, citing DeBano and Schmidt 1990; O’Laughlin and Belt 1995”, citing DeBano and Schmidt 1990; O’Laughlin and Belt 1995”

¹⁰⁰ Army Corps of Engineers WRAP, “Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process”, ERDC-WRAP-01-6, May 2002,, citing DeBano and Schmidt 1990; O’Laughlin and Belt 1995”.

¹⁰¹ Army Corps of Engineers WRAP, “Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process”, ERDC-WRAP-01-6, May 2002,, citing DeBano and Schmidt 1990; O’Laughlin and Belt 1995”.

¹⁰² Water, Science, and Technology Board, Board of Environmental Studies and Technology, “Riparian Areas: Functions and Strategies for Management”, 2002, citing Swanson, et al; Center for Watershed Protection, “Impacts of Impervious Cover on Aquatic Systems”, Watershed Protection Research Monograph No. 1, March 2003; Ibid. 38

¹⁰³ Center for Watershed Protection, Better Site Design: A Handbook for Changing Development Rules in Your Community, August, 1998, Pg. 134, Lutzenhiser, M. and N.R. Netusil. “The Effect of Open Spaces on a Home’s Sale Price.” Contemporary Economic Policy 19.3 (2001): 291-298.

¹⁰⁴ For example, "Pennypack Park in Philadelphia is credited with a 38% increase in the value of a nearby property." Center for Watershed Protection, Better Site Design: A Handbook for Changing Development Rules in Your Community, August, 1998, p. 134

Soil Compaction, Runoff and Recharge impacts will negatively affect floodplain values. The ROW associated with PennEast will be the location of compacted soils and, in the case of natural landscapes like forests, the maintenance of plants that have lesser capacity to infiltrate rainfall. The combination of compacted soils with low growing plants (to the degree they are able to grow in the compacted soils or under PennEast’s ROW management protocols) will result in increased runoff to nearby streams, thereby increasing flows in downstream communities.

According to the expert report *Technical Memorandum Review of Draft Environmental Impact Statement, Proposed PennEast Pipeline* conducted by Tom Myers, Ph.D.:

“Pipeline disturbance to soils includes the removal of vegetation which when present shelters the soil from raindrop erosion and protects/increase its capacity for rainfall recharge; and includes soil compaction and furrowing caused by construction traffic on the soils which reduces the soil’s ability to infiltrate and recharge rainfall and impacts the ability of the soil to support/encourage vegetation regrowth. Highly compacted soils inhibit vegetation regrowth. Even when shrubs and trees are allowed to regrow on compacted soils as part of a pipeline maintenance plan, and are able to regrow, their ability to protect soils from erosion due to a healthy canopy and healthy root growth, as well as their ability to encourage rainfall infiltration and recharge requires years and often decades to reestablish.”

“After construction, ongoing maintenance activities and inspection with heavy equipment can re-inflict compaction impacts. The impacts of construction of the proposed pipeline on soils, can have significant and enduring ramifications for runoff, erosion, groundwater, stream baseflows and for supporting healthy habitats required by wildlife.”¹⁰⁵

Increased landscapes that are the source of stormwater runoff contributing to flood flows, flood peaks, and more erosive stream flows, could be significant in some areas. It is the combination of damaged upstream habitats, coupled with the damaged floodplains and vegetative buffer areas, that increases the level of compromise to the stream channel and flow levels.

Flooding rivers can scour river bottoms and expose pipelines to powerful water currents and damaging debris. Extreme and erosive flooding events in streams crossed by PennEast will increase the likelihood of stream scour, exposure and rupture. Heavy rains threaten to increase overall stream degradation and channel migration – thereby also exposing buried pipelines.¹⁰⁶

The mitigation statement provided by PennEast in the Corps’ Public Notice states that:

¹⁰⁵ *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

¹⁰⁶ See e.g. 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>; 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).

“No net loss to wetlands or waterbodies will occur within the pipeline corridor; Penn East will return all wetlands within the pipeline ROW to preconstruction contours and will restore natural flow conditions to all affected waterbodies.”

However, documented observations on the ground following pipeline construction and maintenance demonstrate that this is not the case. Photos taken by DRN volunteer monitors show wetlands that have a changed flow and elevation due to ground disturbance and the pipeline placement. These hydrological changes and harms are permanent damage to these sensitive habitats.¹⁰⁷

According to Princeton Hydro’s *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*,

“FERC recognizes that the Project has the potential to permanently alter the physical properties of native soil disturbed by clearing, construction, and maintenance activities, specifically as a result of soil compaction, rutting, and erosion. However, FERC concludes that these impacts can be adequately mitigated through the implementation of the Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures). The Cornell Soil Health Test (CSHT) provides a standard for assessing the important physical, chemical and biological processes and functions of disturbed soil. The CSHT was used to evaluate the impacts of a recently constructed pipeline that transected University-owned land. The CSHT analysis definitively showed that soils within the ROW had significantly lower soil quality levels than the soils sampled in the adjacent areas unaffected by the pipeline’s construction. This suggests that reliance on standard erosion control and soil handling techniques inadequately compensates for soil compaction issues within the ROW. Compacted soils inhibit the recharge of precipitation leading to a greater amount of stormwater runoff. The added runoff can lead to an increase in the mobilization and transport of pollutants and an increased opportunity for overall soil erosion.”

“Recent investigation of another pipeline ROW (Tennessee Gas pipeline as it passes through the Highlands region of New Jersey) conducted by the New Jersey Conservation Foundation¹⁰⁸ found multiple examples of “restored” sites that were significantly altered from pre-pipeline conditions, even though each had been mitigated in accordance with FERC accepted erosion control and revegetation measures.”¹⁰⁹

These are only a sample of the documented examples proving pipeline impacts to the floodplain storage capacities have proven not to be “temporary in nature” and all construction areas have not been shown to be “restored to pre-construction elevations and contours.” The finding “that the proposed mitigation measures will prevent any significant alteration of site soils or can successfully limit impacts attributable to such

¹⁰⁷ See attached *DRN Comments –Columbia Gas Line 1278 Line K Replacement in Special Protection Waters-DRBC Docket -D-2014-008-1*

¹⁰⁸ Emile DeVito, PhD. August 2016. Letter with supporting report and photographs from New Jersey Conservation Foundation to Norman Bay, Chairman, FERC.

¹⁰⁹ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

alterations is inaccurate as based on actual field assessments of “restored” pipeline ROWs.”¹¹⁰ As such, it would be irresponsible for the Corps to take these claims from the applicant as fact.

The extensive detrimental impacts caused by the Project’s potential adverse effect on flood values outlined above, combined with the many public benefits that rely on an intact floodplain and naturally vegetated buffers that would be lost, and the fact that no potential flood value benefits would result from the Project, provide the Corps with a clear cost-benefit analysis, demonstrating that the Project would not be in the public interest and are reason enough for the Corps to deny the Project 404 permits.

i. The proposed Project would have an adverse effect on Land Use and would be contrary to the public interest.

The proposed Project’s construction and maintenance activities would result in significant adverse effects to the existing land uses in the region, including the temporary and permanent loss of forests; wetlands; agricultural land; preserved open space; urban open space and waterways, all of which are of significant value to the public interest. The Project offers no conceivable public benefit to the land use. Additionally, the detrimental impacts to land uses are often unmitigable.

According to the EIS, a total of “1,613.5 acres of land, will be disturbed in order to construct the pipeline and supporting pipeline facilities (aboveground facilities, pipe and contractor ware yards and staging areas, and access roads). Once completed, the long-term operation and maintenance of the pipeline affects 784 acres of land, of which the majority (715 acres) consists of the pipeline ROW, 61 acres in the form of aboveground facilities, and 8 acres associated with new permanent access roads”.¹¹¹

GIS analysis conducted by Key-Log economics estimates the acres impacted by the Project will be even greater:

“Impacted acres (area converted temporarily or permanently from its existing use or cover):

- In the permanent right-of-way (ROW): 717.3
- In the construction zone (the construction corridor, new temporary roads, pipeyards, and temporary aboveground infrastructure): 1,852.7
- In new permanent access roads and aboveground infrastructure: 55.8
- The most heavily affected land cover types: forest (386.8 acres) and cropland (147.0 acres) (ROW only)”¹¹²

As described by Key-Log Economics, the project area includes a wide variety of land uses which support an even greater selection of benefits to the public interest:

“This study region encompasses Bucks, Carbon, Luzerne, and Northampton counties in Pennsylvania, as well as Hunterdon and Mercer counties in New Jersey. This 2,961-square-

¹¹⁰ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹¹¹ FERC DEIS

¹¹² **adapted from** *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

mile region supports diverse land uses, including the Delaware, Lehigh, and Susquehanna Rivers, thriving cities and townships, wetlands, and parks. These natural, cultural, and economic assets are among the reasons more than 1.8 million people call this six-county region home and an even larger number visit each year for hiking, fishing, festivals, kayaking, horseback riding, weddings, and other events.”¹¹³

Many of the adverse impacts to land uses in the region, including forests, wetlands, agricultural lands, preserved open space, and waterways, are outlined throughout this comment and the attached reports. However, the full extent of detrimental impacts to land uses in the region cannot be fully known due to the deficient information and analysis available. As documented in the comment from Meliora Design,¹¹⁴ the information provided by PennEast and the FERC EIS:

“fail to consider the unique, site specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts associated with stream crossings, including open cut crossings. The DEIS fails to comprehensively evaluate each stream crossing with regards to conditions such as water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting. Lacking consideration of the site specific conditions at each crossing, the DEIS fails to require adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing. The proposed stream and wetland crossing locations, methods of construction, and long-term land use conditions appear to be based on the needs and preferences of PennEast and not informed by site specific conditions.”

While the full extent of adverse impacts to land uses resulting from the Project aren't accurately portrayed in available information, Key Log Economics estimates of the acreage of land affected by the Project according to its land use using GIS data, and provides insight into the massive scale, as shown in Table 4.

¹¹³ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

¹¹⁴ *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.

TABLE 4: Land Area Affected By PE, Study Region Total (See Also Figure 5)

Land Use	Baseline acreage in ROW	Baseline acreage in the construction zone	Baseline acreage in permanent surface infrastructure and access roads
Barren	4.4	52.1	0
Cropland	147.0	401.8	9.5
Pasture/Forage	77.6	164.0	4.4
Grassland	7.2	17.1	3.0
Shrub/Scrub	31.8	106.6	2.3
Forest	386.8	887.7	33.0
Water	3.5	6.3	0
Wetland	0.7	1.1	0
Urban Open Space	39.6	99.9	2.4
Urban Other	16.4	116.2	1.1
Total	715.0	1,852.7	55.8

Table 4. Acreage of Land affected by PennEast by Land Use¹¹⁵

Further examples of the adverse effects to land use that would result from the proposed Project, as well as resulting adverse impacts on the public interest, include:

- The single largest land use to be disturbed in Pennsylvania is forest – 59% of the pipeline length in Pennsylvania.¹¹⁶
- The ramifications of drought will be dramatically increased by land use changes, such as those that will be inflicted by PennEast.
- Permanent, long term changes to land use cover and soil conditions, and corresponding increases in stormwater runoff and erosion. As a result of pipeline construction, there will be permanent long term water quality impacts related to stormwater runoff, including increases in the rate, volume, and frequency of stormwater runoff.

As explained by Princeton Hydro, the adverse impacts to land use that would result from the project are significant and permanent:

“The pipeline’s work corridor right of way (the area disturbed during the survey, site-access and construction of pipeline) varies between 90 and 125 feet in width. Following construction, a 50 foot wide permanent right-of-way (ROW) will run the entire length of the pipeline. This ROW will **remain in a significantly altered state relative to existing conditions**. The temporary and permanent ROWs are part of the overall environmental damage caused by the pipeline. Supporting

¹¹⁵ Economic Costs of the PennEast Pipeline, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

¹¹⁶ *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.

the “pipeline” are various appurtenant facilities used to transport the gas. These include access/maintenance roads, compressor units, metering stations, regulator stations, delivery stations, holders, valves, and the other infrastructure elements critical to the pipeline’s operations. These components of the pipeline are all above ground and are neither benign nor passive operational elements of the system.”¹¹⁷

The report further emphasizes the fact the mitigation measures proposed by PennEast will not actually allow the affected land to return to pre-construction conditions, including current land uses:

“There is a robust body of data that demonstrates FERC’s standard pipeline mitigation measures are actually often quite ineffective. These measures ... are not capable of restoring project sites to their original environmental state thus preventing the project site from providing its original ecological services and functions conditions.”¹¹⁸

The proposed Project’s would clearly result in significant adverse effects to the existing land uses in the region, including the temporary and permanent loss of forests; wetlands; agricultural land; preserved open space; urban open space and waterways, resulting in detrimental losses to the public. The Project offers no benefit to the land uses to counter these adverse impacts. Additionally, despite PennEast’s claims, the detrimental impacts to land uses are often permanent and cannot be mitigated. As such, the Project would clearly result in adverse impacts that are contrary to the public interest and should be denied 404 permits by the Army Corps.

j. The proposed Project would adversely affect Navigation and would be contrary to the public interest.

The Project would cross three navigable waters: Susquehanna River and Lehigh River in Pennsylvania and the Delaware River located in both Pennsylvania and New Jersey.

Both the Lehigh River and the Susquehanna River will be impacted by short term adverse impacts to recreational navigation as the navigable waterway will be crossed using an open-trench with dual coffer dam crossing method, preventing navigation through the waterways during construction. There could be impacts to navigation on the Delaware as well depending on how the proposed HDD were to proceed and whether or not there were any problems that resulted during construction operations.

As such, the proposed Project would adversely affect navigation and would provide no benefits to navigation for the public interest.

k. The proposed Project would adversely affect Shore Erosion and Accretion and would be contrary to the public interest.

¹¹⁷ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹¹⁸ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

The proposed Project would significantly and adversely affect shore erosion and accretion and result in cascading detrimental impacts to the public interest.

The loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain) and exacerbating the sedimentation impacts of construction. As noted by experts, the deforestation caused by the PennEast pipeline will result in increased stormwater runoff; this will result in increasing flows in the stream with stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Increased erosion means loss of habitat; channel migration that can have serious implications for riparian lands and vegetation over long stretches and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel; and increased instream sedimentation which is considered a pollutant both legally and scientifically. Erosive and extreme flow events will combine with the impacts inflicted by the construction and ongoing land management, including removal of riparian vegetation and forest, associated with the pipeline ROW to intensify the impacts of both.

As documented by experts in the attached reports, including Meliora Design¹¹⁹:

“The proposed pipeline conditions will significantly reduce the land surface’s ability to retain rainfall and facilitate infiltration, and will increase runoff frequency, volumes, and flow rates, including increased surface erosion and sediment transport to Special Protection or C1 water bodies.”

“When vegetation regrowth is limited, the likelihood of accelerated erosion is increased. When runoff cannot infiltrate, is not slowed at the surface by vegetation, and has direct contact with exposed soils, sediments are much more likely to be transported to downhill streams and wetlands. This is of specific concern on significant portions of the pipeline right-of-way in proximity to stream crossings, where soils to be disturbed by pipeline construction are classified as Severe Erosion Potential (79), Poor Vegetation (122), and Rugged Terrain with slopes greater than 30% (28). These areas are especially prone to erosion and sediment transport to waterbodies.”¹²⁰

At least 43 waterbody crossings have steep slopes that would be cut by the pipeline. These 43 crossings are proposed to have additional temporary work spaces (ATWS) within 50 ft. of sensitive water features, adding to the potential erosion threats to these steep banks and the nearby sensitive streams where sediment pollution can cause long term harm.¹²¹

According to the report by Princeton Hydro, the Project will lead to “Increased amounts of stormwater runoff, the rate of runoff and the frequency and longevity of erosive flows” and “Increased pollutant loading to wetlands and streams”, as well as “combination of increased runoff volume and increased rate of runoff”, which “has been repeatedly demonstrated as the root cause of stream erosion.”

¹¹⁹ *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

¹²⁰ *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

¹²¹ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.

Princeton Hydro also states:

“The acute erosion problems caused by the PennEast Pipeline are not limited to upland areas. Some of the more potentially severe acute and long-term impacts occur where the pipeline crosses through wetlands and streams. These areas are characterized by persistent standing water, actively flowing water or saturated soils. Such conditions present especially difficult conditions for the proper installation of erosion and sediment control measures. Such conditions also decrease the functionality of most erosion and sediment control measures, which by design are meant to work in dry environments.”¹²²

PennEast states that completed E&S Control Plans by agencies will adequately avoid harms but this is a false conclusion as can be seen on other pipeline projects where severe sediment pollution harmed local waterbodies, many of which had special protection designations¹²³. Most agencies require quick establishment of groundcover to stabilize soils which takes the place of establishing more desired and diverse native habitats, therefore biodiversity and soil health is lost. Once soil chemistry, soil porosity, and soil layering (horizons) that took eons to form are destroyed by the construction process, erosion control measures usually require lime and fertilizer to be applied so that seed mixes grow rapidly. The addition of lime and fertilizer are like poison to what were once forest soils of low pH and low nutrients. This essentially ruins the chance that the soil will ever revert to a native plant community again. Alien invasive weeds of all kinds thrive on the nutrient-enriched, topsy-turvy soil layers in the aftermath of construction. Native herbaceous plants and shrubs almost never outcompete weeds in these altered, nutrient-enriched, high pH soils. Just like on abandoned farmland, these construction sites act as "post-agricultural soils," and just like our abundant forests on post-agricultural soils, the herbaceous and shrub layers will be dominated by alien weeds virtually forever, especially with over-abundant deer in the equation.¹²⁴

In addition to the examples listed here, numerous attached reports outline the many ways the proposed Project would adversely affect erosion and secretion, as well as the ways in which this will lead to cascading detrimental impacts to the public interest. As such, the Corps should reject the 404 permits for the Project as it would be contrary to the public interest.

I. The proposed Project would adversely affect Recreation and would be contrary to the public interest.

- The proposed Project would significantly and adversely affect recreation and result in cascading detrimental impacts to the public interest. The project will cross a number of highly used recreational and special interest areas, site specific crossing plans and impact analyses are sorely lacking and/or missing in the materials provided, therefore it is difficult to assess full impacts. But given that hiking, birding, boating, fishing, hunting and other recreational enjoyments are dependent on beautiful and healthy habitats to be attractive for supporting recreational use, because PennEast will

¹²² *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹²³ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.

¹²⁴ Dr. Emile DeVito, New Jersey Conservation Foundation, Email Correspondence Re: Tennessee Gas Pipeline practices. July 14, 2015.

harm these attributes both enjoyment and economic impacts are inevitable and could be significant. The open cut stream crossings will impact boating, fishing, birding and other recreational uses in the areas – both during construction but also during operation and maintenance due to the changed natural conditions from the permanent and repeatedly maintained footprint. The crossing of the Appalachian Trail by the proposed route is in a section that is only feet away from a scenic overlook and cliff outcropping – it is hard to imagine a more damaging location for harming this important recreational and cultural resource. This area is also prime rattlesnake habitat.

We know that the recreational ramifications of PennEast are well recognized by the citizenry and of high concern as well. According to Key Log’s analysis: “In a review of comments collected through the DEIS, 99.4% of people who mentioned recreation and tourism businesses, 100% of commenters mentioning health (either related to the pipeline or the compressor station), and 93.3% of people mentioning the environment believed the PE would have a negative effect.”

The recreation supported by the region, particularly the water resources and preserved natural areas in the region, many of which are targeted by PennEast, are also an important part of the local economy. According to the attached Key Log analysis: “Tourists spent about \$4.5 billion in the study region in 2015. The companies that directly served those tourists employed 40,896 people, or 5.7% of total private employment in the region (Tourism Economics, 2015 & 2016).”

As further observed by Key Log: “A loss of scenic and recreational amenities, the perception and the reality of physical danger, and environmental and property damage resulting from the PE could discourage people from visiting, relocating to, or staying in the region. Workers, businesses, and retirees who might otherwise choose to locate along the PE’s proposed route will instead pick locations that have retained their character, their productive and healthy landscapes, and their promise for a higher quality of life.” “This is already occurring in the region. With the possibility of the PE looming, business plans are stalling and the real estate market is slowing.”

Other examples of the many adverse impacts to recreation on both public and private lands within the region, are well explored in the attached reports.

The FERC EIS does not consider the adverse impacts to recreation and ecotourism so vitally important to the impacted region. As a result, given that the Corps relied heavily on that document for its analysis, the Corps has similarly not given due consideration to this important public interest, recreational, environmental and economic interest.

In light of the many ways the proposed Project would adversely affect recreation, as well as the ways in which this will detrimentally impact to the public interest, the Corps should reject the 404 permits for the Project as it would be contrary to the public interest.

m. The proposed Project would have significant adverse effects on Water Supply and Conservation, which would be both detrimental and contrary to the public interest.

The PennEast Pipeline will cross multiple water sources, including aquifers, wellhead protection areas, and the Delaware River. PennEast prepared a Well Monitoring Plan stating that the company will conduct pre- and post-construction water quality monitoring within 150 feet of the construction corridor. However, the New Jersey Department of Environmental Protection commented in response to the plan that a monitoring distance of 150 feet of the pipeline is inadequate, suggesting a 1,000 feet monitoring radius instead (New Jersey Department of Environmental Protection, 2015) – while the Corps is only looking at the Pennsylvania portion of the project, this observation by the NJDEP is an equally sound recommendation for the Pennsylvania portion. The Environmental Protection Agency also submitted comment about drinking water concerns and deficiencies in information in the DEIS, stating PennEast Pipeline Company should work with state water agencies to account more thoroughly for any potential contamination.

There are several public and private wells along the construction corridor, with dozens of communities already passing resolutions opposing construction of the pipeline.¹²⁵ During public comment on the project, there have been numerous findings regarding potential and serious impacts to drinking water sources. Additionally there has been identification of significant amounts of inaccurate or missing information – to the extent the Corps relied on PennEast and Corps documents where these multiple and serious deficiencies exist, the Corps has not conducted an accurate analysis.

“The proposed pipeline route passes through rural areas where many residents obtain their drinking water from onsite wells. One of the most widely recognized functions of wetlands is their ability to absorb or filter pollutants such as nitrogen, phosphorus, and sediments and thereby to provide an important water quality benefit. When wetlands are located above or along private drinking water supplies, that water quality enhancement function is particularly significant.”¹²⁶

“Schmid analysis “identified properties and specific landowners in Pennsylvania where there are (confirmed), or where there are likely to be, springs or drinking water wells located 10 within 150 feet of the proposed pipeline construction workspace. Examples include: at MP 58.2 along E. Dannersville Road in Moore Township, Northampton County; at MP 57.8 along W. Beersville Road in Moore Township, Northampton County; near MP 53 along North Cottonwood Road in Danielsville, Northampton County; near MP 45.75 east of Beers Lane, Towamensing Township, Carbon County.”¹²⁷

“Thus, FERC's statement that "there are no private water supply wells or springs located within 150 feet of the pipeline construction workspace in Pennsylvania" (DEIS, page ES-5) is false. This is a problem in its own right, because there can be direct impacts to private water supplies if construction activities are not done carefully or if leaks occur during operation of the pipeline. In addition, the fact that there are private springs and wells used for water supply within 150 feet of the proposed ROW in Pennsylvania suggests that there very well may be additional Exceptional Value Wetlands not yet identified that meet the PADEP criterion at §105.17(1)(iv) regarding association with existing public or private water supplies.”¹²⁸

Given that the Palmerton Water Company has four production wells at the foot of Blue

¹²⁵ Phillips et al, 2017, Exhibit xx

¹²⁶ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016

¹²⁷ Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

¹²⁸ Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

Mountain that supply water to the towns of Palmerton and Aquashicola, an analysis of groundwater impacts and potential threats to this important drinking water supply for thousands needs to be earnestly and scientifically considered by the DEIS; as written, it is not.

The DEIS should, but did not, 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.¹²⁹

The information provided by PennEast and the FERC EIS is too deficient for the Corps to make any meaningful assessment of the proposed Project's true and full impacts on water supply and conservation:

- FERC's statement that "there are no private water supply wells or springs located within 150 feet of the pipeline construction workspace in Pennsylvania" (DEIS, page ES-5) is false. Delaware Riverkeeper Network experts have "identified properties and specific landowners in Pennsylvania where there are (confirmed), or where there are likely to be, springs or drinking water wells located within 150 feet of the proposed pipeline construction workspace."
- The EIS does not provide data and references supporting the assertion that there is "no indication that common construction activities that involve shallow excavation, such as home construction, has resulted in increased arsenic concentrations in water supply wells" (DEIS, p 4-12).
- The EIS does not 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.
- The EIS fails 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.
- The EIS fails 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.
- The EIS fails to analyze the potential for the trench backfill to facilitate the movement of contaminants through the groundwater as part of an analysis of preferential flow.
- The EIS fails to consider the pipeline trench as a pathway for contamination.
- The EIS lacks information regarding standards used to guide HDD water withdrawals without preventing impacts on downstream ecological or human uses and needs

¹²⁹ *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*

- The EIS fails to include a table of bedrock aquifers that includes relevant properties, including specific capacity statistics or well yields, and conductivity where available.
- The EIS fails to include maps, 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.
- The EIS fails to 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.
- The EIS fails to 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.
- The EIS fails to 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.
- The EIS fails to assess the potential for pipeline construction to generate acid generation or leach metals in all areas where it crosses mine spoil.
- The EIS fails to present avoidance and mitigation discussions focused on preventing the leaching and transport of acid and metals from the site.
- The EIS fails to provide the data and references supporting the EIS assertion that “shallow groundwater ... generally have (sic) low arsenic concentrations and that high arsenic concentrations ... are the result of more mature groundwater interacting with geochemically susceptible and arsenic-enriched water bearing zones, which are often deeper wells” (DEIS, p 4-12).

Given the extensive lack of data that is critical to the public interest, it would be irresponsible for the Corps to approve 404 permits for the project.

The destruction of naturally vegetated buffers along all wetlands and waterways resulting from the Project would have harmful impacts for a number of public interest concerns, including the health and safety of drinking water supplies:

- Protecting and enhancing water quality by preventing and filtering pollution and enhancing the ability of the neighboring stream to process pollutants, thereby protecting drinking water supplies, recreational uses of our waterways, commercial and recreational fisheries, ecotourism, and business operations that need clean water;
- Recharging aquifers that supply drinking water and base flow to streams;

Additionally, the water withdrawals and discharges within the Delaware River watershed could result in significant and adverse impacts to the water supply and conservation for the region and the public

interest. PennEast anticipates using approximately 33 million gallons of water for hydrostatic testing,¹³⁰ including withdrawals and discharges.

PennEast is subject to DRBC jurisdiction and docket review as a result of the Project's substantial effects on water resources of the Basin—including through its substantial land disturbance, its impact on Comprehensive Plan Areas, and its impact on Special Protection Waters, among others—and therefore is required to be submitted for Commission review. The jurisdiction of the Delaware River Basin Commission over the PennEast Pipeline project extends the entire length of the project as it passes through the boundaries of the Delaware River watershed.

The DRBC articulated in its November 14, 2014 letter to PennEast that it intends to enforce its authority and that “DRBC review and approval are required prior to the commencement of any water withdrawal, discharge, or earth disturbance activities.” April 23, 2015, the DRBC sent a letter to FERC that included a request for FERC to consider a joint public meeting and DRBC public hearing on the captioned project. On April 25, 2016, the DRBC withdrew that request. The DRBC will conduct its public process independently of FERC's.

PennEast submitted its application to DRBC for the PennEast Pipeline Project (“Project”) on February 8, 2016 and has since submitted supplemental material and responses to DRBC comments on April 1, 2016; July 25, 2016; May 23, 2016; November 1, 2016, April 17, 2017, and May 12, 2017.

However, PennEast has not yet developed a hydrostatic test plan that identifies the final hydrostatic test water sources and discharge locations,¹³¹ including the water volume that would be withdrawn and discharged as both a Project-total amount, and a daily amount, for each pipeline segment.

Such significant withdrawals can adversely affect water conservation and the expense of the public interest, especially in exceptionally dry periods when low flow conditions may be encountered.

Discharges of hydrostatic test water would be regulated by state SPDES permit, and the classification of the receiving waters (as applicable) would be identified as part of the permitting process. As such, water should be prevented from discharging into state-designated exceptional value waters, waterbodies that provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies. However, the fact expert analysis and field monitoring has demonstrated that PennEast has falsely characterized or excluded mention of extensive areas of each of those protected resources in its materials to date raises concerns again here.

Due to this high potential for adverse impacts to water supply and conservation from the Project, and the detrimental impacts to the public interest that would result, the Corps should deny the Project's 404 applications.

n. The proposed Project would adversely affect Water Quality resulting in a detrimental impact on the public interest.

¹³⁰ FEIS

¹³¹ FERC EIS

The project would result in severe and adverse impacts to water quality that would be contrary to the public interest.

Examples of some of the many adverse impacts to water quality that would result from the Project include:

- Due to land use changes and soil alteration, there will be permanent long term water quality impacts related to stormwater runoff, including increases in the rate, volume, and frequency of stormwater runoff.¹³²
- At least 43 waterbody crossings have steep slopes that would be cut by the pipeline. These 43 crossings are proposed to have additional temporary work spaces (ATWS) within 50 ft. of sensitive water features, adding to the potential erosion threats to these steep banks and the nearby sensitive streams where sediment pollution can cause long term harm.¹³³
- Pipeline construction results in the loss of riparian (streamside) vegetation.¹³⁴ For each of the pipeline construction techniques there is a resulting loss of vegetation and foliage associated with clearing the stream banks – the PennEast pipeline is no exception. At least 255 streams will be crossed with the vast majority being crossed via open trench methods which result in permanently denuded streambanks. 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.
- The loss of riparian vegetation along streams will, among other impacts, remove shading and result in increased stream temperatures. Many of the streams being cut by PennEast are smaller, headwater streams with high water quality. The loss in vegetation will magnify increased stream temperature and thereby reduce its quality and suitability for aquatic life. For some species, the resulting change in temperature could have dramatic impacts.
- Furthermore, the loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain) and exacerbating the sedimentation impacts of construction. As noted by experts, the deforestation caused by the PennEast pipeline will result in increased stormwater runoff; this will result in increasing flows in the stream with stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Increased erosion means loss of habitat; channel migration that can have serious implications for riparian lands and vegetation over long stretches and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel; and increased instream sedimentation which is considered a pollutant both legally and scientifically.

¹³² *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

¹³³ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.

¹³⁴ Norman, *supra*.

- “When vegetation regrowth is limited, the likelihood of accelerated erosion is increased. When runoff cannot infiltrate, is not slowed at the surface by vegetation, and has direct contact with exposed soils, sediments are much more likely to be transported to downhill streams and wetlands. This is of specific concern on significant portions of the pipeline right-of-way in proximity to stream crossings, where soils to be disturbed by pipeline construction are classified as Severe Erosion Potential (79), Poor Vegetation (122), and Rugged Terrain with slopes greater than 30% (28). These areas are especially prone to erosion and sediment transport to waterbodies.”¹³⁵

Erosion and sedimentation controls and best management practices do not prevent adverse impacts.

- FERC states that completed E&S Control Plans by agencies will adequately avoid harms but this is a false conclusion as can be seen on other pipeline projects where severe sediment pollution harmed local waterbodies, many of which had special protection designations,¹³⁶ as explained further above.
- “The proposed pipeline conditions will significantly reduce the land surface’s ability to retain rainfall and facilitate infiltration, and will increase runoff frequency, volumes, and flow rates, including increased surface erosion and sediment transport to Special Protection or C1 water bodies.”¹³⁷
- “although erosion and sediment control measures could be implemented, the topography of sections of the pipeline’s route will limit the effectiveness of soil and sediment control measures. Therefore, even with the best developed soil erosion and sediment control plan in place there will be sediment and soil erosion impacts given the scale of the project and the sensitivity of the environments traversed by the pipeline.”¹³⁸

Compliance with Section 401 Water Quality Certification.

In accordance with Section 401 of the Clean Water Act, a Water Quality Certificate is necessary from the State government in which the work is located. The New Jersey Department of Environmental Protection (NJDEP) as of the time of this Public Notice has not issued a Water Quality Certificate for the portion of the project located in the State of New Jersey.

On April 26, 2017 the NJDEP issued a determination that the PennEast application materials submitted to the state were significantly deficient and incomplete. Subsequently, on June 28, 2017, NJDEP determined the PennEast Pipeline Company’s application for state approval of its project to be “administratively closed”

¹³⁵ *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

¹³⁶ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network

¹³⁷ *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

¹³⁸ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

due to the company's failure to remedy significant identified deficiencies and its failure to provide full information in a timely fashion for Clean Water Act decisionmaking. In its determination letter the NJDEP wrote:

“...given the complexity of the remaining deficient items, and the lack of demonstrated progress on the part of the applicant, it appears that it would be unlikely that an additional 60 days would allow substantial progress on the application. This application will be deemed ‘administratively closed’ as of the date of this letter.”

While the applicant did obtain a 401 Water Quality Certification on February 7, 2017, from the Pennsylvania Department of Environmental Protection (PADEP), the Delaware Riverkeeper Network is currently involved in ongoing litigation with the state over this determination and its failure to apply appropriate state standards for determining whether a 401 Water Quality Certification was proper.

PADEP has also sent a series of three incompleteness review letters to PennEast for its Chapter 105 and Chapter 102 permits. Each of the letters has indicated the applications submitted are not yet considered to be complete by PADEP and that they cannot commence technical review until the applications are complete. The incompleteness letters were sent on April 26, 2016, and again September 19, 2016 and December 23, 2016. On June 26, 2017, DEP received a request for an extension from PennEast Pipeline Company, LLC. PennEast requested additional response time to the December 23, 2016 incompleteness review letters, indicating that they “do not anticipate submitting the information requested to complete the applications until December 29, 2017.” On August 10, 2017, DEP granted the requested extension.

The missing information that PADEP requires for their Chapter 105 Water Obstruction and Encroachment Permits and Chapter 102 Erosion and Sediment Control permits is extremely relevant to the water quality impacts that the Corps is required to consider as part of its 404 public interest review.

Information gaps that risk adverse impact to water quality:

- The arsenic analysis provided in the EIS is insufficient to indicate that arsenic leaching from pipeline construction in the Newark Basin would not be a problem for shallow groundwater and therefore needs to legitimately and scientifically analyze this issue.
- PennEast and FERC have not included HDD water discharge details including the specific discharge method and impacts on receiving streams;
- Investigation is incomplete for vernal pools; in Pennsylvania, survey work is 21% **incomplete**; in New Jersey, it is 74% **incomplete**.

Water quality effects of crossings specific to the Philadelphia District review:

According to the Public Notice from the Philadelphia District, the project would include the following waterbody crossings and impacts:

IP-1: Pipeline crossing of Bear Creek, unnamed tributaries of Bear Creek. The crossing will impact a total of 1.06 acres. Specifically, the crossing will impact 0.15 acre of water ways. The waterways will be crossed in a dry condition created by the construction of a coffer dam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods.

IP-2: Pipeline crossing of the Lehigh River. The crossing will impact a total of 1.01 acres of the waterway. The Lehigh River will be crossed in a dry condition created by construction of a coffer dam and bypassing the water around the construction area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of the waterway.

IP-3: Pipeline crossing of unnamed tributaries to Laurel Run. The crossing will impact a total of 1.83 acres of waters and wetlands. Specifically, the crossing will impact 0.10 acre of waterways. The waterways will be crossed in a dry condition created by construction of a coffer dam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of waterway or wetland area.

IP-4: Pipeline crossing unnamed tributary to Stony Creek. The crossing will impact a total of 1.19 acres. Specifically, the crossing will impact 0.11 acre of waterways. The waterways will be crossed in a dry condition created by construction of a coffer dam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of waterway or wetland area.

IP-5: Pipeline crossing of PFO wetlands, the Delaware Canal, and the Delaware River. The crossing will be constructed via Horizontal Directional Drill (HDD) methods. The HDD will extend from an upland field approximately 1,200 feet west of the Delaware River to a upland field approximately 1,100 feet east of the Delaware River. In addition to crossing under the Delaware Canal, the Delaware River, and a PFO wetland the HDD will go under State Route 611 in Pennsylvania and Old River Road, the Riegelsville Milford Road and a railroad line New Jersey. There are no surface impacts to waters and wetlands associated with this crossing.

Each of these crossings would have serious adverse impacts to the water quality in the region. For example, even the HDD crossing of the Delaware River raises concerns. Alternate crossing techniques such as horizontal direction drilling (HDD) are often used to minimize the likelihood of sedimentation impacts. The HDD method is typically used in larger stream crossings and requires a significant amount of work space to store the equipment on both sides of the stream. These work spaces are described as temporary but the impacts associated with the clearing of this land can be permanent. While often touted as environmentally-friendly, HDD is an unproven method that frequently leads to spills and brings inherent risks to the environment. The recent spilling issues with the Mariner East 2 Pipeline is proof of this. Between April 2017 and August 2017, there have been 90 spills releasing over 202,000 gallons of HDD drilling fluids into the environment from Mariner East 2.¹³⁹

These drilling fluids largely consist of non-toxic bentonite, leading many to believe that it is safe. However, non-toxic does not mean completely safe for the environment. Drilling fluids substantially increase suspended solids in a stream, interfering with fish gill development and function, reducing quality of fish spawning and rearing areas, reducing fish refuge sites, reducing food availability to upper trophic levels, smothering and displacing macroinvertebrates, and filling interstitial spaces in substrates.¹⁴⁰ Furthermore,

¹³⁹ Legere, L. (2017). Some drilling allowed to resume on Mariner East pipeline after spills. *Harrisburg Bureau*, August 4, 2017.

¹⁴⁰ Crowell, H. (2014). Ecological Impacts of Inadvertent Returns from Horizontal Directional Dilling (HDD). HullRAC Science Summit, February 4, 2014.

drilling mud deposition rates far exceed the rates of natural sediment deposition and erosion.³ Even with Erosion & Sediment Control BMPs in place, these measures frequently fail and cannot be relied upon as effective protection. DRN has witnessed these failures countless times, particularly recently with the Mariner East 2 Pipeline as evidenced in the pictures below from Huntingdon County in May of 2017.



Finally, there is evidence that the acoustic impacts from construction activities, such as those described for this project, can significantly harm fish. The effects of underwater sounds created by construction activity on fish may range from a brief acoustic annoyance to instantaneous lethal injury depending on many factors.¹⁴¹ Even at non-lethal levels, low levels of acoustic damage may result in the fish not being able to swim normally, detect predators, stay oriented relative to other fish in the school, or feed or breed successfully. This is a potential threat to all fish in the vicinity of the construction.

¹⁴¹ California Department Of Transportation (2001). San Francisco – Oakland Bay Bridge East Span Seismic Safety Project, Pile Installation Demonstration Project, Fisheries Impact Assessment, August 2001.

The proposed open-trench crossing of the Susquehanna, even when considered in isolation from the Project, poses such serious adverse impacts on water quality that it is sufficient basis for the Corp to determine the Project is contrary to public interest and deny its 404 permits.

The Susquehanna River Crossing will result in 12.97 acres of temporary impacts to the Susquehanna River. At the crossing, PennEast proposes to:

“use a dual cofferdam system to construct the Susquehanna River crossing ... Preliminary engineering of this crossing would involve installing a Portadam® at the upstream tip of Monocanock Island, which is located in the river's center, to divert flow to one side of the river...Secondary coffer dams would be installed adjacent to the pipeline trench for further dewatering.”¹⁴²

Penn East anticipates that construction of the Susquehanna River crossing would be completed within 45 days, including cofferdam construction, dewatering, pipeline construction, and restoration. And that trenching, pipeline construction, and backfilling will take 6 days for (3 days for each side of the river). According to the notice, PennEast “provided the following justification written below for the need of an open-cut installation across the North Branch of the Susquehanna River, in lieu of directional drilling under the river”:

“The Susquehanna River, as it flows through Wilkes-Barre in Luzerne County, presented a challenge to the Project with its existing geologic setting and historic coal workings that occurred throughout the area. Penn East has extensively investigated this regional geohazard, and implemented field investigations and project routing that support the design and planning for construction and long-term operation of the Project.”

These “field investigations” described by PennEast consisted of meetings with PADEP Bureau of Abandoned Mine Reclamation (BAMR), desktop analysis of historical underground mine catalogs, maps and records; as well as two geotechnical boring investigations in exploratory holes to determine the nature of the ground conditions beneath the Susquehanna River.

As a result of the desktop analysis, PennEast found that there was not sufficient clearance between the ground surface and previously worked coal seams for HDD without the potential for intersecting the coal worked seams, and risking “inadvertent return of borehole fluid into the mine seams which, in turn, could surface into the River or purge acid mine drainage existing in the mine into the River.” Additionally, the results of their boring investigations found that soil conditions were such that “drilling fluids within the HDD bore cannot be controlled or maintained, resulting in drilling fluid migration into the surrounding soils...Therefore, based on the geotechnical conditions observed in the boreholes and knowledge of historic mine workings in the area, traditional open-cut method of installation is proposed at the Susquehanna River crossing.”

While the Delaware Riverkeeper Network agrees that HDD does not seem like a safe option for crossing the Susquehanna, we are also concerned by the risks that would result from an open-trench crossing in this area, particularly in light of the gaps in site specific information and the existing mine-impacted soil pollution, including acid mine drainage (AMD) in the area. These include:

¹⁴² Corps Public Notice

Lack of site specific information:

PennEast's statement that "Additional design detail and supporting engineering analyses will be submitted to the USACE Baltimore District and the PADEP in the application update after all surveys are complete" is of great concern. Not only would it be completely irresponsible for the Corps to permit this 404 crossing prior to the completion of PennEast's site surveys, engineering analysis, and design details are complete

As stated in Robert Hughes comments to FERC: "abandoned mines and an underground mine pool is located in that area and should be a cause for some concern and should be looked at much more closely should any trenching or excavation be done in that area."¹⁴³ Mine mapping in the region is incomplete, inaccurate, and in some cases, maps don't even exist. This is due in part to coal operators going "wildcatting," or mining in areas without properly documenting what they were doing.¹⁴⁴

Additionally, the known existing mines and their proximity to the riverbed and open trench seem to pose serious risks.

"PennEast discovered that ten named coal seams are present beneath the proposed Susquehanna River crossing location or surrounding areas. Four mine entrances were identified near the proposed Susquehanna River crossing location. The historic mine shafts which exist in close proximity to the River are not intersected by the currently proposed Project alignment. At the specific crossing of the Susquehanna River, there is estimated to be significantly greater than 60 feet of clearance between the ground surface and previously worked coal seams which exist closer toward the eastern bank of the Susquehanna River." According to PennEast, "This clearance between the top of seams and the bottom of the proposed trench depth is considered sufficient clearance to ensure that trenching operations will not intersect historic workings". However, even if the historic maps reviewed are correct and there is a 60 foot clearance between the ground and coal seams, we are concerned whether this would be sufficient clearance to safely trench when also considering the depth required for an open trench cut of a 36" pipe in a major river. As Princeton Hydro explains, the depth and disturbance of this open-trench crossing would be significant:

"The trench depth for the 36" diameter PennEast Pipeline must conform to the Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA). For safety reasons it must be buried deep enough to avoid accidental punctures and to deal with seasonal frost issues. The PHMSA requires pipelines transporting conventional and unconventional gas to typically be covered by 30 to 36 inches of soil overburden. The thickness of soil cover may be greater when the pipeline runs under a roadway or when it runs under a stream, river or lake. PHMSA may require additional cover (48 inches to 60 inches) when the pipeline runs under agricultural lands. Less cover however may be allowed (as little as 18 inches) when the pipeline cuts through a consolidated area of bedrock. Nonetheless the amount of excavation required to properly trench the pipe is significant."¹⁴⁵

¹⁴³ January 27, 2015 Comment of Robert E. Hughes Executive Director Eastern PA Coalition for Abandoned Mine Reclamation to FERC Re PennEast prefilng docket no. PF15-1. Accession no. 20150127-5018.

¹⁴⁴ "River concerns surface about pipeline," Elizabeth Skrapits, The Citizen's Voice. March 9, 2015.

<http://citizensvoice.com/news/river-concerns-surface-about-pipeline-1.1845246>

¹⁴⁵ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

The added risk of scour in the backfilled trench could add to the risks of the river both intersecting coal seams and exposing coal-related pollution in the soil. This risk would seem to be potentially exacerbated by the pervious gravel soils found during boring investigations:

“The geotechnical conditions beneath the river were found to be of deep alluvial deposits underlain by sedimentary rock. The overburden conditions observed were primarily stiff silts; however, layers of soft clay and highly permeable gravels were also encountered during drilling. . . **Gravel deposits, similar to the river deposits observed in the borings, present a pervious pathway for drill fluid and therefore increase the risk of an inadvertent return.** The presence of gravels also present challenges associated with bore stability, raveling and inducing steering corrections to maintain a proposed design alignment.”¹⁴⁶

Mine-impacted soil and open-trench concerns:

“Because the placement of the pipe in the trench takes time there is the need to stockpile the excavated soil in areas adjacent to the trench. Each stockpile represents another opportunity for offsite soil migration. This happened during the construction of the Tennessee Gas pipeline in Northern New Jersey leading to the impact of streams, wetlands and large recreational lakes located adjacent to the pipeline ROW.”¹⁴⁷

“There are numerous mines near the centerline of the proposed pipeline, beginning at about MP 5.1 and continuing to MP 11.2, as noted in DEIS Table 4.1.4-1. None apparently are operating. The soils table in RR7 (Table 7.1-1) lists various soils in this reach as “mine dump” or strip mine, burned”. Partially shown on Figure 7, mine-affected soils cover substantial areas on the east side of the Susquehanna River crossing. Excavating or otherwise disturbing mine spoil can release contaminants, including acid mine drainage (AMD) if sulfides are present.”

“However, the DEIS does not present any discussion of minerals that could be present in these soils or discuss whether minerals or other contaminants including AMD could result from meteoric water leaching through or running off of these soils. The mine spoil identified in RR7 is considered to have high conductivity (RR7, Table 7.1-1 for Luzerne County), which means the potential for contaminants to be released by construction disturbance is relatively high. It also has the potential for high erosion when disturbed (RR7, p 7-16). But the DEIS fails to discuss the pollution potential that will result.”¹⁴⁸

In order for the Corps to make a responsible evaluation of the crossing, FERC must “provide 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”; “assess the potential for pipeline construction to generate acid generation or leach metals in all areas where it crosses” mine spoil”; and “present avoidance and mitigation discussions focused on preventing the leaching and transport of acid and metals from the site.”¹⁴⁹

¹⁴⁶ Army Corps Public Notice (emphasis added)

¹⁴⁷ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹⁴⁸ *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

¹⁴⁹ *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

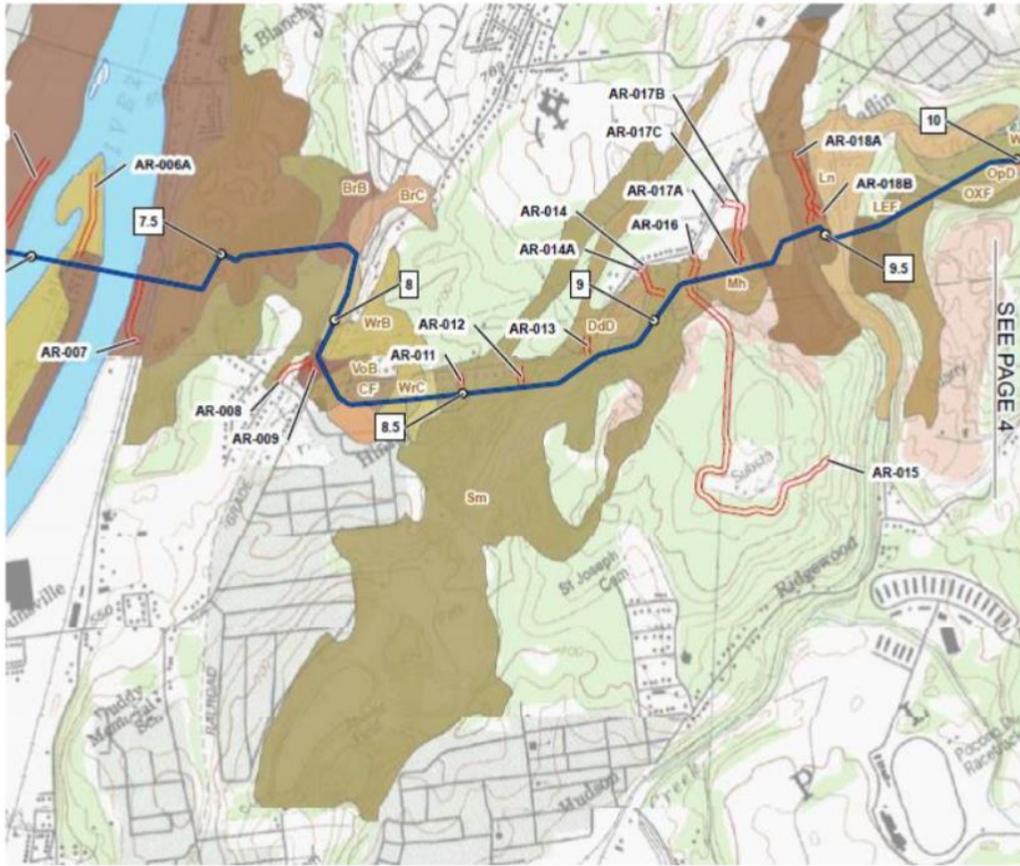


Figure 7: Snapshot of soils map (RR7, Figure 2.1-1) showing MP 7.0 to 10.0. Soil SM is strip mine.
Figure 1. Soils map referenced by Myers Report.¹⁵⁰

Adverse impacts of open-trench waterbody crossings must be considered.

These impacts and concerns are in addition to the adverse impacts that would result from a successful open-trench crossing, including:

“The dewatering of the site [required] to allow the measure to be installed or constructed. This in itself creates an impact to the stream or wetland ecosystem and resident organisms by significantly altering the hydrologic regime.”¹⁵¹

“Open-cutting is a traditional stream crossing method that is still heavily utilized, particularly for minor to intermediate stream crossings. Open-cut crossings typically result in an elevation of downstream sediment loads during and shortly after the period of construction. Sediment released during instream construction can cause negative changes to downstream aquatic life and their habitats. These negative effects include reductions in the abundance of fish populations, reductions in the abundance and

¹⁵⁰ 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

¹⁵¹ Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project, Princeton Hydro, September 2016

diversity of benthic invertebrate communities, and alterations to streambed conditions.”¹⁵²

“The trench depth will be at least 5-6 feet below existing stream grade, and could be even deeper to avoid thermal impacts to the stream or to protect the pipe from high-energy event scour and exposure. Overall, this type of construction is very disruptive to the stream and will negatively affect its ecological functionality. The current mitigative measures planned by PennEast, while perhaps addressing short-term erosion and sedimentation impacts, do nothing to restore the streams to their pre-disturbance ecological complexity and functionality. In order to justifiably state that the pipeline will cause “no impact” at each stream crossing, the subject stream must have its stream channel restored to the pre-construction width, depth, slope and substrate. This entails the collection of detailed stream data and seasonal sampling of the stream’s biota, neither of which is proposed by PennEast or recommended by FERC. The restored substrate would also have to mirror the pre-construction composition of the streambed and bank materials and condition, including restoration of the kind, quantity and quality of rock, sediment, woody debris and vegetation. Additionally, the stream’s restoration must allow for natural channel migrations, flows, sediment transport, and stream channel evolutions typical of natural stream flows. None of the mitigation measures discussed by FERC within the DEIS satisfy these requirements or demonstrate the ability to fully restore the streams to pre-construction conditions.”¹⁵³

According to the FERC EIS:

“The Susquehanna River has water quality impairment related to metals and a fish consumption advisory for PCBs... PennEast has not conducted sediment analysis to determine if PCBs are present in the sediment at the specific water crossing locations; however, prior to construction, PennEast would sample sediment within the proposed workspace for PCB concentration in the waterbodies identified in table 4.3.2-5. If PCBs are found to be present within the Project area, PennEast would consult with the appropriate agencies to determine whether additional precautions should be undertaken to prevent releasing PCBs into the water column. PennEast presented this sampling plan and site-specific crossing plan to PADEP and USACE in its Luzerne County Joint Permit Application.”

Impaired Waterbodies or Waterbodies with Contaminated Sediments Crossed by Pipeline Facilities						
Waterbody	MP <u>a</u>/	Impaired Designated Use(s) - 305(b) List	Pollutant(s) - 303(d) List	Water Quality Management Plan	Crossing Length (feet)	Pipeline Crossing Method
Pennsylvania						
Susquehanna River	7.2	Aquatic Life, Fish Consumption	Source Unknown - Mercury, AMD -Metals, Source Unknown - PCB	TMDL, 2002 (PCB, pH, siltation, metals)	1,056	Dry Crossing

¹⁵² Reid, S.M., & Anderson, PG. (1999). Effects of Sediment Released During Open-Cut Pipeline Water Crossings. *Canadian Water Resources Journal*, Vol. 24, No. 3.

¹⁵³ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

Table 5. Impaired Waterbodies or Waterbodies with Contaminated Sediments Crossed by Pipeline Facilities, adapted from the FEIS.

In FERC's own description of the crossing, PennEast will "minimize" "in-water resuspension of contaminated sediments in the water column during construction". Given the severity of the contamination present the associated risks to the public interest, it is not enough for PennEast to "minimize", but not avoid, this contamination.

The FERC EIS also states that:

"Abandoned mine drainage (AMD) is a potential source of contaminated sediments within impaired waterbodies. Two waterbody crossings (Gardner Creek and Susquehanna River) have sediment-related impairment issues related to the presence of metals which are potentially from AMD. . . . Susquehanna River PennEast proposes a dry crossing of the Susquehanna River at MP 7.1. The proposed crossing location is bordered by an airport and flood-control berm to the south and a newly constructed highway bridge to the north. The proposed crossing is in proximity to the historic 1959 Knox Mine disaster where the river bed collapsed into the mine.

"Additionally, sediment-related impairment issues regarding the Susquehanna River are related to the presence of metals which are potentially caused by AMD."

As stated in a January 27, 2015 letter to FERC from the Executive Director Eastern PA Coalition for Abandoned Mine Reclamation regarding the Project:

"Anthracite underground mining has definitely occurred extensively in this region underground and at the surface on multiple coal veins, both along the floodplain of the Susquehanna River, and even under portions of the Susquehanna River, although, that was not encouraged since it was outside of the safety zone for mining coal, overburden, and other roof support material/rock. The historic mine maps show the geographic representation of how much of the workings have been mined out, pillars removed, pillars drilled through, areas that have been flushed, slurried, left intact (solid barrier pillars of coal), and the depth at which the mining has occurred."

"This area of the crossing is not something that can be completed in the short period of time that is available to provide comments. EPCAMR is of the opinion that based on the best available mapping that is out there without conducting a full hydrogeological investigation and mapping and mine pool investigation, which is something that PennEast should possibly consider, there could be the potential for a great deal of environmental concern for pollution, leaks into the underground mine pools, subsidence, and or instability issues at the surface depending on the infrastructure needed to create the pipeline crossing."

"EPCAMR believes that PennEast should seriously consider the abandoned underground mining implications and potential risk for mine subsidence and mine pool contamination for this project in this area prior to moving forward. . . . abandoned mines and an underground mine pool [are] located in that area and should be a cause for some concern and should be looked at much more closely should any trenching or excavation be done

in that area... [PennEast] should be concerned greatly that there could be the potential for mine subsidence, infiltration of surface water into the underground workings through fractured rock, excavation into the mine pool which could cause a new discharge to created, or a possible breach into the levee system.”

Given the

- unreliability of desktop reviews for historic coal mines due to “wildcat” mining;
- the lack of actual surveys complete and design detail and supporting engineering analyses;
- the pervious soils found during boring tests; and the
- proximity of the project activities to coal mines and AMD

the risks associated this crossing and the potential for extremely adverse impacts to the water quality and the public interest are too great a burden to put on the public—especially in light of the fact that there is no public benefit that would come as a result. The Corps must reject the Project’s 404 permit applications based on the potential adverse impacts of this crossing alone.

- o. **The proposed Project would have an adverse effect on Energy Needs and would result in detrimental impacts on the public interest.**

PennEast and FERC’s assertion of need is contradicted by the preponderance of the evidence and is largely a statement of industry desires rather than public need.

The DEIS asserts the proposed pipeline is necessary to serve New Jersey and eastern Pennsylvania communities and some unidentified “surrounding states”. It is asserted that the project is needed to “provide low cost natural gas produced from the Marcellus Shale region”. The DEIS asserts that there is a need to displace Gulf Coast gas with cheaper and reliable access to Marcellus shale gas. It is asserted that there is a need for the project in order to “provide enhanced competition among natural gas suppliers and pipeline transportation providers.” The DEIS asserts there is a need in order to allow “supply flexibility”, “diversity”, “reliability”, better pricing, and to allow direct access to long lived dry gas reserves.

However, none of these are “needs”. These are industry desires, goals, hopes, dreams, wishes and wants. However you look at it, these claims do not assert a “need” for the gas. They assert a desire by the pipeline company to be able to provide a different source of gas so it can make money. These are very clearly private corporate goals and gains. These are not “needs” of the public; they are desires of private industry.

In fact, there is no need for the gas PennEast would carry to New Jersey and Pennsylvania; both states are fully supplied. And to the degree that PennEast wants to assert it is delivering the gas to other unknown, unidentified states -- in order to substantiate this claim and subject it to the public process that is required by NEPA, more detail is required that actually identifies the states and the users.

As noted in the attached expert report from Arthur Berman:¹⁵⁴

¹⁵⁴ *Professional Opinion of Proposed PennEast Pipeline Project*, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015

“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...”

“Pennsylvania was already grossly over-supplied and that the proposed additional 1 Bcf/d supply would result in an over-supply for New Jersey of approximately 53%,” and there is no evidence that PennEast will result in lowered costs for consumers.¹⁵⁵

“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....”

“There is no evidence...that more gas supply [would] result[] in lower costs to consumers”
“All leading companies in the Marcellus and Utica plays reported net losses for the second quarter of 2015”.

A second report issued by Arthur Berman further clarifies that:¹⁵⁶

“There is no evidence...that more gas supply [would] result[] in lower costs to consumers”

“All leading companies in the Marcellus and Utica plays reported net losses for the second quarter of 2015”

“U.S. gas production is declining and shale gas output is down almost 2.5 Bcf per day”

In comments submitted on the FERC docket on September 12, 2016, the New Jersey Division of Rate Counsel, in substantive comments, supported by an expert affidavit, similarly challenge the claimed need for the project. According to their comments there is in fact no objectively demonstrated need for the project. In fact, the NJ Division of Rate Counsel effectively makes the case that the “forecasted demands of the LDCs that PennEast is designed to supply are already being met by existing gas supply arrangements and available transportation capacity.”¹⁵⁷

The New Jersey Division of Rate Counsel well documents the self-dealing evidence provided by PennEast attempting to support its need claim. Given the self-dealing nature of this evidence the NJ Division of Rate Counsel urges FERC to conduct an independent analysis into need which has not been done. While there is ample evidence and expert analysis on the record to document no genuine need for the project that would justify the significant community, environmental and economic costs it will inflict, at a minimum, it is incumbent on the Corps to conduct such an independent review.

¹⁵⁵ *Professional Opinion of Proposed PennEast Pipeline Project*, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015 and September 11, 2016.

¹⁵⁶ *Opinion on the PennEast Pipeline*, Arthur Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., September 11, 2016

¹⁵⁷ Comments submitted by New Jersey Division of Rate Counsel, Sept 12, 2016, to FERC Docket No. CP15-558

An additional expert report generated by Skipping Stone (attached here) 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:¹⁵⁸

“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 complimented by the predictions and concerns of experts that the industry is proposing an “overbuild” of pipelines from the Marcellus and Utica shales:¹⁵⁹

“Speaking to attendees at the 21st Annual LDC Gas Forums Northeast conference in Boston Tuesday, 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.

Lack of “need” for gas in Pennsylvania is also asserted by a Labrynth Consulting reaction to a recently released report advocating for more pipelines for similar goals, to fulfill an asserted need for gas and to reduce prices in the region. In this responsive analysis the assertion of a need for the gas was proven false with facts:

“First, Pennsylvania exported 3.23 Bcfd to other regions of the country in 2015 an amount almost equal to its 2014 consumption of 3.3 Bcfd. There is plenty of existing pipeline capacity to meet Pennsylvania’s demand and enough left over to send out of the state.”¹⁶⁰

The assertion that PennEast is intended to provide “enhanced competition” and cheaper pricing for industry users is not a need – it is a corporate desire, but it is not a need. It is an abuse of process and power for FERC to allow PennEast to claim that cheaper prices and setting the PennEast companies up to better compete with other industries fulfills the requirement of “need”. Approving construction of a pipeline project, granting it exemption from state and local laws, giving it the power of eminent domain so it can take private property, so it can take publicly preserved parks, forests and natural lands, in order to inflict unmitigatable and irreparable harms, all so the pipeline company can achieve its independent goal of greater profits and other industries can save a buck on the backs of the rest of us, subjecting communities to the threat and reality of pipeline accidents, incidents and explosions (which happen with concerning regularity) does not characterize a legitimate need that warrants the property takings and associated harms.

¹⁵⁸ *Analysis of Public Benefit Regarding PennEast*, Skipping Stone, March 9, 2016

¹⁵⁹ *Marcellus/Utica on Pace for Pipeline Overbuild*, Says Braziel, Natural Gas Intelligence, June 8, 2016

¹⁶⁰ Labrynth Consulting responding to “A Pipeline For Growth Report”

The assertion that PennEast is necessary to provide greater reliability is also not a “need”. There is no evidence that New Jersey, Pennsylvania, and the undisclosed other states do not have reliable access to energy sources, gas or otherwise. The reports above document that in fact both states are already fully and reliably served. It is incumbent upon PennEast to demonstrate there is a reliability problem, and that the proposed project will necessarily ameliorate this problem. They have not done so.

Regarding the claim that PennEast is “needed” to provide direct access to long lived reserves, this claim is neither explored nor demonstrated by the DEIS document. In fact, there is a wealth of analysis which documents that shale gas will soon be on a swift decline and as such is not in fact a long term reliable source of energy; to the contrary it is a short term fix that will quickly run dry and require replacement with other energy sources. As the Post Carbon Institute’s *Drilling Deeper* report fully documents, the shale gas and tight oil industries have a short life, one that is only a few decades long.¹⁶¹ Multiple experts reach similar conclusions when reflecting on EIA figures, current production rates, and other objective data, e.g. findings of Labrynth consulting when reacting to a recently released report titled, “A Pipeline For Growth” found:

Official EIA proven developed producing shale gas reserves for the Marcellus Shale are 84.5 trillion cubic feet (Tcf) and, for the Utica Shale, 6.4 Tcf (Table 1). That suggests approximately 18 years of supply at current production rates. There are approximately 27 years of supply including proven undeveloped reserves (PUD).¹⁶²

Construction of a 40 year pipeline for an energy source that will peak by 2020 and be on decline thereafter is irrational and cannot be said to fulfill the definition of a “need”.

The claim that this pipeline is “needed” in order to provide lower cost gas to New Jersey and Pennsylvania customers is not a “need” (as discussed above and in the attached expert reports) but in addition, it cannot be an expected outcome of this project. The construction of the PennEast pipeline may, to the contrary, contribute to an increase in gas prices for many in PennEast’s identified service area.

The New Jersey Division of Rate Counsel (2016) found that “forecasted demands of the LDCs that PennEast is designed to supply are already being met by existing gas supply arrangements and available transportation capacity” (p. 8).¹⁶³

Natural gas prices are lowest in the regions in which gas is produced. For many years, the lowest natural gas prices in the East were found at Henry Hub, located near the Gulf of Mexico where much of the natural gas in the United States was produced. With the increase in shale gas production, however, the lowest natural gas prices in the country are now found at trading points in and around the Marcellus and Utica shale plays in Pennsylvania, West Virginia, and Ohio. Availability of pipeline infrastructure to send natural gas to other regions has a direct impact on the price of natural gas in those regions—greater gas take-away capacity allows more natural gas to be produced, and an increase in supply will lead to a decline in price in those regions that receive additional gas. The improved access to higher priced markets via additional pipeline infrastructure will raise the price of natural gas in the producing region, which also will increase production – in this case the producing region is Pennsylvania, therefore it is not a given that prices would in fact reduce. In addition, while generally speaking increasing the supply in a nonproducing region (such as NJ)

¹⁶¹ *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

¹⁶² Labrynth Consulting responding to “A Pipeline For Growth Report”

¹⁶³ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

from a lower cost producing region (Pennsylvania) may be expected to lower prices in the downstream market, one recent study that was specific to the PennEast Pipeline showed how gas rates for some customers in NJ may increase due to other pipelines increasing their transportation rates.¹⁶⁴

The claim that increased pipeline capacity will necessarily result in reduced gas prices is challenged by other experts considering the issue when responding to claims that pipeline capacity is needed to reduce prices for Eastern Pennsylvania end users:

“The correlation between volume of gas production and the price of gas for power generation is poor because there are other factors besides production volume that affect the price of gas. Still it seems unlikely that more gas production in Pennsylvania would result in a cost reduction since production already exceeds consumption by almost 100%.”¹⁶⁵

Further, as information regarding actual asserted customers for PennEast is revealed, it is increasingly clear that the claim of need is largely self-manufactured. For example, Spectra Energy Partners is a “member company” in PennEast Pipeline Company, LLC and 10% owner of the PennEast Pipeline proposal. Spectra Energy is currently planning for and proposing a new project called the Texas Eastern Marcellus to Market project (M2M). Spectra has made clear that the proposed PennEast pipeline will be the primary source of gas that the M2M project will transport. Specifically, according to the Spectra Energy website, the new M2M pipeline would receive the majority of its gas, 62.5%, (up to 125,000 dekatherms per day (Dth/d)) from the PennEast pipeline (this equates to over 11% of PennEast’s anticipated capacity). In other words, Spectra, as part of PennEast, is asserting the PennEast pipeline needs to be built in order to service the Texas Eastern M2M customer which is, in fact, Spectra. The end users of the M2M project are not identified in the DEIS or anywhere else in the record, and have not, in fact, demonstrated a need for that project. Again we are dealing with self-serving speculation of need rather than a demonstration of a genuine public need for the project. Of the 12 shippers PennEast identifies as demonstrating a need for the pipeline and thereby helping to game the system in this way, at least five are PennEast owners: PSEG, Spectra (Texas Eastern Transmission), South Jersey Gas, UGI, and Elizabethtown Gas (Pivotal Utility Holdings).

Making the artificial argument of “need” for the PennEast project is used to craft an artificial justification for imposing extreme and unnecessary harm on the environment and communities. The asserted “need” for PennEast is really an argument for a project that will allow the PennEast companies to achieve their private goals of generating a profit – it does not support a genuine “need” for the PennEast pipeline. Given the significant level of impacts that will be inflicted by the PennEast pipeline on the water resources of Pennsylvania and New Jersey, and that the project will necessarily result in unavoidable and unmitigatable harm to the environment and communities, this lack of need for the PennEast pipeline project is a fatal flaw. It is improper for the DEIS to presume “need” rather than require the project applicant to affirmatively demonstrate it.

FERC has made it clear that it does not “look behind the contracts to determine whether the customer commitments represent genuine growth in market demand” or need. *See also NE Hub Partners, L.P.*, 90 FERC ¶ 61,142 (2000). Such an arbitrary review process, when taken to its logical conclusion, leads to absurd results. Indeed, to the extent the contracts are artificially manufactured and do not represent “genuine growth in market demand” FERC essentially admits that such fraudulent representations are sufficient for a

¹⁶⁴ Lander, Gregg. “Analysis of Public Benefit Regarding PennEast Pipeline”, New Jersey Conservation Foundation. March 9, 2016. Available at: <http://njconservation.org/docs/PennEastNotNeeded.pdf>

¹⁶⁵ Labrynth Consulting responding to “A Pipeline For Growth Report”

decision approving the certificate. Here, substantial questions have been raised regarding the underlying contracts, and to the extent FERC fails to make a determination on “genuine market growth” and subsequent approval provided by FERC is arbitrary and capricious.

Furthermore, eminent domain originated as a way for governments to build necessary public infrastructure projects such as national highways and public buildings. It also enables governments to create parks and other public recreation areas. While eminent domain is considered an inherent power, it is subject to constitutional limitations. Among those limitations is that the land acquisition must be for “public use”.¹⁶⁶ The power of eminent domain is abused when it is used to benefit powerful interest groups at the expense of the less powerful; Supreme Court justices have recognized that the beneficiaries of this abuse “are likely to be those...with disproportionate influence and power in the political process, including large corporations and development firms.”¹⁶⁷ At its best, eminent domain allows for the acquisition of private property to create national parks for all to enjoy, and at worst, it exploits less politically and economically powerful groups. In the latter instance, the government acts as a henchman for private corporations, and this is not the intent of eminent domain. However, this is precisely what is happening at the behest of pipeline companies including PennEast. As noted, there is no genuine need for this project; the true goals are not to serve the public but to help the six companies that comprise the PennEast Pipeline, LLC to meet their corporate goals and to generate profits. This amounts to a government subsidization of a private company’s profits, at the expense of the public.

FERC has stated that “[e]ven though the compensation received in [an eminent domain proceeding] . . . is deemed legally adequate, the dollar amount received as a result of eminent domain may not provide a satisfactory result to the landowner and this is a valid factor to consider in balancing the adverse effects of a project against the public benefits.” *See Order Clarifying Statement of Policy*, 90 FERC ¶ 61,128, at 61,398. FERC has made clear that “[u]nder the Certificate Policy Statement, FERC will not authorize the construction of a project, with the concomitant right to obtain the necessary rights-of-way through either negotiation or the eminent domain process, unless it first finds that the overall public (not private) benefits of the project will outweigh the potential adverse consequences.” *See Order Clarifying Statement of Policy*, 88 FERC ¶ 61,748, at 50. Here, a significant portion of the landowners have refused PennEast access to their property, which will require PennEast to acquire vast tracts of property via eminent domain. As such, this significant adverse impact supports a finding that the adverse effects of the Project outweigh its questionable benefits to the public.

The Corps is required to consider “The relative extent of the public and private need for the proposed structure or work” in the evaluation of every application. (33 C.F.R. § 320.4(a)(2)) as part of this cost-benefit analysis required for a public interest review. Without a public need for the project, in light of the many adverse impacts to the environmental and the public interest, the Project is clearly contrary to the public interest and the Corps should reject its 404 permit.

p. The proposed Project would adversely affect the Safety of those in the region, and would therefore have a detrimental impact on the public interest.

There are many adverse safety impacts that would result from the Project and which would detrimentally impact the public interest.

¹⁶⁶ U.S. Const. Amend. V

¹⁶⁷ *Kelo v. City of New London*, 545 U.S. 469 (2005), O’Connor Dissent

Proximity to compressor stations has inflicted health harms, quality of life impacts and property damage, as well as lost property value, and has had impacts so severe that in at least one documented case it forced a family to abandon their \$250,000 investment in the home rather than suffer the health, safety and other harms they were experiencing.

According to the Pipeline and Hazardous Materials Safety Administration, 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. And the risk of accident, incident and harm is increasing. 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.

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."

FERC's improper determination that pipelines constructed more recently are safer resulted in a flawed analysis and discussion of the health and safety ramifications of the proposed PennEast pipeline for communities. The focus of the DEIS on compliance with regulations does not excuse the failure to assess the fact that accidents, incidents and explosions are higher than in older, pre-1940 pipelines, and the need to consider why safety is on the decline and whether PennEast will be subjected to the same construction approaches that have made more modern pipelines less safe and more prone to catastrophic events.

In the EIS FERC and PennEast use the assertion that, "the majority of fatalities from natural gas pipelines are associated with local distribution pipelines. These pipelines are not regulated by FERC; they distribute natural gas to homes and businesses after transportation through interstate transmission pipelines. In general, these distribution lines are smaller-diameter pipes and/or plastic pipes that are more susceptible to damage" to diminish the serious health and safety threats and harms of pipelines.

Given that distribution pipelines are a normal and needed consequence of an interstate transmission line in order to take the induced fracked gas from the well pads into interstate commerce, the harms inflicted by distribution lines must be equally assessed and accounted for in the EIS as a foreseeable, direct and induced consequence of the PennEast pipeline.

The effort by the EIS to dismiss the devastation that gets inflicted when a pipeline explodes or does damage to a community through an accident or incident is, frankly, disgusting. The EIS tries to dismiss the devastation to people and families suffered from an explosion of a pipeline, for example, by asserting that the harms associated with pipelines are less than with other activities:

"The nationwide totals of accidental fatalities from various anthropogenic and natural hazards are listed in table 4.11.3-2 in order to provide a relative measure of the industry-wide safety of natural gas transmission pipelines. Direct comparisons between accident categories should be made cautiously because individual exposures to hazards are not uniform among

all categories. As indicated in table 4.11.3-2, the number of fatalities associated with natural gas facilities is much lower than the fatalities from natural hazards such as lightning, tornados, floods, earthquakes, etc.”

In addition to the effort to diminish the devastation to a person or family suffered during an explosion by a natural gas pipeline, the dismissal fails to give the necessary context or assessment to fairly compare these uses. The necessary comparisons of potential for an incident to occur amongst different threats versus the actual reality of a hazard is lacking in the EIS analysis. Comparing apples to oranges does not work here.

“Based upon experience with other pipelines it can be anticipated that, for example, just in Carbon County where 560 people live within 2 miles of the proposed compressor station (US Census Bureau, 2015), there will be on the order of “504 people experiencing odor events, 398 people experiencing respiratory impacts, 325 people experiencing sinus problems, and 218 people experiencing sleep disturbances and/or severe headaches.”

Additional adverse safety effects and considerations from the Key-Log Economics analysis:

“**Evacuation Zone:** The evacuation zone is defined by the distance beyond which an unprotected human could escape burn injury in the event of the ignition or explosion of leaking gas (Pipeline Association for Public Awareness, 2007, p. 29). There would be a potential evacuation zone with a radius of at least 3,157 feet (962.48 m). (See map, Figure 2, for a close-up of these zones in part of the study region.)

Residents and housing units in the evacuation zone: 54,579 people, 23,293 homes

Compressor Station: The proposed compressor station is likely to have separate effects on property value and on human health. Based on the experience of homeowners near a compressor station in Hancock, New York, we consider the possibility of a property value effect within one half mile of the proposed compressor station in Kidder Township, Carbon County (Catskill Citizens for Safe Energy, 2015). This zone overlaps the ROW and the evacuation zone, and because we assume that the more acute and ever present effect of proximity to the compressor station would dominate all other effects, we ignore the ROW and evacuation zone effects for these particular properties.

Compressor stations have also been associated with various human health effects at distances up to two miles away (Subra, 2009, 2015). Further epidemiological research would allow estimation of the costs of those effects for the proposed station in Kidder Township, however, without such research, we do not include the potential public health costs in the present study.”¹⁶⁸

As such, the proposed Project would adversely affect the Safety of those in the region, and would therefore have a detrimental impact on the public interest.

- q. **The proposed Project would adversely affect Food and fiber production that would have a detrimental impact on the public interest.**

¹⁶⁸ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

We have learned from farmers, and it has been documented on the record, that crop production has gone down by as much as 30% when a pipeline cuts through farm crop lands. PennEast and FERC's EIS figures do not consider harms to other local businesses, such as the 7th generation nursery business reported in the press that said their ability to continue to operate would be harmed if PennEast passes through their property as is under consideration.

In addition to providing exaggerated and false claims of benefit, the EIS ignores the economic harms inflicted by construction and operation of PennEast. Among its many deficiencies, the DEIS analysis does not consider the adverse impacts to recreation and ecotourism so vitally important to the impacted region; the analysis fails to consider the implications for future investment in open space preservation and the adverse impacts thereof as communities realize that preserved lands are not protected from pipeline construction; the economic damage to agricultural crop production is overlooked as are harms to other businesses.

The threat of increased drought from climate change is significant depending on how quickly the U.S. reduces climate changing emissions – and given that we are commenting on yet another proposal for a fossil fuel based gas pipeline, it is not unlikely that emissions will significantly reduce in sufficient time to prevent these consequences from coming to fruition. According to the Union of Concerned Scientists:

“On a higher-emissions pathway, a short seasonal drought can be expected every year in most of New England by the end of this century, while the frequency of longer droughts could triple to once every 6 to 10 years in parts of New York, Pennsylvania, and Maine—the region's key agricultural states.”

An additional effect discussed but not quantified by the Key-Log Economics analysis is the

“long-standing harm to agricultural productivity due to soil compaction, soil temperature changes, and alteration of drainage patterns due to pipeline construction. Rob Fulper, a farmer in West Amwell, Hunterdon County, New Jersey, noticed that corn planted over two existing pipelines buried on his 100-year-old family farm during World War II that now transport natural gas produce lower yields (Colaneri, 2015). Separately, agronomist Richard Fitzgerald (2015) concludes, “it is my professional opinion that the productivity for row crops and alfalfa will never be regenerated to its existing present ‘healthy’ and productive condition [after installation of a pipeline].” Thus, the true loss in food and other ecosystem service value from pasture/forage acreage would be larger than our estimates reflect.”¹⁶⁹

The definitively lower crop yield that these farmers have faced due to the permanent ecological changes in the land disprove the claim by FERC and pipeline companies that any effects would be “temporary in nature” and that all areas will be “restored to agricultural use after construction.” The reality felt on the ground by farmers is that these adverse impacts to food and fiber production cannot be reversed.

As such, with no public benefits to food and fiber production to possibly come from the Project, and a significant adverse impact to be suffered by public, particularly those in the agricultural areas the pipeline would pass through and those who depend on them, the Corps should find the Project contrary to the public interest and deny the 404 permit.

¹⁶⁹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

r. **The proposed Project would adversely affect Mineral Needs, resulting in an adverse impact to the public interest.**

The information provided by FERC fails to forecast the way in which natural gas fits into the United States' energy mix in the future. For example, by some estimates all shale plays have peaked and older plays, like the Barnett Shale and Haynesville Shale, are in a gradual decline as the industry as a whole has seen a roughly 4% decline since early 2016.¹⁷⁰

Indeed, in a long-term outlook published in June of 2017, Bloomberg New Energy Finance predicted that the natural gas market share in global power generation will “drop from 23 percent last year to 16 percent by 2040, and that gas-fired power generation capacity will start to decline after 2031.”¹⁷¹

With these emerging forecasts in mind, the Project, which would result in infrastructure for the transport of shale gas, a rapidly declining energy source for the country, would have an adverse impact on the mineral needs of the public interest.

s. **The proposed Project would adversely affect Considerations of Property Ownership, resulting in a detrimental impact to the public interest.**

The proposed Project would cause extreme adverse impacts on Considerations of Property Ownership in relation to the public interest. Most significantly property ownership would be forcibly taken away from any landowner in the path of the pipeline. This adverse impact is even harder for the public to bear in light of the fact that there is no public need for the project. Additionally, property value, which is an essential consideration and component to property ownership, would be greatly decreased for property in proximity to the Project.

Approving construction of a pipeline project, granting it exemption from state and local laws, giving it the power of eminent domain, so it can take private property, so it can take publicly preserved parks, forests and natural lands, in order to inflict un-mitigatable and irreparable harms, all so the pipeline company can achieve its independent goal of greater profits and other industries can save a buck on the backs of the rest of us, subjecting communities to the threat and reality of pipeline accidents, incidents and explosions (which happen with concerning regularity) does not characterize a legitimate need that warrants the property takings and associated harms.

Eminent domain originated as a way for governments to build necessary public infrastructure projects such as national highways and public buildings. It also enables governments to create parks and other public recreation areas. While eminent domain is considered an inherent power, it is subject to constitutional limitations. Among those limitations is that the land acquisition must be for “public use”.

¹⁷⁰ See Hughes, J. David, *2016 Shale Gas Reality Check*, Post Carbon Institute (December 2016), available at: http://www.postcarbon.org/wpcontent/uploads/2016/12/Hughes_2016-Shale-Gas-Reality-Check-2016.pdf.

¹⁷¹ Farchy, Jack, *What if Big Oil's Bet on Gas is Wrong*, Bloomberg (July 18, 2017), available at: <https://www.bloomberg.com/news/articles/2017-07-17/big-oil-sees-salvation-ingas-but-what-if-it-s-the-wrong-bet> (noting that “[w]ind and solar are just getting too cheap, too fast’ for gas to play a transitional role, said Seb Henbest, lead author of the BNEF report”).

The power of eminent domain is abused when it is used to benefit powerful interest groups at the expense of the less powerful; Supreme Court justices have recognized that the beneficiaries of this abuse “are likely to be those...with disproportionate influence and power in the political process, including large corporations and development firms.”

At its best, eminent domain allows for the acquisition of private property to create national parks for all to enjoy, and at worst, it exploits less politically and economically powerful groups. In the latter instance, the government acts as a henchman for private corporations, and this is not the intent of eminent domain. However, this is precisely what is happening at the behest of pipeline companies including PennEast. As noted, there is no genuine need for this project; the true goals are not to serve the public but to help the six companies that comprise the PennEast Pipeline LLC to meet their corporate goals and to generate profits. This amounts to a government subsidization of a private company’s profits, at the expense of the public.

FERC has stated that “[e]ven though the compensation received in [an eminent domain proceeding] . . . is deemed legally adequate, the dollar amount received as a result of eminent domain may not provide a satisfactory result to the landowner and this is a valid factor to consider in balancing the adverse effects of a project against the public benefits.” *See Order Clarifying Statement of Policy*, 90 FERC ¶ 61,128, at 61,398. FERC has made clear that “[u]nder the Certificate Policy Statement, FERC will not authorize the construction of a project, with the concomitant right to obtain the necessary rights-of-way through either negotiation or the eminent domain process, unless it first finds that the overall public (not private) benefits of the project will outweigh the potential adverse consequences.” *See Order Clarifying Statement of Policy*, 88 FERC ¶ 61,748, at 50. Here, a significant portion of the landowners have refused PennEast access to their property, which will require PennEast to acquire vast tracts of property via eminent domain. As such, this significant adverse impact supports a finding that the adverse effects of the Project outweigh its questionable benefits to the public.

Key-Log Economics Analysis found the following Adverse Impacts to Land Price resulting from similar projects:

“To say the impacts and potential impacts of the PennEast Pipeline on private property value are important to people along its proposed route would be an extreme understatement. Key-Log Economics and Delaware Riverkeeper Network are conducting an analysis of all comments submitted through the closing of the DEIS comment period on September 12, 2016. Of 1977 total comments reviewed thus far (a sample), 99.8% of comments mentioning property value believed the PE would have a negative impact.”¹⁷²

“Landowners and Realtors along the proposed route of the Mountain Valley Pipeline, a 42” high-pressure natural gas pipeline designated to transport gas from fracked wells in the Marcellus through West Virginia and Virginia, report abandoned building plans, lower than expected appraisals, and buyers walking away from properties potentially affected by the construction (Adams, 2016). At least one ROW landowner was told by insurance agencies that their rates would likely increase if coverage remains available at all (Roston, 2015).”

“While it is impossible to know precisely how large an effect the specter of the PE has already had on land prices, there is strong evidence from other regions that the effect would be negative. In a systematic review,

¹⁷² *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

Kielisch (2015) presents evidence from surveys of realtors, home buyers, and appraisers demonstrating natural gas pipelines negatively affect property values for a number of reasons. Among his key findings relevant to the PE:

- 68% of Realtors believe the presence of a pipeline would decrease residential property value.
- Of these Realtors, 56% believe the decrease in value would be between 5% and 10%. (Kielisch does not report the magnitude of the price decrease expected by the other 44%.)
- 70% of Realtors believe a pipeline would cause an increase in the time it takes to sell a home. This is not merely an inconvenience, but a true economic and financial cost to the seller.
- More than three quarters of the Realtors view pipelines as a safety risk.
- In a survey of buyers presented with the prospect of buying an otherwise desirable home with a 36-inch diameter gas transmission line on the property, 62.2% stated that they would no longer buy the property at any price. Of the remainder, half (18.9%) stated that they would still buy the property, but only at a price 21%, on average, below what would otherwise be the market price. The other 18.9% said the pipeline would have no effect on the price they would offer.
- Not incidentally, the survey participants were informed that the risks of “accidental explosions, terrorist threats, tampering, and the inability to detect leaks” were “extremely rare” (2015, p. 7). The survey participants had, in other words, realistic information about the probability of pipeline accidents and were not responding out of overblown fears.
- Considering only those buyers who are still willing to purchase the property, the expected loss in market value would be 10.5%.¹⁷³ This loss in value provides the mid-level impact in our estimates. A much greater loss (and higher estimates) would occur if one were to consider the fact that 62% of buyers are effectively reducing their offer prices by 100%, making the average reduction in offer price for all potential buyers 66.2%.¹⁷⁴ In our estimates, however, we have used the smaller effect (-10.5%) based on the assumption that sellers will eventually find one of the buyers still willing to buy the pipeline-easement-encumbered property.
- Based on five “impact studies” in which appraisals of smaller properties with and without pipelines were compared, “the average impact [on value] due to the presence of a gas transmission pipeline is -11.6%” (Kielisch, 2015, p. 11). The average rises to a range of -12% to -14% if larger parcels are considered, possibly due to the loss of subdivision capability.
- These findings are consistent with economic theory about the behavior of generally risk-averse people. While would-be landowners who are informed about pipeline risks and nevertheless decide to buy property near the proposed PE corridor could be said to be “coming to the nuisance,” one

¹⁷³ Half of the buyers would offer 21% less, and the other half would offer 0% less; therefore the expected loss is $0.5(-21\%) + 0.5(0\%) = -10.5\%$.

¹⁷⁴ This is the expected value calculated as $0.622*(-100\%) + 0.189*(-21\%) + 0.189*(0\%)$.

would expect them to offer less for the pipeline-impacted property than they would offer for a property with no known risks.

- Kielisch’s findings demonstrate that properties on natural gas pipeline rights-of-way suffer a loss in property value. Boxall, Chan, and McMillan (2005), meanwhile, show that pipelines also decrease the value of properties lying at greater distances. In their study of property values near oil and gas wells, pipelines, and related infrastructure, the authors found that properties within the “emergency plan response zone” (EPZs) of sour gas¹⁷⁵ wells and natural gas pipelines faced an average loss in value of 3.8%, other things being equal.”¹⁷⁶

“The PE has both a high consequence area and an evacuation zone radiating from both sides of the pipeline defined by health and safety risks. Whether disclosed or not by sellers, prospective buyers are likely to become informed regarding location of the property relative to the PE’s HCA and evacuation zones or, at a minimum, regarding the presence of the PE in the study region.

“The compressor station proposed for Kidder Township in Carbon County would likely cause its own more severe reduction in the value of nearby properties. We apply the percentage reduction awarded in the Hancock, New York case (25%) to properties that are (as the properties were in that case) within half a mile of the proposed compressor station (“Proximity of Compressor Station Devalues Homes by as much as 50%,” 2015). The stations can also be noisy, with low-frequency noise cited as a constant nuisance (“Proximity of Compressor Station Devalues Homes by as much as 50%,” 2015). These issues led some homeowners to pull-up stakes and move away and to reduced property value assessments for others (Cohen, 2015; “Proximity of Compressor Station Devalues Homes by as much as 50%,” 2015).”¹⁷⁷

“Existing studies suggest negative impacts on land value from various types of nuisances that impose noise, light, air, and water pollution, life safety risks, and lesser human health risks on nearby residents (Sun, 2013; Bolton & Sick, 1999; Boxall et al., 2005). In addition to the emerging body of evidence demonstrating a negative relationship between natural gas infrastructure and property value, well established analyses strongly reveal the opposite analog. Namely, amenities such as scenic vistas, access to recreational resources, proximity to protected areas, cleaner water, and others convey positive value to property.¹⁷⁸ The bottom line is that people derive greater value from, and are willing to pay more for, properties that are closer to positive amenities and farther from negative influences, including health and safety risks.”¹⁷⁹

“Land Value Effects of Compressor Stations: Compressor stations like the three-unit, 47,700 hp station proposed for Kidder Township can cause decreases in home values and have even forced some homeowners to move away from the noise, smells, and illnesses associated with living near stations. In one case from Minisink, New York, a family of six moved to escape the effects of a much smaller (12,600 hp) compressor station operated by Millennium Pipeline, L.L.C. After two years of headaches, eye irritation, and lethargy among the children and even lost vigor in their fruit trees, the couple, unable to find a buyer for their home, moved away, leaving their \$250,000 investment in the property on the table with their bank holding the balance of the mortgage (Cohen, 2015).”

¹⁷⁵ “Sour” gas contains high concentrations of hydrogen sulfide and poses an acute risk to human health.

¹⁷⁶ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

¹⁷⁷ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

¹⁷⁸ Phillips (2004) is an example of a study that includes an extensive review of the literature on the topic.

¹⁷⁹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

“Claims That Pipelines Have No Effect on Property Value Are Invalid: The DEIS (Federal Energy Regulatory Commission, 2016b) and PE LLC cite studies purporting to show that natural gas pipelines (and in one case a liquid petroleum pipeline) have at most an ambiguous and non-permanent effect on property values (Allen, Williford & Seale Inc., 2001; Fruits, 2008; Palmer, 2008; Diskin et al. 2011). While the studies differ in methods, they are similar in that they fail to take into account two factors potentially voiding their conclusions entirely.”¹⁸⁰

The following two tables adapted from the Key-Log Economics analysis outline the estimated loss in property that would result from the project as well as the resulting loss in tax revenue: ¹⁸¹

Table 10: Summary of Land Value Effects, by Zone and County

Area	Effects in Right-of-Way (2015\$)			Effects in Evacuation Zone (2015\$)
	Realtor Survey (4.2%)	Buyer Survey (10.5%) ^a	Impact Studies (13.0%)	Boxall Study (3.8%)
Study Region	-8,420,100	-21,050,250	-26,062,214	-149,890,650
<i>Pennsylvania Portion</i>	-4,400,237	-11,000,593	-13,619,782	-77,656,828
Bucks	-24,305	-60,761	75,228	-334,798
Carbon	-411,78	-1,029,459	-1,274,568	-3,690,122
Luzerne	-2,709,525	-6,773,812	-8,386,625	-36,044,026
Northampton	-1,254,624	-3,136,560	-3,883,360	-37,587,882
<i>New Jersey Portion</i>	-4,019,863	-10,049,657	-12,442,433	-72,233,822
Hunterdon	-2,326,511	-5,816,278	-7,201,106	-30,734,752
Mercer	-1,693,352	-4,233,380	-5,241,327	-41,499,070

Table 10: Continued

Area	Effects Near Compressor (2015\$)	Total of ROW, Compressor Station, and Evacuation Zone Effects (2015\$)		
	Hancock, NY Finding (25%)	Low	Medium	High
Study Region		-159,698,484	-172,328,634	-177,340,598
<i>Pennsylvania Portion</i>	-1,387,734	-83,444,799	-90,045,155	-92,664,344
Bucks	n/a	-359,103	-395,560	-410,027
Carbon	-1,387,734	-5,489,639	-6,107,315	-6,352,424
Luzerne	n/a	-38,753,551	-42,817,838	-44,430,651
Northampton	n/a	-38,842,506	-40,724,442	-41,471,242
<i>New Jersey Portion</i>	n/a	-76,253,685	-82,283,479	-84,676,255
Hunterdon	n/a	-33,061,263	-36,551,029	-37,935,857
Mercer	n/a	-43,192,422	-45,732,450	-46,740,397

¹⁸⁰ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

¹⁸¹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

Table 11: Effects on Local Property Tax Revenue

Source: Property Taxes by State (propertytax101.org, 2016).

Area	Median Tax Rate (% of Home Value) ^a	Lost Property Tax Revenue (2015\$)		
		Low	Medium	High
Study Region		-2,719,343	-2,932,534	-3,017,134
<i>Pennsylvania Portion</i>		-1,215,386	-1,310,614	-1,348,403
Bucks	1.27%	-4,561	-5,024	-5,207
Carbon	1.56%	-85,638	-95,274	-99,098
Luzerne	1.40%	-542,550	-599,450	-622,029
Northampton	1.50%	-582,638	-610,867	-622,069
<i>New Jersey Portion</i>		-1,503,95	-1,621,920	-1,668,731
Hunterdon	1.91%	-631,470	-698,125	-724,575
Mercer	2.02%	-872,487	-923,795	-944,156

- t. **The Proposed project would result in adverse impacts to the general needs and welfare of the people and as such, would be contrary to the public interest.**

The proposed Project would result in many adverse impacts to the general, the needs and welfare of the people. As demonstrated by their own comments, the public clearly does not want the pipeline and have all these concerns. The Delaware Riverkeeper Network and Key-Log Economics released a new report documenting the overwhelmingly negative public comments submitted to FERC regarding the PennEast Pipeline. The study, which used crowd sourced reviewers to analyze 3,443 written messages to FERC, found that 76.7% of all commenters expressed a negative attitude toward the proposed PennEast Pipeline—and of those living along the proposed pipeline route, 92.6% expressed a negative sentiment toward the pipeline.¹⁸² One of the most significant of those if that hasn't already been extensively discussed in this comment is the affect the Project would have on public health.

The analysis by Key-Log Economics found the following Adverse Impacts Public Health Effects of the proposed Project:¹⁸³

“Natural gas transmission releases toxins, smog forming pollutants, and greenhouse gases that have a negative impact on public health (Fleischman, McCabe, & Graham, 2016). Emissions from the natural gas industry have been tied to a myriad of health concerns, however, more concrete epidemiological studies are needed to determine the extent to which natural gas transmission causes public health concerns.”

“More recent emerging literature is beginning to quantify just how large of an effect the industry can have on public health. For example, a study by the Clean Air Task Force (2016) estimated that in 2025, increases in ozone levels due to pollution from the oil and gas industry will cause 750,000 additional asthma attacks in children under the age of 18, add an additional 2,000 asthma-related emergency room visits and 600

¹⁸² *Citizen Input Regarding the PennEast Pipeline*. Cara Bottorff & Spencer Phillips, PhD. Key-Log Economic, LLC. March 2017.

¹⁸³ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

respiratory related hospital admissions, cause children to miss 500,000 days of school annually, and cause adults to deal with 1.5 million days of forced rest or reduced activity due to ozone smog.”

Air Pollution from the Proposed Compressor Station:

“The PennEast Pipeline impacts air quality by converting forests, which remove normal levels of impurities from the air, to other land uses. There is also concern for impacts that would occur due to the dumping of excess impurities into the air in the first place. While there is a chance leaks could occur at any place along the proposed route, leaks and major releases of gas and other substances (lubricants, etc.) would certainly occur at the 47,700 hp compressor station proposed for Kidder Township, Carbon County, Pennsylvania. Leaks in seals on the moving parts of natural gas compressors produce a significant amount of VOC emissions (Fleischman, McCabe, & Graham, 2016).”

“The negative effects of the compressor station include noise and air pollution from everyday operations plus periodic “blowdowns,” or venting of gas in the system to reduce pressure. As a recent study by the New York Department of Environmental Conservation indicates, pollution around compressor stations is common and severe (Lucas, 2015). The five-state study found that “more than 40% of the air samples from compressor stations exceeded federal regulations for certain chemicals like methane, benzene, and hydrogen sulfide” (Lucas, 2015). The study also found high rates of illnesses such as nosebleeds and respiratory difficulties among people living near the stations.”

“While more definitive epidemiological studies are needed to determine the extent to which natural gas compressor stations add to background rates of various illnesses, these stations are implicated as contributing to a long list of maladies. According to Subra (2015), individuals living within 2 miles of compressor stations and metering stations experience respiratory impacts (71% of residents), sinus problems (58%), throat irritation (55%), eye irritation (52%), nasal irritation (48%), breathing difficulties (42%), vision impairment (42%), sleep disturbances (39%), and severe headaches (39%). In addition, some 90% of individuals living within 2 miles of these facilities also reported experiencing odor events (Southwest Pennsylvania Environmental Health Project, 2015). Odors associated with compressor stations include sulfur smell, odorized natural gas, ozone, and burnt butter (Subra, 2009). Furthermore, compressors emit constant low-frequency noise, which can cause negative physical and mental health effects (Luckett, Buppert, & Margolis, 2015).”

“In Carbon County, 560 people live within 2 miles of the proposed compressor station (U.S. Census Bureau, 2015). Translating the findings from Subra (2015), 504 people would experience odor events, 398 people would experience respiratory impacts, 325 people would experience sinus problems, and 218 people would experience sleep disturbances and/or severe headaches. In addition to the health impacts discussed above, this pollution can cause damage to agriculture and infrastructure. One study found that shale gas air pollution damages in Pennsylvania already amount to between \$7.2 and \$30 million, with compressor stations responsible for 60-75% of this total (Walker & Koplinka-Loehr, 2014). Using the low estimate of 60%, that is between \$4.32 and \$18 million in damages associated with compressor stations.”

In light of the many, significant adverse impacts outlined in this comment, the Corps must deny a Section 404 permit when issuing the permit would be “contrary to the public interest,” 33 C.F.R. § 320.4(a)(1). Given the lack of need, the self-serving interests of the PennEast companies (AGL Resources; NJR Pipeline Company; PSEG Power; SJI Midstream; Spectra Energy Partners; UGI Energy Services) to advance this project, the high level of environmental, community and economic harm that will be inflicted, the use of eminent domain purely for private gain, the threat and harms to the health, safety and natural resources of the communities impacted as well as to future generations, this project cannot be said to meet the standards for the Corps’ public interest review necessary to issue a 404 permit for the proposed Project.

II. PennEast's Proposed Project Conflicts With The Requirements Of A Water Quality Certification Issued Pursuant To Section 401 Of The Clean Water Act.

Both Pennsylvania's Chapter 105 Water Obstruction and Encroachment permit and New Jersey's Freshwater Wetlands Protection Act permit constitute the approval of a Water Quality Certification under Section 401 of the Federal Water Pollution Act (also known as the Clean Water Act or "CWA"). However, PennEast's proposed Project violates a number of the requisite conditions of Chapter 105 of the Pennsylvania Code and New Jersey's Freshwater Wetlands Protection Act pursuant to NJAC 7:7:A. (NJAC 7:7:A-2.1(d)) and therefore does not qualify for a Section 401 Water Quality Certification. The Corps may not issue a 404 permit for any project unless the project applicant secures and complies with a Water Quality Certification. As a result, any issuance of a section 404 permit by the Corps for the proposed Project is arbitrary, capricious, and an abuse of discretion.

CWA Section 401 authorizes the states to ensure that federal permits meet state water quality standards after a site specific environmental review. The CWA relies on the States to establish water quality standards that are approved by the United States Environmental Protection Agency. *See* 33 U.S.C. § 1342; *Arkansas, supra; PUD No. 1, supra*. The CWA also specifically preserves state law authority in certain respects to condition certification of water quality under state law standards in general and under NEPA. *See* 33 U.S.C. §§ 1341(d), 1370, and 1371(c).

Furthermore, CWA Section 401 forbids a federal agency from granting a "license or permit" unless the certification has been obtained or waived. *Id.* CWA Section 401 provides, "No license or permit shall be granted if certification has been denied by the State . . ." *Id.* Further, CWA Section 401(d) states that:

Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations, under section 1311 or 1312 of this title . . . and **with any other appropriate requirement of State law set forth in such certification** and shall become a condition on any Federal license or permit, subject to the provisions of this section.

33 U.S.C. § 1341(d) (emphasis added). *See PUD No. 1 of Jefferson County*, 511 U.S. at 707-708, 711 (explaining that Section 401(d) "expands the state's authority to impose conditions on the certification of a project," including "appropriate state law requirements.").

The State's authority under CWA Section 401(d) to condition a federal permit under state law has been broadly read to include conditions "affecting water quality in one manner or another." *American Rivers, Inc. v. FERC*, 129 F.3d 99, 107 (2nd Cir. 1997); *see also Roosevelt Campobello Int'l Park Comm'n v. US EPA*, 684 F.2d 1041, 1056 (1st Cir. 1982) (finding Maine's CWA Section 401 certification conditions to be appropriate requirements of state law and related to water quality). As noted by the U.S. Supreme Court:

State certifications under § 401 are essential in the scheme to preserve state authority to address the broad range of pollution, as Senator Muskie explained on the floor when what is now § 401 was first proposed:

No [person] will be able to hide behind a Federal license or permit as an excuse for a violation of water quality standard[s]. No [person] will be able to make major investments in facilities under a federal license or permit without

providing assurance that the facility will comply with water quality standards. No State water pollution control agency will be confronted with a fait accompli by an industry that has built a plant without consideration of water quality requirements.

S.D. Warren Co. v. Maine Bd. of Env'tl. Protection, 547 U.S. 370, 386 (2006). The Supreme Court noted that these “are the very reasons that Congress provided the States with power to enforce ‘any other appropriate requirement of State law,’ 33 U.S.C. § 1341(d), by imposing conditions on federal licenses for activities that may result in a discharge.” *Id.*

NJDEP and PADEP have already found PennEast’s application materials to be incomplete.

On April 26, 2017 the NJDEP issued a determination that the PennEast 401 application materials submitted to the state were significantly deficient and incomplete. Among the deficiencies were:

- Delineations of all freshwater wetlands, transition areas and open waters;
- Soil borings and/or other physical indicators of wetlands, transition areas or open waters;
- Other identified information pertaining to wetlands, open waters and transition areas;
- An amended Phase I Archaeological Survey Report investigating the entire proposed alignment for the PennEast Pipeline project occurring in the State of New Jersey.

Subsequently, on June 28, 2017, NJDEP determined the PennEast Pipeline Company’s application for state approval of its project to be “administratively closed” due to the company’s failure to remedy significant identified deficiencies and its failure to provide full information in a timely fashion for Clean Water Act decisionmaking. In its determination letter the NJDEP wrote:

“...given the complexity of the remaining deficient items, and the lack of demonstrated progress on the part of the applicant, it appears that it would be unlikely that an additional 60 days would allow substantial progress on the application. This application will be deemed ‘administratively closed’ as of the date of this letter.”

While the applicant did obtain a 401 Water Quality Certification on February 7, 2017, from the Pennsylvania Department of Environmental Protection (PADEP), the Delaware Riverkeeper Network is currently involved in ongoing litigation with the state over this determination and its failure to apply appropriate state standards for determining whether a 401 Water Quality Certification was proper. Multiple comments and expert reports attached to this comment outline the many ways in which the Project does not meet the requirements for 401 certification from PA.

Additionally, PADEP has also sent a series of three incompleteness review letters to PennEast for its Chapter 105 and Chapter 102 permits. Each of the letters has indicated the applications submitted are not yet considered to be complete by PADEP and that they cannot commence technical review until the applications are complete. The incompleteness letters were sent on April 26, 2016, and again September 19, 2016 and December 23 2016. On June 26, 2017, DEP received a request for an extension from PennEast Pipeline Company, LLC. PennEast requested additional response time to the December 23, 2016 incompleteness review letters, indicating that they “do not anticipate submitting the information requested to complete the applications until December 29, 2017.” On August 10, 2017, DEP granted the requested extension.

The missing information that PADEP requires for their Chapter 105 Water Obstruction and Encroachment Permits and Chapter 102 Erosion and Sediment Control permits are extremely relevant to the water quality impacts that the Corps is required to consider as part of its 404 public interest review.

a. The PennEast Pipeline does not meet the requirements necessary for a New Jersey 401 Certification pursuant to the Clean Water Act

The proposed PennEast Pipeline clearly cannot and will not meet the requirements necessary to secure a 401 Water Quality Certification from the State of New Jersey. Given the high level of harm the project will inflict on the water and wetland resources of the state and the absolute lack of need for the project in order to serve local, state or even national demand.

In order to secure 401 water quality certification from the State of New Jersey, the PennEast Pipeline company must meet the standards and procedures for securing a Freshwater Wetlands Protection Act permit from the State of New Jersey pursuant to NJAC 7:7:A. (NJAC 7:7:A-2.1(d)).

Given that there is no public, private, or compelling need for the gas to be carried by the proposed PennEast Pipeline, NJ regulations prohibit 401 Water Quality Certification.

New Jersey communities have no public or private need for the gas that would be delivered by the PennEast Pipeline, and certainly has no compelling public need for the gas. As noted in the attached expert report from Arthur Berman:

“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.”

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

Given that NJ has no need for the gas PennEast would carry and that delivery of the gas proposed by PennEast, if it in fact were to be delivered to NJ entities (PennEast has provided no evidence of where or who the specific final end users will be, and instead have only provided general assertions of broad markets) it would create a natural gas surplus in the state, the requisite demonstration of need pursuant to 7:7A-7.2(b)(1) & (12) and/or 7:7A-7.5 cannot be met. The natural gas needs of New Jersey are already being met and the public and private energy needs of New Jersey can now and in the near future be better met with clean energy alternatives that would have a less adverse impact on the environment, open waters and wetlands. As a result, the PennEast pipeline is not an appropriate candidate for a NJ 401 Water Quality Certificate.

The PennEast Pipeline would cause and contribute to violations of applicable State water quality standards and will cause and contribute to degradation of ground and surface waters. PennEast will also be unable to comply with the mandates of the stormwater management and flood hazard rules. These are among the reasons that NJ regulations prohibit 401 Water Quality Certification.

There are significant environmental impacts which result from pipeline crossing and construction activities regardless of mitigation techniques used. The list of impacts 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, wetland degradation, and cumulative environmental impacts along the length of the project. The proposed Project, would inflict severe and irreparable harm on NJ aquatic resources, vegetation, fish, wildlife, aquatic circulation, wetlands and hydrologic patterns. 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.

The PennEast company will impact 54 wetlands and 87 surface waterbodies. Many of the New Jersey waterways crossed/cut are Category One (C1) waters.

The proposed PennEast Pipeline project, as demonstrated by the installation of other pipeline projects in our region and nation, will create new pathways for water flow, thereby altering the hydrologic pattern of the watershed and adversely impacting (in both quantity, quality and seasonal timing) streams, wetlands and drinking water sources.

During the construction of the PennEast pipeline stream crossings there will be high levels of suspended sediments from blasting, trench excavation, and backfilling. Sedimentation will also result from the removal of vegetation and activity that takes place on the stream-adjacent (riparian) lands. The resulting sedimentation will have serious consequences for the benthic invertebrates and fish species whose vitality is crucial for healthy aquatic ecosystems – including, but not limited to, filling in the interstitial spaces of the streambed, changing its porosity and composition, and thereby increasing embeddedness and reducing riffle area and habitat quality. As with other pipelines, there will be 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. In addition to the stream crossing construction activity and the associated new road construction increases the risk of erosion and sedimentation.

Even in instances where the impacted benthic community restores itself, that does not diminish or negate the ecosystem affects during the time of damage including the other cascading affects 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.

Pipeline construction activity requires the clearing of vegetation in and around wetlands having degrading impacts. After construction the PennEast pipeline company will maintain the right-of-way along its length, including in wetland areas, by preventing woody vegetation from re-establishing. For forested wetlands this will mean a permanent conversion of the forested wetland to an emergent wetland. This conversion will adversely impact the functions and values of the impacted wetlands. 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 – this will be the outcome with the PennEast Pipeline as well if it is allowed to cut through NJ wetlands.

A functional conversion of wetlands from forested wetlands to emergent wetlands will result in decreases to above ground biomass, structural diversity of the wetland, and local climate amelioration. 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. Moreover, these conversions will cause an increased wetland exposure to wind, ice and sun, as well as the localized effects of global warming on biota. 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. As a result, erosion and sedimentation can be expected to increase as a result of the conversion. The function of storm damage shielding can also be expected to decrease as a result of this conversion. For each of the pipeline construction techniques there used there will be a resulting loss of riparian buffer vegetation, foliage, waterway protection and habitat. As a result the PennEast pipeline will fail to meet the buffer mandates of NJ regulations.

Pipelines have been seen by experts to be 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 will be no less true for the PennEast pipeline than every other pipeline that has cut through our ecological systems and communities. This alteration will decrease the water resources available to support wetland hydrology and stream base flow in the summer and fall dry season.

The compacted soils resulting from pipeline construction will increase rainfall runoff and reduce ground water infiltration further harming wetland hydrology and stream baseflow.

In addition the 84” total construction depth of the pipeline will, in a number of New Jersey communities, impact ground water through the disturbance of shallow bedrock, causing bedrock channels to close up wells or springs as much as a mile away. In addition, the blasting that will be needed for PennEast will have significant impacts for water resources that will be unavoidable.

The adverse impacts to wetlands, forests, and both surface and groundwaters is detrimental, far reaching and in many instances permanent. Recreation and aesthetic values of both the public and private lands and ecosystems impacted will be greatly diminished both near term and long term.

In addition, research is increasingly showing that there will be adverse economic impacts to private properties that will be cut by PennEast with some studies showing adverse impacts by as much as 30 to 50%. The harm to open space preservation is also significant – not only will the communities, aesthetic, recreational and ecological values of the open spaces crossed be diminished, but the future desire of communities to invest in open space preservation for the benefits of waterway, wetlands, aquatic life and wildlife live will also be undermined – who will want to invest in preserving land if they know it will be turned over to a pipeline company?

PennEast will have significant cumulative impacts on the water resources and ecological communities cut by the project and located adjacent to or downstream of it. The large amount of land disturbance created during pipeline construction results in increased stormwater runoff, sedimentation, and erosion of the land and stream channels. The disturbance of the land, including loss of forested and healthy ecological vegetation, the adverse impacts to wetlands, and the soil compaction that results from construction in both the permanent footprint as well as the supposed temporary construction areas, are permanent as is the water quality and ecological harm they inflict.

The capacity of NJ waterways and habitats to recover from the multitude of impacts inflicted by PennEast will most certainly be exceeded.

The cumulative impacts will not just result from the direct cuts and footprints across the landscape, but will be compounded by the resulting air pollution and climate changing impacts of the pipeline’s operation.

Additionally, the potential of pipelines to rupture and leak raises a greater risk of human health concerns and serious water contamination issues.

It is clear that the PennEast Pipeline cannot meet the mandates of 401 Water Quality Certification in New Jersey. Therefore, any concurrent issuance of a 404 permit by the Corps would be arbitrary, capricious, and an abuse of discretion.

III. The Project Information that The Corps' Relies on Fails To Provide An Adequate Baseline From Which A Public Interest Review Can Proceed

The Corps must also deny a Section 404 permit when issuing the permit would be “contrary to the public interest,” 33 C.F.R. § 320.4(a)(1). The Corps has utterly failed to properly designate wetlands pursuant to the Pennsylvania state code, properly identify and classify wetland types, and accurately account for the expected ground disturbance impacts that will result from the construction activity of the project. As a result, the Corps is unable to accurately establish a foundational baseline from which it can begin to balance the potential benefits of the project from its harms and costs in a public interest review. Therefore, any issuance of a 404 permit for the proposed Project would be arbitrary, capricious, and an abuse of discretion.

During a public interest review, the Corps must consider “all the facts” and then deny a permit if “the costs of the project outweigh[] its potential benefits and . . . the public interest would best be served by denying the permit.” *Buttrey v. United States*, 690 F.2d 1170, 1185 (5th Cir. 1982). To evaluate the project's effects on the public interest, the Corps must balance the “benefits which reasonably may be expected to accrue from the proposal” against the “reasonably foreseeable detriments.” 33 C.F.R. § 320.4(a)(1). This “careful weighing” considers “[a]ll factors which may be relevant to the proposal . . . including the cumulative effects thereof.” *Id.* As in any such analysis, “[s]imple logic, fairness, and the premises of cost-benefit analysis . . . demand that a cost-benefit analysis be carried out objectively.” *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983). For example, the Corps' public interest review may not “mention the positive anticipated impact of the proposal on jobs and municipal taxes” but “sidestep [] any consideration of adverse economic effects.” *Hough v. Marsh*, 557 F. Supp. 74, 86 (D. Mass. 1982).

The Corps' regulations list over twenty factors to evaluate during a public interest review, including “conservation, economics, aesthetics, general environmental concerns, [and] wetlands.” 33 C.F.R. § 320.4(a)(1). Every permit decision must also consider “the public and private need” for the work, “the practicability of using reasonable alternative locations and methods to accomplish the objective of the . . . work,” and “[t]he extent and permanence of the beneficial and/or detrimental effects” of the proposed project. *Id.* § 320.4(a)(2).

The Project information provided to the Corps by PennEast and FERC, as well as the limited information available in the Corps Public Notice of PennEast's 404 application, is filled with key data gaps, misrepresentations, misinformation, missing information, inaccurate information, false information, and conflicting information. As a result, the Corps is unable to accurately establish a foundational baseline from which it can begin to balance the potential benefits of the project from its harms and costs in a public interest review. Therefore, any issuance of a 404 permit for the proposed Project would be arbitrary, capricious, and an abuse of discretion.

Specifically, the FERC's EIS fails establish an accurate baseline from which a determination can be made regarding the significance of the impacts resulting from construction and operational activity of the Project,

the DEIS fails to examine the cumulative and induced development that would result from the approval of the Project, the DEIS improperly segments its environmental analysis with regard to other interdependent projects, the DEIS does not sufficiently account for climate change impacts, the DEIS's alternatives analysis is unlawfully narrow, and the DEIS fails to sufficiently establish need for the Project. Additional deficiencies are noted throughout this comment letter, and the attached expert reports. The quality of information cannot support any conclusion whatsoever.

The missing and inaccurate information is a fundamental failing of the Project materials, and it prevents the Corps, as well as other agencies and the public, from having the data and information they need to assess the impacts of the proposed pipeline on water resources, habitat, wildlife, drinking water and human communities. This comment and the attached reports contain many examples of assertions that are false, inaccurate, misleading and/or deficient, including, but not limited to:

Spot checks and field-truthing indicate inadequate and incomplete mapping of sensitive wetlands along the proposed ROW. Along one 0.5 mile of the proposed route in sensitive State Gamelands, at least 12 vernal pool complexes or groundwater seeps were identified while PennEast tables only indicate 2 vernal pool habitats along the same proposed route and no groundwater seeps.¹⁸⁴

“72% of the proposed pipeline alignment in New Jersey and 23% in Pennsylvania has not yet been field investigated for wetlands and other water resources.”¹⁸⁵

“Importantly, the supporting documentation provided by PennEast fails to provide stream and wetland crossing information in a manner that allows FERC and other reviewing agencies to evaluate the site specific conditions at each stream crossing, including information discussed further in this memo. Important site specific information is located in different Resource Report volumes and other documents, and not easily correlated or evaluated. [...] The project selection of stream and wetland crossing locations and construction methods cannot be clearly evaluated in the form in which it is presented in the DEIS and supporting documents.”

In addition, it is clear that this DEIS cannot be relied upon by any government agency, not FERC, not the US Fish & Wildlife Service, not the U.S. Army Corps of Engineers, not the U.S. Environmental Protection Agency, not the NJ Department of Environmental Protection, not the PA Department of Environmental Protection, not the Delaware River Basin Commission for evaluation or decision-making purposes. And for any agency to do so would subject them to successful legal challenge.

The missing and inaccurate information is a fundamental failing of FERC's EIS, and it prevents other state, federal and regional watershed agencies, and the public from having the data and information they need to assess the impacts of the proposed pipeline on water resources, habitat, wildlife, drinking water and human communities. The DEIS is designed to help inform sound decision-making, in its current deficient and erratic state this document is worthless for assessment and decision-making purposes.

¹⁸⁴ Delaware Riverkeeper Network. *Field-Truthing and Monitoring of the Proposed PennEast Pipeline, FERC Draft EIS, Docket No. CP15-558*, September 2016.

¹⁸⁵ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016; Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

The Corps must “independent[ly] verif[y]” the applicant's data and conclusions. *Utahns for Better Transp.*, 305 F.3d at 1186; *Sierra Club v. Van Antwerp*, 362 F. App'x 100, 106 (11th Cir. 2010) (“[T]he Corps may rely on information submitted by the applicant but must *independently verify such information.*” (emphasis added)). The Corps' duty of independent verification is especially strong when the Corps “receives particularized objections to material upon which it importantly relied in its review.” *Van Abbema v. Fornell*, 807 F.2d 633, 640 (7th Cir. 1986) *49 (considering a challenge to a Corps permit under NEPA). If the Corps bases its permitting conclusions on insufficient, unverified, or false information, the Corps' conclusions are “arbitrary and capricious.” *Id.* at 639 (holding the Corps may not base its conclusions on “entirely false premises or information”); *Utahns for Better Transp.*, 305 F.3d at 1187 (holding the Corps may not rely on insufficient information or unverified cost estimates).

As noted above, when the Corps is presented with particularized objections to the material on which it relies, as such, the Corps must independently verify the accuracy of the information on which it will base its decision. Without an accurate and verified baseline any public interest review contained in a decisional document issued by the Corps is arbitrary, capricious, and an abuse of discretion.

IV. Conclusion.

In addition to this comment and attached reports, the Delaware Riverkeeper Network incorporates by reference all information in the footnotes cited and all information provided by other commenters concerned about/opposed to construction, operation and maintenance of the PennEast pipeline.

For the reasons stated herewith the Delaware Riverkeeper Network respectfully requests that the Corps deny the pending 404 permit. In the alternative, we request that the Corps grant a public hearing to further evaluate the numerous unresolved issues and problems that riddle PennEast’s application.

By: /s/ Maya K. van Rossum
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Delaware Riverkeeper Network
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Bristol, PA 19007
Phone: (215) 369-1188

Attachments:

1. *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.
 - a. DRN Field Reports for Tennessee Gas 300 Line (Restoration Phase) –Dated 10/1/12 to 3/12/2013 (59 pages)
 - b. DRN Field Reports for Tennessee Gas Northeast Upgrade Project Dated 7/18/12 to 5/23/13 (60 pages)
 - c. DRN Letters to FERC and other agencies Regarding Mapping, Pollution and Construction Concerns from the Field (Subset)
 - d. NOV summary table of Pike County Conservation District Inspections and Violations
 - e. Selected Expert Reports
2. *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.
3. Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.
4. *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.
 - a. Table A Attachment to *Professional Review & Comment...*, Meliora Design, LLC, September 5, 2016
5. *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
6. *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016
7. *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016
8. Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.
9. *Opinion on the PennEast Pipeline*, Arthur Berman, Petroleum Geologist, Labrynth Consulting Services, Inc., September 11, 2016
10. *Professional Opinion of Proposed PennEast Pipeline Project*, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015
11. *Analysis of Public Benefit Regarding PennEast*, Skipping Stone, March 9, 2016
12. *Review of PennEast Pipeline Project Economic Impact Analysis*, Jannette Barth, Pepacton Institute, April 4, 2016

13. *Expert Report on the PennEast Pipeline Project Economic Impact Analysis for New Jersey and Pennsylvania*, The Goodman Group Report, Nov 4, 2015
14. *Report on Phase 1 Bog Turtle Survey for Wetlands Associated with Hunters Creek, Towamensing Township, Carbon County, Pennsylvania*, Jason Tesauro, September 5, 2015
15. *Cumulative Land Cover Impacts of Proposed Transmission Pipelines in the Delaware River Basin*, Lars Hanson and Steven Habicht, May 2016
16. *Pennsylvania Energy Impacts Assessment*, Nels Johnson, the Nature Conservancy, November 15, 2010
17. *Review of INGAA Foundation Report, "Pipeline Impact to Property Value and Property Insurability"*, Key-Log Economics, March 11, 2015
18. *Fulper Farm Grain Harvest Graphics*, 4 Images, 2008-2012
19. Table A-1. Active, proposed and reported natural gas wells in Pennsylvania, by county
20. *Marcellus/Utica on Pace for Pipeline Overbuild, Says Braziel*, Natural Gas Intelligence, June 8, 2016
21. *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
22. *A Bridge Too Far: How Appalachian Basin Gas Pipeline Expansion Will Undermine U.S. Climate Goals*, Oil International, July 2016
23. *Achieving Higher Quality Restoration Along Pipeline Rights of Way*, Leslie Sauer, May 2014
24. *Climate Change Impacts and Solutions for Pennsylvania*, Union of Concerned Scientists, 2008
25. *The Changing Northeast Climate*, Union of Concerned Scientists, 2006
26. *The Potential Environmental Impact from Fracking in the Delaware River Basin*, Steven Habicht, Lars Hanson, and Paul Faeth, August 2015
27. *Climate Change in Pennsylvania: Impacts and Solutions for the Keystone State*, Union of Concerned Scientists, October 2008
28. *Climate Change Impacts in the United States*, Radley Horton and Gary Yohe, May 2014
29. *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
30. *Natural Gas Price Increase Inevitable*, Art Berman, The Petroleum Truth Report, February 21, 2016

31. *Revealed: Contractors Hired by FERC to Review A New Spectra Energy Pipeline Work for Spectra on a Related Project*, Itai Vardi, Desmog, May 26, 2016
32. *Citizen Input Regarding the PennEast Pipeline*. Cara Bottorff & Spencer Phillips, PhD. Key-Log Economic, LLC. March 2017.
33. *Better Site Design: A Handbook for Changing Development Rules in Your Community*, Center for Watershed Protection, August, 1998.
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51. Delaware Riverkeeper Network Comments: Columbia Gas Line 1278 Line K Replacement in Special Protection Waters-DRBC Docket -D-2014-008-1
52. Emile DeVito, PhD. August 2016. Letter with supporting report and photographs from New Jersey Conservation Foundation to Norman Bay, Chairman, FERC.
53. Phillips et al, 2017, Exhibit xx
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64. *Compendium of Scientific, Medical and Media Findings Demonstrating Risks and Harms of Fracking*, Physicians for Social Responsibility, November 17, 2016.
65. *Potential Environmental Impacts of Full-development of the Marcellus Shale in Pennsylvania*, Lars Hanson, Steven Habicht, and Paul Faeth, September 2016.
66. Delaware Riverkeeper Network Comment to US Fish and Wildlife Service, December 27, 2016.
67. Comments of the New Jersey Division of Rate Counsel
68. Sunoco Mariner East II - Pipeline Construction Inadvertent Returns - Waters of the Commonwealth

Exhibit B



October 14, 2017

District Engineer
U.S. Army Corps of Engineers, Philadelphia District
Wannamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390
Penneast-Comments@usace.army.mil

RE: Comment Letter: Public CENAP-OP-R –Re . CENAP 2014-00975– PennEast Pipeline Company’s PennEast Pipeline Project

To Whom It May Concern:

The Delaware Riverkeeper Network, and the Delaware Riverkeeper (collectively “DRN”) submit the following comments on the application for a Department of Army permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act with respect to the PennEast Pipeline Project (the "Project") proposed by PennEast Pipeline Company, LLC (“PennEast”). According to the United States Army Corps of Engineers’ (“Corps”) Public Notice and the Federal Energy Regulatory Commission’s (FERC) Final Environmental Impact Study (FEIS), PennEast is requesting to construct 120.2 miles of natural gas pipeline and associated equipment and facilities in order to provide about 1.1 million dekatherms per day (MMDth/d) of year-round natural gas transportation service from northern Pennsylvania to markets in New Jersey, eastern and southeastern Pennsylvania, and surrounding states. The Project will begin with two interconnects with existing intrastate natural gas pipelines (the Wyoming Interconnect at Mile Post 0.0 connects to an Energy Transfer Partners, L.P pipeline and the Springville Interconnect at Mile Post 0.3 connects to a Williams Partners pipeline) in Dallas Township, Luzerne County, Pennsylvania and ends at a terminal point along the existing Transco Pipeline in Hopewell Township, Mercer County, New Jersey. The proposed Pipeline Project consists of the following facilities:

- 116.0 miles of new 36-inch-diameter pipeline,
- 2.1 mile Hellertown lateral consisting of 24-inch diameter pipe in Northampton County, PA,
- 0.6 mile Gilbert lateral consisting of 12-inch diameter pipe in Hunterdon County, NJ,
- 1.5 mile Lambertville lateral consisting of 36-inch diameter pipe,
- 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,
- 8 meter and regulator stations for interconnects,

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- 11 mainline valve sites, and
- 4 pig launcher/receiver sites.

The project includes multiple stream and wetland crossings in the Susquehanna River and Delaware River watersheds. PennEast's 404 permit application to the Army Corps Philadelphia District, as noticed in the September 14, 2017 Public Notice CENAP-OP-R re Application no. CENAP 2014-00975, includes five individual permits for five separate single and complete crossings of waters and/or wetlands associated with the PennEast project:

- Individual Permit (IP) 1- Bear Creek & Unnamed Tributary to Bear Creek (Luzerne County).
- IP 2 - Lehigh River (Carbon & Luzerne Counties).
IP 3 - Unnamed tributary to Laurel Run (Carbon).
IP 4 - Unnamed Tributary to Stony Creek (Carbon).
- IP 5 - Delaware River and Delaware Canal (Bucks County, Pennsylvania and Hunterdon County, New Jersey).

However, the Corps cannot adequately evaluate the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest, on the 22 factors that it is required to consider as part of its public interest review per 33 C.F.R. § 320.4(a)(1)., including “conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people,” without considering these individual permits in the context of the Project as a whole. Additionally, the Corps relies heavily on the Project information provided by FERC’s FEIS which includes information for the Project as a whole, not just the individual permit areas described in Corps Public Notice. As such, this comment largely addresses the project-wide impacts of proposed pipeline. We also speak directly to the deficiencies of, and errors in, the EIS, (both the FEIS and the DEIS which was transformed into the FEIS without significant and needed alteration) thereby demonstrating that the Corps was not justified in relying upon this document for its decisionmaking.

PennEast’s Section 404 application for a permit from the United States Army Corps of Engineers (“Corps”) must be denied because:

- 1) The adverse effects of the proposed Project outweigh its potential benefits and do not meet the standards for the Corps’ public interest review
- 2) the Project conflicts with the requirements of a Clean Water Act Water Quality Certification,
- 3) the Corps has failed to establish a baseline for its public interest review,
- 4) FERC’s FEIS and the materials provided by PennEast continue to include inaccurate, false and misleading information and that the information provided is incomplete in significant and substantively important ways, and as such the Corps does not have the information it needs for informed or accurate decisionmaking.

The information that has been garnered from the Corps’ Public Notice, the FEIS materials, the filed resource reports, filings with other regulatory agencies, that were then vetted, analyzed and in some cases field verified by third party experts and DRN, demonstrates that this project will inflict substantial adverse environmental and community impacts regardless of implementation of the supposed mitigation recommended by PennEast or by FERC. In addition to the comments specifically discussed here, the expert

reports filed herewithin include a number of factual and legal deficiencies that are provided and adopted by DRN and incorporated by reference. We note from the outset that while a number of our expert reviews and comments were directed to the Draft EIS (DEIS) as that was the FERC document subject to public comment, the comment referenced in those reports and included in this comment are just as relevant to final EIS documents, and other materials submitted by PennEast and/or relied upon by the Corps in making its assessments to date.

According to the FEIS, construction of the project will 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). According to the FEIS the project will at least cut through 255 waterbodies (including 159 perennial, 45 intermittent, 40 ephemeral, 11 open water), 633 acres of forest, 91 wetlands, impact “several” vernal pools, and infringe upon and damage habitat for threatened and endangered species of bat, sturgeon, snake, turtle, mussels and more. This comment and others will prove that these impacts are sorely understated, incomplete, and misrepresent the footprint and damage that would be inflicted if the PennEast pipeline were built.

I. The adverse effects of the proposed Project (even as deficiently described) outweigh its potential benefits and do not meet the standards for the Corps’ public interest review necessary to issue a 404 permit.

The Corps must deny a Section 404 permit when issuing the permit would be “contrary to the public interest,” 33 C.F.R. § 320.4(a)(1). During a public interest review, the Corps must consider “all the facts” and then deny a permit if “the costs of the project outweigh[] its potential benefits and . . . the public interest would best be served by denying the permit.” *Buttrey v. United States*, 690 F.2d 1170, 1185 (5th Cir. 1982). To evaluate the project's effects on the public interest, the Corps must balance the “benefits which reasonably may be expected to accrue from the proposal” against the “reasonably foreseeable detriments.” 33 C.F.R. § 320.4(a)(1). This “careful weighing” considers “[a]ll factors which may be relevant to the proposal . . . including the cumulative effects thereof.” *Id.* As in any such analysis, “[s]imple logic, fairness, and the premises of cost-benefit analysis . . . demand that a cost-benefit analysis be carried out objectively.” *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983). For example, the Corps' public interest review may not “mention the positive anticipated impact of the proposal on jobs and municipal taxes” but “sidestep [] any consideration of adverse economic effects.” *Hough v. Marsh*, 557 F. Supp. 74, 86 (D. Mass. 1982).

The Corps' regulations list over twenty factors (including “conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people,”) to evaluate during a public interest review, including “conservation, economics, aesthetics, general environmental concerns, [and] wetlands.” 33 C.F.R. § 320.4(a)(1). Every permit decision must also consider “the public and private need” for the work, “the practicability of using reasonable alternative locations and methods to accomplish the objective of the . . . work,” and “[t]he extent and permanence of the beneficial and/or detrimental effects” of the proposed project. *Id.* § 320.4(a)(2).

Even with the immense deficiencies and inaccuracies in the information found in the Corps Public Notice and the FERC FEIS, it is clear that the PennEast Pipeline will result in extremely adverse effects to almost every category that the Corps is required to consider, with or without the mitigation the Corps postures,

given the reality of the harms to be inflicted. The probable adverse impacts, including cumulative impacts, of the proposed PennEast Pipeline and its intended use on the public interest, which are generally absent from the Corps' Public Notice and FERC FEIS, are outlined below. These reasonably foreseeable adverse impacts far outweigh any benefits which reasonably may be expected to accrue from the proposal, making clear that the proposed project would be contrary to the public interest.

a. The adverse Economic effects of the Project on the public far outweigh any reasonably foreseeable benefit.

In its public interest review, the Corps is required to consider “all the facts” and then deny a permit if “the costs of the project outweigh[] its potential benefits and . . . the public interest would best be served by denying the permit.” *Buttrey v. United States*, 690 F.2d 1170, 1185 (5th Cir. 1982). To evaluate the project's effects on the public interest, the Corps must balance the “benefits which reasonably may be expected to accrue from the proposal” against the “reasonably foreseeable detriments.” 33 C.F.R. § 320.4(a)(1). This “careful weighing” considers “[a]ll factors which may be relevant to the proposal . . . including the cumulative effects thereof.” *Id.* As in any such analysis, “[s]imple logic, fairness, and the premises of cost-benefit analysis . . . demand that a cost-benefit analysis be carried out objectively.” *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983). For example, the Corps' public interest review may not “mention the positive anticipated impact of the proposal on jobs and municipal taxes” but “sidestep [] any consideration of adverse economic effects.” *Hough v. Marsh*, 557 F. Supp. 74, 86 (D. Mass. 1982).

According to a robust and thorough analysis of the economic impacts of the proposed Project conducted by Key Log Economics,¹ the adverse economic impacts (or costs to the public) would outweigh the economic benefits claimed by PennEast by up to \$54.3 billion:

“Adding up all one-time recurring costs, and discounting those future costs to 2017, we estimate the total external costs of PennEast Pipeline to be between \$13.3 and \$56.6 billion. By contrast, the pipeline would in the words of FERC’s DEIS provide only “minor” benefits in the form of economic impact during construction and operation of the pipeline. Using PennEast LLC’s own estimates (Econsult Solutions & Drexel University School of Economics, 2015) and applying the same methods to calculate the present value of all future benefits, the pipeline promises a total of \$2.3 billion in economic impact over 30 years of operation. This means for every dollar of benefit promised, the PennEast Pipeline would impose between \$5.85 and \$24.97 in costs.”

This disparity at the expense of the public interest, while likely greatly underestimated (as explained below), clearly demonstrates that the adverse impacts from the Project far outweigh the potential economic benefits of the Project and as such mandate that the Corps to deny the permit.

As outlined below and explained in further detail in the accompanying expert analyses,² the construction and operation of the Project would greatly adversely impact the economic resources of the area, in both the near and long-term. The potential adverse environmental-economic effects include: effects on ecosystem

¹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

² *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

; See also letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

service value, effects on property value, the social cost of carbon, effects on economic development, and other impacts not quantified such as public health impact and impact on county community services.

For each of these categories with quantifiable economic data available, expert analysis conducted by Key Log Economics found that the one-time and annual costs to the public that would result from the proposed Project would be:

Lost ecosystem service value (“the benefits nature provides to people for free”), such as for water and air purification, aesthetics, and recreation “that will become less available and/or less valuable due to the PE’s construction and operation.”

- Over the one-year construction period (a one-time cost): **\$6.3 to \$22.1 million**
- In the ROW and in other permanent infrastructure (annual): **\$2.6 to \$9.8 million**

Property value: “loss of private property value as owners and would-be owners choose properties farther from the pipeline’s right-of-way, evacuation zone, compressor station, and viewshed.”

- Total property value lost (a one-time cost): **\$159.7 to \$177.3 million**
- Resulting loss in property tax revenue (annual): **\$2.7 to \$3.0 million**

The social cost of carbon (the economic cost of harm associated with carbon emissions):

- “The project would contribute to an equivalent of 21.3 million metric tons of carbon dioxide a year. Using a 5% discount rate, the social cost of carbon ranges from \$291.9 to \$608.1 million per year between 2019 and 2048. Using a 2.5% discount rate for the same time period, the social cost of carbon ranges between **\$1.5 and \$2.3 billion per year.**”³

Economic activity that depends on the region’s scenic, recreational, and quality-of-life:

(We consider scenarios in which visitor spending declines by 10% from current levels, and the rate of growth in retirement and proprietor’s income slows by 10%)

- Annual loss of recreation tourism expenditures of \$448.0 million that would otherwise support 4,090 jobs and generate \$38.8 million in state and local tax receipts
- Annual loss of personal income of \$55.6 million due to slower growth in the number of retirees
- Annual loss of personal income of \$16.3 million due to slower growth in sole proprietorships

The analysis found that the total the one-time and annual costs to the public that would result from the proposed Project would be:

“Total estimated costs:

- One-time costs (lost property value plus lost ecosystem service value during construction) would total between \$166.0 and \$199.4 million
- Annual costs (costs that recur year after year) would range from \$5.3 to \$12.8 million PLUS the social cost of carbon, which varies by year, and ranges between \$291.9 million and \$2.3 billion per year

³ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

- Present discounted value of all future annual costs (including the social cost of carbon): \$13.1 to \$56.4 billion
- One-time costs plus the discounted value of all future annual costs: \$13.3 to \$56.6 billion”⁴

These estimates are conservative. These estimates are conservative because they do not represent all potential costs as several categories of cost cannot be directly quantified, such as value of preserving the landscape, damages to human and environmental health and property in the event of leaks and explosions, and the lack of sufficient data to quantify the cost increase of community services such as emergency response and road maintenance. Additionally, many of the adverse economic impacts that would result from the Project have not been quantified but also must be considered by the Corps. These include community service costs, such as provisions of public and private water, roads and traffic, emergency services, and law enforcement; as well as effects on economic development, tourism, recreation, retirement income, and jobs.

According to the Key Log Economics analysis:

“If PE is built, there will likely be increases in the costs of community service, such as for traffic control and extra law enforcement capacity needed during construction and for emergency preparedness/emergency services during operation. As borough, township, city, and county governments, as well as volunteer fire companies meet these needs, costs for services would increase.”

Roads, traffic, and community services may be adversely impacted. As outlined in the Key-Log Economics Report:

“Damaged or worn-out roads, an increase in traffic volume involving those heavy vehicles, and an influx of out-of-area workers unfamiliar with local roads are also associated with increases in motor vehicle accidents (Muehlenbachs & Krupnick, 2014). Motor vehicle accidents impose a range of costs, from emergency response, medical care, time off of work, premature death, property damage, and the cost of time lost to traffic jams at accident scenes (National Highway Traffic Safety Administration, 2015).”

PennEast Pipeline Company has stated it will pay to restore roads damaged during construction, but it is up to individual municipalities to survey the state of their roads prior to construction to ensure that PennEast meets this promise. This cost of securing baseline information, then identifying the damage, and then pursuing and securing repair is all on local communities, as are the costs of the damage to vehicles inflicted by the damage while in disrepair.

Pipelines also pose new challenges to emergency responders, with fire and rescues teams devoting more time and resources to training, planning, and response to pipeline incidents. An investigation into a California pipeline rupture that killed eight people, injured several others, and destroyed 38 homes revealed that local responders were not prepared.⁵ There are significant time and resource costs in pursuing this training and planning that are not accounted for. In addition, the costs of actual response when there is an accident, incident or explosion are also not accounted for.

⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁵ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

Law enforcement costs will also increase. In addition to responding to any increase in motor vehicle accidents due to increased traffic, research has shown an increase in crime in gas drilling areas. This kind of community and economic impact will translate to pipeline construction areas. As Key-Log Economics⁶ states:

“Furthermore, a multi-state analysis found that counties with high drilling had statistically significant increases in violent crime and property crime (Multi-State Shale Research Collaborative, 2014). Temporary out-of-state workers have been associated with increased arrests, traffic violations, protection-from-abuse orders, and warrants for people failing to appear in court (Associated Press, 2011).

PennEast expects 60% of their 2,400 person workforce to consist of non-local, temporary hires (Federal Energy Regulatory Commission, 2016b). While pipeline construction jobs will come and go more quickly than gas field jobs, it is reasonable to assume, prepare for, and expect higher costs for additional law enforcement needs.”

The Project will also have detrimental impacts in the areas of economic development, tourism, recreation, retirement income, and jobs.

Clean, high-quality environments are important to tourism and wildlife-related recreational activities and businesses in the communities that will be impacted by PennEast construction, operation and maintenance. In addition, several counties and regions include the importance of a clean environment and scenic and recreational amenities in their economic development plans – as a result PennEast will be an adverse impact to the businesses and recreational enjoyment present today as well as adversely impact and depress economic and recreational uses in the future. The adverse impacts of a pipeline in a region that depends on tourism and outdoor recreation would not be in the public interest. In the Pocono Mountains, partially located in Carbon County, a study reported 25 million person-trips, totaling in about \$1.3 billion in spending.⁷

Because of community concern about the pipeline project, it is important to consider what impact this would have on retirement income. Key-Log Economics⁸ found that even a 10% growth rate reduction would mean a loss of \$55.6 million in investment income and age-related transfer payments.

This community concern also applies to people starting a new business or moving an existing business to the area. Jobs will be adversely affected by the pipeline project. Using the same 10% example as in the previous retirement income scenario, that 10% reduction in the rate of growth would mean 791 fewer jobs and \$16.3 million less in personal income.⁹

The Key-Log economic report describes how the economic impacts are not in the public interest, stating, “A loss of scenic and recreational amenities, the perception and the reality of physical danger, and environmental and property damage resulting from the PE could discourage people from visiting, relocating to, or staying in the region. Workers, businesses, and retirees who might otherwise choose to locate along

⁶ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁷ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁸ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

the PE’s proposed route will instead pick locations that have retained their character, their productive and healthy landscapes, and their promise for a higher quality of life.”

The community service costs for public and private water are discussed under “water supply and conservation” below.

Available estimates of the Project’s economic benefits are flawed, biased, and imbalanced. The economic benefits asserted by PennEast and FERC are indefensible and unsupported, and the economic harms are entirely overlooked.

In addition to the fact that the estimates of the adverse impacts or economic costs to the public provided here are conservatively calculated, it is also important for the Corps to consider, as part of its cost-benefit analysis required for a public interest review, that the estimated potential benefits of the project provided by PennEast and the FERC FEIS are inherently biased and imbalanced.

The economic analysis provided in FERC’s materials should not be relied on by the Corps in order to carry out the objective cost-benefit analysis required for a public interest review as FERC policy relies on applicants to provide information about benefits and costs, incentivizing the applicant “to be generous in counting benefits and parsimonious in counting the costs of its proposal.” This is reflected in the EIS, where “FERC has made no effort itself to ensure a full accounting of economic costs to landowners or the broader community despite the wealth of comments placed on the docket that could support such an assessment.”¹⁰

In addition, Key Log Economics’ analysis determined the estimates provided by PennEast to be based on flawed research and assumptions, and to avoid the inclusion of costs or adverse impacts to the economy necessary for a balanced review.

“PE LLC has published estimates of economic benefits in the form of employment and income stemming from the construction and operation of the PE (PennEast Pipeline Company, LLC, 2015b). These studies suffer from errors in the choice and application of methods and in assumptions made regarding the long-run economic stimulus represented by the PE. Most significantly, the studies make no mention of likely economic costs, and their projections of long-term benefits extend far beyond the time period (of a year or so) within which economic impact analysis is either useful or appropriate.”¹¹

FERC accepts this deficient and imbalanced analysis:

While the DEIS considers all presumed benefits advanced by PennEast, it ignores the economic damage inflicted to public health, property values, jobs, businesses and from the loss of ecosystem services.¹²

¹⁰The policy’s stated objective “is for the applicant to develop whatever record is necessary, and for the Commission to impose whatever conditions are necessary, for the Commission to be able to find that the benefits to the public from the project outweigh the adverse impact on the relevant interests” J. J. Hoecker, et al. *Certification of New Interstate Natural Gas Pipeline Facilities*, 88 FERC, para 61, 227. 1999.

¹¹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017 and Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹² Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

As determined in a careful analysis by Key-Log Economics,¹³ in short, the FERC EIS;

- 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.”

In addition to providing exaggerated and false claims of benefit, the EIS ignores the economic harms inflicted by construction and operation of PennEast. Among its many deficiencies, the EIS analysis does not consider the adverse impacts to recreation and ecotourism so vitally important to the impacted region; the analysis fails to consider the implications for future investment in open space preservation and the adverse impacts thereof as communities realize that preserved lands are not protected from pipeline construction; the economic damage to agricultural crop production is overlooked as are harms to other businesses;¹⁴ the impact on market values and marketability of properties are misrepresented; the costs to the community to respond to emergencies, to the increased stormwater runoff, pollution inputs, and other adverse impacts that could result from this project and be foisted upon the shoulders of local towns and residents are given short shrift if they are mentioned at all; and the DEIS does not consider the health impacts to the residents who will be impacted by construction and operation of this project.

By way of more specific examples, the EIS analysis ignores the many and varied economic harms that would result from the construction, operation and maintenance of the PennEast pipeline. Attached is a detailed analysis of the many deficiencies provided by Key-Log Economics. Among the deficiencies highlighted in that report, and in other resources provided as part of this comment, the EIS fails to consider:

- **Public health costs:** “Based upon experience with other pipelines it can be anticipated that, for example, just in Carbon County where 560 people live within 2 miles of the proposed compressor station (US Census Bureau, 2015), there will be on the order of “504 people experiencing odor events, 398 people experiencing respiratory impacts, 325 people experiencing sinus problems, and 218 people experiencing sleep disturbances and/or severe headaches.”¹⁵
- **Reduced property values:** Of the comments reviewed by the Delaware Riverkeeper Network in partnership with Key-Log Economics (which includes the majority filed to date) “35% mention

¹³ In addition to the Key-Log Economics analyses attached see *Review of PennEast Pipeline Project Economic Impact Analysis*, Jannette Barth, Pepacton Institute, April 4, 2016 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 they ignored.

¹⁴ We have learned from farmers, and it has been documented on the record, that crop production has gone down by as much as 30% when a pipeline cuts through farm crop lands. DEIS figures do not consider harms to other local businesses, such as the 7th generation nursery business reported in the press that said their ability to continue to operate would be harmed if PennEast passes through their property as is under consideration.

¹⁵ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

concerns about the effect on property value. Of this group, 99.6% believe the effect on property value will be negative.”¹⁶

“68% of Realtors believe the presence of a pipeline would decrease residential property value.”¹⁷

“Of these Realtors, 56% believe the decrease in value would be between 5% and 10%. (Kielisch does not report the magnitude of the price decrease expected by the other 44%.)”¹⁸

“70% of Realtors believe a pipeline would cause an increase in the time it takes to sell a home. This is not merely an inconvenience, but a true economic and financial cost to the seller.”¹⁹

“In a survey of buyers presented with the prospect of buying an otherwise desirable home with a 36 inch diameter gas transmission line on the property, 62.2% stated that they would no longer buy the property at any price. Of the remainder, half (18.9%) stated that they would still buy the property, but only at a price 21%, on average, below what would otherwise be the market price. The other 18.9% said the pipeline would have no effect on the price they would offer.

Not incidentally, the survey participants were informed that the risks of “accidental explosions, terrorist threats, tampering, and the inability to detect leaks” were “extremely rare” (Kielisch, 2015, p. 7). Considering only those buyers who are still willing to purchase the property, the expected loss in market value would be 10.5%. This loss in value provides the midlevel impact in our estimates. A much greater loss (and higher estimates) would occur if one were to consider the fact that 62% of buyers are effectively reducing their offer prices by 100%, making the average reduction in offer price for all potential buyers 66.2%.”²⁰

“Based on five “impact studies” in which appraisals of smaller properties with and without pipelines were compared, “the average impact [on value] due to the presence of a gas transmission pipeline is 11.6%”(Kielisch, 2015, p. 11). The average rises to a range of 12% to 14% if larger parcels are considered, possibly due to the loss of subdivision capability.”²¹

Research has also “found that properties within the “emergency plan response zone” of sour gas wells and natural gas pipelines faced an average loss in value of 3.8%, other things being equal.”²²

¹⁶ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹⁷ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹⁸ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹⁹ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²⁰ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²¹ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²² Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis..

Proximity to compressor stations has inflicted health harms, quality of life impacts and property damage, as well as lost property value, and has had impacts so severe that in at least one documented case it forced a family to abandon their \$250,000 investment in their home rather than suffer the health, safety and other harms they were experiencing.²³

“In Hancock, another New York town with a much smaller (15,000 hp) compressor station, three homeowners have had their property assessments reduced, two by 25% and one by 50%, due to the impact of truck traffic, noise, odors, and poor air quality associated with the compressor station (“Proximity of Compressor Station Devalues Homes by as Much as 50%” 2015).”²⁴

The experts at Key-Log Economics estimate that “properties within one half mile of the Kidder Township compressor station would lose 25% of their value if the station is built.” ... “[T]he Kidder compressor station would reduce the value of 43 properties by a total of \$1.9 million dollars.”²⁵

- **Damage caused by air pollution to agriculture and infrastructure:** “One study found that shale gas air pollution damages in Pennsylvania already amount to between \$7.2 and \$30 million, with compressor stations responsible for 60-75% of this total (Walker & Koplinka-Loehr, 2014). Using the low estimate of 60%, that is between \$4.32 and \$18 million in damages associated with compressor stations.”²⁶
- **Loss of Ecosystem Services** The ecosystem services, “benefits that flow from nature to people”, that will be lost, for example, “tangible physical quantities, such as food, timber, and clean drinking water, life support functions like assimilating waste that ends up in air and water or on the land, as well as aesthetics, recreational opportunities, and other benefits of a more cultural, social, or spiritual nature.”²⁷

In addition there is no recognition in the EIS for the decrease in property values associated with increased ecological impacts to the environment from PennEast. For example, 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.²⁸ 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

²³ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²⁴ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²⁵ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²⁶ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²⁷ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²⁸ *Review of INGAA Foundation Report, “Pipeline Impact to Property Value and Property Insurability”*, Key-Log Economics, March 11, 2015.

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.

The impacts to the market value and marketability of homes that will result from the removal of mature vegetation to make way for the pipeline (both permanent ROW and temporary construction areas that will not be fully restored) must also be fully and fairly considered. Healthy, mature, vegetated buffers along waterways are known to enhance property market values. For example, "Pennypack Park in Philadelphia is credited with a 38% increase in the value of a nearby property."

In addition, "[t]wo regional economic surveys documented that conserving forests on residential and commercial sites enhanced property values by an average of 6 to 15% and increased the rate at which units were sold or leased."²⁹ And in a survey conducted by the National Association of Home Builders, 43% of home buyers paid a premium of up to \$3,000, 30% paid premiums of \$3,000 to \$5,000, and 27% paid premiums of over \$5,000 for homes with trees.³⁰ To the extent the PennEast project will be cutting down forests and buffers and replacing them with low growing grasslands, and to the extent that the forest fragmentation caused by pipeline construction and maintenance will result in additional forest degradation as far as 300 feet back on either side of the ROW, the impacts to home market values and marketability must be considered.

In addition, the economic analysis included in the EIS fails to consider the potentially superior economic benefits and values of a clean energy alternative for fulfilling energy needs in Pennsylvania, New Jersey and the unnamed surrounding states PennEast asserts it is seeking to serve. For example, investments in clean energy strategies are known to result in far superior job creation for every million dollars invested as compared to the oil and gas industry, including pipeline projects.

Research has demonstrated that investment in clean energy generates a greater number of long term jobs that bring greater capacity for worker earning and advancement. Every million dollars invested in clean energy, including wind, solar, eco-friendly water, and efficiency, generates 6 to 8 times the number of direct jobs, and 3 times the number of direct, indirect and induced jobs collectively as compared to oil, gas or coal.³¹

FERC wrongly concentrates its determinations regarding pipeline certificate approvals largely on the contracts and the alleged reliability accessibility proposed by the applicant without considering the economic costs articulated above –given that improper review, FERC's failure to fully consider economic harms renders a decision flowing therefrom as arbitrary and capricious.

Overall, Key Log Economic's analysis found the PennEast DEIS "to be greatly lacking both in the scope of economically relevant environmental effects considered and in the quality of the analysis of those few effects considered."³²

²⁹ Center for Watershed Protection, *Better Site Design: A Handbook for Changing Development Rules in Your Community*, Citing two studies by Morales and Weyerhauser, August, 1998.

³⁰ Cheryl Kollin, *"Designing with Nature and Showing the Benefits"*, Land Development, National Association of Home Builders, Winter, 1997.

³¹ See *The Economic Benefits of Investing in Clean Energy*, by the Center for American Progress & PERI University of Massachusetts Amherst.

³² Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

While the Corps regulations state that “it will generally be assumed that appropriate economic evaluations have been completed, the proposal is economically viable, and is needed in the market place” when reviewing the permit application of a private enterprise, “**in appropriate cases [the district engineer], may make an independent review of the need for the project from the perspective of the overall public interest,**” recognizing that the economic impacts of many projects are “important to the local community [...] affecting such factors as **employment, tax revenues, community cohesion, community services, and property values.**” 33 C.F.R. § 320.4(q). (emphasis added).

Given that independent economic analysis found that the adverse economic impacts of the Project could outweigh the company’s claimed benefits by over \$50 billion³³; the economic evaluations and estimates provided by PennEast and the FEIS are shown to be biased, flawed, and unbalanced; and the extensive qualitative analysis provided here and in the abundance of public comments demonstrating adverse impacts to **employment, tax revenues, community services, and property values**, the proposed PennEast Pipeline project is clearly an appropriate case for the district engineer to undertake an independent review of the need for the project for the protection of the public interest.

In fact, in this case, there is significant evidence on the record challenging the claim of need for the project. (See comments below)

Additionally, the Corps is required to “independent[ly] verif[y]” the applicant's data and conclusions. *Utahns for Better Transp.*, 305 F.3d at 1186; *Sierra Club v. Van Antwerp*, 362 F. App'x 100, 106 (11th Cir. 2010) (“[T]he Corps may rely on information submitted by the applicant but must *independently verify such information.*” (emphasis added)). The Corps' duty of independent verification is especially strong when the Corps “receives particularized objections to material upon which it importantly relied in its review.” *Van Abbema v. Fornell*, 807 F.2d 633, 640 (7th Cir. 1986) *49 (considering a challenge to a Corps permit under NEPA). If the Corps bases its permitting conclusions on insufficient, unverified, or false information, the Corps' conclusions are “arbitrary and capricious.” *Id.* at 639 (holding the Corps may not base its conclusions on “entirely false premises or information”); *Utahns for Better Transp.*, 305 F.3d at 1187 (holding the Corps may not rely on insufficient information or unverified cost estimates).

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, and that those costs are being advanced for a project for which there is no genuine need. The Corps must deny the Projects 404 permits as the project is clearly contrary to the public interest.

b. The Project would offer only adverse impacts to the Conservation of a variety of resources important to the public good.

The proposed project offers no net benefits to conservation in the area of the project and greatly disrupts the conservation of a variety of resources, such as established forest ecosystems and habitats, wetlands, aquatic ecosystems, vulnerable or high value habitats and species, including many swaths of lands thought to be permanently preserved through both public and private means in the deliberate and concerted effort to conserve the resources of the region.

³³*Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

The adverse impacts to the conservation of these resources that would result from the Project are serious and often permanent. Ecological destruction and/or irreparable damage results from tree clearing, land clearing, soil compaction, crossing of wetlands and waterbodies, and from construction and maintenance activities. These adverse impacts have cascading detrimental effects on the environment and public good.

According to PennEast and the FEIS, construction of the project will 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). According to the FEIS the project will at least cut through 255 waterbodies (including 159 perennial, 45 intermittent, 40 ephemeral, 11 open water), 633 acres of forest, 91 wetlands, impact “several” vernal pools, and infringe upon and damage habitat for threatened and endangered species of bat, sturgeon, snake, turtle, mussels and more. However, as demonstrated in this comment, these impacts are sorely understated, incomplete, and misrepresent the footprint and damage that would be inflicted if the PennEast pipeline were built.

By way of illustrating resources of high public value whose conservation will be adversely affected, Key Log Economics’ technical report³⁴ found that:

The route would cross important waterways such as the Delaware—the longest undammed river east of the Mississippi, Lehigh, and Susquehanna rivers, pristine streams, the Appalachian Trail, wetlands, forests, and established public and private conservation lands. The D&R Greenway Land Trust estimates that the proposed route in New Jersey “will touch lands that have been preserved over time with public funding totaling over \$37 million” (D&R Greenway Land Trust, 2015). In addition, the project would potentially harm the habitat of several federally listed endangered species (Federal Energy Regulatory Commission, 2016b).

The variety of harms that would result from the proposed cuts through preserved open space must be fully and fairly considered—whether the open space is preserved by purchase or conservation easement. The protection of open space is necessary to preserve the remarkable resources of the Lower Delaware River corridor. Natural areas are critical for water quality, have more stable soils, provide habitat for plants and animal species, prevent invasive species spread, and help maintain the value of historical sites. Loss of open space adversely impacts water quality, aquatic habitat, and the intact ecological health that is otherwise benefitted by the preserved open space. Pipeline passage through open space significantly reduces scenic character and recreational opportunities thereby adversely impacting jobs and economic benefits associated with recreation, vacation and other related industries. Realtors in the region have asserted at public meetings that the presence, or even the potential presence, of an interstate transmission pipeline of the size proposed by PennEast adversely impacts the marketability of nearby homes. The Corps must fully and fairly consider these harms and require quantifiable and documented data to support any assertions/findings.

There are impacts from the fragmentation of the forest by PennEast as well as by other cuts in the same region by other pipelines and/or linear projects. Over the life of the pipeline maintenance of the ROW will result in new impacts as well as perpetuate ongoing harms. Operation and maintenance of the pipeline will include the prevention of tree growth and maintenance of low growing vegetation only – this will be accomplished by periodic mowing and the use of herbicides. The mowing will disturb the vegetation and habitats that were allowed to encroach on the ROW. The herbicides will include impacts for non-target

³⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017. \

species, and could have implications for soil microbes and nearby wetland, vernal pool and stream ecosystems. Maintenance activities will involve periodic trimming, pruning, cutting back and removal of trees and woody vegetation growing along the perimeter of the ROW. “The inspection and maintenance of the ROW means the repetitive access and traverse of the ROW by inspection vehicles and maintenance equipment. This increases overall soil compaction and because there are no stabilized access-ways, it also creates repeated opportunity for soil erosion.”³⁵

Forest ecological systems would experience enduring but also fresh impacts throughout the life and presence of the pipeline. The initial impact will include the removal of the forest and understory vegetation, coupled with the changes in light, moisture, wind, etc. impacting 300 feet into the forest on either side of the ROW footprint. There will be enduring compacted soils, and dramatically altered vegetative composition along the ROW and along that forest edge that will increase volume and alter the timing of stormwater runoff, reduce groundwater recharge, and change/take habitats for species of all kinds. There will then be the influx of invasive plant and animal species that will have cascading impacts on the forest ecosystem, which will spread along the ROW and back into the core of the adjacent forest.

The loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain) and exacerbating the sedimentation impacts of construction. As noted by experts, the deforestation caused by the PennEast pipeline will result in increased stormwater runoff; this will result in increasing flows in the stream with stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Increased erosion means loss of habitat; channel migration that can have serious implications for riparian lands and vegetation over long stretches and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel; and increased instream sedimentation which is considered a pollutant both legally and scientifically. Additionally, 44 dry stream crossings will impact Conservation Areas and Public Lands, and 14 dry stream crossings will impact areas held in private conservation easement.³⁶

The PennEast Pipeline will be cutting down hundreds of acres of forest. “Fifty-seven percent of the pipeline right-of-way area, or approximately 446 acres, is currently forested and will permanently be altered from forest during pipeline operation. An additional 139 acres of forest will be removed for construction.”³⁷ In forested areas the habitat loss will not just be in the immediate footprint of the pipeline, but it will impact an additional 300 feet of forest on either side of the ROW.³⁸ This means that for every mile of pipeline cut through a forest an additional 72 acres of forest will be harmed. In addition, the pipeline will irreparably alter a tremendous number of wetlands (how many is unclear, as this comment and our attached reports document the incredibly inaccurate, misleading and deficient job PennEast and FERC, through the EIS, did on assessing wetland impacts), including their changing functions and values. The result will be to reduce

³⁵ See the FERC Draft EIS.

³⁶ *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.

³⁷ *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.

³⁸ *Pennsylvania Energy Impacts Assessment*, Nels Johnson, the Nature Conservancy, November 15, 2010; 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.

available bird habitat, nesting grounds and feeding grounds, to impact bat species as well as a number of amphibians and mammal species.

PennEast’s minimal mitigation measures will not come close to negating the adverse impacts to conservation. PennEast will only be required to “ensure that the soils are stable and is under no regulatory obligation to restore soil to pre-construction conditions.” “[T]hese changes in the properties of the soils along the pipeline and within the pipeline ROW will contribute to the predicted increases in the volume and rate of runoff. Along the entire length of the 115.1-mile long pipeline, these changes in the post-construction hydrology of the affected lands (especially the steeper sloped areas) will invariably alter runoff properties. The end result will be impacts to the streams, wetlands and riparian areas traversed by the pipeline and pipeline ROW and increased opportunity for erosion along the steeper segments of the pipeline and pipeline ROW. Because PennEast is not required to implement any of the conventionally utilized best management measures to collect, treat and control ROW runoff, there is no way to mitigate for these changes other than to revegetate. However, once again the cover type will be different pre to post-construction (e.g. trees to grass) and PennEast is only obligated to achieve 80% post-revegetation coverage with the vegetation type it is using.”

This is only an overview of the many and cumulative adverse impacts that will affect the conservation of resources in the area. The attached expert reports provide further details and specificity of these impacts—although it is impossible to quantify them all given the lack of survey access along the proposed route and the deficient information provided by PennEast, FERC, and the Army Corps on the record. However, based on the scale of the project, the magnitude of severe, unavoidable, unmitigatable, and irreversible adverse impacts to greenfield land, forests, wetlands, waterways and other resources of great importance to the public interest—it is clear that any benefit from the minimal mitigation, compensation, and restoration plans offered by PennEast will be outweighed by the adverse impacts to conservation of vital resources.

c. The Project will adversely impact the Aesthetics of the region.

There are no conceivable aesthetic benefits that could result from the proposed Project. However, many detrimental impacts to the regional aesthetics have been identified and in some cases quantified or mapped.

The Project would adversely affect the public’s viewshed along the pipeline corridor:

Beyond the areas where the proposed pipeline would alter land use and present the risk of physical danger, the pipeline would change the aesthetic qualities of the region. Residents and visitors will see the pipeline corridor as a break in a once completely forested hillside, and the lower aesthetic quality would translate into further loss of value for properties from which the corridor is visible.³⁹

In measuring its ecosystem value, aesthetic value is defined as “the role that beautiful, healthy natural areas play in attracting people to live, work, and recreate in a region.” The monetary effect of lost aesthetic value, an ecosystem service enjoyed by the public, along the pipeline corridor can be quantified. Below are excerpts from the attached Key Log report demonstrating the value of aesthetic losses due to construction and operation of the pipeline.:

³⁹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

Ecosystem Service	Study Region			
	Baseline (low) (2015\$)	Loss (low) (2015\$)	Baseline (high) (2015\$)	Loss (high) (2015\$)
Aesthetic Value	4,074,427	(4,074,427)	16,294,264	(16,294,264)

Table 1. Ecosystem Service Value Lost to the Construction Corridor, New Temporary Roads, Pipeyards, and Temporary Aboveground Infrastructure, Relative to Baseline, by Ecosystem Service.⁴⁰

Ecosystem Service	Study Region			
	Baseline (low) (2015\$)	Loss (low) (2015\$)	Baseline (high) (2015\$)	Loss (high) (2015\$)
Aesthetic Value	1,770,919	(1,707,351)	7,092,570	(7,013,190)

Table 2. Ecosystem Service Value Lost Each Year Post Construction in Right-Of-Way, Relative to Baseline, by Ecosystem Service.⁴¹

Ecosystem Service	Study Region			
	Baseline (low) (2015\$)	Loss (low) (2015\$)	Baseline (high) (2015\$)	Loss (high) (2015\$)
Aesthetic Value	150,016	(150,016)	603,428	(603,428)

Table 3. Ecosystem Service Value Lost Each Year Post Construction in Permanent Infrastructure, Relative to Baseline, by Ecosystem Service⁴²

The visual effects felt by the adverse aesthetic impact of the pipeline corridor have far-reaching effects on the surrounding region. For the purpose of this study, the economic loss from adverse aesthetic impacts was calculated only within the footprint of the pipeline corridor. However, the visual effects felt by the surrounding community are also considered:

Utility corridors from which power lines are visible decrease property values (by 6.3% in one study) (Bolton & Sick, 1999). This suggests that a pipeline corridor reduces property value either by impairing a good view or, like power lines, by simply being unattractive. It is reasonable to conclude that the proposed PE would have effects on property value due to the visual effects⁴³

The *Visibility of the Proposed PennEast Pipeline* map below illustrates the places where the pipeline would be visible in the study region that might suffer a portion of lost aesthetic value. This analysis shows that:

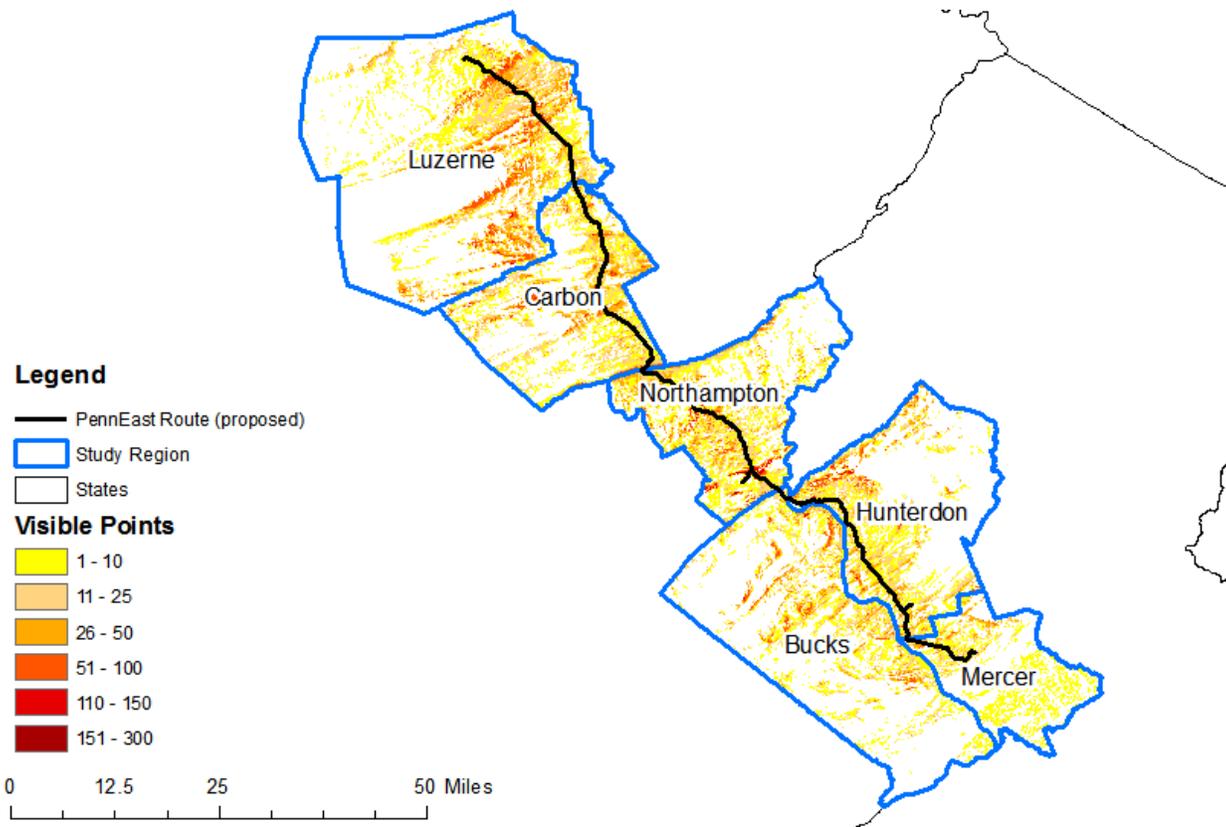
⁴⁰ Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴¹ Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴² Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴³ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

- “there are places in the study region where 30 km, or 18.6 miles, of the pipeline corridor could be visible”⁴⁴
- “it would be possible to see at least one point (representing 100m) along the ROW from 36% of the six-county study region. For this 36% of the region, an average of 1.8 km (1.1 miles) of the PE ROW would be visible. For 20% of the study region, seeing 10 or more points, or 1 km (0.62 miles) of the ROW is possible.”⁴⁵



Visibility of the Proposed PennEast Pipeline⁴⁶

The color of each point on the map indicates the number of waypoints, spaced 100m apart, along the PE route and within 25 miles that could be seen from each point. Note that the analysis is based on elevation only and does not take into account the extent to which buildings or trees may mask views of the pipeline corridor.

Sources: PE route obtained from the Delaware Riverkeeper Network; Counties from USGS (U.S. Department of Interior & U.S. Geological Survey, 2015).

Diminished aesthetic value has clear and cascading region-wide effects on the public interest and human wellbeing:

Beyond the loss of ecosystem services stemming from the conversion of land in the ROW, the loss of property value resulting from the chance of biophysical impacts (leaks and explosions), or the certainty of impacts on aesthetics, the proposed PE would also diminish physical ecosystem services, scenic amenity, and passive use value that are realized or

⁴⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴⁵ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴⁶ Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

enjoyed beyond the evacuation zone and out of sight of the pipeline corridor. The people affected include residents, businesses, and landowners throughout the study region, as well as past, current, and future visitors to the region. The impacts on human well-being would be reflected in economic decisions such as whether to stay in or migrate to the study region, whether to choose the region as a place to do business, and whether to spend scarce vacation time and dollars near the PE instead of in some other place.⁴⁷

Economic impacts of the cascading detriments to the public interest from the loss of aesthetic impacts of the Project are predicted to include:

- Economic activity that depends on the region’s scenic, recreational, and quality-of-life:
 - Annual loss of recreation tourism expenditures of \$448.0 million that would otherwise support 4,090 jobs and generate \$38.8 million in state and local tax receipts
 - Annual loss of personal income of \$55.6 million due to slower growth in the number of retirees
 - Annual loss of personal income of \$16.3 million due to slower growth in sole proprietorships⁴⁸

Additional examples of adverse aesthetic impacts that would result from the proposed Project include:

- 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. Property values are demonstrably harmed by the presence of a pipeline.⁴⁹ 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.
- The crossing of the Appalachian Trail by the proposed route is in a section that is only feet away from a scenic overlook and cliff outcropping – it is hard to imagine a more damaging location for harming this important recreational and cultural resource. This area is also prime rattlesnake habitat.

The adverse impacts to the aesthetics of the region created by the Project are not caused by the appearance of the pipeline itself, “but rather the gap or break in otherwise intact forests, farm fields, or other more natural features through which the ROW passes.”⁵⁰ As a result, the adverse impacts to aesthetics are impossible to mitigate as long as the pipeline ROW is maintained, and likely long after. Claims that aesthetic impacts can be mitigated by measures such as allowing temporary work spaces to revert to pre-construction conditions are misleading as this would do nothing to actually do anything to mitigate the visual impact of the unavoidable ROW.

The adverse and unmitigatable impacts on aesthetics that would result from the proposed Project would clearly be a detriment to the public interest and are reason enough for the Corps to deny the Project 404 permits.

d. The proposed Project would adversely affect a significant number of General Environmental Concerns that would have a detrimental impact on the public interest.

⁴⁷ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴⁸ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017..

⁴⁹ *Review of INGAA Foundation Report, “Pipeline Impact to Property Value and Property Insurability”*, Key-Log Economics, March 11, 2015

⁵⁰ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

The proposed Project would have extremely adverse impacts on many general environmental concerns that are crucial to the public interest. There are no beneficial impacts to general environmental concerns that would result from the proposed project. While there are too many adverse impacts to the environment generally to list them all here, the following are a sample of the many detriments the project would have on the environment. Many more examples can be found in the export reports attached to this comment, although not all of the adverse impacts from the project can be identified because of the substantial data gaps and deficiencies in the Project materials.

Project construction and maintenance activities, including clearing, grading, trench excavation, backfilling, and movement of construction equipment along the ROW and access roads would lead to a large number of adverse impacts on the environment including soil compaction, removal of vegetation, increased stormwater runoff and decreased groundwater recharge. These can cause an increased soil erosion in and into waterways and wetlands, reduced stream baseflow, reduced wetland baseflow, lost habitat, increased invasive species, polluted runoff into waterways and wetlands, disruptive noise pollution, air pollution, nuisance recreational users of the pipeline such as ATVs, among many other adverse impacts to the environment. All of these impacts are directly harmful in the locations where construction, operation and maintenance occur, but also create much more significant adverse harms when considered cumulatively. The Corps is required to consider cumulative impacts in its 404 evaluation.

All of these adverse environmental effects would have a directly negative impact on the public interest through the loss of vital resources and ecosystem services we rely on, as well as the cascading effects that would result.

- 75% of the stream crossings will be undertaken using open cut methods. Many of the streams that will be open cut have the highest quality designations available in Pennsylvania and New Jersey.
- Compacted soils in and around the pipeline right of way, accompanied by low growing plants (to the degree they are able to grow in the compacted soils or under PennEast's ROW management protocols) will result in increased runoff to nearby streams, thereby increasing flows that impact downstream communities in terms of flooding, erosion, habitat and water quality impacts.
- Compacted soils and lost or altered vegetation will decrease groundwater recharge. In addition the presence of the pipeline will alter the flow path of some groundwater systems. The result will be to reduce and/or diverting water from streams and wetlands diminishing and denying needed base flow. Reduced baseflow will adversely impact water quality, habitat, and recreation. The cumulative impact of these harms across the pipeline and multiple pipelines for affected waterways and wetlands could be significant depending on the harm being evaluated. In addition to adversely impacting stream and/or wetland base flows, drinking water supplies/aquifers could be adversely impacted, losing the historic water recharge they receive.

Additionally, blasting activities used for the construction of the Project leave behind "nitrogen which can run off with stormflow and enter streams as nitrate or ammonia."⁵¹

PennEast and FERC suggest that compliance with standard regulatory requirements and/or mitigation measures will avoid anticipated harms. But we know from experience this is not the case, and so the Corps needs to more intentionally and carefully consider proposed plans. For example, PennEast and FERC state that completed Erosion & Sediment (“E & S”) Control Plans by agencies will adequately avoid harms but this is a false conclusion as can be seen on other pipeline projects where severe sediment pollution harmed local waterbodies, many of which had special protection designations.⁵² Most agencies require quick establishment of groundcover to stabilize soils which takes the place of establishing more desired and diverse native habitats, biodiversity and soil health is lost. Once soil chemistry, soil porosity, and soil layering (horizons) that took eons to form are destroyed by the construction process, erosion control measures usually require lime and fertilizer to be applied so that seed mixes grow rapidly. The addition of lime and fertilizer are like poison to what were once forest soils of low pH and low nutrients. This essentially ruins the chance that the soil will ever revert to a native plant community again. Alien invasive weeds of all kinds thrive on the nutrient-enriched, topsy-turvy soil layers in the aftermath of construction. Native herbaceous plants and shrubs almost never outcompete weeds in these altered, nutrient-enriched, high pH soils. Just like on abandoned farmland, these construction sites act as "post-agricultural soils," and just like our abundant forests on post-agricultural soils, the herbaceous and shrub layers will be dominated by alien weeds virtually forever, especially with over-abundant deer in the equation.⁵³

By way of further example, FERC and PennEast presume “that there is no difference between the hydrologic response of a forested woodland and the compacted, post-construction pipeline right-of-way.” As a result, there is no consideration of construction practices to avoid or mitigate the harms inflicted on these natural resources and thereby prevent the ecological harm that will result in the form of lost habitat, increased stormwater runoff, reduced groundwater infiltration and recharge, inability of vegetation to regrow etc. The mitigation measures proposed by the PennEast Pipeline will not negate these serious adverse effects to environment. As explained by Meliora Design”

“Compaction in construction work spaces will not be restored by simply regrading to pre-existing contours, retilling at the surface, and reseeded the area as currently outlined in the permit application materials. Heavy equipment used in the construction of the pipeline will inherently compact work areas to depths deeper than conventional surface tilling can reach. Compaction creates conditions that inhibit the germination of plants and plant root growth. Existing topsoil will not be segregated and restored, but will be lost in the construction process. The establishment of vegetative cover within the pipeline ROW will be more difficult once surface soils are compacted, and forested woodland will not be restored.”⁵⁴

“When vegetation regrowth is limited, the likelihood of accelerated erosion is increased. When runoff cannot infiltrate, is not slowed at the surface by vegetation, and has direct contact with exposed soils, sediments are much more likely to be transported to downhill streams and wetlands. This is of specific concern on significant portions of the pipeline right-of-way in proximity to stream crossings, where soils to be disturbed by pipeline construction are classified as Severe Erosion Potential (79), Poor Vegetation (122), and

⁵² Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

⁵³ Dr. Emile DeVito, New Jersey Conservation Foundation, Email Correspondence Re: Tennessee Gas Pipeline practices. July 14, 2015.

Rugged Terrain with slopes greater than 30% (28). These areas are especially prone to erosion and sediment transport to waterbodies.”⁵⁵

Cumulative Impacts Must be Considered on a Sub Watershed Scale.

The Corps cumulative impacts assessment should be considered across a broad range of environmental and community harms (e.g. air, water, wetlands, habitat, forest, floodplain, water quality, drinking water supplies, health, safety, climate change, economics). Consideration of the multiple cuts proposed by PennEast on a subwatershed scale is required. FERC has not assessed the cumulative impact of multiple cuts on a subwatershed scale. Therefore the Corps will need to conduct its own independent analysis and subject that analysis to public comment.

Cumulative impacts must be assessed by ecological system type – e.g. forests, wetlands, species habitat.

Cumulative impacts of the pipeline construction, operation, and maintenance on impacted ecological systems must also be considered. The Corps should evaluate the cumulative impacts to key ecological systems, over the lifetime of the pipeline, from construction through operation and including maintenance activities. For example, forest ecological systems would experience enduring but also fresh impacts throughout the life and presence of the pipeline. The initial impact will include the removal of the forest and understory vegetation, coupled with the changes in light, moisture, wind, etc. impacting 300 feet into the forest on either side of the ROW footprint. There will be enduring compacted soils, and dramatically altered vegetative composition along the ROW and along that forest edge that will increase volume and alter the timing of stormwater runoff, reduce groundwater recharge, change/take habitats for species of all kinds. There will be the influx of invasive plant and animal species that will have cascading impacts on the forest ecosystem, which will spread along the ROW and back into the core of the adjacent forest, and may introduce invasives into a region that could spread to other intact forest systems in the area but not directly on the PennEast pipeline route. There are the impacts of the fragmentation of the forest by PennEast but also by other cuts in the same region by other pipelines and/or linear projects. Over the life of the pipeline will be the maintenance of the ROW which will include the prevention of tree growth and maintenance of low growing vegetation only – this will be accomplished by periodic mowing and the use of herbicides. The mowing will disturb the vegetation, habitats and species along and nearby the ROW. The herbicides will include impacts for non-target species, and could have implications for soil microbes and nearby wetland, vernal pool and stream ecosystems. Maintenance activities will involve periodic trimming, pruning, cutting back and removal of trees and woody vegetation growing along the perimeter of the ROW. “The inspection and maintenance of the ROW means the repetitive access and traverse of the ROW by inspection vehicles and maintenance equipment. This increases overall soil compaction and because there are no stabilized access-ways, it also creates repeated opportunity for soil erosion.” PennEast will only be required to “ensure that the soils are stable and is under no regulatory obligation to restore soil to pre-construction conditions.” “[T]hese changes in the properties of the soils along the pipeline and within the pipeline ROW will contribute to the predicted increases in the volume and rate of runoff. Along the entire length of the 115.1-mile long pipeline, these changes in the post-construction hydrology of the affected lands (especially the steeper sloped areas) will invariably alter runoff properties. The end result will be impacts to the streams, wetlands and riparian areas traversed by the pipeline and pipeline ROW and increased opportunity for erosion along the steeper segments of the pipeline and pipeline ROW. Because PennEast is not required

to implement any of the conventionally utilized best management measures to collect, treat and control ROW runoff, there is no way to mitigate for these changes other than to revegetate. However, once again the cover type will be different pre to post-construction (e.g. trees to grass) and PennEast is only obligated to achieve 80% post-revegetation coverage with the vegetation type it is using.”⁵⁶

As documented in the comment from Meliora Design,⁵⁷ the EIS fails to consider cumulative impacts in an ecological system and fails to consider the multiple elements of specific site conditions that impact one another synergistically to determine what will be the impact that results from development of that site, with and/or without mitigation – e.g. pre and post vegetation composition, soils, slope etc. (While they comments were originally directed at the DEIS, they apply equally to the final EIS.) This missing component of the EIS is massive and seriously undermines any of the conclusions reached regarding ecological impacts.:

- “The DEIS and supporting materials provided by PennEast fail to consider the unique, site specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts associated with stream crossings, including open cut crossings. The DEIS fails to comprehensively evaluate each stream crossing with regards to conditions such as water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting. Lacking consideration of the site specific conditions at each crossing, the DEIS fails to require adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing. The proposed stream and wetland crossing locations, methods of construction, and long-term land use conditions appear to be based on the needs and preferences of PennEast and not informed by site specific conditions.”
- “Importantly, the supporting documentation provided by PennEast fails to provide stream and wetland crossing information in a manner that allows FERC and other reviewing agencies to evaluate the site specific conditions at each stream crossing, including information discussed further in this memo. Important site specific information is located in different Resource Report volumes and other documents, and not easily correlated or evaluated. Much of the information discussed in this memo was compiled from multiple volumes, documents, and updates and is not readily reviewed by FERC or other reviewing agencies in a comprehensive manner. The project selection of stream and wetland crossing locations and construction methods cannot be clearly evaluated in the form in which it is presented in the DEIS and supporting documents.”

These cumulative assessments, considering near term and long term impacts, cumulative impacts resulting from the damage done near term and long term to a resource, including the lasting implications even with mitigation measures undertaken and full compliance with the law (let alone acknowledgement of the violations that are documented to take place as a matter of course during pipeline construction, operation

⁵⁶ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

⁵⁷ *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

and maintenance) need to be evaluated by the Corps and are not included in the FERC EIS. The forest example above is but one kind of resource that experiences these multi-pronged impacts in need of cumulative assessment – vernal pools, wetlands, streams, aquatic life, avian life, amphibian life, soil life, and wildlife all need an assessment of the cumulative impacts that will be visited upon them by PennEast if it were to be constructed.

Based upon the lack of information, the misrepresentations regarding cumulative impacts, and the reality of the extent and breadth of the harms which can be determined even from the information provided, the Corps can and must reject the 404 permit.

Consideration of cumulative impacts that will result to ecological resources and recreational and cultural assets resulting from PennEast as well as other existing, proposed or anticipated infrastructure projects is required but does not appear to have been well considered on the record. Each project individually depletes the natural and scenic resources of the region, and the combined impact becomes increasingly severe, unavoidable, unmitigatable, and irreversible.

The Corps evaluation of cumulative impacts must consider reasonably foreseeable shale gas extraction/production as well as its end uses. Pursuant to 33 C.F.R. § 320.4(a)(1), in evaluating the 404 permit for the proposed Project, the Corps must include an “evaluation of the probable impacts, including **cumulative impacts**, of the proposed activity and its intended use on the public interest.” Additionally, the “benefits which reasonably may be expected to accrue from the proposal must be balanced against its **reasonably foreseeable detriments**.” 33 C.F.R. § 320.4(a)(1)(emphasis added). As such, the Corps must consider in its cumulative impact analysis the reasonably foreseeable shale gas extraction activities (including drilling and fracking operations) that will result, as well as impacts from the end uses of the gas including at powerplants and LNG exports (given that the PennEast gas could be directed to export facilities such as Cove Point, a potential outcome identified throughout the FERC docket and the PennEast record).

All direct, cumulative, and foreseeable impacts must be considered. Documentation of these cumulative impacts is included as attachments to this comment, including evidence that:

- The PennEast pipeline will induce the drilling of on or about 3,000 new wells in Pennsylvania (from a combination of wells that have been drilled but are not yet producing and wells not yet drilled) in Northeast Pennsylvania, in Bradford, Susquehanna, Lycoming, and Tioga counties.

The cumulative review of PennEast must include the water, air, forest, habitat, soil, climate change and other impacts of the shale gas extraction that will be induced, supported and/or advanced by construction of the PennEast pipeline. Attached to this comment are multiple reports documenting the harms that will result from the shale gas extraction activities.

Use of standard constructions practices will result in environmental violations and degradation.

PennEast and the EIS assert in multiple ways that the project will be constructed in full compliance with all applicable laws and that in temporary work spaces 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 pointed this out in great detail in our comments to date. The fact that FERC fails to consider the reality of pipeline construction, and that construction is fraught with environmental violations and a failure of mitigation/restored areas to return to ecological health is a significant deficiency.

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. We 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 of these pipelines, it is clear that:

- 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 technical documents, reports and observations compiled as the result of field monitoring which support, inform and expand upon these conclusions. DRN's 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.

Additionally, we attach new information documenting the significant violations and environmental damage inflicted most recently by construction of the Mariner East 2 pipeline. While this is a liquids pipeline, the implications documented in the attached materials are equally applicable to PennEast, perhaps moreso given that PennEast will not be subject to the same breadth of state legal requirements that the Mariner East Project it.

For the reason stated above as well as the extensive adverse impacts that would result from the Project that are included in the attachments to this comment, including the many cascading impacts to the public interest—as well as the evidence demonstrating that these adverse impacts largely cannot be mitigated—the proposed Project would be contrary to the public interest and the Corps should deny its 404 permit.

e. The proposed Project would adversely affect a significant number of wetlands that are of considerable value to the public interest.

The Project includes multiple wetland crossings in the Delaware River and Susquehanna River watersheds that would have both temporary and permanent adverse effects on wetlands and the vital services that they provide for the public.

Sections 320.4(b)(1) and 320.4(b)(3) specifically contemplate a robust review of wetlands in the public interest review process, as the protection of vulnerable wetlands is a distinct priority in the Corps' review. The Corps is required to apply a presumption during the public interest review that “[m]ost wetlands constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest.” *Id.* § 320.4(b)(1). The Corps also is required to evaluate applications with the recognition that individual wetland sites “may be part of a complete and interrelated wetland area.” *Id.* § 320.4(b)(3). Although alterations at individual sites “may constitute a minor change, the cumulative effect of numerous piecemeal changes can result in a major impairment of wetland resources.” *Id.* These requirements give effect to the Clean Water Act's statutory purpose and ensure that “wetlands will [not] be destroyed simply because it is more convenient than not to do so.” *Buttrey*, 690 F.2d at 1180.

The expert reports attached provide a general description of the way in which the permanent conversion of forested wetlands to emergent wetlands constitutes an adverse impact on the functions and values of those wetlands. The attached expert reports address the way in which wetland functions are disrupted, decreased, or lost as a result of a permanent conversion from forested to emergent wetland cover type. The Corps' Public Notice provides details on the acreage of wetlands –that will be permanently converted from forested wetlands to emergent wetlands as a result of the proposed Project.⁵⁸

⁵⁸ As noted later, these calculations of impacts have been grossly undercounted.

Additionally, a series of the attached reports detail the way in which the functional conversion of wetlands – specific to the portion of the proposed Project in Pennsylvania – will result in adverse impacts to the functions and values of those wetlands. The report breaks down the harms to each of the wetlands and measures the intensity and scope of the ground disturbance. In addition to detailing the adverse impacts as a result of wetland conversion, attached reports also detail the ways in which the mitigation techniques and site location are insufficient to satisfy the requirements of a 404 permit. The reports attached to this comment, irrefutably demonstrate that the permanent conversion of wetlands called for by this project will result in adverse impacts to those wetlands.

The Corps has vastly undercut or excluded consideration of the full acreage of impacts resulting from construction activity for the Project in its Public Notice. The Corps has also failed to properly account for the value, functionality, and acreage that will be impacted as a result of construction activity.

Corps' Public Notice quantifies only the following distinct permanent wetland impacts resulting from the Project, it does not discuss or assess the full wetland impacts of the project which are far greater than just the 5 individual permit sites:

the permanent conversion of 5.98 acres of PFO and PSS wetlands to PEM wetlands within the Philadelphia Area of Operations associated with the 30-foot wide permanently maintained area over top of the proposed pipeline. All other PFO and PSS wetlands temporarily impacted by the project will be restored and left to revert back to their natural condition. There are no permanent impacts associated with the five individual permits discussed in this Public Notice. The five individual permits described in this Public Notice result in a total of 2.29 acres of permanent conversion.

- Specifically, the following permanent conversion impacts occur at the following:
 - IP's: IP-1 = 0.55 acre (Bear Creek & Unnamed Tributary to Bear Creek (Luzerne County)).
 - IP-2 = 0.00 acres (Lehigh River (Carbon & Luzerne Counties)),
 - IP-3 = 1.16 acres, Unnamed tributary to Laurel Run (Carbon),
 - IP-4 = 0.58 acre (Unnamed Tributary to Stony Creek (Carbon)), and
 - IP-5 = 0.00 acre (Delaware River and Delaware Canal Bucks County, Pennsylvania and Hunterdon County, New Jersey)

Specifically, each of these crossings will have the following wetland impacts:

IP-1: Palustrine Scrub Shrub (PSS) and Palustrine Forested (PFO) wetlands. The crossing will impact a total of 1.06 acres. Specifically, the crossing will impact 0.15 acre of water ways, 0.63 acre of PFO wetland and 0.28 acre of PSS wetland. The waterways will be crossed in a dry condition created by the construction of a coffer dam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of waterway or wetland area, however, the crossing will result in the permanent conversion of 0.44 acre of PFO wetland and 0.11 acre of PSS wetland to Palustrine Emergent (PEM) wetlands. Compensatory mitigation has been offered by the applicant to offset the 0.55 acres of permanent conversation.

IP-3: Pipeline crossing of unnamed tributaries to Laurel Run. The crossing will impact a total of 1.83 acres of waters and wetlands. Specifically, the crossing will impact 1.35 acres of PFO wetland and 0.38 acre of PEM wetland. The waterways will be crossed in a dry condition created by construction of a coffer dam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the

pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of waterway or wetland area, however, the crossing will result in the permanent conversion of 1.16 acre of PFO wetland to Palustrine Emergent (PEM) wetlands. Compensatory mitigation has been offered by the applicant to offset the 1.16 acres of permanent conversation.

IP-4: Pipeline crossing unnamed tributary to Stony Creek. The crossing will impact a total of 1.19 acres. Specifically, the crossing will impact 0.73 acre of PFO wetland and 0.35 acre of PEM wetland. The waterways will be crossed in a dry condition created by construction of a coffer dam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of waterway or wetland area, however, the crossing will result in the permanent conversion of 0.58 acre of PFO wetland to Palustrine Emergent (PEM) wetlands. Compensatory mitigation has been offered by the applicant to offset the 0.58 acres of permanent conversation.

IP-5: Pipeline crossing of PFO wetlands, the Delaware Canal, and the Delaware River. The crossing will be constructed via Horizontal Directional Drill (HDD) methods. The HDD will extend from an upland field approximately 1,200 feet west of the Delaware River to a upland field approximately 1,100 feet east of the Delaware River. In addition to crossing under the Delaware Canal, the Delaware River, and a PFO wetland the HDD will go under State Route 611 in Pennsylvania and Old River Road, the Riegelsville Milford Road and a railroad line New Jersey. PennEast has stated that no tree clearing will occur in the permanent 30 foot Right-Of-Way over the HDD within the PFO wetland. There are no surface impacts to waters and wetlands associated with this crossing.

- The Baltimore District’s Public Notice for the PennEast 404 application stated that wetland impacts included: “Approximately 0.01 acre (604 square feet) of palustrine emergent wetlands will be filled to accommodate construction and operation of the Kidder Compressor Station in Carbon County (USACE Philadelphia District)”, however, there is no mention of these impacts in the Philadelphia District’s Public Notice for the Project.

The Corps does not discuss or assess the full wetland impacts of the project which re far greater than just the 5 individual permit sites discussed in the public notice. However, the Corp’s cannot adequately evaluate the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest, on the 22 factors that it is required to consider as part of its public interest review per 33 C.F.R. § 320.4(a)(1), and on the full array of wetland impacts without considering these individual permits as part of the Project as a whole.

FERC concludes that the Project will temporarily impact about 36 acres of wetlands (20 acres in Pennsylvania and 16 acres in New Jersey) and permanently impact about 20 acres of wetlands (12 acres in Pennsylvania and 8 acres in New Jersey). We note, again, as demonstrated by expert reports and field monitoring reports attached to this comment, FERC severely undercut the actual number of and acreage of impacted wetlands that would be adversely affected by the Project. And so not only is the wetland impact significantly greater than what the Corps’ public notice takes into consideration, it is greater than even the much larger figure FERC provides.

The Corps’ regulations specifically prohibit the issuance of a permit that involves the alteration of “important” wetlands unless the Corps determines that “the benefits of the proposed alteration outweigh the damage to the wetlands resource.” 33 C.F.R. §320.4(b)(4). The Corps cannot possibly begin to balance the

twenty different factors as required in its public interest review without first properly classifying, characterizing, and counting the ground disturbance and impacts that will result from the proposed project, including to the full array and acreage of wetlands that will be harmed.

Additionally, expert analysis and field monitoring have clearly demonstrated the information provided by PennEast and reported by FERC on the Project's impact to wetlands is full of inconsistencies, regularly undervalues or misrepresents impacts, and is full of information gaps. As such, the Corps should not rely on the information provided by PennEast or FERC to evaluate the project's impacts to wetlands.

As documented in the comment from Meliora Design,⁵⁹

“The DEIS and supporting materials provided by PennEast fail to consider the unique, site specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts associated with stream crossings, including open cut crossings. The DEIS fails to comprehensively evaluate each stream crossing with regards to conditions such as water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting. Lacking consideration of the site specific conditions at each crossing, the DEIS fails to require adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing. The proposed stream and wetland crossing locations, methods of construction, and long-term land use conditions appear to be based on the needs and preferences of PennEast and not informed by site specific conditions.”

“Importantly, the supporting documentation provided by PennEast fails to provide stream and wetland crossing information in a manner that allows FERC and other reviewing agencies to evaluate the site specific conditions at each stream crossing, including information discussed further in this memo. Important site specific information is located in different Resource Report volumes and other documents, and not easily correlated or evaluated. Much of the information discussed in this memo was compiled from multiple volumes, documents, and updates and is not readily reviewed by FERC or other reviewing agencies in a comprehensive manner. The project selection of stream and wetland crossing locations and construction methods cannot be clearly evaluated in the form in which it is presented in the DEIS and supporting documents.”

Spot checks and field-truthing indicate inadequate and incomplete mapping of sensitive wetlands along the proposed ROW. For example:

- Along one 0.5 mile of the proposed route in sensitive State Gamelands, at least 12 vernal pool complexes or groundwater seeps were identified while PennEast tables only indicate 2 vernal pool habitats along the same proposed route and no groundwater seeps.⁶⁰
- “72% of the proposed pipeline alignment in New Jersey and 23% in Pennsylvania has not yet been field investigated for wetlands and other water resources.”⁶¹

⁵⁹ *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

⁶⁰ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network..

A report on *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania* by Schmid and Company⁶² found that:

- The size (acreage) of some wetlands along the proposed pipeline were undermapped significantly.
- Most wetlands within and along the proposed pipeline right-of-way (ROW) are not visibly flagged in the field making field verification and ground truth difficult.
- Many of the wetlands in the Project area are not appropriately classified pursuant to the Pennsylvania Code and the requirements therein, thus preventing FERC and the public from considering the quality of the wetlands impacted. Indeed, there is no data in the DEIS analyzing wetland quality outside of this classification system, therefore it is critical that these classifications are exactly accurate (which they are not).
- Some wetlands which should be classified as "exceptional value" pursuant to Pennsylvania law were incorrectly identified by the applicant as "other"
- No "existing use" analysis of affected streams has been done, possibly leading to an undercount of the number and extent of Exceptional Value Wetlands.
- An assessment of the functions and values of existing wetlands has not been done, and no evaluation of proposed impacts on the functions and values of wetlands has been done.
- Additional wetlands exist within approximately 19.4 miles of right-of-way (24% of the proposed pipeline Study Area) that have not been investigated because access was not (initially) granted. Impacts to those wetlands have not been acknowledged, calculated, or mitigated for.
- [Neither the Corps nor] FERC can develop an appropriate mitigation plan based on the information and analysis in the EIS with regard to wetlands because the EIS “provides no evidence that the functions and values of each wetland proposed to be impacted have been determined or evaluated.”
- Most of the wetlands data is unreliable because it is largely “based on available remote sensing mapping, and not on field-based investigations.”

For a full analysis of the adverse impacts to wetlands that would result from the proposed Project, as well as the resulting harms to the public interest, see the expert reports attached.⁶³

⁶¹ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016; Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

⁶² *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016

⁶³ *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

Table A Attachment to Professional Review & Comment..., Meliora Design, LLC, September 5, 2016

The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network, Schmid and Company, July 2016 Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

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

PennEast proposes to mitigate the Project’s wetland impacts by “enhance[ing] 17.84 acres of PEM wetlands by the planting of trees and shrubs and protecting 0.49 acre of streams.” The Corps Public Notice states that this approximately 3 to 1 ratio adequately addresses the temporal loss associated with the mitigation until it becomes established. However, it is important to the Corps public interest evaluation of the Project to note that Compensatory Mitigation measures, such as the three offsite wetland mitigation areas within the Upper Central Susquehanna River Sub basin and the Central Delaware River Sub basin proposed by PennEast, do not negate the loss of ecosystem function and resulting impacts to the public interest felt elsewhere.

The FERC suggests that “emergent vegetation regenerates quickly (in wetlands), typically within one to three years and in scrub shrub and forested wetlands, PE would maintain a 10 foot wide corridor centered over the pipeline in an herbaceous state and would selectively cut trees within a 30-foot-wide corridor centered over the pipeline. The remainder of forested and scrub-shrub vegetation would be allowed to return to preconstruction conditions and would not be affected during operation. No permanent fill or loss of wetland area would result from construction and operation of the Project.” But DRN has documented continued and irreversible impacts to wetlands from pipeline crossings that are sustained beyond this short term view, especially in forested wetlands where tree regrowth can take decades to recover.⁶⁴ In light of deer browse and other impacts to changed soils, trees may never establish as they had prior to the ROW impact in these forested wetlands. Invasive plant species often move into these wetlands and impact the wetland ecology long term.⁶⁵

Wetlands provide various ecosystems services such as carbon storage, flood abatement, water quality maintenance, and biodiversity support. Wetland mitigation and other “offset” policies rely on restoration as a form of compensation for the loss of ecosystem function and structure, with the assumption that the entire suite of ecosystem services that have been lost will be replaced.⁶⁶ Research over the past decade indicates that there are many cases where wetland restoration, including compensatory mitigation, leads to the creation of wetlands that are not ecologically equivalent to naturally occurring wetlands, which calls into question the level to which ecosystem services can be replaced. It is unlikely that any mitigation will fully restore each ecosystem service equally.

Tradeoffs occur when one service is changed at the expense of another. For example, studies have shown that optimizing restored wetlands for nutrient cycling and removal comes at the expense of less biodiversity.¹ There are currently no standard requirements for measuring ecosystem functions at impacted wetlands prior to impact or after mitigation or restoration. The performance standards used to evaluate mitigation wetlands are based on vegetation and provide little indication of whether other ecosystem functions are being replaced in any capacity. Therefore, it is unknown which ecosystem services are being

Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project, Princeton Hydro, September 2016. Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

⁶⁴ Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

⁶⁵ Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

⁶⁶ Jessop, Jordan, et al. “*Tradeoffs Among Ecosystem Services in Restored Wetlands*” *Biological Conservation*, vol. 191, 2015, pp. 341–348.

provided through wetland mitigation and their level of effectiveness. It is likely that many ecosystem services will be impaired compared to what the natural wetland provided.

As such, the Corps cost-benefit analysis of the “benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments” should not consider the proposed compensatory mitigation measures to have the same net positive impact on wetlands and the public interest as the unavoidable negative impacts that would result to wetlands from the Project. This abundance of evidence makes clear that the effect of the Project on wetlands would ultimately be adverse and detrimental to the public interest and that the 404 permit should be denied.

f. The Project will inflict only adverse impacts to the historical properties of the region and provide no benefits.

There are no conceivable benefits to the historic properties of the region that could result from the proposed Project. While here too there are issues of missing information that need to be address, the information on the record and concerns expressed by relevant agencies already demonstrate there will be adverse impacts from the Project.

The Corps’ Public Notice for the Project states that:

“FERC is the lead federal agency responsible for the Section 106 process. The permit areas are within the Area of Potential Effect for the Overall Project as reviewed by FERC, and the results of the cultural resources investigations will be coordinated with the SHPO and the Tribes. If any significant resources exist within the permit area, the USACE will work with the FERC, the SHPO and the Tribes to avoid, minimize or mitigate impacts.”

However, the information provided by FERC lacks documentation of PA and NJ State Historic Preservation Offices (SHPOs) regarding proposed avoidance, resource identification, recommendations, updated documentation, avoidance plans, evaluation reports, treatment plans and mitigation for National Register of Historic Places – eligible archaeological sites that cannot be protected from project impacts.

Additionally, the National Park Service (NPS) expressed concern about the proposed PennEast pipeline crossing of the North Branch of the Susquehanna River which includes part of the river-based Captain John Smith Chesapeake National Historic Trail. NPS’ prime concern involves effects to archaeological resources and cultural landscapes that may be of importance to tribes. However, FERC materials have failed to identify of NPS concerns with regards to effects to trails and cultural resources or provide a vibration monitoring plan and modification of blasting plan that include a review of potential effects to cultural resources.

The Corps cannot consider the impacts to historic properties included in the FERC materials to be adequate to base its own public interest review. Many impacted community members have commented on the destruction of historic resources that would result from the Project at the expense of the public’s interest.

g. The proposed Project would significantly adversely affect Fish and Wildlife Values throughout the region and would result in a detrimental impact on the public interest.

The proposed Project would have many significant and adverse effects on Fish and Wildlife Values throughout the region and would result in a detrimental impact on the public interest. The extent of these adverse impacts is not included in the Corps Public Notice.

The Corps' Public Notice States that

A preliminary review of this application indicates that the proposed work would not affect listed species or their critical habitat pursuant to Section 7 of the Endangered Species Act as amended. The following Threatened or Endangered Species are known to exist within the portion of the PennEast project being reviewed within the Philadelphia District's Area of Operation; Bog Turtle, Northern Long Eared Bat, Indiana Bat, Dwarf Wedge Mussel, Rusty Patch Bumble Bee, and Northern Bull Rush. As the evaluation of this application continues, additional information may become available which could modify this preliminary determination. The following preliminary information by species is provided for each IP:

IP-1:

Bog Turtle –Not Within a Watershed Known to Have an Occurrence of Bog Turtles
Indian Bat and Northern Long Eared Bat –Time of Year Restrictions
Dwarf Wedge Mussel –Not Within the Known Range
Rusty Patch Bumble Bee –USFWS Assumes Species Not Present
Northern Bull Rush –Wetlands Surveyed and Species Not Present

IP-2:

Bog Turtle –No Wetland Impacts Associated With Crossing
Indian Bat and Northern Long Eared Bat –Time of Year Restrictions
Dwarf Wedge Mussel –Not Within the Known Range
Rusty Patch Bumble Bee –USFWS Assumes Species Not Present
Northern Bull Rush –No Wetland Impacts Associated With Crossing

IP-3:

Bog Turtle –Wetlands Surveyed and Found Not To Be Potential Habitat
Indian Bat and Northern Long Eared Bat –Time of Year Restrictions
Dwarf Wedge Mussel –Not Within the Known Range
Rusty Patch Bumble Bee –USFWS Assumes Species Not Present
Northern Bull Rush –Wetlands Surveyed and Species Not Present

IP-4:

Bog Turtle –Wetlands Surveyed and Found Not To Be Potential Habitat
Indian Bat and Northern Long Eared Bat –Time of Year Restrictions
Dwarf Wedge Mussel –Not Within the Known Range
Rusty Patch Bumble Bee –USFWS Assumes Species Not Present
Northern Bull Rush –Wetlands Surveyed and Species Not Present

IP-5:

Bog Turtle –No Wetland Impacts Associated With Crossing
Indian Bat and Northern Long Eared Bat –Time of Year Restrictions
Dwarf Wedge Mussel –No Surface Impacts in Delaware River
Rusty Patch Bumble Bee –USFWS Assumes Species Not Present
Northern Bull Rush –No Wetland Impacts Associated With Crossing

As demonstrated in earlier sections of this comment, the Corps cannot adequately evaluate the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest, on the 22 factors that it is required to consider as part of its public interest review per 33 C.F.R. § 320.4(a)(1), including “fish and wildlife values” without considering these individual permits as part of the Project as a whole. Additionally, given the rampant deficiencies in surveys used to determine the presence of endangered species and critical habitat, outlined below, the Corps should not accept the applicant’s claim that the Northern Long Eared Bat and Indiana Bat are the only Threatened or Endangered Species known to exist within the portion of the overall Project being reviewed.

The following examples of false, inaccurate, misleading and/or deficient information regarding Endangered Species and Critical Habitat and other fish and wildlife values from the FERC EIS demonstrate that the presence of protected wildlife is far greater than reported by PennEast or FERC. This deficient and often false information cannot be used as a basis for the Corps to evaluate the true effects of the Project on the public interest. However, the information gathered through independent expert analysis and field-truthing demonstrate that the Project’s impacts on fish and wildlife values would be adverse and that no public benefit to fish and wildlife values would result. As such, the Corps must reject the Projects’ 404 permit applications.

False, inaccurate, misleading and/or deficient information regarding Endangered Species and Critical Habitat and other fish and wildlife values from the FERC EIS:

- A total of 8 NJ state threatened, endangered, or special concern mussel species are completely left out of the EIS. These species are as follows: triangle floater (threatened), brook floater (endangered), yellow lampmussel (threatened), eastern lampmussel (threatened), green floater (endangered), tidewater mucket (threatened), eastern pondmussel (threatened), and creeper (species of special concern). All eight of these species may potentially occur in various waterbodies crossed by the project, based on the GIS range maps created by the Conserve Wildlife Foundation of New Jersey found at: <http://conservewildlife.maps.arcgis.com/apps/MapJournal/index.html?appid=093a625e6fa044e191595e57dceee027&webmap=7fc0d5a9cd0f419a8fdd3d254b316752>
- The DEIS notes that surveys resulted in “no suitable habitat” in regards to the red-shouldered hawk, however, the surveys missed two red-shouldered hawk nests and multiple adult and juvenile red-shouldered hawks that were observed in the area of MP 93.5 and MP 93.6 by Dennis and Joann Kager in Kingwood Township, NJ. The nests were adjacent to the ROW where the pipeline would go, and photographs and observational data were submitted to NJDEP.
- The conclusion of “absence” as a result of the Phase 2 presence/absence bog turtle surveys does not carry much weight when it is admitted that the project may affect the species and is likely to adversely affect the species because not all areas have been surveyed. The same can be said for the Indiana bat, northern long-eared bat, dwarf wedgemussel, and northeastern bulrush. FERC’s failure to evaluate the areas where there is likely to be an adverse impact to these species renders the DEIS factually deficient.
- The EIS notes that 7 wetlands in PA are considered suitable bog turtle habitat. However, Save Carbon County hired an independent USFWS qualified bog turtle surveyor (Jason Tesauro) who identified 9 properties containing one or more suitable bog turtle wetlands in the Hunters Creek drainage (part of Aquashicola Creek watershed) alone. Tesauro’s report was posted on the FERC docket and also filed with the USFWS.

- Bog turtle searches did not encompass the entire area requested by USFWS.
- The habitats that are listed in the DEIS as being surveyed for timber rattlesnakes and copperheads are not complete. DRN documented optimum timber rattlesnake habitat during assessments conducted in SGL 168 from at least MP 52.9 to 51.0 along Blue Mountain near Danielsville, PA. DEIS states that 51.1 to 51.6 was surveyed for timber rattlesnake but this only includes one section of this habitat and does not include all of the optimal habitat areas in that area of SGLs. There are other areas that should have been/should be the subject of Phase 1 and/or Phase 2 surveys but have not been.⁶⁷
- The maintenance of the ROW will include the prevention of tree growth and maintenance of low growing vegetation only – this will be accomplished by periodic mowing and the use of herbicides. The mowing will disturb the vegetation and habitats that were allowed to encroach on the ROW. The herbicides will include impacts for non-target species, and could have implications for soil microbes and nearby wetland, vernal pool and stream ecosystems. Openings in the canopy and vegetation along the ROW will encourage the influx of invasive plant and animal species that will have cascading impacts on the forest ecosystem, which will spread along the ROW and back into the core of the adjacent forest.
- The habitat of Ruffed Grouse includes deciduous and mixed forest, dense undergrowth, overgrown pasture, scrub oak, thick shrubland, young forest, and understory and can be found in Carbon, Luzerne, Northampton, Bucks, Hunterdon, and Lehigh Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.
- The habitat of White-throated Sparrow includes coniferous and mixed forest, dense thickets, secondary growth areas, adjacent to ponds or openings, and forest edge in Hunterdon, Luzerne, Northampton, Carbon, Lehigh, and Bucks Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.
- The habitat of Magnolia Warbler includes coniferous and mixed forest, especially young spruces, nests in trees, deciduous shrubs or low trees (during migration) in Luzerne, Northampton, Carbon, Lehigh, Bucks, and Hunterdon Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.
- The habitat of Yellow-Rumped Warbler includes mature coniferous and mixed coniferous/deciduous forest and forest edge and includes Luzerne, Northampton, Carbon, Lehigh, Bucks, and Hunterdon Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.
- FERC falsely states that vernal pools to be cut by the pipeline will only have temporary impacts or not significant sustaining impacts yet it fails to consider the 1,000 feet of upland forest that amphibians using vernal pools require for parts of the year when they are not in their breeding vernal pool habitats. A pipeline cut adjacent and through a vernal pool or within 1,000 feet of a vernal pool can be a death sentence for migrating amphibians who may not be able to successfully cross the dry

⁶⁷ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.*

compacted pipeline route to reach their seasonal vernal pool.⁶⁸ Predation also increases with these pipeline cuts.

On July 14, 2017, FERC submitted a Biological Assessment to the USFWS and requested that the Service develop a Biological Opinion as to whether authorizing the proposed pipeline project is likely to jeopardize the continued existence of any federally listed species. FERC's Biological Assessment concluded that the project "may affect and is likely to adversely affect the northern long-eared bat, Indiana bat, bog turtle, and northeastern bulrush." Additionally, it concluded that the project "may affect, but is not likely to adversely affect dwarf wedgemussels" and that there would be "no effect on the rusty patched bumble bee." The Delaware Riverkeeper Network offers the following comments on FERC's Biological Assessment, as it has bearing on the Corps assessment of fish and wildlife impacts resulting from the project:

Northern long-eared bat and Indiana bat: At the admission of FERC and by their own recommendation in their Biological Assessment, there is the potential for adverse impacts to these two bat species. See attached report for a more complete discussion of potential impacts to bats from both the pipeline and the reasonably foreseeable gas drilling that will result. In its Final EIS, FERC states that,

"Construction of the Project would disturb a total of approximately 601 acres of forested habitats, which could potentially support these bat species."

"Young bats or those that are unable to fly could be killed if tree clearing activities occur while the trees are occupied by bats. In addition, bats are sensitive to disturbance and may abandon disturbed roosts trees if the trees are occupied at the time of construction. If this occurs, then the disturbance and subsequent abandonment could have energetic repercussions on affected bats, potentially decreasing the likelihood of successful reproduction and survival."

"The Project also has the potential to impact listed bat species during operation. Noise, visual, and ground-vibration disturbance would occur during certain operation and maintenance-related activities (e.g., during routine inspections of the line). Potential disturbance to listed bat species could occur during ongoing maintenance activities, and disturbances to bats can result in individuals fleeing the area, thereby using up critical limited energy reserves, which can potentially result in mortality."

"Because all potentially suitable habitats for the Indiana bat and northern long-eared bat have not been surveyed to-date, it is possible that unidentified habitats for these bat species occur along the Project's proposed disturbance footprint. . . . In addition, the Project would have long-term impacts on forested habitats that are used as foraging or roosting habitats by listed bats."

Bog turtle: Only 80% of bog turtle surveys have been completed in PA and 31% in NJ at the time the Final EIS was submitted. Additionally, the proposed pipeline has been re-routed several times to avoid potential bog turtle habitat. This includes the deviation at MP 49.3 near the Blue Mountain Ski Resort in Carbon County, PA. Although the purpose of this deviation is to avoid the wetland area, it still comes within 250 feet of it at its closest point. A similar deviation was made at MP 73.5 in Northampton County, PA to avoid the large wetland complex where Phase 3 trapping surveys were conducted. In this case, the edge of the

⁶⁸ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network..

right-of-way in the deviation still clips the edge of the wetland complex. Furthermore, these deviations would not alleviate groundwater contamination concerns because they are still too close to the wetlands. Any contamination to groundwater would impact a larger area and particularly any nearby spring-fed emergent wetlands that bog turtles prefer. With the amount of unsurveyed wetlands and by FERC's own statements, it's clear that adverse impacts to bog turtles are likely. In its Final EIS, FERC states that,

“Construction of the Project within wetland habitats has the potential to impact bog turtles. If present during construction, bog turtles could be directly injured or killed by construction equipment, or disturbed due to the presence of humans and machines in the area. In addition, construction and operation of the Project could alter wetland habitats that support this species. As discussed in detail within Sections 4.4 and 4.5, construction of the Project has the potential to alter wetland hydrology, increase the risk of invasive plant establishment/spread, and can fragment habitats.”

“Although no bog turtles have been found during Project-specific surveys, the Project would cross through and impact potential bog turtle habitat (including habitats in unsurveyed areas), and bog turtles could be present in unsurveyed areas.”

Northeastern bulrush: As with the other species, there is a great degree of uncertainty about the presence of northeastern bulrush within the project corridor and FERC statements reflect this in addition to their conclusion in their Biological Assessment. Regarding northeastern bulrush, FERC states in their Final EIS that,

“Not all potential habitat for this species has been surveyed to date, and the unsurveyed wetlands along the Project's disturbance footprint may support this species. As a result, the Project has the potential to impact this listed species. If this species cannot be avoided by the Project, then potential impacts could include direct removal of individual northeastern bulrush plants during trenching or clearing, crushing of plants by equipment, or alternations to their wetland habitats (e.g., altered wetland hydrology and increased risk of invasive plant establishment/spread).”

Dwarf wedgemussel: In its Biological Assessment, FERC concludes that the project “may affect, but is not likely to adversely affect” dwarf wedgemussels. This conclusion is puzzling when specific dwarf wedgemussel surveys have not been conducted. According to the Final EIS,

“No Project-specific surveys for the dwarf wedgemussel have been conducted (beyond a general habitat assessments conducted for freshwater mussels; see table 4.6-1); however, the dwarf wedgemussel is known to occur in the Delaware River.”

“Individual mussels could be crushed by construction equipment and killed during the proposed conventional open-cut crossing method that may be used at the upstream tributaries to the Delaware River. In addition, construction of the Project could impact this species if activities increase the sedimentation levels found in occupied waterbodies. Increased sedimentation could impact this mussel through burial of eggs or mortality of their food supplies. These effects would impact species living both at the point where sedimentation increased and at points farther downstream.”

Based on these statements, it's more likely that the project would affect and adversely affect this species. Unless surveys were conducted between the time the Final EIS was submitted and the present time, it's difficult to understand how any other conclusion can be reached.

Rusty patched bumble bee: FERC concludes that there would be “no effect” on the rusty patched bumble bee in its Biological Assessment. However, the Final EIS states that,

“No Project-specific surveys for the rusty patched bumble bee have been conducted or are planned by PennEast; however, data from the FWS indicates that this species can occur in all four Pennsylvania counties crossed by the Project.”

“If present during construction, rusty patched bumblebee colonies could be destroyed, and direct mortality of bees could occur during vegetation clearing and right-of-way and road construction. In addition, impacts could occur due to the loss of suitable habitat or as a result of habitat fragmentation.”

Once again, it’s difficult to understand how FERC can be so certain that there would be no effect if surveys have not been conducted. Based on FERC’s statements on the direct mortality of bees and habitat loss, it seems that the project would likely adversely affect the species as is the case with the rest of the species in the Biological Assessment.

The inconsistencies within each of these individually—the DEIS, the FEIS, and statements made to other federal agencies including USFWS -- undermine FERC’s claims regarding the likelihood that adverse impacts will occur to fish and wildlife species as well as the extent of those species and the impacts. In light of FERC’s own admissions outlined above, the Corps must recognize the huge threat to all of these protected species that would result from this project.

Claims that adverse impacts will be temporary in nature or that permanent losses and conversion of ecosystems will still have value to wildlife as habitat, foraging and nesting areas fails to recognize the sensitivity and particularity, especially of already endangered species, in the region. The Corps should find that the proposed Project would significantly adversely affect Fish and Wildlife Values throughout the region and would result in a detrimental impact on the public interest and should deny the project 404 certification.

h. The proposed Project would adversely affect Flood Hazards and would have a detrimental impact on the public interest.

The proposed Project would have potential detrimental impacts to Flood Hazards in the region, particularly as result of potential rain and flooding events during construction of waterbody crossings that are dewatered in order to install the pipeline.

“The Project crosses 255 waterbodies (159 perennial, 45 intermittent, 40 ephemeral, and 11 open water), with eleven (11) of these water courses classified by FERC as major waterbodies that are over 100 feet in width.”⁶⁹ Of these, the Project will include 165 stream crossings in Pennsylvania and 90 in New Jersey.⁷⁰ “HDD techniques will be used to bore under a few of these waterbodies (Beltzville

⁶⁹ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

⁷⁰ DEIS, p 2-9.

Lake, the Lehigh River/Lehigh Canal the Delaware River/Delaware Canal , two locations along Lockatong Creek, and an unnamed tributary to Woolsey Brook).”⁷¹

According to analysis by Tom Myers, Ph.D⁷²:

“All dry stream crossing construction methods would involve development of a trench across the stream with subsequent backfill. Dry stream crossing techniques involve temporarily diverting the stream from the streambed so that trenching occurs without flowing water, using either a flume or a dam and pump method (RR2, p 2-28; RR1, p 1-84, -85). The method used to trench and install the proposed pipeline would not influence the effect that trench and streambed crossing could have on groundwater/surface water relations near the crossing.”

“As such, the vast majority of the stream crossings require the diversion of stream flow around the construction zone or actively pumping water out of the construction zone. Even when the work area is segregated from the stream by some type of diversion measure, the shallow depth to groundwater relative to the required depth of the pipe trench will require the constant dewatering of the trench. Similar types of acute impacts will also occur in the wetland and riparian areas traversed by the pipeline again due to shallow depth to seasonal highwater (groundwater), standing water or saturated soil conditions.”⁷³

“PennEast concludes that the dry crossing method can be conducted in a manner that minimizes potential in-stream turbidity impacts. FERC’s review of the conventional channel cut, flume crossing, and dam-pump crossing techniques reach a similar conclusion. It is FERC’s position that after the pipe is installed and the trench backfilled, the streamchannel and stream banks will be adequately restored and the ecological properties of the stream returned to pre-construction conditions.”⁷⁴

According to Princeton Hydro:

“None of the conclusions reached by either PennEast or FERC are supported by any data. Again the finding of no significant impact is largely based on the assumption that the proposed mitigation measures can be successfully implemented and will lessen the Project’s impact to surface waters. [...] PennEast’s position that impacts can be minimized is inconsequential as the quality, ecological functions, aesthetics and recreational potential of Exceptional Value and Category-1 streams cannot be decreased in any manner.”⁷⁵

⁷¹ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

⁷² *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

⁷³ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

⁷⁴ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

⁷⁵ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

These open trench crossing would pose may potential adverse impacts for flooding hazards, as the Myers' report further explains:

“Trench backfill would have different conductivity than the surrounding alluvium, usually lower if the trench backfill is compacted and the surrounding is alluvium. The trench therefore would hydraulically impede groundwater flowing parallel to the stream and force it to surface into the stream. Depending on conditions downstream of the trench, the surface water would either percolate back into the alluvium or continue flowing as surface water, leaving less water stored in the alluvium than would otherwise be stored there. This could result in lower baseflow downstream of the trench because the trench effectively dams the groundwater flow so that groundwater discharges to the stream at times when the aquifer should be filling with percolating surface water. Each crossing is a different circumstance, but the DEIS has not analyzed the groundwater hydrology near any of the crossings.”⁷⁶

The choice of PennEast to rely on open-trench crossing methods has much higher risk for adverse flood hazard impacts than HDD would, “which would affect the groundwater flow and groundwater/surface water interactions much less than trenches with backfill.”⁷⁷ This is simply because the bores have less effect on the overburden above the pipeline and do not interrupt the groundwater flow. This is not to say that there are no risks with HDD, there certainly are as the information from Mariner East 2 we provided indicates. But, when implemented properly and conscientiously, the impacts should be less.

The FERC EIS, “fails to disclose impacts to surface water resources due to pipeline construction.” As the Myer's report explains, the EIS:⁷⁸

“acknowledges that “clearing and grading of streambanks, in-stream trenching, blasting, trench dewatering, inadvertent returns from HDD operations, and potential spills or leaks of hazardous materials” (DEIS, p 4-55, p 5-6) could affect surface waters. It lists several potential impacts including (DEIS, p 455):

- Modification of aquatic habitat
- Increased runoff and in-stream sediment loading
- Decreased dissolved oxygen
- Releases of pollutants from sediments
- Modification of riparian areas
- Introduction of chemical contaminants to waterways⁷⁹

Instead of quantifying either the existing conditions or describing how the pipeline would affect the existing conditions, the EIS essentially repeats this

⁷⁶ *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*

⁷⁷ *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.*

⁷⁸ *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*

⁷⁹ *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*

“noting that the “extent of the impact would depend on sediment loads, stream velocity, turbidity, bank composition, and sediment particle size” (DEIS, p 4-55). It does not quantify either the existing conditions or describe how the pipeline would affect the existing conditions. For each water crossing, the DEIS could easily describe the stream velocities, expected range of flows, bank composition, bed sediment sizes and contaminants present on those sediments, riparian conditions, and stream type (Rosgen and Silvey 1996). Using this information the DEIS could make at least semi-quantitative descriptions of the impacts pipeline construction will cause to the stream. HDD crossings would cause substantially fewer impacts to the stream, especially concerning changes in sediment transport and riparian vegetation (outlined at DEIS p 5-6).”⁸⁰

In order for the Corps to properly assess the impacts to flood hazards that could result from the Project, there must be “detailed analyses for each stream crossing of the potential for the crossing to change flow velocities, sediment transport, and stream type.” There also needs to be discussion of “alternative crossings including underground borings.”⁸¹ In the absence of this information, the Corps is unable to make a true assessment of these impacts that could support issuance of a 404 permit.

Another potential flood-related hazard that would be exacerbated by the Project is the increased risk of landslides within the Project area. *A Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted For PennEast Pipeline Project* conducted by Princeton Hydro explains this risk:⁸²

“The DEIS notes that in Pennsylvania, portions of the pipeline’s route traverses areas that are susceptible to landslides. This analysis is limited to areas prone to seismic events that could trigger a landslide. However, landslides often occur in the absence of any seismic event, especially in steeply sloped areas. Such landslides are more commonly associated with intense rain storms or major snows melts, and increase in likelihood when lands are denuded of vegetation and native soils are disturbed and exposed. The DEIS does not discuss how such events could result in the catastrophic transport of large quantities of soil, rock and debris into sensitive upland, wetland, riparian and water resources.

Within Appendix D of the DEIS (E&SCP), PennEast notes that:

“The primary cause of landslides is when colluvial (loose) soil and old landslide debris on steep slopes give way. The geologic instabilities that cause landslides are often exacerbated by highway projects in which the earth is cut and soil is loosened. Other primary causes of landslides are rainfall or rain-on-snow events that can weaken debris on steep mountain slopes (McCormick Taylor, 2009).”

⁸⁰*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*

⁸¹*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*

⁸² *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project, Princeton Hydro, September 2016*

The PennEast project will create exactly these types of conditions (cut earth and loosened soils) as part of the land clearing and pipeline trenching elements of the Project. The construction phase of the project, when soils are exposed, soils are stock piled and the vegetation has been stripped from the site, offers the greatest potential for the occurrence of a landslide. Neither Sub-Section 5 (Description of Erosion and Sediment Control BMPs) nor Sub-Section 6 (Project Site Runoff Prior to Site Restoration) of the E&SCP (Appendix D of the DEIS) identifies any special actions or measures that will be implemented when conducting work in steep slopes to prevent a landslide.

Additionally, the post-construction alterations of the ROW's vegetative cover and the inevitable compaction of site soils will increase the rate and volume of runoff generated from the Project ROW. These changes to prevailing soil conditions and alteration in the type of vegetated cover (trees and shrubs to grasses) increase the likelihood for post-construction landslides, especially in steeply sloped areas.”⁸³

Potential Flood Hazards to groundwater and surface waters.

“There always exists the possibility that during construction a spill will occur; for example fuel spill or that directional drilling, trenching or related construction operations will result in the improper management of drilling fluids or dewatering effluent. These actions, in particular construction related accidents, can pose a threat to local groundwater resources. FERC concludes that any groundwater impacts attributable to construction related operations will be minimized by PennEast's adherence to and implementation of a Spill Prevention, Control, and Countermeasures Plan.”

“The Spill Prevention, Control, and Countermeasures Plan is contained in Appendix D of the DEIS (Erosion and Sediment Control Plan). It is part of an earlier document prepared by PennEast (Draft Erosion and Sediment Control Plan) dated September 2015. The subsection of the plan dealing with spill prevention and control is contained in Sub-Section 13 of the E&SCP, and is a single paragraph consisting of **five (5) simple bullet points**, none of which provide any direction of the actions that must be taken in the event of a spill. The Spill Prevention, Control, and Counter measures Plan upon which FERC has based their findings is unreasonably simplistic, lacks any detail, and does not account for the highly sensitive and unique environments the pipeline will disturb.”

According to the FEIS, the Project would cross the following Flood Hazard Zones:

“The Federal Emergency Management Agency (FEMA) identifies areas subject to flooding and high-volume flows identified as Special Flood Hazard Areas which are located within the 100-year floodplain. The Project mainline would cross 4.9 miles of FEMA Special Flood Hazard Areas, including 3.4 miles in Pennsylvania and 1.4 miles in New Jersey. The Hellertown Lateral would cross less than 0.1 mile of FEMA Special Flood Hazard Areas while the Gilbert and Lambertville laterals would not cross any FEMA Special Flood Hazard Areas. In addition, the pipeline route would cross regulated flood hazard areas consisting of floodways and flood fringes of waters regulated under the New Jersey Flood Hazard Area

⁸³ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

Control Act Rules at N.J.A.C. 7:13. No tidally influenced waterbodies would be located within the Project area.”⁸⁴

The fact that the Project contains overlap with Flood Hazard Zones increases the potential for adverse impacts to flood hazards on areas of public interest. For all of these reasons, the Corps should find the Project to be contrary to the public interest and deny its 404 application.

i. The proposed Project would adversely impact Floodplain Values in the region, resulting in a detrimental effect on the public interest.

The effect from the Project to floodplain values within the region would be wholly adverse and detrimental to the public interest. No beneficial impacts to floodplain values would result from the Project. Construction and maintenance activities would result in both temporary and permanent impacts to floodplain storage capacities through alteration of riparian vegetation at each stream and wetland crossing; soil compaction; and changes in elevation and contours.

The Project would result in Adverse Impacts to Floodplains, Including Their Permanent Alteration.

The project will permanently remove floodplain vegetation and result in compacted floodplain soils – both of these, particularly when considered cumulatively across the pipeline project as well as across the multiple projects in, or proposed for, the same region, is important. Floodplains vegetated with trees and shrubs can be four times as effective at retarding flood flows as grassy areas.⁸⁵ In addition, naturally vegetated floodplains provide breeding and feeding grounds for both fish and wildlife, they "create and enhance waterfowl habitat", and they "protect habitat for rare and endangered species."⁸⁶ Naturally vegetated floodplains are generally layered with leaf and organic matter which result in organic soils with high porosity and a greater capacity for holding water.⁸⁷ The floodplain, in this natural state, is a riparian ecosystem that needs the overbank flows that the natural watershed's hydrology provides in order to remain healthy and in balance.⁸⁸ According to the U.S. Environmental Protection Agency, the number one source of pollution to our nation's waterways is from nonpoint sources, including pollution from floodwaters, washed from the land in stormwater runoff.⁸⁹ Floodplains play a key role in reducing stormwater flows and containing floods, filtering out nonpoint source pollution, thereby reducing pollutant loading and protecting water quality.

The benefits of naturally vegetated and healthy floodplains includes:

- Stores and slows floodwaters;

⁸⁴ FEIS

⁸⁵ DNREC and Brandywine Conservancy, Conservation Design for Stormwater Management: A Design Approach to Reduce Stormwater Impacts from Land Development and Achieve Multiple Objectives Related to Land Use, September, 1997, p. 2-11.

⁸⁶ DNREC and Brandywine Conservancy, Conservation Design for Stormwater Management: A Design Approach to Reduce Stormwater Impacts from Land Development and Achieve Multiple Objectives Related to Land Use, September, 1997, p. 2-11.

⁸⁷ DNREC and Brandywine Conservancy, Conservation Design for Stormwater Management: A Design Approach to Reduce Stormwater Impacts from Land Development and Achieve Multiple Objectives Related to Land Use, September, 1997, p. 2-11.

⁸⁸ Poff, Allan, Bain, Karr, Prestergaard, Richter, Sparks, and Stromberg, "The Natural Flow Regime", BioScience, Vol. 47, No.

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⁸⁹ Chester L. Arnold Jr., and C. James Gibbons, "Impervious Surface Coverage, the Emergence of a Key Environmental Indicator", APA Journal, Spring 1996, p. 245

- Intercepts overland flows, capturing sediment;
- Stabilizes streambanks, preventing erosion;
- Protects wetlands and other critical habitats;
- Replenishes groundwater aquifer;
- Filters out and/or transforms pollution;
- Provides recreation and education;
- Trees and other riparian vegetation: provide wildlife habitat; process nutrients and other would-be pollutants; shade and cool waterways; provide food for wildlife and stream insects (detritus); provide beauty and refuge.

The Delaware River's health and the health of its tributary streams are threatened by loss of its floodplain's function and the resulting increase in stormwater and floodwater. Adverse impacts to beneficial floodplain values must be considered. These include the accelerated runoff produced along the ROW that will result in more erosion and deposition within streams, increased transport and loading of contaminants, increase in flood peaks due to accelerated runoff (in turn reducing the amount of water entering the ground), decrease in groundwater recharge, blocked or diverted groundwater flow, soil compaction, and the removal of habitat and food sources for wildlife and aquatic life. These impacts can also produce a “ripple” effect by upsetting the balanced ecosystem of the landscape through construction activities. The Corps should consider the short term, long-term, and cumulative impacts of these alterations. Unnatural flood levels and flood damages are experienced by communities living along the Delaware River and tributary streams. In addition, removal of vegetation along water systems removes the natural armoring that helps prevent accelerated erosion from unnaturally high flood flows. The ramifications, individually and cumulatively, of the multitude of proposed stream crossings for flooding, flood peaks, flood damages and erosion must be considered.

The Project would result in The Destruction of Naturally Vegetated Buffers Along All Wetlands and Waterways. Healthy and vegetated streamside buffers serve our communities by:

- Providing flood storage,⁹⁰ reducing flood peaks,⁹¹ and slowing the velocity of floodwaters,⁹² and thereby reducing flooding and damaging flows in downstream and nearby communities;
- Protecting and enhancing water quality by preventing and filtering pollution⁹³ and enhancing the ability of the neighboring stream to process pollutants,⁹⁴ thereby protecting drinking water supplies,

⁹⁰ Tourbier, J. Toby "Open Space Through Stormwater Management, Helping to Structure Growth on the Urban Fringe".

⁹¹ Army Corps of Engineers WRAP, “Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process”, ERDC-WRAP-01-6, May 2002, citing DeBano and Schmidt 1990; O’Laughlin and Belt 1995”.

⁹² Army Corps of Engineers WRAP, “Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process”, ERDC-WRAP-01-6, May 2002, citing DeBano and Schmidt 1990; O’Laughlin and Belt 1995”.

⁹³ NJAC 7:8 NJDEP Agency Proposal Document at NJAC 7:8-5.5(h), USEPA, “Pesticide Tolerance Reassessment and Re-registration, Terbufos IRED Facts”, EPA 738-F-01-015, October 2001;Id.

recreational uses of our waterways, commercial and recreational fisheries, ecotourism, and business operations that need clean water;

- Recharging aquifers that supply drinking water and base flow to streams;⁹⁵
- Providing and enhancing birding, fishing, hiking and other recreational opportunities that are so critical to our region's aesthetic beauty and community quality of life;
- Providing and enhancing the quantity and quality of habitat⁹⁶ to aquatic life, animals, birds and plants that are important to our watershed ecologically, economically, recreationally and psychologically;
- Providing organic matter critical for supporting aquatic organisms;⁹⁷
- Providing shading and thereby providing water temperature control⁹⁸ important for the quality of the stream including the health of the habitats and aquatic organisms present;
- Reducing flood damages by ensuring structure-free zones devoid of structures to be harmed;
- Protecting public and private lands from erosion and helping streambanks maintain their integrity in order to prevent/minimize the costs and harms of sedimentation and restoration;⁹⁹
- Increasing the market value and marketability of nearby homes and communities;¹⁰⁰
- Increasing the opportunity for and success of ecotourism businesses dependent on the aesthetic beauty of the river and its ecological health; and
- Maintaining the unique ecological and historical qualities of our River and region that are an international draw.¹⁰¹

⁹⁴ Sweeney & Blaine, "Resurrecting the In-Stream Side of Riparian Forests", *Journal of Contemporary Water Research & Education*, Issue 136, June 2007.

⁹⁵ Castelle, Johnson, Conolly, "Wetland and Stream Buffer Size Requirements –A Review", *J. Environ. Qual.* 23:878-882 (1994); NJAC 7:8 NJDEP Agency Proposal Document at NJAC 7:8-5.5(h), page 77; *Ibid.* 38

⁹⁶ Army Corps of Engineers WRAP, "Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process", ERDC-WRAP-01-6, May 2002, citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995", citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995"

⁹⁷ Army Corps of Engineers WRAP, "Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process", ERDC-WRAP-01-6, May 2002., citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995".

⁹⁸ Army Corps of Engineers WRAP, "Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process", ERDC-WRAP-01-6, May 2002., citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995".

⁹⁹ Water, Science, and Technology Board, Board of Environmental Studies and Technology, "Riparian Areas: Functions and Strategies for Management", 2002, citing Swanson, et al; Center for Watershed Protection, "Impacts of Impervious Cover on Aquatic Systems", *Watershed Protection Research Monograph No. 1*, March 2003; *Ibid.* 38

¹⁰⁰ Center for Watershed Protection, *Better Site Design: A Handbook for Changing Development Rules in Your Community*, August, 1998, Pg. 134, Lutzenhiser, M. and N.R. Netusil. "The Effect of Open Spaces on a Home's Sale Price." *Contemporary Economic Policy* 19.3 (2001): 291-298.

The loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain). The deforestation caused by the PennEast pipeline will result in increased stormwater runoff which will result in increasing flows in the stream, making stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Loss of riparian protection can also cause channel migration that can have serious implications long stretches and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel. Extreme flow events will combine with the impacts inflicted by the construction and ongoing land management, including removal of riparian vegetation and forest, associated with the pipeline ROW to intensify the impacts of flooding.

Soil Compaction, Runoff and Recharge impacts will negatively affect floodplain values. The ROW associated with PennEast will be the location of compacted soils and, in the case of natural landscapes like forests, the maintenance of plants that have lesser capacity to infiltrate rainfall. The combination of compacted soils with low growing plants (to the degree they are able to grow in the compacted soils or under PennEast's ROW management protocols) will result in increased runoff to nearby streams, thereby increasing flows in downstream communities.

According to the expert report *Technical Memorandum Review of Draft Environmental Impact Statement, Proposed PennEast Pipeline* conducted by Tom Myers, Ph.D.:

“Pipeline disturbance to soils includes the removal of vegetation which when present shelters the soil from raindrop erosion and protects/increase its capacity for rainfall recharge; and includes soil compaction and furrowing caused by construction traffic on the soils which reduces the soil's ability to infiltrate and recharge rainfall and impacts the ability of the soil to support/encourage vegetation regrowth. Highly compacted soils inhibit vegetation regrowth. Even when shrubs and trees are allowed to regrow on compacted soils as part of a pipeline maintenance plan, and are able to regrow, their ability to protect soils from erosion due to a healthy canopy and healthy root growth, as well as their ability to encourage rainfall infiltration and recharge requires years and often decades to reestablish.”

“After construction, ongoing maintenance activities and inspection with heavy equipment can re-inflict compaction impacts. The impacts of construction of the proposed pipeline on soils, can have significant and enduring ramifications for runoff, erosion, groundwater, stream baseflows and for supporting healthy habitats required by wildlife.”¹⁰²

Increased landscapes that are the source of stormwater runoff contributing to flood flows, flood peaks, and more erosive stream flows, could be significant in some areas. It is the combination of damaged upstream habitats, coupled with the damaged floodplains and vegetative buffer areas, that increases the level of compromise to the stream channel and flow levels.

¹⁰¹ For example, "Pennypack Park in Philadelphia is credited with a 38% increase in the value of a nearby property." Center for Watershed Protection, *Better Site Design: A Handbook for Changing Development Rules in Your Community*, August, 1998, p. 134

¹⁰² *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

Flooding rivers can scour river bottoms and expose pipelines to powerful water currents and damaging debris. Extreme and erosive flooding events in streams crossed by PennEast will increase the likelihood of stream scour, exposure and rupture. Heavy rains threaten to increase overall stream degradation and channel migration – thereby also exposing buried pipelines.¹⁰³

The mitigation statement provided by PennEast in the Corps' Public Notice states that:

“No net loss to wetlands or waterbodies will occur within the pipeline corridor; Penn East will return all wetlands within the pipeline ROW to preconstruction contours and will restore natural flow conditions to all affected waterbodies.”

However, documented observations on the ground following pipeline construction and maintenance demonstrate that this is not the case. Photos taken by DRN volunteer monitors show wetlands that have a changed flow and elevation due to ground disturbance and the pipeline placement. These hydrological changes and harms are permanent damage to these sensitive habitats.¹⁰⁴

According to Princeton Hydro's *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*,

“FERC recognizes that the Project has the potential to permanently alter the physical properties of native soil disturbed by clearing, construction, and maintenance activities, specifically as a result of soil compaction, rutting, and erosion. However, FERC concludes that these impacts can be adequately mitigated through the implementation of the Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures). The Cornell Soil Health Test (CSHT) provides a standard for assessing the important physical, chemical and biological processes and functions of disturbed soil. The CSHT was used to evaluate the impacts of a recently constructed pipeline that transected University-owned land. The CSHT analysis definitively showed that soils within the ROW had significantly lower soil quality levels than the soils sampled in the adjacent areas unaffected by the pipeline's construction. This suggests that reliance on standard erosion control and soil handling techniques inadequately compensates for soil compaction issues within the ROW. Compacted soils inhibit the recharge of precipitation leading to a greater amount of stormwater runoff. The added runoff can lead to an increase in the mobilization and transport of pollutants and an increased opportunity for overall soil erosion.”

“Recent investigation of another pipeline ROW (Tennessee Gas pipeline as it passes through the Highlands region of New Jersey) conducted by the New Jersey Conservation

¹⁰³ See e.g. 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>; 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).

¹⁰⁴ See attached *DRN Comments –Columbia Gas Line 1278 Line K Replacement in Special Protection Waters-DRBC Docket -D-2014-008-1*

Foundation¹⁰⁵ found multiple examples of “restored” sites that were significantly altered from pre-pipeline conditions, even though each had been mitigated in accordance with FERC accepted erosion control and revegetation measures.”¹⁰⁶

These are only a sample of the documented examples proving pipeline impacts to the floodplain storage capacities have proven not to be “temporary in nature” and all construction areas have not been shown to be “restored to pre-construction elevations and contours.” The finding “that the proposed mitigation measures will prevent any significant alteration of site soils or can successfully limit impacts attributable to such alterations is inaccurate as based on actual field assessments of “restored” pipeline ROWs.”¹⁰⁷ As such, it would be irresponsible for the Corps to take these claims from the applicant as fact.

The extensive detrimental impacts caused by the Project’s potential adverse effect on flood values outlined above, combined with the many public benefits that rely on an intact floodplain and naturally vegetated buffers that would be lost, and the fact that no potential flood value benefits would result from the Project, provide the Corps with a clear cost-benefit analysis, demonstrating that the Project would not be in the public interest and are reason enough for the Corps to deny the Project 404 permits.

j. The proposed Project would have an adverse effect on Land Use and would be contrary to the public interest.

The proposed Project’s construction and maintenance activities would result in significant adverse effects to the existing land uses in the region, including the temporary and permanent loss of forests; wetlands; agricultural land; preserved open space; urban open space and waterways, all of which are of significant value to the public interest. The Project offers no conceivable public benefit to the land use. Additionally, the detrimental impacts to land uses are often unmitigable.

According the EIS, a total of “1,613.5 acres of land, will be disturbed in order to construct the pipeline and supporting pipeline facilities (aboveground facilities, pipe and contractor ware yards and staging areas, and access roads). Once completed, the long-term operation and maintenance of the pipeline affects 784 acres of land, of which the majority (715 acres) consists of the pipeline ROW, 61 acres in the form of aboveground facilities, and 8 acres associated with new permanent access roads”.¹⁰⁸

GIS analysis conducted by Key-Log economics estimates the acres impacted by the Project will be even greater:

“Impacted acres (area converted temporarily or permanently from its existing use or cover):

- In the permanent right-of-way (ROW): 717.3
- In the construction zone (the construction corridor, new temporary roads, pipeyards, and temporary aboveground infrastructure): 1,852.7

¹⁰⁵ Emile DeVito, PhD. August 2016. Letter with supporting report and photographs from New Jersey Conservation Foundation to Norman Bay, Chairman, FERC.

¹⁰⁶ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹⁰⁷ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹⁰⁸ FERC DEIS

- In new permanent access roads and aboveground infrastructure: 55.8
- The most heavily affected land cover types: forest (386.8 acres) and cropland (147.0 acres) (ROW only)”¹⁰⁹

As described by Key-Log Economics, the project area includes a wide variety of land uses which support an even greater selection of benefits to the public interest:

“This study region encompasses Bucks, Carbon, Luzerne, and Northampton counties in Pennsylvania, as well as Hunterdon and Mercer counties in New Jersey. This 2,961-square-mile region supports diverse land uses, including the Delaware, Lehigh, and Susquehanna Rivers, thriving cities and townships, wetlands, and parks. These natural, cultural, and economic assets are among the reasons more than 1.8 million people call this six-county region home and an even larger number visit each year for hiking, fishing, festivals, kayaking, horseback riding, weddings, and other events.”¹¹⁰

Many of the adverse impacts to land uses in the region, including forests, wetlands, agricultural lands, preserved open space, and waterways, are outlined throughout this comment and the attached reports. However, the full extent of detrimental impacts to land uses in the region cannot be fully known due to the deficient information and analysis available. As documented in the comment from Meliora Design,¹¹¹ the information provided by PennEast and the FERC EIS:

“fail to consider the unique, site specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts associated with stream crossings, including open cut crossings. The DEIS fails to comprehensively evaluate each stream crossing with regards to conditions such as water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting. Lacking consideration of the site specific conditions at each crossing, the DEIS fails to require adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing. The proposed stream and wetland crossing locations, methods of construction, and long-term land use conditions appear to be based on the needs and preferences of PennEast and not informed by site specific conditions.”

While the full extent of adverse impacts to land uses resulting from the Project aren’t accurately portrayed in available information, Key Log Economics estimates of the acreage of land affected by the Project according to its land use using GIS data, and provides insight into the massive scale, as shown in Table 4.

¹⁰⁹ adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

¹¹⁰ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

¹¹¹ *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.

TABLE 4: Land Area Affected By PE, Study Region Total (See Also Figure 5)

Land Use	Baseline acreage in ROW	Baseline acreage in the construction zone	Baseline acreage in permanent surface infrastructure and access roads
Barren	4.4	52.1	0
Cropland	147.0	401.8	9.5
Pasture/Forage	77.6	164.0	4.4
Grassland	7.2	17.1	3.0
Shrub/Scrub	31.8	106.6	2.3
Forest	386.8	887.7	33.0
Water	3.5	6.3	0
Wetland	0.7	1.1	0
Urban Open Space	39.6	99.9	2.4
Urban Other	16.4	116.2	1.1
Total	715.0	1,852.7	55.8

Table 4. Acreage of Land affected by PennEast by Land Use¹¹²

Further examples of the adverse effects to land use that would result from the proposed Project, as well as resulting adverse impacts on the public interest, include:

- The single largest land use to be disturbed in Pennsylvania is forest – 59% of the pipeline length in Pennsylvania.¹¹³
- The ramifications of drought will be dramatically increased by land use changes, such as those that will be inflicted by PennEast.
- Permanent, long term changes to land use cover and soil conditions, and corresponding increases in stormwater runoff and erosion. As a result of pipeline construction, there will be permanent long term water quality impacts related to stormwater runoff, including increases in the rate, volume, and frequency of stormwater runoff.

As explained by Princeton Hydro, the adverse impacts to land use that would result from the project are significant and permanent:

“The pipeline’s work corridor right of way (the area disturbed during the survey, site-access and construction of pipeline) varies between 90 and 125 feet in width. Following construction, a 50 foot wide permanent right-of-way (ROW) will run the entire length of the pipeline. This ROW will **remain in a significantly altered state relative to existing conditions**. The temporary and permanent ROWs are part of the overall environmental damage caused by the pipeline. Supporting

¹¹² Economic Costs of the PennEast Pipeline, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

¹¹³ *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.

the “pipeline” are various appurtenant facilities used to transport the gas. These include access/maintenance roads, compressor units, metering stations, regulator stations, delivery stations, holders, valves, and the other infrastructure elements critical to the pipeline’s operations. These components of the pipeline are all above ground and are neither benign nor passive operational elements of the system.”¹¹⁴

The report further emphasizes the fact the mitigation measures proposed by PennEast will not actually allow the affected land to return to pre-construction conditions, including current land uses:

“There is a robust body of data that demonstrates FERC’s standard pipeline mitigation measures are actually often quite ineffective. These measures ... are not capable of restoring project sites to their original environmental state thus preventing the project site from providing its original ecological services and functions conditions.”¹¹⁵

The proposed Project’s would clearly result in significant adverse effects to the existing land uses in the region, including the temporary and permanent loss of forests; wetlands; agricultural land; preserved open space; urban open space and waterways, resulting in detrimental losses to the public. The Project offers no benefit to the land uses to counter these adverse impacts. Additionally, despite PennEast’s claims, the detrimental impacts to land uses are often permanent and cannot be mitigated. As such, the Project would clearly result in adverse impacts that are contrary to the public interest and should be denied 404 permits by the Army Corps.

k. The proposed Project would adversely affect Navigation and would be contrary to the public interest.

The Project would cross three navigable waters: Susquehanna River and Lehigh River in Pennsylvania and the Delaware River located in both Pennsylvania and New Jersey.

Both the Lehigh River and the Susquehanna River will be impacted by short term adverse impacts to recreational navigation as the navigable waterway will be crossed using an open-trench with dual coffer dam crossing method, preventing navigation through the waterways during construction. There could be impacts to navigation on the Delaware as well depending on how the proposed HDD were to proceed and whether or not there were any problems that resulted during construction operations.

As such, the proposed Project would adversely affect navigation and would provide no benefits to navigation for the public interest.

l. The proposed Project would adversely affect Shore Erosion and Accretion and would be contrary to the public interest.

¹¹⁴ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹¹⁵ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

The proposed Project would significantly and adversely affect shore erosion and accretion and result in cascading detrimental impacts to the public interest.

The loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain) and exacerbating the sedimentation impacts of construction. As noted by experts, the deforestation caused by the PennEast pipeline will result in increased stormwater runoff; this will result in increasing flows in the stream with stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Increased erosion means loss of habitat; channel migration that can have serious implications for riparian lands and vegetation over long stretches and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel; and increased instream sedimentation which is considered a pollutant both legally and scientifically. Erosive and extreme flow events will combine with the impacts inflicted by the construction and ongoing land management, including removal of riparian vegetation and forest, associated with the pipeline ROW to intensify the impacts of both.

As documented by experts in the attached reports, including Meliora Design¹¹⁶:

“The proposed pipeline conditions will significantly reduce the land surface’s ability to retain rainfall and facilitate infiltration, and will increase runoff frequency, volumes, and flow rates, including increased surface erosion and sediment transport to Special Protection or C1 water bodies.”

“When vegetation regrowth is limited, the likelihood of accelerated erosion is increased. When runoff cannot infiltrate, is not slowed at the surface by vegetation, and has direct contact with exposed soils, sediments are much more likely to be transported to downhill streams and wetlands. This is of specific concern on significant portions of the pipeline right-of-way in proximity to stream crossings, where soils to be disturbed by pipeline construction are classified as Severe Erosion Potential (79), Poor Vegetation (122), and Rugged Terrain with slopes greater than 30% (28). These areas are especially prone to erosion and sediment transport to waterbodies.”¹¹⁷

At least 43 waterbody crossings have steep slopes that would be cut by the pipeline. These 43 crossings are proposed to have additional temporary work spaces (ATWS) within 50 ft. of sensitive water features, adding to the potential erosion threats to these steep banks and the nearby sensitive streams where sediment pollution can cause long term harm.¹¹⁸

According to the report by Princeton Hydro, the Project will lead to “Increased amounts of stormwater runoff, the rate of runoff and the frequency and longevity of erosive flows” and “Increased pollutant loading to wetlands and streams”, as well as “combination of increased runoff volume and increased rate of runoff”, which “has been repeatedly demonstrated as the root cause of stream erosion.”

¹¹⁶ *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

¹¹⁷ *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

¹¹⁸ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.

Princeton Hydro also states:

“The acute erosion problems caused by the PennEast Pipeline are not limited to upland areas. Some of the more potentially severe acute and long-term impacts occur where the pipeline crosses through wetlands and streams. These areas are characterized by persistent standing water, actively flowing water or saturated soils. Such conditions present especially difficult conditions for the proper installation of erosion and sediment control measures. Such conditions also decrease the functionality of most erosion and sediment control measures, which by design are meant to work in dry environments.”¹¹⁹

PennEast states that completed E&S Control Plans by agencies will adequately avoid harms but this is a false conclusion as can be seen on other pipeline projects where severe sediment pollution harmed local waterbodies, many of which had special protection designations¹²⁰. Most agencies require quick establishment of groundcover to stabilize soils which takes the place of establishing more desired and diverse native habitats, therefore biodiversity and soil health is lost. Once soil chemistry, soil porosity, and soil layering (horizons) that took eons to form are destroyed by the construction process, erosion control measures usually require lime and fertilizer to be applied so that seed mixes grow rapidly. The addition of lime and fertilizer are like poison to what were once forest soils of low pH and low nutrients. This essentially ruins the chance that the soil will ever revert to a native plant community again. Alien invasive weeds of all kinds thrive on the nutrient-enriched, topsy-turvy soil layers in the aftermath of construction. Native herbaceous plants and shrubs almost never outcompete weeds in these altered, nutrient-enriched, high pH soils. Just like on abandoned farmland, these construction sites act as "post-agricultural soils," and just like our abundant forests on post-agricultural soils, the herbaceous and shrub layers will be dominated by alien weeds virtually forever, especially with over-abundant deer in the equation.¹²¹

In addition to the examples listed here, numerous attached reports outline the many ways the proposed Project would adversely affect erosion and secretion, as well as the ways in which this will lead to cascading detrimental impacts to the public interest. As such, the Corps should reject the 404 permits for the Project as it would be contrary to the public interest.

m. The proposed Project would adversely affect Recreation and would be contrary to the public interest.

- The proposed Project would significantly and adversely affect recreation and result in cascading detrimental impacts to the public interest. The project will cross a number of highly used recreational and special interest areas, site specific crossing plans and impact analyses are sorely lacking and/or missing in the materials provided, therefore it is difficult to assess full impacts. But given that hiking, birding, boating, fishing, hunting and other recreational enjoyments are dependent on beautiful and healthy habitats to be attractive for supporting recreational use, because PennEast will

¹¹⁹ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹²⁰ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.

¹²¹ Dr. Emile DeVito, New Jersey Conservation Foundation, Email Correspondence Re: Tennessee Gas Pipeline practices. July 14, 2015.

harm these attributes both enjoyment and economic impacts are inevitable and could be significant. The open cut stream crossings will impact boating, fishing, birding and other recreational uses in the areas – both during construction but also during operation and maintenance due to the changed natural conditions from the permanent and repeatedly maintained footprint. The crossing of the Appalachian Trail by the proposed route is in a section that is only feet away from a scenic overlook and cliff outcropping – it is hard to imagine a more damaging location for harming this important recreational and cultural resource. This area is also prime rattlesnake habitat.

We know that the recreational ramifications of PennEast are well recognized by the citizenry and of high concern as well. According to Key Log’s analysis: “In a review of comments collected through the DEIS, 99.4% of people who mentioned recreation and tourism businesses, 100% of commenters mentioning health (either related to the pipeline or the compressor station), and 93.3% of people mentioning the environment believed the PE would have a negative effect.”

The recreation supported by the region, particularly the water resources and preserved natural areas in the region, many of which are targeted by PennEast, are also an important part of the local economy. According to the attached Key Log analysis: “Tourists spent about \$4.5 billion in the study region in 2015. The companies that directly served those tourists employed 40,896 people, or 5.7% of total private employment in the region (Tourism Economics, 2015 & 2016).”

As further observed by Key Log: “A loss of scenic and recreational amenities, the perception and the reality of physical danger, and environmental and property damage resulting from the PE could discourage people from visiting, relocating to, or staying in the region. Workers, businesses, and retirees who might otherwise choose to locate along the PE’s proposed route will instead pick locations that have retained their character, their productive and healthy landscapes, and their promise for a higher quality of life.” “This is already occurring in the region. With the possibility of the PE looming, business plans are stalling and the real estate market is slowing.”

Other examples of the many adverse impacts to recreation on both public and private lands within the region, are well explored in the attached reports.

The FERC EIS does not consider the adverse impacts to recreation and ecotourism so vitally important to the impacted region. As a result, given that the Corps relied heavily on that document for its analysis, the Corps has similarly not given due consideration to this important public interest, recreational, environmental and economic interest.

In light of the many ways the proposed Project would adversely affect recreation, as well as the ways in which this will detrimentally impact to the public interest, the Corps should reject the 404 permits for the Project as it would be contrary to the public interest.

n. The proposed Project would have significant adverse effects on Water Supply and Conservation, which would be both detrimental and contrary to the public interest.

The PennEast Pipeline will cross multiple water sources, including aquifers, wellhead protection areas, and the Delaware River. PennEast prepared a Well Monitoring Plan stating that the company will conduct pre- and post-construction water quality monitoring within 150 feet of the construction corridor. However, the New Jersey Department of Environmental Protection commented in response to the plan that a monitoring distance of 150 feet of the pipeline is inadequate, suggesting a 1,000 feet monitoring radius instead (New Jersey Department of Environmental Protection, 2015) – while the Corps is only looking at the Pennsylvania portion of the project, this observation by the NJDEP is an equally sound recommendation for the Pennsylvania portion. The Environmental Protection Agency also submitted comment about drinking water concerns and deficiencies in information in the DEIS, stating PennEast Pipeline Company should work with state water agencies to account more thoroughly for any potential contamination.

There are several public and private wells along the construction corridor, with dozens of communities already passing resolutions opposing construction of the pipeline.¹²² During public comment on the project, there have been numerous findings regarding potential and serious impacts to drinking water sources. Additionally there has been identification of significant amounts of inaccurate or missing information – to the extent the Corps relied on PennEast and Corps documents where these multiple and serious deficiencies exist, the Corps has not conducted an accurate analysis.

“The proposed pipeline route passes through rural areas where many residents obtain their drinking water from onsite wells. One of the most widely recognized functions of wetlands is their ability to absorb or filter pollutants such as nitrogen, phosphorus, and sediments and thereby to provide an important water quality benefit. When wetlands are located above or along private drinking water supplies, that water quality enhancement function is particularly significant.”¹²³

“Schmid analysis “identified properties and specific landowners in Pennsylvania where there are (confirmed), or where there are likely to be, springs or drinking water wells located 10 within 150 feet of the proposed pipeline construction workspace. Examples include: at MP 58.2 along E. Dannersville Road in Moore Township, Northampton County; at MP 57.8 along W. Beersville Road in Moore Township, Northampton County; near MP 53 along North Cottonwood Road in Danielsville, Northampton County; near MP 45.75 east of Beers Lane, Towamensing Township, Carbon County.”¹²⁴

“Thus, FERC's statement that "there are no private water supply wells or springs located within 150 feet of the pipeline construction workspace in Pennsylvania" (DEIS, page ES-5) is false. This is a problem in its own right, because there can be direct impacts to private water supplies if construction activities are not done carefully or if leaks occur during operation of the pipeline. In addition, the fact that there are private springs and wells used for water supply within 150 feet of the proposed ROW in Pennsylvania suggests that there very well may be additional Exceptional Value Wetlands not yet identified that meet the PADEP criterion at §105.17(1)(iv) regarding association with existing public or private water supplies.”¹²⁵

¹²² Spencer Phillips, PhD, et al. *Economic Costs of the PennEast Pipeline*. January 2017. Key-Log Economic, LLC.

¹²³ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016

¹²⁴ Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

¹²⁵ Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

Given that the Palmerton Water Company has four production wells at the foot of Blue Mountain that supply water to the towns of Palmerton and Aquashicola, an analysis of groundwater impacts and potential threats to this important drinking water supply for thousands needs to be earnestly and scientifically considered by the DEIS; as written, it is not.

The DEIS should, but did not, 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.¹²⁶

The information provided by PennEast and the FERC EIS is too deficient for the Corps to make any meaningful assessment of the proposed Project's true and full impacts on water supply and conservation:

- FERCs statement that "there are no private water supply wells or springs located within 150 feet of the pipeline construction workspace in Pennsylvania" (DEIS, page ES-5) is false. Delaware Riverkeeper Network experts have "identified properties and specific landowners in Pennsylvania where there are (confirmed), or where there are likely to be, springs or drinking water wells located within 150 feet of the proposed pipeline construction workspace."
- The EIS does not provide data and references supporting the assertion that there is "no indication that common construction activities that involve shallow excavation, such as home construction, has resulted in increased arsenic concentrations in water supply wells" (DEIS, p 4-12).
- The EIS does not 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.
- The EIS fails 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.
- The EIS fails 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.
- The EIS fails to analyze the potential for the trench backfill to facilitate the movement of contaminants through the groundwater as part of an analysis of preferential flow.
- The EIS fails to consider the pipeline trench as a pathway for contamination.
- The EIS lacks information regarding standards used to guide HDD water withdrawals without preventing impacts on downstream ecological or human uses and needs

¹²⁶ *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

- The EIS fails to include a table of bedrock aquifers that includes relevant properties, including specific capacity statistics or well yields, and conductivity where available.
- The EIS fails to include maps, 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.
- The EIS fails to 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.
- The EIS fails to 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.
- The EIS fails to 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.
- The EIS fails to assess the potential for pipeline construction to generate acid generation or leach metals in all areas where it crosses mine spoil.
- The EIS fails to present avoidance and mitigation discussions focused on preventing the leaching and transport of acid and metals from the site.
- The EIS fails to provide the data and references supporting the EIS assertion that “shallow groundwater ... generally have (sic) low arsenic concentrations and that high arsenic concentrations ... are the result of more mature groundwater interacting with geochemically susceptible and arsenic-enriched water bearing zones, which are often deeper wells” (DEIS, p 4-12).

Given the extensive lack of data that is critical to the public interest, it would be irresponsible for the Corps to approve 404 permits for the project.

The destruction of naturally vegetated buffers along all wetlands and waterways resulting from the Project would have harmful impacts for a number of public interest concerns, including the health and safety of drinking water supplies:

- Protecting and enhancing water quality by preventing and filtering pollution and enhancing the ability of the neighboring stream to process pollutants, thereby protecting drinking water supplies, recreational uses of our waterways, commercial and recreational fisheries, ecotourism, and business operations that need clean water;
- Recharging aquifers that supply drinking water and base flow to streams;

Additionally, the water withdrawals and discharges within the Delaware River watershed could result in significant and adverse impacts to the water supply and conservation for the region and the public

interest. PennEast anticipates using approximately 33 million gallons of water for hydrostatic testing,¹²⁷ including withdrawals and discharges.

PennEast is subject to DRBC jurisdiction and docket review as a result of the Project's substantial effects on water resources of the Basin—including through its substantial land disturbance, its impact on Comprehensive Plan Areas, and its impact on Special Protection Waters, among others—and therefore is required to be submitted for Commission review. The jurisdiction of the Delaware River Basin Commission over the PennEast Pipeline project extends the entire length of the project as it passes through the boundaries of the Delaware River watershed.

The DRBC articulated in its November 14, 2014 letter to PennEast that it intends to enforce its authority and that “DRBC review and approval are required prior to the commencement of any water withdrawal, discharge, or earth disturbance activities.” April 23, 2015, the DRBC sent a letter to FERC that included a request for FERC to consider a joint public meeting and DRBC public hearing on the captioned project. On April 25, 2016, the DRBC withdrew that request. The DRBC will conduct its public process independently of FERC's.

PennEast submitted its application to DRBC for the PennEast Pipeline Project (“Project”) on February 8, 2016 and has since submitted supplemental material and responses to DRBC comments on April 1, 2016; July 25, 2016; May 23, 2016; November 1, 2016, April 17, 2017, and May 12, 2017.

However, PennEast has not yet developed a hydrostatic test plan that identifies the final hydrostatic test water sources and discharge locations,¹²⁸ including the water volume that would be withdrawn and discharged as both a Project-total amount, and a daily amount, for each pipeline segment.

Such significant withdrawals can adversely affect water conservation and the expense of the public interest, especially in exceptionally dry periods when low flow conditions may be encountered.

Discharges of hydrostatic test water would be regulated by state SPDES permit, and the classification of the receiving waters (as applicable) would be identified as part of the permitting process. As such, water should be prevented from discharging into state-designated exceptional value waters, waterbodies that provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies. However, the fact expert analysis and field monitoring has demonstrated that PennEast has falsely characterized or excluded mention of extensive areas of each of those protected resources in its materials to date raises concerns again here.

Due to this high potential for adverse impacts to water supply and conservation from the Project, and the detrimental impacts to the public interest that would result, the Corps should deny the Project's 404 applications.

o. The proposed Project would adversely affect Water Quality resulting in a detrimental impact on the public interest.

¹²⁷ FERC EIS

¹²⁸ FERC EIS

The project would result in severe and adverse impacts to water quality that would be contrary to the public interest.

Examples of some of the many adverse impacts to water quality that would result from the Project include:

- Due to land use changes and soil alteration, there will be permanent long term water quality impacts related to stormwater runoff, including increases in the rate, volume, and frequency of stormwater runoff.¹²⁹
- At least 43 waterbody crossings have steep slopes that would be cut by the pipeline. These 43 crossings are proposed to have additional temporary work spaces (ATWS) within 50 ft. of sensitive water features, adding to the potential erosion threats to these steep banks and the nearby sensitive streams where sediment pollution can cause long term harm.¹³⁰
- Pipeline construction results in the loss of riparian (streamside) vegetation.¹³¹ For each of the pipeline construction techniques there is a resulting loss of vegetation and foliage associated with clearing the stream banks – the PennEast pipeline is no exception. At least 255 streams will be crossed with the vast majority being crossed via open trench methods which result in permanently denuded streambanks. 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.
- The loss of riparian vegetation along streams will, among other impacts, remove shading and result in increased stream temperatures. Many of the streams being cut by PennEast are smaller, headwater streams with high water quality. The loss in vegetation will magnify increased stream temperature and thereby reduce its quality and suitability for aquatic life. For some species, the resulting change in temperature could have dramatic impacts.
- Furthermore, the loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain) and exacerbating the sedimentation impacts of construction. As noted by experts, the deforestation caused by the PennEast pipeline will result in increased stormwater runoff; this will result in increasing flows in the stream with stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Increased erosion means loss of habitat; channel migration that can have serious implications for riparian lands and vegetation over long stretches and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel; and increased instream sedimentation which is considered a pollutant both legally and scientifically.

¹²⁹ *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

¹³⁰ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.

¹³¹ Norman, *supra*.

- “When vegetation regrowth is limited, the likelihood of accelerated erosion is increased. When runoff cannot infiltrate, is not slowed at the surface by vegetation, and has direct contact with exposed soils, sediments are much more likely to be transported to downhill streams and wetlands. This is of specific concern on significant portions of the pipeline right-of-way in proximity to stream crossings, where soils to be disturbed by pipeline construction are classified as Severe Erosion Potential (79), Poor Vegetation (122), and Rugged Terrain with slopes greater than 30% (28). These areas are especially prone to erosion and sediment transport to waterbodies.”¹³²

Erosion and sedimentation controls and best management practices do not prevent adverse impacts.

- FERC states that completed E&S Control Plans by agencies will adequately avoid harms but this is a false conclusion as can be seen on other pipeline projects where severe sediment pollution harmed local waterbodies, many of which had special protection designations,¹³³ as explained further above.
- “The proposed pipeline conditions will significantly reduce the land surface’s ability to retain rainfall and facilitate infiltration, and will increase runoff frequency, volumes, and flow rates, including increased surface erosion and sediment transport to Special Protection or C1 water bodies.”¹³⁴
- “although erosion and sediment control measures could be implemented, the topography of sections of the pipeline’s route will limit the effectiveness of soil and sediment control measures. Therefore, even with the best developed soil erosion and sediment control plan in place there will be sediment and soil erosion impacts given the scale of the project and the sensitivity of the environments traversed by the pipeline.”¹³⁵

Compliance with Section 401 Water Quality Certification.

In accordance with Section 401 of the Clean Water Act, a Water Quality Certificate is necessary from the State government in which the work is located. The New Jersey Department of Environmental Protection (NJDEP) as of the time of this Public Notice has not issued a Water Quality Certificate for the portion of the project located in the State of New Jersey.

On April 26, 2017 the NJDEP issued a determination that the PennEast application materials submitted to the state were significantly deficient and incomplete. Subsequently, on June 28, 2017, NJDEP determined the PennEast Pipeline Company’s application for state approval of its project to be “administratively closed”

¹³² *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

¹³³ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network

¹³⁴ *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

¹³⁵ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

due to the company's failure to remedy significant identified deficiencies and its failure to provide full information in a timely fashion for Clean Water Act decisionmaking. In its determination letter the NJDEP wrote:

“...given the complexity of the remaining deficient items, and the lack of demonstrated progress on the part of the applicant, it appears that it would be unlikely that an additional 60 days would allow substantial progress on the application. This application will be deemed ‘administratively closed’ as of the date of this letter.”

While the applicant did obtain a 401 Water Quality Certification on February 7, 2017, from the Pennsylvania Department of Environmental Protection (PADEP), the Delaware Riverkeeper Network is currently involved in ongoing litigation with the state over this determination and its failure to apply appropriate state standards for determining whether a 401 Water Quality Certification was proper.

PADEP has also sent a series of three incompleteness review letters to PennEast for its Chapter 105 and Chapter 102 permits. Each of the letters has indicated the applications submitted are not yet considered to be complete by PADEP and that they cannot commence technical review until the applications are complete. The incompleteness letters were sent on April 26, 2016, and again September 19, 2016 and December 23, 2016. On June 26, 2017, DEP received a request for an extension from PennEast Pipeline Company, LLC. PennEast requested additional response time to the December 23, 2016 incompleteness review letters, indicating that they “do not anticipate submitting the information requested to complete the applications until December 29, 2017.” On August 10, 2017, DEP granted the requested extension.

The missing information that PADEP requires for their Chapter 105 Water Obstruction and Encroachment Permits and Chapter 102 Erosion and Sediment Control permits is extremely relevant to the water quality impacts that the Corps is required to consider as part of its 404 public interest review.

Information gaps that risk adverse impact to water quality:

- The arsenic analysis provided in the EIS is insufficient to indicate that arsenic leaching from pipeline construction in the Newark Basin would not be a problem for shallow groundwater and therefore needs to legitimately and scientifically analyze this issue.
- PennEast and FERC have not included HDD water discharge details including the specific discharge method and impacts on receiving streams;
- Investigation is incomplete for vernal pools; in Pennsylvania, survey work is 21% **incomplete**; in New Jersey, it is 74% **incomplete**.

Water quality effects of crossings specific to the Philadelphia District review:

According to the Public Notice from the Philadelphia District, the project would include the following waterbody crossings and impacts:

IP-1: Pipeline crossing of Bear Creek, unnamed tributaries of Bear Creek. The crossing will impact a total of 1.06 acres. Specifically, the crossing will impact 0.15 acre of water ways. The waterways will be crossed in a dry condition created by the construction of a coffer dam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods.

IP-2: Pipeline crossing of the Lehigh River. The crossing will impact a total of 1.01 acres of the waterway. The Lehigh River will be crossed in a dry condition created by construction of a coffer dam and bypassing the water around the construction area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of the waterway.

IP-3: Pipeline crossing of unnamed tributaries to Laurel Run. The crossing will impact a total of 1.83 acres of waters and wetlands. Specifically, the crossing will impact 0.10 acre of waterways. The waterways will be crossed in a dry condition created by construction of a coffer dam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of waterway or wetland area.

IP-4: Pipeline crossing unnamed tributary to Stony Creek. The crossing will impact a total of 1.19 acres. Specifically, the crossing will impact 0.11 acre of waterways. The waterways will be crossed in a dry condition created by construction of a coffer dam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of waterway or wetland area.

IP-5: Pipeline crossing of PFO wetlands, the Delaware Canal, and the Delaware River. The crossing will be constructed via Horizontal Directional Drill (HDD) methods. The HDD will extend from an upland field approximately 1,200 feet west of the Delaware River to a upland field approximately 1,100 feet east of the Delaware River. In addition to crossing under the Delaware Canal, the Delaware River, and a PFO wetland the HDD will go under State Route 611 in Pennsylvania and Old River Road, the Riegelsville Milford Road and a railroad line New Jersey. There are no surface impacts to waters and wetlands associated with this crossing.

Each of these crossings would have serious adverse impacts to the water quality in the region. For example, even the HDD crossing of the Delaware River raises concerns. Alternate crossing techniques such as horizontal direction drilling (HDD) are often used to minimize the likelihood of sedimentation impacts. The HDD method is typically used in larger stream crossings and requires a significant amount of work space to store the equipment on both sides of the stream. These work spaces are described as temporary but the impacts associated with the clearing of this land can be permanent. While often touted as environmentally-friendly, HDD is an unproven method that frequently leads to spills and brings inherent risks to the environment. The recent spilling issues with the Mariner East 2 Pipeline is proof of this. Between April 2017 and August 2017, there have been 90 spills releasing over 202,000 gallons of HDD drilling fluids into the environment from Mariner East 2.¹³⁶

These drilling fluids largely consist of non-toxic bentonite, leading many to believe that it is safe. However, non-toxic does not mean completely safe for the environment. Drilling fluids substantially increase suspended solids in a stream, interfering with fish gill development and function, reducing quality of fish spawning and rearing areas, reducing fish refuge sites, reducing food availability to upper trophic levels, smothering and displacing macroinvertebrates, and filling interstitial spaces in substrates.¹³⁷ Furthermore,

¹³⁶ Legere, L. (2017). Some drilling allowed to resume on Mariner East pipeline after spills. *Harrisburg Bureau*, August 4, 2017.

¹³⁷ Crowell, H. (2014). Ecological Impacts of Inadvertent Returns from Horizontal Directional Dilling (HDD). HullRAC Science Summit, February 4, 2014.

drilling mud deposition rates far exceed the rates of natural sediment deposition and erosion.³ Even with Erosion & Sediment Control BMPs in place, these measures frequently fail and cannot be relied upon as effective protection. DRN has witnessed these failures countless times, particularly recently with the Mariner East 2 Pipeline as evidenced in the pictures below from Huntingdon County in May of 2017.



Finally, there is evidence that the acoustic impacts from construction activities, such as those described for this project, can significantly harm fish. The effects of underwater sounds created by construction activity on fish may range from a brief acoustic annoyance to instantaneous lethal injury depending on many factors.¹³⁸ Even at non-lethal levels, low levels of acoustic damage may result in the fish not being able to swim normally, detect predators, stay oriented relative to other fish in the school, or feed or breed successfully. This is a potential threat to all fish in the vicinity of the construction.

¹³⁸ California Department Of Transportation (2001). San Francisco – Oakland Bay Bridge East Span Seismic Safety Project, Pile Installation Demonstration Project, Fisheries Impact Assessment, August 2001.

The proposed open-trench crossing of the Susquehanna, even when considered in isolation from the Project, poses such serious adverse impacts on water quality that it is sufficient basis for the Corp to determine the Project is contrary to public interest and deny its 404 permits.

The Susquehanna River Crossing will result in 12.97 acres of temporary impacts to the Susquehanna River. At the crossing, PennEast proposes to:

“use a dual cofferdam system to construct the Susquehanna River crossing ... Preliminary engineering of this crossing would involve installing a Portadam® at the upstream tip of Monocanock Island, which is located in the river's center, to divert flow to one side of the river...Secondary coffer dams would be installed adjacent to the pipeline trench for further dewatering.”¹³⁹

Penn East anticipates that construction of the Susquehanna River crossing would be completed within 45 days, including cofferdam construction, dewatering, pipeline construction, and restoration. And that trenching, pipeline construction, and backfilling will take 6 days for (3 days for each side of the river). According to the notice, PennEast “provided the following justification written below for the need of an open-cut installation across the North Branch of the Susquehanna River, in lieu of directional drilling under the river”:

“The Susquehanna River, as it flows through Wilkes-Barre in Luzerne County, presented a challenge to the Project with its existing geologic setting and historic coal workings that occurred throughout the area. Penn East has extensively investigated this regional geohazard, and implemented field investigations and project routing that support the design and planning for construction and long-term operation of the Project.”

These “field investigations” described by PennEast consisted of meetings with PADEP Bureau of Abandoned Mine Reclamation (BAMR), desktop analysis of historical underground mine catalogs, maps and records; as well as two geotechnical boring investigations in exploratory holes to determine the nature of the ground conditions beneath the Susquehanna River.

As a result of the desktop analysis, PennEast found that there was not sufficient clearance between the ground surface and previously worked coal seams for HDD without the potential for intersecting the coal worked seams, and risking “inadvertent return of borehole fluid into the mine seams which, in turn, could surface into the River or purge acid mine drainage existing in the mine into the River.” Additionally, the results of their boring investigations found that soil conditions were such that “drilling fluids within the HDD bore cannot be controlled or maintained, resulting in drilling fluid migration into the surrounding soils...Therefore, based on the geotechnical conditions observed in the boreholes and knowledge of historic mine workings in the area, traditional open-cut method of installation is proposed at the Susquehanna River crossing.”

While the Delaware Riverkeeper Network agrees that HDD does not seem like a safe option for crossing the Susquehanna, we are also concerned by the risks that would result from an open-trench crossing in this area, particularly in light of the gaps in site specific information and the existing mine-impacted soil pollution, including acid mine drainage (AMD) in the area. These include:

¹³⁹ Corps Public Notice

Lack of site specific information:

PennEast's statement that "Additional design detail and supporting engineering analyses will be submitted to the USACE Baltimore District and the PADEP in the application update after all surveys are complete" is of great concern. Not only would it be completely irresponsible for the Corps to permit this 404 crossing prior to the completion of PennEast's site surveys, engineering analysis, and design details are complete

As stated in Robert Hughes comments to FERC: "abandoned mines and an underground mine pool is located in that area and should be a cause for some concern and should be looked at much more closely should any trenching or excavation be done in that area."¹⁴⁰ Mine mapping in the region is incomplete, inaccurate, and in some cases, maps don't even exist. This is due in part to coal operators going "wildcatting," or mining in areas without properly documenting what they were doing.¹⁴¹

Additionally, the known existing mines and their proximity to the riverbed and open trench seem to pose serious risks.

"PennEast discovered that ten named coal seams are present beneath the proposed Susquehanna River crossing location or surrounding areas. Four mine entrances were identified near the proposed Susquehanna River crossing location. The historic mine shafts which exist in close proximity to the River are not intersected by the currently proposed Project alignment. At the specific crossing of the Susquehanna River, there is estimated to be significantly greater than 60 feet of clearance between the ground surface and previously worked coal seams which exist closer toward the eastern bank of the Susquehanna River." According to PennEast, "This clearance between the top of seams and the bottom of the proposed trench depth is considered sufficient clearance to ensure that trenching operations will not intersect historic workings". However, even if the historic maps reviewed are correct and there is a 60 foot clearance between the ground and coal seams, we are concerned whether this would be sufficient clearance to safely trench when also considering the depth required for an open trench cut of a 36" pipe in a major river. As Princeton Hydro explains, the depth and disturbance of this open-trench crossing would be significant:

"The trench depth for the 36" diameter PennEast Pipeline must conform to the Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA). For safety reasons it must be buried deep enough to avoid accidental punctures and to deal with seasonal frost issues. The PHMSA requires pipelines transporting conventional and unconventional gas to typically be covered by 30 to 36 inches of soil overburden. The thickness of soil cover may be greater when the pipeline runs under a roadway or when it runs under a stream, river or lake. PHMSA may require additional cover (48 inches to 60 inches) when the pipeline runs under agricultural lands. Less cover however may be allowed (as little as 18 inches) when the pipeline cuts through a consolidated area of bedrock. Nonetheless the amount of excavation required to properly trench the pipe is significant."¹⁴²

¹⁴⁰ January 27, 2015 Comment of Robert E. Hughes Executive Director Eastern PA Coalition for Abandoned Mine Reclamation to FERC Re PennEast prefilng docket no. PF15-1. Accession no. 20150127-5018.

¹⁴¹ "River concerns surface about pipeline," Elizabeth Skrapits, The Citizen's Voice. March 9, 2015.

<http://citizensvoice.com/news/river-concerns-surface-about-pipeline-1.1845246>

¹⁴² *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

The added risk of scour in the backfilled trench could add to the risks of the river both intersecting coal seams and exposing coal-related pollution in the soil. This risk would seem to be potentially exacerbated by the pervious gravel soils found during boring investigations:

“The geotechnical conditions beneath the river were found to be of deep alluvial deposits underlain by sedimentary rock. The overburden conditions observed were primarily stiff silts; however, layers of soft clay and highly permeable gravels were also encountered during drilling. . . **Gravel deposits, similar to the river deposits observed in the borings, present a pervious pathway for drill fluid and therefore increase the risk of an inadvertent return.** The presence of gravels also present challenges associated with bore stability, raveling and inducing steering corrections to maintain a proposed design alignment.”¹⁴³

Mine-impacted soil and open-trench concerns:

“Because the placement of the pipe in the trench takes time there is the need to stockpile the excavated soil in areas adjacent to the trench. Each stockpile represents another opportunity for offsite soil migration. This happened during the construction of the Tennessee Gas pipeline in Northern New Jersey leading to the impact of streams, wetlands and large recreational lakes located adjacent to the pipeline ROW.”¹⁴⁴

“There are numerous mines near the centerline of the proposed pipeline, beginning at about MP 5.1 and continuing to MP 11.2, as noted in DEIS Table 4.1.4-1. None apparently are operating. The soils table in RR7 (Table 7.1-1) lists various soils in this reach as “mine dump” or strip mine, burned”. Partially shown on Figure 7, mine-affected soils cover substantial areas on the east side of the Susquehanna River crossing. Excavating or otherwise disturbing mine spoil can release contaminants, including acid mine drainage (AMD) if sulfides are present.”

“However, the DEIS does not present any discussion of minerals that could be present in these soils or discuss whether minerals or other contaminants including AMD could result from meteoric water leaching through or running off of these soils. The mine spoil identified in RR7 is considered to have high conductivity (RR7, Table 7.1-1 for Luzerne County), which means the potential for contaminants to be released by construction disturbance is relatively high. It also has the potential for high erosion when disturbed (RR7, p 7-16). But the DEIS fails to discuss the pollution potential that will result.”¹⁴⁵

In order for the Corps to make a responsible evaluation of the crossing, FERC must “provide 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”; “assess the potential for pipeline construction to generate acid generation or leach metals in all areas where it crosses” mine spoil”; and “present avoidance and mitigation discussions focused on preventing the leaching and transport of acid and metals from the site.”¹⁴⁶

¹⁴³ Army Corps Public Notice (emphasis added)

¹⁴⁴ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹⁴⁵ *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

¹⁴⁶ *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

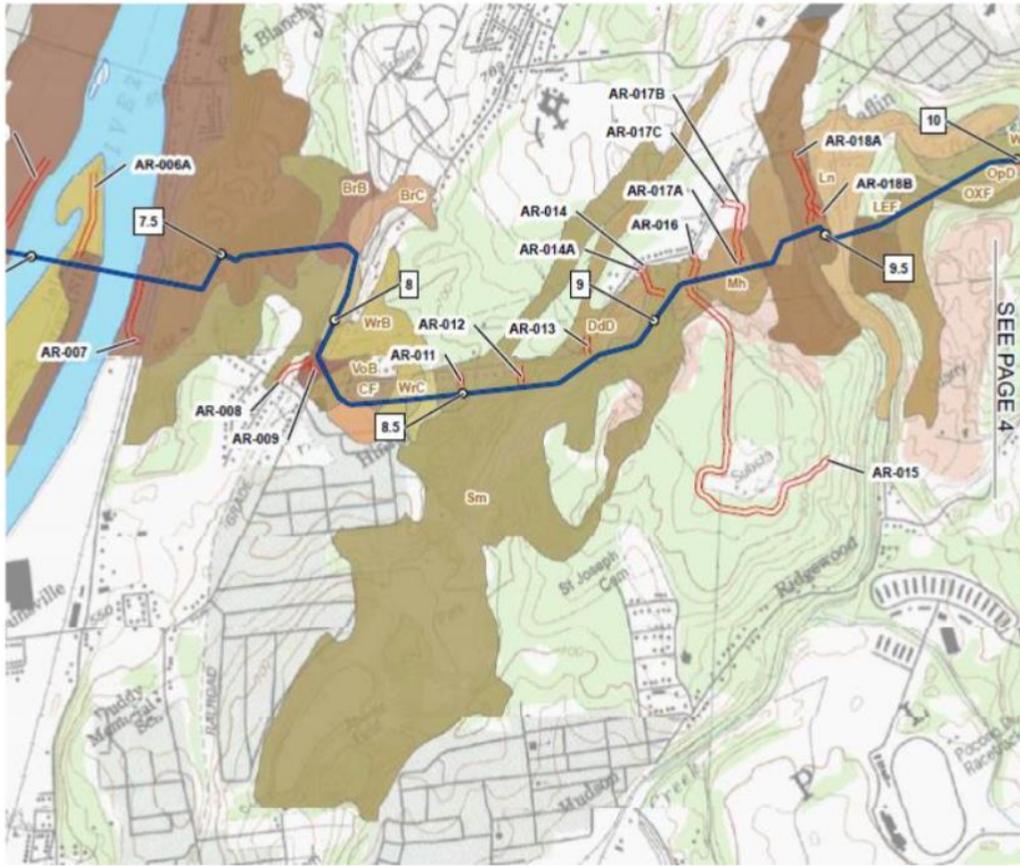


Figure 7: Snapshot of soils map (RR7, Figure 2.1-1) showing MP 7.0 to 10.0. Soil SM is strip mine.
Figure 1. Soils map referenced by Myers Report.¹⁴⁷

Adverse impacts of open-trench waterbody crossings must be considered.

These impacts and concerns are in addition to the adverse impacts that would result from a successful open-trench crossing, including:

“The dewatering of the site [required] to allow the measure to be installed or constructed. This in itself creates an impact to the stream or wetland ecosystem and resident organisms by significantly altering the hydrologic regime.”¹⁴⁸

“Open-cutting is a traditional stream crossing method that is still heavily utilized, particularly for minor to intermediate stream crossings. Open-cut crossings typically result in an elevation of downstream sediment loads during and shortly after the period of construction. Sediment released during instream construction can cause negative changes to downstream aquatic life and their habitats. These negative effects include reductions in the abundance of fish populations, reductions in the abundance and

¹⁴⁷ 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

¹⁴⁸ Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project, Princeton Hydro, September 2016

diversity of benthic invertebrate communities, and alterations to streambed conditions.”¹⁴⁹

“The trench depth will be at least 5-6 feet below existing stream grade, and could be even deeper to avoid thermal impacts to the stream or to protect the pipe from high-energy event scour and exposure. Overall, this type of construction is very disruptive to the stream and will negatively affect its ecological functionality. The current mitigative measures planned by PennEast, while perhaps addressing short-term erosion and sedimentation impacts, do nothing to restore the streams to their pre-disturbance ecological complexity and functionality. In order to justifiably state that the pipeline will cause “no impact” at each stream crossing, the subject stream must have its stream channel restored to the pre-construction width, depth, slope and substrate. This entails the collection of detailed stream data and seasonal sampling of the stream’s biota, neither of which is proposed by PennEast or recommended by FERC. The restored substrate would also have to mirror the pre-construction composition of the streambed and bank materials and condition, including restoration of the kind, quantity and quality of rock, sediment, woody debris and vegetation. Additionally, the stream’s restoration must allow for natural channel migrations, flows, sediment transport, and stream channel evolutions typical of natural stream flows. None of the mitigation measures discussed by FERC within the DEIS satisfy these requirements or demonstrate the ability to fully restore the streams to pre-construction conditions.”¹⁵⁰

According to the FERC EIS:

“The Susquehanna River has water quality impairment related to metals and a fish consumption advisory for PCBs... PennEast has not conducted sediment analysis to determine if PCBs are present in the sediment at the specific water crossing locations; however, prior to construction, PennEast would sample sediment within the proposed workspace for PCB concentration in the waterbodies identified in table 4.3.2-5. If PCBs are found to be present within the Project area, PennEast would consult with the appropriate agencies to determine whether additional precautions should be undertaken to prevent releasing PCBs into the water column. PennEast presented this sampling plan and site-specific crossing plan to PADEP and USACE in its Luzerne County Joint Permit Application.”

Impaired Waterbodies or Waterbodies with Contaminated Sediments Crossed by Pipeline Facilities						
Waterbody	MP <u>a</u>/	Impaired Designated Use(s) - 305(b) List	Pollutant(s) - 303(d) List	Water Quality Management Plan	Crossing Length (feet)	Pipeline Crossing Method
Pennsylvania						
Susquehanna River	7.2	Aquatic Life, Fish Consumption	Source Unknown - Mercury, AMD -Metals, Source Unknown - PCB	TMDL, 2002 (PCB, pH, siltation, metals)	1,056	Dry Crossing

¹⁴⁹ Reid, S.M., & Anderson, PG. (1999). Effects of Sediment Released During Open-Cut Pipeline Water Crossings. *Canadian Water Resources Journal*, Vol. 24, No. 3.

¹⁵⁰ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

Table 5. Impaired Waterbodies or Waterbodies with Contaminated Sediments Crossed by Pipeline Facilities, adapted from the FEIS.

In FERC's own description of the crossing, PennEast will "minimize" "in-water resuspension of contaminated sediments in the water column during construction". Given the severity of the contamination present the associated risks to the public interest, it is not enough for PennEast to "minimize", but not avoid, this contamination.

The FERC EIS also states that:

"Abandoned mine drainage (AMD) is a potential source of contaminated sediments within impaired waterbodies. Two waterbody crossings (Gardner Creek and Susquehanna River) have sediment-related impairment issues related to the presence of metals which are potentially from AMD. . . . Susquehanna River PennEast proposes a dry crossing of the Susquehanna River at MP 7.1. The proposed crossing location is bordered by an airport and flood-control berm to the south and a newly constructed highway bridge to the north. The proposed crossing is in proximity to the historic 1959 Knox Mine disaster where the river bed collapsed into the mine.

"Additionally, sediment-related impairment issues regarding the Susquehanna River are related to the presence of metals which are potentially caused by AMD."

As stated in a January 27, 2015 letter to FERC from the Executive Director Eastern PA Coalition for Abandoned Mine Reclamation regarding the Project:

"Anthracite underground mining has definitely occurred extensively in this region underground and at the surface on multiple coal veins, both along the floodplain of the Susquehanna River, and even under portions of the Susquehanna River, although, that was not encouraged since it was outside of the safety zone for mining coal, overburden, and other roof support material/rock. The historic mine maps show the geographic representation of how much of the workings have been mined out, pillars removed, pillars drilled through, areas that have been flushed, slurried, left intact (solid barrier pillars of coal), and the depth at which the mining has occurred."

"This area of the crossing is not something that can be completed in the short period of time that is available to provide comments. EPCAMR is of the opinion that based on the best available mapping that is out there without conducting a full hydrogeological investigation and mapping and mine pool investigation, which is something that PennEast should possibly consider, there could be the potential for a great deal of environmental concern for pollution, leaks into the underground mine pools, subsidence, and or instability issues at the surface depending on the infrastructure needed to create the pipeline crossing."

"EPCAMR believes that PennEast should seriously consider the abandoned underground mining implications and potential risk for mine subsidence and mine pool contamination for this project in this area prior to moving forward. . . . abandoned mines and an underground mine pool [are] located in that area and should be a cause for some concern and should be looked at much more closely should any trenching or excavation be done

in that area... [PennEast] should be concerned greatly that there could be the potential for mine subsidence, infiltration of surface water into the underground workings through fractured rock, excavation into the mine pool which could cause a new discharge to created, or a possible breach into the levee system.”

Given the

- unreliability of desktop reviews for historic coal mines due to “wildcat” mining;
- the lack of actual surveys complete and design detail and supporting engineering analyses;
- the pervious soils found during boring tests; and the
- proximity of the project activities to coal mines and AMD

the risks associated this crossing and the potential for extremely adverse impacts to the water quality and the public interest are too great a burden to put on the public—especially in light of the fact that there is no public benefit that would come as a result. The Corps must reject the Project’s 404 permit applications based on the potential adverse impacts of this crossing alone.

p. The proposed Project would have an adverse effect on Energy Needs and would result in detrimental impacts on the public interest.

PennEast and FERC’s assertion of need is contradicted by the preponderance of the evidence and is largely a statement of industry desires rather than public need.

The DEIS asserts the proposed pipeline is necessary to serve New Jersey and eastern Pennsylvania communities and some unidentified “surrounding states”. It is asserted that the project is needed to “provide low cost natural gas produced from the Marcellus Shale region”. The DEIS asserts that there is a need to displace Gulf Coast gas with cheaper and reliable access to Marcellus shale gas. It is asserted that there is a need for the project in order to “provide enhanced competition among natural gas suppliers and pipeline transportation providers.” The DEIS asserts there is a need in order to allow “supply flexibility”, “diversity”, “reliability”, better pricing, and to allow direct access to long lived dry gas reserves.

However, none of these are “needs”. These are industry desires, goals, hopes, dreams, wishes and wants. However you look at it, these claims do not assert a “need” for the gas. They assert a desire by the pipeline company to be able to provide a different source of gas so it can make money. These are very clearly private corporate goals and gains. These are not “needs” of the public; they are desires of private industry.

In fact, there is no need for the gas PennEast would carry to New Jersey and Pennsylvania; both states are fully supplied. And to the degree that PennEast wants to assert it is delivering the gas to other unknown, unidentified states -- in order to substantiate this claim and subject it to the public process that is required by NEPA, more detail is required that actually identifies the states and the users.

As noted in the attached expert report from Arthur Berman:¹⁵¹

¹⁵¹ *Professional Opinion of Proposed PennEast Pipeline Project*, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015

“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...”

“Pennsylvania was already grossly over-supplied and that the proposed additional 1 Bcf/d supply would result in an over-supply for New Jersey of approximately 53%,” and there is no evidence that PennEast will result in lowered costs for consumers.¹⁵²

“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....”

“There is no evidence...that more gas supply [would] result[] in lower costs to consumers”
“All leading companies in the Marcellus and Utica plays reported net losses for the second quarter of 2015”.

A second report issued by Arthur Berman further clarifies that:¹⁵³

“There is no evidence...that more gas supply [would] result[] in lower costs to consumers”

“All leading companies in the Marcellus and Utica plays reported net losses for the second quarter of 2015”

“U.S. gas production is declining and shale gas output is down almost 2.5 Bcf per day”

In comments submitted on the FERC docket on September 12, 2016, the New Jersey Division of Rate Counsel, in substantive comments, supported by an expert affidavit, similarly challenge the claimed need for the project. According to their comments there is in fact no objectively demonstrated need for the project. In fact, the NJ Division of Rate Counsel effectively makes the case that the “forecasted demands of the LDCs that PennEast is designed to supply are already being met by existing gas supply arrangements and available transportation capacity.”¹⁵⁴

The New Jersey Division of Rate Counsel well documents the self-dealing evidence provided by PennEast attempting to support its need claim. Given the self-dealing nature of this evidence the NJ Division of Rate Counsel urges FERC to conduct an independent analysis into need which has not been done. While there is ample evidence and expert analysis on the record to document no genuine need for the project that would justify the significant community, environmental and economic costs it will inflict, at a minimum, it is incumbent on the Corps to conduct such an independent review.

¹⁵² *Professional Opinion of Proposed PennEast Pipeline Project*, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015 and September 11, 2016.

¹⁵³ *Opinion on the PennEast Pipeline*, Arthur Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., September 11, 2016

¹⁵⁴ Comments submitted by New Jersey Division of Rate Counsel, Sept 12, 2016, to FERC Docket No. CP15-558

An additional expert report generated by Skipping Stone (attached here) 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:¹⁵⁵

“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 complimented by the predictions and concerns of experts that the industry is proposing an “overbuild” of pipelines from the Marcellus and Utica shales:¹⁵⁶

“Speaking to attendees at the 21st Annual LDC Gas Forums Northeast conference in Boston Tuesday, 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.

Lack of “need” for gas in Pennsylvania is also asserted by a Labrynth Consulting reaction to a recently released report advocating for more pipelines for similar goals, to fulfill an asserted need for gas and to reduce prices in the region. In this responsive analysis the assertion of a need for the gas was proven false with facts:

“First, Pennsylvania exported 3.23 Bcfd to other regions of the country in 2015 an amount almost equal to its 2014 consumption of 3.3 Bcfd. There is plenty of existing pipeline capacity to meet Pennsylvania’s demand and enough left over to send out of the state.”¹⁵⁷

The assertion that PennEast is intended to provide “enhanced competition” and cheaper pricing for industry users is not a need – it is a corporate desire, but it is not a need. It is an abuse of process and power for FERC to allow PennEast to claim that cheaper prices and setting the PennEast companies up to better compete with other industries fulfills the requirement of “need”. Approving construction of a pipeline project, granting it exemption from state and local laws, giving it the power of eminent domain so it can take private property, so it can take publicly preserved parks, forests and natural lands, in order to inflict unmitigatable and irreparable harms, all so the pipeline company can achieve its independent goal of greater profits and other industries can save a buck on the backs of the rest of us, subjecting communities to the threat and reality of pipeline accidents, incidents and explosions (which happen with concerning regularity) does not characterize a legitimate need that warrants the property takings and associated harms.

¹⁵⁵ *Analysis of Public Benefit Regarding PennEast*, Skipping Stone, March 9, 2016

¹⁵⁶ *Marcellus/Utica on Pace for Pipeline Overbuild*, Says Braziel, Natural Gas Intelligence, June 8, 2016

¹⁵⁷ Labyrinth Consulting responding to “A Pipeline For Growth Report”

The assertion that PennEast is necessary to provide greater reliability is also not a “need”. There is no evidence that New Jersey, Pennsylvania, and the undisclosed other states do not have reliable access to energy sources, gas or otherwise. The reports above document that in fact both states are already fully and reliably served. It is incumbent upon PennEast to demonstrate there is a reliability problem, and that the proposed project will necessarily ameliorate this problem. They have not done so.

Regarding the claim that PennEast is “needed” to provide direct access to long lived reserves, this claim is neither explored nor demonstrated by the DEIS document. In fact, there is a wealth of analysis which documents that shale gas will soon be on a swift decline and as such is not in fact a long term reliable source of energy; to the contrary it is a short term fix that will quickly run dry and require replacement with other energy sources. As the Post Carbon Institute’s *Drilling Deeper* report fully documents, the shale gas and tight oil industries have a short life, one that is only a few decades long.¹⁵⁸ Multiple experts reach similar conclusions when reflecting on EIA figures, current production rates, and other objective data, e.g. findings of Labrynth consulting when reacting to a recently released report titled, “A Pipeline For Growth” found:

Official EIA proven developed producing shale gas reserves for the Marcellus Shale are 84.5 trillion cubic feet (Tcf) and, for the Utica Shale, 6.4 Tcf (Table 1). That suggests approximately 18 years of supply at current production rates. There are approximately 27 years of supply including proven undeveloped reserves (PUD).¹⁵⁹

Construction of a 40 year pipeline for an energy source that will peak by 2020 and be on decline thereafter is irrational and cannot be said to fulfill the definition of a “need”.

The claim that this pipeline is “needed” in order to provide lower cost gas to New Jersey and Pennsylvania customers is not a “need” (as discussed above and in the attached expert reports) but in addition, it cannot be an expected outcome of this project. The construction of the PennEast pipeline may, to the contrary, contribute to an increase in gas prices for many in PennEast’s identified service area.

The New Jersey Division of Rate Counsel (2016) found that “forecasted demands of the LDCs that PennEast is designed to supply are already being met by existing gas supply arrangements and available transportation capacity” (p. 8).¹⁶⁰

Natural gas prices are lowest in the regions in which gas is produced. For many years, the lowest natural gas prices in the East were found at Henry Hub, located near the Gulf of Mexico where much of the natural gas in the United States was produced. With the increase in shale gas production, however, the lowest natural gas prices in the country are now found at trading points in and around the Marcellus and Utica shale plays in Pennsylvania, West Virginia, and Ohio. Availability of pipeline infrastructure to send natural gas to other regions has a direct impact on the price of natural gas in those regions—greater gas take-away capacity allows more natural gas to be produced, and an increase in supply will lead to a decline in price in those regions that receive additional gas. The improved access to higher priced markets via additional pipeline infrastructure will raise the price of natural gas in the producing region, which also will increase production – in this case the producing region is Pennsylvania, therefore it is not a given that prices would in fact reduce. In addition, while generally speaking increasing the supply in a nonproducing region (such as NJ)

¹⁵⁸ *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

¹⁵⁹ Labrynth Consulting responding to “A Pipeline For Growth Report”

¹⁶⁰ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

from a lower cost producing region (Pennsylvania) may be expected to lower prices in the downstream market, one recent study that was specific to the PennEast Pipeline showed how gas rates for some customers in NJ may increase due to other pipelines increasing their transportation rates.¹⁶¹

The claim that increased pipeline capacity will necessarily result in reduced gas prices is challenged by other experts considering the issue when responding to claims that pipeline capacity is needed to reduce prices for Eastern Pennsylvania end users:

“The correlation between volume of gas production and the price of gas for power generation is poor because there are other factors besides production volume that affect the price of gas. Still it seems unlikely that more gas production in Pennsylvania would result in a cost reduction since production already exceeds consumption by almost 100%.”¹⁶²

Further, as information regarding actual asserted customers for PennEast is revealed, it is increasingly clear that the claim of need is largely self-manufactured. For example, Spectra Energy Partners is a “member company” in PennEast Pipeline Company, LLC and 10% owner of the PennEast Pipeline proposal. Spectra Energy is currently planning for and proposing a new project called the Texas Eastern Marcellus to Market project (M2M). Spectra has made clear that the proposed PennEast pipeline will be the primary source of gas that the M2M project will transport. Specifically, according to the Spectra Energy website, the new M2M pipeline would receive the majority of its gas, 62.5%, (up to 125,000 dekatherms per day (Dth/d)) from the PennEast pipeline (this equates to over 11% of PennEast’s anticipated capacity). In other words, Spectra, as part of PennEast, is asserting the PennEast pipeline needs to be built in order to service the Texas Eastern M2M customer which is, in fact, Spectra. The end users of the M2M project are not identified in the DEIS or anywhere else in the record, and have not, in fact, demonstrated a need for that project. Again we are dealing with self-serving speculation of need rather than a demonstration of a genuine public need for the project. Of the 12 shippers PennEast identifies as demonstrating a need for the pipeline and thereby helping to game the system in this way, at least five are PennEast owners: PSEG, Spectra (Texas Eastern Transmission), South Jersey Gas, UGI, and Elizabethtown Gas (Pivotal Utility Holdings).

Making the artificial argument of “need” for the PennEast project is used to craft an artificial justification for imposing extreme and unnecessary harm on the environment and communities. The asserted “need” for PennEast is really an argument for a project that will allow the PennEast companies to achieve their private goals of generating a profit – it does not support a genuine “need” for the PennEast pipeline. Given the significant level of impacts that will be inflicted by the PennEast pipeline on the water resources of Pennsylvania and New Jersey, and that the project will necessarily result in unavoidable and unmitigatable harm to the environment and communities, this lack of need for the PennEast pipeline project is a fatal flaw. It is improper for the DEIS to presume “need” rather than require the project applicant to affirmatively demonstrate it.

FERC has made it clear that it does not “look behind the contracts to determine whether the customer commitments represent genuine growth in market demand” or need. *See also NE Hub Partners, L.P.*, 90 FERC ¶ 61,142 (2000). Such an arbitrary review process, when taken to its logical conclusion, leads to absurd results. Indeed, to the extent the contracts are artificially manufactured and do not represent “genuine growth in market demand” FERC essentially admits that such fraudulent representations are sufficient for a

¹⁶¹ Lander, Gregg. “Analysis of Public Benefit Regarding PennEast Pipeline”, New Jersey Conservation Foundation. March 9, 2016. Available at: <http://njconservation.org/docs/PennEastNotNeeded.pdf>

¹⁶² Labrynth Consulting responding to “A Pipeline For Growth Report”

decision approving the certificate. Here, substantial questions have been raised regarding the underlying contracts, and to the extent FERC fails to make a determination on “genuine market growth” and subsequent approval provided by FERC is arbitrary and capricious.

Furthermore, eminent domain originated as a way for governments to build necessary public infrastructure projects such as national highways and public buildings. It also enables governments to create parks and other public recreation areas. While eminent domain is considered an inherent power, it is subject to constitutional limitations. Among those limitations is that the land acquisition must be for “public use”.¹⁶³ The power of eminent domain is abused when it is used to benefit powerful interest groups at the expense of the less powerful; Supreme Court justices have recognized that the beneficiaries of this abuse “are likely to be those...with disproportionate influence and power in the political process, including large corporations and development firms.”¹⁶⁴ At its best, eminent domain allows for the acquisition of private property to create national parks for all to enjoy, and at worst, it exploits less politically and economically powerful groups. In the latter instance, the government acts as a henchman for private corporations, and this is not the intent of eminent domain. However, this is precisely what is happening at the behest of pipeline companies including PennEast. As noted, there is no genuine need for this project; the true goals are not to serve the public but to help the six companies that comprise the PennEast Pipeline, LLC to meet their corporate goals and to generate profits. This amounts to a government subsidization of a private company’s profits, at the expense of the public.

FERC has stated that “[e]ven though the compensation received in [an eminent domain proceeding] . . . is deemed legally adequate, the dollar amount received as a result of eminent domain may not provide a satisfactory result to the landowner and this is a valid factor to consider in balancing the adverse effects of a project against the public benefits.” *See Order Clarifying Statement of Policy*, 90 FERC ¶ 61,128, at 61,398. FERC has made clear that “[u]nder the Certificate Policy Statement, FERC will not authorize the construction of a project, with the concomitant right to obtain the necessary rights-of-way through either negotiation or the eminent domain process, unless it first finds that the overall public (not private) benefits of the project will outweigh the potential adverse consequences.” *See Order Clarifying Statement of Policy*, 88 FERC ¶ 61,748, at 50. Here, a significant portion of the landowners have refused PennEast access to their property, which will require PennEast to acquire vast tracts of property via eminent domain. As such, this significant adverse impact supports a finding that the adverse effects of the Project outweigh its questionable benefits to the public.

The Corps is required to consider “The relative extent of the public and private need for the proposed structure or work” in the evaluation of every application. (33 C.F.R. § 320.4(a)(2)) as part of this cost-benefit analysis required for a public interest review. Without a public need for the project, in light of the many adverse impacts to the environmental and the public interest, the Project is clearly contrary to the public interest and the Corps should reject its 404 permit.

q. The proposed Project would adversely affect the Safety of those in the region, and would therefore have a detrimental impact on the public interest.

There are many adverse safety impacts that would result from the Project and which would detrimentally impact the public interest.

¹⁶³ U.S. Const. Amend. V

¹⁶⁴ *Kelo v. City of New London*, 545 U.S. 469 (2005), O’Connor Dissent

Proximity to compressor stations has inflicted health harms, quality of life impacts and property damage, as well as lost property value, and has had impacts so severe that in at least one documented case it forced a family to abandon their \$250,000 investment in the home rather than suffer the health, safety and other harms they were experiencing.

According to the Pipeline and Hazardous Materials Safety Administration, 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. And the risk of accident, incident and harm is increasing. 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.

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."

FERC's improper determination that pipelines constructed more recently are safer resulted in a flawed analysis and discussion of the health and safety ramifications of the proposed PennEast pipeline for communities. The focus of the DEIS on compliance with regulations does not excuse the failure to assess the fact that accidents, incidents and explosions are higher than in older, pre-1940 pipelines, and the need to consider why safety is on the decline and whether PennEast will be subjected to the same construction approaches that have made more modern pipelines less safe and more prone to catastrophic events.

In the EIS FERC and PennEast use the assertion that, "the majority of fatalities from natural gas pipelines are associated with local distribution pipelines. These pipelines are not regulated by FERC; they distribute natural gas to homes and businesses after transportation through interstate transmission pipelines. In general, these distribution lines are smaller-diameter pipes and/or plastic pipes that are more susceptible to damage" to diminish the serious health and safety threats and harms of pipelines.

Given that distribution pipelines are a normal and needed consequence of an interstate transmission line in order to take the induced fracked gas from the well pads into interstate commerce, the harms inflicted by distribution lines must be equally assessed and accounted for in the EIS as a foreseeable, direct and induced consequence of the PennEast pipeline.

The effort by the EIS to dismiss the devastation that gets inflicted when a pipeline explodes or does damage to a community through an accident or incident is, frankly, disgusting. The EIS tries to dismiss the devastation to people and families suffered from an explosion of a pipeline, for example, by asserting that the harms associated with pipelines are less than with other activities:

"The nationwide totals of accidental fatalities from various anthropogenic and natural hazards are listed in table 4.11.3-2 in order to provide a relative measure of the industry-wide safety of natural gas transmission pipelines. Direct comparisons between accident categories should be made cautiously because individual exposures to hazards are not uniform among

all categories. As indicated in table 4.11.3-2, the number of fatalities associated with natural gas facilities is much lower than the fatalities from natural hazards such as lightning, tornados, floods, earthquakes, etc.”

In addition to the effort to diminish the devastation to a person or family suffered during an explosion by a natural gas pipeline, the dismissal fails to give the necessary context or assessment to fairly compare these uses. The necessary comparisons of potential for an incident to occur amongst different threats versus the actual reality of a hazard is lacking in the EIS analysis. Comparing apples to oranges does not work here.

“Based upon experience with other pipelines it can be anticipated that, for example, just in Carbon County where 560 people live within 2 miles of the proposed compressor station (US Census Bureau, 2015), there will be on the order of “504 people experiencing odor events, 398 people experiencing respiratory impacts, 325 people experiencing sinus problems, and 218 people experiencing sleep disturbances and/or severe headaches.”

Additional adverse safety effects and considerations from the Key-Log Economics analysis:

“**Evacuation Zone:** The evacuation zone is defined by the distance beyond which an unprotected human could escape burn injury in the event of the ignition or explosion of leaking gas (Pipeline Association for Public Awareness, 2007, p. 29). There would be a potential evacuation zone with a radius of at least 3,157 feet (962.48 m). (See map, Figure 2, for a close-up of these zones in part of the study region.)

Residents and housing units in the evacuation zone: 54,579 people, 23,293 homes

Compressor Station: The proposed compressor station is likely to have separate effects on property value and on human health. Based on the experience of homeowners near a compressor station in Hancock, New York, we consider the possibility of a property value effect within one half mile of the proposed compressor station in Kidder Township, Carbon County (Catskill Citizens for Safe Energy, 2015). This zone overlaps the ROW and the evacuation zone, and because we assume that the more acute and ever present effect of proximity to the compressor station would dominate all other effects, we ignore the ROW and evacuation zone effects for these particular properties.

Compressor stations have also been associated with various human health effects at distances up to two miles away (Subra, 2009, 2015). Further epidemiological research would allow estimation of the costs of those effects for the proposed station in Kidder Township, however, without such research, we do not include the potential public health costs in the present study.”¹⁶⁵

As such, the proposed Project would adversely affect the Safety of those in the region, and would therefore have a detrimental impact on the public interest.

r. The proposed Project would adversely affect Food and fiber production that would have a detrimental impact on the public interest.

¹⁶⁵ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

We have learned from farmers, and it has been documented on the record, that crop production has gone down by as much as 30% when a pipeline cuts through farm crop lands. PennEast and FERC's EIS figures do not consider harms to other local businesses, such as the 7th generation nursery business reported in the press that said their ability to continue to operate would be harmed if PennEast passes through their property as is under consideration.

In addition to providing exaggerated and false claims of benefit, the EIS ignores the economic harms inflicted by construction and operation of PennEast. Among its many deficiencies, the DEIS analysis does not consider the adverse impacts to recreation and ecotourism so vitally important to the impacted region; the analysis fails to consider the implications for future investment in open space preservation and the adverse impacts thereof as communities realize that preserved lands are not protected from pipeline construction; the economic damage to agricultural crop production is overlooked as are harms to other businesses.

The threat of increased drought from climate change is significant depending on how quickly the U.S. reduces climate changing emissions – and given that we are commenting on yet another proposal for a fossil fuel based gas pipeline, it is not unlikely that emissions will significantly reduce in sufficient time to prevent these consequences from coming to fruition. According to the Union of Concerned Scientists:

“On a higher-emissions pathway, a short seasonal drought can be expected every year in most of New England by the end of this century, while the frequency of longer droughts could triple to once every 6 to 10 years in parts of New York, Pennsylvania, and Maine—the region's key agricultural states.”

An additional effect discussed but not quantified by the Key-Log Economics analysis is the

“long-standing harm to agricultural productivity due to soil compaction, soil temperature changes, and alteration of drainage patterns due to pipeline construction. Rob Fulper, a farmer in West Amwell, Hunterdon County, New Jersey, noticed that corn planted over two existing pipelines buried on his 100-year-old family farm during World War II that now transport natural gas produce lower yields (Colaneri, 2015). Separately, agronomist Richard Fitzgerald (2015) concludes, “it is my professional opinion that the productivity for row crops and alfalfa will never be regenerated to its existing present ‘healthy’ and productive condition [after installation of a pipeline].” Thus, the true loss in food and other ecosystem service value from pasture/forage acreage would be larger than our estimates reflect.”¹⁶⁶

The definitively lower crop yield that these farmers have faced due to the permanent ecological changes in the land disprove the claim by FERC and pipeline companies that any effects would be “temporary in nature” and that all areas will be “restored to agricultural use after construction.” The reality felt on the ground by farmers is that these adverse impacts to food and fiber production cannot be reversed.

As such, with no public benefits to food and fiber production to possibly come from the Project, and a significant adverse impact to be suffered by public, particularly those in the agricultural areas the pipeline would pass through and those who depend on them, the Corps should find the Project contrary to the public interest and deny the 404 permit.

¹⁶⁶ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

s. The proposed Project would adversely affect Mineral Needs, resulting in an adverse impact to the public interest.

The information provided by FERC fails to forecast the way in which natural gas fits into the United States' energy mix in the future. For example, by some estimates all shale plays have peaked and older plays, like the Barnett Shale and Haynesville Shale, are in a gradual decline as the industry as a whole has seen a roughly 4% decline since early 2016.¹⁶⁷

Indeed, in a long-term outlook published in June of 2017, Bloomberg New Energy Finance predicted that the natural gas market share in global power generation will “drop from 23 percent last year to 16 percent by 2040, and that gas-fired power generation capacity will start to decline after 2031.”¹⁶⁸

With these emerging forecasts in mind, the Project, which would result in infrastructure for the transport of shale gas, a rapidly declining energy source for the country, would have an adverse impact on the mineral needs of the public interest.

t. The proposed Project would adversely affect Considerations of Property Ownership, resulting in a detrimental impact to the public interest.

The proposed Project would cause extreme adverse impacts on Considerations of Property Ownership in relation to the public interest. Most significantly property ownership would be forcibly taken away from any landowner in the path of the pipeline. This adverse impact is even harder for the public to bear in light of the fact that there is no public need for the project. Additionally, property value, which is an essential consideration and component to property ownership, would be greatly decreased for property in proximity to the Project.

Approving construction of a pipeline project, granting it exemption from state and local laws, giving it the power of eminent domain, so it can take private property, so it can take publicly preserved parks, forests and natural lands, in order to inflict un-mitigatable and irreparable harms, all so the pipeline company can achieve its independent goal of greater profits and other industries can save a buck on the backs of the rest of us, subjecting communities to the threat and reality of pipeline accidents, incidents and explosions (which happen with concerning regularity) does not characterize a legitimate need that warrants the property takings and associated harms.

Eminent domain originated as a way for governments to build necessary public infrastructure projects such as national highways and public buildings. It also enables governments to create parks and other public recreation areas. While eminent domain is considered an inherent power, it is subject to constitutional limitations. Among those limitations is that the land acquisition must be for “public use”.

¹⁶⁷ See Hughes, J. David, *2016 Shale Gas Reality Check*, Post Carbon Institute (December 2016), available at: http://www.postcarbon.org/wpcontent/uploads/2016/12/Hughes_2016-Shale-Gas-Reality-Check-2016.pdf.

¹⁶⁸ Farchy, Jack, *What if Big Oil's Bet on Gas is Wrong*, Bloomberg (July 18, 2017), available at: <https://www.bloomberg.com/news/articles/2017-07-17/big-oil-sees-salvation-ingas-but-what-if-it-s-the-wrong-bet> (noting that “[w]ind and solar are just getting too cheap, too fast’ for gas to play a transitional role, said Seb Henbest, lead author of the BNEF report”).

The power of eminent domain is abused when it is used to benefit powerful interest groups at the expense of the less powerful; Supreme Court justices have recognized that the beneficiaries of this abuse “are likely to be those...with disproportionate influence and power in the political process, including large corporations and development firms.”

At its best, eminent domain allows for the acquisition of private property to create national parks for all to enjoy, and at worst, it exploits less politically and economically powerful groups. In the latter instance, the government acts as a henchman for private corporations, and this is not the intent of eminent domain. However, this is precisely what is happening at the behest of pipeline companies including PennEast. As noted, there is no genuine need for this project; the true goals are not to serve the public but to help the six companies that comprise the PennEast Pipeline LLC to meet their corporate goals and to generate profits. This amounts to a government subsidization of a private company’s profits, at the expense of the public.

FERC has stated that “[e]ven though the compensation received in [an eminent domain proceeding] . . . is deemed legally adequate, the dollar amount received as a result of eminent domain may not provide a satisfactory result to the landowner and this is a valid factor to consider in balancing the adverse effects of a project against the public benefits.” *See Order Clarifying Statement of Policy*, 90 FERC ¶ 61,128, at 61,398. FERC has made clear that “[u]nder the Certificate Policy Statement, FERC will not authorize the construction of a project, with the concomitant right to obtain the necessary rights-of-way through either negotiation or the eminent domain process, unless it first finds that the overall public (not private) benefits of the project will outweigh the potential adverse consequences.” *See Order Clarifying Statement of Policy*, 88 FERC ¶ 61,748, at 50. Here, a significant portion of the landowners have refused PennEast access to their property, which will require PennEast to acquire vast tracts of property via eminent domain. As such, this significant adverse impact supports a finding that the adverse effects of the Project outweigh its questionable benefits to the public.

Key-Log Economics Analysis found the following Adverse Impacts to Land Price resulting from similar projects:

“To say the impacts and potential impacts of the PennEast Pipeline on private property value are important to people along its proposed route would be an extreme understatement. Key-Log Economics and Delaware Riverkeeper Network are conducting an analysis of all comments submitted through the closing of the DEIS comment period on September 12, 2016. Of 1977 total comments reviewed thus far (a sample), 99.8% of comments mentioning property value believed the PE would have a negative impact.”¹⁶⁹

“Landowners and Realtors along the proposed route of the Mountain Valley Pipeline, a 42” high-pressure natural gas pipeline designated to transport gas from fracked wells in the Marcellus through West Virginia and Virginia, report abandoned building plans, lower than expected appraisals, and buyers walking away from properties potentially affected by the construction (Adams, 2016). At least one ROW landowner was told by insurance agencies that their rates would likely increase if coverage remains available at all (Roston, 2015).”

“While it is impossible to know precisely how large an effect the specter of the PE has already had on land prices, there is strong evidence from other regions that the effect would be negative. In a systematic review,

¹⁶⁹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

Kielisch (2015) presents evidence from surveys of realtors, home buyers, and appraisers demonstrating natural gas pipelines negatively affect property values for a number of reasons. Among his key findings relevant to the PE:

- 68% of Realtors believe the presence of a pipeline would decrease residential property value.
- Of these Realtors, 56% believe the decrease in value would be between 5% and 10%. (Kielisch does not report the magnitude of the price decrease expected by the other 44%.)
- 70% of Realtors believe a pipeline would cause an increase in the time it takes to sell a home. This is not merely an inconvenience, but a true economic and financial cost to the seller.
- More than three quarters of the Realtors view pipelines as a safety risk.
- In a survey of buyers presented with the prospect of buying an otherwise desirable home with a 36-inch diameter gas transmission line on the property, 62.2% stated that they would no longer buy the property at any price. Of the remainder, half (18.9%) stated that they would still buy the property, but only at a price 21%, on average, below what would otherwise be the market price. The other 18.9% said the pipeline would have no effect on the price they would offer.
- Not incidentally, the survey participants were informed that the risks of “accidental explosions, terrorist threats, tampering, and the inability to detect leaks” were “extremely rare” (2015, p. 7). The survey participants had, in other words, realistic information about the probability of pipeline accidents and were not responding out of overblown fears.
- Considering only those buyers who are still willing to purchase the property, the expected loss in market value would be 10.5%.¹⁷⁰ This loss in value provides the mid-level impact in our estimates. A much greater loss (and higher estimates) would occur if one were to consider the fact that 62% of buyers are effectively reducing their offer prices by 100%, making the average reduction in offer price for all potential buyers 66.2%.¹⁷¹ In our estimates, however, we have used the smaller effect (-10.5%) based on the assumption that sellers will eventually find one of the buyers still willing to buy the pipeline-easement-encumbered property.
- Based on five “impact studies” in which appraisals of smaller properties with and without pipelines were compared, “the average impact [on value] due to the presence of a gas transmission pipeline is -11.6%” (Kielisch, 2015, p. 11). The average rises to a range of -12% to -14% if larger parcels are considered, possibly due to the loss of subdivision capability.
- These findings are consistent with economic theory about the behavior of generally risk-averse people. While would-be landowners who are informed about pipeline risks and nevertheless decide to buy property near the proposed PE corridor could be said to be “coming to the nuisance,” one

¹⁷⁰ Half of the buyers would offer 21% less, and the other half would offer 0% less; therefore the expected loss is $0.5(-21\%) + 0.5(0\%) = -10.5\%$.

¹⁷¹ This is the expected value calculated as $0.622*(-100\%) + 0.189*(-21\%) + 0.189*(0\%)$.

would expect them to offer less for the pipeline-impacted property than they would offer for a property with no known risks.

- Kielisch’s findings demonstrate that properties on natural gas pipeline rights-of-way suffer a loss in property value. Boxall, Chan, and McMillan (2005), meanwhile, show that pipelines also decrease the value of properties lying at greater distances. In their study of property values near oil and gas wells, pipelines, and related infrastructure, the authors found that properties within the “emergency plan response zone” (EPZs) of sour gas¹⁷² wells and natural gas pipelines faced an average loss in value of 3.8%, other things being equal.”¹⁷³

“The PE has both a high consequence area and an evacuation zone radiating from both sides of the pipeline defined by health and safety risks. Whether disclosed or not by sellers, prospective buyers are likely to become informed regarding location of the property relative to the PE’s HCA and evacuation zones or, at a minimum, regarding the presence of the PE in the study region.

“The compressor station proposed for Kidder Township in Carbon County would likely cause its own more severe reduction in the value of nearby properties. We apply the percentage reduction awarded in the Hancock, New York case (25%) to properties that are (as the properties were in that case) within half a mile of the proposed compressor station (“Proximity of Compressor Station Devalues Homes by as much as 50%,” 2015). The stations can also be noisy, with low-frequency noise cited as a constant nuisance (“Proximity of Compressor Station Devalues Homes by as much as 50%,” 2015). These issues led some homeowners to pull-up stakes and move away and to reduced property value assessments for others (Cohen, 2015; “Proximity of Compressor Station Devalues Homes by as much as 50%,” 2015).”¹⁷⁴

“Existing studies suggest negative impacts on land value from various types of nuisances that impose noise, light, air, and water pollution, life safety risks, and lesser human health risks on nearby residents (Sun, 2013; Bolton & Sick, 1999; Boxall et al., 2005). In addition to the emerging body of evidence demonstrating a negative relationship between natural gas infrastructure and property value, well established analyses strongly reveal the opposite analog. Namely, amenities such as scenic vistas, access to recreational resources, proximity to protected areas, cleaner water, and others convey positive value to property.¹⁷⁵ The bottom line is that people derive greater value from, and are willing to pay more for, properties that are closer to positive amenities and farther from negative influences, including health and safety risks.”¹⁷⁶

“Land Value Effects of Compressor Stations: Compressor stations like the three-unit, 47,700 hp station proposed for Kidder Township can cause decreases in home values and have even forced some homeowners to move away from the noise, smells, and illnesses associated with living near stations. In one case from Minisink, New York, a family of six moved to escape the effects of a much smaller (12,600 hp) compressor station operated by Millennium Pipeline, L.L.C. After two years of headaches, eye irritation, and lethargy among the children and even lost vigor in their fruit trees, the couple, unable to find a buyer for their home, moved away, leaving their \$250,000 investment in the property on the table with their bank holding the balance of the mortgage (Cohen, 2015).”

¹⁷² “Sour” gas contains high concentrations of hydrogen sulfide and poses an acute risk to human health.

¹⁷³ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

¹⁷⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

¹⁷⁵ Phillips (2004) is an example of a study that includes an extensive review of the literature on the topic.

¹⁷⁶ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

“Claims That Pipelines Have No Effect on Property Value Are Invalid: The DEIS (Federal Energy Regulatory Commission, 2016b) and PE LLC cite studies purporting to show that natural gas pipelines (and in one case a liquid petroleum pipeline) have at most an ambiguous and non-permanent effect on property values (Allen, Williford & Seale Inc., 2001; Fruits, 2008; Palmer, 2008; Diskin et al. 2011). While the studies differ in methods, they are similar in that they fail to take into account two factors potentially voiding their conclusions entirely.”¹⁷⁷

The following two tables adapted from the Key-Log Economics analysis outline the estimated loss in property that would result from the project as well as the resulting loss in tax revenue: ¹⁷⁸

Table 10: Summary of Land Value Effects, by Zone and County

Area	Effects in Right-of-Way (2015\$)			Effects in Evacuation Zone (2015\$)
	Realtor Survey (4.2%)	Buyer Survey (10.5%) ^a	Impact Studies (13.0%)	Boxall Study (3.8%)
Study Region	-8,420,100	-21,050,250	-26,062,214	-149,890,650
<i>Pennsylvania Portion</i>	-4,400,237	-11,000,593	-13,619,782	-77,656,828
Bucks	-24,305	-60,761	75,228	-334,798
Carbon	-411,78	-1,029,459	-1,274,568	-3,690,122
Luzerne	-2,709,525	-6,773,812	-8,386,625	-36,044,026
Northampton	-1,254,624	-3,136,560	-3,883,360	-37,587,882
<i>New Jersey Portion</i>	-4,019,863	-10,049,657	-12,442,433	-72,233,822
Hunterdon	-2,326,511	-5,816,278	-7,201,106	-30,734,752
Mercer	-1,693,352	-4,233,380	-5,241,327	-41,499,070

Table 10: Continued

Area	Effects Near Compressor (2015\$)	Total of ROW, Compressor Station, and Evacuation Zone Effects (2015\$)		
	Hancock, NY Finding (25%)	Low	Medium	High
Study Region		-159,698,484	-172,328,634	-177,340,598
<i>Pennsylvania Portion</i>	-1,387,734	-83,444,799	-90,045,155	-92,664,344
Bucks	n/a	-359,103	-395,560	-410,027
Carbon	-1,387,734	-5,489,639	-6,107,315	-6,352,424
Luzerne	n/a	-38,753,551	-42,817,838	-44,430,651
Northampton	n/a	-38,842,506	-40,724,442	-41,471,242
<i>New Jersey Portion</i>	n/a	-76,253,685	-82,283,479	-84,676,255
Hunterdon	n/a	-33,061,263	-36,551,029	-37,935,857
Mercer	n/a	-43,192,422	-45,732,450	-46,740,397

¹⁷⁷ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

¹⁷⁸ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

Table 11: Effects on Local Property Tax Revenue

Source: Property Taxes by State (propertytax101.org, 2016).

Area	Median Tax Rate (% of Home Value) ^a	Lost Property Tax Revenue (2015\$)		
		Low	Medium	High
Study Region		-2,719,343	-2,932,534	-3,017,134
<i>Pennsylvania Portion</i>		-1,215,386	-1,310,614	-1,348,403
Bucks	1.27%	-4,561	-5,024	-5,207
Carbon	1.56%	-85,638	-95,274	-99,098
Luzerne	1.40%	-542,550	-599,450	-622,029
Northampton	1.50%	-582,638	-610,867	-622,069
<i>New Jersey Portion</i>		-1,503,95	-1,621,920	-1,668,731
Hunterdon	1.91%	-631,470	-698,125	-724,575
Mercer	2.02%	-872,487	-923,795	-944,156

u. The Proposed project would result in adverse impacts to the general needs and welfare of the people and as such, would be contrary to the public interest.

The proposed Project would result in many adverse impacts to the general, the needs and welfare of the people. As demonstrated by their own comments, the public clearly does not want the pipeline and have all these concerns. The Delaware Riverkeeper Network and Key-Log Economics released a new report documenting the overwhelmingly negative public comments submitted to FERC regarding the PennEast Pipeline. The study, which used crowd sourced reviewers to analyze 3,443 written messages to FERC, found that 76.7% of all commenters expressed a negative attitude toward the proposed PennEast Pipeline—and of those living along the proposed pipeline route, 92.6% expressed a negative sentiment toward the pipeline.¹⁷⁹ One of the most significant of those if that hasn’t already been extensively discussed in this comment is the affect the Project would have on public health.

The analysis by Key-Log Economics found the following Adverse Impacts Public Health Effects of the proposed Project:¹⁸⁰

“Natural gas transmission releases toxins, smog forming pollutants, and greenhouse gases that have a negative impact on public health (Fleischman, McCabe, & Graham, 2016). Emissions from the natural gas industry have been tied to a myriad of health concerns, however, more concrete epidemiological studies are needed to determine the extent to which natural gas transmission causes public health concerns.”

“More recent emerging literature is beginning to quantify just how large of an effect the industry can have on public health. For example, a study by the Clean Air Task Force (2016) estimated that in 2025, increases in ozone levels due to pollution from the oil and gas industry will cause 750,000 additional asthma attacks in children under the age of 18, add an additional 2,000 asthma-related emergency room visits and 600

¹⁷⁹ *Citizen Input Regarding the PennEast Pipeline*. Cara Bottorff & Spencer Phillips, PhD. Key-Log Economic, LLC. March 2017.

¹⁸⁰ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

respiratory related hospital admissions, cause children to miss 500,000 days of school annually, and cause adults to deal with 1.5 million days of forced rest or reduced activity due to ozone smog.”

Air Pollution from the Proposed Compressor Station:

“The PennEast Pipeline impacts air quality by converting forests, which remove normal levels of impurities from the air, to other land uses. There is also concern for impacts that would occur due to the dumping of excess impurities into the air in the first place. While there is a chance leaks could occur at any place along the proposed route, leaks and major releases of gas and other substances (lubricants, etc.) would certainly occur at the 47,700 hp compressor station proposed for Kidder Township, Carbon County, Pennsylvania. Leaks in seals on the moving parts of natural gas compressors produce a significant amount of VOC emissions (Fleischman, McCabe, & Graham, 2016).”

“The negative effects of the compressor station include noise and air pollution from everyday operations plus periodic “blowdowns,” or venting of gas in the system to reduce pressure. As a recent study by the New York Department of Environmental Conservation indicates, pollution around compressor stations is common and severe (Lucas, 2015). The five-state study found that “more than 40% of the air samples from compressor stations exceeded federal regulations for certain chemicals like methane, benzene, and hydrogen sulfide” (Lucas, 2015). The study also found high rates of illnesses such as nosebleeds and respiratory difficulties among people living near the stations.”

“While more definitive epidemiological studies are needed to determine the extent to which natural gas compressor stations add to background rates of various illnesses, these stations are implicated as contributing to a long list of maladies. According to Subra (2015), individuals living within 2 miles of compressor stations and metering stations experience respiratory impacts (71% of residents), sinus problems (58%), throat irritation (55%), eye irritation (52%), nasal irritation (48%), breathing difficulties (42%), vision impairment (42%), sleep disturbances (39%), and severe headaches (39%). In addition, some 90% of individuals living within 2 miles of these facilities also reported experiencing odor events (Southwest Pennsylvania Environmental Health Project, 2015). Odors associated with compressor stations include sulfur smell, odorized natural gas, ozone, and burnt butter (Subra, 2009). Furthermore, compressors emit constant low-frequency noise, which can cause negative physical and mental health effects (Luckett, Buppert, & Margolis, 2015).”

“In Carbon County, 560 people live within 2 miles of the proposed compressor station (U.S. Census Bureau, 2015). Translating the findings from Subra (2015), 504 people would experience odor events, 398 people would experience respiratory impacts, 325 people would experience sinus problems, and 218 people would experience sleep disturbances and/or severe headaches. In addition to the health impacts discussed above, this pollution can cause damage to agriculture and infrastructure. One study found that shale gas air pollution damages in Pennsylvania already amount to between \$7.2 and \$30 million, with compressor stations responsible for 60-75% of this total (Walker & Koplinka-Loehr, 2014). Using the low estimate of 60%, that is between \$4.32 and \$18 million in damages associated with compressor stations.”

In light of the many, significant adverse impacts outlined in this comment, the Corps must deny a Section 404 permit when issuing the permit would be “contrary to the public interest,” 33 C.F.R. § 320.4(a)(1). Given the lack of need, the self-serving interests of the PennEast companies (AGL Resources; NJR Pipeline Company; PSEG Power; SJI Midstream; Spectra Energy Partners; UGI Energy Services) to advance this project, the high level of environmental, community and economic harm that will be inflicted, the use of eminent domain purely for private gain, the threat and harms to the health, safety and natural resources of the communities impacted as well as to future generations, this project cannot be said to meet the standards for the Corps’ public interest review necessary to issue a 404 permit for the proposed Project.

II. PennEast's Proposed Project Conflicts With The Requirements Of A Water Quality Certification Issued Pursuant To Section 401 Of The Clean Water Act.

Both Pennsylvania's Chapter 105 Water Obstruction and Encroachment permit and New Jersey's Freshwater Wetlands Protection Act permit constitute the approval of a Water Quality Certification under Section 401 of the Federal Water Pollution Act (also known as the Clean Water Act or "CWA"). However, PennEast's proposed Project violates a number of the requisite conditions of Chapter 105 of the Pennsylvania Code and New Jersey's Freshwater Wetlands Protection Act pursuant to NJAC 7:7:A. (NJAC 7:7:A-2.1(d)) and therefore does not qualify for a Section 401 Water Quality Certification. The Corps may not issue a 404 permit for any project unless the project applicant secures and complies with a Water Quality Certification. As a result, any issuance of a section 404 permit by the Corps for the proposed Project is arbitrary, capricious, and an abuse of discretion.

CWA Section 401 authorizes the states to ensure that federal permits meet state water quality standards after a site specific environmental review. The CWA relies on the States to establish water quality standards that are approved by the United States Environmental Protection Agency. *See* 33 U.S.C. § 1342; *Arkansas, supra; PUD No. 1, supra*. The CWA also specifically preserves state law authority in certain respects to condition certification of water quality under state law standards in general and under NEPA. *See* 33 U.S.C. §§ 1341(d), 1370, and 1371(c).

Furthermore, CWA Section 401 forbids a federal agency from granting a "license or permit" unless the certification has been obtained or waived. *Id.* CWA Section 401 provides, "No license or permit shall be granted if certification has been denied by the State . . ." *Id.* Further, CWA Section 401(d) states that:

Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations, under section 1311 or 1312 of this title . . . and **with any other appropriate requirement of State law set forth in such certification** and shall become a condition on any Federal license or permit, subject to the provisions of this section.

33 U.S.C. § 1341(d) (emphasis added). *See PUD No. 1 of Jefferson County*, 511 U.S. at 707-708, 711 (explaining that Section 401(d) "expands the state's authority to impose conditions on the certification of a project," including "appropriate state law requirements.").

The State's authority under CWA Section 401(d) to condition a federal permit under state law has been broadly read to include conditions "affecting water quality in one manner or another." *American Rivers, Inc. v. FERC*, 129 F.3d 99, 107 (2nd Cir. 1997); *see also Roosevelt Campobello Int'l Park Comm'n v. US EPA*, 684 F.2d 1041, 1056 (1st Cir. 1982) (finding Maine's CWA Section 401 certification conditions to be appropriate requirements of state law and related to water quality). As noted by the U.S. Supreme Court:

State certifications under § 401 are essential in the scheme to preserve state authority to address the broad range of pollution, as Senator Muskie explained on the floor when what is now § 401 was first proposed:

No [person] will be able to hide behind a Federal license or permit as an excuse for a violation of water quality standard[s]. No [person] will be able to make major investments in facilities under a federal license or permit without

providing assurance that the facility will comply with water quality standards. No State water pollution control agency will be confronted with a fait accompli by an industry that has built a plant without consideration of water quality requirements.

S.D. Warren Co. v. Maine Bd. of Env'tl. Protection, 547 U.S. 370, 386 (2006). The Supreme Court noted that these “are the very reasons that Congress provided the States with power to enforce ‘any other appropriate requirement of State law,’ 33 U.S.C. § 1341(d), by imposing conditions on federal licenses for activities that may result in a discharge.” *Id.*

NJDEP and PADEP have already found PennEast’s application materials to be incomplete.

On April 26, 2017 the NJDEP issued a determination that the PennEast 401 application materials submitted to the state were significantly deficient and incomplete. Among the deficiencies were:

- Delineations of all freshwater wetlands, transition areas and open waters;
- Soil borings and/or other physical indicators of wetlands, transition areas or open waters;
- Other identified information pertaining to wetlands, open waters and transition areas;
- An amended Phase I Archaeological Survey Report investigating the entire proposed alignment for the PennEast Pipeline project occurring in the State of New Jersey.

Subsequently, on June 28, 2017, NJDEP determined the PennEast Pipeline Company’s application for state approval of its project to be “administratively closed” due to the company’s failure to remedy significant identified deficiencies and its failure to provide full information in a timely fashion for Clean Water Act decisionmaking. In its determination letter the NJDEP wrote:

“...given the complexity of the remaining deficient items, and the lack of demonstrated progress on the part of the applicant, it appears that it would be unlikely that an additional 60 days would allow substantial progress on the application. This application will be deemed ‘administratively closed’ as of the date of this letter.”

While the applicant did obtain a 401 Water Quality Certification on February 7, 2017, from the Pennsylvania Department of Environmental Protection (PADEP), the Delaware Riverkeeper Network is currently involved in ongoing litigation with the state over this determination and its failure to apply appropriate state standards for determining whether a 401 Water Quality Certification was proper. Multiple comments and expert reports attached to this comment outline the many ways in which the Project does not meet the requirements for 401 certification from PA.

Additionally, PADEP has also sent a series of three incompleteness review letters to PennEast for its Chapter 105 and Chapter 102 permits. Each of the letters has indicated the applications submitted are not yet considered to be complete by PADEP and that they cannot commence technical review until the applications are complete. The incompleteness letters were sent on April 26, 2016, and again September 19, 2016 and December 23 2016. On June 26, 2017, DEP received a request for an extension from PennEast Pipeline Company, LLC. PennEast requested additional response time to the December 23, 2016 incompleteness review letters, indicating that they “do not anticipate submitting the information requested to complete the applications until December 29, 2017.” On August 10, 2017, DEP granted the requested extension.

The missing information that PADEP requires for their Chapter 105 Water Obstruction and Encroachment Permits and Chapter 102 Erosion and Sediment Control permits are extremely relevant to the water quality impacts that the Corps is required to consider as part of its 404 public interest review.

a. The PennEast Pipeline does not meet the requirements necessary for a New Jersey 401 Certification pursuant to the Clean Water Act

The proposed PennEast Pipeline clearly cannot and will not meet the requirements necessary to secure a 401 Water Quality Certification from the State of New Jersey. Given the high level of harm the project will inflict on the water and wetland resources of the state and the absolute lack of need for the project in order to serve local, state or even national demand.

In order to secure 401 water quality certification from the State of New Jersey, the PennEast Pipeline company must meet the standards and procedures for securing a Freshwater Wetlands Protection Act permit from the State of New Jersey pursuant to NJAC 7:7:A. (NJAC 7:7:A-2.1(d)).

Given that there is no public, private, or compelling need for the gas to be carried by the proposed PennEast Pipeline, NJ regulations prohibit 401 Water Quality Certification.

New Jersey communities have no public or private need for the gas that would be delivered by the PennEast Pipeline, and certainly has no compelling public need for the gas. As noted in the attached expert report from Arthur Berman:

“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.”

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

Given that NJ has no need for the gas PennEast would carry and that delivery of the gas proposed by PennEast, if it in fact were to be delivered to NJ entities (PennEast has provided no evidence of where or who the specific final end users will be, and instead have only provided general assertions of broad markets) it would create a natural gas surplus in the state, the requisite demonstration of need pursuant to 7:7A-7.2(b)(1) & (12) and/or 7:7A-7.5 cannot be met. The natural gas needs of New Jersey are already being met and the public and private energy needs of New Jersey can now and in the near future be better met with clean energy alternatives that would have a less adverse impact on the environment, open waters and wetlands. As a result, the PennEast pipeline is not an appropriate candidate for a NJ 401 Water Quality Certificate.

The PennEast Pipeline would cause and contribute to violations of applicable State water quality standards and will cause and contribute to degradation of ground and surface waters. PennEast will also be unable to comply with the mandates of the stormwater management and flood hazard rules. These are among the reasons that NJ regulations prohibit 401 Water Quality Certification.

There are significant environmental impacts which result from pipeline crossing and construction activities regardless of mitigation techniques used. The list of impacts 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, wetland degradation, and cumulative environmental impacts along the length of the project. The proposed Project, would inflict severe and irreparable harm on NJ aquatic resources, vegetation, fish, wildlife, aquatic circulation, wetlands and hydrologic patterns. 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.

The PennEast company will impact 54 wetlands and 87 surface waterbodies. Many of the New Jersey waterways crossed/cut are Category One (C1) waters.

The proposed PennEast Pipeline project, as demonstrated by the installation of other pipeline projects in our region and nation, will create new pathways for water flow, thereby altering the hydrologic pattern of the watershed and adversely impacting (in both quantity, quality and seasonal timing) streams, wetlands and drinking water sources.

During the construction of the PennEast pipeline stream crossings there will be high levels of suspended sediments from blasting, trench excavation, and backfilling. Sedimentation will also result from the removal of vegetation and activity that takes place on the stream-adjacent (riparian) lands. The resulting sedimentation will have serious consequences for the benthic invertebrates and fish species whose vitality is crucial for healthy aquatic ecosystems – including, but not limited to, filling in the interstitial spaces of the streambed, changing its porosity and composition, and thereby increasing embeddedness and reducing riffle area and habitat quality. As with other pipelines, there will be 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. In addition to the stream crossing construction activity and the associated new road construction increases the risk of erosion and sedimentation.

Even in instances where the impacted benthic community restores itself, that does not diminish or negate the ecosystem affects during the time of damage including the other cascading affects 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.

Pipeline construction activity requires the clearing of vegetation in and around wetlands having degrading impacts. After construction the PennEast pipeline company will maintain the right-of-way along its length, including in wetland areas, by preventing woody vegetation from re-establishing. For forested wetlands this will mean a permanent conversion of the forested wetland to an emergent wetland. This conversion will adversely impact the functions and values of the impacted wetlands. 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 – this will be the outcome with the PennEast Pipeline as well if it is allowed to cut through NJ wetlands.

A functional conversion of wetlands from forested wetlands to emergent wetlands will result in decreases to above ground biomass, structural diversity of the wetland, and local climate amelioration. 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. Moreover, these conversions will cause an increased wetland exposure to wind, ice and sun, as well as the localized effects of global warming on biota. 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. As a result, erosion and sedimentation can be expected to increase as a result of the conversion. The function of storm damage shielding can also be expected to decrease as a result of this conversion. For each of the pipeline construction techniques there used there will be a resulting loss of riparian buffer vegetation, foliage, waterway protection and habitat. As a result the PennEast pipeline will fail to meet the buffer mandates of NJ regulations.

Pipelines have been seen by experts to be 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 will be no less true for the PennEast pipeline than every other pipeline that has cut through our ecological systems and communities. This alteration will decrease the water resources available to support wetland hydrology and stream base flow in the summer and fall dry season.

The compacted soils resulting from pipeline construction will increase rainfall runoff and reduce ground water infiltration further harming wetland hydrology and stream baseflow.

In addition the 84” total construction depth of the pipeline will, in a number of New Jersey communities, impact ground water through the disturbance of shallow bedrock, causing bedrock channels to close up wells or springs as much as a mile away. In addition, the blasting that will be needed for PennEast will have significant impacts for water resources that will be unavoidable.

The adverse impacts to wetlands, forests, and both surface and groundwaters is detrimental, far reaching and in many instances permanent. Recreation and aesthetic values of both the public and private lands and ecosystems impacted will be greatly diminished both near term and long term.

In addition, research is increasingly showing that there will be adverse economic impacts to private properties that will be cut by PennEast with some studies showing adverse impacts by as much as 30 to 50%. The harm to open space preservation is also significant – not only will the communities, aesthetic, recreational and ecological values of the open spaces crossed be diminished, but the future desire of communities to invest in open space preservation for the benefits of waterway, wetlands, aquatic life and wildlife live will also be undermined – who will want to invest in preserving land if they know it will be turned over to a pipeline company?

PennEast will have significant cumulative impacts on the water resources and ecological communities cut by the project and located adjacent to or downstream of it. The large amount of land disturbance created during pipeline construction results in increased stormwater runoff, sedimentation, and erosion of the land and stream channels. The disturbance of the land, including loss of forested and healthy ecological vegetation, the adverse impacts to wetlands, and the soil compaction that results from construction in both the permanent footprint as well as the supposed temporary construction areas, are permanent as is the water quality and ecological harm they inflict.

The capacity of NJ waterways and habitats to recover from the multitude of impacts inflicted by PennEast will most certainly be exceeded.

The cumulative impacts will not just result from the direct cuts and footprints across the landscape, but will be compounded by the resulting air pollution and climate changing impacts of the pipeline’s operation.

Additionally, the potential of pipelines to rupture and leak raises a greater risk of human health concerns and serious water contamination issues.

It is clear that the PennEast Pipeline cannot meet the mandates of 401 Water Quality Certification in New Jersey. Therefore, any concurrent issuance of a 404 permit by the Corps would be arbitrary, capricious, and an abuse of discretion.

III. The Project Information that The Corps' Relies on Fails To Provide An Adequate Baseline From Which A Public Interest Review Can Proceed

The Corps must also deny a Section 404 permit when issuing the permit would be “contrary to the public interest,” 33 C.F.R. § 320.4(a)(1). The Corps has utterly failed to properly designate wetlands pursuant to the Pennsylvania state code, properly identify and classify wetland types, and accurately account for the expected ground disturbance impacts that will result from the construction activity of the project. As a result, the Corps is unable to accurately establish a foundational baseline from which it can begin to balance the potential benefits of the project from its harms and costs in a public interest review. Therefore, any issuance of a 404 permit for the proposed Project would be arbitrary, capricious, and an abuse of discretion.

During a public interest review, the Corps must consider “all the facts” and then deny a permit if “the costs of the project outweigh[] its potential benefits and . . . the public interest would best be served by denying the permit.” *Buttrey v. United States*, 690 F.2d 1170, 1185 (5th Cir. 1982). To evaluate the project's effects on the public interest, the Corps must balance the “benefits which reasonably may be expected to accrue from the proposal” against the “reasonably foreseeable detriments.” 33 C.F.R. § 320.4(a)(1). This “careful weighing” considers “[a]ll factors which may be relevant to the proposal . . . including the cumulative effects thereof.” *Id.* As in any such analysis, “[s]imple logic, fairness, and the premises of cost-benefit analysis . . . demand that a cost-benefit analysis be carried out objectively.” *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983). For example, the Corps' public interest review may not “mention the positive anticipated impact of the proposal on jobs and municipal taxes” but “sidestep [] any consideration of adverse economic effects.” *Hough v. Marsh*, 557 F. Supp. 74, 86 (D. Mass. 1982).

The Corps' regulations list over twenty factors to evaluate during a public interest review, including “conservation, economics, aesthetics, general environmental concerns, [and] wetlands.” 33 C.F.R. § 320.4(a)(1). Every permit decision must also consider “the public and private need” for the work, “the practicability of using reasonable alternative locations and methods to accomplish the objective of the . . . work,” and “[t]he extent and permanence of the beneficial and/or detrimental effects” of the proposed project. *Id.* § 320.4(a)(2).

The Project information provided to the Corps by PennEast and FERC, as well as the limited information available in the Corps Public Notice of PennEast's 404 application, is filled with key data gaps, misrepresentations, misinformation, missing information, inaccurate information, false information, and conflicting information. As a result, the Corps is unable to accurately establish a foundational baseline from which it can begin to balance the potential benefits of the project from its harms and costs in a public interest review. Therefore, any issuance of a 404 permit for the proposed Project would be arbitrary, capricious, and an abuse of discretion.

Specifically, the FERC's EIS fails establish an accurate baseline from which a determination can be made regarding the significance of the impacts resulting from construction and operational activity of the Project,

the DEIS fails to examine the cumulative and induced development that would result from the approval of the Project, the DEIS improperly segments its environmental analysis with regard to other interdependent projects, the DEIS does not sufficiently account for climate change impacts, the DEIS's alternatives analysis is unlawfully narrow, and the DEIS fails to sufficiently establish need for the Project. Additional deficiencies are noted throughout this comment letter, and the attached expert reports. The quality of information cannot support any conclusion whatsoever.

The missing and inaccurate information is a fundamental failing of the Project materials, and it prevents the Corps, as well as other agencies and the public, from having the data and information they need to assess the impacts of the proposed pipeline on water resources, habitat, wildlife, drinking water and human communities. This comment and the attached reports contain many examples of assertions that are false, inaccurate, misleading and/or deficient, including, but not limited to:

Spot checks and field-truthing indicate inadequate and incomplete mapping of sensitive wetlands along the proposed ROW. Along one 0.5 mile of the proposed route in sensitive State Gamelands, at least 12 vernal pool complexes or groundwater seeps were identified while PennEast tables only indicate 2 vernal pool habitats along the same proposed route and no groundwater seeps.¹⁸¹

“72% of the proposed pipeline alignment in New Jersey and 23% in Pennsylvania has not yet been field investigated for wetlands and other water resources.”¹⁸²

“Importantly, the supporting documentation provided by PennEast fails to provide stream and wetland crossing information in a manner that allows FERC and other reviewing agencies to evaluate the site specific conditions at each stream crossing, including information discussed further in this memo. Important site specific information is located in different Resource Report volumes and other documents, and not easily correlated or evaluated. [...] The project selection of stream and wetland crossing locations and construction methods cannot be clearly evaluated in the form in which it is presented in the DEIS and supporting documents.”

In addition, it is clear that this DEIS cannot be relied upon by any government agency, not FERC, not the US Fish & Wildlife Service, not the U.S. Army Corps of Engineers, not the U.S. Environmental Protection Agency, not the NJ Department of Environmental Protection, not the PA Department of Environmental Protection, not the Delaware River Basin Commission for evaluation or decision-making purposes. And for any agency to do so would subject them to successful legal challenge.

The missing and inaccurate information is a fundamental failing of FERC's EIS, and it prevents other state, federal and regional watershed agencies, and the public from having the data and information they need to assess the impacts of the proposed pipeline on water resources, habitat, wildlife, drinking water and human communities. The DEIS is designed to help inform sound decision-making, in its current deficient and erratic state this document is worthless for assessment and decision-making purposes.

¹⁸¹ Delaware Riverkeeper Network. *Field-Truthing and Monitoring of the Proposed PennEast Pipeline, FERC Draft EIS, Docket No. CP15-558*, September 2016.

¹⁸² *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016; Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

The Corps must “independent[ly] verif[y]” the applicant's data and conclusions. *Utahns for Better Transp.*, 305 F.3d at 1186; *Sierra Club v. Van Antwerp*, 362 F. App'x 100, 106 (11th Cir. 2010) (“[T]he Corps may rely on information submitted by the applicant but must *independently verify such information.*” (emphasis added)). The Corps' duty of independent verification is especially strong when the Corps “receives particularized objections to material upon which it importantly relied in its review.” *Van Abbema v. Fornell*, 807 F.2d 633, 640 (7th Cir. 1986) *49 (considering a challenge to a Corps permit under NEPA). If the Corps bases its permitting conclusions on insufficient, unverified, or false information, the Corps' conclusions are “arbitrary and capricious.” *Id.* at 639 (holding the Corps may not base its conclusions on “entirely false premises or information”); *Utahns for Better Transp.*, 305 F.3d at 1187 (holding the Corps may not rely on insufficient information or unverified cost estimates).

As noted above, when the Corps is presented with particularized objections to the material on which it relies, as such, the Corps must independently verify the accuracy of the information on which it will base its decision. Without an accurate and verified baseline any public interest review contained in a decisional document issued by the Corps is arbitrary, capricious, and an abuse of discretion.

IV. Conclusion.

In addition to this comment and attached reports, the Delaware Riverkeeper Network incorporates by reference all information in the footnotes cited and all information provided by other commenters concerned about/opposed to construction, operation and maintenance of the PennEast pipeline.

For the reasons stated herewith the Delaware Riverkeeper Network respectfully requests that the Corps deny the pending 404 permit. In the alternative, we request that the Corps grant a public hearing to further evaluate the numerous unresolved issues and problems that riddle PennEast's application.

By: /s/ Maya K. van Rossum
[The Delaware Riverkeeper](#),
Delaware Riverkeeper Network
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Phone: (215) 369-1188

Attachments:

1. *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.
 - a. DRN Field Reports for Tennessee Gas 300 Line (Restoration Phase) –Dated 10/1/12 to 3/12/2013 (59 pages)
 - b. DRN Field Reports for Tennessee Gas Northeast Upgrade Project Dated 7/18/12 to 5/23/13 (60 pages)
 - c. DRN Letters to FERC and other agencies Regarding Mapping, Pollution and Construction Concerns from the Field (Subset)
 - d. NOV summary table of Pike County Conservation District Inspections and Violations
 - e. Selected Expert Reports
2. *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.
3. Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.
4. *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.
 - a. Table A Attachment to *Professional Review & Comment...*, Meliora Design, LLC, September 5, 2016
5. *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
6. *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016
7. *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016
8. Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.
9. *Opinion on the PennEast Pipeline*, Arthur Berman, Petroleum Geologist, Labrynth Consulting Services, Inc., September 11, 2016
10. *Professional Opinion of Proposed PennEast Pipeline Project*, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015
11. *Analysis of Public Benefit Regarding PennEast*, Skipping Stone, March 9, 2016
12. *Review of PennEast Pipeline Project Economic Impact Analysis*, Jannette Barth, Pepacton Institute, April 4, 2016

13. *Expert Report on the PennEast Pipeline Project Economic Impact Analysis for New Jersey and Pennsylvania*, The Goodman Group Report, Nov 4, 2015
14. *Report on Phase 1 Bog Turtle Survey for Wetlands Associated with Hunters Creek, Towamensing Township, Carbon County, Pennsylvania*, Jason Tesauro, September 5, 2015
15. *Cumulative Land Cover Impacts of Proposed Transmission Pipelines in the Delaware River Basin*, Lars Hanson and Steven Habicht, May 2016
16. *Pennsylvania Energy Impacts Assessment*, Nels Johnson, the Nature Conservancy, November 15, 2010
17. *Review of INGAA Foundation Report, "Pipeline Impact to Property Value and Property Insurability"*, Key-Log Economics, March 11, 2015
18. *Fulper Farm Grain Harvest Graphics*, 4 Images, 2008-2012
19. Table A-1. Active, proposed and reported natural gas wells in Pennsylvania, by county
20. *Marcellus/Utica on Pace for Pipeline Overbuild, Says Braziel*, Natural Gas Intelligence, June 8, 2016
21. *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
22. *A Bridge Too Far: How Appalachian Basin Gas Pipeline Expansion Will Undermine U.S. Climate Goals*, Oil International, July 2016
23. *Achieving Higher Quality Restoration Along Pipeline Rights of Way*, Leslie Sauer, May 2014
24. *Climate Change Impacts and Solutions for Pennsylvania*, Union of Concerned Scientists, 2008
25. *The Changing Northeast Climate*, Union of Concerned Scientists, 2006
26. *The Potential Environmental Impact from Fracking in the Delaware River Basin*, Steven Habicht, Lars Hanson, and Paul Faeth, August 2015
27. *Climate Change in Pennsylvania: Impacts and Solutions for the Keystone State*, Union of Concerned Scientists, October 2008
28. *Climate Change Impacts in the United States*, Radley Horton and Gary Yohe, May 2014
29. *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
30. *Natural Gas Price Increase Inevitable*, Art Berman, The Petroleum Truth Report, February 21, 2016

31. *Revealed: Contractors Hired by FERC to Review A New Spectra Energy Pipeline Work for Spectra on a Related Project*, Itai Vardi, Desmog, May 26, 2016
32. *Citizen Input Regarding the PennEast Pipeline*. Cara Bottorff & Spencer Phillips, PhD. Key-Log Economic, LLC. March 2017.
33. *Better Site Design: A Handbook for Changing Development Rules in Your Community*, Center for Watershed Protection, August, 1998.
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37. Dr. Emile DeVito, New Jersey Conservation Foundation, Email Correspondence Re: Tennessee Gas Pipeline practices. July 14, 2015.
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51. Delaware Riverkeeper Network Comments: Columbia Gas Line 1278 Line K Replacement in Special Protection Waters-DRBC Docket -D-2014-008-1
52. Emile DeVito, PhD. August 2016. Letter with supporting report and photographs from New Jersey Conservation Foundation to Norman Bay, Chairman, FERC.
53. Phillips et al, 2017, Exhibit xx
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63. *The Science on Shale Gas Development, A Survey of the Environmental Public Health Literature*, PSE 2016.
64. *Compendium of Scientific, Medical and Media Findings Demonstrating Risks and Harms of Fracking*, Physicians for Social Responsibility, November 17, 2016.
65. *Potential Environmental Impacts of Full-development of the Marcellus Shale in Pennsylvania*, Lars Hanson, Steven Habicht, and Paul Faeth, September 2016.
66. Delaware Riverkeeper Network Comment to US Fish and Wildlife Service, December 27, 2016.
67. Comments of the New Jersey Division of Rate Counsel
68. Sunoco Mariner East II - Pipeline Construction Inadvertent Returns - Waters of the Commonwealth

Exhibit C



June 22, 2019

District Engineer
U.S. Army Corps of Engineers, Philadelphia District
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390
Penneast-Comments@usace.army.mil

RE: Comment Letter: Public CENAP-OP-R –Re. CENAP 2014-00975– PennEast Pipeline Company’s PennEast Pipeline Project

To Whom It May Concern:

The Delaware Riverkeeper Network, and the Delaware Riverkeeper (collectively “DRN”) submit the following comments on the supplemental application for a Department of Army permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act with respect to the PennEast Pipeline Project (PennEast Pipeline) proposed by PennEast Pipeline Company, LLC (“PennEast”). Clean Air Council joins in these comments.

According to the Corps Public Notice, PennEast is proposing to construct 120.2 miles of new 36-inch diameter natural gas pipeline. The overall project will begin with two interconnects with existing intrastate natural gas pipelines (the Wyoming Interconnect at Mile Post 0.0 connects to an Energy Transfer Partners, L.P pipeline and the Springville Interconnect at Mile Post 0.3 connects to a Williams Partners pipeline) in Dallas Township, Luzerne County, Pennsylvania to a terminal point along the existing Transco Pipeline in Hopewell Township, Mercer County, New Jersey. The proposed overall project also includes the proposed 0.6 mile Blue Mountain lateral consisting of , the 2.1 mile Hellertown lateral consisting of 24-inch diameter pipe, the 0.6 mile Gilbert Lateral consisting of 12-inch diameter pipe, and the 1.5 mile Lambertville lateral consisting of 36-inch.

The project includes hundreds of stream and wetland crossings in the Susquehanna River and Delaware River watersheds. PennEast’s supplemental 404 permit application to the Army Corps Philadelphia District, as noticed in the May 23, 2019 Public Notice CENAP-OP-R re Application no. CENAP 2014-00975, includes four individual permits for four separate single and complete crossings of wetlands associated with the PennEast project:

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- IP 6 - Wetland complex (Carbon County).
- IP 7 - Wetland complex (Carbon County).
- IP 8 - Wetland complex and unnamed tributaries to Hokendauqua Creek (Northampton County).
- IP 9 – Wetland complex and unnamed tributaries to Bull Run (Northampton County).

However, the Corps cannot adequately evaluate the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest, on the 22 factors that it is required to consider as part of its public interest review per 33 C.F.R. § 320.4(a)(1)., including “conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people,” without considering these individual permits in the context of the Project as a whole. Additionally, the Corps relies heavily on the Project information provided by FERC’s FEIS which includes information for the Project as a whole, not just the individual permit areas described in Corps Public Notice. As such, this comment largely addresses the project-wide impacts of proposed pipeline. We also speak directly to the deficiencies of, and errors in, the EIS, (both the FEIS and the DEIS) thereby demonstrating that the Corps was not justified in relying upon this document for its decision-making.

PennEast’s Section 404 application for a permit from the United States Army Corps of Engineers (“Corps”) must be denied because:

- 1) The adverse effects of the proposed Project outweigh its potential benefits and do not meet the standards for the Corps’ public interest review;
- 2) the Project conflicts with the requirements of a Clean Water Act Water Quality Certification;
- 3) the Corps has failed to establish a baseline for its public interest review; and
- 4) FERC’s FEIS and the materials provided by PennEast continue to include inaccurate, false and misleading information and that the information provided is incomplete in significant and substantively important ways, and as such the Corps does not have the information it needs for informed or accurate decision-making.

The information that has been garnered from the Corps’ Public Notice, the FEIS materials, the filed resource reports, filings with other regulatory agencies, that were then vetted, analyzed and in some cases field verified by third party experts and DRN, demonstrates that this project will inflict substantial adverse environmental and community impacts regardless of implementation of the supposed mitigation recommended by PennEast or by FERC. In addition to the comments specifically discussed here, the expert reports filed here within include a number of factual and legal deficiencies that are provided and adopted by DRN and incorporated by reference. We note from the outset that while a number of our expert reviews and comments were directed to the Draft EIS (DEIS) as that was the FERC document subject to public comment, the comment referenced in those reports and included in this comment are just as relevant to final EIS documents, and other materials submitted by PennEast and/or relied upon by the Corps in making its assessments to date.

According to the FEIS, construction of the project will 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). According to the FEIS, the project will at least cut through 255 waterbodies (including 159 perennial, 45 intermittent, 40 ephemeral, 11 open water), 633 acres of forest, 91 wetlands,

impact “several” vernal pools, and infringe upon and damage habitat for threatened and endangered species of bat, sturgeon, snake, turtle, mussels and more. This comment and others will prove that these impacts are sorely understated, incomplete, and misrepresent the footprint and damage that would be inflicted if the PennEast pipeline were built.

I. The adverse effects of the proposed Project (even as deficiently described) outweigh its potential benefits and do not meet the standards for the Corps’ public interest review necessary to issue a 404 permit.

The Corps must deny a Section 404 permit when issuing the permit would be “contrary to the public interest,” 33 C.F.R. § 320.4(a)(1). During a public interest review, the Corps must consider “all the facts” and then deny a permit if “the costs of the project outweigh[] its potential benefits and . . . the public interest would best be served by denying the permit.” *Buttrey v. United States*, 690 F.2d 1170, 1185 (5th Cir. 1982). To evaluate the project's effects on the public interest, the Corps must balance the “benefits which reasonably may be expected to accrue from the proposal” against the “reasonably foreseeable detriments.” 33 C.F.R. § 320.4(a)(1). This “careful weighing” considers “[a]ll factors which may be relevant to the proposal . . . including the cumulative effects thereof.” *Id.* As in any such analysis, “[s]imple logic, fairness, and the premises of cost-benefit analysis . . . demand that a cost-benefit analysis be carried out objectively.” *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983). For example, the Corps' public interest review may not “mention the positive anticipated impact of the proposal on jobs and municipal taxes” but “sidestep [] any consideration of adverse economic effects.” *Hough v. Marsh*, 557 F. Supp. 74, 86 (D. Mass. 1982).

The Corps' regulations list over twenty factors (including “conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people,”) to evaluate during a public interest review, including “conservation, economics, aesthetics, general environmental concerns, [and] wetlands.” 33 C.F.R. § 320.4(a)(1). Every permit decision must also consider “the public and private need” for the work, “the practicability of using reasonable alternative locations and methods to accomplish the objective of the . . . work,” and “[t]he extent and permanence of the beneficial and/or detrimental effects” of the proposed project. *Id.* § 320.4(a)(2).

Even with the immense deficiencies and inaccuracies in the information found in the Corps Public Notice and the FERC FEIS, it is clear that the PennEast Pipeline will result in extremely adverse effects to almost every category that the Corps is required to consider, with or without the mitigation the Corps postures, given the reality of the harms to be inflicted. The probable adverse impacts, including cumulative impacts, of the proposed PennEast Pipeline and its intended use on the public interest, which are generally absent from the Corps’ Public Notice and FERC FEIS, are outlined below. These reasonably foreseeable adverse impacts far outweigh any benefits which reasonably may be expected to accrue from the proposal, making clear that the proposed project would be contrary to the public interest.

a. The adverse Economic effects of the Project on the public far outweigh any reasonably foreseeable benefit.

In its public interest review, the Corps is required to consider “all the facts” and then deny a permit if “the costs of the project outweigh[] its potential benefits and . . . the public interest would best be served by denying the permit.” *Buttrey v. United States*, 690 F.2d 1170, 1185 (5th Cir. 1982). To evaluate the project's effects on the public interest, the Corps must balance the “benefits which reasonably may be expected to accrue from the proposal” against the “reasonably foreseeable detriments.” 33 C.F.R. § 320.4(a)(1). This “careful weighing” considers “[a]ll factors which may be relevant to the proposal . . . including the cumulative effects thereof.” *Id.* As in any such analysis, “[s]imple logic, fairness, and the premises of cost-benefit analysis . . . demand that a cost-benefit analysis be carried out objectively.” *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983). For example, the Corps' public interest review may not “mention the positive anticipated impact of the proposal on jobs and municipal taxes” but “sidestep [] any consideration of adverse economic effects.” *Hough v. Marsh*, 557 F. Supp. 74, 86 (D. Mass. 1982).

According to a robust and thorough analysis of the economic impacts of the proposed Project conducted by Key Log Economics,¹ the adverse economic impacts (or costs to the public) would outweigh the economic benefits claimed by PennEast by up to \$54.3 billion:

“Adding up all one-time recurring costs, and discounting those future costs to 2017, we estimate the total external costs of PennEast Pipeline to be between \$13.3 and \$56.6 billion. By contrast, the pipeline would in the words of FERC’s DEIS provide only “minor” benefits in the form of economic impact during construction and operation of the pipeline. Using PennEast LLC’s own estimates (Econsult Solutions & Drexel University School of Economics, 2015) and applying the same methods to calculate the present value of all future benefits, the pipeline promises a total of \$2.3 billion in economic impact over 30 years of operation. This means for every dollar of benefit promised, the PennEast Pipeline would impose between \$5.85 and \$24.97 in costs.”

This disparity at the expense of the public interest, while likely greatly underestimated (as explained below), clearly demonstrates that the adverse impacts from the Project far outweigh the potential economic benefits of the Project and as such mandate that the Corps deny the permit.

As outlined below and explained in further detail in the accompanying expert analyses,² the construction and operation of the Project would greatly adversely impact the economic resources of the area, in both the near and long-term. The potential adverse environmental-economic effects include: effects on ecosystem service value, effects on property value, the social cost of carbon, effects on economic development, and other impacts not quantified such as public health impact and impact on county community services.

For each of these categories with quantifiable economic data available, expert analysis conducted by Key Log Economics found that the one-time and annual costs to the public that would result from the proposed Project would be:

Lost ecosystem service value (“the benefits nature provides to people for free”): such as for water and air purification, aesthetics, and recreation “that will become less available and/or less valuable due to the PE’s construction and operation.”

- o Over the one-year construction period (a one-time cost): **\$6.3 to \$22.1 million**

¹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

² *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

; See also letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

- o In the ROW and in other permanent infrastructure (annual): **\$2.6 to \$9.8 million**

Property value: “loss of private property value as owners and would-be owners choose properties farther from the pipeline’s right-of-way, evacuation zone, compressor station, and viewshed.”

- o Total property value lost (a one-time cost): **\$159.7 to \$177.3 million**
- o Resulting loss in property tax revenue (annual): **\$2.7 to \$3.0 million**

The social cost of carbon (the economic cost of harm associated with carbon emissions):

- o “The project would contribute to an equivalent of 21.3 million metric tons of carbon dioxide a year. Using a 5% discount rate, the social cost of carbon ranges from \$291.9 to \$608.1 million per year between 2019 and 2048. Using a 2.5% discount rate for the same time period, the social cost of carbon ranges between **\$1.5 and \$2.3 billion per year.**”³

Economic activity that depends on the region’s scenic, recreational, and quality-of-life:

(We consider scenarios in which visitor spending declines by 10% from current levels, and the rate of growth in retirement and proprietor’s income slows by 10%)

- o Annual loss of recreation tourism expenditures of \$448.0 million that would otherwise support 4,090 jobs and generate \$38.8 million in state and local tax receipts
- o Annual loss of personal income of \$55.6 million due to slower growth in the number of retirees
- o Annual loss of personal income of \$16.3 million due to slower growth in sole proprietorships

The analysis found that the total one-time and annual costs to the public that would result from the proposed Project would be:

Total estimated costs:

- o One-time costs (lost property value plus lost ecosystem service value during construction) would total between \$166.0 and \$199.4 million
- o Annual costs (costs that recur year after year) would range from \$5.3 to \$12.8 million PLUS the social cost of carbon, which varies by year, and ranges between \$291.9 million and \$2.3 billion per year
 - Present discounted value of all future annual costs (including the social cost of carbon): \$13.1 to \$56.4 billion
- o One-time costs plus the discounted value of all future annual costs: \$13.3 to \$56.6 billion”⁴

These estimates are conservative. These estimates are conservative because they do not represent all potential costs as several categories of cost cannot be directly quantified, such as the value of preserving the landscape, damages to human and environmental health and property in the event of leaks and explosions, and the lack of sufficient data to quantify the cost increase of community services such as emergency response and road maintenance. Additionally, many of the adverse economic impacts that would result from the Project have not been quantified but also must be considered by the Corps. These include community service costs, such as provision of public and private water, roads and traffic, emergency services, and law enforcement; as well as effects on economic development, tourism, recreation, retirement income, and jobs.

³ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

According to the Key-Log Economics analysis:

“If PE is built, there will likely be increases in the costs of community services, such as for traffic control and extra law enforcement capacity needed during construction and for emergency preparedness/emergency services during operation. As borough, township, city, and county governments, as well as volunteer fire companies meet these needs, costs for services would increase.”

Roads, traffic, and community services may be adversely impacted. As outlined in the Key-Log Economics Report:

“Damaged or worn-out roads, an increase in traffic volume involving those heavy vehicles, and an influx of out-of-area workers unfamiliar with local roads are also associated with increases in motor vehicle accidents (Muehlenbachs & Krupnick, 2014). Motor vehicle accidents impose a range of costs, from emergency response, medical care, time off of work, premature death, property damage, and the cost of time lost to traffic jams at accident scenes (National Highway Traffic Safety Administration, 2015).”

PennEast Pipeline Company has stated it will pay to restore roads damaged during construction, but it is up to individual municipalities to survey the state of their roads prior to construction to ensure that PennEast meets this promise. This cost of securing baseline information, then identifying the damage, and then pursuing and securing repair is all on local communities, as are the costs of the damage to vehicles inflicted by the damage while in disrepair.

Pipelines also pose new challenges to emergency responders, with fire and rescue teams devoting more time and resources to training, planning, and response to pipeline incidents. An investigation into a California pipeline rupture that killed eight people, injured several others, and destroyed 38 homes revealed that local responders were not prepared.⁵ There are significant time and resource costs in pursuing this training and planning that are not accounted for. In addition, the costs of actual response when there is an accident, incident or explosion are also not accounted for.

Law enforcement costs will also increase. In addition to responding to any increase in motor vehicle accidents due to increased traffic, research has shown an increase in crime in gas drilling areas. This kind of community and economic impact will translate to pipeline construction areas. As Key-Log Economics⁶ states:

“Furthermore, a multi-state analysis found that counties with high drilling had statistically significant increases in violent crime and property crime (Multi-State Shale Research Collaborative, 2014). Temporary out-of-state workers have been associated with increased arrests, traffic violations, protection-from-abuse orders, and warrants for people failing to appear in court (Associated Press, 2011).

PennEast expects 60% of their 2,400-person workforce to consist of non-local, temporary hires (Federal Energy Regulatory Commission, 2016b). While pipeline construction jobs will

⁵ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁶ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

come and go more quickly than gas field jobs, it is reasonable to assume, prepare for, and expect higher costs for additional law enforcement needs.”

The PennEast Pipeline Project will also have detrimental impacts in the areas of economic development, tourism, recreation, retirement income, and jobs.

Clean, high-quality environments are important to tourism and wildlife-related recreational activities and businesses in the communities that will be impacted by PennEast construction, operation and maintenance. In addition, several counties and regions include the importance of a clean environment and scenic and recreational amenities in their economic development plans – as a result PennEast will be an adverse impact to the businesses and recreational enjoyment present today as well as adversely impact and depress the economic and recreational uses in the future. The adverse impacts of a pipeline in a region that depends on tourism and outdoor recreation would not be in the public interest. In the Pocono Mountains, partially located in Carbon County, a study reported 25 million person-trips, totaling in about \$1.3 billion in spending.⁷

Because of community concern about the pipeline project, it is important to consider what impact this would have on retirement income. Key-Log Economics⁸ found that even a 10% growth rate reduction would mean a loss of \$55.6 million in investment income and age-related transfer payments.

This community concern also applies to people starting a new business or moving an existing business to the area. Jobs will be adversely affected by the pipeline project. Using the same 10% example as in the previous retirement income scenario, that 10% reduction in the rate of growth would mean 791 fewer jobs and \$16.3 million less in personal income.⁹

The Key-Log economic report describes how the economic impacts are not in the public interest, stating, “A loss of scenic and recreational amenities, the perception and the reality of physical danger, and environmental and property damage resulting from the PennEast Pipeline could discourage people from visiting, relocating to, or staying in the region. Workers, businesses, and retirees who might otherwise choose to locate along the PE’s proposed route will instead pick locations that have retained their character, their productive and healthy landscapes, and their promise for a higher quality of life.”

The community service costs for public and private water are discussed under “water supply and conservation” below.

Available estimates of the Project’s economic benefits are flawed, biased, and imbalanced. The economic benefits asserted by PennEast and FERC are indefensible and unsupported, and the economic harms are entirely overlooked.

In addition to the fact that the estimates of the adverse impacts or economic costs to the public provided here are conservatively calculated, it is also important for the Corps to consider, as part of its cost-benefit analysis required for a public interest review, that the estimated potential benefits of the project provided by PennEast and the FERC FEIS are inherently biased and imbalanced.

⁷ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁸ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

The economic analysis provided in FERC’s materials should not be relied on by the Corps in order to carry out the objective cost-benefit analysis required for a public interest review as FERC policy relies on applicants to provide information about benefits and costs, incentivizing the applicant “to be generous in counting benefits and parsimonious in counting the costs of its proposal.” This is reflected in the EIS, where “FERC has made no effort itself to ensure a full accounting of economic costs to landowners or the broader community despite the wealth of comments placed on the docket that could support such an assessment.”¹⁰

In addition, Key Log Economics’ analysis determined the estimates provided by PennEast to be based on flawed research and assumptions, and to avoid the inclusion of costs or adverse impacts to the economy necessary for a balanced review.

“PE LLC has published estimates of economic benefits in the form of employment and income stemming from the construction and operation of the PE (PennEast Pipeline Company, LLC, 2015b). These studies suffer from errors in the choice and application of methods and in assumptions made regarding the long-run economic stimulus represented by the PE. Most significantly, the studies make no mention of likely economic costs, and their projections of long-term benefits extend far beyond the time period (of a year or so) within which economic impact analysis is either useful or appropriate.”¹¹

FERC accepts this deficient and imbalanced analysis:

While the DEIS considers all presumed benefits advanced by PennEast, it ignores the economic damage inflicted to public health, property values, jobs, businesses and from the loss of ecosystem services.¹²

As determined in a careful analysis by Key-Log Economics,¹³ in short, the FERC EIS:

- 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.

In addition to providing exaggerated and false claims of benefit, the EIS ignores the economic harms inflicted by construction and operation of PennEast. Among its many deficiencies, the EIS analysis does not consider the adverse impacts to recreation and ecotourism so vitally important to the impacted region; the

¹⁰The policy’s stated objective “is for the applicant to develop whatever record is necessary, and for the Commission to impose whatever conditions are necessary, for the Commission to be able to find that the benefits to the public from the project outweigh the adverse impact on the relevant interests” J. J. Hoecker, et al. *Certification of New Interstate Natural Gas Pipeline Facilities*, 88 FERC, para 61, 227. 1999.

¹¹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017 and Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹² Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹³ In addition to the Key-Log Economics analyses attached see *Review of PennEast Pipeline Project Economic Impact Analysis*, Jannette Barth, Pepacton Institute, April 4, 2016 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 they ignored.

analysis fails to consider the implications for future investment in open space preservation and the adverse impacts thereof as communities realize that preserved lands are not protected from pipeline construction; the economic damage to agricultural crop production is overlooked as are harms to other businesses;¹⁴ the impact on market values and marketability of properties are misrepresented; the costs to the community to respond to emergencies, to the increased stormwater runoff, pollution inputs, and other adverse impacts that could result from this project and be foisted upon the shoulders of local towns and residents are given short shrift if they are mentioned at all; and the DEIS does not consider the health impacts to the residents who will be impacted by construction and operation of this project.

By way of more specific examples, the EIS analysis ignores the many and varied economic harms that would result from the construction, operation and maintenance of the PennEast pipeline. Attached is a detailed analysis of the many deficiencies provided by Key-Log Economics. Among the deficiencies highlighted in that report, and in other resources provided as part of this comment, the EIS fails to consider:

- **Public health costs:** “Based upon experience with other pipelines it can be anticipated that, for example, just in Carbon County where 560 people live within 2 miles of the proposed compressor station (US Census Bureau, 2015), there will be on the order of “504 people experiencing odor events, 398 people experiencing respiratory impacts, 325 people experiencing sinus problems, and 218 people experiencing sleep disturbances and/or severe headaches.”¹⁵
- **Reduced property values:** Of the comments reviewed by the Delaware Riverkeeper Network in partnership with Key-Log Economics, “35% mention concerns about the effect on property value. Of this group, 99.6% believe the effect on property value will be negative.”¹⁶

“68% of Realtors believe the presence of a pipeline would decrease residential property value.”¹⁷

“Of these Realtors, 56% believe the decrease in value would be between 5% and 10%. (Kielisch does not report the magnitude of the price decrease expected by the other 44%).”¹⁸

“70% of Realtors believe a pipeline would cause an increase in the time it takes to sell a home. This is not merely an inconvenience, but a true economic and financial cost to the seller.”¹⁹

¹⁴ We have learned from farmers, and it has been documented on the record, that crop production has gone down by as much as 30% when a pipeline cuts through farm crop lands. DEIS figures do not consider harms to other local businesses, such as the 7th generation nursery business reported in the press that said their ability to continue to operate would be harmed if PennEast passes through their property as is under consideration.

¹⁵ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹⁶ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹⁷ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹⁸ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

¹⁹ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

“In a survey of buyers presented with the prospect of buying an otherwise desirable home with a 36 inch diameter gas transmission line on the property, 62.2% stated that they would no longer buy the property at any price. Of the remainder, half (18.9%) stated that they would still buy the property, but only at a price 21%, on average, below what would otherwise be the market price. The other 18.9% said the pipeline would have no effect on the price they would offer.

Not incidentally, the survey participants were informed that the risks of “accidental explosions, terrorist threats, tampering, and the inability to detect leaks” were “extremely rare” (Kielisch, 2015, p.7). Considering only those buyers who are still willing to purchase the property, the expected loss in market value would be 10.5%. This loss in value provides the midlevel impact in our estimates. A much greater loss (and higher estimates) would occur if one were to consider the fact that 62% of buyers are effectively reducing their offer prices by 100%, making the average reduction in offer price for all potential buyers 66.2%.”²⁰

“Based on five “impact studies” in which appraisals of smaller properties with and without pipelines were compared, “the average impact [on value] due to the presence of a gas transmission pipeline is 11.6%”(Kielisch, 2015, p. 11). The average rises to a range of 12% to 14% if larger parcels are considered, possibly due to the loss of subdivision capability.”²¹

Research has also “found that properties within the ‘emergency plan response zone’ of sour gas wells and natural gas pipelines faced an average loss in value of 3.8%, other things being equal.”²²

Proximity to compressor stations has inflicted health harms, quality of life impacts and property damage, as well as lost property value, and has had impacts so severe that in at least one documented case it forced a family to abandon their \$250,000 investment in their home rather than suffer the health, safety and other harms they were experiencing.²³

“In Hancock, another New York town with a much smaller (15,000 hp) compressor station, three homeowners have had their property assessments reduced, two by 25% and one by 50%, due to the impact of truck traffic, noise, odors, and poor air quality associated with the compressor station (“Proximity of Compressor Station Devalues Homes by as Much as 50%” 2015).”²⁴

The experts at Key-Log Economics estimate that “properties within one half mile of the Kidder Township compressor station would lose 25% of their value if the station is built.” ... “[T]he Kidder compressor station would reduce the value of 43 properties by a total of \$1.9 million dollars.”²⁵

²⁰ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²¹ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²² Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis..

²³ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²⁴ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²⁵ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

- **Damage caused by air pollution to agriculture and infrastructure:** “One study found that shale gas air pollution damages in Pennsylvania already amount to between \$7.2 and \$30 million, with compressor stations responsible for 60-75% of this total (Walker & Koplinka-Loehr, 2014). Using the low estimate of 60%, that is between \$4.32 and \$18 million in damages associated with compressor stations.”²⁶
- **Loss of Ecosystem Services** The ecosystem services, “benefits that flow from nature to people”, that will be lost, for example, “tangible physical quantities, such as food, timber, and clean drinking water, life support functions like assimilating waste that ends up in air and water or on the land, as well as aesthetics, recreational opportunities, and other benefits of a more cultural, social, or spiritual nature.”²⁷

In addition, there is no recognition in the EIS for the decrease in property values associated with increased ecological impacts to the environment from PennEast. For example, 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.²⁸ 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.

The impacts to the market value and marketability of homes that will result from the removal of mature vegetation to make way for the pipeline (both permanent ROW and temporary construction areas that will not be fully restored) must also be fully and fairly considered. Healthy, mature, vegetated buffers along waterways are known to enhance property market values.²⁹ For example, "Pennypack Park in Philadelphia is credited with a 38% increase in the value of a nearby property."

In addition, "[t]wo regional economic surveys documented that conserving forests on residential and commercial sites enhanced property values by an average of 6 to 15% and increased the rate at which units were sold or leased."³⁰ And in a survey conducted by the National Association of Home Builders, 43% of home buyers paid a premium of up to \$3,000, 30% paid premiums of \$3,000 to \$5,000, and 27% paid premiums of over \$5,000 for homes with trees.³¹ To the extent the PennEast project will be cutting down forests and buffers and replacing them with low growing grasslands, and to the extent that the forest fragmentation caused by pipeline construction and maintenance will result in additional forest degradation

²⁶ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²⁷ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

²⁸ *Review of INGAA Foundation Report, “Pipeline Impact to Property Value and Property Insurability”*, Key-Log Economics, March 11, 2015.

²⁹ ECONorthwest (2018). *The Economic Value of Riparian Buffers in the Delaware River Basin*.

³⁰ Center for Watershed Protection, *Better Site Design: A Handbook for Changing Development Rules in Your Community*, Citing two studies by Morales and Weyerhauser, August, 1998.

³¹ Cheryl Kollin, *Designing with Nature and Showing the Benefits*, Land Development, National Association of Home Builders, Winter, 1997.

as far as 300 feet back on either side of the ROW, the impacts to home market values and marketability must be considered.

In addition, the economic analysis included in the EIS fails to consider the potentially superior economic benefits and values of a clean energy alternative for fulfilling energy needs in Pennsylvania, New Jersey and the unnamed surrounding states PennEast asserts it is seeking to serve. For example, investments in clean energy strategies are known to result in far superior job creation for every million dollars invested as compared to the oil and gas industry, including pipeline projects.

Research has demonstrated that investment in clean energy generates a greater number of long term jobs that bring greater capacity for workers earning and advancement. Every million dollars invested in clean energy, including wind, solar, eco-friendly water, and energy efficiency, generates 6 to 8 times the number of direct jobs, and 3 times the number of direct, indirect and induced jobs collectively as compared to oil, gas or coal.³²

FERC wrongly concentrates its determinations regarding pipeline certificate approvals largely on the contracts and the alleged reliability and accessibility proposed by the applicant without considering the economic costs articulated above –given that improper review, FERC’s failure to fully consider economic harms renders a decision flowing therefrom as arbitrary and capricious.

Overall, Key Log Economic’s analysis found the PennEast DEIS “to be greatly lacking both in the scope of economically relevant environmental effects considered and in the quality of the analysis of those few effects considered.”³³

While the Corps regulations state that “it will generally be assumed that appropriate economic evaluations have been completed, the proposal is economically viable, and is needed in the marketplace” when reviewing the permit application of a private enterprise, **“in appropriate cases [the district engineer], may make an independent review of the need for the project from the perspective of the overall public interest,”** recognizing that the economic impacts of many projects are “important to the local community [...] affecting such factors as **employment, tax revenues, community cohesion, community services, and property values.**” 33 C.F.R. § 320.4(q). (emphasis added).

Given that independent economic analysis found that the adverse economic impacts of the Project could outweigh the company’s claimed benefits by over \$50 billion³⁴; the economic evaluations and estimates provided by PennEast and the FEIS are shown to be biased, flawed, and unbalanced; and the extensive qualitative analysis provided here and in the abundance of public comments demonstrating adverse impacts to **employment, tax revenues, community services, and property values**, the proposed PennEast Pipeline project is clearly an appropriate case for the district engineer to undertake an independent review of the need for the project for the protection of the public interest.

In fact, in this case, there is significant evidence on the record challenging the claim of need for the project. (See comments below):

³² See *The Economic Benefits of Investing in Clean Energy*, by the Center for American Progress & PERI University of Massachusetts Amherst.

³³ Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

³⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

Additionally, the Corps is required to “independent[ly] verif[y]” the applicant's data and conclusions. *Utahns for Better Transp.*, 305 F.3d at 1186; *Sierra Club v. Van Antwerp*, 362 F. App'x 100, 106 (11th Cir. 2010) (“[T]he Corps may rely on information submitted by the applicant but must *independently verify such information.*” (emphasis added)). The Corps' duty of independent verification is especially strong when the Corps “receives particularized objections to material upon which it importantly relied in its review.” *Van Abbema v. Fornell*, 807 F.2d 633, 640 (7th Cir. 1986) *49 (considering a challenge to a Corps permit under NEPA). If the Corps bases its permitting conclusions on insufficient, unverified, or false information, the Corps' conclusions are “arbitrary and capricious.” *Id.* at 639 (holding the Corps may not base its conclusions on “entirely false premises or information”); *Utahns for Better Transp.*, 305 F.3d at 1187 (holding the Corps may not rely on insufficient information or unverified cost estimates).

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, and that those costs are being advanced for a project for which there is no genuine need. The Corps must deny the Projects 404 permits as the project is clearly contrary to the public interest.

b. The Project would offer only adverse impacts to the conservation of a variety of resources important to the public good.

The proposed project offers no net benefits to conservation in the area of the project and greatly disrupts the conservation of a variety of resources, such as established forest ecosystems and habitats, wetlands, aquatic ecosystems, vulnerable or high value habitats and species, including many swaths of lands thought to be permanently preserved through both public and private means in the deliberate and concerted effort to conserve the resources of the region.

The adverse impacts to the conservation of these resources that would result from the Project are serious and often permanent. Ecological destruction and/or irreparable damage results from tree clearing, land clearing, soil compaction, crossing of wetlands and waterbodies, and from construction and maintenance activities. These adverse impacts have cascading detrimental effects on the environment and public good.

According to PennEast and the FEIS, construction of the project will 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). According to the FEIS the project will at least cut through 255 waterbodies (including 159 perennial, 45 intermittent, 40 ephemeral, 11 open water), 633 acres of forest, 91 wetlands, impact “several” vernal pools, and infringe upon and damage habitat for threatened and endangered species of bat, sturgeon, snake, turtle, mussels and more. However, as demonstrated in this comment, these impacts are sorely understated, incomplete, and misrepresent the footprint and damage that would be inflicted if the PennEast pipeline were built.

By way of illustrating resources of high public value whose conservation will be adversely affected, Key Log Economics’ technical report³⁵ found that:

The route would cross important waterways such as the Delaware—the longest undammed river east of the Mississippi, Lehigh, and Susquehanna rivers, pristine streams, the Appalachian Trail,

³⁵ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017. \

wetlands, forests, and established public and private conservation lands. The D&R Greenway Land Trust estimates that the proposed route in New Jersey “will touch lands that have been preserved over time with public funding totaling over \$37 million” (D&R Greenway Land Trust, 2015). In addition, the project would potentially harm the habitat of several federally listed endangered species (Federal Energy Regulatory Commission, 2016b).

The variety of harms that would result from the proposed cuts through preserved open space must be fully and fairly considered—whether the open space is preserved by purchase or conservation easement. The protection of open space is necessary to preserve the remarkable resources of the Lower Delaware River corridor. Natural areas are critical for water quality, have more stable soils, provide habitat for plants and animal species, prevent invasive species spread, and help maintain the value of historical sites. Loss of open space adversely impacts water quality, aquatic habitat, and the intact ecological health that is otherwise benefitted by the preserved open space. Pipeline passage through open space significantly reduces scenic character and recreational opportunities thereby adversely impacting jobs and economic benefits associated with recreation, vacation and other related industries. Realtors in the region have asserted at public meetings and through the survey indicated above that the presence, or even the potential presence, of an interstate transmission pipeline of the size proposed by PennEast adversely impacts the marketability of nearby homes. The Corps must fully and fairly consider these harms and require quantifiable and documented data to support any assertions/findings.

There are impacts from the fragmentation of the forest by PennEast as well as by other cuts in the same region by other pipelines and/or linear projects. Over the life of the pipeline, maintenance of the ROW will result in new impacts as well as perpetuate ongoing harms. Operation and maintenance of the pipeline will include the prevention of tree growth and maintenance of low growing vegetation only – this will be accomplished by periodic mowing and the use of herbicides. The mowing will disturb the vegetation and habitats that were allowed to encroach on the ROW. The herbicides will include impacts for non-target species, and could have implications for soil microbes and nearby wetland, vernal pool and stream ecosystems. Maintenance activities will involve periodic trimming, pruning, cutting back and removal of trees and woody vegetation growing along the perimeter of the ROW. “The inspection and maintenance of the ROW means the repetitive access and traverse of the ROW by inspection vehicles and maintenance equipment. This increases overall soil compaction and because there are no stabilized access-ways, it also creates repeated opportunity for soil erosion.”³⁶

Forest ecological systems would experience enduring but also fresh impacts throughout the life and presence of the pipeline. The initial impact will include the removal of the forest and understory vegetation, coupled with the changes in light, moisture, wind, etc. impacting 300 feet into the forest on either side of the ROW footprint. There will be enduring compacted soils, and dramatically altered vegetative composition along the ROW and along that forest edge that will increase volume and alter the timing of stormwater runoff, reduce groundwater recharge, and change/take habitats for species of all kinds. There will then be the influx of invasive plant and animal species that will have cascading impacts on the forest ecosystem, which will spread along the ROW and back into the core of the adjacent forest.

The loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events and flooding, resulting in the loss of riparian lands (including floodplain) and exacerbating the sedimentation impacts of construction. As noted by experts, the deforestation caused by the PennEast pipeline will result in increased stormwater runoff; this will result in increasing flows in the

³⁶ See the FERC Draft EIS.

stream with stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Increased erosion means loss of habitat; channel migration that can have serious implications for riparian lands and vegetation over long stretches and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel; and increased instream sedimentation which is considered a pollutant both legally and scientifically. Additionally, 44 dry stream crossings will impact Conservation Areas and Public Lands, and 14 dry stream crossings will impact areas held in private conservation easement.³⁷

The PennEast Pipeline will be cutting down hundreds of acres of forest. “Fifty-seven percent of the pipeline right-of-way area, or approximately 446 acres, is currently forested and will permanently be altered from forest during pipeline operation. An additional 139 acres of forest will be removed for construction.”³⁸ In forested areas the habitat loss will not just be in the immediate footprint of the pipeline, but it will impact an additional 300 feet of forest on either side of the ROW.³⁹ This means that for every mile of pipeline cut through a forest an additional 72 acres of forest will be harmed. In addition, the pipeline will irreparably alter a tremendous number of wetlands (how many is unclear, as this comment and our attached reports document the incredibly inaccurate, misleading and deficient job PennEast and FERC, through the EIS, did on assessing wetland impacts), including their changing functions and values. The result will be to reduce available bird habitat, nesting grounds and feeding grounds, to impact bat species as well as a number of amphibians and mammal species.

PennEast’s minimal mitigation measures will not come close to negating the adverse impacts to conservation. PennEast will only be required to “ensure that the soils are stable and is under no regulatory obligation to restore soil to pre-construction conditions.” “[T]hese changes in the properties of the soils along the pipeline and within the pipeline ROW will contribute to the predicted increases in the volume and rate of runoff. Along the entire length of the 115.1-mile long pipeline, these changes in the post-construction hydrology of the affected lands (especially the steeper sloped areas) will invariably alter runoff properties. The end result will be impacts to the streams, wetlands and riparian areas traversed by the pipeline and pipeline ROW and increased opportunity for erosion along the steeper segments of the pipeline and pipeline ROW. Because PennEast is not required to implement any of the conventionally utilized best management measures to collect, treat and control ROW runoff, there is no way to mitigate for these changes other than to revegetate. However, once again the cover type will be different pre to post-construction (e.g. trees to grass) and PennEast is only obligated to achieve 80% post-revegetation coverage with the vegetation type it is using.”

This is only an overview of the many and cumulative adverse impacts that will affect the conservation of resources in the area. The attached expert reports provide further details and specificity of these impacts—although it is impossible to quantify them all given the lack of survey access along the proposed route and the deficient information provided by PennEast, FERC, and the Corps on the record. However, based on the scale of the project, the magnitude of severe, unavoidable, unmitigatable, and irreversible

³⁷ *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.

³⁸ *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.

³⁹ *Pennsylvania Energy Impacts Assessment*, Nels Johnson, the Nature Conservancy, November 15, 2010; 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.

adverse impacts to greenfield land, forests, wetlands, waterways and other resources of great importance to the public interest—it is clear that any benefit from the minimal mitigation, compensation, and restoration plans offered by PennEast will be outweighed by the adverse impacts to conservation of vital resources.

c. The Project will adversely impact the Aesthetics of the region.

There are no conceivable aesthetic benefits that could result from the proposed Project. However, many detrimental impacts to the regional aesthetics have been identified and, in some cases, quantified or mapped.

The Project would adversely affect the public’s viewshed along the pipeline corridor:

Beyond the areas where the proposed pipeline would alter land use and present the risk of physical danger, the pipeline would change the aesthetic qualities of the region. Residents and visitors will see the pipeline corridor as a break in a once completely forested hillside, and the lower aesthetic quality would translate into further loss of value for properties from which the corridor is visible.⁴⁰

In measuring its ecosystem value, aesthetic value is defined as “the role that beautiful, healthy natural areas play in attracting people to live, work, and recreate in a region.” The monetary effect of lost aesthetic value, an ecosystem service enjoyed by the public, along the pipeline corridor can be quantified. Below are excerpts from the attached Key Log report demonstrating the value of aesthetic losses due to construction and operation of the pipeline.:

Ecosystem Service	Study Region			
	Baseline (low) (2015\$)	Loss (low) (2015\$)	Baseline (high) (2015\$)	Loss (high) (2015\$)
Aesthetic Value	4,074,427	(4,074,427)	16,294,264	(16,294,264)

Table 1. Ecosystem Service Value Lost to the Construction Corridor, New Temporary Roads, Pipeyards, and Temporary Aboveground Infrastructure, Relative to Baseline, by Ecosystem Service.⁴¹

Ecosystem Service	Study Region			
	Baseline (low) (2015\$)	Loss (low) (2015\$)	Baseline (high) (2015\$)	Loss (high) (2015\$)
Aesthetic Value	1,770,919	(1,707,351)	7,092,570	(7,013,190)

Table 2. Ecosystem Service Value Lost Each Year Post Construction in Right-Of-Way, Relative to Baseline, by Ecosystem Service.⁴²

⁴⁰ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴¹ Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴² Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

Ecosystem Service	Study Region			
	Baseline (low) (2015\$)	Loss (low) (2015\$)	Baseline (high) (2015\$)	Loss (high) (2015\$)
Aesthetic Value	150,016	(150,016)	603,428	(603,428)

Table 3. Ecosystem Service Value Lost Each Year Post Construction in Permanent Infrastructure, Relative to Baseline, by Ecosystem Service⁴³

The visual effects felt by the adverse aesthetic impact of the pipeline corridor have far-reaching effects on the surrounding region. For the purpose of this study, the economic loss from adverse aesthetic impacts was calculated only within the footprint of the pipeline corridor. However, the visual effects felt by the surrounding community are also considered:

Utility corridors from which power lines are visible decrease property values (by 6.3% in one study) (Bolton & Sick, 1999). This suggests that a pipeline corridor reduces property value either by impairing a good view or, like power lines, by simply being unattractive. It is reasonable to conclude that the proposed PE would have effects on property value due to the visual effects⁴⁴

The *Visibility of the Proposed PennEast Pipeline* map below illustrates the places where the pipeline would be visible in the study region that might suffer a portion of lost aesthetic value. This analysis shows that:

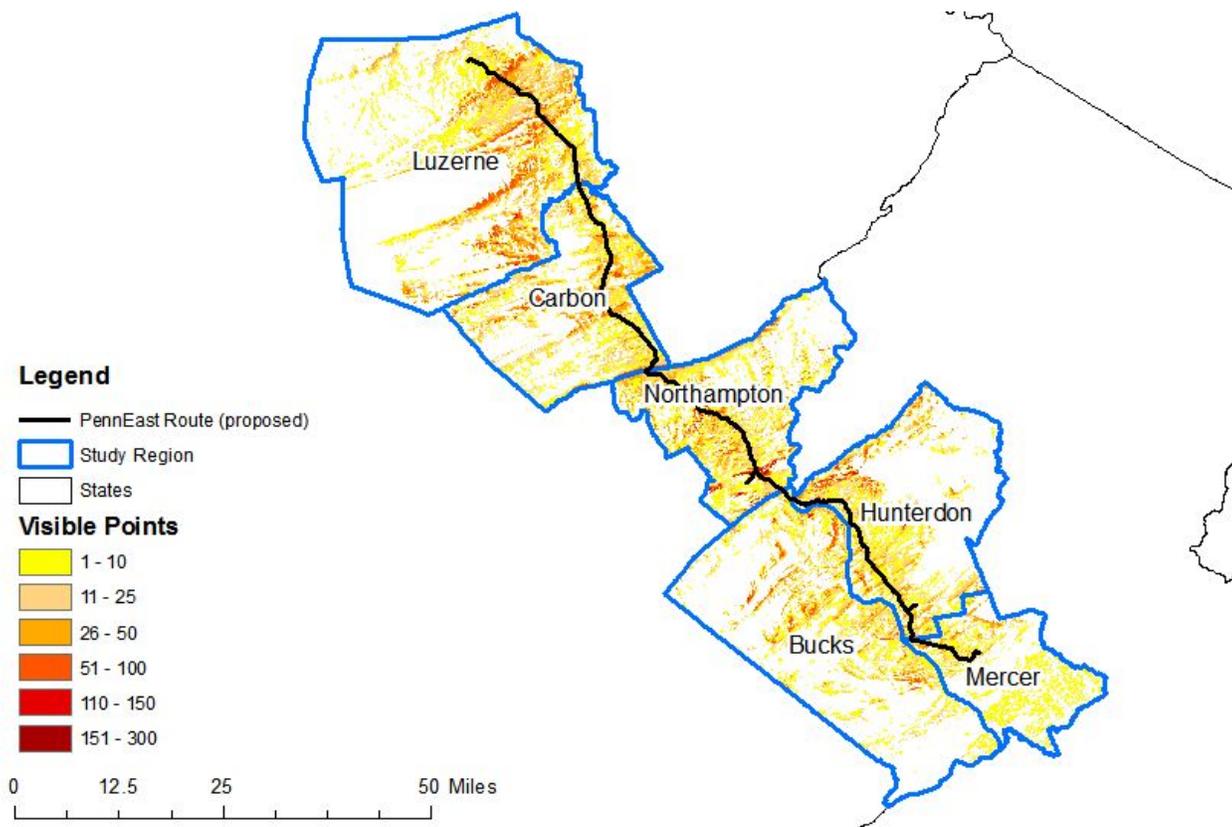
- “there are places in the study region where 30 km, or 18.6 miles, of the pipeline corridor could be visible”⁴⁵
- “it would be possible to see at least one point (representing 100m) along the ROW from 36% of the six-county study region. For this 36% of the region, an average of 1.8 km (1.1 miles) of the PE ROW would be visible. For 20% of the study region, seeing 10 or more points, or 1 km (0.62 miles) of the ROW is possible.”⁴⁶
- It is important to note that the concept of “out of site and out of mind” can wreak havoc on our natural waterbodies, wetlands and forests and the overall health of the watershed – often pushing pipeline corridors in more rural or remote areas where property values are not as high but where healthier habitats remain. This often puts pipelines or can redirect pipelines through re-routes in the intact forests and in remote places with steep slopes and high quality and exceptional value streams and wetlands and public preserved lands or DCNR lands ultimately putting an enormous tax on our public trust and wild spaces that remain.

⁴³ Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴⁵ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴⁶ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.



Visibility of the Proposed PennEast Pipeline⁴⁷

The color of each point on the map indicates the number of waypoints, spaced 100m apart, along the PE route and within 25 miles that could be seen from each point. Note that the analysis is based on elevation only and does not take into account the extent to which buildings or trees may mask views of the pipeline corridor.

Sources: PE route obtained from the Delaware Riverkeeper Network; Counties from USGS (U.S. Department of Interior & U.S. Geological Survey, 2015).

Diminished aesthetic value has clear and cascading region-wide effects on the public interest and human wellbeing:

Beyond the loss of ecosystem services stemming from the conversion of land in the ROW, the loss of property value resulting from the chance of biophysical impacts (leaks and explosions), or the certainty of impacts on aesthetics, the proposed PE would also diminish physical ecosystem services, scenic amenity, and passive use values that are realized or enjoyed beyond the evacuation zone and out of sight of the pipeline corridor. The people affected include residents, businesses, and landowners throughout the study region, as well as past, current, and future visitors to the region. The impacts on human well-being would be reflected in economic decisions such as whether to stay in or migrate to the study region, whether to choose the region as a place to do business, and whether to spend scarce vacation time and dollars near the PE instead of in some other place.⁴⁸

Economic impacts of the cascading detriments to the public interest from the loss of aesthetic impacts of the Project are predicted to include:

⁴⁷ Adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁴⁸ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

- o Economic activity that depends on the region’s scenic, recreational, and quality-of-life:
 - Annual loss of recreation tourism expenditures of \$448.0 million that would otherwise support 4,090 jobs and generate \$38.8 million in state and local tax receipts
 - Annual loss of personal income of \$55.6 million due to slower growth in the number of retirees
 - Annual loss of personal income of \$16.3 million due to slower growth in sole proprietorships⁴⁹

Additional examples of adverse aesthetic impacts that would result from the proposed Project include:

- 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. Property values are demonstrably harmed by the presence of a pipeline.⁵⁰ 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.
- The crossing of the Appalachian Trail by the proposed route is in a section that is only feet away from a scenic overlook and cliff outcropping – it is hard to imagine a more damaging location for harming this important recreational and cultural resource. This area is also prime timber rattlesnake habitat.

The adverse impacts to the aesthetics of the region created by the Project are not caused by the appearance of the pipeline itself, “but rather the gap or break in otherwise intact forests, farm fields, or other more natural features through which the ROW passes.”⁵¹ As a result, the adverse impacts to aesthetics are impossible to mitigate as long as the pipeline ROW is maintained, and likely long after. Claims that aesthetic impacts can be mitigated by measures such as allowing temporary work spaces or additional temporary work spaces to revert to pre-construction conditions are misleading as this would do nothing to mitigate the visual impact of the unavoidable ROW that must be maintained according to the industry.

The adverse and unmitigatable impacts on aesthetics that would result from the proposed Project would clearly be a detriment to the public interest and are reason enough for the Corps to deny the Project 404 permits.

d. The proposed Project would adversely affect a significant number of General Environmental Concerns that would have a detrimental impact on the public interest and public trust.

The proposed Project would have extremely adverse impacts on many general environmental concerns that are crucial to the public interest. There are no beneficial impacts to general environmental concerns that would result from the proposed project. While there are too many adverse impacts to the environment generally to list them all here, the following are a sample of the many detriments the project would have on the environment. Many more examples can be found in the expert reports attached to this comment, although not all of the adverse impacts from the project can be identified because of the substantial data gaps and deficiencies in the Project materials.

⁴⁹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

⁵⁰ *Review of INGAA Foundation Report, “Pipeline Impact to Property Value and Property Insurability”*, Key-Log Economics, March 11, 2015

⁵¹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

Project construction and maintenance activities, including clearing, grading, trench excavation, backfilling, and movement of construction equipment along the ROW and access roads would lead to a large number of adverse impacts on the environment including soil compaction, removal of vegetation, increased stormwater runoff and decreased groundwater recharge. These can cause increased soil erosion in and into waterways and wetlands, increased thermal impacts, reduced stream baseflow, reduced wetland baseflow, changes in hydrology, lost habitat, increased invasive species, polluted runoff into waterways and wetlands, disruptive noise pollution, air pollution, nuisance recreational users of the pipeline such as ATVs, among many other adverse impacts to the environment. All of these impacts are directly harmful in the locations where construction, operation and maintenance occur, but also create much more significant adverse harms when considered cumulatively. The Corps is required to consider cumulative impacts in its 404 evaluation.

All of these adverse environmental effects would have a directly negative impact on the public interest through the loss of vital resources and ecosystem services we rely on, as well as the cascading effects that would result.

- 75% of the stream crossings will be undertaken using open cut methods. Many of the streams that will be open cut have the highest quality designations available in Pennsylvania and New Jersey.
- Compacted soils in and around the pipeline right of way, accompanied by low growing plants (to the degree they are able to grow in the compacted soils or under PennEast's ROW management protocols) will result in increased runoff to nearby streams, thereby increasing flows that impact downstream communities in terms of flooding, erosion, habitat and water quality impacts.
- Compacted soils and lost or altered vegetation will decrease groundwater recharge. In addition, the presence of the pipeline will alter the flow path of some groundwater systems. The result will be to reduce and/or diverting water from streams and wetlands diminishing and denying needed base flow. Reduced baseflow will adversely impact water quality, habitat, and recreation. The cumulative impact of these harms across the pipeline and multiple pipelines for affected waterways and wetlands could be significant depending on the harm being evaluated. In addition to adversely impacting stream and/or wetland base flows, drinking water supplies/aquifers could be adversely impacted, losing the historic water recharge they receive.

Additionally, blasting activities used for the construction of the Project leave behind “nitrogen which can run off with stormflow and enter streams as nitrate or ammonia.”⁵²

PennEast and FERC suggest that compliance with standard regulatory requirements and/or mitigation measures will avoid anticipated harms. But we know from experience and past harms along other pipeline projects this is woefully not the case, and so the Corps needs to more intentionally and carefully consider proposed plans. For example, PennEast and FERC state that completed Erosion & Sediment (“E & S”) Control Plans by agencies will adequately avoid harms but this is a false conclusion as can be seen on other pipeline projects where severe sediment pollution harmed local waterbodies, many of which had special protection designations.⁵³ Most agencies require quick establishment of groundcover to stabilize soils which takes the place of establishing more desired and diverse native habitats, biodiversity and soil health is lost. Once soil chemistry, soil porosity, and soil layering (horizons) that took eons to form are destroyed by the

⁵² ECONorthwest (2018). The Economic Value of Riparian Buffers in the Delaware River Basin.

⁵³ Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

construction process, erosion control measures usually require lime and fertilizer to be applied so that seed mixes grow rapidly. The addition of lime and fertilizer are like poison to what were once forest soils of low pH and low nutrients. This essentially ruins the chance that the soil will ever revert to a native plant community again. Alien invasive weeds of all kinds thrive on the nutrient-enriched, topsy-turvy soil layers in the aftermath of construction. Native herbaceous plants and shrubs almost never outcompete weeds in these altered, nutrient-enriched, high pH soils. Just like on abandoned farmland, these construction sites act as "post-agricultural soils," and just like our abundant forests on post-agricultural soils, the herbaceous and shrub layers will be dominated by alien weeds virtually forever, especially with overabundant deer in the equation.⁵⁴

By way of further example, FERC and PennEast presume "that there is no difference between the hydrologic response of a forested woodland and the compacted, post-construction pipeline right-of-way." As a result, there is no consideration of construction practices to avoid or mitigate the harms inflicted on these natural resources and thereby prevent the ecological harm that will result in the form of lost habitat, increased stormwater runoff, reduced groundwater infiltration and recharge, inability of vegetation to regrow etc. The mitigation measures proposed by the PennEast Pipeline will not negate these serious adverse effects to the environment. As explained by Meliora Design:

"Compaction in construction work spaces will not be restored by simply regrading to pre-existing contours, retiling at the surface, and reseeding the area as currently outlined in the permit application materials. Heavy equipment used in the construction of the pipeline will inherently compact work areas to depths deeper than conventional surface tilling can reach. Compaction creates conditions that inhibit the germination of plants and plant root growth. Existing topsoil will not be segregated and restored, but will be lost in the construction process. The establishment of vegetative cover within the pipeline ROW will be more difficult once surface soils are compacted, and forested woodland will not be restored."⁵⁵

"When vegetation regrowth is limited, the likelihood of accelerated erosion is increased. When runoff cannot infiltrate, is not slowed at the surface by vegetation, and has direct contact with exposed soils, sediments are much more likely to be transported to downhill streams and wetlands. This is of specific concern on significant portions of the pipeline right-of-way in proximity to stream crossings, where soils to be disturbed by pipeline construction are classified as Severe Erosion Potential (79), Poor Vegetation (122), and Rugged Terrain with slopes greater than 30% (28). These areas are especially prone to erosion and sediment transport to waterbodies."⁵⁶

Cumulative Impacts Must be Considered on a Sub Watershed Scale.

The Corps cumulative impacts assessment should be considered across a broad range of environmental and community harms (e.g. air, water, wetlands, habitat, forest, floodplain, water quality, drinking water

⁵⁴ Dr. Emile DeVito, New Jersey Conservation Foundation, Email Correspondence Re: Tennessee Gas Pipeline practices. July 14, 2015.

⁵⁵ *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

⁵⁶ *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

supplies, health, safety, climate change, economics). Consideration of the multiple cuts proposed by PennEast on a subwatershed scale is required. FERC has not assessed the cumulative impact of multiple cuts on a subwatershed scale. Therefore, the Corps will need to conduct its own independent analysis and subject that analysis to public comment.

Cumulative impacts must be assessed by ecological system type – e.g. forests, wetlands, species habitat.

Cumulative impacts of the pipeline construction, operation, and maintenance on impacted ecological systems must also be considered. The Corps should evaluate the cumulative impacts to key ecological systems, over the lifetime of the pipeline, from construction through operation and including maintenance activities. For example, forest ecological systems would experience enduring but also fresh impacts throughout the life and presence of the pipeline. The initial impact will include the removal of the forest and understory vegetation, coupled with the changes in light, moisture, wind, etc. impacting 300 feet into the forest on either side of the ROW footprint. There will be enduring compacted soils, and dramatically altered vegetative composition along the ROW and along that forest edge that will increase volume and alter the timing of stormwater runoff, reduce groundwater recharge, change/take habitats for species of all kinds. There will be the influx of invasive plant and animal species that will have cascading impacts on the forest ecosystem, which will spread along the ROW and back into the core of the adjacent forest, and may introduce invasives into a region that could spread to other intact forest systems in the area but not directly on the PennEast pipeline route. There are the impacts of the fragmentation of the forest by PennEast but also by other cuts in the same region by other pipelines and/or linear projects. Over the life of the pipeline will be the maintenance of the ROW which will include the prevention of tree growth and maintenance of low growing vegetation only – this will be accomplished by periodic mowing and the use of herbicides. The mowing will disturb the vegetation, habitats and species along and nearby the ROW. The herbicides will include impacts for non-target species, and could have implications for soil microbes and nearby wetland, vernal pool and stream ecosystems. Maintenance activities will involve periodic trimming, pruning, cutting back and removal of trees and woody vegetation growing along the perimeter of the ROW. “The inspection and maintenance of the ROW means the repetitive access and traverse of the ROW by inspection vehicles and maintenance equipment. This increases overall soil compaction and because there are no stabilized access-ways, it also creates repeated opportunity for soil erosion.” PennEast will only be required to “ensure that the soils are stable and is under no regulatory obligation to restore soil to pre-construction conditions.” “[T]hese changes in the properties of the soils along the pipeline and within the pipeline ROW will contribute to the predicted increases in the volume and rate of runoff. Along the entire length of the 115.1-mile long pipeline, these changes in the post-construction hydrology of the affected lands (especially the steeper sloped areas) will invariably alter runoff properties. The end result will be impacts to the streams, wetlands and riparian areas traversed by the pipeline and pipeline ROW and increased opportunity for erosion along the steeper segments of the pipeline and pipeline ROW. Because PennEast is not required to implement any of the conventionally utilized best management measures to collect, treat and control ROW runoff, there is no way to mitigate for these changes other than to revegetate. However, once again the cover type will be different pre to post-construction (e.g. trees to grass) and PennEast is only obligated to achieve 80% post-revegetation coverage with the vegetation type it is using.”⁵⁷

⁵⁷ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

As documented in the comment from Meliora Design,⁵⁸ the EIS fails to consider cumulative impacts in an ecological system and fails to consider the multiple elements of specific site conditions that impact one another synergistically to determine what will be the impact that results from development of that site, with and/or without mitigation – e.g. pre and post vegetation composition, soils, slope etc. (While these comments were originally directed at the DEIS, they apply equally to the final EIS and Corps review.) This missing component of the EIS is massive and seriously undermines any of the conclusions reached regarding ecological impacts:

- “The DEIS and supporting materials provided by PennEast fail to consider the unique, site specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts associated with stream crossings, including open cut crossings. The DEIS fails to comprehensively evaluate each stream crossing with regards to conditions such as water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting. Lacking consideration of the site specific conditions at each crossing, the DEIS fails to require adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing. The proposed stream and wetland crossing locations, methods of construction, and long-term land use conditions appear to be based on the needs and preferences of PennEast and not informed by site specific conditions.”
- “Importantly, the supporting documentation provided by PennEast fails to provide stream and wetland crossing information in a manner that allows FERC and other reviewing agencies to evaluate the site specific conditions at each stream crossing, including information discussed further in this memo. Important site-specific information is located in different Resource Report volumes and other documents, and not easily correlated or evaluated. Much of the information discussed in this memo was compiled from multiple volumes, documents, and updates and is not readily reviewed by FERC or other reviewing agencies in a comprehensive manner. The project selection of stream and wetland crossing locations and construction methods cannot be clearly evaluated in the form in which it is presented in the DEIS and supporting documents.”
- Riparian buffer conditions, floodway and floodplain characteristics along proposed open cut streams and wetlands are not documented or evaluated. This is a large omission and should be catalogued properly as riparian vegetation can have direct influence on the health of the stream or wetland in way of thermal impacts, algae blooms and other water quality connections.

These cumulative assessments, considering near term and long term impacts, cumulative impacts resulting from the damage done near term and long term to a resource, including the lasting implications even with mitigation measures undertaken and full compliance with the law (let alone acknowledgement of the violations that are documented to take place as a matter of course during pipeline construction, operation and maintenance) need to be evaluated by the Corps and are not included in the FERC EIS. The forest

⁵⁸ *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

example above is but one kind of resource that experiences these multi-pronged impacts in need of cumulative assessment – vernal pools, wetlands, streams, aquatic life, avian life, amphibian life, soil life, and wildlife all need an assessment of the cumulative impacts that will be visited upon them by PennEast if it were to be constructed.

Based upon the lack of information, the misrepresentations regarding cumulative impacts, and the reality of the extent and breadth of the harms which can be determined even from the information provided, the Corps can and must reject the 404 permit.

Consideration of cumulative impacts that will result to ecological resources and recreational and cultural assets resulting from PennEast as well as other existing, proposed or anticipated infrastructure projects is required but does not appear to have been well considered on the record. Each project individually depletes the natural and scenic resources of the region, and the combined impact becomes increasingly severe, unavoidable, unmitigatable, and irreversible.

The Corps evaluation of cumulative impacts must consider reasonably foreseeable shale gas extraction/production as well as its end uses. Pursuant to 33 C.F.R. § 320.4(a)(1), in evaluating the 404 permit for the proposed Project, the Corps must include an “evaluation of the probable impacts, including **cumulative impacts**, of the proposed activity and its intended use on the public interest.” Additionally, the “benefits which reasonably may be expected to accrue from the proposal must be balanced against its **reasonably foreseeable detriments**.” 33 C.F.R. § 320.4(a)(1)(emphasis added). As such, the Corps must consider in its cumulative impact analysis the reasonably foreseeable shale gas extraction activities (including drilling and fracking operations) that will result, as well as impacts from the end uses of the gas including at power plants and LNG exports (given that the PennEast gas could be directed to export facilities such as Cove Point, a potential outcome identified throughout the FERC docket and the PennEast record).

All direct, cumulative, and foreseeable impacts must be considered. Documentation of these cumulative impacts is included as attachments to this comment, including evidence that:

- The PennEast pipeline will induce the drilling of on or about 3,000 new wells in Pennsylvania (from a combination of wells that have been drilled but are not yet producing and wells not yet drilled) in Northeast Pennsylvania, in Bradford, Susquehanna, Lycoming, and Tioga counties.

The cumulative review of PennEast must include the water, air, forest, habitat, soil, climate change and other impacts of the shale gas extraction that will be induced, supported and/or advanced by construction of the PennEast pipeline. Attached to this comment are multiple reports documenting the harms that will result from the shale gas extraction activities.

Use of standard construction practices will result in environmental violations and degradation.

PennEast and the EIS assert in multiple ways that the project will be constructed in full compliance with all applicable 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 pointed this out in great detail in our comments to date. The fact that FERC fails to consider the reality of pipeline construction, and that construction is fraught with environmental violations and a failure of mitigation/restored areas to return to ecological health is a significant deficiency.

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. We 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 of these pipelines, it is clear that:

- 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 technical documents, reports and observations compiled as the result of field monitoring which support, inform and expand upon these conclusions. DRN's 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.

Additionally, we attach new information documenting the significant violations and environmental damage inflicted most recently by construction of the Mariner East 2 pipeline. While this is a liquids pipeline, the implications documented in the attached materials are equally applicable to PennEast, perhaps more so given that PennEast will not be subject to the same breadth of state legal requirements that the Mariner East Project is.

For the reason stated above as well as the extensive adverse impacts that would result from the Project that are included in the attachments to this comment, including the many cascading impacts to the public interest—as well as the evidence demonstrating that these adverse impacts largely cannot be mitigated—the proposed Project would be contrary to the public interest and the Corps should deny its 404 permit.

e. The proposed Project would adversely affect a significant number of wetlands that are of considerable value to the public interest.

The Project includes multiple wetland crossings in the Delaware River and Susquehanna River watersheds that would have both temporary and permanent adverse effects on wetlands and the vital services that they provide for the public.

Sections 320.4(b)(1) and 320.4(b)(3) specifically contemplate a robust review of wetlands in the public interest review process, as the protection of vulnerable wetlands is a distinct priority in the Corps' review. The Corps is required to apply a presumption during the public interest review that “[m]ost wetlands constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest.” *Id.* § 320.4(b)(1). The Corps also is required to evaluate applications with the recognition that individual wetland sites “may be part of a complete and interrelated wetland area.” *Id.* § 320.4(b)(3). Although alterations at individual sites “may constitute a minor change, the cumulative effect of numerous piecemeal changes can result in a major impairment of wetland resources.” *Id.* These requirements give effect to the Clean Water Act's statutory purpose and ensure that “wetlands will [not] be destroyed simply because it is more convenient than not to do so.” *Buttrey*, 690 F.2d at 1180.

The expert reports attached provide a general description of the way in which the permanent conversion of forested wetlands to emergent wetlands constitutes an adverse impact on the functions and values of those wetlands. The attached expert reports address the way in which wetland functions are disrupted, decreased, or lost as a result of a permanent conversion from forested to emergent wetland cover type. The Corps' Public Notice provides details on the acreage of wetlands –that will be permanently converted from forested wetlands to emergent wetlands as a result of the proposed Project.⁵⁹

⁵⁹ As noted later, these calculations of impacts have been grossly undercounted.

Additionally, a series of the attached reports detail the way in which the functional conversion of wetlands – specific to the portion of the proposed Project in Pennsylvania – will result in adverse impacts to the functions and values of those wetlands. The report breaks down the harms to each of the wetlands and measures the intensity and scope of the ground disturbance. In addition to detailing the adverse impacts as a result of wetland conversion, attached reports also detail the ways in which the mitigation techniques and site location are insufficient to satisfy the requirements of a 404 permit. The expert reports attached to this comment, irrefutably demonstrate that the permanent conversion of wetlands called for by this project will result in adverse impacts to those wetlands.

The Corps has vastly undercut or excluded consideration of the full acreage of impacts resulting from construction activity for the Project in its Public Notice. The Corps has also failed to properly account for the value, functionality, and acreage that will be impacted as a result of construction activity.

The Corps' Public Notice quantifies only the following distinct permanent wetland impacts resulting from the Project, it does not discuss or assess the full wetland impacts of the project which are far greater than just the 4 individual permit sites:

the permanent conversion of 5.98 acres of PFO and PSS wetlands to PEM wetlands within the Philadelphia Area of Operations associated with the 30-foot wide permanently maintained area over top of the proposed pipeline. All other PFO and PSS wetlands temporarily impacted by the project will be restored and left to revert back to their natural condition. There are no permanent impacts associated with the four individual permits discussed in the Public Notice. The four individual permits described in the Public Notice result in a total of 2.167 acres of permanent conversion.

- Specifically, the following permanent conversion impacts occur at the following:
 - IP-6 = 0.519 acres
 - IP-7 = 0.770 acres
 - IP-8 = 0.293 acres
 - IP-9 = 0.585 acres

Specifically, each of these crossings will have the following wetland impacts:

IP-6: Pipeline crossing of a Palustrine Forested (PFO) wetland and Palustrine Emergent Wetland (PEM).

The crossing will impact a total of 1.437 acres of wetlands. Specifically, the crossing will impact 1.324 acres of PFO wetland and 0.113 acre of PEM wetland. Once the crossing is restored there will be no loss of wetland area, however, the crossing will result in the permanent conversion of 0.519 acre of PFO wetland to Palustrine Emergent (PEM) wetlands. Compensatory mitigation has been offered by the applicant to offset the 0.520 acres of permanent conversation

IP-7: Pipeline crossing of two Palustrine Forested (PFO) wetlands. The crossing will impact 1.909 acres of wetlands. Once the crossing is restored there will be no loss of wetland area, however, the crossing will result in the permanent conversion of 0.770 acre of PFO wetland to Palustrine Emergent (PEM)

wetlands. Compensatory mitigation has been offered by the applicant to offset the 0.770 acres of permanent conversation.

IP-8: Pipeline crossing of unnamed tributaries to the Hokendauqua Creek, PFO wetlands, and PEM wetlands. The crossing will impact a total of 1.150 acres of waters and wetlands. Specifically, the crossing will impact 0.007 acre of waterways, 0.815 acres of PFO wetland and 0.328 acre of PEM wetland. The waterways will be crossed in a dry condition either during a period of no flow or created by construction of a coffer dam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of waterway or wetland area, however, the crossing will result in the permanent conversion of 0.223 acre of PFO wetland to Palustrine Emergent (PEM) wetlands. Compensatory mitigation has been offered by the applicant to offset the 0.223 acres of permanent conversation.

IP-9: Pipeline crossing unnamed tributary to Bull Run and PFO wetlands. The crossing will impact a total of 1.284 acres. Specifically, the crossing will impact 0.096 acre of waterways, 1.284 acres of PFO wetlands. The waterways will be crossed in a dry condition either during a period of no flow or created by construction of a cofferdam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of waterway or wetland area, however, the crossing will result in the permanent conversion of 0.585 acre of PFO wetland to PEM wetland. Compensatory mitigation has been offered by the applicant to offset the 0.585 acre of permanent conversation.

With so many PFO wetlands possibly being impacted in these realignments alone, the Corps should consider why PennEast does not instead propose outright horizontal directional drilling (HDD) under these forested resources and complexes since thermal impacts certainly will occur with open cuts along with all the other soil and compaction disturbances. Being the large impacts seen time and time again it is an insult and failure of the agencies that companies continue to propose open cuts to forested streams and forested wetlands and agencies continue to rubber stamp such proposals that lead to great harm when alternatives are possible. Economic feasibility must not just be based on what the company says is expensive when so much harm is at stake that will be passed off to the taxpayers down the road.

The Corps does not discuss or assess the full wetland impacts of the project which are far greater than just the 5 individual permit sites discussed in the public notice. However, the Corp's cannot adequately evaluate the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest, on the 22 factors that it is required to consider as part of its public interest review per 33 C.F.R. § 320.4(a)(1), and on the full array of wetland impacts without considering these individual permits as part of the Project as a whole.

FERC concludes that the Project will temporarily impact about 36 acres of wetlands (20 acres in Pennsylvania and 16 acres in New Jersey) and permanently impact about 20 acres of

wetlands (12 acres in Pennsylvania and 8 acres in New Jersey). We note, again, as demonstrated by expert reports by Schmid & Company and field monitoring reports attached to this comment, FERC severely undercut the actual number of and acreage of impacted wetlands that would be adversely affected by the Project. And so not only is the wetland impact significantly greater than what the Corps' public notice takes into consideration, it is greater than even the much larger figure FERC provides.

The Corps' regulations specifically prohibit the issuance of a permit that involves the alteration of "important" wetlands unless the Corps determines that "the benefits of the proposed alteration outweigh the damage to the wetlands resource." 33 C.F.R. §320.4(b)(4). The Corps cannot possibly begin to balance the twenty different factors as required in its public interest review without first properly classifying, characterizing, and counting the ground disturbance and impacts that will result from the proposed project, including to the full array and acreage of wetlands that will be harmed.

Additionally, expert analysis and field monitoring have clearly demonstrated the information provided by PennEast and reported by FERC on the Project's impact to wetlands is full of inconsistencies, regularly undervalues or misrepresents impacts, and is full of information gaps. As such, the Corps should not rely on the information provided by PennEast or FERC to evaluate the project's impacts to wetlands. The 404 permit should be denied.

As documented in the comment from Meliora Design,⁶⁰

"The DEIS and supporting materials provided by PennEast fail to consider the unique, site specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts associated with stream crossings, including open cut crossings. The DEIS fails to comprehensively evaluate each stream crossing with regards to conditions such as water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting. Lacking consideration of the site specific conditions at each crossing, the DEIS fails to require adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing. The proposed stream and wetland crossing locations, methods of construction, and long-term land use conditions appear to be based on the needs and preferences of PennEast and not informed by site specific conditions."

"Importantly, the supporting documentation provided by PennEast fails to provide stream and wetland crossing information in a manner that allows FERC and other reviewing agencies to evaluate the site specific conditions at each stream crossing, including information discussed further in this memo. Important site specific information is located in different Resource Report volumes and other documents, and not easily correlated or evaluated. Much of the information discussed in this memo was compiled from multiple volumes, documents, and updates and is not readily reviewed by FERC or other reviewing agencies in a comprehensive manner. The project selection of stream and wetland crossing locations and construction methods cannot be clearly evaluated in the form in which it is presented in the DEIS and supporting documents."

⁶⁰ *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

Meliora's March 2019 expert report⁶¹ indicates 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 impact. 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. The report also 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. 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.

According to Meliora's March 2019 expert report⁶², PennEast plans do not adequately protect the sensitive environmental resources such as EV wetlands and HQ/EV streams within the CWA. 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. In addition, not all stream crossings are noted on the E&S plan, therefore no direction is given to the contractor about what approach is to be taken to cross the undocumented watercourse. The plans were specifically developed by licensed professionals with large amounts of information at their disposal to provide planning and design to minimize impacts to natural resources. For example, stream PA-NHD-057 in Pine Run watershed (EV) at STA 2117+30 is shown to start and stop around the right-of-way even though topography would suggest it continues north to south. This crossing is also missing from the Aquatic Resources Impact Table.

Spot checks and field-truthing indicate inadequate and incomplete mapping of sensitive wetlands along the proposed ROW. For example:

⁶¹ *Review of PennEast Pipeline Application for Chapter 102 and 105 Permits*, Michele Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, March 2019.

⁶² *Review of PennEast Pipeline Application for Chapter 102 and 105 Permits*, Michele Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, March 2019.

- Along one 0.5 mile of the proposed route in sensitive State Gamelands, at least 12 vernal pool complexes or groundwater seeps were identified while PennEast tables only indicate 2 vernal pool habitats along the same proposed route and no groundwater seeps.⁶³
- “72% of the proposed pipeline alignment in New Jersey and 23% in Pennsylvania has not yet been field investigated for wetlands and other water resources.”⁶⁴

A report on *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania* by Schmid and Company⁶⁵ found that:

- The size (acreage) of some wetlands along the proposed pipeline were undermapped significantly.
- Most wetlands within and along the proposed pipeline right-of way (ROW) are not visibly flagged in the field making field verification and ground truth difficult.
- Many of the wetlands in the Project area are not appropriately classified pursuant to the Pennsylvania Code and the requirements therein, thus preventing FERC and the public from considering the quality of the wetlands impacted. Indeed, there is no data in the DEIS analyzing wetland quality outside of this classification system, therefore it is critical that these classifications are exactly accurate (which they are not).
- Some wetlands which should be classified as "exceptional value" pursuant to Pennsylvania law were incorrectly identified by the applicant as "other"
- No "existing use" analysis of affected streams has been done, possibly leading to an undercount of the number and extent of Exceptional Value Wetlands.
- An assessment of the functions and values of existing wetlands has not been done, and no evaluation of proposed impacts on the functions and values of wetlands has been done.
- Additional wetlands exist within approximately 19.4 miles of right-of-way (24% of the proposed pipeline Study Area) that have not been investigated because access was not (initially) granted. Impacts to those wetlands have not been acknowledged, calculated, or mitigated for.
- [Neither the Corps nor] FERC can develop an appropriate mitigation plan based on the information and analysis in the EIS with regard to wetlands because the EIS “provides no evidence that the functions and values of each wetland proposed to be impacted have been determined or evaluated.”
- Most of the wetlands data is unreliable because it is largely “based on available remote sensing mapping, and not on field-based investigations.”

A March 2019 supplemental report by Schmid and Company⁶⁶ noted that:

⁶³ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.

⁶⁴ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016; Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

⁶⁵ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016

⁶⁶ *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.

- 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.”

For a full analysis of the adverse impacts to wetlands that would result from the proposed Project, as well as the resulting harms to the public interest, see the expert reports attached.⁶⁷ Because the drawings by PennEast consultants have been field verified as being inaccurate, we also request a JD to reevaluate all wetland delineations.

PennEast proposes to mitigate the Project’s wetland impacts by “enhance[ing] 17.84 acres of PEM wetlands by the planting of trees and shrubs and protecting 0.49 acre of streams.” The Corps Public Notice states that this approximately 3 to 1 ratio adequately addresses the temporal loss associated with the mitigation until it becomes established. However, it is important to the Corps public interest evaluation of the Project to note that Compensatory Mitigation measures, such as the three offsite wetland mitigation areas within the Upper Central Susquehanna River Sub basin and the Central Delaware River Sub basin proposed by PennEast, do not negate the loss of ecosystem function and resulting impacts to the public interest felt elsewhere.

FERC suggests that “emergent vegetation regenerates quickly (in wetlands), typically within one to three years and in scrub shrub and forested wetlands, PE would maintain a 10 foot wide corridor centered over the pipeline in an herbaceous state and would selectively cut trees within a 30-foot-wide corridor centered over the pipeline. The remainder of forested and scrub-shrub vegetation would be allowed to return to

⁶⁷ *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

Table A Attachment to Professional Review & Comment..., Meliora Design, LLC, September 5, 2016

The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network, Schmid and Company, July 2016 Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

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

Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project, Princeton Hydro, September 2016. Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

preconstruction conditions and would not be affected during operation. No permanent fill or loss of wetland area would result from construction and operation of the Project.” But DRN has documented continued and irreversible impacts to wetlands from pipeline crossings that are sustained beyond this short-term view, especially in forested wetlands where tree regrowth can take decades to recover.⁶⁸ In light of deer browse and other impacts to changed soils, trees may never establish as they had prior to the ROW impact in these forested wetlands. Invasive plant species often move into these wetlands and impact the wetland ecology long term.⁶⁹

Wetlands provide various ecosystem services such as carbon storage, flood abatement, water quality maintenance, and biodiversity support. Wetland mitigation and other “offset” policies rely on restoration as a form of compensation for the loss of ecosystem function and structure, with the assumption that the entire suite of ecosystem services that have been lost will be replaced.⁷⁰ Research over the past decade indicates that there are many cases where wetland restoration, including compensatory mitigation, leads to the creation of wetlands that are not ecologically equivalent to naturally occurring wetlands, which calls into question the level to which ecosystem services can be replaced. It is unlikely that any mitigation will fully restore each ecosystem service equally.

Tradeoffs occur when one service is changed at the expense of another. For example, studies have shown that optimizing restored wetlands for nutrient cycling and removal comes at the expense of less biodiversity.¹ There are currently no standard requirements for measuring ecosystem functions at impacted wetlands prior to impact or after mitigation or restoration. The performance standards used to evaluate mitigation wetlands are based on vegetation and provide little indication of whether other ecosystem functions are being replaced in any capacity. Therefore, it is unknown which ecosystem services are being provided through wetland mitigation and their level of effectiveness. It is likely that many ecosystem services will be impaired compared to what the natural wetland provided.

As part of settlement negotiations from a prior pipeline case brought by Clean Air Council, Delaware Riverkeeper Network, and Mountain Watershed Association where gross errors and inadequacies to wetland protections were documented (Mariner East 2), DRN and CAC experts are serving on an Alternatives Analysis Stakeholder Workgroup with industry and agency to review PADEP Chapter 105 wetland regulations as it pertains to Alternatives Analysis. An HDD work group is also part of this effort – again due to gross errors and pollution incidents from the Mariner 2 pipeline and the need for much better oversight from the start by the state agency and others. This work is ongoing with public comment periods expected in the fall and a timeline going into Spring or Summer 2020. As such, there should be no movement or approvals on any more pipeline permits especially in way of the water pollution impacts, until that process has been completed. The 404 application should be denied or at least put on hold at minimum for consideration until this stakeholder process has been completed and the public has had adequate time to respond. The water resources proposed to be cut by PennEast cannot suffer the same harm seen time and time again on past pipeline projects – repeating a system that has been failing the public trust.

As such, the Corps’ cost-benefit analysis of the “benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments” should not consider the

⁶⁸ Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

⁶⁹ Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

⁷⁰ Jessop, Jordan, et al. “Tradeoffs Among Ecosystem Services in Restored Wetlands” *Biological Conservation*, vol. 191, 2015, pp. 341–348.

proposed compensatory mitigation measures to have the same net positive impact on wetlands and the public interest as the unavoidable negative impacts that would result to wetlands from the Project. This abundance of evidence makes clear that the effect of the Project on wetlands would ultimately be adverse and detrimental to the public interest and that the 404 permit should be denied.

f. The Project will inflict only adverse impacts on the historical properties of the region and provide no benefits.

There are no conceivable benefits to the historic properties of the region that could result from the proposed Project. While here too there are issues of missing information that need to be addressed, the information on the record and concerns expressed by relevant agencies already demonstrate there will be adverse impacts from the Project.

The Corps' Public Notice for the Project states that:

“FERC is the lead federal agency responsible for the Section 106 process. The permit areas are within the Area of Potential Effect for the Overall Project as reviewed by FERC, and the results of the cultural resources investigations will be coordinated with the SHPO and the Tribes. If any significant resources exist within the permit area, the USACE will work with the FERC, the SHPO and the Tribes to avoid, minimize or mitigate impacts.”

However, the information provided by FERC lacks documentation of PA and NJ State Historic Preservation Offices (SHPOs) regarding proposed avoidance, resource identification, recommendations, updated documentation, avoidance plans, evaluation reports, treatment plans and mitigation for National Register of Historic Places – eligible archaeological sites that cannot be protected from project impacts.

Additionally, the National Park Service (NPS) expressed concern about the proposed PennEast pipeline crossing of the North Branch of the Susquehanna River which includes part of the river-based Captain John Smith Chesapeake National Historic Trail. NPS' prime concern involves effects to archaeological resources and cultural landscapes that may be of importance to tribes. However, FERC materials have failed to identify of NPS concerns with regards to effects to trails and cultural resources or provide a vibration monitoring plan and modification of blasting plan that include a review of potential effects to cultural resources.

The Corps cannot consider the impacts to historic properties included in the FERC materials to be adequate to base its own public interest review. Many impacted community members have commented on the destruction of historic resources that would result from the Project at the expense of the public's interest.

g. The proposed Project would significantly adversely affect Fish and Wildlife Values throughout the region and would result in a detrimental impact on the public interest.

The proposed Project would have many significant and adverse effects on Fish and Wildlife Values throughout the region and would result in a detrimental impact on the public interest. The extent of these adverse impacts is not included in the Corps' Public Notice.

The Corps' Public Notice States that:

A preliminary review of this application indicates that the proposed work would not affect listed species or their critical habitat pursuant to Section 7 of the Endangered Species Act as amended. The following Threatened or Endangered Species are known to exist within the portion of the overall project being reviewed within the Philadelphia District's Area of Operation; Bog Turtle, Northern Long Eared Bat, Indiana Bat, Dwarf Wedge Mussel, Rusty Patch Bumble Bee, and Northern Bull Rush. The USFWS issued a Biological Opinion (BO) for the PennEast Pipeline project on November 28, 2017. The following species determinations were made at the four wetland crossings:

IP-6: Bog Turtle – Not Within a Watershed Known to Have an Occurrence of Bog Turtles Indiana Bat and Northern Long Eared Bat – Not Likely to Adversely Affect Dwarf Wedge Mussel – Not Likely to Adversely Affect Rusty Patch Bumble Bee – Not Addressed in BO, USFWS Assumes Species Not Present Northern Bull Rush – Not Likely to Adversely Affect

IP-7: Bog Turtle – Not Within a Watershed Known to Have an Occurrence of Bog Turtles Indiana Bat and Northern Long Eared Bat – Not Likely to Adversely Affect Dwarf Wedge Mussel – Not Likely to Adversely Affect Rusty Patch Bumble Bee – Not Addressed in BO, USFWS Assumes Species Not Present Northern Bull Rush – Not Likely to Adversely Affect

IP-8: Bog Turtle – Wetlands Surveyed and Found Not To Be Potential Habitat Indiana Bat and Northern Long Eared Bat – Not Likely to Adversely Affect Dwarf Wedge Mussel – Not Likely to Adversely Affect Rusty Patch Bumble Bee – Not Addressed in BO, USFWS Assumes Species Not Present Northern Bull Rush – Not Likely to Adversely Affect

IP-9: Bog Turtle – Wetlands Surveyed and Found Not To Be Potential Habitat Indiana Bat and Northern Long Eared Bat – Not Likely to Adversely Affect Dwarf Wedge Mussel – Not Likely to Adversely Affect Rusty Patch Bumble Bee – Not Addressed in BO, USFWS Assumes Species Not Present Northern Bull Rush – Not Likely to Adversely Affect.

The information provided for IP-9 is incorrect because some of the wetlands in that area were found to be potential bog turtle habitat, which is why a Phase 2 survey was conducted there. A Phase 2 survey would not be conducted in an area that was not deemed suitable habitat by a Phase 1 survey. The Phase 2 survey was conducted in May and June of 2015 by Skelly and Loy Engineering-Environmental Consultants in the vicinity of IP-9, which is known as the Buttermilk Site. The Buttermilk Site is part of a large complex of PEM, PSS, and PFO wetlands containing suitable hydrology, suitable mucky soils between 3 and 36 inches deep, and suitable plant species such as soft rush and jewelweed to be considered textbook bog turtle habitat. In fact, a Phase 3 trapping survey was eventually conducted at this wetland complex because it was so large and was considered highly suitable bog turtle habitat that was too difficult to survey by Phase 2 alone. The notion that IP-9 was not found to be potential bog turtle habitat is grossly inaccurate and misleading.

Bog turtles have been historically documented near this site and there is even a farm on Buttermilk Road called "Bog Turtle Farm." In 2016 and 2017, DRN was contacted by concerned landowners in the area who were pressured by PennEast representatives trying to force them to grant access to their properties in order for their bog turtle consultants to conduct surveys. These PennEast representatives were attempting to have surveys conducted prior to April 15, which is outside of the USFWS recognized survey window of April 15 to June 15 for Phase 2 and Phase 3 surveys. On May 30, 2017, a DRN biologist was granted permission to visit a property in this area that was being pressured by PennEast. During this site visit, two vernal pools

and numerous springs and seeps were documented. In addition, wetland delineation flagging by PennEast consultants was found; however, the landowner had not given PennEast permission to survey. While it was determined that the landowner's neighbor had allowed survey access to PennEast, the wetland delineation flags crossed the property boundaries and therefore the PennEast surveyors were trespassing. Below are photos of the forested wetland in the vicinity of IP-9, the two vernal pools, and the wetland delineation flagging from trespassing PennEast surveyors.







As demonstrated in earlier sections of this comment, the Corps cannot adequately evaluate the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest, on the 22 factors that it is required to consider as part of its public interest review per 33 C.F.R. § 320.4(a)(1), including “fish and wildlife values” without considering these individual permits as part of the Project as a whole. Additionally, given the rampant deficiencies in surveys used to determine the presence of endangered species and critical habitat, outlined below, the Corps should not accept the applicant’s claim that the Northern Long Eared Bat and Indiana Bat are the only Threatened or Endangered Species known to exist within the portion of the overall Project being reviewed.

The following examples of false, inaccurate, misleading and/or deficient information regarding Endangered Species and Critical Habitat and other fish and wildlife values from the FERC EIS demonstrate that the presence of protected wildlife is far greater than reported by PennEast or FERC. This deficient and often false information cannot be used as a basis for the Corps to evaluate the true effects of the Project on the public interest. However, the information gathered through independent expert analysis and field-truthing demonstrate that the Project’s impacts on fish and wildlife values would be adverse and that no public benefit to fish and wildlife values would result. As such, the Corps must reject PennEast Pipeline’s 404 permit applications.

False, inaccurate, misleading and/or deficient information regarding Endangered Species and Critical Habitat and other fish and wildlife values from the FERC EIS:

- A total of 8 NJ state threatened, endangered, or special concern mussel species are completely left out of the EIS. These species are as follows: triangle floater (threatened), brook floater (endangered), yellow lampmussel (threatened), eastern lampmussel (threatened), green floater (endangered), tidewater mucket (threatened), eastern pondmussel (threatened), and creeper (species of special concern). All eight of these species may potentially occur in various waterbodies crossed by the project, based on the GIS range maps created by the Conserve Wildlife Foundation of New

Jersey found at:

<http://conservewildlife.maps.arcgis.com/apps/MapJournal/index.html?appid=093a625e6fa044e191595e57dceee027&webmap=7fc0d5a9cd0f419a8fdd3d254b316752>

- The DEIS notes that surveys resulted in “no suitable habitat” in regards to the red-shouldered hawk, however, the surveys missed two red-shouldered hawk nests and multiple adult and juvenile red-shouldered hawks that were observed in the area of MP 93.5 and MP 93.6 by Dennis and Joann Kager in Kingwood Township, NJ. The nests were adjacent to the ROW where the pipeline would go, and photographs and observational data were submitted to NJDEP.
- The conclusion of “absence” as a result of the Phase 2 presence/absence bog turtle surveys does not carry much weight when it is admitted that the project may affect the species and is likely to adversely affect the species because not all areas have been surveyed. The same can be said for the Indiana bat, northern long-eared bat, dwarf wedgemussel, and northeastern bulrush. FERC’s failure to evaluate the areas where there is likely to be an adverse impact to these species renders the DEIS factually deficient.
- The EIS notes that 7 wetlands in PA are considered suitable bog turtle habitat. However, Save Carbon County hired an independent USFWS qualified bog turtle surveyor (Jason Tesauro) who identified 9 properties containing one or more suitable bog turtle wetlands in the Hunters Creek drainage (part of Aquashicola Creek watershed) alone. Tesauro’s report was posted on the FERC docket and also filed with the USFWS.
- Bog turtle searches did not encompass the entire area requested by USFWS.
- The habitats that are listed in the DEIS as being surveyed for timber rattlesnakes and copperheads are not complete. DRN documented optimum timber rattlesnake habitat during assessments conducted in SGL 168 from at least MP 52.9 to 51.0 along Blue Mountain near Danielsville, PA. DEIS states that 51.1 to 51.6 was surveyed for timber rattlesnake but this only includes one section of this habitat and does not include all of the optimal habitat areas in that area of SGLs. There are other areas that should have been/should be the subject of Phase 1 and/or Phase 2 surveys but have not been.⁷¹
- The maintenance of the ROW will include the prevention of tree growth and maintenance of low growing vegetation only – this will be accomplished by periodic mowing and the use of herbicides. The mowing will disturb the vegetation and habitats that were allowed to encroach on the ROW. The herbicides will include impacts for non-target species, and could have implications for soil microbes and nearby wetland, vernal pool and stream ecosystems. Openings in the canopy and vegetation along the ROW will encourage the influx of invasive plant and animal species that will have cascading impacts on the forest ecosystem, which will spread along the ROW and back into the core of the adjacent forest.
- The habitat of Ruffed Grouse includes deciduous and mixed forest, dense undergrowth, overgrown pasture, scrub oak, thick shrubland, young forest, and understory and can be found in Carbon, Luzerne, Northampton, Bucks, Hunterdon, and Lehigh Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.
- The habitat of White-throated Sparrow includes coniferous and mixed forest, dense thickets, secondary growth areas, adjacent to ponds or openings, and forest edge in Hunterdon, Luzerne,

⁷¹ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.*

Northampton, Carbon, Lehigh, and Bucks Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.

- The habitat of Magnolia Warbler includes coniferous and mixed forest, especially young spruces, nests in trees, deciduous shrubs or low trees (during migration) in Luzerne, Northampton, Carbon, Lehigh, Bucks, and Hunterdon Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.
- The habitat of Yellow-Rumped Warbler includes mature coniferous and mixed coniferous/deciduous forest and forest edge and includes Luzerne, Northampton, Carbon, Lehigh, Bucks, and Hunterdon Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts for this species were not considered.
- FERC falsely states that vernal pools to be cut by the pipeline will only have temporary impacts or not significant sustaining impacts yet it fails to consider the 1,000 feet of upland forest that amphibians using vernal pools require for parts of the year when they are not in their breeding vernal pool habitats. A pipeline cut adjacent and through a vernal pool or within 1,000 feet of a vernal pool can be a death sentence for migrating amphibians who may not be able to successfully cross the dry compacted pipeline route to reach their seasonal vernal pool.⁷² Predation also increases with these pipeline cuts.

On July 14, 2017, FERC submitted a Biological Assessment to the USFWS and requested that the Service develop a Biological Opinion as to whether authorizing the proposed pipeline project is likely to jeopardize the continued existence of any federally listed species. FERC's Biological Assessment concluded that the project "may affect and is likely to adversely affect the northern long-eared bat, Indiana bat, bog turtle, and northeastern bulrush." Additionally, it concluded that the project "may affect, but is not likely to adversely affect dwarf wedgemussels" and that there would be "no effect on the rusty patched bumble bee." The Delaware Riverkeeper Network offers the following comments on FERC's Biological Assessment, as it has bearing on the Corps assessment of fish and wildlife impacts resulting from the project:

Northern long-eared bat and Indiana bat: At the admission of FERC and by their own recommendation in their Biological Assessment, there is the potential for adverse impacts to these two bat species. See attached report for a more complete discussion of potential impacts to bats from both the pipeline and the reasonably foreseeable gas drilling that will result. In its Final EIS, FERC states that,

"Construction of the Project would disturb a total of approximately 601 acres of forested habitats, which could potentially support these bat species."

"Young bats or those that are unable to fly could be killed if tree clearing activities occur while the trees are occupied by bats. In addition, bats are sensitive to disturbance and may abandon disturbed roosts trees if the trees are occupied at the time of construction. If this occurs, then the disturbance and subsequent abandonment could have energetic repercussions on affected bats, potentially decreasing the likelihood of successful reproduction and survival."

"The Project also has the potential to impact listed bat species during operation. Noise, visual, and ground-vibration disturbance would occur during certain operation and maintenance-related

⁷² *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.

activities (e.g., during routine inspections of the line). Potential disturbance to listed bat species could occur during ongoing maintenance activities, and disturbances to bats can result in individuals fleeing the area, thereby using up critical limited energy reserves, which can potentially result in mortality.”

“Because all potentially suitable habitats for the Indiana bat and northern long-eared bat have not been surveyed to-date, it is possible that unidentified habitats for these bat species occur along the Project’s proposed disturbance footprint. . . . In addition, the Project would have long-term impacts on forested habitats that are used as foraging or roosting habitats by listed bats.”

Bog turtle: Only 80% of bog turtle surveys have been completed in PA and 31% in NJ at the time the Final EIS was submitted. Additionally, the proposed pipeline has been re-routed several times to avoid potential bog turtle habitat. This includes the deviation at MP 49.3 near the Blue Mountain Ski Resort in Carbon County, PA. Although the purpose of this deviation is to avoid the wetland area, it still comes within 250 feet of it at its closest point. A similar deviation was made at MP 73.5 in Northampton County, PA to avoid the large wetland complex where Phase 3 trapping surveys were conducted (where wetland IP-9 in the public notice is located). In this case, the edge of the right-of-way in the deviation still clips the edge of the wetland complex. Furthermore, these deviations would not alleviate groundwater contamination concerns because they are still too close to the wetlands. Any contamination to groundwater would impact a larger area and particularly any nearby spring-fed emergent wetlands that bog turtles prefer. With the amount of unsurveyed wetlands and by FERC’s own statements, it’s clear that adverse impacts to bog turtles are likely. In its Final EIS, FERC states that,

“Construction of the Project within wetland habitats has the potential to impact bog turtles. If present during construction, bog turtles could be directly injured or killed by construction equipment, or disturbed due to the presence of humans and machines in the area. In addition, construction and operation of the Project could alter wetland habitats that support this species. As discussed in detail within Sections 4.4 and 4.5, construction of the Project has the potential to alter wetland hydrology, increase the risk of invasive plant establishment/spread, and can fragment habitats.”

“Although no bog turtles have been found during Project-specific surveys, the Project would cross through and impact potential bog turtle habitat (including habitats in unsurveyed areas), and bog turtles could be present in unsurveyed areas.”

Northeastern bulrush: As with the other species, there is a great degree of uncertainty about the presence of northeastern bulrush within the project corridor and FERC statements reflect this in addition to their conclusion in their Biological Assessment. Regarding northeastern bulrush, FERC states in their Final EIS that,

“Not all potential habitat for this species has been surveyed to date, and the unsurveyed wetlands along the Project’s disturbance footprint may support this species. As a result, the Project has the potential to impact this listed species. If this species cannot be avoided by the Project, then potential impacts could include direct removal of individual northeastern bulrush plants during trenching or clearing, crushing of plants by equipment, or alterations to their wetland habitats (e.g., altered wetland hydrology and increased risk of invasive plant establishment/spread).”

Dwarf wedgemussel: In its Biological Assessment, FERC concludes that the project “may affect, but is not likely to adversely affect” dwarf wedgemussels. This conclusion is puzzling when specific dwarf wedgemussel surveys have not been conducted. According to the Final EIS,

“No Project-specific surveys for the dwarf wedgemussel have been conducted (beyond a general habitat assessments conducted for freshwater mussels; see table 4.6-1); however, the dwarf wedgemussel is known to occur in the Delaware River.”

“Individual mussels could be crushed by construction equipment and killed during the proposed conventional open-cut crossing method that may be used at the upstream tributaries to the Delaware River. In addition, construction of the Project could impact this species if activities increase the sedimentation levels found in occupied waterbodies. Increased sedimentation could impact this mussel through burial of eggs or mortality of their food supplies. These effects would impact species living both at the point where sedimentation increased and at points farther downstream.”

Based on these statements, it’s more likely that the project would affect and adversely affect this species. Unless surveys were conducted between the time the Final EIS was submitted and the present time, it’s difficult to understand how any other conclusion can be reached.

Rusty patched bumble bee: FERC concludes that there would be “no effect” on the rusty patched bumble bee in its Biological Assessment. However, the Final EIS states that,

“No Project-specific surveys for the rusty patched bumble bee have been conducted or are planned by PennEast; however, data from the FWS indicates that this species can occur in all four Pennsylvania counties crossed by the Project.”

“If present during construction, rusty patched bumblebee colonies could be destroyed, and direct mortality of bees could occur during vegetation clearing and right-of-way and road construction. In addition, impacts could occur due to the loss of suitable habitat or as a result of habitat fragmentation.”

Once again, it’s difficult to understand how FERC can be so certain that there would be no effect if surveys have not been conducted. Based on FERC’s statements on the direct mortality of bees and habitat loss, it seems that the project would likely adversely affect the species as is the case with the rest of the species in the Biological Assessment.

The inconsistencies within each of these individually—the DEIS, the FEIS, and statements made to other federal agencies including USFWS -- undermine FERC’s claims regarding the likelihood that adverse impacts will occur to fish and wildlife species as well as the extent of those species and the impacts. In light of FERC’s own admissions outlined above, the Corps must recognize the huge threat to all of these protected species that would result from this project.

Claims that adverse impacts will be temporary in nature or that permanent losses and conversion of ecosystems will still have value to wildlife as habitat, foraging and nesting areas fails to recognize the sensitivity and particularity, especially of already endangered species, in the region. The Corps should find that the proposed Project would significantly adversely affect Fish and Wildlife Values throughout the region and would result in a detrimental impact on the public interest and should deny the project 404 certification.

h. The proposed Project would adversely affect Flood Hazards and would have a detrimental impact on the public interest.

The proposed Project would have potential detrimental impacts to Flood Hazards in the region, particularly as result of potential rain and flooding events during construction of waterbody crossings that are dewatered in order to install the pipeline.

“The Project crosses 255 waterbodies (159 perennial, 45 intermittent, 40 ephemeral, and 11 open water), with eleven (11) of these water courses classified by FERC as major waterbodies that are over 100 feet in width.”⁷³ Of these, the Project will include 165 stream crossings in Pennsylvania and 90 in New Jersey.⁷⁴ “HDD techniques will be used to bore under a few of these waterbodies (Beltzville Lake, the Lehigh River/Lehigh Canal the Delaware River/Delaware Canal , two locations along Lockatong Creek, and an unnamed tributary to Woolsey Brook).”⁷⁵

According to analysis by Tom Myers, Ph.D⁷⁶:

“All dry stream crossing construction methods would involve development of a trench across the stream with subsequent backfill. Dry stream crossing techniques involve temporarily diverting the stream from the streambed so that trenching occurs without flowing water, using either a flume or a dam and pump method (RR2, p 2-28; RR1, p 1-84, -85). The method used to trench and install the proposed pipeline would not influence the effect that trench and streambed crossing could have on groundwater/surface water relations near the crossing.”

“As such, the vast majority of the stream crossings require the diversion of stream flow around the construction zone or actively pumping water out of the construction zone. Even when the work area is segregated from the stream by some type of diversion measure, the shallow depth to groundwater relative to the required depth of the pipe trench will require the constant dewatering of the trench. Similar types of acute impacts will also occur in the wetland and riparian areas traversed by the pipeline again due to shallow depth to seasonal highwater (groundwater), standing water or saturated soil conditions.”⁷⁷

“PennEast concludes that the dry crossing method can be conducted in a manner that minimizes potential in-stream turbidity impacts. FERC’s review of the conventional channel cut, flume crossing, and dam-pump crossing techniques reach a similar conclusion. It is FERC’s position that after the pipe is installed and the trench backfilled, the stream channel and stream banks will be adequately restored and the ecological properties of the stream returned to pre-construction conditions.”⁷⁸

⁷³ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

⁷⁴ DEIS, p 2-9.

⁷⁵ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

⁷⁶ *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

⁷⁷ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

⁷⁸ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

According to Princeton Hydro:

“None of the conclusions reached by either PennEast or FERC are supported by any data. Again the finding of no significant impact is largely based on the assumption that the proposed mitigation measures can be successfully implemented and will lessen the Project’s impact to surface waters. [...] PennEast’s position that impacts can be minimized is inconsequential as the quality, ecological functions, aesthetics and recreational potential of Exceptional Value and Category-1 streams cannot be decreased in any manner.”⁷⁹

These open trench crossing would pose many potential adverse impacts for flooding hazards, as the Myers’ report further explains:

“Trench backfill would have different conductivity than the surrounding alluvium, usually lower if the trench backfill is compacted and the surrounding is alluvium. The trench therefore would hydraulically impede groundwater flowing parallel to the stream and force it to surface into the stream. Depending on conditions downstream of the trench, the surface water would either percolate back into the alluvium or continue flowing as surface water, leaving less water stored in the alluvium than would otherwise be stored there. This could result in lower baseflow downstream of the trench because the trench effectively dams the groundwater flow so that groundwater discharges to the stream at times when the aquifer should be filling with percolating surface water. Each crossing is a different circumstance, but the DEIS has not analyzed the groundwater hydrology near any of the crossings.”⁸⁰

The choice of PennEast to rely on open-trench crossing methods has much higher risk for adverse flood hazard impacts than HDD would, “which would affect the groundwater flow and groundwater/surface water interactions much less than trenches with backfill.”⁸¹ This is simply because the bores have less effect on the overburden above the pipeline and do not interrupt the groundwater flow. This is not to say that there are no risks with HDD, there certainly are as the information from Mariner East 2 we provided indicates. But, when implemented properly and conscientiously, the impacts should be significantly less than open-trenching. For forested watersheds and forested riparian buffers along streams, HDD would be even more critical to consider because of the tree cutting that leads to thermal impacts to waterbodies. HDD should also be considered for longer stretches to better avoid resources. For example, proposed alignments often show pipeline companies drilling under a road or a development with high density development but exit just before a wetland or forest that could also be drilled under by extending the HDD. In this way the companies propose piecemealing from the start to discourage HDD instead of considering the forests and the stream cuts as valuable as the highway or other human structure where they proposed HDD. It is time the agencies fully require companies to drill under these public trust water resources when it can be done safely – a company’s unsupported statement that it is not feasible is not acceptable.

⁷⁹ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016.

⁸⁰ *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

⁸¹ *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.

The FERC EIS, “fails to disclose impacts to surface water resources due to pipeline construction.” As the Myer’s report explains, the EIS:⁸²

“acknowledges that “clearing and grading of streambanks, in-stream trenching, blasting, trench dewatering, inadvertent returns from HDD operations, and potential spills or leaks of hazardous materials” (DEIS, p 4-55, p 5-6) could affect surface waters. It lists several potential impacts including (DEIS, p 455):

- Modification of aquatic habitat
- Increased runoff and in-stream sediment loading
- Decreased dissolved oxygen
- Releases of pollutants from sediments
- Modification of riparian areas
- Introduction of chemical contaminants to waterways⁸³

Instead of quantifying either the existing conditions or describing how the pipeline would affect the existing conditions, the EIS essentially repeats this:

“noting that the “extent of the impact would depend on sediment loads, stream velocity, turbidity, bank composition, and sediment particle size” (DEIS, p 4-55). It does not quantify either the existing conditions or describe how the pipeline would affect the existing conditions. For each water crossing, the DEIS could easily describe the stream velocities, expected range of flows, bank composition, bed sediment sizes and contaminants present on those sediments, riparian conditions, and stream type (Rosgen and Silvey 1996). Using this information the DEIS could make at least semi-quantitative descriptions of the impacts pipeline construction will cause to the stream. HDD crossings would cause substantially fewer impacts to the stream, especially concerning changes in sediment transport and riparian vegetation (outlined at DEIS p 5-6).”⁸⁴

In order for the Corps to properly assess the impacts to flood hazards that could result from the Project, there must be “detailed analyses for each stream crossing of the potential for the crossing to change flow velocities, sediment transport, and stream type.” There also needs to be discussion of “alternative crossings including underground borings.”⁸⁵ In the absence of this information, the Corps is unable to make a true assessment of these impacts that could support issuance of a 404 permit.

Another potential flood-related hazard that would be exacerbated by the Project is the increased risk of landslides within the Project area. A Technical Review of Volume I

⁸² *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*

⁸³ *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*

⁸⁴ *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*

⁸⁵ *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*

FERC Draft Environmental Impact Statement Submitted For PennEast Pipeline Project conducted by Princeton Hydro explains this risk:⁸⁶

“The DEIS notes that in Pennsylvania, portions of the pipeline’s route traverses areas that are susceptible to landslides. This analysis is limited to areas prone to seismic events that could trigger a landslide. However, landslides often occur in the absence of any seismic event, especially in steeply sloped areas. Such landslides are more commonly associated with intense rainstorms or major snows melts, and increase in likelihood when lands are denuded of vegetation and native soils are disturbed and exposed. The DEIS does not discuss how such events could result in the catastrophic transport of large quantities of soil, rock and debris into sensitive upland, wetland, riparian and water resources.

Within Appendix D of the DEIS (E&SCP), PennEast notes that:

“The primary cause of landslides is when colluvial (loose) soil and old landslide debris on steep slopes give way. The geologic instabilities that cause landslides are often exacerbated by highway projects in which the earth is cut and soil is loosened. Other primary causes of landslides are rainfall or rain-on-snow events that can weaken debris on steep mountain slopes (McCormick Taylor, 2009).”

The PennEast project will create exactly these types of conditions (cut earth and loosened soils) as part of the land clearing and pipeline trenching elements of the Project. The construction phase of the project, when soils are exposed, soils are stock piled and the vegetation has been stripped from the site, offers the greatest potential for the occurrence of a landslide. Neither Sub-Section 5 (Description of Erosion and Sediment Control BMPs) nor Sub-Section 6 (Project Site Runoff Prior to Site Restoration) of the E&SCP (Appendix D of the DEIS) identifies any special actions or measures that will be implemented when conducting work in steep slopes to prevent a landslide.

Additionally, the post-construction alterations of the ROW’s vegetative cover and the inevitable compaction of site soils will increase the rate and volume of runoff generated from the Project ROW. These changes to prevailing soil conditions and alteration in the type of vegetated cover (trees and shrubs to grasses) increase the likelihood for post-construction landslides, especially in steeply sloped areas.”⁸⁷

Potential Flood Hazards to groundwater and surface waters.

“There always exists the possibility that during construction a spill or leaks will occur; for example a fuel spill or that directional drilling, trenching or related construction operations will result in the improper management of drilling fluids or dewatering effluent. These actions, in particular construction related accidents, can pose a threat to local groundwater resources. FERC concludes that any groundwater impacts attributable to

⁸⁶ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

⁸⁷ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

construction related operations will be minimized by PennEast's adherence to and implementation of a Spill Prevention, Control, and Countermeasures Plan."

"The Spill Prevention, Control, and Countermeasures Plan is contained in Appendix D of the DEIS (Erosion and Sediment Control Plan). It is part of an earlier document prepared by PennEast (Draft Erosion and Sediment Control Plan) dated September 2015. The subsection of the plan dealing with spill prevention and control is contained in Sub-Section 13 of the E&SCP, and is a single paragraph consisting of **five (5) simple bullet points**, none of which provide any direction of the actions that must be taken in the event of a spill. The Spill Prevention, Control, and Countermeasures Plan upon which FERC has based their findings is unreasonably simplistic, lacks any detail, and does not account for the highly sensitive and unique environments the pipeline will disturb."

According to the FEIS, the Project would cross the following Flood Hazard Zones:

"The Federal Emergency Management Agency (FEMA) identifies areas subject to flooding and high-volume flows identified as Special Flood Hazard Areas which are located within the 100-year floodplain. The Project mainline would cross 4.9 miles of FEMA Special Flood Hazard Areas, including 3.4 miles in Pennsylvania and 1.4 miles in New Jersey. The Hellertown Lateral would cross less than 0.1 mile of FEMA Special Flood Hazard Areas while the Gilbert and Lambertville laterals would not cross any FEMA Special Flood Hazard Areas. In addition, the pipeline route would cross-regulated flood hazard areas consisting of floodways and flood fringes of waters regulated under the New Jersey Flood Hazard Area Control Act Rules at N.J.A.C. 7:13. No tidally influenced waterbodies would be located within the Project area."⁸⁸

The fact that the Project contains overlap with Flood Hazard Zones increases the potential for adverse impacts to flood hazards on areas of public interest. For all of these reasons, the Corps should find the Project to be contrary to the public interest and deny its 404 application.

i. The proposed Project would adversely impact Floodplain Values in the region, resulting in a detrimental effect on the public interest.

The effect from the Project to floodplain values within the region would be wholly adverse and detrimental to the public interest. No beneficial impacts to floodplain values would result from the Project. Construction and maintenance activities would result in both temporary and permanent impacts to floodplain storage capacities through alteration of riparian vegetation at each stream and wetland crossing; soil compaction; and changes in elevation and contours.

The Project would result in Adverse Impacts to Floodplains, Including Their Permanent Alteration.

The project will permanently remove floodplain vegetation and result in compacted floodplain soils. Both of these, particularly when considered cumulatively across the pipeline project, as well as with the multiple projects in, or proposed for, the same region, are important. Floodplains vegetated with native trees and

⁸⁸ FEIS

shrubs can be four times as effective at retarding flood flows as grassy areas.⁸⁹ In addition, naturally vegetated floodplains provide breeding and feeding grounds for both fish and wildlife, they "create and enhance waterfowl habitat", and they "protect habitat for rare and endangered species."⁹⁰ Naturally vegetated floodplains are generally layered with leaf and organic matter which result in organic soils with high porosity and a greater capacity for holding water.⁹¹ The floodplain, in this natural state, is a riparian ecosystem that needs the overbank flows that the natural watershed's hydrology provides in order to remain healthy and in balance.⁹² According to the U.S. Environmental Protection Agency, the number one source of pollution to our nation's waterways is from nonpoint sources, including pollution from floodwaters, washed from the land in stormwater runoff.⁹³ Floodplains play a key role in reducing stormwater flows and containing floods, filtering out nonpoint source pollution, thereby reducing pollutant loading and protecting water quality.

The benefits of naturally vegetated and healthy floodplains include:

- Storing and slowing floodwaters;
- Intercepting overland flows, capturing sediment;
- Stabilizing streambanks, preventing erosion;
- Protecting wetlands and other critical habitats;
- Replenishing groundwater aquifers;
- Filtering out and/or transforming pollution;
- Providing recreation and education;
- Trees and other riparian vegetation: provide wildlife habitat; process nutrients and other would-be pollutants; shade and cool waterways; provide food for wildlife and stream insects (detritus); provide beauty and refuge.

The Delaware River's health and the health of its tributary streams are threatened by loss of its floodplain's function and the resulting increase in stormwater and floodwater. Adverse impacts to beneficial floodplain values must be considered. These include the accelerated runoff produced along the ROW that will result in more erosion and deposition within streams, increased transport and loading of contaminants, increase in flood peaks due to accelerated runoff (in turn reducing the amount of water entering the ground), decrease in groundwater recharge, blocked or diverted groundwater flow, soil compaction, and the removal of habitat and food sources for wildlife and aquatic life. These impacts can also produce a "ripple" effect by upsetting

⁸⁹ DNREC and Brandywine Conservancy, Conservation Design for Stormwater Management: A Design Approach to Reduce Stormwater Impacts from Land Development and Achieve Multiple Objectives Related to Land Use, September, 1997, p. 2-11.

⁹⁰ DNREC and Brandywine Conservancy, Conservation Design for Stormwater Management: A Design Approach to Reduce Stormwater Impacts from Land Development and Achieve Multiple Objectives Related to Land Use, September, 1997, p. 2-11.

⁹¹ DNREC and Brandywine Conservancy, Conservation Design for Stormwater Management: A Design Approach to Reduce Stormwater Impacts from Land Development and Achieve Multiple Objectives Related to Land Use, September, 1997, p. 2-11.

⁹² Poff, Allan, Bain, Karr, Prestergaard, Richter, Sparks, and Stromberg, "The Natural Flow Regime", BioScience, Vol. 47, No. 11

⁹³ Chester L. Arnold Jr., and C. James Gibbons, "Impervious Surface Coverage, the Emergence of a Key Environmental Indicator", APA Journal, Spring 1996, p. 245

the balanced ecosystem of the landscape through construction activities. The Corps should consider the short term, long-term, and cumulative impacts of these alterations. Unnatural flood levels and flood damages are experienced by communities living along the Delaware River and tributary streams. In addition, removal of vegetation along water systems removes the natural armoring that helps prevent accelerated erosion from unnaturally high flood flows. The ramifications, individually and cumulatively, of the multitude of proposed stream crossings for flooding, flood peaks, flood damages and erosion must be considered.

The Project would result in The Destruction of Naturally Vegetated Buffers Along All Wetlands and Waterways. Healthy and vegetated streamside buffers serve our communities by:

- Providing flood storage,⁹⁴ reducing flood peaks,⁹⁵ and slowing the velocity of floodwaters,⁹⁶ thereby reducing flooding and damaging flows in downstream and nearby communities;
- Protecting and enhancing water quality by preventing and filtering pollution⁹⁷ and enhancing the ability of the neighboring stream to process pollutants,⁹⁸ thereby protecting drinking water supplies, recreational uses of our waterways, commercial and recreational fisheries, ecotourism, and business operations that need clean water;
- Recharging aquifers that supply drinking water and base flow to streams;⁹⁹
- Providing and enhancing birding, fishing, hiking and other recreational opportunities that are so critical to our region's aesthetic beauty and community quality of life;
- Providing and enhancing the quantity and quality of habitat¹⁰⁰ to aquatic life, animals, birds and plants that are important to our watershed ecologically, economically, recreationally and psychologically;
- Providing organic matter critical for supporting aquatic organisms;¹⁰¹

⁹⁴ Tourbier, J. Toby "Open Space Through Stormwater Management, Helping to Structure Growth on the Urban Fringe".

⁹⁵ Army Corps of Engineers WRAP, "Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process", ERDC-WRAP-01-6, May 2002, citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995".

⁹⁶ Army Corps of Engineers WRAP, "Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process", ERDC-WRAP-01-6, May 2002, citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995".

⁹⁷ NJAC 7:8 NJDEP Agency Proposal Document at NJAC 7:8-5.5(h), USEPA, "Pesticide Tolerance Reassessment and Re-registration, Terbufos IRED Facts", EPA 738-F-01-015, October 2001;Id.

⁹⁸ Sweeney & Blaine, "Resurrecting the In-Stream Side of Riparian Forests", Journal of Contemporary Water Research & Education, Issue 136, June 2007.

⁹⁹ Castelle, Johnson, Conolly, "Wetland and Stream Buffer Size Requirements –A Review", J. Environ. Qual. 23:878-882 (1994); NJAC 7:8 NJDEP Agency Proposal Document at NJAC 7:8-5.5(h), page 77; Ibid. 38

¹⁰⁰ Army Corps of Engineers WRAP, "Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process", ERDC-WRAP-01-6, May 2002, citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995", citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995"

¹⁰¹ Army Corps of Engineers WRAP, "Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process", ERDC-WRAP-01-6, May 2002,, citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995".

- Providing shading and thereby providing water temperature control¹⁰² important for the quality of the stream including the health of the habitats and aquatic organisms present;
- Reducing flood damages by ensuring structure-free zones devoid of structures to be harmed;
- Protecting public and private lands from erosion and helping streambanks maintain their integrity in order to prevent/minimize the costs and harms of sedimentation and restoration;¹⁰³
- Increasing the market value and marketability of nearby homes and communities;¹⁰⁴
- Increasing the opportunity for and success of ecotourism businesses dependent on the aesthetic beauty of the river and its ecological health; and
- Maintaining the unique ecological and historical qualities of our River and region that are an international draw.¹⁰⁵

The loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain). The deforestation caused by the PennEast pipeline will result in increased stormwater runoff which will result in increasing flows in the stream, making stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Loss of riparian protection can also cause channel migration that can have serious implications over long stretches periods of time as the stream continues to erode, downcut, and deposit sediment in order to try and reestablish a stable channel. Extreme flow events will combine with the impacts inflicted by the construction and ongoing land management, including removal of riparian vegetation and forest, associated with the pipeline ROW to intensify the impacts of flooding.

Soil Compaction, Runoff and Recharge impacts will negatively affect floodplain values. The ROW associated with PennEast will be the location of compacted soils and, in the case of natural landscapes like forests, the maintenance of plants that have lesser capacity to infiltrate rainfall. The combination of compacted soils with low growing plants (to the degree they are able to grow in the compacted soils or under PennEast’s ROW management protocols) will result in increased runoff to nearby streams, thereby increasing flows in downstream communities.

According to the expert report *Technical Memorandum Review of Draft Environmental Impact Statement, Proposed PennEast Pipeline* conducted by Tom Myers, Ph.D.:

“Pipeline disturbance to soils includes the removal of vegetation which when present shelters the soil from raindrop erosion and protects/increase its capacity for rainfall recharge; and includes

¹⁰² Army Corps of Engineers WRAP, “Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process”, ERDC-WRAP-01-6, May 2002., citing DeBano and Schmidt 1990; O’Laughlin and Belt 1995”.

¹⁰³ Water, Science, and Technology Board, Board of Environmental Studies and Technology, “Riparian Areas: Functions and Strategies for Management”, 2002, citing Swanson, et al; Center for Watershed Protection, “Impacts of Impervious Cover on Aquatic Systems”, Watershed Protection Research Monograph No. 1, March 2003; Ibid. 38

¹⁰⁴ Center for Watershed Protection, Better Site Design: A Handbook for Changing Development Rules in Your Community, August, 1998, Pg. 134, Lutzenhiser, M. and N.R. Netusil. “The Effect of Open Spaces on a Home's Sale Price.” Contemporary Economic Policy 19.3 (2001): 291-298.

¹⁰⁵ For example, "Pennypack Park in Philadelphia is credited with a 38% increase in the value of a nearby property." Center for Watershed Protection, Better Site Design: A Handbook for Changing Development Rules in Your Community, August, 1998, p. 134

soil compaction and furrowing caused by construction traffic on the soils which reduces the soil's ability to infiltrate and recharge rainfall and impacts the ability of the soil to support/encourage vegetation regrowth. Highly compacted soils inhibit vegetation regrowth. Even when shrubs and trees are allowed to regrow on compacted soils as part of a pipeline maintenance plan, and are able to regrow, their ability to protect soils from erosion due to a healthy canopy and healthy root growth, as well as their ability to encourage rainfall infiltration and recharge, requires years and often decades to reestablish.”

“After construction, ongoing maintenance activities and inspection with heavy equipment can re-inflict compaction impacts. The impacts of construction of the proposed pipeline on soils, can have significant and enduring ramifications for runoff, erosion, groundwater, stream baseflows and for supporting healthy habitats required by wildlife.”¹⁰⁶

Increased landscapes that are the source of stormwater runoff contributing to flood flows, flood peaks, and more erosive stream flows, could be significant in some areas. It is the combination of damaged upstream habitats, coupled with the damaged floodplains and vegetative buffer areas, that increases the level of compromise to the stream channel and flow levels.

Flooding rivers can scour river bottoms and expose pipelines to powerful water currents and damaging debris. Extreme and erosive flooding events in streams crossed by PennEast will increase the likelihood of stream scour, exposure and rupture. Heavy rains threaten to increase overall stream degradation and channel migration— thereby also exposing buried pipelines.¹⁰⁷

The mitigation statement provided by PennEast in the Corps' Public Notice states that:

“No net loss to wetlands or waterbodies will occur within the pipeline corridor; Penn East will return all wetlands within the pipeline ROW to preconstruction contours and will restore natural flow conditions to all affected waterbodies.”

However, documented observations on the ground following pipeline construction and maintenance demonstrate that this is not the case. Photos taken by DRN volunteer monitors show wetlands that have a changed flow and elevation due to ground disturbance and the pipeline placement.¹⁰⁸ These hydrological changes and harms are permanent damage to these sensitive habitats.

According to Princeton Hydro's *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*,

“FERC recognizes that the Project has the potential to permanently alter the physical properties of native soil disturbed by clearing, construction, and maintenance activities,

¹⁰⁶ *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

¹⁰⁷ See e.g. 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>; 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).

¹⁰⁸ See attached *DRN Comments –Columbia Gas Line 1278 Line K Replacement in Special Protection Waters-DRBC Docket -D-2014-008-1*

specifically as a result of soil compaction, rutting, and erosion. However, FERC concludes that these impacts can be adequately mitigated through the implementation of the Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures). The Cornell Soil Health Test (CSHT) provides a standard for assessing the important physical, chemical and biological processes and functions of disturbed soil. The CSHT was used to evaluate the impacts of a recently constructed pipeline that transected University-owned land. The CSHT analysis definitively showed that soils within the ROW had significantly lower soil quality levels than the soils sampled in the adjacent areas unaffected by the pipeline's construction. This suggests that reliance on standard erosion control and soil handling techniques inadequately compensates for soil compaction issues within the ROW. Compacted soils inhibit the recharge of precipitation leading to a greater amount of stormwater runoff. The added runoff can lead to an increase in the mobilization and transport of pollutants and an increased opportunity for overall soil erosion.”

“Recent investigation of another pipeline ROW (Tennessee Gas pipeline as it passes through the Highlands region of New Jersey) conducted by the New Jersey Conservation Foundation¹⁰⁹ found multiple examples of ‘restored’ sites that were significantly altered from pre-pipeline conditions, even though each had been mitigated in accordance with FERC accepted erosion control and revegetation measures.”¹¹⁰

These are only a sample of the documented examples proving pipeline impacts to the floodplain storage capacities are not “temporary in nature” and all construction areas have not been shown to be “restored to pre-construction elevations and contours.” The finding “that the proposed mitigation measures will prevent any significant alteration of site soils or can successfully limit impacts attributable to such alterations is inaccurate as based on actual field assessments of ‘restored’ pipeline ROWs.”¹¹¹ As such, it would be irresponsible for the Corps to take these claims from the applicant as fact.

The extensive detrimental impacts caused by the Project’s potential adverse effect on flood values outlined above, combined with the many public benefits that rely on an intact floodplain and naturally vegetated buffers that would be lost, and the fact that no potential flood value benefits would result from the Project, provide the Corps with a clear cost-benefit analysis, demonstrating that the Project would not be in the public interest and are reason enough for the Corps to deny the Project 404 permits.

j. The proposed Project would have an adverse effect on Land Use and would be contrary to the public interest.

The proposed Project’s construction and maintenance activities would result in significant adverse effects to the existing land uses in the region, including the temporary and permanent loss of forests; wetlands; agricultural land; preserved open space; urban open space and waterways, all of which are of significant value

¹⁰⁹ Emile DeVito, PhD. August 2016. Letter with supporting report and photographs from New Jersey Conservation Foundation to Norman Bay, Chairman, FERC.

¹¹⁰ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹¹¹ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

to the public interest. The Project offers no conceivable public benefit to the land use. Additionally, the detrimental impacts to land uses are often unmitigable.

According to the EIS, a total of “1,613.5 acres of land, will be disturbed in order to construct the pipeline and supporting pipeline facilities (aboveground facilities, pipe and contractor ware yards and staging areas, and access roads). Once completed, the long-term operation and maintenance of the pipeline affects 784 acres of land, of which the majority (715 acres) consists of the pipeline ROW, 61 acres in the form of aboveground facilities, and 8 acres associated with new permanent access roads”.¹¹²

GIS analysis conducted by Key-Log economics estimates the acres impacted by the Project will be even greater:

“Impacted acres (area converted temporarily or permanently from its existing use or cover):

- o In the permanent right-of-way (ROW): 717.3
- o In the construction zone (the construction corridor, new temporary roads, pipeyards, and temporary aboveground infrastructure): 1,852.7
- o In new permanent access roads and aboveground infrastructure: 55.8
- o The most heavily affected land cover types: forest (386.8 acres) and cropland (147.0 acres) (ROW only)”¹¹³

As described by Key-Log Economics, the project area includes a wide variety of land uses which currently support an even greater selection of benefits to the public interest:

“This study region encompasses Bucks, Carbon, Luzerne, and Northampton counties in Pennsylvania, as well as Hunterdon and Mercer counties in New Jersey. This 2,961-square-mile region supports diverse land uses, including the Delaware, Lehigh, and Susquehanna Rivers, thriving cities and townships, wetlands, and parks. These natural, cultural, and economic assets are among the reasons more than 1.8 million people call this six-county region home and an even larger number visit each year for hiking, fishing, festivals, kayaking, horseback riding, weddings, and other events.”¹¹⁴

Many of the adverse impacts to land uses in the region, including forests, wetlands, agricultural lands, preserved open space, and waterways, are outlined throughout this comment and the attached reports. However, the full extent of detrimental impacts to land uses in the region cannot be fully known due to the deficient information and analysis available. As documented in the comment from Meliora Design,¹¹⁵ the information provided by PennEast and the FERC EIS:

“fail to consider the unique, site specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts associated with stream crossings, including open cut crossings. The DEIS fails to comprehensively evaluate each stream

¹¹² FERC DEIS

¹¹³ adapted from *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

¹¹⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

¹¹⁵ *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.

crossing with regards to conditions such as water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting. Lacking consideration of the site specific conditions at each crossing, the DEIS fails to require adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing. The proposed stream and wetland crossing locations, methods of construction, and long-term land use conditions appear to be based on the needs and preferences of PennEast and not informed by site specific conditions.”

While the full extent of adverse impacts to land uses resulting from the Project aren’t accurately portrayed in available information, Key Log Economics estimates the acreage of land affected by the Project according to its land use using GIS data, and provides insight into the massive scale, as shown in Table 4.

TABLE 4: Land Area Affected By PE, Study Region Total (See Also Figure 5)

Land Use	Baseline acreage in ROW	Baseline acreage in the construction zone	Baseline acreage in permanent surface infrastructure and access roads
Barren	4.4	52.1	0
Cropland	147.0	401.8	9.5
Pasture/Forage	77.6	164.0	4.4
Grassland	7.2	17.1	3.0
Shrub/Scrub	31.8	106.6	2.3
Forest	386.8	887.7	33.0
Water	3.5	6.3	0
Wetland	0.7	1.1	0
Urban Open Space	39.6	99.9	2.4
Urban Other	16.4	116.2	1.1
Total	715.0	1,852.7	55.8

Table 4. Acreage of Land affected by PennEast by Land Use¹¹⁶

Further examples of the adverse effects to land use that would result from the proposed Project, as well as resulting adverse impacts on the public interest, include:

- The single largest land use to be disturbed in Pennsylvania is forest – 59% of the pipeline length in Pennsylvania.¹¹⁷
- The ramifications of drought will be dramatically increased by land use changes such as those that will be inflicted by PennEast.
- Permanent, long term changes to land use cover and soil conditions, and corresponding increases in stormwater runoff and erosion. As a result of pipeline construction, there will be permanent long

¹¹⁶ Economic Costs of the PennEast Pipeline, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

¹¹⁷ *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.

term water quality impacts related to stormwater runoff, including increases in the rate, volume, and frequency of stormwater runoff.

As explained by Princeton Hydro, the adverse impacts to land use that would result from the project are significant and permanent:

“The pipeline’s work corridor right of way (the area disturbed during the survey, site-access and construction of pipeline) varies between 90 and 125 feet in width. Following construction, a 50 foot wide permanent right-of-way (ROW) will run the entire length of the pipeline. This ROW will **remain in a significantly altered state relative to existing conditions**. The temporary and permanent ROWs are part of the overall environmental damage caused by the pipeline. Supporting the “pipeline” are various appurtenant facilities used to transport the gas. These include access/maintenance roads, compressor units, metering stations, regulator stations, delivery stations, holders, valves, and the other infrastructure elements critical to the pipeline’s operations. These components of the pipeline are all above ground and are neither benign nor passive operational elements of the system.”¹¹⁸

The report further emphasizes the fact the mitigation measures proposed by PennEast will not actually allow the affected land to return to pre-construction conditions, including current land uses:

“There is a robust body of data that demonstrates FERC’s standard pipeline mitigation measures are actually often quite ineffective. These measures ... are not capable of restoring project sites to their original environmental state thus preventing the project site from providing its original ecological services and functions conditions.”¹¹⁹

The proposed Project would clearly result in significant adverse effects to the existing land uses in the region, including the temporary and permanent loss of forests; wetlands; agricultural land; preserved open space; urban open space and waterways. These losses would be detrimental to the public. The Project offers no benefit to the land uses to counter these adverse impacts. Additionally, despite PennEast’s claims, the detrimental impacts to land uses are often permanent and cannot be mitigated. As such, the Project would clearly result in adverse impacts that are contrary to the public interest, and the 404 permits should be denied by the Army Corps.

k. The proposed Project would adversely affect Navigation and would be contrary to the public interest.

The Project would cross three navigable waters: Susquehanna River and Lehigh River in Pennsylvania and the Delaware River located in both Pennsylvania and New Jersey.

Both the Lehigh River and the Susquehanna River will be impacted by short term adverse impacts to recreational navigation as the navigable waterway will be crossed using an open-trench with dual cofferdam crossing method, preventing navigation through the waterways during construction. There could be impacts

¹¹⁸ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹¹⁹ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

to navigation on the Delaware as well depending on how the proposed HDD were to proceed and whether or not there were any problems that resulted during construction operations.

As such, the proposed Project would adversely affect navigation and would provide no benefits to navigation for the public interest.

I. The proposed Project would adversely affect Shore Erosion and Accretion and would be contrary to the public interest.

The proposed Project would significantly and adversely affect shore erosion and accretion and result in cascading detrimental impacts to the public interest.

The loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain) and exacerbating the sedimentation impacts of construction. As noted by experts, the deforestation caused by the PennEast pipeline will result in increased stormwater runoff; this will result in increasing flows in the stream with stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Increased erosion means loss of habitat; channel migration that can have serious implications for riparian lands and vegetation over long distances and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel; and increased instream sedimentation which is considered a pollutant both legally and scientifically. Erosive and extreme flow events will combine with the impacts inflicted by the construction and ongoing land management, including removal of riparian vegetation and forest, associated with the pipeline ROW to intensify the impacts of both.

As documented by experts in the attached reports, including Meliora Design¹²⁰:

“The proposed pipeline conditions will significantly reduce the land surface’s ability to retain rainfall and facilitate infiltration, and will increase runoff frequency, volumes, and flow rates, including increased surface erosion and sediment transport to Special Protection or C1 waterbodies.”

“When vegetation regrowth is limited, the likelihood of accelerated erosion is increased. When runoff cannot infiltrate, is not slowed at the surface by vegetation, and has direct contact with exposed soils, sediments are much more likely to be transported to downhill streams and wetlands. This is of specific concern on significant portions of the pipeline right-of-way in proximity to stream crossings, where soils to be disturbed by pipeline construction are classified as Severe Erosion Potential (79), Poor Vegetation (122), and Rugged Terrain with slopes greater than 30% (28). These areas are especially prone to erosion and sediment transport to waterbodies.”¹²¹

At least 43 waterbody crossings have steep slopes that would be cut by the pipeline. These 43 crossings are proposed to have additional temporary workspaces (ATWS) within 50 ft. of sensitive water features, adding

¹²⁰ *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

¹²¹ *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

to the potential erosion threats to these steep banks and the nearby sensitive streams where sediment pollution can cause long-term harm.¹²²

According to the report by Princeton Hydro, the Project will lead to “Increased amounts of stormwater runoff, the rate of runoff and the frequency and longevity of erosive flows” and “Increased pollutant loading to wetlands and streams”, as well as “combination of increased runoff volume and increased rate of runoff”, which “has been repeatedly demonstrated as the root cause of stream erosion.”

Princeton Hydro also states:

“The acute erosion problems caused by the PennEast Pipeline are not limited to upland areas. Some of the more potentially severe acute and long-term impacts occur where the pipeline crosses through wetlands and streams. These areas are characterized by persistent standing water, actively flowing water or saturated soils. Such conditions present especially difficult conditions for the proper installation of erosion and sediment control measures. Such conditions also decrease the functionality of most erosion and sediment control measures, which by design are meant to work in dry environments.”¹²³

PennEast states that completed E&S Control Plans by agencies will adequately avoid harms but this is a false conclusion as can be seen on other pipeline projects where severe sediment pollution harmed local waterbodies, many of which had special protection designations¹²⁴. Because most agencies require quick establishment of groundcover to stabilize soils, which takes the place of establishing more desired and diverse native habitats, biodiversity and soil health is lost. Once soil chemistry, soil porosity, and soil layering (horizons) that took eons to form are destroyed by the construction process, erosion control measures usually require lime and fertilizer to be applied so that seed mixes grow rapidly. The addition of lime and fertilizer are like poison to what were once forest soils of low pH and low nutrients. This essentially ruins the chance that the soil will ever revert to a native plant community again. Alien invasive weeds of all kinds thrive on the nutrient-enriched, topsy-turvy soil layers in the aftermath of construction. Native herbaceous plants and shrubs almost never outcompete weeds in these altered, nutrient-enriched, high pH soils. Just like on abandoned farmland, these construction sites act as "post-agricultural soils," and just like our abundant forests on post-agricultural soils, the herbaceous and shrub layers will be dominated by alien weeds virtually forever, especially with overabundant deer in the equation.¹²⁵

In addition to the examples listed here, numerous attached reports outline the many ways the proposed Project would adversely affect erosion and sedimentation, as well as the ways in which this will lead to cascading detrimental impacts to the public interest. As such, the Corps should reject the 404 permits for the Project as it would be contrary to the public interest.

¹²² *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.

¹²³ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹²⁴ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.

¹²⁵ Dr. Emile DeVito, New Jersey Conservation Foundation, Email Correspondence Re: Tennessee Gas Pipeline practices. July 14, 2015.

m. The proposed Project would adversely affect Recreation and would be contrary to the public interest.

The proposed Project would significantly and adversely affect recreation and result in cascading detrimental impacts to the public interest. The project will cross a number of highly used recreational and special interest areas. Because site-specific crossing plans and impact analyses are sorely lacking and/or missing in the materials provided, it is difficult to assess full impacts. But given that hiking, birding, boating, fishing, hunting and other recreational enjoyments are dependent on beautiful and healthy habitats to be attractive for recreational use, and because PennEast will harm these attributes, both enjoyment and economic impacts are inevitable and could be significant. The open cut stream crossings will impact boating, fishing, birding and other recreational uses in the areas – both during construction but also during operation and maintenance due to the changed natural conditions from the permanent and repeatedly maintained footprint. The crossing of the Appalachian Trail by the proposed route is in a section that is only feet away from a scenic overlook and cliff outcropping – it is hard to imagine a more damaging location for harming this important recreational and cultural resource. This area is also prime rattlesnake habitat.

We know that the recreational ramifications of PennEast are well recognized by the citizenry and of high concern as well. According to Key Log’s analysis: “In a review of comments collected through the DEIS, 99.4% of people who mentioned recreation and tourism businesses, 100% of commenters mentioning health (either related to the pipeline or the compressor station), and 93.3% of people mentioning the environment believed the PE would have a negative effect.”

The recreation supported by the region—and particularly by the water resources and preserved natural areas in the region, many of which are targeted by PennEast—are also an important part of the local economy. According to the attached Key Log analysis: “Tourists spent about \$4.5 billion in the study region in 2015. The companies that directly served those tourists employed 40,896 people, or 5.7% of total private employment in the region (Tourism Economics, 2015 & 2016).”

As further observed by Key Log: “A loss of scenic and recreational amenities, the perception and the reality of physical danger, and environmental and property damage resulting from the PE could discourage people from visiting, relocating to, or staying in the region. Workers, businesses, and retirees who might otherwise choose to locate along the PE’s proposed route will instead pick locations that have retained their character, their productive and healthy landscapes, and their promise for a higher quality of life.” “This is already occurring in the region. With the possibility of the PE looming, business plans are stalling and the real estate market is slowing.”

Other examples of the many adverse impacts to recreation on both public and private lands within the region are well explored in the attached reports.

The FERC EIS does not consider the adverse impacts to recreation and ecotourism so vitally important to the impacted region. As a result, given that the Corps relied heavily on that document for its analysis, the Corps has similarly not given due consideration to this important public interest, recreational, environmental and economic interest.

In light of the many ways the proposed Project would adversely affect recreation, as well as the ways in which this will detrimentally impact to the public interest, the Corps should reject the 404 permits for the Project as it would be contrary to the public interest.

n. The proposed Project would have significant adverse effects on Water Supply and Conservation, which would be both detrimental and contrary to the public interest.

The PennEast Pipeline will cross multiple water sources including aquifers, wellhead protection areas, and the Delaware River. PennEast prepared a Well Monitoring Plan stating that the company will conduct pre- and post-construction water quality monitoring within 150 feet of the construction corridor. However, the New Jersey Department of Environmental Protection commented in response to the plan, that a monitoring distance of 150 feet of the pipeline is inadequate, instead, suggesting a 1,000 feet monitoring radius (New Jersey Department of Environmental Protection, 2015). While the Corps is only looking at the Pennsylvania portion of the project, this observation by the NJDEP is an equally sound recommendation for the Pennsylvania portion. The Environmental Protection Agency also submitted a comment about drinking water concerns and deficiencies in information in the DEIS. Specifically they stated PennEast Pipeline Company should work with state water agencies to account more thoroughly for any potential contamination.

There are several public and private wells along the construction corridor, with dozens of communities already passing resolutions opposing construction of the pipeline.¹²⁶ During public comment on the project, there have been numerous findings regarding potential and serious impacts to drinking water sources. Additionally, a significant amount of inaccurate or missing information has been identified. The extent to which it relied on PennEast and Corps documents where these multiple and serious deficiencies existed.

“The proposed pipeline route passes through rural areas where many residents obtain their drinking water from onsite wells. One of the most widely recognized functions of wetlands is their ability to absorb or filter pollutants such as nitrogen, phosphorus, and sediments and thereby to provide an important water quality benefit. When wetlands are located above or along private drinking water supplies, that water quality enhancement function is particularly significant.”¹²⁷

“Schmid analysis “identified properties and specific landowners in Pennsylvania where there are (confirmed), or where there are likely to be, springs or drinking water wells located 10 within 150 feet of the proposed pipeline construction workspace. Examples include: at MP 58.2 along E. Dannersville Road in Moore Township, Northampton County; at MP 57.8 along W. Beersville Road in Moore Township, Northampton County; near MP 53 along North Cottonwood Road in Danielsville, Northampton County; near MP 45.75 east of Beers Lane, Towamensing Township, Carbon County.”¹²⁸

“Thus, FERC's statement that "there are no private water supply wells or springs located within 150 feet of the pipeline construction workspace in Pennsylvania" (DEIS, page ES-5) is false. This is a problem in its

¹²⁶ Spencer Phillips, PhD, et al. *Economic Costs of the PennEast Pipeline*. January 2017. Key-Log Economic, LLC.

¹²⁷ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016

¹²⁸ Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

own right, because there can be direct impacts to private water supplies if construction activities are not done carefully, or if leaks occur during operation of the pipeline. In addition, the fact that there are private springs and wells used for water supply within 150 feet of the proposed ROW in Pennsylvania suggests that there very well may be additional Exceptional Value Wetlands not yet identified that meet the PADEP criterion at §105.17(1)(iv) regarding association with existing public or private water supplies.”¹²⁹

Given that the Palmerton Water Company has four production wells at the foot of Blue Mountain that supply water to thousands of people living in the towns of Palmerton and Aquashicola, an analysis of groundwater impacts and potential threats to this important drinking water supply needs to be earnestly and scientifically considered by the DEIS; as written, it is not.

The DEIS should, but did not, provide a plume map of groundwater contamination and a map showing soils contamination from the Palmerton Zinc Pile Superfund site assessing the implications of the various proposed pipeline routes for water, groundwater and drinking water contamination.¹³⁰

The information provided by PennEast and the FERC EIS is too deficient for the Corps to make any meaningful assessment of the proposed Project’s true and full impacts on water supply and conservation:

- FERCs statement that "there are no private water supply wells or springs located within 150 feet of the pipeline construction workspace in Pennsylvania" (DEIS, page ES-5) is false. Delaware Riverkeeper Network experts have “identified properties and specific landowners in Pennsylvania where there are (confirmed), or where there are likely to be, springs or drinking water wells located within 150 feet of the proposed pipeline construction workspace.”
- The EIS does not provide data and references supporting the assertion that there is “no indication that common construction activities that involve shallow excavation, such as home construction, has resulted in increased arsenic concentrations in water supply wells” (DEIS, p 4-12).
- The EIS does not provide a plume map of groundwater contamination and a map showing soils contamination from the Palmerton Zinc Pile Superfund site assessing the implications of the various proposed pipeline routes for water, groundwater and drinking water contamination.
- The EIS fails 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 trenching, and groundwater drawdown caused by trenching.
- The EIS fails to consider how the project construction would affect recharge rates, which are highly variable given the underlying geology, soil type and thickness, and topography controlling the actual recharge location.

¹²⁹ Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

¹³⁰ *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

- The EIS fails to analyze as part of an analysis of preferential flow the potential for trench backfill to facilitate the movement of contaminants through the groundwater .
- The EIS fails to consider the pipeline trench as a pathway for contamination.
- The EIS lacks information regarding the standards used to guide HDD water withdrawals that prevent impacts on downstream ecological or human uses and needs.
- The EIS fails to include a table of bedrock aquifers including relevant properties, specific capacity statistics or well yields, and conductivity, where available.
- The EIS fails to include maps, 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.
- The EIS fails to include a complete inventory of springs and seeps within a quarter mile of the pipeline that adequately considers the changes which could occur due to pipeline construction.
- The EIS fails to present both the result of a final karst study for the area and plans for mitigating problems caused by constructing through karst by rapid contaminant transport within karst.
- The EIS fails to include data or information regarding the mineral content of the soils to be crossed by the proposed pipeline, nor does it include the results of leaching tests which are required.
- The EIS fails to assess the potential for pipeline construction to result in acid generation or leached metals in all areas where it crosses mine spoil.
- The EIS fails to present avoidance and mitigation discussions focused on preventing the leaching and transport of acid and metals from the site.
- The EIS fails to provide the data and references supporting the assertion that “shallow groundwater ... generally have (sic) low arsenic concentrations and that high arsenic concentrations ... are the result of more mature groundwater interacting with geochemically susceptible and arsenic-enriched water bearing zones, which are often deeper wells” (DEIS, p 4-12).

Given the extensive lack of data critical to the public interest, it would be irresponsible for the Corps to approve 404 permits for the project.

The destruction of naturally vegetated buffers along all wetlands and waterways resulting from the Project would have harmful impacts on a number of public interest concerns, including the health and safety of drinking water supplies:

- Protecting and enhancing water quality by preventing and filtering pollution, and enhancing the ability of the neighboring stream to process pollutants, thereby protecting drinking water supplies,

recreational uses of our waterways, commercial and recreational fisheries, ecotourism, and business operations that need clean water;

- Recharging aquifers that supply drinking water and base flow to streams;

Additionally, the water withdrawals and discharges within the Delaware River watershed could result in significant and adverse impacts to the water supply and conservation for the region, and the public interest. PennEast anticipates using approximately 33 million gallons of water for hydrostatic testing,¹³¹ including withdrawals and discharges.

PennEast is subject to DRBC jurisdiction and docket review as a result of the Project's substantial effects on water resources of the Basin—including, through its substantial land disturbance, its impact on Comprehensive Plan Areas, and its impact on Special Protection Waters, among others—and is therefore required to be submitted for Commission review. The jurisdiction of the Delaware River Basin Commission over the PennEast Pipeline project extends the entire length of the project as it passes through the boundaries of the Delaware River watershed.

The DRBC articulated in its November 14, 2014 letter to PennEast that it intends to enforce its authority and that “DRBC review and approval are required prior to the commencement of any water withdrawal, discharge, or earth disturbance activities.” April 23, 2015, the DRBC sent a letter to FERC that included a request for FERC to consider a joint public meeting and DRBC public hearing on the captioned project. On April 25, 2016, the DRBC withdrew that request. The DRBC will conduct its public process independently of FERC's.

PennEast submitted its application to DRBC for the PennEast Pipeline Project (“Project”) on February 8, 2016 and has since submitted supplemental material and responses to DRBC comments on April 1, 2016; July 25, 2016; May 23, 2016; November 1, 2016, April 17, 2017, and May 12, 2017.

However, PennEast has not yet developed a hydrostatic test plan that identifies the final hydrostatic test water sources and discharge locations,¹³² including the water volume that would be withdrawn and discharged as both a Project-total amount, and a daily amount, for each pipeline segment.

Such significant withdrawals can adversely affect water conservation at the expense of the public interest, especially in exceptionally dry periods when low flow conditions may be encountered.

Discharges of hydrostatic test water would be regulated by a state SPDES permit, and the classification of the receiving waters (as applicable) would be identified as part of the permitting process. As such, water should be prevented from being discharged into state-designated exceptional value waters, waterbodies that provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies. However, the fact that expert analysis and field monitoring to date has demonstrated that PennEast has falsely characterized or excluded the mention of these protected resources in its materials raises concerns.

¹³¹ FERC EIS

¹³² FERC EIS

Due to this high potential for the project to adversely impact water supply and conservation, and the detrimental impacts to the public interest that would result, the Corps should deny the Project's 404 applications.

o. The proposed Project would adversely affect Water Quality resulting in a detrimental impact on the public interest.

The project would result in severe and adverse impacts to water quality which would be contrary to the public interest.

Examples of some of the many adverse impacts to water quality that would result from the Project include:

- Due to land use changes and soil alteration, there will be permanent long-term water quality impacts related to stormwater runoff, including increases in the rate, volume, and frequency of stormwater runoff.¹³³
- At least 43 waterbody crossings have steep slopes that would be cut by the pipeline. These 43 crossings are proposed to have additional temporary workspaces (ATWS) within 50 ft. of sensitive water features, adding to the potential erosion threats to these steep banks and the nearby sensitive streams where sediment pollution can cause long term harm.¹³⁴
- Pipeline construction results in the loss of riparian (streamside) vegetation.¹³⁵ For each of the pipeline construction techniques there is a resulting loss of vegetation and foliage associated with clearing the stream banks – the PennEast pipeline is no exception. At least 255 streams will be crossed with the vast majority being crossed via open trench methods which result in permanently denuded streambanks. 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.
- The loss of riparian vegetation along streams will, among other impacts, remove shading and result in increased stream temperatures. Many of the streams being cut by PennEast are smaller, headwater streams with high water quality. The loss in vegetation will magnify increased stream temperature and thereby reduce its quality and suitability for aquatic life. For some species, the resulting change in temperature could have dramatic impacts.
- Furthermore, the loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain) and exacerbating the sedimentation impacts of construction. As noted by experts, the

¹³³ *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

¹³⁴ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.

¹³⁵ Norman, *supra*.

deforestation caused by the PennEast pipeline will result in increased stormwater runoff; this will result in increasing flows in the stream with stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Increased erosion means loss of habitat. Channel migration can have serious implications for riparian lands and vegetation over long stretches and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel; and increased instream sedimentation which is considered a pollutant both legally and scientifically.

- “When vegetation regrowth is limited, the likelihood of accelerated erosion is increased. When runoff cannot infiltrate, is not slowed at the surface by vegetation, and has direct contact with exposed soils, sediments are much more likely to be transported to downhill streams and wetlands. This is of specific concern on significant portions of the pipeline right-of-way in proximity to stream crossings, where soils to be disturbed by pipeline construction are classified as Severe Erosion Potential (79), Poor Vegetation (122), and Rugged Terrain with slopes greater than 30% (28). These areas are especially prone to erosion and sediment transport to waterbodies.”¹³⁶

Erosion and sedimentation controls and best management practices do not prevent adverse impacts.

- FERC states that completed E&S Control Plans by agencies will adequately avoid harms. This is a false conclusion as can be seen with pipeline projects where severe sediment pollution harmed local waterbodies, many of which had special protection designations,¹³⁷ as explained further above.
- “The proposed pipeline conditions will significantly reduce the land surface’s ability to retain rainfall and facilitate infiltration, and will increase runoff frequency, volumes, and flow rates, including increased surface erosion and sediment transport to Special Protection or C1 waterbodies.”¹³⁸
- “although erosion and sediment control measures could be implemented, the topography of sections of the pipeline’s route will limit the effectiveness of soil and sediment control measures. Therefore, even with the best developed soil erosion and sediment control plan in place there will be sediment and soil erosion impacts given the scale of the project and the sensitivity of the environments traversed by the pipeline.”¹³⁹

Compliance with Section 401 Water Quality Certification.

¹³⁶ *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

¹³⁷ *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network

¹³⁸ *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

¹³⁹ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

In accordance with Section 401 of the Clean Water Act, a Water Quality Certificate is necessary from the State government in which the work is located. As of now, the New Jersey Department of Environmental Protection (NJDEP) has not issued a Water Quality Certificate for the portion of the project located in the State of New Jersey.

On April 26, 2017 the NJDEP issued a determination that the PennEast application materials submitted to the state were significantly deficient and incomplete. Subsequently, on June 28, 2017, NJDEP determined the PennEast Pipeline Company's application for state approval of its project to be "administratively closed" due to the company's failure to remedy significant identified deficiencies and its failure to provide full information in a timely fashion for Clean Water Act decision making. In its determination letter, the NJDEP wrote:

"...given the complexity of the remaining deficient items, and the lack of demonstrated progress on the part of the applicant, it appears that it would be unlikely that an additional 60 days would allow substantial progress on the application. This application will be deemed 'administratively closed' as of the date of this letter."

While the applicant did obtain a 401 Water Quality Certification on February 7, 2017, from the Pennsylvania Department of Environmental Protection (PADEP), the Delaware Riverkeeper Network is currently involved in ongoing litigation with the state over this determination and its failure to apply appropriate state standards for determining whether a 401 Water Quality Certification was proper.

PADEP has also sent a series of three incompleteness review letters to PennEast for its Chapter 105 and Chapter 102 permits. Each of the letters has indicated the applications submitted are not yet considered to be complete by PADEP and that they cannot commence technical review until the applications are complete. The incompleteness letters were sent on April 26, 2016, and again September 19, 2016 and December 23, 2016. On June 26, 2017, DEP received a request for an extension from PennEast Pipeline Company, LLC. PennEast requested additional response time to the December 23, 2016 incompleteness review letters, indicating that they "do not anticipate submitting the information requested to complete the applications until December 29, 2017." On August 10, 2017, DEP granted the requested extension. PennEast then asked for two more extensions and did not provide PADEP with the requested materials until December 26, 2018 and then changed the route two months later in February 2019.

The missing information that PADEP requires for their Chapter 105 Water Obstruction and Encroachment Permits and Chapter 102 Erosion and Sediment Control permits is extremely relevant to the water quality impacts that the Corps is required to consider as part of its 404 public interest review.

Information gaps that risk adverse impact to water quality:

- The arsenic analysis provided in the EIS is insufficient to indicate that arsenic leaching from pipeline construction in the Newark Basin would not be a problem for shallow groundwater and therefore needs to legitimately and scientifically analyze this issue.
- PennEast and FERC have not included HDD water discharge details including the specific discharge method and impacts on receiving streams;

- Investigation is incomplete for vernal pools; in Pennsylvania, survey work is 21% **incomplete**; in New Jersey, it is 74% **incomplete**.

Water quality effects of crossings specific to the Philadelphia District review:

According to the original 2017 Public Notice from the Philadelphia District, the project would include the following waterbody crossings and impacts:

IP-1: Pipeline crossing of Bear Creek and unnamed tributaries of Bear Creek. The crossing will impact a total of 1.06 acres. Specifically, the crossing will impact 0.15 acre of water ways. The waterways will be crossed in a dry condition created by the construction of a cofferdam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods.

IP-2: Pipeline crossing of the Lehigh River. The crossing will impact a total of 1.01 acres of the waterway. The Lehigh River will be crossed in a dry condition created by the construction of a cofferdam and bypassing the water around the construction area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of the waterway.

IP-3: Pipeline crossing of unnamed tributaries to Laurel Run. The crossing will impact a total of 1.83 acres of waters and wetlands. Specifically, the crossing will impact 0.10 acre of waterways. The waterways will be crossed in a dry condition created by the construction of a cofferdam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of waterway or wetland area.

IP-4: Pipeline crossing unnamed tributary to Stony Creek. The crossing will impact a total of 1.19 acres. Specifically, the crossing will impact 0.11 acre of waterways. The waterways will be crossed in a dry condition created by the construction of a cofferdam and bypassing the water around the work area via pumps or a flume. Once a dry condition is established the pipeline will be installed via traditional open trench methods. Once the crossing is restored there will be no loss of waterway or wetland area.

IP-5: Pipeline crossing of PFO wetlands, the Delaware Canal, and the Delaware River. The crossing will be constructed via Horizontal Directional Drill (HDD) methods. The HDD will extend from an upland field approximately 1,200 feet west of the Delaware River to an upland field approximately 1,100 feet east of the Delaware River. In addition to crossing under the Delaware Canal, the Delaware River, and a PFO wetland, the HDD will go under State Route 611 in Pennsylvania, Old River Road, the Riegelsville Milford Road and a railroad line New Jersey. There are no surface impacts to waters and wetlands associated with this crossing.

Each of these crossings would have serious adverse impacts to the water quality in the region. For example, even the HDD crossing of the Delaware River raises concerns. Alternate crossing techniques such as horizontal directional drilling (HDD) are often used to minimize the likelihood of sedimentation impacts. The HDD method is typically used in larger stream crossings and requires a significant amount of work space to store the equipment on both sides of the stream. These work spaces are described as temporary but the impacts associated with the clearing of this land can be permanent. While often touted as environmentally-friendly, HDD is an unproven method that frequently leads to spills and brings inherent

risks to the environment. The recent spilling issues with the Mariner East 2 Pipeline is proof of this. Between April 2017 and August 2017, there have been 90 spills releasing over 202,000 gallons of HDD drilling fluids into the environment from Mariner East 2.¹⁴⁰

These drilling fluids largely consist of non-toxic bentonite, leading many to believe that it is safe. However, non-toxic does not mean completely safe for the environment. Drilling fluids substantially increase suspended solids in a stream, interfering with fish gill development and function, reducing the quality of fish spawning and rearing areas, reducing fish refuge sites, reducing food availability to upper trophic levels, smothering and displacing macroinvertebrates, and filling interstitial spaces in substrates.¹⁴¹ Furthermore, drilling mud deposition rates far exceed the rates of natural sediment deposition and erosion.³ Even with Erosion & Sediment Control BMPs in place, these measures frequently fail and cannot be relied upon as effective protection. DRN has witnessed these failures countless times, particularly recently with the Mariner East 2 Pipeline, as evidenced in the pictures below from Huntingdon County in May of 2017.



¹⁴⁰ Legere, L. (2017). Some drilling allowed to resume on Mariner East pipeline after spills. *Harrisburg Bureau*, August 4, 2017.

¹⁴¹ Crowell, H. (2014). Ecological Impacts of Inadvertent Returns from Horizontal Directional Drilling (HDD). HullRAC Science Summit, February 4, 2014.

Finally, there is evidence that the acoustic impacts from construction activities, such as those described for this project, can significantly harm fish. The effects of underwater sounds created by construction activity on fish may range from a brief acoustic annoyance to instantaneous lethal injury depending on many factors.¹⁴² Even at non-lethal levels, low levels of acoustic damage may result in the fish not being able to swim normally, detect predators, stay oriented relative to other fish in the school, or feed or breed successfully. This is a potential threat to all fish in the vicinity of the construction.

The proposed open-trench crossing of the Susquehanna, even when considered in isolation from the Project, poses such serious adverse impacts on water quality that it is sufficient basis for the Corp to determine the Project is contrary to public interest and deny its 404 permits.

The Susquehanna River Crossing will result in 12.97 acres of temporary impacts to the Susquehanna River. At the crossing, PennEast proposes to:

“use a dual cofferdam system to construct the Susquehanna River crossing ... Preliminary engineering of this crossing would involve installing a Portadam® at the upstream tip of Monocanock Island, which is located in the river's center, to divert flow to one side of the river...Secondary cofferdams would be installed adjacent to the pipeline trench for further dewatering.”¹⁴³

Penn East anticipates that construction of the Susquehanna River crossing would be completed within 45 days, including cofferdam construction, dewatering, pipeline construction, and restoration. Trenching, pipeline construction, and backfilling will take 6 days (3 days for each side of the river). According to the notice, PennEast “provided the following justification written below for the need of an open-cut installation across the North Branch of the Susquehanna River, in lieu of directional drilling under the river”:

“The Susquehanna River, as it flows through Wilkes-Barre in Luzerne County, presented a challenge to the Project with its existing geologic setting and historic coal workings that occurred throughout the area. PennEast has extensively investigated this regional geohazard, and implemented field investigations and project routing that supports the design and planning for construction and long-term operation of the Project.”

These “field investigations” described by PennEast consisted of meetings with PADEP Bureau of Abandoned Mine Reclamation (BAMR), desktop analysis of historical underground mine catalogs, and maps and records; as well as two geotechnical boring investigations in exploratory holes to determine the nature of the ground conditions beneath the Susquehanna River.

As a result of the desktop analysis, PennEast found that there was not sufficient clearance between the ground surface and previously worked coal seams for HDD without the potential for intersecting the coal worked seams, and risking “inadvertent return of borehole fluid into the mine seams which, in turn, could surface into the River or purge acid mine drainage existing in the mine into the River.” Additionally, the results of their boring investigations found that soil conditions were such that “drilling fluids within the HDD bore cannot be controlled or maintained, resulting in drilling fluid migration into the surrounding soils...Therefore, based on the geotechnical conditions observed in the boreholes and knowledge of historic

¹⁴² California Department Of Transportation (2001). San Francisco – Oakland Bay Bridge East Span Seismic Safety Project, Pile Installation Demonstration Project, Fisheries Impact Assessment, August 2001.

¹⁴³ Corps Public Notice

mine workings in the area, traditional open-cut method of installation is proposed at the Susquehanna River crossing.”

While the Delaware Riverkeeper Network agrees that HDD does not seem like a safe option for crossing the Susquehanna, we are also concerned by the risks that would result from an open-trench crossing in this area, particularly in light of the gaps in site specific information and the existing mine-impacted soil pollution, including acid mine drainage (AMD) in the area. These include:

Lack of site specific information:

PennEast’s statement that “Additional design detail and supporting engineering analyses will be submitted to the USACE Baltimore District and the PADEP in the application update after all surveys are complete” is of great concern. It would be completely irresponsible for the Corps to permit this 404 crossing prior to the completion of PennEast’s site surveys, engineering analysis, and design details.

As stated in Robert Hughes comments to FERC: “abandoned mines and an underground mine pool is located in that area and should be a cause for some concern and should be looked at much more closely should any trenching or excavation be done in that area.”¹⁴⁴ Mine mapping in the region is incomplete, inaccurate, and in some cases, maps don’t even exist. This is due in part to coal operators going “wildcatting,” or mining in areas without properly documenting what they were doing.¹⁴⁵

Additionally, the known existing mines and their proximity to the riverbed and open trench seem to pose serious risks. “PennEast discovered that ten named coal seams are present beneath the proposed Susquehanna River crossing location or surrounding areas. Four mine entrances were identified near the proposed Susquehanna River crossing location. The historic mine shafts which exist in close proximity to the River are not intersected by the currently proposed Project alignment. At the specific crossing of the Susquehanna River, there is estimated to be significantly greater than 60 feet of clearance between the ground surface and previously worked coal seams which exist closer toward the eastern bank of the Susquehanna River.” According to PennEast, “This clearance between the top of seams and the bottom of the proposed trench depth is considered sufficient clearance to ensure that trenching operations will not intersect historic workings”. However, even if the historic maps reviewed are correct and there is a 60 foot clearance between the ground and coal seams, we are concerned whether this would be sufficient clearance to safely trench when also considering the depth required for an open trench cut of a 36” pipe in a major river. As Princeton Hydro explains, the depth and disturbance of this open-trench crossing would be significant:

“The trench depth for the 36” diameter PennEast Pipeline must conform to the Department of Transportation’s Pipeline and Hazardous Materials Safety Administration (PHMSA). For safety reasons it must be buried deep enough to avoid accidental punctures and to deal with seasonal frost issues. The PHMSA requires pipelines transporting conventional and unconventional gas to typically be covered by 30 to 36 inches of soil overburden. The thickness of soil cover may be greater when the pipeline runs under a roadway or when it runs under a stream, river or lake. PHMSA may require additional cover (48 inches to 60 inches) when the pipeline runs under agricultural lands. Less cover however may be allowed (as little as 18 inches) when the pipeline cuts through a consolidated area

¹⁴⁴ January 27, 2015 Comment of Robert E. Hughes Executive Director Eastern PA Coalition for Abandoned Mine Reclamation to FERC Re PennEast pre-filing docket no. PF15-1. Accession no. 20150127-5018.

¹⁴⁵ "River concerns surface about pipeline," Elizabeth Skrapits, The Citizen's Voice. March 9, 2015.

<http://citizensvoice.com/news/river-concerns-surface-about-pipeline-1.1845246>

of bedrock. Nonetheless the amount of excavation required to properly trench the pipe is significant.”¹⁴⁶

The added risk of scour in the backfilled trench could add to the risks of the river both intersecting coal seams and exposing coal-related pollution in the soil. This risk would seem to be potentially exacerbated by the pervious gravel soils found during boring investigations:

“The geotechnical conditions beneath the river were found to be of deep alluvial deposits underlain by sedimentary rock. The overburden conditions observed were primarily stiff silts; however, layers of soft clay and highly permeable gravels were also encountered during drilling... **Gravel deposits, similar to the river deposits observed in the borings, present a pervious pathway for drill fluid and therefore increase the risk of an inadvertent return.** The presence of gravels also present challenges associated with bore stability, raveling and inducing steering corrections to maintain a proposed design alignment.”¹⁴⁷

Mine-impacted soil and open-trench concerns:

“Because the placement of the pipe in the trench takes time there is the need to stockpile the excavated soil in areas adjacent to the trench. Each stockpile represents another opportunity for offsite soil migration. This happened during the construction of the Tennessee Gas pipeline in Northern New Jersey leading to the impact of streams, wetlands and large recreational lakes located adjacent to the pipeline ROW.”¹⁴⁸

“There are numerous mines near the centerline of the proposed pipeline, beginning at about MP 5.1 and continuing to MP 11.2, as noted in DEIS Table 4.1.4-1. None apparently are operating. The soils table in RR7 (Table 7.1-1) lists various soils in this reach as ‘mine dump’ or ‘strip mine, burned’. Partially shown on Figure 7, mine-affected soils cover substantial areas on the east side of the Susquehanna River crossing. Excavating or otherwise disturbing mine spoil can release contaminants, including acid mine drainage (AMD) if sulfides are present.”

“However, the DEIS does not present any discussion of minerals that could be present in these soils or discuss whether minerals or other contaminants including AMD could result from meteoric water leaching through or running off of these soils. The mine spoil identified in RR7 is considered to have high conductivity (RR7, Table 7.1-1 for Luzerne County), which means the potential for contaminants to be released by construction disturbance is relatively high. It also has the potential for high erosion when disturbed (RR7, p 7-16). But the DEIS fails to discuss the pollution potential that will result.”¹⁴⁹

In order for the Corps to make a responsible evaluation of the crossing, FERC must “provide 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”; “assess the potential for pipeline construction to generate acid

¹⁴⁶ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹⁴⁷ Army Corps Public Notice (emphasis added)

¹⁴⁸ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

¹⁴⁹ *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

generation or leach metals in all areas where it crosses” mine spoil”; and “present avoidance and mitigation discussions focused on preventing the leaching and transport of acid and metals from the site.”¹⁵⁰

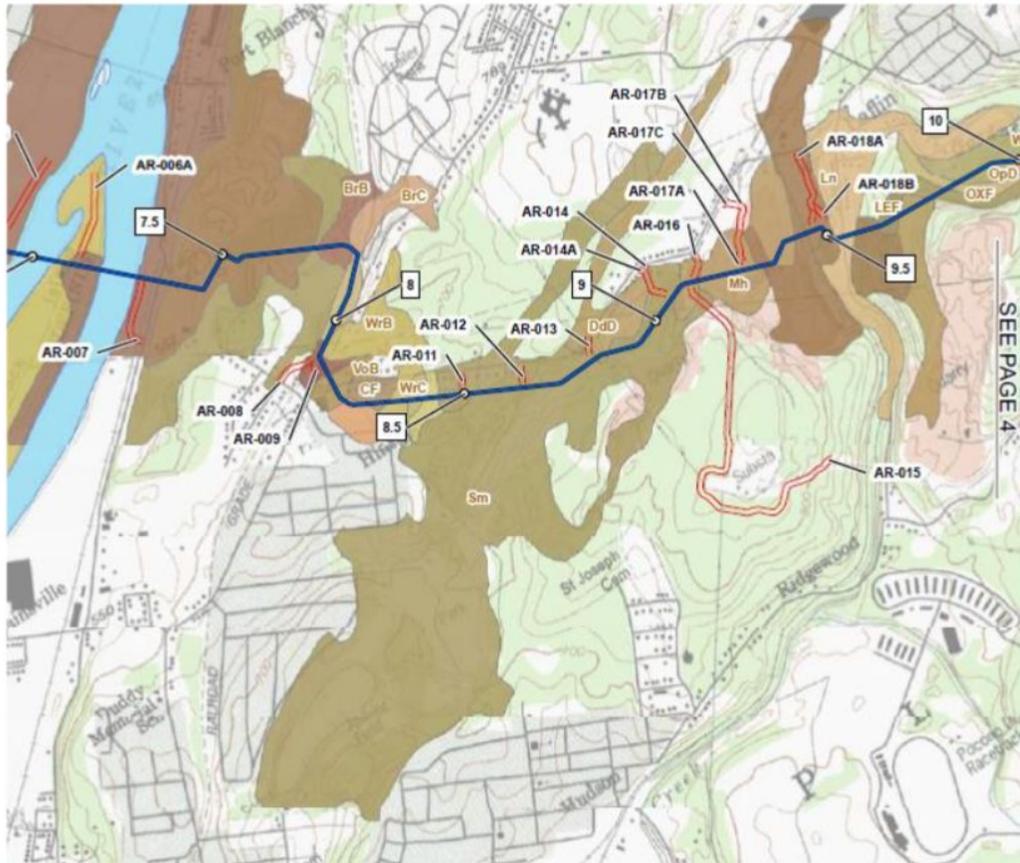


Figure 7: Snapshot of soils map (RR7, Figure 2.1-1) showing MP 7.0 to 10.0. Soil SM is strip mine.

Figure 1. Soils map referenced by Myers Report.¹⁵¹

Adverse impacts of open-trench waterbody crossings must be considered.

These impacts and concerns are in addition to the adverse impacts that would result from a successful open-trench crossing, including:

“The dewatering of the site [required] to allow the measure to be installed or constructed. This in itself creates an impact to the stream or wetland ecosystem and resident organisms by significantly altering the hydrologic regime.”¹⁵²

“Open-cutting is a traditional stream crossing method that is still heavily utilized, particularly for minor to intermediate stream crossings. Open-cut crossings typically result in an elevation of downstream sediment loads during and shortly after the period of construction. Sediment released during instream construction can cause negative

¹⁵⁰ 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

¹⁵¹ 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

¹⁵² Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project, Princeton Hydro, September 2016

changes to downstream aquatic life and their habitats. These negative effects include reductions in the abundance of fish populations, reductions in the abundance and diversity of benthic invertebrate communities, and alterations to streambed conditions.”¹⁵³

“The trench depth will be at least 5-6 feet below existing stream grade, and could be even deeper to avoid thermal impacts to the stream or to protect the pipe from high-energy event scour and exposure. Overall, this type of construction is very disruptive to the stream and will negatively affect its ecological functionality. The current mitigative measures planned by PennEast, while perhaps addressing short-term erosion and sedimentation impacts, do nothing to restore the streams to their pre-disturbance ecological complexity and functionality. In order to justifiably state that the pipeline will cause ‘no impact’ at each stream crossing, the subject stream must have its stream channel restored to the pre-construction width, depth, slope and substrate. This entails the collection of detailed stream data and seasonal sampling of the stream’s biota, neither of which is proposed by PennEast or recommended by FERC. The restored substrate would also have to mirror the pre-construction composition of the streambed and bank materials and condition, including restoration of the kind, quantity and quality of rock, sediment, woody debris and vegetation. Additionally, the stream’s restoration must allow for natural channel migrations, flows, sediment transport, and stream channel evolutions typical of natural stream flows. None of the mitigation measures discussed by FERC within the DEIS satisfy these requirements or demonstrate the ability to fully restore the streams to pre-construction conditions.”¹⁵⁴

According to the FERC EIS:

“The Susquehanna River has water quality impairment related to metals and a fish consumption advisory for PCBs...PennEast has not conducted sediment analysis to determine if PCBs are present in the sediment at the specific water crossing locations; however, prior to construction, PennEast would sample sediment within the proposed workspace for PCB concentration in the waterbodies identified in table 4.3.2-5. If PCBs are found to be present within the Project area, PennEast would consult with the appropriate agencies to determine whether additional precautions should be undertaken to prevent releasing PCBs into the water column. PennEast presented this sampling plan and site-specific crossing plan to PADEP and USACE in its Luzerne County Joint Permit Application.”

¹⁵³ Reid, S.M., & Anderson, P.G. (1999). Effects of Sediment Released During Open-Cut Pipeline Water Crossings. *Canadian Water Resources Journal*, Vol. 24, No. 3.

¹⁵⁴ *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016

TABLE 4.3.2-5						
Impaired Waterbodies or Waterbodies with Contaminated Sediments Crossed by Pipeline Facilities						
Waterbody	MP <u>a/</u>	Impaired Designated Use(s) - 305(b) List	Pollutant(s) - 303(d) List	Water Quality Management Plan	Crossing Length (feet)	Pipeline Crossing Method
Pennsylvania						
Susquehanna River	7.2	Aquatic Life, Fish Consumption	Source Unknown - Mercury, AMD -Metals, Source Unknown - PCB	TMDL, 2002 (PCB, pH, siltation, metals)	1,056	Dry Crossing

Table 5. Impaired Waterbodies or Waterbodies with Contaminated Sediments Crossed by Pipeline Facilities, adapted from the FEIS.

In FERC’s own description of the crossing, PennEast will “minimize” “in-water resuspension of contaminated sediments in the water column during construction”. Given the severity of the contamination present and the associated risks to the public interest, it is not enough for PennEast to “minimize”, but not avoid, this contamination.

The FERC EIS also states that:

“Abandoned mine drainage (AMD) is a potential source of contaminated sediments within impaired waterbodies. Two waterbody crossings (Gardner Creek and Susquehanna River) have sediment-related impairment issues related to the presence of metals which are potentially from AMD. ... Susquehanna River PennEast proposes a dry crossing of the Susquehanna River at MP 7.1. The proposed crossing location is bordered by an airport and flood-control berm to the south and a newly constructed highway bridge to the north. The proposed crossing is in proximity to the historic 1959 Knox Mine disaster where the river bed collapsed into the mine.”

“Additionally, sediment-related impairment issues regarding the Susquehanna River are related to the presence of metals which are potentially caused by AMD.”

As stated in a January 27, 2015 letter to FERC from the Executive Director Eastern PA Coalition for Abandoned Mine Reclamation regarding the Project:

“Anthracite underground mining has definitely occurred extensively in this region underground and at the surface on multiple coal veins, both along the floodplain of the Susquehanna River, and even under portions of the Susquehanna River, although that was not encouraged since it was outside of the safety zone for mining coal, overburden, and other roof support material/rock. The historic mine maps show the geographic representation of how much of the workings have been mined out, pillars removed, pillars drilled through, areas that have been flushed, slurried, left intact (solid barrier pillars of coal), and the depth at which the mining has occurred.”

“This area of the crossing is not something that can be completed in the short period of time that is available to provide comments. EPCAMR is of the opinion that based on the best available mapping that is out there without conducting a full hydrogeological investigation and mapping and mine pool investigation, which is something that PennEast

should possibly consider, there could be the potential for a great deal of environmental concern for pollution, leaks into the underground mine pools, subsidence, and or instability issues at the surface depending on the infrastructure needed to create the pipeline crossing.”

“EPCAMR believes that PennEast should seriously consider the abandoned underground mining implications and potential risk for mine subsidence and mine pool contamination for this project in this area prior to moving forward...abandoned mines and an underground mine pool [are] located in that area and should be a cause for some concern and should be looked at much more closely should any trenching or excavation be done in that area.... [PennEast] should be concerned greatly that there could be the potential for mine subsidence, infiltration of surface water into the underground workings through fractured rock, excavation into the mine pool which could cause a new discharge to created, or a possible breach into the levee system.”

Given the

- unreliability of desktop reviews for historic coal mines due to “wildcat” mining;
- the lack of actual surveys complete and design detail and supporting engineering analyses;
- the pervious soils found during boring tests; and the
- proximity of the project activities to coal mines and AMD

The risks associated with this crossing and the potential for extremely adverse impacts to the water quality and the public interest are too great a burden to put on the public—especially in light of the fact that there is no public benefit that would come as a result. The Corps must reject the Project’s 404 permit applications based on the potential adverse impacts of this crossing alone.

p. The proposed Project would have an adverse effect on energy needs and would result in detrimental impacts on the public interest.

PennEast and FERC’s assertion of need is contradicted by the preponderance of the evidence and is largely a statement of industry desires rather than public need.

The DEIS asserts the proposed pipeline is necessary to serve New Jersey and eastern Pennsylvania communities and some unidentified “surrounding states.” It is asserted that the project is needed to “provide low cost natural gas produced from the Marcellus Shale region.” The DEIS asserts that there is a need to displace Gulf Coast gas with cheaper and reliable access to Marcellus shale gas. It is asserted that there is a need for the project in order to “provide enhanced competition among natural gas suppliers and pipeline transportation providers.” The DEIS asserts there is a need in order to allow “supply flexibility,” “diversity,” “reliability,” better pricing, and to allow direct access to long lived dry gas reserves.

However, none of these are “needs.” These are industry desires, goals, hopes, dreams, wishes and wants. However you look at it, these claims do not assert a “need” for the gas. They assert a desire by the pipeline company to be able to provide a different source of gas in order to make money. These are very clearly private corporate goals and gains. These are not “needs” of the public; they are desires of private industry.

In fact, there is no need for the gas PennEast would carry to New Jersey and Pennsylvania; both states are fully supplied. PennEast broadly asserts it is delivering the gas to other unknown, unidentified states -- in order to substantiate this claim and subject it to the public process that is required by NEPA, more detail is required that actually identifies the states and the users.

As noted in the attached expert report from Arthur Berman:¹⁵⁵

“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...”

“Pennsylvania was already grossly over-supplied and that the proposed additional 1 Bcf/d supply would result in an oversupply for New Jersey of approximately 53%,” and there is no evidence that PennEast will result in lowered costs for consumers.¹⁵⁶

“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....”

“There is no evidence...that more gas supply [would] result[] in lower costs to consumers” “All leading companies in the Marcellus and Utica plays reported net losses for the second quarter of 2015”.

A second report issued by Arthur Berman further clarifies that:¹⁵⁷

“There is no evidence...that more gas supply [would] result[] in lower costs to consumers”

“All leading companies in the Marcellus and Utica plays reported net losses for the second quarter of 2015”

“U.S. gas production is declining and shale gas output is down almost 2.5 Bcf per day”

In comments submitted on the FERC docket on September 12, 2016, the New Jersey Division of Rate Counsel, in substantive comments, supported by an expert affidavit, similarly challenged the claimed need for the project. According to their comments there is in fact no objectively demonstrated need for the project. In fact, the NJ Division of Rate Counsel effectively makes the case that the “forecasted demands of

¹⁵⁵ *Professional Opinion of Proposed PennEast Pipeline Project*, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015

¹⁵⁶ *Professional Opinion of Proposed PennEast Pipeline Project*, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015 and September 11, 2016.

¹⁵⁷ *Opinion on the PennEast Pipeline*, Arthur Berman, Petroleum Geologist, Labrynth Consulting Services, Inc., September 11, 2016

the LDCs that PennEast is designed to supply are already being met by existing gas supply arrangements and available transportation capacity.”¹⁵⁸

The New Jersey Division of Rate Counsel well documents the self-dealing evidence provided by PennEast attempting to support its need claim. Given the self-dealing nature of this evidence the NJ Division of Rate Counsel urges FERC to conduct an independent analysis into the need claim which has not been done. While there is ample evidence and expert analysis on the record to document no genuine need for the project that would justify the significant community, environmental and economic costs it will inflict, at a minimum, it is incumbent on the Corps to conduct such an independent review.

An additional expert report generated by Skipping Stone (attached here) 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:¹⁵⁹

“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:¹⁶⁰

“Speaking to attendees at the 21st Annual LDC Gas Forums Northeast conference in Boston Tuesday, 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.

Lack of “need” for gas in Pennsylvania is also asserted by a Labrynth Consulting reaction to a recently released report advocating for more pipelines for similar goals, to fulfill an asserted need for gas and to reduce prices in the region. In this responsive analysis, the assertion of a need for the gas was proven false with facts:

“First, Pennsylvania exported 3.23 Bcfd to other regions of the country in 2015 an amount almost equal to its 2014 consumption of 3.3 Bcfd. There is plenty of existing pipeline capacity to meet Pennsylvania’s demand and enough left over to send out of the state.”¹⁶¹

¹⁵⁸ Comments submitted by New Jersey Division of Rate Counsel, Sept 12, 2016, to FERC Docket No. CP15-558

¹⁵⁹ *Analysis of Public Benefit Regarding PennEast*, Skipping Stone, March 9, 2016

¹⁶⁰ *Marcellus/Utica on Pace for Pipeline Overbuild*, Says Braziel, Natural Gas Intelligence, June 8, 2016

¹⁶¹ Labrynth Consulting responding to “A Pipeline For Growth Report”

The assertion that PennEast is intended to provide “enhanced competition” and cheaper pricing for industry users is not a need – it is a corporate desire. It is an abuse of process and power for FERC to allow PennEast to claim that cheaper prices and setting the PennEast companies up to better compete with other industries fulfills the requirement of “need.” Approving construction of a pipeline project, granting it exemption from state and local laws, giving it the power of eminent domain so it can take private property, so it can take publicly preserved parks, forests and natural lands, in order to inflict unmitigatable and irreparable harms, all so the pipeline company can achieve its independent goal of greater profits and other industries can save a buck on the backs of the rest of us, subjecting communities to the threat and reality of pipeline accidents, incidents and explosions (which happen with concerning regularity) does not characterize a legitimate need that warrants the property takings and associated harms.

The assertion that PennEast is necessary to provide greater reliability is also not a “need.” There is no evidence that New Jersey, Pennsylvania, and the undisclosed other states do not have reliable access to energy sources, gas or otherwise. The reports above document that in fact both states are already fully and reliably served. It is incumbent upon PennEast to demonstrate there is a reliability problem and that the proposed project will necessarily ameliorate this problem. They have not done so.

Regarding the claim that PennEast is “needed” to provide direct access to long lived reserves, this claim is neither explored nor demonstrated by the DEIS document. In fact, there is a wealth of analysis which documents that shale gas will soon be on a swift decline and as such is not in fact a long term reliable source of energy; to the contrary it is a short term fix that will quickly run dry and require replacement with other energy sources. As the Post Carbon Institute’s *Drilling Deeper* report fully documents, the shale gas and tight oil industries have a short life, one that is only a few decades long.¹⁶² Multiple experts reach similar conclusions when reflecting on EIA figures, current production rates, and other objective data, e.g. findings of Labrynth consulting when reacting to a recently released report titled, “A Pipeline For Growth” found:

Official EIA proven developed producing shale gas reserves for the Marcellus Shale are 84.5 trillion cubic feet (Tcf) and, for the Utica Shale, 6.4 Tcf (Table 1). That suggests approximately 18 years of supply at current production rates. There are approximately 27 years of supply including proven undeveloped reserves (PUD).¹⁶³

Construction of a 40-year pipeline for an energy source that will peak by 2020 and be on decline thereafter is irrational and cannot be said to fulfill the definition of a “need”.

The claim that this pipeline is “needed” in order to provide lower cost gas to New Jersey and Pennsylvania customers is not a “need” (as discussed above and in the attached expert reports), but in addition, it cannot be an expected outcome of this project. The construction of the PennEast pipeline may, to the contrary, contribute to an increase in gas prices for many in PennEast’s identified service area.

The New Jersey Division of Rate Counsel (2016) found that “forecasted demands of the LDCs that PennEast is designed to supply are already being met by existing gas supply arrangements and available transportation capacity” (p. 8).¹⁶⁴

¹⁶² *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

¹⁶³ Labrynth Consulting responding to “A Pipeline For Growth Report”

¹⁶⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

Natural gas prices are lowest in the regions in which gas is produced. For many years, the lowest natural gas prices in the East were found at Henry Hub, located near the Gulf of Mexico where much of the natural gas in the United States was produced. With the increase in shale gas production, however, the lowest natural gas prices in the country are now found at trading points in and around the Marcellus and Utica shale plays in Pennsylvania, West Virginia, and Ohio. Availability of pipeline infrastructure to send natural gas to other regions has a direct impact on the price of natural gas in those regions—greater gas take-away capacity allows more natural gas to be produced, and an increase in supply will lead to a decline in price in those regions that receive additional gas. The improved access to higher priced markets via additional pipeline infrastructure will raise the price of natural gas in the producing region, which also will increase production – in this case the producing region is Pennsylvania. Therefore, it is not a given that prices would in fact reduce. In addition, while generally speaking increasing the supply in a non-producing region (such as NJ) from a lower cost producing region (Pennsylvania) may be expected to lower prices in the downstream market, one recent study that was specific to the PennEast Pipeline showed how gas rates for some customers in NJ may increase due to other pipelines increasing their transportation rates.¹⁶⁵

The claim that increased pipeline capacity will necessarily result in reduced gas prices is challenged by other experts considering the issue when responding to claims that pipeline capacity is needed to reduce prices for Eastern Pennsylvania end users:

“The correlation between volume of gas production and the price of gas for power generation is poor because there are other factors besides production volume that affect the price of gas. Still it seems unlikely that more gas production in Pennsylvania would result in a cost reduction since production already exceeds consumption by almost 100%.”¹⁶⁶

Further, as information regarding actual asserted customers for PennEast is revealed, it is increasingly clear that the claim of need is largely self-manufactured. For example, Spectra Energy Partners is a “member company” in PennEast Pipeline Company, LLC and 10% owner of the PennEast Pipeline proposal. Spectra Energy is currently planning for and proposing a new project called the Texas Eastern Marcellus to Market project (M2M). Spectra has made clear that the proposed PennEast pipeline will be the primary source of gas that the M2M project will transport. Specifically, according to the Spectra Energy website, the new M2M pipeline would receive the majority of its gas, 62.5%, (up to 125,000 dekatherms per day (Dth/d)) from the PennEast pipeline (this equates to over 11% of PennEast’s anticipated capacity). In other words, Spectra, as part of PennEast, is asserting the PennEast pipeline needs to be built in order to service the Texas Eastern M2M customer which is, in fact, Spectra. The end users of the M2M project are not identified in the DEIS or anywhere else in the record, and have not, in fact, demonstrated a need for that project. Again we are dealing with self-serving speculation of need rather than a demonstration of a genuine public need for the project. Of the 12 shippers PennEast identifies as demonstrating a need for the pipeline and thereby helping to game the system in this way, at least five are PennEast owners: PSEG, Spectra (Texas Eastern Transmission), South Jersey Gas, UGI, and Elizabethtown Gas (Pivotal Utility Holdings).

Making the artificial argument of “need” for the PennEast project is used to craft an artificial justification for imposing extreme and unnecessary harm on the environment and communities. The asserted “need” for PennEast is really an argument for a project that will allow the PennEast companies to achieve their private goals of generating a profit – it does not support a genuine “need” for the PennEast pipeline. Given the

¹⁶⁵ Lander, Gregg. “Analysis of Public Benefit Regarding PennEast Pipeline”, New Jersey Conservation Foundation. March 9, 2016. Available at: <http://njconservation.org/docs/PennEastNotNeeded.pdf>

¹⁶⁶ Labrynth Consulting responding to “A Pipeline For Growth Report”

significant level of impacts that will be inflicted by the PennEast pipeline on the water resources of Pennsylvania and New Jersey and that the project will necessarily result in unavoidable and unmitigatable harm to the environment and communities, this lack of need for the PennEast pipeline project is a fatal flaw. It is improper for the DEIS to presume “need” rather than require the project applicant to affirmatively demonstrate it.

FERC has made it clear that it does not “look behind the contracts to determine whether the customer commitments represent genuine growth in market demand” or need. *See also NE Hub Partners, L.P.*, 90 FERC ¶ 61,142 (2000). Such an arbitrary review process, when taken to its logical conclusion, leads to absurd results. Indeed, to the extent the contracts are artificially manufactured and do not represent “genuine growth in market demand” FERC essentially admits that such fraudulent representations are sufficient for a decision approving the certificate. Here, substantial questions have been raised regarding the underlying contracts, and to the extent FERC fails to make a determination on “genuine market growth” and subsequent approval provided by FERC is arbitrary and capricious.

Furthermore, eminent domain originated as a way for governments to build necessary public infrastructure projects such as national highways and public buildings. It also enables governments to create parks and other public recreation areas. While eminent domain is considered an inherent power, it is subject to constitutional limitations. Among those limitations is that the land acquisition must be for “public use”.¹⁶⁷ The power of eminent domain is abused when it is used to benefit powerful interest groups at the expense of the less powerful. Supreme Court justices have recognized that the beneficiaries of this abuse “are likely to be those...with disproportionate influence and power in the political process, including large corporations and development firms.”¹⁶⁸ At its best, eminent domain allows for the acquisition of private property to create national parks for all to enjoy, and at worst, it exploits less politically and economically powerful groups. In the latter instance, the government acts as a henchman for private corporations, and this is not the intent of eminent domain. However, this is precisely what is happening at the behest of pipeline companies including PennEast. As noted, there is no genuine need for this project; the true goals are not to serve the public but to help the six companies that comprise the PennEast Pipeline, LLC to meet their corporate goals and to generate profits. This amounts to a government subsidization of a private company’s profits, at the expense of the public.

FERC has stated that “[e]ven though the compensation received in [an eminent domain proceeding] . . . is deemed legally adequate, the dollar amount received as a result of eminent domain may not provide a satisfactory result to the landowner and this is a valid factor to consider in balancing the adverse effects of a project against the public benefits.” *See Order Clarifying Statement of Policy*, 90 FERC ¶ 61,128, at 61,398. FERC has made clear that “[u]nder the Certificate Policy Statement, FERC will not authorize the construction of a project, with the concomitant right to obtain the necessary rights-of-way through either negotiation or the eminent domain process, unless it first finds that the overall public (not private) benefits of the project will outweigh the potential adverse consequences.” *See Order Clarifying Statement of Policy*, 88 FERC ¶ 61,748, at 50. Here, a significant portion of the landowners have refused PennEast access to their property, which will require PennEast to acquire vast tracts of property via eminent domain. As such, this significant adverse impact supports a finding that the adverse effects of the Project outweigh its questionable benefits to the public.

¹⁶⁷ U.S. Const. Amend. V

¹⁶⁸ *Kelo v. City of New London*, 545 U.S. 469 (2005), O’Connor Dissent

The Corps is required to consider “The relative extent of the public and private need for the proposed structure or work” in the evaluation of every application. (33 C.F.R. § 320.4(a)(2)) as part of this cost-benefit analysis required for a public interest review. Without a public need for the project, in light of the many adverse impacts to the environment and the public interest, the Project is clearly contrary to the public interest and the Corps should reject its 404 permit.

q. The proposed Project would adversely affect the Safety of those in the region, and would therefore have a detrimental impact on the public interest.

There are many adverse safety impacts that would result from the Project and which would detrimentally impact the public interest.

Proximity to compressor stations has inflicted health harms, quality of life impacts and property damage, as well as lost property value, and has had impacts so severe that in at least one documented case it forced a family to abandon their \$250,000 investment in the home rather than suffer the health, safety and other harms they were experiencing.

According to the Pipeline and Hazardous Materials Safety Administration, 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. And the risk of accident, incident and harm is increasing. 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.

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.”

FERC’s improper determination that pipelines constructed more recently are safer resulted in a flawed analysis and discussion of the health and safety ramifications of the proposed PennEast pipeline for communities. The focus of the DEIS on compliance with regulations does not excuse the failure to assess the fact that accidents, incidents and explosions are higher than in older, pre-1940 pipelines, and the need to consider why safety is on the decline and whether PennEast will be subjected to the same construction approaches that have made more modern pipelines less safe and more prone to catastrophic events.

In the EIS FERC and PennEast use the assertion that, “the majority of fatalities from natural gas pipelines are associated with local distribution pipelines. These pipelines are not regulated by FERC; they distribute natural gas to homes and businesses after transportation through interstate transmission pipelines. In general, these distribution lines are smaller-diameter pipes and/or plastic pipes that are more susceptible to damage” to diminish the serious health and safety threats and harms of pipelines.

Given that distribution pipelines are a normal and needed consequence of an interstate transmission line in order to take the induced fracked gas from the well pads into interstate commerce, the harms inflicted by

distribution lines must be equally assessed and accounted for in the EIS as a foreseeable, direct and induced consequence of the PennEast pipeline.

The effort by the EIS to dismiss the devastation that gets inflicted when a pipeline explodes or does damage to a community through an accident or incident is, frankly, disgusting. The EIS tries to dismiss the devastation to people and families suffered from an explosion of a pipeline, for example, by asserting that the harms associated with pipelines are less than with other activities:

“The nationwide totals of accidental fatalities from various anthropogenic and natural hazards are listed in table 4.11.3-2 in order to provide a relative measure of the industry-wide safety of natural gas transmission pipelines. Direct comparisons between accident categories should be made cautiously because individual exposures to hazards are not uniform among all categories. As indicated in table 4.11.3-2, the number of fatalities associated with natural gas facilities is much lower than the fatalities from natural hazards such as lightning, tornados, floods, earthquakes, etc.”

In addition to the effort to diminish the devastation to a person or family suffered during an explosion by a natural gas pipeline, the dismissal fails to give the necessary context or assessment to fairly compare these uses. The necessary comparisons of potential for an incident to occur amongst different threats versus the actual reality of a hazard is lacking in the EIS analysis. Comparing apples to oranges does not work here.

“Based upon experience with other pipelines it can be anticipated that, for example, just in Carbon County where 560 people live within 2 miles of the proposed compressor station (US Census Bureau, 2015), there will be on the order of “504 people experiencing odor events, 398 people experiencing respiratory impacts, 325 people experiencing sinus problems, and 218 people experiencing sleep disturbances and/or severe headaches.”

Additional adverse safety effects and considerations from the Key-Log Economics analysis:

“**Evacuation Zone:** The evacuation zone is defined by the distance beyond which an unprotected human could escape burn injury in the event of the ignition or explosion of leaking gas (Pipeline Association for Public Awareness, 2007, p. 29). There would be a potential evacuation zone with a radius of at least 3,157 feet (962.48 m). (See map, Figure 2, for a close-up of these zones in part of the study region.)

Residents and housing units in the evacuation zone: 54,579 people, 23,293 homes

Compressor Station: The proposed compressor station is likely to have separate effects on property value and on human health. Based on the experience of homeowners near a compressor station in Hancock, New York, we consider the possibility of a property value effect within one half mile of the proposed compressor station in Kidder Township, Carbon County (Catskill Citizens for Safe Energy, 2015). This zone overlaps the ROW and the evacuation zone, and because we assume that the more acute and ever present effect of proximity to the compressor station would dominate all other effects, we ignore the ROW and evacuation zone effects for these particular properties.

Compressor stations have also been associated with various human health effects at distances up to two miles away (Subra, 2009, 2015). Further epidemiological research would allow estimation of the costs of

those effects for the proposed station in Kidder Township, however, without such research, we do not include the potential public health costs in the present study.”¹⁶⁹

As such, the proposed Project would adversely affect the Safety of those in the region, and would therefore have a detrimental impact on the public interest.

r. The proposed Project would adversely affect Food and fiber production that would have a detrimental impact on the public interest.

We have learned from farmers, and it has been documented on the record, that crop production goes down by as much as 30% when a pipeline cuts through farm crop lands. PennEast and FERC’s EIS figures do not consider harms to other local businesses, such as the 7th generation nursery business reported in the press that said their ability to continue to operate would be harmed if PennEast passes through their property as is under consideration.

In addition to providing exaggerated and false claims of benefit, the EIS ignores the economic harms inflicted by construction and operation of PennEast. Among its many deficiencies, the DEIS analysis does not consider the adverse impacts to recreation and ecotourism, so vitally important to the impacted region; the analysis fails to consider the implications for future investment in open space preservation and the adverse impacts thereof as communities realize that preserved lands are not protected from pipeline construction; the economic damage to agricultural crop production is overlooked as are harms to other businesses.

The threat of increased drought from climate change is significant depending on how quickly the U.S. reduces climate changing emissions— and given that we are commenting on yet another proposal for a fossil fuel based gas pipeline—it is unlikely that emissions will significantly reduce in sufficient time to prevent these consequences from coming to fruition. According to the Union of Concerned Scientists:

“On a higher-emissions pathway, a short seasonal drought can be expected every year in most of New England by the end of this century, while the frequency of longer droughts could triple to once every 6 to 10 years in parts of New York, Pennsylvania, and Maine— the region’s key agricultural states.”

An additional effect discussed but not quantified by the Key-Log Economics analysis is the

“long-standing harm to agricultural productivity due to soil compaction, soil temperature changes, and alteration of drainage patterns due to pipeline construction. Rob Fulper, a farmer in West Amwell, Hunterdon County, New Jersey, noticed that corn planted over two existing pipelines buried on his 100-year-old family farm during World War II that now transport natural gas produce lower yields (Colaneri, 2015). Separately, agronomist Richard Fitzgerald (2015) concludes, ‘it is my professional opinion that the productivity for row crops and alfalfa will never be regenerated to its existing present ‘healthy’ and productive condition [after installation of a pipeline].’ Thus, the true loss in food and other ecosystem service value from pasture/forage acreage would be larger than our estimates reflect.”¹⁷⁰

¹⁶⁹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

¹⁷⁰ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

The definitively lower crop yield that these farmers have faced due to the permanent ecological changes in the land disprove the claim by FERC and pipeline companies that any effects would be “temporary in nature” and that all areas will be “restored to agricultural use after construction.” The reality felt on the ground by farmers is that these adverse impacts to food and fiber production cannot be reversed.

As such, with no public benefits to food and fiber production to possibly come from the Project, and a significant adverse impact to be suffered by the public, particularly those who live in and depend on the agricultural areas the pipeline would pass through, the Corps should find the Project contrary to the public interest and deny the 404 permit.

s. The proposed Project would adversely affect Mineral Needs, resulting in an adverse impact to the public interest.

The information provided by FERC fails to forecast the way in which natural gas fits into the United States’ energy mix in the future. For example, by some estimates all shale plays have peaked and older plays, like the Barnett Shale and Haynesville Shale, are in a gradual decline as the industry as a whole has seen a roughly 4% decline since early 2016.¹⁷¹

Indeed, in a long-term outlook published in June of 2017, Bloomberg New Energy Finance predicted that the natural gas market share in global power generation will “drop from 23 percent last year to 16 percent by 2040, and that gas-fired power generation capacity will start to decline after 2031.”¹⁷²

With these emerging forecasts in mind, the Project, which would result in infrastructure for the transport of shale gas, a rapidly declining energy source for the country, would have an adverse impact on the mineral needs of the public interest.

t. The proposed Project would adversely affect Considerations of Property Ownership, resulting in a detrimental impact to the public interest.

The proposed Project would cause extreme adverse impacts on Considerations of Property Ownership in relation to the public interest. Most significantly, property ownership would be forcibly taken away from any landowner in the path of the pipeline. This adverse impact is even harder for the public to bear in light of the fact that there is no public need for the project. Additionally, property value, which is an essential consideration and component to property ownership, would be greatly decreased for property in proximity to the Project.

Approving construction of a pipeline project, granting it exemption from state and local laws, and giving it the power of eminent domain, so it can take private property and e publicly preserved parks, forests and natural lands, in order to inflict unmitigatable and irreparable harm, in order to achieve the pipeline

¹⁷¹ See Hughes, J. David, *2016 Shale Gas Reality Check*, Post Carbon Institute (December 2016), available at: http://www.postcarbon.org/wpcontent/uploads/2016/12/Hughes_2016-Shale-Gas-Reality-Check-2016.pdf.

¹⁷² Farhy, Jack, *What if Big Oil’s Bet on Gas is Wrong*, Bloomberg (July 18, 2017), available at: <https://www.bloomberg.com/news/articles/2017-07-17/big-oil-sees-salvation-ingas-but-what-if-it-s-the-wrong-bet> (noting that “[w]ind and solar are just getting too cheap, too fast’ for gas to play a transitional role, said Seb Henbest, lead author of the BNEF report”).

company's independent goal of greater profits and so other industries can save a buck on the backs of the rest of us, subjecting communities to the threat and reality of pipeline accidents, incidents and explosions (which happen with concerning regularity) does not characterize a legitimate need that warrants the property takings and associated harms.

Eminent domain originated as a way for governments to build necessary public infrastructure such as national highways and public buildings. It also enables governments to create parks and other public recreation areas. While eminent domain is considered an inherent power, it is subject to constitutional limitations. Among those limitations is that the land acquisition must be for "public use".

The power of eminent domain is abused when it is used to benefit powerful interest groups at the expense of the less powerful; Supreme Court justices have recognized that the beneficiaries of this abuse "are likely to be those...with disproportionate influence and power in the political process, including large corporations and development firms."

At its best, eminent domain allows for the acquisition of private property to create national parks for all to enjoy and at worst, it exploits less politically and economically powerful groups. In the latter instance, the government acts as a henchman for private corporations, and this is not the intent of eminent domain. However, this is precisely what is happening at the behest of pipeline companies including PennEast. As noted, there is no genuine need for this project; the true goals are not to serve the public but to help the six companies that comprise the PennEast Pipeline LLC to meet their corporate goals and to generate profits. This amounts to a government subsidization of a private company's profits, at the expense of the public.

FERC has stated that "[e]ven though the compensation received in [an eminent domain proceeding] . . . is deemed legally adequate, the dollar amount received as a result of eminent domain may not provide a satisfactory result to the landowner and this is a valid factor to consider in balancing the adverse effects of a project against the public benefits." *See Order Clarifying Statement of Policy*, 90 FERC ¶ 61,128, at 61,398. FERC has made clear that "[u]nder the Certificate Policy Statement, FERC will not authorize the construction of a project, with the concomitant right to obtain the necessary rights-of-way through either negotiation or the eminent domain process, unless it first finds that the overall public (not private) benefits of the project will outweigh the potential adverse consequences." *See Order Clarifying Statement of Policy*, 88 FERC ¶ 61,748, at 50. Here, a significant portion of the landowners have refused PennEast access to their property, which will require PennEast to acquire vast tracts of property via eminent domain. As such, this significant adverse impact supports a finding that the adverse effects of the Project outweigh its questionable benefits to the public.

Key-Log Economics Analysis found the following Adverse Impacts to Land Price resulting from similar projects:

"To say the impacts and potential impacts of the PennEast Pipeline on private property value are important to people along its proposed route would be an extreme understatement. Key-Log Economics and Delaware Riverkeeper Network are conducting an analysis of all comments submitted through the closing of the DEIS comment period on September 12, 2016. Of 1977 total comments reviewed thus far (a sample), 99.8% of comments mentioning property value believed the PE would have a negative impact."¹⁷³

¹⁷³ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017.

“Landowners and Realtors along the proposed route of the Mountain Valley Pipeline, a 42” high-pressure natural gas pipeline designated to transport gas from fracked wells in the Marcellus through West Virginia and Virginia, report abandoned building plans, lower than expected appraisals, and buyers walking away from properties potentially affected by the construction (Adams, 2016). At least one ROW landowner was told by insurance agencies that their rates would likely increase if coverage remains available at all (Roston, 2015).”

“While it is impossible to know precisely how large an effect the specter of the PE has already had on land prices, there is strong evidence from other regions that the effect would be negative. In a systematic review, Kielisch (2015) presents evidence from surveys of realtors, home buyers, and appraisers demonstrating natural gas pipelines negatively affect property values for a number of reasons. Among his key findings relevant to the PE:

- 68% of Realtors believe the presence of a pipeline would decrease residential property value.
- Of these Realtors, 56% believe the decrease in value would be between 5% and 10%. (Kielisch does not report the magnitude of the price decrease expected by the other 44%.)
- 70% of Realtors believe a pipeline would cause an increase in the time it takes to sell a home. This is not merely an inconvenience, but a true economic and financial cost to the seller.
- More than three quarters of the Realtors view pipelines as a safety risk.
- In a survey of buyers presented with the prospect of buying an otherwise desirable home with a 36-inch diameter gas transmission line on the property, 62.2% stated that they would no longer buy the property at any price. Of the remainder, half (18.9%) stated that they would still buy the property, but only at a price 21%, on average, below what would otherwise be the market price. The other 18.9% said the pipeline would have no effect on the price they would offer.
- Not incidentally, the survey participants were informed that the risks of “accidental explosions, terrorist threats, tampering, and the inability to detect leaks” were “extremely rare” (2015, p. 7). The survey participants had, in other words, realistic information about the probability of pipeline accidents and were not responding out of overblown fears.
- Considering only those buyers who are still willing to purchase the property, the expected loss in market value would be 10.5%.¹⁷⁴ This loss in value provides the mid-level impact in our estimates. A much greater loss (and higher estimates) would occur if one were to consider the fact that 62% of buyers are effectively reducing their offer prices by 100%, making the average reduction in offer price for all potential buyers 66.2%.¹⁷⁵ In our estimates, however, we have used the smaller effect (-10.5%) based on the assumption that sellers will eventually find one of the buyers still willing to buy the pipeline-easement-encumbered property.

¹⁷⁴ Half of the buyers would offer 21% less, and the other half would offer 0% less; therefore the expected loss is $0.5(-21\%) + 0.5(0\%) = -10.5\%$.

¹⁷⁵ This is the expected value calculated as $0.622*(-100\%) + 0.189*(-21\%) + 0.189*(0\%)$.

- Based on five “impact studies” in which appraisals of smaller properties with and without pipelines were compared, “the average impact [on value] due to the presence of a gas transmission pipeline is -11.6%” (Kielisch, 2015, p. 11). The average rises to a range of -12% to -14% if larger parcels are considered, possibly due to the loss of subdivision capability.
- These findings are consistent with economic theory about the behavior of generally risk-averse people. While would-be landowners who are informed about pipeline risks and nevertheless decide to buy property near the proposed PE corridor could be said to be “coming to the nuisance,” one would expect them to offer less for the pipeline-impacted property than they would offer for a property with no known risks.
- Kielisch’s findings demonstrate that properties on natural gas pipeline rights-of-way suffer a loss in property value. Boxall, Chan, and McMillan (2005), meanwhile, show that pipelines also decrease the value of properties lying at greater distances. In their study of property values near oil and gas wells, pipelines, and related infrastructure, the authors found that properties within the “emergency plan response zone” (EPZs) of sour gas¹⁷⁶ wells and natural gas pipelines faced an average loss in value of 3.8%, other things being equal.”¹⁷⁷

“The PE has both a high consequence area and an evacuation zone radiating from both sides of the pipeline defined by health and safety risks. Whether disclosed or not by sellers, prospective buyers are likely to become informed regarding location of the property relative to the PE’s HCA and evacuation zones or, at a minimum, regarding the presence of the PE in the study region.

“The compressor station proposed for Kidder Township in Carbon County would likely cause its own more severe reduction in the value of nearby properties. We apply the percentage reduction awarded in the Hancock, New York case (25%) to properties that are (as the properties were in that case) within half a mile of the proposed compressor station (“Proximity of Compressor Station Devalues Homes by as much as 50%,” 2015). The stations can also be noisy, with low-frequency noise cited as a constant nuisance (“Proximity of Compressor Station Devalues Homes by as much as 50%,” 2015). These issues led some homeowners to pull-up stakes and move away and to reduced property value assessments for others (Cohen, 2015; “Proximity of Compressor Station Devalues Homes by as much as 50%,” 2015).”¹⁷⁸

“Existing studies suggest negative impacts on land value from various types of nuisances that impose noise, light, air, and water pollution, life safety risks, and lesser human health risks on nearby residents (Sun, 2013; Bolton & Sick, 1999; Boxall et al., 2005). In addition to the emerging body of evidence demonstrating a negative relationship between natural gas infrastructure and property value, well established analyses strongly reveal the opposite analog. Namely, amenities such as scenic vistas, access to recreational resources, proximity to protected areas, cleaner water, and others convey positive value to property.¹⁷⁹ The bottom line is that people derive greater value from, and are willing to pay more for, properties that are closer to positive amenities and farther from negative influences, including health and safety risks.”¹⁸⁰

¹⁷⁶ “Sour” gas contains high concentrations of hydrogen sulfide and poses an acute risk to human health.

¹⁷⁷ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

¹⁷⁸ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

¹⁷⁹ Phillips (2004) is an example of a study that includes an extensive review of the literature on the topic.

¹⁸⁰ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

“Land Value Effects of Compressor Stations: Compressor stations like the three-unit, 47,700 hp station proposed for Kidder Township can cause decreases in home values and have even forced some homeowners to move away from the noise, smells, and illnesses associated with living near stations. In one case from Minisink, New York, a family of six moved to escape the effects of a much smaller (12,600 hp) compressor station operated by Millennium Pipeline, L.L.C. After two years of headaches, eye irritation, and lethargy among the children and even lost vigor in their fruit trees, the couple, unable to find a buyer for their home, moved away, leaving their \$250,000 investment in the property on the table with their bank holding the balance of the mortgage (Cohen, 2015).”

“Claims That Pipelines Have No Effect on Property Value Are Invalid: The DEIS (Federal Energy Regulatory Commission, 2016b) and PE LLC cite studies purporting to show that natural gas pipelines (and in one case a liquid petroleum pipeline) have at most an ambiguous and non-permanent effect on property values (Allen, Williford & Seale Inc., 2001; Fruits, 2008; Palmer, 2008; Diskin et al. 2011). While the studies differ in methods, they are similar in that they fail to take into account two factors potentially voiding their conclusions entirely.”¹⁸¹

The following two tables adapted from the Key-Log Economics analysis outline the estimated loss in property that would result from the project as well as the resulting loss in tax revenue:¹⁸²

¹⁸¹ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

¹⁸² *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

Table 10: Summary of Land Value Effects, by Zone and County

Area	Effects in Right-of-Way (2015\$)			Effects in Evacuation Zone (2015\$)
	Realtor Survey (4.2%)	Buyer Survey (10.5%) ^a	Impact Studies (13.0%)	Boxall Study (3.8%)
Study Region	-8,420,100	-21,050,250	-26,062,214	-149,890,650
<i>Pennsylvania Portion</i>	-4,400,237	-11,000,593	-13,619,782	-77,656,828
Bucks	-24,305	-60,761	75,228	-334,798
Carbon	-411,78	-1,029,459	-1,274,568	-3,690,122
Luzerne	-2,709,525	-6,773,812	-8,386,625	-36,044,026
Northampton	-1,254,624	-3,136,560	-3,883,360	-37,587,882
<i>New Jersey Portion</i>	-4,019,863	-10,049,657	-12,442,433	-72,233,822
Hunterdon	-2,326,511	-5,816,278	-7,201,106	-30,734,752
Mercer	-1,693,352	-4,233,380	-5,241,327	-41,499,070

Table 10: Continued

Area	Effects Near Compressor (2015\$)	Total of ROW, Compressor Station, and Evacuation Zone Effects (2015\$)		
	Hancock, NY Finding (25%)	Low	Medium	High
Study Region		-159,698,484	-172,328,634	-177,340,598
<i>Pennsylvania Portion</i>	-1,387,734	-83,444,799	-90,045,155	-92,664,344
Bucks	n/a	-359,103	-395,560	-410,027
Carbon	-1,387,734	-5,489,639	-6,107,315	-6,352,424
Luzerne	n/a	-38,753,551	-42,817,838	-44,430,651
Northampton	n/a	-38,842,506	-40,724,442	-41,471,242
<i>New Jersey Portion</i>	n/a	-76,253,685	-82,283,479	-84,676,255
Hunterdon	n/a	-33,061,263	-36,551,029	-37,935,857
Mercer	n/a	-43,192,422	-45,732,450	-46,740,397

Table 11: Effects on Local Property Tax Revenue

Source: Property Taxes by State (propertytax101.org, 2016).

Area	Median Tax Rate (% of Home Value) ^a	Lost Property Tax Revenue (2015\$)		
		Low	Medium	High
Study Region		-2,719,343	-2,932,534	-3,017,134
<i>Pennsylvania Portion</i>		-1,215,386	-1,310,614	-1,348,403
Bucks	1.27%	-4,561	-5,024	-5,207
Carbon	1.56%	-85,638	-95,274	-99,098
Luzerne	1.40%	-542,550	-599,450	-622,029
Northampton	1.50%	-582,638	-610,867	-622,069
<i>New Jersey Portion</i>		-1,503,95	-1,621,920	-1,668,731
Hunterdon	1.91%	-631,470	-698,125	-724,575
Mercer	2.02%	-872,487	-923,795	-944,156

u. The Proposed project would result in adverse impacts to the general needs and welfare of the people and as such, would be contrary to the public interest.

The proposed Project would result in many adverse impacts to the general needs and welfare of the people. As demonstrated by their own comments, the public clearly does not want the pipeline and have voiced all these concerns. The Delaware Riverkeeper Network and Key-Log Economics released a new report documenting the overwhelmingly negative public comments submitted to FERC regarding the PennEast Pipeline. The study, which used crowd sourced reviewers to analyze 3,443 written messages to FERC, found that 76.7% of all commenters expressed a negative attitude toward the proposed PennEast Pipeline—and of those living along the proposed pipeline route, 92.6% expressed a negative sentiment toward the pipeline.¹⁸³ One of the most significant of those is the affect the Project would have on public health.

The analysis by Key-Log Economics found the following Adverse Impacts Public Health Effects of the proposed Project:¹⁸⁴

“Natural gas transmission releases toxins, smog forming pollutants, and greenhouse gases that have a negative impact on public health (Fleischman, McCabe, & Graham, 2016). Emissions from the natural gas industry have been tied to a myriad of health concerns, however, more concrete epidemiological studies are needed to determine the extent to which natural gas transmission causes public health concerns.”

“More recent emerging literature is beginning to quantify just how large of an effect the industry can have on public health. For example, a study by the Clean Air Task Force (2016) estimated that in 2025, increases in ozone levels due to pollution from the oil and gas industry will cause 750,000 additional asthma attacks in children under the age of 18, add an additional 2,000 asthma-related emergency room visits and 600 respiratory related hospital admissions, cause children to miss 500,000 days of school annually, and cause adults to deal with 1.5 million days of forced rest or reduced activity due to ozone smog.”

Air Pollution from the Proposed Compressor Station:

“The PennEast Pipeline impacts air quality by converting forests, which remove normal levels of impurities from the air, to other land uses. There is also concern for impacts that would occur due to the dumping of excess impurities into the air in the first place. While there is a chance leaks could occur at any place along the proposed route, leaks and major releases of gas and other substances (lubricants, etc.) would certainly occur at the 47,700 hp compressor station proposed for Kidder Township, Carbon County, Pennsylvania. Leaks in seals on the moving parts of natural gas compressors produce a significant amount of VOC emissions (Fleischman, McCabe, & Graham, 2016).”

“The negative effects of the compressor station include noise and air pollution from everyday operations plus periodic “blowdowns,” or venting of gas in the system to reduce pressure. As a recent study by the New York Department of Environmental Conservation indicates, pollution around compressor stations is common and severe (Lucas, 2015). The five-state study found that “more than 40% of the air samples from compressor stations exceeded federal regulations for certain chemicals like methane, benzene, and hydrogen

¹⁸³ *Citizen Input Regarding the PennEast Pipeline*. Cara Bottorff & Spencer Phillips, PhD. Key-Log Economic, LLC. March 2017.

¹⁸⁴ *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC. January 2017

sulfide” (Lucas, 2015). The study also found high rates of illnesses such as nosebleeds and respiratory difficulties among people living near the stations.

“While more definitive epidemiological studies are needed to determine the extent to which natural gas compressor stations add to background rates of various illnesses, these stations are implicated as contributing to a long list of maladies. According to Subra (2015), individuals living within 2 miles of compressor stations and metering stations experience respiratory impacts (71% of residents), sinus problems (58%), throat irritation (55%), eye irritation (52%), nasal irritation (48%), breathing difficulties (42%), vision impairment (42%), sleep disturbances (39%), and severe headaches (39%). In addition, some 90% of individuals living within 2 miles of these facilities also reported experiencing odor events (Southwest Pennsylvania Environmental Health Project, 2015). Odors associated with compressor stations include sulfur smell, odorized natural gas, ozone, and burnt butter (Subra, 2009). Furthermore, compressors emit constant low-frequency noise, which can cause negative physical and mental health effects (Luckett, Buppert, & Margolis, 2015).”

“In Carbon County, 560 people live within 2 miles of the proposed compressor station (U.S. Census Bureau, 2015). Translating the findings from Subra (2015), 504 people would experience odor events, 398 people would experience respiratory impacts, 325 people would experience sinus problems, and 218 people would experience sleep disturbances and/or severe headaches. In addition to the health impacts discussed above, this pollution can cause damage to agriculture and infrastructure. One study found that shale gas air pollution damages in Pennsylvania already amount to between \$7.2 and \$30 million, with compressor stations responsible for 60-75% of this total (Walker & Koplinka-Loehr, 2014). Using the low estimate of 60%, that is between \$4.32 and \$18 million in damages associated with compressor stations.”

In light of the many, significant adverse impacts outlined in this comment, the Corps must deny a Section 404 permit when issuing the permit would be “contrary to the public interest,” 33 C.F.R. § 320.4(a)(1). Given the lack of need, the self-serving interests of the PennEast companies (AGL Resources; NJR Pipeline Company; PSEG Power; SJI Midstream; Spectra Energy Partners; UGI Energy Services) to advance this project, the high level of environmental, community and economic harm that will be inflicted, the use of eminent domain purely for private gain, and the threat and harms to the health, safety and natural resources of the communities impacted today, as well as to future generations, this project cannot be said to meet the standards for the Corps’ public interest review necessary to issue a 404 permit for the proposed Project.

II. PennEast’s Proposed Project Conflicts With The Requirements Of A Water Quality Certification Issued Pursuant To Section 401 Of The Clean Water Act.

Both Pennsylvania’s Chapter 105 Water Obstruction and Encroachment permit and New Jersey’s Freshwater Wetlands Protection Act permit constitute the approval of a Water Quality Certification under Section 401 of the Federal Water Pollution Act (also known as the Clean Water Act or “CWA”). However, PennEast’s proposed Project violates a number of the requisite conditions of Chapter 105 of the Pennsylvania Code and New Jersey’s Freshwater Wetlands Protection Act pursuant to NJAC 7:7:A. (NJAC 7:7:A-2.1(d)) and, therefore, does not qualify for a Section 401 Water Quality Certification. The Corps may not issue a 404 permit for any project unless the project applicant secures and complies with a Water Quality Certification. As a result, any issuance of a section 404 permit by the Corps for the proposed Project is arbitrary, capricious, and an abuse of discretion.

CWA Section 401 authorizes states to ensure that federal permits meet state water quality standards after a site specific environmental review. The CWA relies on states to establish water quality standards to be approved by the United States Environmental Protection Agency. *See* 33 U.S.C. § 1342; *Arkansas, supra*; *PUD No. 1, supra*. The CWA also specifically preserves state law authority, in certain respects, to condition certification of water quality under state law standards in general and under NEPA. *See* 33 U.S.C. §§ 1341(d), 1370, and 1371(c).

Furthermore, CWA Section 401 forbids a federal agency from granting a “license or permit” unless the certification has been obtained or waived. *Id.* CWA Section 401 provides, “No license or permit shall be granted if certification has been denied by the State” *Id.* Further, CWA Section 401(d) states that:

Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations, under section 1311 or 1312 of this title . . . and **with any other appropriate requirement of State law set forth in such certification** and shall become a condition on any Federal license or permit, subject to the provisions of this section.

33 U.S.C. § 1341(d) (emphasis added). *See PUD No. 1 of Jefferson County*, 511 U.S. at 707-708, 711 (explaining that Section 401(d) “expands the state’s authority to impose conditions on the certification of a project,” including “appropriate state law requirements.”).

The State’s authority under CWA Section 401(d) to condition a federal permit under state law has been broadly read to include conditions “affecting water quality in one manner or another.” *American Rivers, Inc. v. FERC*, 129 F.3d 99, 107 (2nd Cir. 1997); *see also Roosevelt Campobello Int’l Park Comm’n v. US EPA*, 684 F.2d 1041, 1056 (1st Cir. 1982) (finding Maine’s CWA Section 401 certification conditions to be appropriate requirements of state law and related to water quality). As noted by the U.S. Supreme Court:

State certifications under § 401 are essential in the scheme to preserve state authority to address the broad range of pollution, as Senator Muskie explained on the floor when what is now § 401 was first proposed:

No [person] will be able to hide behind a Federal license or permit as an excuse for a violation of water quality standard[s]. No [person] will be able to make major investments in facilities under a federal license or permit without providing assurance that the facility will comply with water quality standards. No State water pollution control agency will be confronted with a *fait accompli* by an industry that has built a plant without consideration of water quality requirements.

S.D. Warren Co. v. Maine Bd. of Env’tl. Protection, 547 U.S. 370, 386 (2006). The Supreme Court noted that these “are the very reasons that Congress provided the States with power to enforce ‘any other appropriate requirement of State law,’ 33 U.S.C. § 1341(d), by imposing conditions on federal licenses for activities that may result in a discharge.” *Id.*

NJDEP and PADEP have already found PennEast’s application materials to be incomplete.

On April 26, 2017 the NJDEP issued a determination that the PennEast 401 application materials submitted to the state were significantly deficient and incomplete. Among the deficient materials were:

- Delineations of all freshwater wetlands, transition areas and open waters;
- Soil borings and/or other physical indicators of wetlands, transition areas or open waters;
- Other identified information pertaining to wetlands, open waters and transition areas;
- An amended Phase I Archaeological Survey Report investigating the entire proposed alignment for the PennEast Pipeline project occurring in the State of New Jersey.

Subsequently, on June 28, 2017, NJDEP determined the PennEast Pipeline Company's application for state approval of its project to be "administratively closed" due to the company's failure to remedy significant identified deficiencies and its failure to provide full information in a timely fashion for Clean Water Act decisionmaking. In its determination letter the NJDEP wrote:

"...given the complexity of the remaining deficient items, and the lack of demonstrated progress on the part of the applicant, it appears that it would be unlikely that an additional 60 days would allow substantial progress on the application. This application will be deemed 'administratively closed' as of the date of this letter."

While the applicant did obtain a 401 Water Quality Certification on February 7, 2017, from the Pennsylvania Department of Environmental Protection (PADEP), the Delaware Riverkeeper Network is currently involved in ongoing litigation with the state over this determination and its failure to apply appropriate state standards for determining whether a 401 Water Quality Certification was proper. Multiple comments and expert reports attached to this comment outline the many ways in which the Project does not meet the requirements for 401 Certification from PA.

Additionally, PADEP has also sent a series of three incompleteness review letters to PennEast for its Chapter 105 and Chapter 102 permits. Each of the letters has indicated the applications submitted are not yet considered to be complete by PADEP and that they cannot commence technical review until the applications are complete. The incompleteness letters were sent on April 26, 2016, September 19, 2016 and December 23 2016. On June 26, 2017, DEP received a request for an extension from PennEast Pipeline Company, LLC. PennEast requested additional response time to the December 23, 2016 incompleteness review letters, indicating that they "do not anticipate submitting the information requested to complete the applications until December 29, 2017." On August 10, 2017, DEP granted the requested extension. On December 27, 2017 and June 28, 2018, PennEast requested additional time extensions. PennEast finally supplied PADEP with updated materials from the incompleteness review on December 26, 2018. PADEP determined that all Chapter 102 and 105 applications were complete on January 25, 2019.

However, this determination was issued prematurely because on February 15, 2019, FERC issued a Notice of Application for Amendment to amend the certificate of public convenience and necessity for the PennEast pipeline. Among these amendments were four modifications to the Pennsylvania portion of the Project design, route, workspace, and construction methods. The amendments still contained incomplete bog turtle and EV wetland information, 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 because of the four route modifications. The missing information that PADEP requires for their Chapter 105 Water Obstruction and Encroachment Permits and Chapter 102 Erosion and Sediment Control permits are extremely relevant to the water quality impacts that

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the Corps is required to consider as part of its 404 public interest review. It is impossible to issue permits when PennEast keeps changing the route and creating more gaps of missing information on top of the ones they have already ignored and refuse to address.

a. The PennEast Pipeline does not meet the requirements necessary for a New Jersey 401 Certification pursuant to the Clean Water Act

The proposed PennEast Pipeline clearly cannot and will not meet the requirements necessary to secure a 401 Water Quality Certification from the State of New Jersey, given the high level of harm the project will inflict on the water and wetland resources of the state and the absolute lack of need for the project in order to serve local, state or even national demand.

In order to secure a 401 Water Quality Certification from the State of New Jersey, the PennEast Pipeline company must meet the standards and procedures for securing a Freshwater Wetlands Protection Act permit from the State of New Jersey pursuant to NJAC 7:7:A. (NJAC 7:7:A-2.1(d)).

There is no public, private, or compelling need for the gas to be carried by the proposed PennEast Pipeline, NJ regulations prohibit 401 Water Quality Certification.

New Jersey communities have no public or private need for the gas that would be delivered by the PennEast Pipeline, and certainly has no compelling public need for the gas. As noted in the attached expert report from Arthur Berman:

“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.”

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

Given that NJ has no need for the gas the PennEast pipeline would carry and that delivery of the gas proposed by PennEast, if it in fact were to be delivered to NJ entities (PennEast has provided no evidence of where or who the specific final end users will be, and instead have only provided general assertions of broad markets), would create a natural gas surplus in the state, the requisite demonstration of need pursuant to 7:7A-7.2(b)(1) & (12) and/or 7:7A-7.5 cannot be met. The natural gas needs of New Jersey are already being met and the public and private energy needs of New Jersey can now and in the near future be better met with clean energy alternatives that would have a less adverse impact on the environment, open waters and wetlands. As a result, the PennEast pipeline is not an appropriate candidate for a NJ 401 Water Quality Certificate.

The PennEast Pipeline would cause and contribute to violations of applicable state water quality standards and will cause and contribute to degradation of ground and surface waters. PennEast will also be unable to comply with the mandates of the stormwater management and flood hazard rules. These are among the conditions under which NJ regulations prohibit granting 401 Water Quality Certification.

There are significant environmental impacts which result from pipeline crossing and construction activities regardless of mitigation techniques used. The list of impacts 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, wetland degradation, and cumulative environmental impacts along the length of the project. The proposed Project would inflict severe and irreparable harm on NJ aquatic resources, vegetation, fish, wildlife, aquatic circulation, wetlands and hydrologic patterns. 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.

The PennEast company will impact 54 wetlands and 87 surface waterbodies. Many of the New Jersey waterways crossed/cut are Category One (C1) waters.

The proposed PennEast Pipeline project, as demonstrated by the installation of other pipeline projects in our region and nation, will create new pathways for water flow, thereby altering the hydrologic pattern of the watershed and adversely impacting (in both quantity, quality and seasonal timing) streams, wetlands and drinking water sources.

During the construction of the PennEast pipeline stream crossings there will be high levels of suspended sediments from blasting, trench excavation, and backfilling. Sedimentation will also result from the removal of vegetation and activity that takes place on the stream-adjacent (riparian) lands. The resulting sedimentation will have serious consequences for the benthic invertebrates and fish species whose vitality is crucial for healthy aquatic ecosystems – including, but not limited to, filling in the interstitial spaces of the streambed, changing its porosity and composition, and thereby increasing embeddedness and reducing riffle area and habitat quality. As with other pipelines, there will be 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. In addition to the stream crossing construction activity, the associated new road construction increases the risk of erosion and sedimentation.

Even in instances where the impacted benthic community restores itself, that does not diminish or negate the ecosystem effects during the time of damage including the cascading effects to other ecosystem services otherwise provided by the invertebrates – including serving 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.

Pipeline construction activity requires the clearing of vegetation in and around wetlands, which has degrading impacts. After construction, the PennEast pipeline company will maintain the right-of-way along its length, including in wetland areas, by preventing woody vegetation from re-establishing. For forested wetlands this will mean a permanent conversion of the forested wetland to an emergent wetland. This conversion will adversely impact the functions and values of the impacted wetlands. 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. This will be the outcome with the PennEast Pipeline as well if it is allowed to cut through NJ wetlands.

A functional conversion of wetlands from forested wetlands to emergent wetlands will result in decreases to above ground biomass, structural diversity of the wetland, and local climate amelioration. 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. Moreover, these conversions will cause an increased wetland exposure to wind, ice and sun and increase the localized effects

of global warming on biota. 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. As a result, erosion and sedimentation can be expected to increase as a result of the conversion. The function of storm damage shielding can also be expected to decrease as a result of this conversion.

For each of the pipeline construction techniques used there will be a resulting loss of riparian buffer vegetation, foliage, waterway protection and habitat. As a result, the PennEast pipeline will fail to meet the buffer mandates of NJ regulations.

Pipelines are 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 will be no less true for the PennEast pipeline than every other pipeline that has cut through our ecological systems and communities. This alteration will decrease the water resources available to support wetland hydrology and stream base flow in the summer and fall dry season.

The compacted soils resulting from pipeline construction will increase rainfall runoff and reduce ground water infiltration further harming wetland hydrology and stream baseflow.

In addition the 84" total construction depth of the pipeline will, in a number of New Jersey communities, impact groundwater through the disturbance of shallow bedrock, causing bedrock channels to close up wells or springs as much as a mile away. In addition, the blasting that will be needed for PennEast will have significant impacts for water resources that will be unavoidable.

The adverse impacts to wetlands, forests, and both surface and groundwater is detrimental, far reaching and in many instances permanent. Recreation and aesthetic values of both the public and private lands and ecosystems impacted will be greatly diminished both near term and long term.

In addition, research is increasingly showing that there will be adverse economic impacts to private properties that will be cut by PennEast with some studies showing adverse impacts by as much as 30 to 50%. The harm to open space preservation is also significant – not only will the communities, aesthetic, recreational and ecological values of the open spaces crossed be diminished, but the future desire of communities to invest in open space preservation for the benefits of waterway, wetlands, aquatic life and wildlife live will also be undermined. Who will want to invest in preserving land if they know it will be turned over to a pipeline company?

PennEast will have significant cumulative impacts on the water resources and ecological communities cut by the project and located adjacent to or downstream of it. The large amount of land disturbance created during pipeline construction results in increased stormwater runoff, sedimentation, and erosion of the land and stream channels. The disturbance of the land, including loss of forested and healthy ecological vegetation, the adverse impacts to wetlands, and the soil compaction that results from construction in both the permanent footprint as well as the supposed temporary construction areas, are permanent as is the water quality and ecological harm they inflict.

The capacity of NJ waterways and habitats to recover from the multitude of impacts inflicted by PennEast will most certainly be exceeded.

The cumulative impacts will not just result from the direct cuts and footprints across the landscape, but will be compounded by the resulting air pollution and climate changing impacts of the pipeline's operation. Additionally, the potential of pipelines to rupture and leak raises a greater risk of human health concerns and serious water contamination issues.

It is clear that the PennEast Pipeline cannot meet the mandates of 401 Water Quality Certification in New Jersey. Therefore, any concurrent issuance of a 404 permit by the Corps would be arbitrary, capricious, and an abuse of discretion.

III. The Project Information that The Corps Relies on Fails To Provide An Adequate Baseline From Which A Public Interest Review Can Proceed

The Corps must also deny a Section 404 permit when issuing the permit would be “contrary to the public interest,” 33 C.F.R. § 320.4(a)(1). The Corps has utterly failed to properly designate wetlands pursuant to the Pennsylvania state code, properly identify and classify wetland types, and accurately account for the expected ground disturbance impacts that will result from the construction activity of the project. As a result, the Corps is unable to accurately establish a foundational baseline from which it can begin to balance the potential benefits of the project against its harms and costs in a public interest review. Therefore, any issuance of a 404 permit for the proposed Project would be arbitrary, capricious, and an abuse of discretion.

During a public interest review, the Corps must consider “all the facts” and then deny a permit if “the costs of the project outweigh[] its potential benefits and . . . the public interest would best be served by denying the permit.” *Buttrey v. United States*, 690 F.2d 1170, 1185 (5th Cir. 1982). To evaluate the project's effects on the public interest, the Corps must balance the “benefits which reasonably may be expected to accrue from the proposal” against the “reasonably foreseeable detriments.” 33 C.F.R. § 320.4(a)(1). This “careful weighing” considers “[a]ll factors which may be relevant to the proposal . . . including the cumulative effects thereof.” *Id.* As in any such analysis, “[s]imple logic, fairness, and the premises of cost-benefit analysis . . . demand that a cost-benefit analysis be carried out objectively.” *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983). For example, the Corps' public interest review may not “mention the positive anticipated impact of the proposal on jobs and municipal taxes” but “sidestep [] any consideration of adverse economic effects.” *Hough v. Marsh*, 557 F. Supp. 74, 86 (D. Mass. 1982).

The Corps' regulations list over twenty factors to evaluate during a public interest review, including “conservation, economics, aesthetics, general environmental concerns, [and] wetlands.” 33 C.F.R. § 320.4(a)(1). Every permit decision must also consider “the public and private need” for the work, “the practicability of using reasonable alternative locations and methods to accomplish the objective of the . . . work,” and “[t]he extent and permanence of the beneficial and/or detrimental effects” of the proposed project. *Id.* § 320.4(a)(2).

The Project information provided to the Corps by PennEast and FERC, as well as the limited information available in the Corps' Public Notice of PennEast's 404 application, is filled with key data gaps, misrepresentations, misinformation, missing information, inaccurate information, false information, and conflicting information. As a result, the Corps is unable to accurately establish a foundational baseline from which it can begin to balance the potential benefits of the project from its harms and costs in a public interest review. Therefore, any issuance of a 404 permit for the proposed Project would be arbitrary, capricious, and an abuse of discretion.

Specifically, the FERC's EIS fails to establish an accurate baseline from which a determination can be made regarding the significance of the impacts resulting from construction and operational activity of the Project, the DEIS fails to examine the cumulative and induced development that would result from the approval of the Project, the DEIS improperly segments its environmental analysis with regard to other interdependent projects, the DEIS does not sufficiently account for climate change impacts, the DEIS's alternatives analysis is unlawfully narrow, and the DEIS fails to sufficiently establish need for the Project. Additional deficiencies are noted throughout this comment letter, and the attached expert reports. The quality of information cannot support any conclusion whatsoever.

The missing and inaccurate information is a fundamental failing of the Project materials, and it prevents the Corps, as well as other agencies and the public, from having the data and information they need to assess the impacts of the proposed pipeline on water resources, habitat, wildlife, drinking water and human communities. This comment and the attached reports contain many examples of assertions that are false, inaccurate, misleading and/or deficient, including, but not limited to:

Spot checks and field-truthing indicate inadequate and incomplete mapping of sensitive wetlands along the proposed ROW. Along one 0.5 mile of the proposed route in sensitive State Gamelands, at least 12 vernal pool complexes or groundwater seeps were identified while PennEast tables only indicate 2 vernal pool habitats along the same proposed route and no groundwater seeps.¹⁸⁵

"72% of the proposed pipeline alignment in New Jersey and 23% in Pennsylvania has not yet been field investigated for wetlands and other water resources."¹⁸⁶

"Importantly, the supporting documentation provided by PennEast fails to provide stream and wetland crossing information in a manner that allows FERC and other reviewing agencies to evaluate the site specific conditions at each stream crossing, including information discussed further in this memo. Important site-specific information is located in different Resource Report volumes and other documents, and not easily correlated or evaluated. [...] The project selection of stream and wetland crossing locations and construction methods cannot be clearly evaluated in the form in which it is presented in the DEIS and supporting documents."

In addition, it is clear that this DEIS cannot be relied upon by any government agency—not FERC, not the US Fish & Wildlife Service, not the U.S. Army Corps of Engineers, not the U.S. Environmental Protection Agency, not the NJ Department of Environmental Protection, not the PA Department of Environmental Protection, not the Delaware River Basin Commission—for evaluation or decision-making purposes. And for any agency to do so would subject them to successful legal challenge.

The missing and inaccurate information is a fundamental failing of FERC's EIS, and it prevents other state, federal and regional watershed agencies, and the public from having the data and information they need to assess the impacts of the proposed pipeline on water resources, habitat, wildlife, drinking water and human communities. The DEIS is designed to help inform sound decision-making, in its current deficient state this document is worthless for assessment and decision-making purposes.

¹⁸⁵ Delaware Riverkeeper Network. *Field-Truthing and Monitoring of the Proposed PennEast Pipeline, FERC Draft EIS, Docket No. CP15-558*, September 2016.

¹⁸⁶ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016; Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

The Corps must “independent[ly] verif[y]” the applicant's data and conclusions. *Utahns for Better Transp.*, 305 F.3d at 1186; *Sierra Club v. Van Antwerp*, 362 F. App'x 100, 106 (11th Cir. 2010) (“[T]he Corps may rely on information submitted by the applicant but must *independently verify such information.*” (emphasis added)). The Corps' duty of independent verification is especially strong when the Corps “receives particularized objections to material upon which it importantly relied in its review.” *Van Abbema v. Fornell*, 807 F.2d 633, 640 (7th Cir. 1986) *49 (considering a challenge to a Corps permit under NEPA). If the Corps bases its permitting conclusions on insufficient, unverified, or false information, the Corps' conclusions are “arbitrary and capricious.” *Id.* at 639 (holding the Corps may not base its conclusions on “entirely false premises or information”); *Utahns for Better Transp.*, 305 F.3d at 1187 (holding the Corps may not rely on insufficient information or unverified cost estimates).

As noted above, when the Corps is presented with particularized objections to the material on which it relies, as such, the Corps must independently verify the accuracy of the information on which it will base its decision. Without an accurate and verified baseline any public interest review contained in a decisional document issued by the Corps is arbitrary, capricious, and an abuse of discretion.

IV. Conclusion.

In addition to this comment and attached reports, the Delaware Riverkeeper Network incorporates by reference all information in the footnotes cited and all information provided by other commenters concerned about/opposed to construction, operation and maintenance of the PennEast pipeline.

For the reasons stated herewith the Delaware Riverkeeper Network and Clean Air Council respectfully request that the Corps deny the pending 404 permit. In the alternative, we request that the Corps grant a public hearing to further evaluate the numerous unresolved issues and problems that riddle PennEast's application. Finally, we request a JD to reevaluate all wetland delineations because the drawings by PennEast consultants have been field verified as being inaccurate.

By: /s/ Maya K. van Rossum

[The Delaware Riverkeeper](#),

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Attachments:

1. *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline*, Delaware Riverkeeper Network.
 - a. DRN Field Reports for Tennessee Gas 300 Line (Restoration Phase) –Dated 10/1/12 to 3/12/2013 (59 pages)
 - b. DRN Field Reports for Tennessee Gas Northeast Upgrade Project Dated 7/18/12 to 5/23/13 (60 pages)
 - c. DRN Letters to FERC and other agencies Regarding Mapping, Pollution and Construction Concerns from the Field (Subset)
 - d. NOV summary table of Pike County Conservation District Inspections and Violations
 - e. Selected Expert Reports
2. *Economic Costs of the PennEast Pipeline*, Spencer Phillips, PhD, et al., Key-Log Economics, LLC, January 2017.
3. Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.
4. *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.
 - a. Table A Attachment to *Professional Review & Comment...*, Meliora Design, LLC, September 5, 2016
5. *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
6. *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, Princeton Hydro, September 2016
7. *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network*, Schmid and Company, July 2016
8. Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.
9. *Opinion on the PennEast Pipeline*, Arthur Berman, Petroleum Geologist, Labrynth Consulting Services, Inc., September 11, 2016
10. *Professional Opinion of Proposed PennEast Pipeline Project*, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015
11. *Analysis of Public Benefit Regarding PennEast*, Skipping Stone, March 9, 2016

12. *Review of PennEast Pipeline Project Economic Impact Analysis*, Jannette Barth, Pepacton Institute, April 4, 2016
13. *Expert Report on the PennEast Pipeline Project Economic Impact Analysis for New Jersey and Pennsylvania*, The Goodman Group Report, Nov 4, 2015
14. *Report on Phase I Bog Turtle Survey for Wetlands Associated with Hunters Creek, Towamensing Township, Carbon County, Pennsylvania*, Jason Tesauro, September 5, 2015
15. *Cumulative Land Cover Impacts of Proposed Transmission Pipelines in the Delaware River Basin*, Lars Hanson and Steven Habicht, May 2016
16. *Pennsylvania Energy Impacts Assessment*, Nels Johnson, the Nature Conservancy, November 15, 2010
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18. *Fulper Farm Grain Harvest Graphics*, 4 Images, 2008-2012
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20. *Marcellus/Utica on Pace for Pipeline Overbuild, Says Braziel*, Natural Gas Intelligence, June 8, 2016
21. *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
22. *A Bridge Too Far: How Appalachian Basin Gas Pipeline Expansion Will Undermine U.S. Climate Goals*, Oil International, July 2016
23. *Achieving Higher Quality Restoration Along Pipeline Rights of Way*, Leslie Sauer, May 2014
24. *Climate Change Impacts and Solutions for Pennsylvania*, Union of Concerned Scientists, 2008
25. *The Changing Northeast Climate*, Union of Concerned Scientists, 2006
26. *The Potential Environmental Impact from Fracking in the Delaware River Basin*, Steven Habicht, Lars Hanson, and Paul Faeth, August 2015
27. *Climate Change in Pennsylvania: Impacts and Solutions for the Keystone State*, Union of Concerned Scientists, October 2008
28. *Climate Change Impacts in the United States*, Radley Horton and Gary Yohe, May 2014
29. *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

30. *Natural Gas Price Increase Inevitable*, Art Berman, The Petroleum Truth Report, February 21, 2016
31. *Revealed: Contractors Hired by FERC to Review A New Spectra Energy Pipeline Work for Spectra on a Related Project*, Itai Vardi, Desmog, May 26, 2016
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51. Delaware Riverkeeper Network Comments: Columbia Gas Line 1278 Line K Replacement in Special Protection Waters-DRBC Docket -D-2014-008-1
52. Emile DeVito, PhD. August 2016. Letter with supporting report and photographs from New Jersey Conservation Foundation to Norman Bay, Chairman, FERC.
53. Phillips et al, 2017, Exhibit xx
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65. *Potential Environmental Impacts of Full-development of the Marcellus Shale in Pennsylvania,* Lars Hanson, Steven Habicht, and Paul Faeth, September 2016.
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Exhibit D



March 4, 2020

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

**Re: PennEast Pipeline Company, LLC, Docket No. CP20-47-000
Comment in Opposition to the Abbreviated Application for Amendment to Certificate of Public Convenience and Necessity**

Dear Ms. Bose,

The Delaware Riverkeeper Network (“DRN”) is providing the following comments to be considered by the Federal Energy Regulatory Commission (“FERC” or “Commission”) in opposition to the proposed PennEast Pipeline Project Amendment (“Phase 1 Project”), which would allow PennEast Pipeline Company, LLC (“PennEast”) to construct the full PennEast Pipeline Project (“PennEast Project”)¹ in two phases; amend the PennEast Project to include a new interconnection facility in Bethlehem, Pennsylvania (“Church Road Facility”); and charge new recourse rates. PennEast also requests that the Commission process its application using the shortened procedures set forth in Rules 801 and 802 of the Commission’s Rules of Practice and Procedure.² Clean Air Council and PennFuture join in these comments.

DRN opposes the Phase 1 Project because it is an unlawful segmentation of a new and expanded PennEast Project with interconnects (“New PennEast Project”), it fails to establish a public need for Phase 1 as a standalone project, it proposes to proceed with construction without the required approval of the Delaware River Basin Commission (“DRBC”), and it includes the new Church Road Facility, which will be a source of dangerous emissions within $\frac{3}{4}$ of a mile of both a high school and an elementary school. If FERC decides to proceed with processing the Phase 1 Project application, it should consider in its Environmental Review the cumulative impacts of the Phase 1 Project, including, but not limited to:

- the impact of the Adelpia Gateway, LLC Pipeline Project (“Adelpia”)³, which will interconnect with the Phase 1 Project at the Church Road Facility and is a significant underpinning of the needs claim;

¹ Order Issuing Certificates, Docket No. CP15-558-000, 162 FERC ¶ 61.053 (Jan. 19, 2018).

² 18 C.F.R. §§ 385.801, 385.802 (2019).

³ FERC Docket Nos. CP18-46-000 and CP18-46-001

- the fracking induced by the increased capacity of the Phase 1 Project/Adelphia Project/New PennEast Project;
- the social cost of carbon emissions⁴ resulting from the construction and operation of the Phase 1 Project/Adelphia Project/New PennEast Project; and
- the social cost of methane emissions⁵ resulting from the construction and operation of the Phase 1 Project/Adelphia Project/New PennEast Project.

Given that the Phase 1 Project is a major Federal action significantly affecting the quality of the human environment the Commission must issue an Environmental Impact Statement (“EIS”) pursuant to the National Environmental Policy Act,^{6,7} Because the Phase 1 Project has a different use and purpose than the PennEast Project, the Final Environmental Impact Statement prepared by FERC and issued April 2017 (“2017 FEIS”) for the PennEast Project cannot be mechanically applied to the Phase 1 Project.⁸ Accordingly, FERC must begin its Environmental Review as if the Phase 1 Project is PennEast’s first and only application.

DRN urges FERC to extend the public comment period. PennEast filed the Phase 1 Project application on January 30, 2020. FERC issued a Notice of Application on February 12, 2020. In that notice, FERC provided a commenting deadline of March 4, 2020. Twenty-one days is a grossly insufficient amount of time for the public to absorb all the new information included in PennEast’s application and to provide meaningful comments. The Phase 1 Project may utilize the same route as a portion of the PennEast Project, but the purpose of the Phase 1 Project is completely different. The proximate projects surrounding the New PennEast Project, and the cumulative impacts they will have with the new and expanded New PennEast Project, are also completely different than those reviewed in FERC’s 2017 FEIS. PennEast must not be allowed to rush an entirely new and different project through FERC’s approval process by characterizing it as a phased approach to constructing the PennEast Project.

DRN has commented extensively on the harmful impacts of the PennEast Project and Adelphia Pipeline Project. To assist FERC in its analysis of the environmental impacts of the Phase 1 Project and to the degree there is overlap or redundancy with the New Penneast Project, DRN hereby expressly incorporates by reference: all comments submitted on FERC Docket Numbers CP15-558-000 and CP19-78-000 as they pertain to the portion of the PennEast Project affecting Pennsylvania; all comments submitted to the Pennsylvania Department of Environmental Protection (“PADEP”) regarding the PennEast Project; all comments submitted to the New Jersey Department of Environmental Protection (“NJDEP”) all comments submitted to the Army Corps of Engineers (“Corps”) regarding the PennEast Project; all comments submitted to the DRBC regarding the PennEast Project;

⁴ INTERAGENCY WORKING GROUP ON SOCIAL COST OF GREENHOUSE GASES, UNITED STATES GOVERNMENT, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12866 (August 2016).

⁵ Alex L. Marten, Elizabeth A. Kopits, Charles W. Griffiths, Stephen C. Newbold & Ann Wolverton (2015) *Incremental CH₄ and N₂O mitigation benefits consistent with the US Government’s SC-CO₂ estimates*, CLIMATE POLICY, 15:2, 272-298, DOI: 10.1080/14693062.2014.912981; Alex L. Marten, Elizabeth A. Kopits, Charles W. Griffiths, Stephen C. Newbold & Ann Wolverton (2015) *Corrigendum to: Incremental CH₄ and N₂O mitigation benefits consistent with the U.S. Government’s SC-CO₂ estimates*, CLIMATE POLICY, 15:5, 678-679, DOI: 10.1080/14693062.2015.1070550.

⁶ 42 U.S.C. § 4321, *et seq.*

⁷ *See id.* § 4332(2)(C).

⁸ *See* OFFICE OF ENERGY PROJECTS, FEDERAL ENERGY REGULATORY COMMISSION, FERC\EIS:0271F, PENNEAST PIPELINE PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT (April 2017).

and all comments submitted to FERC, PADEP, and DRBC regarding the Adelpia Pipeline Project. Copies of the aforementioned comments are attached hereto for FERC's convenience.

I. The Phase 1 Project Scheme by PennEast

PennEast claims the Phase 1 Project is a stand-alone project involving the construction of “the facilities proposed to be located in Pennsylvania through approximate milepost (“MP”) 68, including two (2) of the compressor units at the Kidder Compressor Station, as well as new interconnection facilities . . . in Pennsylvania[.]”⁹ PennEast’s goal is to put the Phase 1 Project into service by November 1, 2021.¹⁰ The Phase 1 Project has a total capacity of 650,000 dekatherms per day (“Dth/d”).¹¹ As of the date of PennEast’s application, it has “executed precedent agreements with four shippers for approximately 340,000 [Dth/d] of capacity for long-term firm transportation service” from the Phase 1 Project receipt points to the new delivery points at the Church Road Interconnects[.]” namely, the Columbia Gas Transmission, LLC (“Columbia Gas”) Pipeline and the recently-certificated Adelpia Gateway, LLC (“Adelpia”) Pipeline.¹² PennEast claims that the “Phase 1 facilities would provide new incremental capacity to meet market demand[.]”¹³

II. FERC Must Prepare an Environmental Impact Statement that Does Not Impermissibly Segment PennEast’s Projects.

NEPA is our “basic national charter for protection of the environment.”¹⁴ As such, it makes environmental protection a part of the mandate of every federal agency.¹⁵ NEPA requires that federal agencies take environmental considerations into account in their decision-making “to the fullest extent possible.”¹⁶ 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.”¹⁷ When preparing an Environmental Impact Statement (EIS), an agency must take a detailed, “hard look” at the environmental impact of and alternatives to the proposed action.¹⁸ This required analysis serves to ensure that “the agency will not act on incomplete information, only to regret its decision after it is too late to correct.”¹⁹

NEPA also “guarantees that the relevant information [concerning environmental impacts] will be made available to the larger audience,” including the public, “that may also play a role in the decision-making process and the implementation of the decision.”²⁰ As NEPA’s implementing regulations explicitly provide, “public scrutiny [is] essential to implementing NEPA.”²¹ The opportunity for public participation guaranteed by NEPA

⁹ Abbreviated Application for Amendment to Certificate of Public Convenience and Necessity of PennEast Pipeline Company, LLC at 1, FERC Docket No. CP20-47-000 (Jan. 30, 2020) (hereinafter, “Phase 1 Application”).

¹⁰ *Id.* at 8.

¹¹ *Id.* at 1.

¹² *Id.* at 9-10.

¹³ *Id.* at 13.

¹⁴ 40 C.F.R. § 1500.1(a) (2019).

¹⁵ See 42 U.S.C. § 4332(1).

¹⁶ *Id.* at § 4332.

¹⁷ *Id.* at § 4332(2)(C).

¹⁸ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989).

¹⁹ *Marsh v. Oregon Natural Res. Council*, 490 U.S. 360, 371 (1979).

²⁰ *Robertson*, 490 U.S. at 349.

²¹ 40 C.F.R. § 1500.1(b) (2019).

ensures that agencies will not take final action until after their analysis of the environmental impacts of their proposed actions has been subject to public scrutiny.²²

An EIS must fully assess and disclose the complete range of environmental consequences of the proposed action, including “ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, [and] cultural” impacts, “whether direct, indirect, or cumulative.”²³ Direct effects are “caused by the action and occur at the same time and place.”²⁴ Indirect effects are those impacts that are caused by the action, but occur “later in time or farther removed in distance, but are still reasonably foreseeable,” and may include “growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.”²⁵ Cumulative impacts are “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.”²⁶ As the regulations make clear, “[c]umulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”²⁷ In addition, NEPA requires FERC to take a hard look at the ways to avoid or mitigate the Projects’ impacts.

NEPA is an “environmental full disclosure law.”²⁸ It requires that an agency obtain and consider detailed information concerning environmental impacts, and it “ensures that an agency will not act on incomplete information, at least in part, by ensuring that the public will be able to analyze and comment on an action’s environmental implications.”²⁹ The information provided to the public “must be of high quality” because “[a]ccurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA.”³⁰ The potential adverse effects of the PennEast’s proposed actions cannot be adequately analyzed without complete data on all affected resources.

On February 28, 2020, FERC issued a Notice of Intent to Prepare an Environmental Assessment for the Proposed PennEast 2020 Amendment Project. In that Notice, FERC stated that it “will prepare an environmental assessment (EA) that will discuss the environmental impacts of the PennEast 2020 Amendment Project involving the construction and operation of facilities by [PennEast]. The EA will discuss facilities to be built in Northampton County, Pennsylvania.”³¹ FERC apparently fails to realize that the Phase 1 Project is not simply an addition or amendment to the PennEast Project certificated in January 2018, but is rather a proposal to construct one-half of an entirely new project. FERC’s NEPA regulations state that “an environmental impact statement [(EIS)] will normally be prepared first for . . . [m]ajor pipeline construction projects under section 7 of the Natural Gas Act

²² See *N. Plains Res. Council v. Surface Transp. Bd.*, 668 F.3d 1067, 1085 (9th Cir. 2011) (noting that where “data is not available during the EIS process and is not available to the public for comment,” the process “cannot serve its larger informational role, and the public is deprived of their opportunity to play a role in the decision-making process”) (quoting *Robertson*, 490 U.S. at 349)).

²³ 40 C.F.R. §§ 1502.16(a), (b); § 1508.8 (2019).

²⁴ *Id.* § 1508.8(a).

²⁵ *Id.* § 1508.8.

²⁶ *Id.* § 1508.7 (emphasis added).

²⁷ *Id.*

²⁸ *Monroe Cnty. Conservation Council, Inc. v. Volpe*, 472 F.2d 693, 697 (2d Cir. 1972).

²⁹ *Ohio Valley Env'tl. Coal. v. U.S. Army Corps of Eng'rs*, 674 F. Supp. 2d 783, 792 (S.D. W. Va. 2009) (internal quotation marks and citations omitted).

³⁰ 40 C.F.R. § 1500.1(b) (2019).

³¹ NOTICE OF INTENT TO PREPARE AN ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED PENNEAST 2020 AMENDMENT PROJECT AND REQUEST FOR COMMENTS ON ENVIRONMENTAL ISSUES at 1, FERC Docket No. CP20-47-000 (Feb. 28, 2020).

using rights-of-way in which there is no existing natural gas pipeline[.]”³² The Phase 1 Project is such a major pipeline construction project. The presumption under the law is that the Phase 1 Project will be subject to an EIS, as is required by NEPA.

PennEast cannot be allowed to claim the Phase 1 Project is simply an amendment to the method of constructing the PennEast Project,³³ while simultaneously claiming that Phase 1 is a stand-alone project.³⁴ Tellingly, PennEast believes that it will be able to construct “Phase 2” without any further input from FERC.³⁵ PennEast is apparently trying to confuse FERC and the public, and avoid a legal challenge by alternately characterizing Phase 1 as a mere change in construction method (when seeking to minimize the fact that the Phase 1 Project has a different purpose than the PennEast Pipeline Project and an expanded impact and footprint), or as a stand-alone project (in an attempt to avoid the argument that it is proposing a segmented NEPA analysis).

A. The Purpose of the Phase 1 Project is Different Than the Purpose of the PennEast Pipeline Project, Thus, the Baseline for FERC’s NEPA Analysis Has Changed.

One of the most significant components of an EIS is the statement of purpose and need.³⁶ The purpose and need of a project “defines the goals of the project to allow for the review of an appropriate range of alternatives.”³⁷ The Phase 1 Project has an entirely different purpose and need than the PennEast Project, thus, the baseline of FERC’s entire NEPA analysis has changed. FERC “bears the responsibility for defining at the outset the objectives of an action.”³⁸ When doing so, FERC “should take into account the needs and goals of the parties involved in the application” and “should always consider the views of Congress, expressed, to the extent that the agency can determine them, in the agency’s statutory authorization to act, as well as in other congressional directives.”³⁹

Here, in the Natural Gas Act, Congress has authorized FERC to issue certificates of public convenience and necessity.⁴⁰ An appropriate statement of purpose and need in this context will include information such as “where the gas must come from, where it will go, [and] how much it will deliver[.]”⁴¹ PennEast’s Phase 1 Project will result in a different destination for, and quantity of, natural gas. Thus, a new statement of purpose and need as well as a new alternatives analysis is necessary.

Accordingly, even as a stand-alone project, the Phase 1 Project requires an EIS. However, through its January 30, 2020 application, PennEast is essentially proposing two new projects: (1) the Phase 1 Project; and (2) a new and expanded version of the PennEast project that includes the interconnection with the Adelpia

³² 18 C.F.R. § 380.6(a)(3) (2019).

³³ *Phase 1 Application* at 1 (PennEast “hereby filed this application requesting that the Commission issue an order amending PennEast’s certificate of public convenience and necessity . . . for the PennEast Pipeline Project . . . to authorize PennEast to construct, own and operate the Project in two (2) phases[.]”).

³⁴ *Id.* at 8 (“[T]he construction and operation of these Phase 1 facilities are in no way contingent on or otherwise impacted by the . . . ultimate construction of the Phase 2 facilities.”).

³⁵ *Id.* at 3 (“Subsequently, upon receipt of the New Jersey Authorizations, PennEast will construct and operate Phase 2.”)

³⁶ 40 C.F.R. § 1502.13 (2019).

³⁷ *Stop the Pipeline v. White*, 233 F. Supp. 2d 957, 971 (S.D. Ohio 2002) (citing *Citizens Against Burlington v. Busey*, 938 F.2d 190, 195-96 (D.C. Cir. 1991)).

³⁸ *Busey*, 938 F.2d at 195-96.

³⁹ *Id.* at 196.

⁴⁰ See 15 U.S.C. § 717f(c).

⁴¹ *Sierra Club, Inc. v. U.S. Forest Serv.*, 897 F.3d 582, 599 (4th Cir. 2018).

and Columbia Gas pipelines (“New PennEast Project”) which is now an essential and integrated section of the pipeline project necessary to defend the claimed purpose and need. If FERC approves the Phase 1 Project, then the PennEast Project as originally certificated by FERC will never come into being. FERC must prepare an EIS that addresses both new projects—to do otherwise would amount to segmentation which is unlawful.

B. An EIS or EA Addressing Only the Phase 1 Project Will Impermissibly Segment FERC’s NEPA Analysis by Failing to Consider the New PennEast Project as a Whole, as Well as the Interconnected Adelpia Project.

The D.C. Circuit in *Delaware Riverkeeper v. FERC*, identified two tests for evaluating whether an agency has improperly segmented its review of a project.⁴² First, the Court stated that for the purpose of segmentation review, an agency’s consideration of the proper scope of its NEPA analysis should be guided by the “governing regulations,” which are 40 C.F.R. § 1508.25(a).⁴³ The same analysis is required in the instant matter. Second, the Court in *Delaware Riverkeeper* also stated that even if the segmentation analysis was guided instead by the test articulated in *Taxpayers Watchdog v. Stanley*,⁴⁴ FERC still unlawfully segmented its review of the projects.⁴⁵ In drafting its EIS for the Phase 1 Project and New PennEast Project, FERC must avoid these pitfalls and unlawful gross errors and practices which benefit the pipeline operators over the public interest.

An agency should prepare a single programmatic EIS for actions that are “connected,” “cumulative,” or “similar,” such that their environmental effects are best considered in a single impact statement.⁴⁶ “Actions are ‘connected’ or ‘closely related’ if they: ‘(i) Automatically trigger other actions which may require environmental impact statements; (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously; [or] (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.’”⁴⁷ Similar actions have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography.⁴⁸ NEPA requires “agencies to consider the cumulative impacts of proposed actions.”⁴⁹ An agency must analyze the impact of a proposed project in light of that project’s interaction with the effects of “past, current, and reasonably foreseeable future actions.”⁵⁰

“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.⁵¹ Federal agencies may not evade their responsibilities under NEPA by “artificially dividing a major federal action into smaller components, each without a ‘significant’ impact.”⁵² 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.”⁵³ Without this rule, developers and agencies could “unreasonably restrict the scope of environmental review.”⁵⁴

⁴² *Delaware Riverkeeper Network, et al. v. Federal Energy Regulatory Commission*, 753 F.3d 1304, 1314-15 (D.C. Cir. 2014).

⁴³ *Id.*

⁴⁴ 819 F.2d 294 (D.C. Cir. 1987).

⁴⁵ *Delaware Riverkeeper Network*, 753 F.3d at 1314-15.

⁴⁶ *Am. Bird Conservancy, Inc. v. FCC*, 516 F.3d 1027, 1032 (D.C. Cir. 2008); 40 C.F.R. § 1508.25(a).

⁴⁷ *Hammond v. Norton*, 370 F. Supp. 2d 226, 247 (D.D.C. 2005) (quoting 40 C.F.R. § 1508.25(a)(1)).

⁴⁸ *Id.* at 246; 40 C.F.R. § 1508.25(a)(3) (2019).

⁴⁹ *NRDC v. Hodel*, 865 F.2d 288, 297 (D.C. Cir. 1988) (“Hodel”). See also *TOMAC v. Norton*, 433 F.3d 852, 864 (D.C. Cir. 2006).

⁵⁰ 40 C.F.R. § 1508.7 (2019).

⁵¹ *Taxpayers*, 819 F.2d 294, 298 (D.C. Cir. 1987).

⁵² *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).

⁵³ *Town of Huntington v. Marsh*, 859 F.2d 1134, 1142 (2d Cir. 1988).

⁵⁴ *Fund for Animals v. Clark*, 27 F. Supp. 2d 9, 16 (D.D.C. 1998) (“Fund”).

In accordance with the three-factor test articulated in *Taxpayers*, to determine whether a project has been unlawfully segmented, “courts have considered such factors as whether the proposed segment (1) has logical termini; (2) has substantial independent utility; (3) does not foreclose the opportunity to consider alternatives[.]”⁵⁵ In *Delaware Riverkeeper*, the court held that even if it were to expand its analysis from Section 1508.25(a) to the factors in articulated in *Taxpayers*, FERC’s defense of its action was still deficient.⁵⁶ Relevant to the Phase 1 Project, a project lacks “independent utility” if it could not function or would not have been constructed in the absence of another project.⁵⁷

Now is the time for FERC to analyze the Phase 1 Project as well as the entirely New PennEast Project. NEPA clearly requires FERC to consider these interconnected projects, which are obviously being contemplated and planned for in the same time frame by the same owner for delivery of the same gas. There exists a physical, functional, and temporal nexus that cannot be overlooked. The New PennEast Project has not been examined before, and will *never* be examined if FERC fails to complete a comprehensive EIS by allowing PennEast to segment the New PennEast Project.

In addition, the effects of Phase 1’s connection with the Adelpia Pipeline have not yet been explored by FERC. Phase 1 serves as the northern portion of the Adelpia Pipeline, and will result in the seamless delivery of natural gas from the Marcellus Shale to Marcus Hook. In FERC’s Environmental Assessment (“EA”) of the Adelpia Project, it stated that the PennEast Project was “entirely outside of the geographic scope of the [Adelpia Project] (including for air quality), with the exception of the Martins Creek Station, which is within the corresponding HUC-12 watersheds, but is already in operation and would be considered the environmental baseline. Due to a large number of public comments about this project, it’s included here for comparison purposes only.”⁵⁸

PennEast’s new Phase 1 Project changes that fact—the pipelines will be directly connected at the Church Road Facility. Accordingly, Phase 1 and the Adelpia Pipeline are “interdependent parts of a larger action and depend on the larger action for their justification.”⁵⁹ Given that Adelpia Pipeline is one of only two delivery points for the Phase 1 Project, it is clear that the Phase 1 Project “[c]annot or will not proceed unless other actions [Adelpia Pipeline] are taken previously or simultaneously.” If FERC fails to analyze these projects as one, it will be unlawfully segmenting a larger project that must be subject to NEPA review.

C. The EIS Must Also Address the Environmental Impacts of Existing and Proposed Pipelines in the Vicinity of the Proposed Projects.

FERC must also consider the environmental effects of pipeline projects within temporal and spatial proximity of the Phase 1 Project and the New PennEast Project. “[F]ederal law requires that an EIS must analyze

⁵⁵ *Taxpayers*, 819 F.2d at 298.

⁵⁶ *Delaware Riverkeeper*, 753 F.3d at 1314-16 (The court held that the projects did not have “(1) has logical termini; [or] (2). . . substantial independent utility.” The court’s examination did not reach the remaining factor.)

⁵⁷ *Wetlands Action Network v. U.S. Army Corps of Engineers*, 222 F.3d 1105, 1118 (9th Cir. 2000). *See also West North Carolina Alliance v. North Carolina Dept. of Transp.*, 312 F. Supp. 2d 765, 774-775 (E.D.N.C. 2003) (project widening highway section lacked independent utility because it would leave a “bottleneck” of narrow highway to north, such that traffic congestion between the termini of the project would be worsened until construction of later project widening bottleneck section).

⁵⁸ OFFICE OF ENERGY PRODUCTS, FEDERAL ENERGY REGULATORY COMMISSION, Docket Nos. CP18-46-000 & CP18-46-001, ADELPHIA GATEWAY PROJECT ENVIRONMENTAL ASSESSMENT 157 (Jan. 2019).

⁵⁹ 40 C.F.R. § 1508.25 (2019).

‘the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.’”⁶⁰ “A necessary component of NEPA’s ‘hard look’ is ‘a sufficiently detailed catalogue of past, present, and future projects, and [] adequate analysis about how these projects, and differences between the projects, are thought to have impacted the environment.’”⁶¹

These projects include, but are certainly not limited to, the Adelpia Pipeline, Regional Energy Access Project (Phase I and II), UGI Bethlehem Liquefied Natural Gas Peak Delivery Facility, Birdsboro Pipeline Project, Transco Atlantic Sunrise Project, Millennium Eastern System Upgrade Project, Transco Orion Project, Transco Susquehanna West, Transco Triad Expansion, Tennessee Gas Pipeline Company Northeast Upgrade Project, Tennessee Gas Pipeline Company 300 Upgrade Project, Transco Leidy Southeast Expansion, Constitution Pipeline (to the degree that it may be revived by project owners and to the degree that construction has already taken place that has harmed communities and the environment), Sunoco Mariner East 2 and 2X Projects, Paulsboro Natural Gas Delaware River Pipeline Relocation Project, Sunoco Logistics Delaware River Pipeline Relocation Project, and the Gibbstown Liquefied Natural Gas Export Facility.

III. FERC Must Analyze the Cumulative Climate Impacts of PennEast’s Projects, Including Upstream Production and Downstream Consumption.

In determining the climate impacts of PennEast’s projects, both upstream production and downstream consumption are within the required scope of FERC’s NEPA analysis. The scope of an EIS includes the impacts of an action, which may be direct, indirect or cumulative.⁶² Effects subject to a NEPA analysis include ecological, economic, and social impacts.⁶³

In FERC’s FEIS for the PennEast Project, it erroneously concluded that “upstream production is not causally connected to the Project, and as such [FERC does] not evaluate the impacts of such activity.”⁶⁴ With regard to downstream uses of gas transmitted by the PennEast project, FERC determined that “the scope and effects of the potential GHG emissions from natural gas production attributable to this Project are not reasonably foreseeable, as there is not enough information available to permit a meaningful analysis.”⁶⁵ Ultimately, FERC concluded that “[b]ecause we cannot determine the projects’ incremental physical impacts on the environment caused by climate change, we cannot determine whether the projects’ contribution to cumulative impacts on climate change would be significant.”⁶⁶

Contrary to FERC’s belief, “[b]ecause FERC could deny a pipeline certificate on the ground that the pipeline would be too harmful to the environment, the agency is a ‘legally relevant cause’ of the direct and indirect environmental effects of pipelines it approves.”⁶⁷ In this respect, the construction of a pipeline is similar to the construction of a logging road in *Thomas v. Peterson*,⁶⁸ a case that discussed the appropriate scope of a NEPA analysis. In that case, the Ninth Circuit reasoned:

⁶⁰ *Oregon Nat. Res. Coun. Fund v. Goodman*, 505 F.3d 884, 892 (9th Cir. 2007) (quoting 40 C.F.R. § 1508.7).

⁶¹ *Id.* (quoting *Lands Council v. Powell*, 395 F.3d 1019, 1027-28 (9th Cir. 2005)).

⁶² 40 C.F.R. § 1508.25 (2019).

⁶³ *Id.* § 1508.8(b).

⁶⁴ OFFICE OF ENERGY PROJECTS, FEDERAL ENERGY REGULATORY COMMISSION, PENNEAST PIPELINE PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT at 4-258, FERC\EIS: 0271F (Apr. 2017).

⁶⁵ *Id.* at 4-334.

⁶⁶ *Id.* at 4-335.

⁶⁷ *Sierra Club v. Fed. Energy Regulatory Comm’n*, 867 F.3d 1357, 1373 (D.C. Cir. 2017).

⁶⁸ 753 F.2d 754 (9th Cir. 1985).

The location, the timing, or other aspects of the timber sales, or even the decision whether to sell any timber at all affects the location, routing, construction techniques, and other aspects of the road, or even the need for construction.

....

The Forest Service argues that the sales are too uncertain and too far in the future for their impacts to be analyzed along with that of the road. This comes close to saying that building the road now is itself irrational. We decline to accept that conclusion. Rather, we believe that if the sales are sufficiently certain to justify construction of the road, then they are sufficiently certain for their environmental impacts to be analyzed along with those of the road.⁶⁹

In sum, if the production and consumption of natural gas is sufficiently certain to justify construction of Phase 1 and the New PennEast Project, then they are sufficiently certain for their environmental impacts to be analyzed along with the construction of the pipeline. PennEast's new application for Phase 1 gives FERC the obligation to assess the climate impacts of the Phase 1 Project and the New PennEast Project, as required by NEPA.

Cumulative impacts caused by "reasonably foreseeable" future actions are recognizable under NEPA and must be considered throughout the NEPA process. Additionally, FERC must consider the cumulative effects of actions similar to the proposed action, whether existing or reasonably foreseeable. Cumulative impacts include "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.*"⁷⁰ "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."⁷¹ Cumulative impacts include "coincident effects (adverse or beneficial) on specific resources, ecosystems, and human communities of all related activities, not just the proposed project or alternatives that initiate the assessment process."⁷² A cumulative effects analysis focuses on resource sustainability, and has expanded geographic and time boundaries.

Upstream natural gas production, and its subsequent impacts, are among the effects that NEPA requires FERC to consider, in determining whether its action will have a significant impact. NEPA's implementing regulations define, as "[i]ndirect effects," those "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."⁷³ That the Phase 1 Project's and the New PennEast Project's takeaway capacity will necessarily lead to additional demand for natural gas, with consequences for its price, production, and use, is eminently foreseeable. The D.C. Circuit has recently held that such "generally applicable economic principles," as the relationship between the price of a good and its production and consumption, are "sufficiently 'self-evident'" to "require 'no evidence outside the administrative record.'"⁷⁴ The

⁶⁹ *Id.* at 760.

⁷⁰ 40 C.F.R. § 1508.7 (2019) (emphasis added).

⁷¹ 40 C.F.R. § 1508.7 (2019).

⁷² COUNCIL ON ENVIRONMENTAL QUALITY, EXECUTIVE OFFICE OF THE PRESIDENT, CONSIDERING CUMULATIVE EFFECTS UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT at v (Jan. 1997).

⁷³ 40 C.F.R. § 1508.8(b) (2019).

⁷⁴ *Airlines for Am. v. Transp. Sec. Admin.*, 780 F.3d 409, 410-11 (D.C. Cir. 2015) (finding standing based on "basic proposition that 'increasing the price of an activity . . . will decrease the quantity of that activity demanded in the market'" (alteration in original) (quoting *Branton v. FCC*, 993 F.2d 906 (D.C. Cir. 1993))).

results of generally applicable economics are all the more foreseeable here because the administrative record does contain evidence specifically foreseeing them.

The Council on Environmental Quality's ("CEQ's") regulations implementing NEPA provide illustrative examples of indirect effects that are closely analogous to those at issue here: "growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate[.]"⁷⁵ Like impacts on gas production and use, growth-inducing effects and induced changes in the pattern of land use reflect responses—generally market-based—to changes in the supply of, and demand for, various resources. Further reflecting the need to consider such impacts, the regulations include economic as well as environmental impacts among those that an agency must consider.⁷⁶

For that reason, courts have consistently required that agencies extend the ambit of their analysis to include effects akin to upstream production and downstream consumption. The Eighth Circuit has addressed circumstances that closely parallel those here, holding that when an agency approves a rail-line extension that would result in "an increase in availability and a decrease in price" of coal, NEPA demands that the agency examine the environmental "effects that may occur as a result of the reasonably foreseeable increase in coal consumption."⁷⁷ In *Mid-States*, the agency's decision enabled an increase in the supply of coal to the domestic market; here, as described below, FERC has enabled an increase in demand for natural gas. In *Mid-States*, that decision had foreseeable effects on the price of coal, its production, and its use.

FERC's decision has foreseeable impacts on natural gas's price, production, and use. In *Mid-States*, the Eighth Circuit held that the agency could not responsibly or lawfully ignore those effects under NEPA.⁷⁸ Likewise, neither could FERC do so here. Other Circuits have reached similar results. When authorizing a runway that would expand capacity and "spur demand," the Ninth Circuit has held that the Department of Transportation must examine the increased usage that will result from that demand.⁷⁹ The First Circuit has refused to let an agency construct a causeway and port, without examining the "industrial development" that would be enabled by that construction.⁸⁰ Those cases establish that when an Agency approves infrastructure that will increase demand for a resource, it cannot ignore the effects of that increased demand.

NEPA does not require agencies to consider only those effects whose specifics are known and certain. As the Eighth Circuit held, "when the *nature* of the effect is reasonably foreseeable but its *extent* is not ... [an] agency may not simply ignore the effect."⁸¹ Indeed, where an action's effects are not precisely known, the

⁷⁵ 40 C.F.R. § 1508.8(b) (2019).

⁷⁶ *Id.*

⁷⁷ *Mid-States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549-50 (8th Cir. 2003) (requiring that agency address air pollution resulting from increased coal use).

⁷⁸ *Id.*

⁷⁹ *Barnes v. U.S. Dep't of Transp.*, 655 F.3d 1124, 1138-9 (9th Cir. 2011).

⁸⁰ *Sierra Club v. Marsh*, 769 F.2d 868, 877-79 (1st Cir. 1985). *See also Friends of the Earth v. U.S. Army Corps of Eng'rs*, 109 F. Supp. 2d 30, 39-40 (D.D.C. 2000) (invalidating agency decision approving casino, without considering economic development that would result).

⁸¹ *Mid-States Coal. for Progress*, 345 F.3d at 549-50 (when agency permits rail extension that will increase "availability of coal," it may not ignore "the construction of additional [coal-fired] power plants" that may result merely because agency does not "know where those plants will be built, and how much coal these new unnamed power plants would use").

Council on Environmental Quality's regulations suggest that the action is more - not less - likely to warrant an environmental impact statement.⁸²

NEPA's implementing regulations provide detailed instructions as to how such uncertainty is to be addressed in an environmental impact statement.⁸³ That the precise location of natural gas production is unknown, therefore, does not render such production unforeseeable, or allow FERC to dismiss its effects as insignificant. "It is well recognized that a lack of certainty concerning prospective environmental impacts cannot relieve an agency of responsibility for considering reasonably foreseeable contingencies."⁸⁴ Rather, "[a]t the threshold stage of the NEPA inquiry ... an agency must determine, to the extent feasible, whether the sum of all reasonably foreseeable effects, discounted by the probability of their occurrence, represent a 'significant' effect on the environment."⁸⁵ If so, the "agency must issue an [environmental impact statement] analyzing the probabilistic facets of the prospective environmental impact."⁸⁶ Here, record evidence shows that not only will additional unconventional shale gas drilling be necessary to support the Project over the lifespan of its contracts, but furthermore, it is shown where the new wells are likely to be located, and how many wells will be needed to support the Project.

A. FERC's Cumulative Impacts Assessment Must Consider Reasonably Foreseeable Shale Gas Production.

FERC's NEPA analysis must include existing and reasonably foreseeable shale development/production that will be advanced, induced and supported if the Phase 1 Project and New PennEast Project were to be approved by FERC and built. Among the reasonably foreseeable actions—the environmental and community impacts of which must be considered—include the construction, operation and maintenance of the shale gas wells that will be the source of the gas carried by the Phase 1 Project and new PennEast Project with interconnects, which will be carrying that gas in interstate commerce – both the new wells that will be constructed and the production that will be induced at pre-existing wells by the proposed projects. The analysis of impact for these gas wells, which will be producing gas for the purposes of delivering it through the pipelines in interstate commerce, must include the associated gathering pipelines, access roads, gathering lines, compressor stations, water pipelines, water consumption and water disposal, truck traffic, and other supporting infrastructure which is necessary for the construction and development of these wells.

Given that shale gas production activities for delivery of gas into interstate commerce through the PennEast Pipeline are "sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision,"⁸⁷ and given that FERC's approval of this project is a legally relevant cause resulting in the induced new, expanded, extended, and ongoing production of shale gas through construction of new gas

⁸² See 40 C.F.R. § 1508.27(b)(5) (intensity depends upon "[t]he degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks"); see also *Found. on Econ. Trends*, 756 F.2d at 154-55 (It is not "sufficient for the agency merely to state that the environmental effects are currently unknown," because uncertainty is "one of the specific criteria for deciding whether an [environmental impact statement] is necessary").

⁸³ 40 C.F.R. § 1502.22(b) (specifying how agency should proceed when "the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known").

⁸⁴ *Potomac Alliance v. U.S. Nuclear Reg. Comm'n*, 682 F.2d 1030, 1036-37 (D.C. Cir. 1982).

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *City of Shoreacres v. Waterworth*, 420 F.3d 440, 453 (5th Cir. 2005) (quoting *Sierra Club v. Marsh*, 976 F.2d 763, 767 (1st Cir. 1992))

wells and well pads and inducing new production at pre-existing wells, FERC is obligated to consider their impacts in its NEPA analysis of the project.

Analysts, experts, and modelers use the location of interstate transmission gas lines as a predictor of where gas production will take place. The reality of the industry is that gas is produced for transmission through interstate commerce, and that there is a direct relationship between the siting and construction of well pads and the location of existing or proposed interstate pipelines.

B. FERC's Cumulative Impacts Assessment Must Consider the Reasonably Foreseeable Consumption of Natural Gas, and Use the Social Cost of Carbon and Social Cost of Methane to Measure the Impact of Emissions.

FERC must establish the amount of carbon and methane emissions that will result from the Phase 1 Project and the New PennEast Project. Using these amounts, FERC must then incorporate the impact of these greenhouse gases (GHGs) into its NEPA analysis.

The social cost of carbon (SC-CO₂) is a comprehensive estimate of the economic cost of harm associated with the emission of carbon. Particularly relevant to natural gas infrastructure is the social cost of methane (SC-CH₄), a tool that allows agencies to similarly weigh the economic cost of harm associated with methane emissions. These estimates are important for regulation because they help agencies more accurately weigh the costs and benefits of a proposed action.

Although agencies are not *required* to perform cost-benefit analyses in an EIS,⁸⁸ failure to do so when the economic benefits of an agency action are quantified may be arbitrary and capricious.⁸⁹ Here, there is sufficient information in the record about the claimed economic benefits of the Phase 1 Project and New PennEast Project to allow FERC to quantify them and perform a cost-benefit analysis using the SC-CO₂ and the SC-CH₄. Furthermore, FERC is already required by the Natural Gas Act to balance the benefits of PennEast's proposed projects with the harms they will cause. Thus, it would be arbitrary and capricious for FERC to ignore the SC-CO₂ and the SC-CH₄ in the EIS.

C. FERC's Cumulative Impacts Assessment Must Consider the Reasonably Foreseeable Outcome of Natural Gas Exports.

The direct, cumulative, and foreseeable impacts resulting from the exportation of the transported gas must also be considered. Facts are clear—the Phase 1 Project and the New PennEast Project will be part of a pipeline system that could transport its shale gas to the recently-approved Cove Point LNG export facility, as well as the Marcus Hook Industrial Complex. The Adelpia Pipeline, if built/permitted, will connect with the Marcus Hook Industrial Complex, which Adelpia advertised in its open season materials as a “state-of-the-art terminalling and natural gas liquids storage facility.” Given that natural gas can sell at a significantly higher price overseas as compared to domestically, it is both reasonable and foreseeable that Phase1/Adelpia transported gas will be transported to Marcus Hook for export.

In addition, the New PennEast Project will have an interconnect with Transco's mainline in Mercer County, NJ, a pipeline that intersects with the Pleasant Valley interconnect in Fairfax County Virginia, which in

⁸⁸ 40 C.F.R. § 1502.23 (2019).

⁸⁹ See *High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1191 (D. Colo. 2014).

turn could deliver gas to Dominion's Cove Point Pipeline. Given that natural gas can sell at a significantly higher price overseas as compared to domestically, it is both reasonable and foreseeable that PennEast transported gas will be transported to Cove Point for export. Furthermore, it is likely that natural gas that is displaced by the PennEast line will likely be exported as well.

IV. PennEast's Air Quality Analysis Fails to Consider Impacts From the Entire Project, Fails to Account for Acute Emissions Impacts, and Uses Outdated Assumptions in Calculating Emissions.

The New PennEast Project would result in significant emissions of several major categories of air pollutants, including NO_x, VOCs, carbon monoxide, air toxics, and greenhouse gases. These emissions would result from the construction and operation of the new pipeline, the new compressor station, and other above-ground facilities, including the Church Road Facility. These additional emissions would affect residents of areas already burdened by elevated levels of pollution. Focusing in on Northampton County alone, the county is in marginal nonattainment under the 8-hour ozone NAAQS.⁹⁰

But the first problem in PennEast's air quality analysis is that it omits the entirety of "Phase 1" of the project. PennEast writes in its Abbreviated Application that "PennEast is proposing only minor modifications to the Project consisting of the Church Road Facility; with the limited exception of these minor modifications, phasing the Project will not otherwise alter the facilities or locations of facilities authorized in the Certificate Order and as proposed to be modified in the 2019 Amendment Application, which itself separately discusses the environmental impacts related thereto." PennEast makes clear that it plans to serve as the northern stretch of the Adelpia Pipeline Project, which is contemporaneous. Yet it does not include any emissions from Adelpia in its analysis. It has been well-settled for decades that NEPA's ultimate goal is the protection of human health and welfare and the physical environment.⁹¹ FERC must therefore undertake a full and substantive analysis of the potential environmental and health effects of NO_x, VOCs, greenhouse gases and other pollutants—including fugitive emissions—that would be generated if PennEast were to go forward, including Adelpia's emissions.

It is not entirely clear from PennEast's application what equipment will be onsite at the Church Road Facility. There is some description in Section 1.2.2 of Exhibit F-1, and it refers to a site plan in Appendix A, but at least the public version of Appendix A contains no site plan. Therefore, the public is prevented from fully characterizing the emissions of the onsite equipment.

However, from the description, there will be at least: (1) a pig⁹² launcher/receiver; (2) gas meters; (3) flow control valves; (4) heaters; and (5) a gas control/remote terminal unit. The first four of these types of equipment all emit pollution. PennEast characterizes emissions from these sources on an annual/chronic but not an acute basis.⁹³ But chronic and acute risks can both be serious and deserve consideration. Of these types of equipment, the pigging operations and valve equipment carry both chronic and acute risks.

⁹⁰ See EPA, Nonattainment Areas for Criteria Pollutants (Green Book), available at <https://www.epa.gov/green-book> (last visited March 2, 2020).

⁹¹ See *Metropolitan Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 771 (1983) ("All the parties agree that effects on human health are cognizable under NEPA . . ."), 773 ("NEPA states its goals in sweeping terms of human health and welfare . . . [T]hese goals are ends that Congress has chosen to pursue by means of protecting the physical environment.") (original emphasis omitted).

⁹² PennEast uses the term "Pipe Inspection Gauge" and capitalizes "PIG," but the term is actually just from the animal, and the device is not a gauge. See <https://en.wikipedia.org/wiki/Pigging>.

⁹³ See Phase 1 Application, Exhibit F-1 at Section 9.0; Appendix G.

Starting with the pigging operations, pigging refers to the use of cylindrical cleaning and inspection devices inside the pipeline. A pig launcher is where the pig is inserted into the pipe, and a pig receiver is where it is removed. In both instances, the inside of the pipe is opened up. During this process, the product inside the pipe is released. This can result in a large amount of emissions all at once. PennEast has not said how it plans to manage that process, but that can make a big difference to the neighbors at the site--and the Church Road Facility is located in a residential area. The federal Agency for Toxic Substances & Disease Registry has taken an interest in studying pigging facilities over concerns of their “potential immediate short-term exposures” to neighbors, just the types of impacts that PennEast ignores here.⁹⁴ In an instance in Western Pennsylvania, as reported in the *Pittsburgh Post-Gazette*, the difference between one method of pigging and another could have grave implications for neighbors:⁹⁵

The model indicated that if gas from the pig launcher had been vented directly from a high-pressure tank during stable nighttime weather conditions, residents could have been exposed to methane at concentrations that could cause “potential irreversible health effects” when they were downwind.

After the equipment was modified to route gas to a low-pressure pipeline in July 2015, the model found that no meteorological conditions would have put either house in that threat zone.

Sites with valves such as the Church Road Facility are sometimes subject to onsite venting and sometimes flaring. Just last week, for example, a Sunoco valve site in Pennsylvania was the site of both venting and flaring.⁹⁶ Depending on the nature of the venting or flaring, it could involve large quantities of product, such as with a blowdown,⁹⁷ or produce heavy and continuous smoke from a portable flare. Either way, it is harmful to neighbors, and should be examined as part of the impacts from the emissions at the site.

Moving on to the chronic air pollution risks, PennEast provided some discussion and documentation of these risks in the form of construction and operation emissions calculations. PennEast’s construction emissions calculations have errors that need fixing before the project can move ahead.

PennEast writes that “The emission factors for off-road construction equipment and on-road vehicles were developed using the EPA MOVES2014 model for Northampton County and construction in 2019.” That is not entirely accurate. The construction emissions calculations are estimated using a mix of up-to-date and outdated guidance.⁹⁸ On the one hand, PennEast correctly uses the MOVES2014 model for some of its estimation. On the other hand, PennEast uses calculations based on superseded EPA documents EPA-420-R-10-018 and EPA420-P-04-005. The first was superseded in July 2018 by EPA-420-R-18-009. This calls into question

⁹⁴ See Laura Legere, “No venting at night? Agency finds tweaks to pipeline maintenance tools could reduce risks to residents,” *Pittsburgh Post-Gazette*, Sept. 19, 2017, available at <https://www.post-gazette.com/business/powersource/2017/09/19/Pig-launcher-health-study-DEP-Mount-Pleasant-Pennsylvania-Agency-for-Toxic-Substances-natural-gas-emissions/stories/201709150053>

⁹⁵ *Id.*

⁹⁶ See February 25, 2020 letter from Township of Middletown, Delaware County, Pennsylvania to its residents, available at https://middletowndelcopa.gov/vertical/sites/%7BE08CD8FE-6BF2-4104-AF8F-C16770381A63%7D/uploads/02.25.2020_Sunoco_Update_-_overnight_venting_of_12in_pipeline.pdf.

⁹⁷ Federal regulations require that “[e]ach blowdown discharge must be located so the gas can be blown to the atmosphere without hazard.” 49 C.F.R. § 192.179. It is unclear if PennEast has done any such analysis.

⁹⁸ See *Phase 1 Application*, Appendix G-1.

PennEast's SO₂ and CO₂ calculations.⁹⁹ The second was superseded in July 2010 by EPA-420-R-10-016. This calls into question PennEast's calculations of air toxics emissions.¹⁰⁰ Its air toxics calculations also fail to use the July 2018 EPA-420-R-18-011 for emissions factors, instead using emissions factors from EPA's AP-42 Sections 3.3 and 3.4, both dating to 1996.¹⁰¹ AP-42 is explicitly for *stationary* sources. MOVES is the model designed for *mobile* sources.

V. PennEast Has Failed to Establish Public Need for its Phase 1 Project and Thus FERC Must Deny PennEast's January 30, 2020 Request for Amendment

Prior to constructing any natural gas facility, a company such as PennEast must obtain a certificate of public convenience and necessity issued by FERC.¹⁰² According to FERC's own Certificate Policy Statement,¹⁰³ in deciding whether to issue such a certificate:

[T]he Commission will consider all relevant factors reflecting on the need for the project. These might include, but would not be limited to, precedent agreements, demand projections, potential cost savings to consumers, or a comparison of projected demand with the amount of capacity currently serving the market. The objective would be for the applicant to make a sufficient showing of the public benefits of its proposed project to outweigh any residual adverse effects discussed below.¹⁰⁴

Those adverse effects include those against "the interests of landowners and surrounding communities."¹⁰⁵ "Traditionally, the interests of the landowners and the surrounding community have been considered synonymous with the environmental impacts of a project."¹⁰⁶ After completing a thorough EIS with public scrutiny and comment on the Phase 1 Project, FERC will have a comprehensive understanding of the environmental impacts of these projects. The cumulative adverse effects associated with the Phase 1 Project are enormous, as the pipeline will cut through sensitive water bodies causing short term and long term harm to water quality, habitat, steep slopes, and recreation areas, will induce additional fracking activity in the Marcellus Shale region, and result in the emission of GHGs such as carbon and methane. The science and expert reports put on record and referenced in this comment outline some of these irreversible harms.

In balancing these adverse effects against the so-called public benefits of Phase 1, FERC should conclude that the benefit of transmitting 340,000 Dth/d of natural gas to existing pipelines simply cannot outweigh the harm that will be caused by the Phase 1 Project. In its application, PennEast asserts that FERC should "evaluate the public benefits of the stand-alone Phase 1 facilities against any potential adverse consequences of PennEast's proposal to phase construction of the Project, including the construction of the Church Road Interconnects."¹⁰⁷ This calculation both assumes that the New PennEast Project will inevitably be built, and puts a thumb on the scale in favor of finding public need.

⁹⁹ See *Phase 1 Application*, Table G-1.2.

¹⁰⁰ See *Phase 1 Application*, Table G-1.3.

¹⁰¹ See *id.*

¹⁰² 15 U.S.C. § 717f(c).

¹⁰³ Federal Energy Regulatory Comm'n, Docket No. PL99-3-000, Statement of Policy, 88 FERC ¶ 61,227 (Sept. 15, 1999).

¹⁰⁴ *Id.* at 23.

¹⁰⁵ *Id.*

¹⁰⁶ *Id.* at 24.

¹⁰⁷ *Phase 1 Application* at 12.

In order to evaluate the Phase 1 Project accurately, FERC must consider the adverse effects of all construction and operational activity of the Phase 1 Project. This includes the siting of the sixty-eight mile pipeline itself, the induced fracking, the new Church Road Facility, and the GHG emissions during construction and operation. This massive conglomeration of adverse effect simply does not outweigh the benefit of “provid[ing] new incremental capacity to meet market demand, as reflected by PennEast’s agreements with the Phase 1 shippers.”¹⁰⁸

PennEast also cites consumer access to stable, low-cost supplies, the creation of pipeline diversity, an increase in reliability of the natural gas transmission grid by providing a pipeline alternative, and reduction of system constraints and an increase in operational flexibility. These “benefits” could be used to describe every proposed new pipeline, and are not sufficient to overcome the permanent environmental harms that will be caused by the Phase 1 Project. Notably, the only Market Data included in PennEast’s Phase 1 Project Application is PennEast’s precedent agreements with its Phase 1 shippers,¹⁰⁹ despite the fact that FERC’s Certificate Policy Statement says that “the evidence necessary to establish the need for the project will usually include a market study.”¹¹⁰ The need PennEast attempts to demonstrate with its shipper agreements is particularly weak because PennEast apparently has not found a single shipper to sign a precedent agreement for its Phase 1 Project besides the component companies of PennEast itself.¹¹¹

Accordingly, the Phase 1 Project fails to meet the standard for public need because the public benefits of the project do not outweigh its adverse effects. FERC should not issue a certificate of public convenience and necessity to PennEast for the Phase 1 Project.

VI. Both the Phase 1 Project and New PennEast Project are Subject to Delaware River Basin Commission Jurisdiction and Approval.

If FERC in error decides to issue a certificate of public convenience and necessity to PennEast for the Phase 1 Project and New PennEast Project, then it must not do so until PennEast receives the approval of the Delaware River Basin Commission (“DRBC”). In its Phase 1 Application, PennEast states that it “will source water for hydrostatic testing and dust suppression from approved sources (e.g. commercial and municipal suppliers), and no chemicals will be added to hydrostatic test waters. Hydrostatic test water will not be discharged or used for dust suppression; all used hydrostatic test water will be removed from the site and disposed of at approved water treatment facilities.”¹¹² On the same date that PennEast submitted its Phase 1 Application to FERC, it also wrote a letter to the DRBC withdrawing its Water Withdrawal and Discharge (“W&D”) Application due to the new “alternatives for water withdrawals and discharge.”¹¹³

FERC must not issue a certificate without DRBC’s approval of the entire New PennEast Project. As previously discussed, PennEast is attempting to unlawfully segment the New PennEast Project by seeking approval for the construction of the Phase 1 Project from FERC.¹¹⁴ By attempting to withdraw its W&D

¹⁰⁸ *Id.* at 13.

¹⁰⁹ *Id.* at 22, Exhibit I.

¹¹⁰ Statement of Policy at 25.

¹¹¹ See Answer of PennEast Pipeline Company, LLC, FERC Docket No. CP20-47-000 (Feb. 26, 2020)

¹¹² *Phase 1 Application*, Exhibit F-I at 14.

¹¹³ Letter from Jeffrey D. England, Project Manager, PennEast Pipeline Company, LLC to Steven J. Tambini, Executive Director, Delaware River Basin Commission (Jan. 30, 2020).

¹¹⁴ See Section II, *supra*.

Application from DRBC, PennEast hopes to evade review of a major pipeline project that would ultimately cross dozens of streams and wetlands in Pennsylvania and New Jersey, and the Delaware River itself. Even if FERC allows PennEast to take its desired piecemeal approach, the Phase 1 Project in Pennsylvania alone is subject to DRBC jurisdiction as a “project having a substantial effect on the water resources of the basin.”¹¹⁵

Section 3.8 of the Delaware River Basin Compact provides:

No project having a substantial effect on the water resources of the basin shall hereafter be undertaken by any person, corporation or governmental authority unless it shall have been first submitted to and approved by the commission, subject to the provisions of Sections 3.3 and 3.5. The commission shall approve a project whenever it finds and determines that such project would not substantially impair or conflict with the comprehensive plan and may modify and approve as modified, or may disapprove any such project whenever it finds and determines that the project would substantially impair or conflict with such plan. The commission shall provide by regulation for the procedure of submission, review and consideration of projects, and for its determinations pursuant to this section.¹¹⁶

The DRBC Rules of Practice and Procedure (“RPP”) classifies projects for review under Section 3.8 of the Compact into two categories, those deemed not to have a substantial effect on the water resources of the Basin and therefore not required to be submitted for DRBC review, and those deemed to have substantial effects on water resources of the Basin and therefore required to be submitted for Commission review.¹¹⁷

With respect to natural gas pipeline projects, the RPP categorizes them as projects that *presumptively* do not have a substantial effect on the water resources of the Watershed and that therefore do not automatically require DRBC review. But then Section 2.3.5(A) says that:

Except as the Executive Director may specifically direct by notice to the project owner or sponsor, or as a state or federal agency may refer under paragraph C., ... a project in any of the following classifications will be deemed not to have a substantial effect on the water resources of the Basin and is not required to be submitted under Section 3.8 of the Compact:

....

12. Electric transmission or bulk power system lines and appurtenances; major trunk communication lines and appurtenances; **natural and manufactured gas transmission lines and appurtenances**; major water transmission lines and appurtenances; unless they would pass in, on, under or across an existing or proposed reservoir or recreation project area as designated in the Comprehensive

¹¹⁵ DELAWARE RIVER BASIN COMPACT, § 3.8 (1961)

¹¹⁶ *Id.*

¹¹⁷ See DELAWARE RIVER BASIN COMMISSION, RULES OF PRACTICE AND PROCEDURE, Article 3, § 2.3.5 (July 1, 2019).

Plan; **unless such lines would involve significant disturbance of ground cover affecting water resources[.]**¹¹⁸

A clear and straightforward reading of the DRBC Compact and Rules of Practice and Procedure clearly contain four exceptions to the exemption that, if the stated conditions are met, trigger DRBC review for natural gas transmission lines and appurtenances:

- 1) if the Executive Director of the Commission specifically directs;
- 2) if any state or federal agency refers a project under paragraph C.;
- 3) if the project in question crosses an existing or proposed reservoir or recreation area that has been incorporated into the Comprehensive Plan; or
- 4) if the project involves a significant disturbance of ground cover affecting water resources.

The New PennEast Project, including the Phase 1 Project in Pennsylvania standing alone, will involve significant disturbance of ground cover affecting water resources of the basin and clearly requires a docket from the DRBC before it can be allowed to proceed with any level of construction, including tree felling. The Phase 1 Project in Pennsylvania includes over sixty-eight (68) miles of pipeline right of way, the vast majority of which will be located within the Delaware River watershed basin. Dozens of waterways will be cut in Luzerne, Carbon, and Northampton Counties and these waterways will suffer temporary and permanent harm. There will be temporary and permanent impacts to wetlands, floodways, and upland habitats that will inflict direct, indirect, irreparable and enduring harm on the water resources of the basin. In addition, the project is still proposed to pass through Comprehensive Plan areas such as Beltzville State Park, Beltzville Reservoir, F.E. Walter Reservoir, Hickory Run State Park and Weiser State Forest which clearly triggers DRBC review.

Because of this significant disturbance of ground cover and the crossing of multiple reservoirs and recreation areas within DRBC's Comprehensive Plan, FERC cannot issue a certificate for the Phase 1 Project or New PennEast Project without the approval of DRBC.

VII. Conclusion

In processing PennEast's Phase 1 Application, FERC must recognize the wolf in sheep's clothing—PennEast is proposing an entirely different multi-phase pipeline project that will have a much greater environmental impact on the region than the previously-certificated PennEast Project. Analysis of the Church Road Facility alone, as FERC currently proposes, would be a glaringly obvious segmentation of a much larger project. In analyzing the entirety of PennEast's proposed project, FERC must focus on the climate impacts of its approval, including the induced fracking it would cause as well as the emissions of GHGs associated with consumption of natural gas, and the social costs associated with those emissions. In analyzing the air pollution emissions associated with the projects, FERC must not narrowly focus on the Church Road Facility but look at the project as a whole. FERC should also determine acute emissions impacts, and require that PennEast use the latest science to document the projects' air impacts.

¹¹⁸ *Id.* at § 2.3.5(A)(12).

FERC must also scrutinize PennEast's assertion of public benefit when analyzing whether the Phase 1 Project and New PennEast Project are deserving of a certificate of public convenience and necessity, ultimately concluding that the asserted public benefits are in fact hollow and that the environmental effects are staggering. Thus, PennEast has not shown that it deserves a certificate of public convenience and necessity and this scheme by PennEast should be rejected by FERC. Should FERC issue a certificate, however, that certificate cannot be issued prior to the approval of the DRBC, as the proposed projects will have a substantial effect on the water resources of the Delaware River basin.

Maya K. van Rossum



the Delaware Riverkeeper
Delaware Riverkeeper Network



Joseph Otis Minott
Executive Director & Chief Counsel
Clean Air Council

Abigail M. Jones



Senior Attorney
PennFuture

Exhibit E



March 30, 2020

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

**Re: PennEast Pipeline Company, LLC, Docket No. CP20-47-000
National Environmental Policy Act Scoping Comment**

Dear Ms. Bose,

The Delaware Riverkeeper Network (“DRN”), Clean Air Council, and PennFuture provide the following comments to be considered by the Federal Energy Regulatory Commission (“FERC” or “Commission”) to assist FERC in its preparation of an Environmental Impact Statement (“EIS”) pursuant to its obligations under the National Environmental Policy Act (“NEPA”), 42 U.S.C. § 4321, *et seq.*

The PennEast Pipeline Company, LLC (“PennEast”) proposes to amend its pipeline project, FERC Docket No. CP15-558, which was certificated January 19, 2018 (the “Original PennEast Project”).¹ The “New PennEast Project”, what is being characterized as an amendment, is a significantly and substantively different project and cannot be legally characterized as a simple amendment – it is in fact an entirely new project in need of its own docket, NEPA review and Natural Gas Act (NGA) Certification. The New PennEast Project involves constructing the originally proposed PennEast project in two phases; includes a new interconnection facility in Bethlehem, Pennsylvania (“Church Road Facility”); charges new recourse rates; and includes the interdependent Adelpia Gateway, LLC Project (“Adelpia Project” or “Adelpia Pipeline”) in order to fulfill the asserted project need and to provide the projected level of service. PennEast inappropriately requests that the Commission process its application using the shortened procedures set forth in Rules 801 and 802 of the Commission’s Rules of Practice and Procedure.²

¹ Order Issuing Certificates, Docket No. CP15-558-000, 162 FERC ¶ 61.053 (Jan. 19, 2018).

² 18 C.F.R. §§ 385.801, 385.802 (2019).

In April 2017, FERC prepared an EIS for the Original PennEast Project, FERC Docket No. CP15-558.³ In January 2019, FERC prepared an Environmental Assessment (“EA”) for the Adelphia Project, FERC Docket No. CP18-46.⁴ In September 2019, FERC prepared an EA for the Original PennEast Project’s amended route.⁵ Now, in March 2020, FERC intends to prepare an EA for the Church Road Facility alone.⁶ This piecemeal review of the New PennEast Project defeats the goals and purpose of NEPA, and obscures from the public the true impact of the project proposed to be built. FERC must recognize that the PennEast Pipeline company is in fact proposing a significantly different and new project that must be considered and reviewed, in its entirety, as a single new project in need of its own docket number, a full NEPA EIS analysis that includes all project elements, and requires its own certification in order to proceed. The New PennEast Project includes both the Pennsylvania and New Jersey portions of the pipeline (with the amended route), as well as the Adelphia Project and the Church Road Facility.

In order to fulfill its obligations pursuant to NEPA and to provide legally supported NGA Certification, FERC must prepare a comprehensive EIS that includes an analysis of the environmental impacts of all aspects of the New PennEast Project including, but not limited to:

- the impact of the Adelphia Project⁷, which would interconnect with the New PennEast Project pipeline at the Church Road Facility and is a significant underpinning of the claim that the project is needed;
- the fracking and fracking infrastructure induced by the increased capacity of both phases of the New PennEast Project;
- the social cost of carbon emissions⁸ resulting from the construction and operation of both phases the New PennEast Project, including the upstream wells; and
- the environmental impacts of construction and maintenance of the entire pipeline route and the indirect fracking infrastructure in shale regions that would occur if the pipeline were built.

³ OFFICE OF ENERGY PROJECTS, FEDERAL ENERGY REGULATORY COMMISSION, FERC\EIS: 0271F, PENNEAST PIPELINE PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT (April 2017).

⁴ OFFICE OF ENERGY PROJECTS, FEDERAL ENERGY REGULATORY COMMISSION, Docket Nos. CP18-46-000 & CP18-46-001, ADELPHIA GATEWAY PROJECT ENVIRONMENTAL ASSESSMENT (January 2019).

⁵ OFFICE OF ENERGY PROJECTS, FEDERAL ENERGY REGULATORY COMMISSION, Docket No. CP19-78-000, PennEast PIPELINE PROJECT AMENDMENT ENVIRONMENTAL ASSESSMENT (September 2019).

⁶ *Notice of Schedule for Environmental Review of the PennEast 2020 Amendment Project*, Docket No. CP20-47-000 (Mar. 18, 2020).

⁷ FERC Docket Nos. CP18-46-000 and CP18-46-001.

⁸ INTERAGENCY WORKING GROUP ON SOCIAL COST OF GREENHOUSE GASES, UNITED STATES GOVERNMENT, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12866 (August 2016).

A failure to include all of these interrelated and interconnected elements that comprise the New PennEast Pipeline would amount to an unlawful segmentation of a new and expanded pipeline project.

Given that the New PennEast Project is a major federal action significantly affecting the quality of the human environment, FERC must issue an EIS pursuant to NEPA. Because the New PennEast Project has a different use and purpose than the Original PennEast Project, neither the Final Environmental Impact Statement prepared by FERC and issued April 2017 (“2017 FEIS”)⁹ nor the January 19, 2018 FERC Certificate Order for the Original PennEast Project can be mechanically applied to the New PennEast Project. FERC must begin its environmental review as if the New PennEast Project is PennEast’s first and only application, using whatever relevant data is currently available to it and requesting additional information from PennEast as needed. This new project should be given its own docket number and include a full, comprehensive and robust NEPA analysis and associated public process. In addition to this written comment opportunity, FERC must hold community hearings along the length of the proposed route to ensure full and fair access for impacted landowners and community members.

I. The Effect of the Coronavirus Pandemic on FERC’s Processes

As an initial matter, FERC must take into account the effects of the coronavirus pandemic on its ability to fully and fairly involve the public in its NEPA and decision-making processes. On March 20, 2020, DRN sent a letter to FERC, among other federal and state entities, requesting that FERC’s approval process be altered to reflect the impact that the coronavirus pandemic has had on the public. That letter is expressly incorporated herein, and attached to this comment.

Specifically, DRN requests that FERC extend the public scoping process to at least May 1, 2020—the date by which FERC has allowed regulated entities to comply with non-statutory deadlines.¹⁰ On March 23, 2020, DRN reached out to FERC’s Pandemic Liaison via email and asked whether the extension of non-statutory deadlines also applied to public comment on environmental review. FERC’s Pandemic Liaison replied that the extension does not apply to comment periods established in notices for environmental review documents. FERC’s Pandemic Liaison added that “Commission staff continues to fully evaluate any comment received after the close of the comment period to the extent practicable, making any formal extension of comment periods unnecessary.” This policy is not reassuring, as it does not guarantee that comments submitted after the deadline will be considered by FERC or considered part of the official record. In addition, there is no apparent plan to allow for in-person public hearings, an essential part of FERC scoping for all newly proposed projects, which this is.

Members of the public have been subject to many hardships due to the pandemic, likely greater than the hardships suffered by energy companies. These hardships to everyday lives of

⁹ See OFFICE OF ENERGY PROJECTS, FEDERAL ENERGY REGULATORY COMMISSION, FERC\EIS:0271F, PENNEAST PIPELINE PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT (April 2017).

¹⁰ *Extension of Non-Statutory Deadlines*, Docket No. AD20-11-000 (Mar. 19, 2020).

residents affect access to time and resources that had been previously freely available. The Governor of Pennsylvania has issued and was one of the first Governors in the nation to implement increasingly restrictive precautionary steps over the past few weeks to flatten the curve of the pandemic (COVID-19) - this is the state where this pipeline project would be built. Stay-at-home orders now encompass 22 of the counties in Pennsylvania with outbreaks of COVID-19, including three of the four New PennEast Project counties. Thus, the public comment period should clearly be extended until at least May 1, 2020, so that the public is on at least the same footing as regulated entities, and be extended to the degree necessary to safely accommodate in-person hearings. In addition, FERC should also extend the planned schedule for the completion of its environmental review, which it set in its March 18, 2020 notice, in order to accommodate the public comment extension hereby requested.¹¹ The New PennEast Project must not be rushed through FERC's certificate process without adequate input from the public, which can only be provided if accommodations are made during this unprecedented global pandemic that is affecting Pennsylvanians directly with mandatory shutdowns in the exact counties in the Eastern portion of the state where this pipeline is proposed to be built.

II. The "Phase 1" Project Scheme by PennEast

PennEast claims the New PennEast Project is merely a phasing of the Original PennEast Project, or, alternatively, a stand-alone project involving the construction of "the facilities proposed to be located in Pennsylvania through approximate milepost ("MP") 68, including two (2) of the compressor units at the Kidder Compressor Station, as well as new interconnection facilities . . . in Pennsylvania[.]"¹² PennEast's goal is to put "Phase 1" into service by November 1, 2021.¹³ "Phase 1" has a total capacity of 650,000 dekatherms per day ("Dth/d").¹⁴ As of the date of PennEast's application, it has "executed precedent agreements with four shippers for approximately 340,000 [Dth/d] of capacity for long-term firm transportation service" from the "Phase 1" receipt points to the new delivery points at the Church Road Interconnects[.]" namely, the Columbia Gas Transmission, LLC ("Columbia Gas") Pipeline and the recently-certificated Adelpia Project.¹⁵ PennEast claims that the "Phase 1 facilities would provide new incremental capacity to meet market demand[.]"¹⁶

FERC should not accept PennEast's contradictory claims that the New PennEast Project is simply an amendment to the method of constructing the Original PennEast Project,¹⁷ but that

¹¹ *Notice of Schedule for Environmental Review of the PennEast 2020 Amendment Project*, Docket No. CP20-47-000 (Mar. 18, 2020).

¹² Abbreviated Application for Amendment to Certificate of Public Convenience and Necessity of PennEast Pipeline Company, LLC at 1, FERC Docket No. CP20-47-000 (Jan. 30, 2020) (hereinafter, "*Phase 1 Application*").

¹³ *Id.* at 8.

¹⁴ *Id.* at 1.

¹⁵ *Id.* at 9-10.

¹⁶ *Id.* at 13.

¹⁷ *Phase 1 Application* at 1 (PennEast "hereby filed this application requesting that the Commission issue an order amending PennEast's certificate of public convenience and necessity . . . for the PennEast Pipeline Project . . . to authorize PennEast to construct, own and operate the Project in two (2) phases[.]").

“Phase 1” is also a stand-alone project.¹⁸ Tellingly, PennEast believes that it will be able to construct “Phase 2” without any further input from FERC.¹⁹ PennEast is apparently trying to confuse FERC and the public, and avoid a legal challenge by alternately mischaracterizing the proposed amendment as a mere change in construction method (when seeking to minimize the fact that the New PennEast Project has a different purpose than the Original PennEast Project and an expanded impact and footprint), or as a stand-alone project (in an attempt to avoid the argument that it is proposing a segmented NEPA analysis).

Notwithstanding PennEast’s characterizations, the appropriate scope of FERC’s EIS should include the environmental impacts of the entirety of the proposed pipeline and related facilities, both in Pennsylvania and New Jersey, as well as the Adelphia Project which is irreplaceably essential to the newly proposed project. It is alarming, to say the least, that in FERC’s recent notice, it describes the project that is subject to environmental review as “a single metering and regulating station with two separate interconnections, measurement facilities, and a pig launcher and receiver,” that is “all located within a 2.1-acre site[.]”²⁰ This signals to the public that FERC intends to continue its piecemeal method of reviewing the project, which constitutes illegal segmentation and violates federal law. While FERC must indeed consider the new Church Road Facility, that facility is only a part of the entire New PennEast Project.

III. FERC Must Prepare an Environmental Impact Statement that Does Not Impermissibly Segment the New PennEast Project.

NEPA is our “basic national charter for protection of the environment.”²¹ As such, it makes environmental protection a part of the mandate of every federal agency.²² NEPA requires that federal agencies take environmental considerations into account in their decision-making “to the fullest extent possible.”²³ 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.”²⁴ When preparing an Environmental Impact Statement (EIS), an agency must take a detailed, “hard look” at the environmental impact of and alternatives to the proposed action.²⁵ This required analysis serves to ensure that “the agency will not act on incomplete information, only to regret its decision after it is too late to correct.”²⁶

¹⁸ *Id.* at 8 (“[T]he construction and operation of these Phase 1 facilities are in no way contingent on or otherwise impacted by the . . . ultimate construction of the Phase 2 facilities.”).

¹⁹ *Id.* at 3 (“Subsequently, upon receipt of the New Jersey Authorizations, PennEast will construct and operate Phase 2.”).

²⁰ *Notice of Schedule for Environmental Review of the PennEast 2020 Amendment Project*, Docket No. CP20-47-000 (Mar. 18, 2020).

²¹ 40 C.F.R. § 1500.1(a) (2019).

²² See 42 U.S.C. § 4332(1).

²³ *Id.* at § 4332.

²⁴ *Id.* at § 4332(2)(C).

²⁵ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989).

²⁶ *Marsh v. Oregon Natural Res. Council*, 490 U.S. 360, 371 (1979).

NEPA also “guarantees that the relevant information [concerning environmental impacts] will be made available to the larger audience,” including the public, “that may also play a role in the decision-making process and the implementation of the decision.”²⁷ As NEPA’s implementing regulations explicitly provide, “public scrutiny [is] essential to implementing NEPA.”²⁸ The opportunity for public participation guaranteed by NEPA ensures that agencies will not take final action until after their analysis of the environmental impacts of their proposed actions have been subject to public scrutiny.²⁹

An EIS must fully assess and disclose the complete range of environmental consequences of the proposed action, including “ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, [and] cultural” impacts, “whether direct, indirect, or cumulative.”³⁰ Direct effects are “caused by the action and occur at the same time and place.”³¹ Indirect effects are those impacts that are caused by the action, but occur “later in time or farther removed in distance, but are still reasonably foreseeable,” and may include “growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.”³² Cumulative impacts are “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.”³³ As the regulations make clear, “[c]umulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”³⁴ In addition, NEPA requires FERC to take a hard look at the ways to avoid or mitigate the Projects’ impacts.

NEPA is an “environmental full disclosure law.”³⁵ It requires that an agency obtain and consider detailed information concerning environmental impacts, and it “ensures that an agency will not act on incomplete information, at least in part, by ensuring that the public will be able to analyze and comment on an action’s environmental implications.”³⁶ The information provided to the public “must be of high quality” because “[a]ccurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA.”³⁷ The potential adverse

²⁷ *Robertson*, 490 U.S. at 349.

²⁸ 40 C.F.R. § 1500.1(b) (2019).

²⁹ See *N. Plains Res. Council v. Surface Transp. Bd.*, 668 F.3d 1067, 1085 (9th Cir. 2011) (noting that where “data is not available during the EIS process and is not available to the public for comment,” the process “cannot serve its larger informational role, and the public is deprived of their opportunity to play a role in the decision-making process”) (quoting *Robertson*, 490 U.S. at 349)).

³⁰ 40 C.F.R. §§ 1502.16(a), (b); § 1508.8 (2019).

³¹ *Id.* § 1508.8(a).

³² *Id.* § 1508.8.

³³ *Id.* § 1508.7 (emphasis added).

³⁴ *Id.*

³⁵ *Monroe Cnty. Conservation Council, Inc. v. Volpe*, 472 F.2d 693, 697 (2d Cir. 1972).

³⁶ *Ohio Valley Env'tl. Coal. v. U.S. Army Corps of Eng'rs*, 674 F. Supp. 2d 783, 792 (S.D. W. Va. 2009) (internal quotation marks and citations omitted).

³⁷ 40 C.F.R. § 1500.1(b) (2019).

effects of PennEast’s proposed actions cannot be adequately analyzed without complete data on all affected resources.

On February 28, 2020, FERC issued a Notice of Intent to Prepare an Environmental Assessment for the Proposed PennEast 2020 Amendment Project. In that Notice, FERC stated that it “will prepare an environmental assessment (EA) that will discuss the environmental impacts of the PennEast 2020 Amendment Project involving the construction and operation of facilities by [PennEast]. The EA will discuss facilities to be built in Northampton County, Pennsylvania.”³⁸ FERC apparently fails to realize that the New PennEast Project is not simply an addition or amendment to the Original PennEast Project certificated in January 2018, but is rather a proposal to construct an entirely new project. FERC’s NEPA regulations state that “an environmental impact statement will normally be prepared first for . . . [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[.]”³⁹ The New PennEast Project is such a major pipeline construction project. The presumption under the law is that the New PennEast Project will be subject to an EIS, as is required by NEPA.

A. The Purpose of the New PennEast Project is Different Than the Purpose of the Original PennEast Project, Thus, the Baseline for FERC’s NEPA Analysis Has Changed.

One of the most significant components of an EIS is the statement of purpose and need.⁴⁰ The purpose and need of a project “define[] the goals of the project to allow for the review of an appropriate range of alternatives.”⁴¹ The New PennEast Project, and Phase 1 of the New PennEast Project, have an entirely different purpose and need than the Original PennEast Project, thus, the baseline of FERC’s entire NEPA analysis has changed. FERC “bears the responsibility for defining at the outset the objectives of an action.”⁴² When doing so, FERC “should take into account the needs and goals of the parties involved in the application” and “should always consider the views of Congress, expressed, to the extent that the agency can determine them, in the agency’s statutory authorization to act, as well as in other congressional directives.”⁴³

In the Natural Gas Act, Congress has authorized FERC to issue certificates of public convenience and necessity.⁴⁴ In this context, an appropriate statement of purpose and need will include information such as “where the gas must come from, where it will go, [and] how much it will deliver[.]”⁴⁵ The New PennEast Project will result in different destinations for, and quantities

³⁸ Notice of Intent to Prepare an Environmental Assessment for the Proposed PennEast 2020 Amendment Project and Request for Comments on Environmental Issues at 1, FERC Docket No. CP20-47-000 (Feb. 28, 2020).

³⁹ 18 C.F.R. § 380.6(a)(3) (2019).

⁴⁰ 40 C.F.R. § 1502.13 (2019).

⁴¹ *Stop the Pipeline v. White*, 233 F. Supp. 2d 957, 971 (S.D. Ohio 2002) (citing *Citizens Against Burlington v. Busey*, 938 F.2d 190, 195-96 (D.C. Cir. 1991)).

⁴² *Busey*, 938 F.2d at 195-96.

⁴³ *Id.* at 196.

⁴⁴ See 15 U.S.C. § 717f(c).

⁴⁵ *Sierra Club, Inc. v. U.S. Forest Serv.*, 897 F.3d 582, 599 (4th Cir. 2018).

of, natural gas. Thus, a new statement of purpose and need as well as a new alternatives analysis is necessary.⁴⁶

In its application, PennEast states that Phase 1 of the New PennEast Project has a capacity of 650,000 Dth/d, approximately 340,000 of which is currently subscribed.⁴⁷ Phase 1 of the New PennEast Project terminates at an interconnection with the Adelpia Pipeline and Columbia Gas Transmission Pipeline. Both “where [the gas] will go, [and] how much it will deliver” have substantively changed from the Original PennEast Project.⁴⁸ Furthermore, PennEast does not make clear in its application whether the completed New PennEast Project (both Phases 1 and 2) will have the same shippers with precedent agreements for the same volume as the Original PennEast Project. The Original PennEast Project had twelve shippers (notably, the majority of which were associated with the PennEast Pipeline Company, demonstrating a firm case of self-dealing that should not have been allowed as the basis of a needs analysis), with precedent agreements for a total volume of 90% of the Original PennEast Project’s total capacity of 1,107,000 Dth/d. While PennEast states that many (but not all) of the shippers who have precedent agreements for Phase 1 of the New PennEast Project also have precedent agreements for the Original PennEast Project, that means that less than 4 of 12 shippers will receive natural gas from the completed New PennEast Project.

PennEast should clarify whether all the same precedent agreements remain in place for the completed New PennEast Project as existed at the time of PennEast’s application for the Original PennEast Project in 2015. It should also disclose if, as was the case previously, the claimed shipper/customers are simply just various arms of PennEast itself.⁴⁹ As expressed by FERC Commissioner Glick in his dissent to Certification of FERC Docket No. CP15-558, “the existence of precedent agreements that are in significant part between the pipeline developer and its affiliates is insufficient to carry the developer’s burden to show that the pipeline is needed.” As we have documented on the record for each project previously, it is clear that the Original PennEast Project and the Adelpia Project were not genuinely needed, and the shipper agreements were the result of self-dealing and efforts to export gas abroad.⁵⁰

⁴⁶ See Section VII, *infra*, discussing PennEast’s asserted “public need” pursuant to the Natural Gas Act.

⁴⁷ *Phase 1 Application* at 1, 12.

⁴⁸ See *Sierra Club, Inc.*, 897 F.3d at 599.

⁴⁹ See *e.g.* Lorne Stockman, et al., Oil Change International, *Art of the Self-Deal: How Regulatory Failure Lets Gas Pipeline Companies Fabricate Need and Fleece Ratepayers* (2017), http://priceofoil.org/content/uploads/2017/09/Gas_Pipeline_Ratepayer_Report.pdf.

⁵⁰ As an example, The Kimberly-Clark facility in Chester, Pennsylvania, asserted in an August 9, 2018 letter to FERC that the Adelpia Project was essential to its plans to switch from a waste-coal generator to natural gas. FERC Docket No. CP18-46-000, Accession No. 20180810-5045 (Aug. 10, 2018). However, in a recent application seeking renewal of its Title V Operating Permit from Pennsylvania Department of Environmental Protection, Kimberly-Clark stated that its coal-fired equipment was out of service. See *Intent to Issue Title V Operating Permits under the Air Pollution Control Act* (35 P.S. §§ 4001—4015) and 25 Pa. Code Chapter 127, Subchapter G, 50 Pa. Bull. 1575 (March 14, 2020). This application was made prior to the Adelpia Pipeline coming into service. Thus, the Adelpia Pipeline was not actually needed by the Kimberly-Clark facility in order to switch from its waste-coal generator. .

Accordingly, even as a stand-alone project, Phase 1 of the New PennEast Project requires a new EIS because it has a new purpose. However, through its January 30, 2020 application, PennEast is actually proposing two new projects: (1) Phase 1 of the New PennEast Project; and (2) the entire New PennEast Project in Pennsylvania and New Jersey—both projects including the interconnection with the Adelpia and Columbia Gas pipelines, now essential and integrated sections of the New PennEast Project necessary to defend the claimed purpose and need. If FERC approves Phase 1 of the New PennEast Project, then the Original PennEast Project certificated by FERC will never come into being. FERC must prepare an EIS that addresses both new projects—to do otherwise would amount to segmentation which is unlawful.

B. An EIS or EA Addressing Only Phase 1 of the New PennEast Project Will Impermissibly Segment FERC’s NEPA Analysis by Failing to Consider the New PennEast Project as a Whole, as Well as the Connected Adelpia Project.

The D.C. Circuit in *Delaware Riverkeeper v. FERC*, identified two tests for evaluating whether an agency has improperly segmented its review of a project.⁵¹ First, the Court stated that for the purpose of segmentation review, an agency’s consideration of the proper scope of its NEPA analysis should be guided by the “governing regulations,” which are 40 C.F.R. § 1508.25(a).⁵² The same analysis is required in the instant matter. Second, the Court in *Delaware Riverkeeper* also stated that even if the segmentation analysis was guided instead by the test articulated in *Taxpayers Watchdog v. Stanley*,⁵³ FERC still unlawfully segmented its review of the projects.⁵⁴ In drafting its EIS for Phase 1 of the New PennEast Project and the New PennEast Project, FERC must avoid these pitfalls and unlawful gross errors and practices which benefit the pipeline operators over the public interest.

An agency should prepare a single programmatic EIS for actions that are “connected,” “cumulative,” or “similar,” such that their environmental effects are best considered in a single impact statement.⁵⁵ “Actions are ‘connected’ or ‘closely related’ if they: ‘(i) Automatically trigger other actions which may require environmental impact statements; (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously; [or] (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.’”⁵⁶ Similar actions have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography.⁵⁷ NEPA requires “agencies to consider the cumulative impacts of proposed actions.”⁵⁸ An agency must analyze the impact of a proposed project in light

⁵¹ *Delaware Riverkeeper Network, et al. v. Federal Energy Regulatory Commission*, 753 F.3d 1304, 1314-15 (D.C. Cir. 2014).

⁵² *Id.*

⁵³ 819 F.2d 294 (D.C. Cir. 1987).

⁵⁴ *Delaware Riverkeeper Network*, 753 F.3d at 1314-15.

⁵⁵ *Am. Bird Conservancy, Inc. v. FCC*, 516 F.3d 1027, 1032 (D.C. Cir. 2008); 40 C.F.R. § 1508.25(a).

⁵⁶ *Hammond v. Norton*, 370 F. Supp. 2d 226, 247 (D.D.C. 2005) (quoting 40 C.F.R. § 1508.25(a)(1)).

⁵⁷ *Id.* at 246; 40 C.F.R. § 1508.25(a)(3) (2019).

⁵⁸ *NRDC v. Hodel*, 865 F.2d 288, 297 (D.C. Cir. 1988) (“Hodel”). See also *TOMAC v. Norton*, 433 F.3d 852, 864 (D.C. Cir. 2006).

of that project's interaction with the effects of "past, current, and reasonably foreseeable future actions."⁵⁹

"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.⁶⁰ Federal agencies may not evade their responsibilities under NEPA by "artificially dividing a major federal action into smaller components, each without a 'significant' impact."⁶¹ 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."⁶² Without this rule, developers and agencies could "unreasonably restrict the scope of environmental review."⁶³

This piecemealing and segmentation has occurred here, where FERC has considered the Original PennEast Project, the Adelpia Project, the Amended Route, and, as currently proposed, the Church Road Facilities, each in a separate environmental review process.

In accordance with the three-factor test articulated in *Taxpayers*, to determine whether a project has been unlawfully segmented, "courts have considered such factors as whether the proposed segment (1) has logical termini; (2) has substantial independent utility; (3) does not foreclose the opportunity to consider alternatives[.]"⁶⁴ In *Delaware Riverkeeper*, the court held that even if it were to expand its analysis from Section 1508.25(a) to the factors articulated in *Taxpayers*, FERC's defense of its action was still deficient.⁶⁵ Relevant to Phase 1 of the New PennEast Project, a project lacks "independent utility" if it could not function or would not have been constructed in the absence of another project.⁶⁶

Both the Adelpia Project and Phase 2 of the New PennEast Project are connected actions that must be included in a single programmatic EIS along with Phase 1 of the New PennEast Project. The Adelpia Pipeline would carry natural gas delivered from Phase 1 to the identified market and shippers, and is to be brought into service contemporaneous with Phase 1, thus, both Phase 1 and the Adelpia Project are "interdependent parts of a larger action and depend on the

⁵⁹ 40 C.F.R. § 1508.7 (2019).

⁶⁰ *Taxpayers*, 819 F.2d 294, 298 (D.C. Cir. 1987).

⁶¹ *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).

⁶² *Town of Huntington v. Marsh*, 859 F.2d 1134, 1142 (2d Cir. 1988).

⁶³ *Fund for Animals v. Clark*, 27 F. Supp. 2d 9, 16 (D.D.C. 1998) ("*Fund*").

⁶⁴ *Taxpayers*, 819 F.2d at 298.

⁶⁵ *Delaware Riverkeeper*, 753 F.3d at 1314-16 (The court held that the projects did not have "(1) has logical termini; [or] (2). . . substantial independent utility." The court's examination did not reach the remaining factor.).

⁶⁶ *Wetlands Action Network v. U.S. Army Corps of Engineers*, 222 F.3d 1105, 1118 (9th Cir. 2000). *See also West North Carolina Alliance v. North Carolina Dept. of Transp.*, 312 F. Supp. 2d 765, 774-775 (E.D.N.C. 2003) (project widening highway section lacked independent utility because it would leave a "bottleneck" of narrow highway to north, such that traffic congestion between the termini of the project would be worsened until construction of later project widening bottleneck section).

larger action for their justification.”⁶⁷ The effects of Phase 1’s connection with the Adelpia Project have not yet been explored by FERC. Phase 1 serves as the northern portion of the Adelpia Pipeline, and would result in the seamless delivery of natural gas from the Marcellus Shale to Marcus Hook, PA.

In FERC’s Environmental Assessment (“EA”) of the Adelpia Project, it stated that the Original PennEast Project was “entirely outside of the geographic scope of the [Adelpia Project] (including for air quality), with the exception of the Martins Creek Station, which is within the corresponding HUC-12 watersheds, but is already in operation and would be considered the environmental baseline. Due to a large number of public comments about this project, it’s included here for comparison purposes only.”⁶⁸ PennEast’s new proposal changes that asserted fact—the pipelines would be directly connected at the Church Road Facility. Given that the Adelpia Pipeline is one of only two delivery points for Phase 1 of the New PennEast Project, it is clear that the Phase 1 Project “[c]annot or will not proceed unless other actions [Adelpia Project] are taken previously or simultaneously.” If FERC fails to consider both projects in a single EIS, then its analysis will be impermissibly segmented.

In its Answer to comments and protests filed in opposition to its application (“Answer to Comments”),⁶⁹ PennEast argues that the Adelpia Project need not be assessed together with Phase 1 of the New PennEast Project because the Adelpia Project has “substantial independent utility” and would proceed without Phase 1 of the New PennEast Project. Even if this were true, it does not change the fact that Phase 1 of the New PennEast Project is dependent on the Adelpia Project to deliver its gas to shippers. The fact that the Adelpia Project was authorized one month prior to PennEast’s application does not sever the temporal connectedness of the projects. In *Delaware Riverkeeper Network*, the D.C. Circuit found connectedness among projects that were “either under construction or were also pending before the Commission,” and held that “[g]iven the self-evident interrelatedness of the projects as well as their temporal overlap, the Commission was obliged to consider” the projects together in a single EIS.⁷⁰

Phase 2 of the New PennEast Project must also be evaluated in the same EIS. Phase 2 would be built upon PennEast’s receipt of state permits, thus, FERC’s approval of Phase 1 would “automatically trigger” Phase 2, a major federal action that would require an EIS under normal circumstances.⁷¹ NEPA clearly requires FERC to consider these connected projects, which are obviously being contemplated and planned for in the same time frame by the same owner for delivery of the same gas. There exists a physical, functional, and temporal nexus that cannot be overlooked. The New PennEast Project has not been examined before, and will *never* be

⁶⁷ See 40 C.F.R. § 1508.25(a).

⁶⁸ OFFICE OF ENERGY PRODUCTS, FEDERAL ENERGY REGULATORY COMMISSION, Docket Nos. CP18-46-000 & CP18-46-001, ADELPHIA GATEWAY PROJECT ENVIRONMENTAL ASSESSMENT 157 (Jan. 2019).

⁶⁹ Motion for Leave to Answer and Answer of PennEast Pipeline Company (“Answer to Comments”), LLC, FERC Docket No. CP20-47-000 (Mar. 25, 2020).

⁷⁰ *Delaware Riverkeeper*, 753 F.3d at 1308 (emphasis added).

⁷¹ See 40 C.F.R. § 1508.25(a).

examined if FERC fails to complete a comprehensive EIS by illegally allowing PennEast to segment the New PennEast Project.

In its Answer to Comments, PennEast states that “[i]n order to properly allege that the Commission is illegally segmenting projects, there must be at least two (2) proposals pending before the agency that meet the NEPA tests for connected actions.”⁷² Although they may not be styled as such, Phase 1 and Phase 2 (resulting in the completed New PennEast Project) are two separate proposals to the extent that PennEast is asking FERC to approve Phase 1 as a stand-alone project, as well as approving the New PennEast Project. Additionally, to the extent that PennEast asserts that the instant application is simply an amendment to the Original PennEast Project (which FERC should not accept), both the Adelpia Project and the route amendments in FERC Docket No. CP19-78-000 were also both pending before FERC at the same time. The proper scope of FERC’s environmental review should include Phase 1, Phase 2, the Adelpia Project, and the Church Road Facility, as these projects are all connected and constitute the New PennEast Project.

C. The EIS Must Also Address the Environmental Impacts of Existing and Proposed Pipelines in the Vicinity of the Proposed Projects.

FERC must also consider the environmental effects of pipeline projects within temporal and spatial proximity of the New PennEast Project. “[F]ederal law requires that an EIS must analyze ‘the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.’”⁷³ “A necessary component of NEPA’s ‘hard look’ is ‘a sufficiently detailed catalogue of past, present, and future projects, and [] adequate analysis about how these projects, and differences between the projects, are thought to have impacted the environment.’”⁷⁴

These projects include, but are certainly not limited to, the Adelpia Project,⁷⁵ Regional Energy Access Project (Phases I and II), UGI Bethlehem Liquefied Natural Gas Peak Delivery Facility, DTE Midstream Birdsboro Pipeline Project, Transco Atlantic Sunrise Project, Millennium Eastern System Upgrade Project, Transco Orion Project, Transco Susquehanna West, Transco Triad Expansion, Tennessee Gas Pipeline Company Northeast Upgrade Project, Tennessee Gas Pipeline Company 300 Upgrade Project, Transco Leidy Southeast Expansion, Constitution Pipeline (to the degree that it may be revived by project owners and to the degree that construction has already taken place that has harmed communities and the environment), Sunoco Mariner East 2 and 2X Projects, Paulsboro Natural Gas Delaware River Pipeline Relocation Project, Sunoco Logistics Delaware River Pipeline Relocation Project, the Delaware River Partners LLC./New Fortress Energy Gibbstown Liquefied Natural Gas Export Facility, and the Sunoco Marcus Hook Industrial Facility.

⁷² Answer to Comments at 15.

⁷³ *Oregon Nat. Res. Coun. Fund v. Goodman*, 505 F.3d 884, 892 (9th Cir. 2007) (quoting 40 C.F.R. § 1508.7).

⁷⁴ *Id.* (quoting *Lands Council v. Powell*, 395 F.3d 1019, 1027-28 (9th Cir. 2005)).

⁷⁵ To the extent that the Adelpia Project or portions thereof is not considered as a connected action.

IV. FERC Must Analyze the Impacts of PennEast’s Projects, Including Upstream Production and Downstream Consumption.

FERC is required by the NGA and NEPA to consider the climate impacts of approving the New PennEast Project. Section 7 of the NGA requires that FERC must find that a proposed project’s benefits outweigh its harms.⁷⁶ NEPA, in turn, demands that FERC take a “hard look” at all environmental impacts of its decisions, including the decision to approve a project.⁷⁷ In determining the climate impacts of PennEast’s projects, both upstream production and downstream consumption are within the required scope of FERC’s NEPA analysis. The scope of an EIS includes the impacts of an action, which may be direct, indirect, or cumulative.⁷⁸ Effects subject to a NEPA analysis include ecological, economic, and social impacts.⁷⁹ The significance of the New PennEast Project’s climate impacts can be measured by the Social Cost of Carbon, a comprehensive estimate of the economic cost of harm associated with the emission of carbon.

In FERC’s EIS for the Original PennEast Project, it erroneously concluded that “upstream production is not causally connected to the Project, and as such [FERC does] not evaluate the impacts of such activity.”⁸⁰ With regard to downstream uses of gas transmitted by the Original PennEast project, FERC determined that “the scope and effects of the potential GHG emissions from natural gas production attributable to this Project are not reasonably foreseeable, as there is not enough information available to permit a meaningful analysis.”⁸¹ Ultimately, FERC concluded that “[b]ecause we cannot determine the projects’ incremental physical impacts on the environment caused by climate change, we cannot determine whether the projects’ contribution to cumulative impacts on climate change would be significant.”⁸²

Contrary to FERC’s conclusion, “[b]ecause FERC could deny a pipeline certificate on the ground that the pipeline would be too harmful to the environment, the agency is a ‘legally relevant cause’ of the direct and indirect environmental effects of pipelines it approves.”⁸³ Accordingly, FERC’s approval is a legally relevant cause of upstream gas production. In this respect, the construction of a pipeline is similar to the construction of a logging road in *Thomas v. Peterson*,⁸⁴ a case that discussed the appropriate scope of a NEPA analysis. In that case, the Ninth Circuit reasoned:

⁷⁶ 15 U.S.C. § 717f.

⁷⁷ See 42 U.S.C. § 4332(2)(C)(iii); *Baltimore Gas & Elec. Co. v. Nat. Res. Def. Coun., Inc.*, 462 U.S. 87, 97 (1983).

⁷⁸ 40 C.F.R. § 1508.25 (2019).

⁷⁹ *Id.* § 1508.8(b).

⁸⁰ OFFICE OF ENERGY PROJECTS, FEDERAL ENERGY REGULATORY COMMISSION, PENNEAST PIPELINE PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT at 4-258, FERC\EIS: 0271F (Apr. 2017).

⁸¹ *Id.* at 4-334.

⁸² *Id.* at 4-335.

⁸³ *Sierra Club v. Fed. Energy Regulatory Comm’n*, 867 F.3d 1357, 1373 (D.C. Cir. 2017).

⁸⁴ 753 F.2d 754 (9th Cir. 1985).

The location, the timing, or other aspects of the timber sales, or even the decision whether to sell any timber at all affects the location, routing, construction techniques, and other aspects of the road, or even the need for construction.

...

The Forest Service argues that the sales are too uncertain and too far in the future for their impacts to be analyzed along with that of the road. This comes close to saying that building the road now is itself irrational. We decline to accept that conclusion. Rather, we believe that if the sales are sufficiently certain to justify construction of the road, then they are sufficiently certain for their environmental impacts to be analyzed along with those of the road.⁸⁵

In sum, if the production and consumption of natural gas is sufficiently certain to justify construction of Phase 1 and the New PennEast Project, then they are sufficiently certain for their environmental impacts to be analyzed along with the construction of the pipeline. PennEast's new application gives FERC the obligation to assess the full extent of the climate impacts of Phase 1 and the New PennEast Project, as required by NEPA.

Cumulative impacts caused by "reasonably foreseeable" future actions are recognizable under NEPA and must be considered throughout the NEPA process. Additionally, FERC must consider the cumulative effects of actions similar to the proposed action, whether existing or reasonably foreseeable. Cumulative impacts include "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.*"⁸⁶ "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."⁸⁷ Cumulative impacts include "coincident effects (adverse or beneficial) on specific resources, ecosystems, and human communities of all related activities, not just the proposed project or alternatives that initiate the assessment process."⁸⁸ A cumulative effects analysis focuses on resource sustainability, and has expanded geographic and time boundaries.

Upstream natural gas production, and its subsequent impacts, are among the effects that NEPA requires FERC to consider, in determining whether its action will have a significant impact. NEPA's implementing regulations define, as "[i]ndirect effects," those "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."⁸⁹ That the Phase 1 Project's and the New PennEast Project's takeaway capacity will

⁸⁵ *Id.* at 760.

⁸⁶ 40 C.F.R. § 1508.7 (2019) (emphasis added).

⁸⁷ 40 C.F.R. § 1508.7 (2019).

⁸⁸ COUNCIL ON ENVIRONMENTAL QUALITY, EXECUTIVE OFFICE OF THE PRESIDENT, CONSIDERING CUMULATIVE EFFECTS UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT at v (Jan. 1997).

⁸⁹ 40 C.F.R. § 1508.8(b) (2019).

necessarily lead to additional demand for natural gas, with consequences for its price, production, and use, is eminently foreseeable. The D.C. Circuit has recently held that such “generally applicable economic principles,” as the relationship between the price of a good and its production and consumption, are “sufficiently ‘self-evident’” to “require ‘no evidence outside the administrative record.’”⁹⁰ The results of generally applicable economics are all the more foreseeable here because the administrative record does contain evidence specifically foreseeing them.

The Council on Environmental Quality’s (“CEQ’s”) regulations implementing NEPA provide illustrations of indirect effects that are closely analogous to those at issue here: “growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate[.]”⁹¹ Like impacts on gas production and use, growth-inducing effects and induced changes in the pattern of land use reflect responses—generally market-based—to changes in the supply of, and demand for, various resources. Further reflecting the need to consider such impacts, the regulations include economic as well as environmental impacts among those that an agency must consider.⁹²

For that reason, courts have consistently required that agencies extend the ambit of their analysis to include effects akin to upstream production and downstream consumption. The Eighth Circuit has addressed circumstances that closely parallel those here, holding that when an agency approves a rail-line extension that would result in “an increase in availability and a decrease in price” of coal, NEPA demands that the agency examine the environmental “effects that may occur as a result of the reasonably foreseeable increase in coal consumption.”⁹³ In *Mid-States*, the agency’s decision enabled an increase in the supply of coal to the domestic market; here, as described below, FERC has enabled an increase in demand for natural gas. In *Mid-States*, that decision had foreseeable effects on the price of coal, its production, and its use.

FERC’s decision has foreseeable impacts on natural gas’s price, production, and use. In *Mid-States*, the Eighth Circuit held that the agency could not responsibly or lawfully ignore those effects under NEPA.⁹⁴ Likewise, neither could FERC do so here. Other Circuits have reached similar results. When authorizing a runway that would expand capacity and “spur demand,” the Ninth Circuit has held that the Department of Transportation must examine the increased usage that will result from that demand.⁹⁵ The First Circuit has refused to let an agency construct a causeway and port without examining the “industrial development” that would be enabled by

⁹⁰ *Airlines for Am. v. Transp. Sec. Admin.*, 780 F.3d 409, 410-11 (D.C. Cir. 2015) (finding standing based on “basic proposition that ‘increasing the price of an activity . . . will decrease the quantity of that activity demanded in the market’” (alteration in original) (quoting *Branton v. FCC*, 993 F.2d 906 (D.C. Cir. 1993))).

⁹¹ 40 C.F.R. § 1508.8(b) (2019).

⁹² *Id.*

⁹³ *Mid-States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549-50 (8th Cir. 2003) (requiring that agency address air pollution resulting from increased coal use).

⁹⁴ *Id.*

⁹⁵ *Barnes v. U.S. Dep’t of Transp.*, 655 F.3d 1124, 1138-9 (9th Cir. 2011).

that construction.⁹⁶ Those cases establish that when an agency approves infrastructure that will increase demand for a resource, it cannot ignore the effects of that increased demand.

NEPA does not allow agencies to consider only those effects whose specifics are known and certain. As the Eighth Circuit held, “when the *nature* of the effect is reasonably foreseeable but its *extent* is not ... [an] agency may not simply ignore the effect.”⁹⁷ Indeed, where an action’s effects are not precisely known, the Council on Environmental Quality’s regulations suggest that the action is more - not less - likely to warrant an environmental impact statement.⁹⁸

NEPA’s implementing regulations provide detailed instructions as to how such uncertainty is to be addressed in an environmental impact statement.⁹⁹ That the precise location of natural gas production is unknown, therefore, does not render such production unforeseeable, or allow FERC to dismiss its effects as insignificant. “It is well recognized that a lack of certainty concerning prospective environmental impacts cannot relieve an agency of responsibility for considering reasonably foreseeable contingencies.”¹⁰⁰ Rather, “[a]t the threshold stage of the NEPA inquiry ... an agency must determine, to the extent feasible, whether the sum of all reasonably foreseeable effects, discounted by the probability of their occurrence, represent a ‘significant’ effect on the environment.”¹⁰¹ If so, the “agency must issue an EIS analyzing the probabilistic facets of the prospective environmental impact.”¹⁰² Here, record evidence shows that not only will additional unconventional shale gas drilling be necessary to support the Project over the lifespan of its contracts, but furthermore, it is shown where the new wells are likely to be located, and how many wells and related gathering lines and infrastructure will be needed to support the Project.

A. FERC’s Impacts Assessment Must Consider Reasonably Foreseeable Shale Gas Production.

FERC’s NEPA analysis must include existing and reasonably foreseeable shale development/production that would be advanced, induced and supported if Phase 1 and the

⁹⁶ *Sierra Club v. Marsh*, 769 F.2d 868, 877-79 (1st Cir. 1985). See also *Friends of the Earth v. U.S. Army Corps of Eng’rs*, 109 F. Supp. 2d 30, 39-40 (D.D.C. 2000) (invalidating agency decision approving casino, without considering economic development that would result).

⁹⁷ *Mid-States Coal. for Progress*, 345 F.3d at 549-50 (when agency permits rail extension that will increase “availability of coal,” it may not ignore “the construction of additional [coal-fired] power plants” that may result merely because agency does not “know where those plants will be built, and how much coal these new unnamed power plants would use”).

⁹⁸ See 40 C.F.R. § 1508.27(b)(5) (intensity depends upon “[t]he degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks”); see also *Found. on Econ. Trends*, 756 F.2d at 154-55 (It is not “sufficient for the agency merely to state that the environmental effects are currently unknown,” because uncertainty is “one of the specific criteria for deciding whether an [environmental impact statement] is necessary”).

⁹⁹ 40 C.F.R. § 1502.22(b) (specifying how the agency should proceed when “the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known”).

¹⁰⁰ *Potomac Alliance v. U.S. Nuclear Reg. Comm’n*, 682 F.2d 1030, 1036-37 (D.C. Cir. 1982).

¹⁰¹ *Id.*

¹⁰² *Id.*

New PennEast Project were to be approved by FERC and built. The reasonably foreseeable actions—the environmental and community impacts of which must be considered—include the construction, operation and maintenance of the shale gas wells that will be the source of the gas carried by the pipelines, which would be carrying that gas in interstate commerce—both the new wells that would be constructed and the production that would be induced at pre-existing wells by the proposed projects. The analysis of impact for these gas wells, which will be producing gas for the purposes of delivering it through the pipelines in interstate commerce, must include the associated access roads, gathering lines, compressor stations, water pipelines, water consumption and water disposal, truck traffic, and other supporting infrastructure which is necessary for the construction, development, and operation of these wells.

Given that shale gas production activities for delivery of gas into interstate commerce through the New PennEast Pipeline are “sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision,”¹⁰³ and given that FERC’s approval of this project is a legally relevant cause resulting in the induced new, expanded, extended, and ongoing production of shale gas through construction of new gas wells and well pads and inducing new production at pre-existing wells, FERC is obligated to consider their impacts in its NEPA analysis of the project.

Analysts, experts, and modelers use the location of interstate transmission gas lines as a predictor of where gas production will take place. The reality of the industry is that gas is produced for transmission through interstate commerce, and that there is a direct relationship between the siting and construction of well pads and the location of existing or proposed interstate pipelines. “Greater gas take-away capacity allows more natural gas to be produced, and an increase in supply will lead to a decline in price in those regions that receive additional gas. The improved access to higher priced markets via additional pipeline infrastructure will raise the price of natural gas in the producing region, which also will increase production.”¹⁰⁴ The New PennEast Project, in conjunction with the Adelpia Project, would create an economic incentive to drill additional wells in the region.¹⁰⁵

Based on the distribution of unconventional natural gas wells in Pennsylvania, including wells that have been permitted but not yet drilled, it is reasonably foreseeable that any new wells drilled as a result of the New PennEast Project’s and the Adelpia Project’s increased capacity will be located in the northeast regions of the state.¹⁰⁶ The number of wells that are induced by a given pipeline depends on the lifetime production of the well, typically measured in billion cubic feet per well.¹⁰⁷ Based on the average lifetime of wells in Bradford, Susquehanna, Greene,

¹⁰³ *City of Shoreacres v. Waterworth*, 420 F.3d 440, 453 (5th Cir. 2005) (quoting *Sierra Club v. Marsh*, 976 F.2d 763, 767 (1st Cir. 1992))

¹⁰⁴ RACHEL WILSON, ET AL., SYNAPSE ENERGY ECONOMICS, INC., IMPACTS OF THE PENNEAST AND ADELPHIA GATEWAY PIPELINES ON GAS DRILLING IN PENNSYLVANIA: AN ESTIMATE OF INDUCED NEW GAS WELLS AND ASSOCIATED GREENHOUSE GAS EMISSIONS 1 (2020).

¹⁰⁵ *Id.* at 5.

¹⁰⁶ *Id.* at 6.

¹⁰⁷ *Id.* at 8.

Washington, Lycoming, and Tioga Counties,¹⁰⁸ and the takeaway capacity of the New PennEast Project and Adelpia Project, the estimated number of new wells that will be drilled is as follows:

Table 4. Estimated number of future wells and drilling-related emissions (metric tons CO₂e), as a result of PennEast and Adelpia Gateway pipeline construction¹⁰⁹

Pipeline Project	Low Estimate of New Wells	High Estimate of New Wells	Low Estimate of Drilling-Related Emissions (mt CO ₂ e)	High Estimate of Drilling-Related Emissions (mt CO ₂ e)
PennEast Phase 1	917	1,466	1,254,641	2,007,425
PennEast Phase 2	644	1,031	882,109	1,411,374
Adelpia Zone South	353	564	482,554	772,086
PennEast Phase 1 + Adelpia Zone South	1,269	2,030	1,737,195	2,779,511
PennEast Phases 1 and 2 + Adelpia Zone South	1,913	3,061	2,619,303	4,190,885

Unconventional natural gas development includes environmental impacts such as drilling, land disturbance, water withdrawal, material handling and waste management, operation of equipment, and GHG emissions.¹¹⁰ The impacts to water, wetlands, habitat, forest, floodplain, water quality, drinking water supplies, health, and safety have been measured, analyzed, and are readily available to FERC, including through the expert reports attached to this comment.

The wells induced by the New PennEast Project and Adelpia would have devastating impacts on land cover in Pennsylvania. According to an analysis done by CNA Analysis & Solutions: “Development of natural gas infrastructure including well pads, and rights-of-way for access roads and natural gas gathering lines, results in 17-23 acres of land cover disturbance per

¹⁰⁸ These counties are those in which future drilling is most likely based on the number of wells proposed but never materialized, or operator reported but not drilled. See *id.* at 7, Table 3.

¹⁰⁹ *Id.* at 8.

¹¹⁰ LARS HANSON, ET AL., CNA ANALYSIS & SOLUTIONS, POTENTIAL ENVIRONMENTAL IMPACTS OF FULL-DEVELOPMENT OF THE MARCELLUS SHALE IN PENNSYLVANIA iii (2016).

well pad.”¹¹¹ Fracking is a highly water-intensive process, requiring between an average of 11.4 million gallons of water per well in the Marcellus region.¹¹² According to the United States Environmental Protection Agency, 70 to 90 percent of water used in fracking is permanently removed from the water cycle.¹¹³

The impacts of fracking are wide reaching and well documented. By way of example, another report by CNA Analysis & Solutions¹¹⁴ found that:

- Discharge of **wastewater effluent** from fracking could raise in-stream concentrations of some key contaminants (notably barium and strontium) up to 500 percent above reference values during maximum development periods at low-flow conditions, if all wastewater were treated to Pennsylvania effluent standards.
- Land cover conversions could increase **erosion rates** up to 150 percent during the initial development phase and up to 15 percent in a post-development state, despite affecting less than 3 percent of land cover in affected watersheds we studied.

As these reports and others, attached to this comment, make clear, assessment of the impacts that fracking imposes on the environment, including quantitative assessments on water and land cover impacts per well and qualitative assessments on other known harms, are doable and done by experts all the time, and need to be done by FERC for the fracking development that the New PennEast Project will induce.

FERC cannot arbitrarily limit the scope of its review by failing to require the disclosure of the readily available, and reasonable and attainable, analyses, projections and assumptions that would inform the agency of the scope and extent of the foreseeable induced natural gas production upon which it can base its cumulative impact analysis across the broad range of environmental and community harms (e.g. air, water, wetlands, habitat, forest, floodplain, water quality, drinking water supplies, health, safety, climate change). FERC’s self-inflicted ignorance of the extent of induced shale gas production does not alleviate the agency of its obligation to undertake these assessments of significant impacts that will, reasonably and foreseeably, and predictably result.

B. FERC’s Impacts Assessment Must Consider Reasonably Foreseeable Greenhouse Gas Emissions, and Use the Social Cost of Carbon to Measure the Impact of Emissions.

In addition to the environmental impacts associated with the siting of wells, FERC must consider the climate change effects of their construction and operation. FERC must consider the

¹¹¹ STEVEN HABICHT, ET AL., CNA ANALYSIS & SOLUTIONS, THE POTENTIAL ENVIRONMENTAL IMPACT FROM FRACKING IN THE DELAWARE RIVER BASIN iv (2015).

¹¹² FRACTRACKER ALLIANCE. (2018). POTENTIAL IMPACTS OF UNCONVENTIONAL OIL AND GAS ON THE DELAWARE RIVER BASIN. March 20.

¹¹³ U.S. ENVTL. PROT. AGENCY, EPA-600-R-16-236FA, HYDRAULIC FRACTURING FOR OIL AND GAS: IMPACTS FROM THE HYDRAULIC FRACTURING WATER CYCLE ON DRINKING WATER RESOURCES IN THE UNITED STATES (Dec. 2016).

¹¹⁴ HABICHT, ET AL., *supra* note 111.

harm caused by the New PennEast Project's greenhouse gas ("GHG") emissions and "evaluate the 'incremental impact' that these emissions will have on climate change or the environment more generally."¹¹⁵ Not only must FERC quantify the GHG emissions from upstream and downstream sources, but it must also "include a discussion of the 'significance' of" the direct and indirect effects of the Project, including its GHG emissions.¹¹⁶

The climate impacts of these new natural gas wells can be measured by their GHG emissions, which can then be translated into the social cost of carbon. The same analysis can be used for consumption of natural gas downstream of Phase 1 and the New PennEast Project. The social cost of carbon is a comprehensive estimate of the economic cost of harm associated with the emission of greenhouse gases. These estimates are important for regulation because they help agencies more accurately weigh the costs and benefits of a proposed action.¹¹⁷

Although agencies are not *required* to perform cost-benefit analyses in an EIS,¹¹⁸ failure to do so when the economic benefits of an agency action are quantified may be arbitrary and capricious.¹¹⁹ Here, there is sufficient information in the record about the claimed economic benefits of the Phase 1 Project and New PennEast Project to allow FERC to quantify them and perform a cost-benefit analysis using the social cost of carbon. Furthermore, FERC is already required by the Natural Gas Act to balance the benefits of PennEast's proposed projects with the harms they would cause. Thus, it would be arbitrary and capricious for FERC to ignore the social cost of carbon in the EIS.

"Climate damages associated with increasing [GHG] emissions can include, but are not limited to, property damage from floods, changes in agricultural productivity, extinction of endangered species, and loss of unique environments."¹²⁰ These damages are measured at \$50/ton of carbon dioxide if measuring worldwide impacts according to calculations made by the Obama Administration, and \$7/ton if measuring domestic impacts according to calculations made by the Trump Administration.¹²¹ With regard to upstream drilling impacts, the social cost of carbon is estimated as follows:

¹¹⁵ *Ctr. For Biological Diversity v. Nat'l Hwy. Traffic Safety Admin.*, 538 F.3d 1172, 1216 (9th Cir. 2008); *see also WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 41, 51 (D.D.C. 2019) (requiring the federal action agency to "provide the information necessary" in its NEPA analysis to express the "impacts of climate change in the state, the region, and across the country").

¹¹⁶ *Sierra Club v. Federal Energy Regulatory Comm'n ("Sabal Trail")*, 867 F.3d 1357, 1374 (D.C. Cir. 2017).

¹¹⁷ *See Zero Zone, Inc. v. U.S. Dep't of Energy*, 832 F.3d 654, 677-78 (7th Cir. 2016).

¹¹⁸ 40 C.F.R. § 1502.23 (2019).

¹¹⁹ *See High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1191 (D. Colo. 2014).

¹²⁰ WILSON, ET AL., *supra* note 104, at 9.

¹²¹ *Id.*

Table 5. Social cost of emissions of CO₂e associated with the drilling of new wells as a result of the pipeline projects¹²²

Pipeline Project	Total Costs (2019\$, Obama SCC)		Total Costs (2019\$, Trump SCC)	
	Low Wells	High Wells	Low Wells	High Wells
PennEast Phase 1	\$46,012,770	\$73,620,432	\$6,300,293	\$10,080,470
PennEast Phase 2	\$32,350,517	\$51,760,827	\$4,429,591	\$7,087,346
Adelphia Zone South	\$17,697,219	\$28,315,551	\$2,423,190	\$3,877,104
PennEast Phase 1 + Adelphia Zone South	\$63,709,989	\$101,935,982	\$8,723,483	\$13,957,573
PennEast Phases 1 and 2 + Adelphia Zone South	\$96,060,506	\$153,696,809	\$13,153,074	\$21,044,919

Based on the number of wells estimated to be drilled, total climate damages using the domestic figures range between \$13 million and \$21 million, while global damages range from \$96 million to \$153 million. When looking at operational and downstream GHG emissions from the New PennEast Project and Adelphia Project, the social cost of carbon is as follows:

¹²² *Id.* at 10.

Table 6. Social cost of maximum potential carbon emissions associated with PennEast pipeline project¹²³

		PennEast Phase 1	PennEast Phase 2	Adelphia	Total
Total Costs (million 2019\$)	Obama Administration SCC	\$20,473	\$14,582	\$7,960	\$43,016
	Trump Administration SCC	\$2,803	\$1,997	\$1,090	\$5,890

Based on pipeline capacity for a projected lifetime of 40 years, the fully-constructed New PennEast Project will cost \$5,890,000,000 in domestic damages and \$43,016,000,000 in global damages.

By any measure, these damages show that the GHGs emissions from upstream wells and both operational and downstream emissions constitute a significant effect on the human environment. Accordingly, after determining that the New PennEast Project’s climate impacts are “significant,” FERC must also determine whether there are “possible mitigation measures” to address these adverse climate impacts.¹²⁴ This evaluation ensures that FERC has taken a “hard look” at the environmental consequences of the New PennEast Project. If FERC identifies mitigation measures and decides to issue PennEast a certificate of public convenience and necessity, that certificate should be conditioned on the implementation of such mitigation measures.

C. FERC’s Impacts Assessment Must Consider the Reasonably Foreseeable Outcome of Natural Gas Exports.

The direct, cumulative, and foreseeable impacts resulting from the exportation of the transported gas must also be considered. The facts are clear—the Phase 1 Project and the New PennEast Project would be part of a pipeline system that could transport its shale gas to the recently-approved Cove Point LNG export facility, as well as the Marcus Hook Industrial Complex. The Adelphia Pipeline would connect with the Marcus Hook Industrial Complex, which Adelphia advertised in its open season materials as a “state-of-the-art terminalling and natural gas liquids storage facility.” Given that natural gas can sell at a significantly higher price overseas as compared to domestically, it is reasonably foreseeable that Phase 1/Adelphia transported gas would be transported to Marcus Hook for export.

In addition, the New PennEast Project would connect with Transco’s mainline, which

¹²³ *Id.* at 10.

¹²⁴ See *Robertson v. Methow Valley Citizens Coun.*, 490 U.S 332, 351, 352 (1989); see also 40 C.F.R §§ 1508.20 (defining “mitigation”), 1508.25 (including in the scope of an environmental impact statement mitigation measures).

feeds into the Pleasant Valley interconnect in Fairfax County Virginia, which in turn could deliver gas to Dominion's Cove Point Pipeline. Given that natural gas can sell at a significantly higher price overseas as compared to domestically, it is reasonably foreseeable that PennEast transported gas will be transported to Cove Point for export. Furthermore, it is likely that natural gas that is displaced by the PennEast line would likely be exported as well.

V. FERC must ensure that PennEast fully and accurately assesses the air quality impacts of the Church Road Facility.

The Church Road Facility is set to be built in an area where residents are already burdened by elevated levels of pollution. Northampton County is in marginal nonattainment under the 8-hour ozone NAAQS.¹²⁵ The construction and operation of the Church Road Facility would contribute additional emissions to this area. To fully understand the impacts, it is critical that PennEast provide complete and accurate calculations of emissions associated with the site as part of FERC's NEPA analysis.

It is not entirely clear from PennEast's application what equipment will be at the Church Road Facility. There is some description in Section 1.2.2 of Exhibit F-1, and it refers to a site plan in Appendix A, but at least the public version of Appendix A contains no site plan. Therefore the public is prevented from fully characterizing the emissions of the onsite equipment. However, from the description, there will be at least: (1) a pig¹²⁶ launcher/receiver; (2) gas meters; (3) flow control valves; (4) heaters; and (5) a gas control/remote terminal unit. PennEast should provide more details about this equipment in the EIS, which can easily be done without compromising security. Equipment specifications are regularly made available to the public in air permit applications and will allow FERC and the public to verify emissions calculations and to better understand the impacts the Church Road Facility will have.

The first four types of equipment listed above produce emissions. PennEast characterizes emissions from these sources on an annual/chronic but not an acute basis.¹²⁷ But chronic and acute risks can both be serious and deserve consideration. Of these types of equipment, the pigging operations and valve equipment carry both chronic and acute risks.

Starting with the pigging operations, pigging refers to the use of cylindrical cleaning and inspection devices inside the pipeline. A pig launcher is where the pig is inserted into the pipe, and a pig receiver is where it is removed. In both instances, the inside of the pipe is opened up. During this process, the product inside the pipe is released. This can result in a large amount of emissions all at once. PennEast has not said how it plans to manage that process, but that can make a big difference to the neighbors at the site--and the Church Road Interconnects site is located in a residential area. The federal Agency for Toxic Substances & Disease Registry has

¹²⁵ See EPA, NONATTAINMENT AREAS FOR CRITERIA POLLUTANTS (GREEN BOOK), available at <https://www.epa.gov/green-book> (last visited March 2, 2020).

¹²⁶ PennEast uses the term "Pipe Inspection Gauge" and capitalizes "PIG," but the term is actually just from the animal, and the device is not a gauge. See <https://en.wikipedia.org/wiki/Pigging>.

¹²⁷ See Exhibit F-1 at Section 9.0; Appendix G.

taken an interest in studying pigging facilities over concerns of their “potential immediate short-term exposures” to neighbors, just the types of impacts that PennEast ignores here.¹²⁸ In an instance in Western Pennsylvania, as reported in the *Pittsburgh Post-Gazette*, the difference between one method of pigging and another could have grave implications for neighbors:¹²⁹

The model indicated that if gas from the pig launcher had been vented directly from a high-pressure tank during stable nighttime weather conditions, residents could have been exposed to methane at concentrations that could cause “potential irreversible health effects” when they were downwind.

After the equipment was modified to route gas to a low-pressure pipeline in July 2015, the model found that no meteorological conditions would have put either house in that threat zone.

Sites with valves such as the interconnect site are sometimes subject to onsite venting and sometimes flaring. Earlier this year, for example, a Sunoco valve site in Pennsylvania was the site of both venting and flaring.¹³⁰ Depending on the nature of the venting or flaring, it could involve large quantities of product, such as with a blowdown,¹³¹ or produce heavy and continuous smoke from a portable flare. Either way, it is harmful to neighbors and the environment, and should be examined in the EA as part of the impacts from the emissions at the site.

The EIS must also fully and accurately address chronic air pollution risks. PennEast provided some discussion and documentation of these risks in the form of construction and operation emissions calculations. These emissions calculations have errors that need to be fixed in the EIS. PennEast writes that “The emission factors for off-road construction equipment and on-road vehicles were developed using the EPA MOVES2014 model for Northampton County and construction in 2019.” That is not entirely accurate. The construction emissions calculations are estimated using a mix of up-to-date and outdated guidance.¹³² On the one hand, PennEast correctly uses the MOVES2014 model for some of its estimation. On the other hand, PennEast uses calculations based on superseded EPA documents EPA-420-R-10-018 and EPA420-P-04-005. The first was superseded in July 2018 by EPA-420-R-18-009. This calls into question PennEast’s SO₂ and CO₂ calculations.¹³³ The second was superseded in July 2010 by EPA-420-R-10-016. This calls into question PennEast’s calculations of air toxics emissions.¹³⁴ Its air toxics calculations also

¹²⁸ See Laura Legere, “No venting at night? Agency finds tweaks to pipeline maintenance tools could reduce risks to residents,” *Pittsburgh Post-Gazette*, Sept. 19, 2017, available at <https://www.post-gazette.com/business/powersource/2017/09/19/Pig-launcher-health-study-DEP-Mount-Pleasant-Pennsylvania-Agency-for-Toxic-Substances-natural-gas-emissions/stories/201709150053>

¹²⁹ *Id.*

¹³⁰ See February 25, 2020 letter from Township of Middletown, Delaware County, Pennsylvania to its residents, available at https://middletowndelcopa.gov/vertical/sites/%7BE08CD8FE-6BF2-4104-AF8F-C16770381A63%7D/uploads/02.25.2020_Sunoco_Update_-_overnight_venting_of_12in_pipeline.pdf.

¹³¹ Federal regulations require that “[e]ach blowdown discharge must be located so the gas can be blown to the atmosphere without hazard.” 49 C.F.R. § 192.179. It is unclear if PennEast has done any such analysis.

¹³² See Appendix G-1.

¹³³ See Table G-1.2.

¹³⁴ See Table G-1.3.

fail to use the July 2018 EPA-420-R-18-011 for emissions factors, instead using emissions factors from EPA's AP-42 Sections 3.3 and 3.4, both dating to 1996.¹³⁵ AP-42 is explicitly for *stationary* sources. MOVES is the model designed for *mobile* sources. In the EIS, FERC should ensure that PennEast's emissions calculations are based on the most up-to-date guidance.

A. *FERC must ensure that PennEast fully assesses the geology at the Church Road Facility.*

Pennsylvania's unique and varied geology presents a known challenge for the construction and operation of gas infrastructure. Over the past few years, Pennsylvanians have become sadly familiar with the dire consequences of pipeline companies failing to account for geologic risks in their construction plans. Energy Transfer's (ET) construction of its Mariner East pipelines has opened massive sinkholes that have destroyed resident's yards and exposed operating pipelines.¹³⁶ ET's refusal to fully investigate and plan for geologic conditions has also resulted in contamination of drinking water supplies.¹³⁷ In western Pennsylvania, a pipeline exploded just days after it started operating because the ground around it collapsed.¹³⁸ Now PennEast is poised to construct the Church Road Facility in an area prone to subsidence. To protect both the public and the environment, FERC must ensure the geology of that site is fully investigated and that the results of the investigation are subject to public and agency review through the EIS process.

To date, PennEast has conducted only one geotechnical test bore in the vicinity of the Church Road Facility.¹³⁹ A single geotechnical bore provides information about the geology for only a pinpoint location, inches across.¹⁴⁰ Geophysical surveying methods can be used in

¹³⁵ See *id.*

¹³⁶ See Jon Hurdle, "Mariner East pipelines: New sinkhole opens at Chester County site; Sunoco shuts line," *WHYY*, Jan. 21, 2019, available at <https://whyy.org/articles/mariner-east-pipelines-new-sinkhole-opens-at-chester-county-site-sunoco-shuts-line/>. See also Joe Holden, "Sinkhole Exposes Highly Controversial Pipeline in West Whiteland Township," *CBS Philly*, Jan. 21, 2019, available at <https://philadelphia.cbslocal.com/2019/01/21/heavy-weekend-rains-cause-large-sinkhole-in-chester-county-officials-say/>.

¹³⁷ See Nina Lakhani, "'We can't live like this': residents say a corrupt pipeline project is making them sick," *The Guardian*, Jan. 27, 2020, available at <https://www.theguardian.com/us-news/2020/jan/27/pennsylvania-residents-mariner-east-pipelines-drinking-water-contamination>.

See also Anya Litvak & Laura Legere, "The lessons of Mariner East 2," *Pittsburgh Post-Gazette*, n.d., available at <https://newsinteractive.post-gazette.com/mariner-east-2-pipeline-horizontal-directional-drilling/>.

¹³⁸ See Reid Frazier, "Federal Prosecutors investigating pipeline company in connection with Beaver County blast," *StateImpact Pennsylvania*, Feb. 26, 2020, available at <https://stateimpact.npr.org/pennsylvania/2020/02/26/federal-prosecutors-investigating-pipeline-company-in-connection-with-beaver-county-blast/>.

See also Anya Litvak, "Energy Transfer given \$30M penalty for Beaver County pipeline explosion," *Pittsburgh Post-Gazette*, Jan. 3, 2020, available at <https://www.post-gazette.com/business/powersource/2020/01/03/Energy-Transfer-30M-penalty-pipeline-explosion-permit-ban-Revolution-Mariner-East/stories/202001030137>.

¹³⁹ PennEast Pipeline Company, LLC, "PennEast Pipeline Project Certificate Amendment Application Exhibit F-I: Environmental Report" at 30, Jan. 30, 2020 (20200130-5196 FERC PDF (Unofficial) at 141, (Jan. 30, 2020)).

¹⁴⁰ See generally "Understanding and interpreting soils and soil boring reports for infiltration BMPs," *Minnesota Pollution Control Agency*, Aug. 29, 2018, available at

conjunction with geotechnical boring to create comprehensive images of subsurface conditions.¹⁴¹ At the Church Roads Interconnects site, PennEast completed only limited geophysical surveying; the survey was restricted to the pipeline alignment itself and did not consider the majority of the site. This is problematic because carbonite rock, which is prone to sinkholes and has contributed to recent pipeline disasters in Pennsylvania, has been identified at the site.¹⁴² A sinkhole was identified close to the site and two surface depressions were found within the site footprint.¹⁴³ This type of geology presents a risk to the integrity of the equipment and facilities PennEast intends to operate at the site. As part of the EIS, FERC should require PennEast to perform geophysical surveying for the entire Church Road Facility site to locate underground voids that could contribute to subsidence. PennEast should also perform additional geotechnical boring to corroborate the geotechnical survey results.

B. FERC must ensure that PennEast fully assesses the groundwater impacts at the Church Facility site.

Despite the change of plans that the construction of the Church Road Facility represents, PennEast appears to have already dismissed the possibility of this additional construction impacting surface water or groundwater. In the EIS, FERC must ensure that PennEast fully assesses water impacts at the site, including impacts to nearby water wells. There are also a number of specific deficiencies with respect to PennEast's analysis of water impacts at the Church Road Facility that must be addressed in the EIS.

First, PennEast's assessment of the Church Road Facility seems to be limited to a 400-foot survey corridor that does not capture the entire footprint. The entire footprint must be thoroughly evaluated, along with any of the surrounding area that could be hydrogeologically connected. Both field and desktop analysis of the footprint and surrounding area are needed. This limited survey corridor also appears to have been used for evaluation of endangered species habitat at the site and should be expanded for those purposes as well.

Second, this in-depth site evaluation must be completed now, as part of the EIS, not just prior to construction and after the opportunity for agency and public review has passed.

https://stormwater.pca.state.mn.us/index.php/Understanding_and_interpreting_soils_and_soil_boring_reports_for_infiltration_BMPs (identifying and interpreting components of typical boring logs).

See also Madeh Izat Hamakareem, "Boring Methods for Soil Sampling for Soil Investigation," *The Constructor*, n.d., available at <https://theconstructor.org/geotechnical/boring-methods-soil-sampling/31869/> (explaining different methods of boring).

¹⁴¹ See Neil Anderson, Neil Croxton, Rick Hoover, & Phil Sirls, Geophysical Methods Commonly Employed for Geotechnical Site Characterization, Transportation Research Board of the National Academies, *Transportation Research Circular Number E-C130* at 4 (Oct. 2008). Retrieved from <http://onlinepubs.trb.org/onlinepubs/circulars/ec130.pdf>.

¹⁴² See United States Geological Survey Water Science School, "Sinkholes," *U.S. Department of the Interior*, n.d., available at https://www.usgs.gov/special-topic/water-science-school/science/sinkholes?qt-science_center_objects=0#qt-science_center_objects.

¹⁴³ PennEast Pipeline Project, "Geotechnical Recommendations Report Church Road Interconnects" at 4, Jan. 24, 2020 (20200130-5196 FERC PDF, *supra* at 250).

PennEast’s proposal to evaluate potential groundwater affects “as engineering design progresses”¹⁴⁴ and to refine its list of nearby wells and springs “prior to Project construction”¹⁴⁵ would allow PennEast to skirt accountability, posing an unacceptable danger to the public. As regards to well identification, in a karst zone, such as underlies the proposed Church Road Facility, it is understood in Pennsylvania that the high degree of hydrogeologic connectivity can lead to contaminants traveling well beyond 500 feet.¹⁴⁶ In order to be appropriately protective, the EIS should identify water wells and springs out to 1000 feet from the Church Road Facility.

Third, PennEast must fully evaluate the stormwater and aquifer recharge impacts of its plans for the Church Road Facility. While PennEast has not shared specifics of its site plans, it is likely they will include additional paving which will affect drainage and recharge at the site. PennEast has not discussed this. Moreover, PennEast has admitted that, “[a]s of January 2020, infiltration testing for stormwater management design had not been completed.” This testing must be completed as part of the EIS.

VI. FERC Must Ensure Its Environmental Impact Statement for the New PennEast Project Analyzes Information Missing from the Original PennEast Pipeline Project’s Environmental Impact Statement.

In conducting its environmental review of the New PennEast Project, FERC must address outstanding informational gaps from its environmental review of the Original PennEast Project, to the extent the two projects overlap. DRN has commented extensively on the harmful impacts of the Original PennEast Project and Adelphia Project. To assist FERC in its analysis of the environmental impacts of the New PennEast Project and to the degree there is overlap or redundancy with the New PennEast Project, DRN hereby expressly incorporates by reference: all comments submitted on FERC Docket Numbers CP15-558-000 and CP19-78-000; all comments submitted to the Pennsylvania Department of Environmental Protection (“PADEP”) regarding the PennEast Project; all comments submitted to the New Jersey Department of Environmental Protection (“NJDEP”), all comments submitted to the Army Corps of Engineers (“Corps”) regarding the PennEast Project; all comments submitted to the Delaware River Basin Commission (“DRBC”) regarding the PennEast Project; and all comments submitted to FERC, PADEP, and DRBC regarding the Adelphia Project. Copies of the aforementioned comments are attached hereto for FERC’s convenience.

¹⁴⁴ PennEast Pipeline Company, LLC, “PennEast Pipeline Project Certificate Amendment Application Exhibit F-I: Environmental Report,” *supra* at 9 (20200130-5196 FERC PDF, *supra* at 120).

¹⁴⁵ *Id.* at 11 (*Id.* at 122).

¹⁴⁶ See, FracTracker Alliance, “Mariner East 2: More Spills & Sinkholes Too?”, available at: <https://www.fractracker.org/2018/03/me2-spills-sinkholes/>. The embedded map, “Mariner East Karst and Inadvertent Returns” shows GPS locations of drilling fluid spills relative to horizontal directional drill alignments. The map can also be accessed directly at <https://ft.maps.arcgis.com/apps/MapTools/index.html?appid=d667432022554ffa9f56aea41eec396a>. Using the map’s measurement tool, several examples of drilling fluid that erupted from the ground over 500 feet, over 1000 feet, and even over 1500 feet away from the drilling alignment are readily apparent.

DRN has also identified errors, inaccuracies, data gaps, as well the tremendous volumes of misinformation, missing information and demonstrably false information prevalent throughout FERC's EIS of the Original PennEast Project. Among the environmental impacts that are inaccurately reported or are otherwise incomplete, DRN identifies the following deficiencies in order to assist FERC in its environmental review of the New PennEast Project (including Phase 1 and Phase 2):

- It is impossible, from the materials included in the EIS, to directly determine how many stream crossings of Exceptional Value and High Quality streams in Pennsylvania will involve open cuts in areas that are currently forested conditions, on public lands, on steep slopes or erosive soils, or any combination thereof – but all of these conditions can significantly impact water quality.
- The EIS fails to consider important site-specific conditions in determining pipeline location and suitability of construction methods to minimize impacts or protect water quality. For example, approximately 103 dry crossings of streams are in areas of severely erodible soils, approximately 34 of the stream dry crossings are in rugged terrain with slopes greater than 30°, and other, often multiple and site-specific constraints that increase the likelihood and potential for adverse water quality impacts are not individually or collectively considered in terms of water quality impacts in project documents.
- The EIS fails to comprehensively evaluate each stream crossing with regards to conditions such as existing water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting.
- The EIS fails to provide adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing.
- In fact, almost universally, the EIS fails to consider the unique, site-specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts and waterway health impacts associated with stream crossings, including open-cut crossings.
- The synergistic implications of climate change and the PennEast pipeline on stream flows, quality, temperatures, health, and aquatic life were not assessed in the EIS.
- The denial of any consideration of the combined effects of PennEast for recharge, groundwater and baseflow, coupled with the heightened anticipation of drought due to climate change, is a significant information gap.
- Streams recently categorized as “exceptional value” in Pennsylvania need to be updated in the EIS.
- The EIS documents at least 131 Wild Trout Waters in Pennsylvania to be cut across by the pipeline. Recent updates to the Fish and Boat Commission Class A and Wild Trout lists could alter this figure. EV Wetlands for wild trout waters are likely also altered. The EIS failed to update this list and ensure all designations are accurate with existing use protections.

- 75% of the stream crossings would be undertaken using open-cut methods. Only 26% of the 189 road crossings would be open-cut. Horizontal Directional Drilling is proposed on 74% of the roadways crossed in order to avoid impacts. Of the seventeen stream crossing locations to be accomplished by Horizontal Directional Drilling, only four are not associated with a road crossing. This clearly demonstrates that FERC places a higher priority on avoiding disturbance of roadways than it places on protecting streams, including streams of the highest quality in Pennsylvania and New Jersey. FERC has yet to explain why it is appropriate to place a higher priority on protecting roads as compared to protecting streams, wetlands, and vernal pools.
- The EIS presented only generic plans for its Horizontal Directional Drilling activities rather than in-situ evaluations. Transco recently encountered significant issues using Horizontal Directional Drilling for its pipeline in Princeton, which has similar geology to Hopewell Township which is proposed to be crossed by PennEast. Energy Transfer also created myriad problems with its poorly planned and sloppily executed Horizontal Directional Drilling for the installation of the Mariner East Pipelines. This was due substantially to Energy Transfer's failure to investigate and account for site-specific geology. Given that the method used for crossing waterways and wetlands can have such detrimental effects, knowing exactly what crossing methods are being proposed and where is critical to FERC's decision making. In the absence of specific plans and proposals for each waterbody, the EIS is markedly incomplete.
- The impacts of maintaining the cleared right of way planned for in the EIS, including enduring compacted soils, dramatically altered vegetative composition, increased stormwater runoff volume, altered timing of stormwater runoff, and reduced groundwater recharge have been largely overlooked.
- The vast majority of stream crossings, 87%, will be dry crossings with the greatest potential for adverse water-quality impacts and long-term impact and alteration of the channel substrate and protective riparian buffers that protect water quality. Approximately 55% of the dry stream crossings are in areas of Potential Blasting. The EIS should, but does not, evaluate the potential need for blasting and excavation at all proposed stream and wetland crossings, and this information should inform decisions related to stream crossing locations and construction methods, including decisions for dry crossing methods or Horizontal Directional Drilling.
- The EIS fails to offer primary consideration and discussion of a Horizontal Directional Drilling construction alternative for each and every wetland and waterway crossing. Given the potential for this type of drilling to protect streams from the ravages of open cut, this is a serious deficiency in EIS materials and analyses.
- The discussion of blasting provided in EIS concerns worker safety, not environmental impacts. There are significant environmental ramifications of blasting, among them that blasting deposits nitrogen which can run off with stormflow and enter streams as nitrate or ammonia. The environmental ramifications of any and all proposed or potential blasting is obviously absent.

- Deviation P-1820 is designed to avoid surface impacts to a wetland and C-1 stream, and to facilitate the trenchless crossing of Rt. 519 in Holland Township, NJ, but requires an access road to the Horizontal Directional Drilling pad which would negatively impact the C-1 stream it is designed to avoid. Discussion of this impact and the ways to avoid it are notably absent from the EIS.
- Deviation P-1710 would cause crossing of two residential roads, impacting C-1 streams and wetlands, as well as eight homes. Discussion of these waterway impacts are notably absent from the EIS.
- Many of the same sub-watersheds subject to development as a result of PennEast were recently, or could be in the future, impacted by construction activity from other pipelines. The cumulative impacts of these cuts is not considered or anticipated in the EIS.
- Consideration of the multiple cuts proposed by PennEast itself in sub-watersheds is lacking needed study and consideration. For example, the proposed right-of-way would cross the Harihokake and its tributaries at 7 different locations in New Jersey – mileposts 85.4, 85.6, 85.8, 85.9, 86, 86.3, 86.7. These cuts pose a threat to water quality and waterway health both individually and cumulatively. The cumulative impact of these multiple cuts is not duly considered in the EIS.
- The PennEast pipeline will induce the drilling of new wells in Northeast Pennsylvania – specifically in the counties of Bradford, Susquehanna, Lycoming, and Tioga. The implications for climate change affects, waste discharges within the Delaware River watershed, and additional new pipeline construction is notably absent from any consideration of foreseeable impacts due to construction of a PennEast pipeline in the EIS.
- Horizontal Directional Drilling long borings should be, but are not, considered and analyzed for feasibility for each and every waterbody crossing and or wetland complex along the route to reduce impacts to sensitive habitats.
- Ground-truthing identified at least 12 vernal pool complexes or groundwater seeps on a half mile section of the route in Blue Mountain State Gameland 168 in Pennsylvania where EIS tables documented the presence of only 2 vernal pool habitats and no groundwater seeps. There has been a clear misrepresentation of water resources that would be impacted in this area.
- The proposed pipeline would run adjacent to the existing right of way cutting through new habitat in the Ted Stiles Preserve on Baldpate Mountain in NJ, instead of being built within the current right-of-way footprint which means more habitat disturbed, trees cut, increased runoff and erosion, and an extension of forest fragmentation further into the woods. The Ted Stiles Preserve has some of the last remaining forest in the region. The EIS does not justify the failure to use the existing right of way versus expanding it.
- The EIS provided multiple new alternative route segments. Full and detailed information on the waterway and water quality impacts of each of these alternatives has not been provided.

- The EIS acknowledges that perennial and intermittent waters in Pennsylvania Exceptional Value and High Quality ("Special Protection") watersheds have 150-foot wide riparian buffers regulated in accordance with 25 Pa. Code Chapter 102.8. Yet PennEast project drawings within the EIS do not identify any existing or proposed riparian buffers around any Exceptional Value or High Quality waters.
- The EIS claims that it was not possible to protect, convert, or establish a riparian buffer or riparian forest buffer to satisfy the anti-degradation requirements for the proposed earth disturbances because PennEast does not own the land on which the pipeline will be constructed and because the existing landowners would not accept deed restrictions, conservation easements, or other mechanisms to protect the buffers into the future. No support for these claims is provided, and they appear to be gross generalizations that are unlikely to apply to every landowner along the 79.5-mile route in Pennsylvania.
- The EIS asserts that PennEast will maintain flow rates adequate for downstream uses including aquatic life, water body designated use or withdrawals. However, documents on the record do not indicate any standard for determining the adequate amount of water to accomplish these critical protections. Therefore there is no way for FERC or the public to determine whether PennEast will in fact ensure protective flows.
- EIS Table 4.3.2-7 lists discharge locations simply as coordinates without listing the receiving stream. This is insufficient disclosure because it is not an analysis of the effects of the discharge on the receiving stream, including limits on the potential flow rate which is important, particularly if the stream is small and the discharge of hundreds of thousands of gallons of water would cause erosion or upset ongoing biologic processes.
- Erosion control measures along the right-of-way usually require lime and fertilizer to be applied so that seed mixes grow rapidly. The addition of lime and fertilizer are like poison to what were once forest soils of low pH and low nutrients. Native herbaceous plants and shrubs almost never outcompete non-native weeds in these altered, nutrient-enriched, high pH soils, and stormwater runoff would pollute local waterways with these added nutrients. Disruption of living soil microbes and topsoil integrity are not fully considered. These implications and impacts are not discussed or addressed in the EIS, nor are alternatives considered for avoiding these impacts altogether.
- The EIS fails to assess or address comments and experience that shows that the use of standard construction practices would result in environmental violations and degradation such as erosion issues and sediment pollution.
- The evaluation of soil compaction impacts based primarily on a soil's drainage classification that has been provided in the EIS is incorrect.
- The EIS greatly underestimates the potential for the alteration of soils traversed by the pipeline and the subsequent short- and long-term consequences of soil compaction such as decreased water absorption and disruption of soil microbes. Carbon sequestration of soils is also not addressed.

- The stated plan for dealing with spill prevention and control is limited to five (5) simple bullet points, none of which provide any direction on the actions that must be taken in the event of a spill, which would negatively impact waterways.
- A Mercer County Public Park in New Jersey has over 12 miles of marked trails for hiking, horseback riding, mountain biking, and trail running. According to the PennEast alignment sheets within the EIS, this area had been surveyed, but no flagging was observed during ground-truthing for the pipeline center line, or any of the wetlands or streams along the proposed pipeline route encountered as late as July 30, 2016. FERC needs substantiation that areas PennEast says were surveyed for purposes of capturing data and information for its project proposal and assessment were in fact surveyed. Verbal assertions from PennEast are not enough.
- Field-truthing of the pipeline route has documented that an intermittent stream in the Ted Stiles Reserve at Baldpate Mountain, NJ was not delineated on the PennEast alignment sheets within the EIS, nor was there flagging present to note this water feature despite the fact that the stream is delineated on state freshwater mapping layers available to the public.
- Despite open cuts making up the majority of the waterbody crossings and despite the exceptions of allowing Additional Temporary Work Spaces within 50 feet of sensitive wetlands at least in 211 instances, it has been asserted there is adequate justification for Additional Temporary Work Spaces and that there will be minimal harm. In fact, avoidance of these sensitive areas was not fully and adequately investigated and the assertion of minimal harm has not been demonstrated.
- Most of the wetlands data within the EIS is unreliable because it is largely “based on available remote sensing mapping, and not on field-based investigations.”
- Expert ground-truthing has identified multiple instances where wetlands shown on project drawings appear to be significantly under-mapped.
- 72% of the proposed pipeline alignment in New Jersey and 23% in Pennsylvania has not yet been field-investigated for wetlands and other water resources.
- Additional wetlands exist within approximately 19.4 miles of right-of-way, 24% of the proposed pipeline Study Area, that have not been investigated because access was not (initially) granted. Impacts to all those wetlands have not been acknowledged, calculated, or mitigated for.
- The EIS has failed to assess how the functions and values of each wetland cut, crossed and/or otherwise impacted, would be changed by pipeline construction, operation and/or maintenance.
- There are even internal discrepancies in the reported acreage of many delineated wetlands in the EIS documents.
- Most wetlands within and along the proposed pipeline right of way are not visibly flagged in the field, making field verification and ground-truthing difficult, and calling into

question whether PennEast ever visited these sites in person. Verification of whether or not PennEast physically visited and assessed each and every wetland along the proposed route is needed as it speaks to the veracity of the assertions in the EIS about all of the project data and impacts how the public and FERC may view the data itself.

- The wetlands tables within the EIS do not indicate the quality of the wetland impacted pursuant to the state classification of the wetland – this is important information that is notably missing.
- Many of the wetlands in the Project area are not appropriately classified pursuant to the Pennsylvania Code and the requirements therein.
- Some wetlands which should be classified as "exceptional value" pursuant to Pennsylvania law were incorrectly identified in the EIS as "other."
- No "existing use" analysis of affected streams has been done, leading to a likely undercount of the number and extent of Exceptional Value Wetlands.
- Bog turtle searches did not encompass the entire area requested by US Fish and Wildlife Service and certain areas of suitable bog turtle habitat were not acknowledged within the EIS. These omissions could negatively impact bog turtles due to the water quality impacts of the pipeline.
- Because the impacts to the functions and values of each wetland proposed to be impacted have not been determined or evaluated there is no appropriate mitigation plan for impacted wetlands.
- The EIS asserts that emergent vegetation regenerates quickly in wetlands, typically within one to three years. The EIS asserts that PennEast would maintain a 10-foot-wide corridor centered over the pipeline in an herbaceous state. And the EIS asserts that PennEast would selectively cut trees within a 30-foot-wide corridor centered over the pipeline. The remainder of forested and scrub-shrub vegetation, the EIS states, would be allowed to return to pre-construction conditions and would not be affected during operation. No permanent fill or loss of wetland area would result from construction and operation of the Project, the EIS asserts. But continued and irreversible impacts to wetlands from pipeline crossings is well documented, especially in the context of forested wetlands where tree regrowth can take decades to recover. The EIS has not addressed these demonstrated ongoing impacts that are documented in the PennEast record.
- The EIS proposes open-cut trenching for 130 of the wetlands proposed to be crossed. Other wetlands not cut by open cut are noted on the record as "not applicable" for crossing type – it is unclear what is meant by "not applicable" – there is no description of that condition in the notes of the table.
- The EIS asserts that approximately 0.13 acres of vernal pool habitats would be impacted by construction of the PennEast pipeline, with 0.11 acres permanently impacted during operation. Based on the sensitive areas along the 115-mile proposed route, this asserted acreage is low. Spot field checks in short sections of already surveyed areas of the route

make clear that significant numbers of vernal pools and wetlands have been missed and not accurately depicted by field surveys or on the record.

- Field-truthing for vernal pools in an area that the EIS states PennEast had surveyed revealed there were only a few pink flags marked by the PennEast surveyors for a short section of the route and no wetland flagging at all was present at vernal pools located along the proposed route.
- The EIS does not consider the full forest impacts and forest upland habitats at least 1,000 feet from vernal pools that will be cut down and lost and that amphibians rely on for times of the year other than breeding.
- Failure by the EIS to consider upland habitat impacts 1000 feet surrounding vernal pools and wetland habitats exemplifies the incomplete assessments that have been provided for wetland and vernal pool features even when they are located in areas as sensitive and accessible as PA State Gamelands.
- The EIS does not include the thermal and likely hydrological impacts that will change vernal pools, compromising water temperature and flow for breeding amphibians.
- The EIS does not include the temperature changes, dry compacted soil conditions and changes to vegetation of a right of way that would make it near impossible for migrating amphibians to return to their breeding pool post-pipeline construction.
- The EIS does not include the repetitive pipeline maintenance impacts like herbicide applications to the proposed right of way and routine cutting and unauthorized ATV use that would impact amphibians long term.
- The EIS does not include a thorough mapping of all vernal pools and wetlands that would be impacted.
- The EIS does not consider the climate change impacts that would result to vernal pool species, stream species, and wetland species.
- Prior to construction, PennEast is supposed to file a complete wetland delineation report for the entire project that includes all wetlands delineated in accordance with the US Army Corps of Engineers and the applicable state agency requirements. This is not protective enough nor does it give regulating agencies or the public adequate time to field-verify information and to use the results of that verification for decision-making purposes.
- Private drinking water supplies are to be protected as Exceptional Value wetlands. The EIS recognizes that private water supplies are not yet mapped, which means that wetlands associated with these water supplies are not yet fully analyzed under Pennsylvania requirements for Exceptional Value wetlands.
- In a wetlands filing where PennEast was required to submit detailed drawings, such as Erosion and Sedimentation Control Plans, it has failed to in fact include such plans.

- In the area between Mile Post 92.0 and Mile Post 92.25, about 1,320 linear feet, where access was not denied, and which a PennEast drawing referenced in the EIS notes as being, quote, "fully surveyed parcel," the wetland proposed to be crossed was not field-surveyed but is in fact described based on non-regulatory NJDEP mapping.
- Near Mile Post 92.3, there are extensive Natural Resources Conservation Service-mapped hydric soils both within and outside wetlands mapped by NJDEP, but PennEast drawings provided for this area and referenced in the EIS only use what is shown on NJDEP maps. In other places, where National Wetlands Inventory mapped wetlands extend beyond the NJDEP-mapped wetlands, sometimes significantly, only the NJDEP-mapped wetlands, and not the National Wetlands Inventory wetlands, are shown on the project plan maps provided.
- Impacts to Exceptional Resource Value Wetlands in New Jersey have not been minimized, including failure to consider the alternative or routing the pipeline around Exceptional Value Wetlands in order to avoid harm. While rerouting to avoid wetlands is mentioned as a general consideration in pipeline siting and alternatives analyses, specific areas where identified Exceptional Value Wetlands were avoided are nowhere identified or discussed.
- PennEast has planned locating Additional Temporary Work Spaces at or about 50 feet from Exceptional Resource Value Wetlands identified in New Jersey for which there is a 150-foot wide buffer requirement. Failure to meet the state 150-foot standard is not addressed by the EIS in any meaningful way.
- Wetlands were delineated within a 400-foot wide (total) study corridor centered on the proposed centerline of the pipeline, meaning 200 feet in each direction from the proposed pipeline. Additionally, proposed construction areas extend out from that centerline, in some cases encompassing the entire width of the study corridor. To have complied with an applicable US Fish and Wildlife Service directive, wetlands should have been delineated within 300 feet of the edge of any limit of proposed disturbance.
- The EIS assumes that there is no difference between the hydrologic response of forested woodland and the compacted, post-construction pipeline right-of-way. As a result, the calculations and assessments of impacts in the EIS are simply wrong.
- In addition, the EIS fails to consider or even acknowledge stormwater impacts from pipeline construction, as no stormwater management is proposed for the pipeline area.
- The current forested conditions in much of the proposed pipeline corridor generates little surface runoff and facilitates groundwater recharge to support baseflow to streams and wetlands. The proposed pipeline conditions would significantly reduce the land surface's ability to retain rainfall and facilitate infiltration, and would increase runoff frequency, volumes, and flow rates, including increased surface erosion and sediment transport to Special Protection or C1 water bodies. As a result of pipeline construction, there would be permanent long-term water-quality impacts. The EIS fails to address the increase in stormwater runoff, erosion, water quality degradation and habitat impacts that would result from the permanent, long-term changes to land use cover and soil conditions.

- The pipeline route both traverses and is located along steep slopes, requiring significant earth movement for construction. When combined with erodible soils, the ability for construction crews to manage runoff and sediment discharge from the construction site becomes increasingly difficult. Several of these steep slope and erodible soil areas are directly adjacent to wetland or stream crossings, increasing the potential for sediment and runoff discharge to waterbodies. These issues are not well considered or addressed in the EIS.
- The EIS identifies approximately 163 areas along the proposed pipeline, totaling 5.9 miles in length, of slopes greater than 30 percent within 200 feet of waterbody crossings, some of which are located immediately adjacent to waterbodies. The clearing and grading of streambanks would reduce riparian vegetation and expose soil to erosional forces. The use of heavy equipment for construction could cause compaction of near-surface soils, an effect that could result in increased runoff into surface waters in the immediate vicinity of the construction right-of-way. These issues are not addressed in the EIS in the assessments, alternatives analyses, or plans.
- The EIS fails to address the fact that the proposed pipeline construction practices and long-term maintenance of the right-of-way in a non-forested condition will alter the land surface conditions and result in greater stormwater and thermal impacts.
- The increased scour, sedimentation and turbidity levels within streams after construction due to sediment transport from uplands into surface waters due to construction and post-construction activities, is not meaningfully considered, addressed or minimized in the EIS in the alternative analyses or construction and maintenance plans.
- Blasting and excavation in streams and wetlands for pipeline construction has the potential for short-and long-term impacts to water quality due to erosion and disturbance during construction, permanent alterations and increased instability in the channel substrate, and long-term alterations and instability in the channel configuration and riparian buffer conditions. These impacts are not meaningfully considered, addressed or minimized in the EIS in the alternative analyses or construction and maintenance plans.
- Impacts to stream baseflow due to land use alterations that would alter the surface hydrological response, increasing runoff and decreasing infiltration are not addressed in the EIS either for the proposed route or alternative routes.
- The construction practices for pipeline installation include the use of heavy equipment with no topsoil segregation and no soil restoration unless parcels are residential or agricultural. This results in a soil profile that is highly compacted, lacking organic material, lacking macropores, and extremely reduced in its ability to retain and slow rainfall. The increased stormwater runoff, erosion, and pollutants, and the decrease in recharge to baseflow that will result is not addressed in the EIS. Soil life, microbes, and carbon sequestration of soils is not considered in the EIS.
- The EIS relies upon PennEast's Horizontal Directional Drilling Inadvertent Returns and Contingency Plan for addressing potential impact to groundwater attributable to drilling wastes, asserting the plan provides sufficient protection. The reference provides only a

single bullet point that states a site specific plan will be implemented. This is a significant deficiency in the EIS and assessments of waterway and water quality impacts.

- The EIS does not address potential groundwater contamination events associated with the operation and maintenance of the pipeline, including the long-term application of herbicides to control the growth of vegetation or the management of invasive plants within and adjacent to the pipeline right-of-way.
- The EIS has failed to recognize potential arsenic contamination, and given that much of Hopewell Township, NJ, for example, is a sole-source aquifer, this is of significant concern, and cannot be mitigated.
- The pipeline trench would need to be 7.3 feet deep and because most of the soil in Hunterdon County, NJ is less than 32 to 64 inches, the bedrock will have to be excavated. This means that the trench construction, which will in some cases require blasting, would fracture, shatter, excavate, and re-bury arsenic-rich shale exposing it to aerobic conditions and potentially polluting groundwater and other water sources. This reality is not addressed by the EIS.
- The EIS fails to provide a detailed plan for achieving the requirements of New Jersey's no-net loss of forest program, as loss of forest would increase runoff volume and sediment pollution.
- Ground-truthing from about Mile Post 51.1 to Mile Post 51.6 in the Blue Mountain, PA area demonstrates the area is dominated by steep slopes, glacial thin soils and abundant outcroppings and boulder fields indicative of ideal timber rattlesnake habitat. Due to the geology, blasting would likely be required, and there would be a very high likelihood of erosion and increased stormwater runoff from tree removal. These issues are not addressed by the EIS.
- Pipeline construction lowers the water table temporarily by dewatering the trench. It lowers the water table permanently by changing the aquifer properties within the trench. These impacts have not been considered in the EIS in any meaningful way if at all.
- Pipeline construction can change surface drainage patterns which could change the locations of both runoff and recharge. These impacts have not been considered in the EIS in any meaningful way if at all.
- An existing 50- to 100-foot-wide treeless swath through a forest could be doubled as the result of the preference to follow existing right-of-ways within a forest area. Such a width doubling could have foreseeable effects especially in valuable forest regions such as in Hickory Run State Park and wetlands where areas exposed to solar insolation could significantly increase, resulting in warming impacted waters and increasing evapotranspiration. The EIS does not consider such factors in its comparison of alternatives.
- Recent reviews and consultation letters from sister agencies (PA Game Commission, March 2020 letter to PennEast) note lack of information and protections pertaining to the

protection of forest interior birds that live in forested public lands and areas where the pipeline would deforest and cut.

- Trench plugs are used to interrupt flow along trenches. The EIS does not analyze how trench plugs would operate or whether they would do as claimed in terms of impacting flows. A plug with lower conductivity than the rest of the trench backfill would interrupt flow through the trench and potentially cause water to discharge to the ground surface. The EIS does not provide for accommodating this surface flow or consider how it changes groundwater flow.
- The EIS does not assess the potential for ancillary damages to water resources, and other features, caused by vehicular access to the pipeline right-of-way after construction, nor does it consider how to avoid or minimize those impacts, for example by reducing vehicular access after construction is complete and implementing enforcement strategies that prevent vehicular access by the public for motorized recreation such as ATVs and snowmobiles.
- The EIS does not describe groundwater recharge, and therefore fails to describe one of the most important factors of the hydrogeology of the area. Because many aspects of the project could affect recharge, failing to describe the process in the project is a serious deficiency.
- The EIS should, but does not, 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 EIS should, but does not, discuss and assess the role of topography in controlling conductivity and how fractures control conductivity and how deep recharge may reach in the bedrock.
- The EIS states that critical soil characteristics were summarized, including poorly or very poorly drained, excessively drained, poor revegetation potential, high compaction, severe erosion potential, prime farmland crossed, and slope by percent of proposed route length affected. But the EIS does not provide the specific location for these soil types. In addition to lacking this specific location information, tables on the record fail to consider characteristics which are collocated and as a result could lead to more critical conditions. Materials on the record are generally insufficient for consideration of the soil conditions on water resources impacted by the proposed preferred route.
- Tables on the record show potential groundwater or soil contamination along the pipeline route. However, they do not show the type of contamination at those sites. There is no discussion provided as to the effect the proposed pipeline could have on contaminated soils or, more accurately, the potential for, and ways in which, the proposed pipeline could release contamination from the contaminated soils thereby affecting the environment and natural resources.

- The EIS should, but does not, present mitigation plans to prevent currently contaminated soils from degrading nearby groundwater due to construction disturbance and the enduring presence of the pipeline.
- The EIS acknowledges that surveys for springs and seeps have not been completed. The inventory as presented is only for springs/seeps within 150 feet of the pipeline. It is not possible for the public or FERC to review the impacts of the proposed preferred route and alternative routes on water resources if the inventory of resources is not complete.
- The EIS should, but does not, include needed 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.
- The EIS should, but does not, assess the potential for pipeline construction to generate acid generation or leach metals in all areas where it crosses mine spoil.
- The EIS should, but does not, present avoidance and mitigation discussions focused on preventing the leaching and transport of acid and metals from the site.
- The arsenic analysis provided in the EIS is insufficient to indicate that arsenic leaching from pipeline construction in the Newark Basin would not be a problem for shallow groundwater. PennEast needs to legitimately and scientifically analyze this issue and threat in order to properly inform FERC decision making.
- The EIS completely fails to consider how pipeline construction would affect the water balance of wetlands with groundwater inflow.
- Materials on the record completely fail to consider how pipeline construction would affect recharge into bedrock by not considering how compaction would prevent water from accessing fracture zones.
- The EIS must consider the transport of contaminants, including methane and spills, from the trench to and along the preferential flow pathways and assess where they would discharge. This could be into a stream or spring, or into a broader aquifer where it could affect wells.
- The EIS needs to assess details about the pipeline leak detection PennEast asserts it will implement, including what rate of leakage can be detected and what responsive actions would be triggered.
- The EIS should, but does not, analyze the extent that methane could spread from the pipeline through the groundwater due to a leak. This is probably a preferential flow issue in that the methane would disperse along the higher conductivity in the trench until it reaches a receptive fracture intersecting the pipeline or wetland or stream.
- A total of 8 New Jersey state-threatened, endangered or special concern mussel species are completely left out of the record. These species are as follows: triangle floater, brook floater, yellow lampmussel, eastern lampmussel, green floater, tidewater mucket, eastern pondmussel, and creeper.

- Amphibian species are at great risk and they would be put at an even greater risk by the combined impacts of climate change and the construction of the PennEast pipeline. The EIS fails to consider these impacts.
- The conclusion of “absence” as a result of the Phase 2 presence/absence bog turtle surveys does not carry much weight when it is admitted that the project may affect the species and is likely to adversely affect the species because not all areas have been surveyed. The same can be said for the Indiana bat, northern long-eared bat, dwarf wedgemussel, and northeastern bulrush. PennEast’s failure to evaluate the areas where there is likely to be an adverse impact to these species renders materials on the record highly deficient.
- The record notes that 7 wetlands in Pennsylvania are considered suitable bog turtle habitat. However, an independent US Fish and Wildlife Service qualified bog turtle surveyor identified 9 properties containing one or more suitable bog turtle wetlands in the Hunters Creek drainage alone.
- The EIS fails to consider utilizing pre-existing cleared areas in the Blue Mountain Ski area as an alternative. This area is already highly impacted with massive cuts for ski slopes, yet it appears the pipeline proposed near the ski center would add an additional cut rather than utilize one of the current clear-cut paths, contributing to erosion and sediment pollution and negatively affecting water quality.
- Results of all geotechnical investigations, including karst areas, necessary for Horizontal Directional Drilling planning and design are missing from the materials on the record.
- The final planned design of each Horizontal Directional Drilling crossing is missing from the materials on the record.
- A revised/final list, based on final surveys, of water wells and springs within 150 feet of any construction workspace (and 500 feet in areas characterized by karst terrain) are missing from the materials on the record.
- Documentation of the final hydrostatic test water withdrawal sources and locations are missing from the EIS.
- Documentation of all necessary permits and approvals for each hydrostatic test water withdrawal source are missing from the EIS.
- Identification of special construction methods for construction in extremely saturated wetlands are missing from the EIS and PennEast materials on the record.
- Justification for required additional workspace to accommodate special construction methods for extremely saturated wetlands are missing from the EIS and PennEast materials on the record.
- A revised/final table of impacts on vernal pools within or near the proposed workspaces based on completed surveys are missing from the EIS and PennEast materials on the record.

- Horizontal Directional Drilling 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. are all missing from the EIS and PennEast materials on the record.
- Horizontal Directional Drilling water discharge details including the specific volume of anticipated discharge, discharge method, and impacts on receiving streams are missing from the EIS and PennEast materials on record.
- Standards used to guide Horizontal Directional Drilling water withdrawals without preventing impacts on downstream ecological or human uses and needs are missing from the EIS and PennEast materials on the record.
- The EIS fails to provide a table of bedrock aquifers that includes relevant properties, including specific capacity statistics or well yields, and conductivity where available.
- The EIS fails to include mapping, 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.
- The EIS should, but does not, 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.
- The EIS should, but does not, 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.
- The EIS should, but does not, provide 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.
- The arsenic analysis provided in the record is insufficient to indicate that arsenic leaching from pipeline construction in the Newark Basin would not be a problem for shallow groundwater and therefore the EIS needs to legitimately and scientifically analyze this issue.
- The EIS should provide the data and references supporting the assertion on the record that “shallow groundwater ... generally have low arsenic concentrations and that high arsenic concentrations ... are the result of more mature groundwater interacting with geochemically susceptible and arsenic-enriched water bearing zones, which are often deeper wells.”
- The EIS should provide the data and references supporting the assertion on the record that there is “no indication that common construction activities that involve shallow excavation, such as home construction, has resulted in increased arsenic concentrations in water supply wells.”

- The EIS needs to 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.
- The EIS has failed 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.
- As part of an analysis of preferential flow, the EIS has failed to analyze the potential for the trench backfill to facilitate the movement of contaminants through the groundwater.
- Materials on the record do not include detailed wetland information necessary for expert review like that of Dr. Schmid to accurately review and determine the quality of the wetlands that are to be impacted.
- The EIS claims that PennEast has negotiated with Suez on Lambertville water supply reservoir. Suez claims no contact. Proof of the negotiation as well as specific items discussed needs to be provided.
- Drought conditions in areas PennEast proposes water withdrawals are not accounted for in the EIS.
- On the record, there is discussion of areas where the route crosses Special Flood Hazard Areas; there are references to two tables, Table 2.3-6 and Table 2.3.6. These tables should, but do not, appear on the record.
- The EIS analysis fails to legitimately examine the potential for landslides resulting from site preparation, construction activities, and post-construction changes to soil properties and vegetative cover.
- Healthy forests are vital for protecting the water resources of the Delaware River watershed. The EIS minimizes or ignores the loss of interior forest. Interior forest impacts are significantly magnified beyond the immediate footprint of the project. There are numerous Interior Forest impacts that are missing from the EIS.
- The EIS fails to provide maps of Interior Forest Impacts wherever PennEast claimed the project was “collocated” in Luzerne and Carbon Counties, Pennsylvania, and Hunterdon and Mercer, New Jersey. The PennEast pipeline appears to encroach 150 feet deep into forested areas in the Poconos. White cross-hatching on maps which denotes Interior Forest Impacts is missing on the following EIS pages and therefore are presumably also misrepresented in all on the record materials:
 - Bear Creek, Luzerne County, Pages 205, 211–218, 224
 - Carbon County, Pages 239, 246-249, 255, 260-263, 270-273, 277-281, 289-293
 - Page 414: milepost 94 at the Calandra Property
 - milepost 94-94.3, no impacts are mapped but PennEast mapped cleared right of way as interior forest

- milepost 105.7 - 108.4 in Baldpate Mountain, impacts are missing for 2.7 miles for Mercer County's largest contiguous forest. In fact PennEast failed to map any impacts at Baldpate except along one access road.
- The EIS fails to consider the potential for encouraging shale gas extraction activities within the boundaries of the Delaware River watershed if the moratorium against drilling were lifted.
- The EIS fails to consider combined adverse environmental impacts of climate change and the PennEast pipeline and the potential implications for the watershed and water resources.
- The PennEast pipeline would inflict between 13.3 and 56.6 billion dollars of economic impact including lost jobs, lost wages, lost taxes, reduced property values, lost ecosystem services and more. The PennEast pipeline would cause an initial loss of \$7.3 million in ecosystem services during a one-year construction period. For each year the pipeline is in operation, the pipeline would induce an additional loss of \$2.4 million in ecosystem services due to conversion of land in the right of way. Ecosystem services include water quality protection, flood protection, erosion prevention, and more. These costs are entirely overlooked by the EIS.
- The EIS fails to consider the adverse impacts to recreation and ecotourism due to loss of healthy and attractive water resources in the watershed.
- The EIS fails to consider the implications for future investment in open space preservation that is beneficial for water resource protection.
- The costs to the community to respond to emergencies, to the increased stormwater runoff, pollution inputs, and other adverse impacts that could result from this project and would be foisted upon the shoulders of local towns and residents, are given short shrift if they are not assessed by the EIS.
- The EIS fails to identify where any of the end-users of the natural gas are located and the associated implications for water quality in the Delaware River watershed.
- FERC rejected co-locating the PennEast line along Transcontinental's Leidy Line gas transportation system for stated reasons that were not sufficiently explained. This alternative is important given that it might have significant implications for water quality in the watershed.
- According to the EIS, PennEast would cross the Appalachian Trail nearby a scenic overlook and cliff outcropping – it is hard to imagine a more damaging location for harming this important recreational and cultural resource that is such an iconic part of our watershed.
- The area in the Appalachian Trail to be crossed by PennEast is prime rattlesnake habitat; a threat to an important watershed species that the EIS glosses over lightly.
- Deviation P-1710 would negatively impact bobcat habitat, which New Jersey has said should be avoided.

- Deviations proposed to avoid Important Bird Areas would inflict significant impacts on water resources and watershed landscapes. The impacts have not been put forth by EIS for public or agency consideration.
- FERC and PennEast have failed to provide the public with GIS-referenced routes and images so they could be plotted in interactive maps for review for full and informed ground-truthing, consideration and comment.
- Alignment sheets fail to include mile posts. The absence of this critically important information renders the information incomplete and unusable for purposes of public, agency or expert review or comment as it impedes the ability to ground-truth and review the information, claims and data.
- The original alignment aerial views and backgrounds on the plots are muted out, making it difficult for the landowners and public monitors to ground-truth the information asserted. On other pipeline projects, maps are much more detailed and legible.
- PennEast uses desktop information for design purposes rather than completed “in-situ” evaluations. As such, the EIS is not relying upon the best, publicly-available information.
- The EIS has not demonstrated how impacts to tile drains serving existing farm fields will be mitigated if encountered. Given the implications for water, this is a concerning oversight.
- There would be an influx of invasive plant and animal species that would have cascading impacts on the forest ecosystem, which would spread along the right of way and back into the core of the adjacent forest. These impacts are not addressed by the EIS.
- An Invasive Plant Species Management Plan for use during construction and operation is not provided by the EIS. New invasions by the emerald ash borer and the spotted lanternfly must also be addressed.
- A Migratory Bird Conservation Plan is missing from the EIS and project materials.
- Identification of appropriate seed mixes to be used during revegetation efforts is not provided by the EIS.
- Completed surveys identifying all potential suitable habitats for special status species in the project area is not provided by the EIS.
- Remaining site-specific construction plans for all residences within 25 feet of the construction ROW and additional temporary workspaces (ATWS) including landowner approval and the potential implications for water resources are not provided by the EIS.
- Updates on the status of the site-specific crossing plans for each of the recreational and special interest areas in the Delaware River watershed listed as being crossed or otherwise affected by the pipeline are not provided by the EIS.
- Identification of National Park Service concerns with regards to effects to trails and cultural resources is not provided in the EIS.

- A vibration monitoring plan and modification of blasting plan that include a review of potential effects to environmental resources is not provided in the EIS.
- Evaluation of liquefaction hazards along the pipeline route and at the compressor station site are not provided in the EIS.
- Final landslide hazard inventory is not provided in the EIS.
- Necessary mitigation measures and post-construction monitoring plan for liquefaction hazards and landslide hazards are not provided in the EIS.
- Evaluations to support routine/mitigation measures through geologically hazardous areas are not provided in the EIS.
- Final landslide inventory is not provided in the EIS.
- Landslide mitigation measures with locations are not provided in the EIS.
- Post-construction landslide monitoring plan is not provided in the EIS.
- Final karst mitigation plan is not provided in the EIS.
- Identification of the management and field environmental professionals responsible for notification for contaminated sites is not provided in the EIS.

This partial listing of the many failings of the various PennEast filings provided to FERC makes clear that FERC failed to take the requisite “hard look” at the Original PennEast Project. In preparing an EIS for the New PennEast Project, FERC must address the above discrepancies and now the additional discrepancies and gaps that are apparent in PennEast’s new “phased” project, which is an attempt to undermine New Jersey’s decision to protect its residents and environment from harm.

In addition, because FERC has since approved PennEast’s requested modifications to the pipeline route,¹⁴⁷ FERC’s EIS for the New PennEast Project must analyze the entire route with modifications. It is vital that FERC view the New PennEast Project as a whole in order to accurately evaluate its impact on the environment. So far, FERC has independently evaluated the Original PennEast Project (which will now no longer be built as analyzed), the Adelpia Project, the route modifications in isolation, and now FERC proposes to review only the Church Road Facility. This piecemeal review of the New PennEast Project distorts the purpose of NEPA, which is “to insure a fully informed and well-considered decision.”¹⁴⁸

¹⁴⁷ Order Amending Certificate, PennEast Pipeline Company, LLC, Docket No. CP19-78-000, 170 FERC ¶ 61,198 (Mar. 19, 2020).

¹⁴⁸ *Vermont Yankee Nuclear Power Corp. v. Nat. Res. Defense Coun.*, 435 U.S. 519, 558 (1978).

VII. PennEast Has Failed to Establish Public Need for its Phase 1 Project and Thus FERC Must Deny PennEast’s January 30, 2020 Request for Amendment

Prior to constructing any natural gas facility, a company such as PennEast must obtain a certificate of public convenience and necessity issued by FERC.¹⁴⁹ According to FERC’s own Certificate Policy Statement,¹⁵⁰ in deciding whether to issue such a certificate:

[T]he Commission will consider all relevant factors reflecting on the need for the project. These might include, but would not be limited to, precedent agreements, demand projections, potential cost savings to consumers, or a comparison of projected demand with the amount of capacity currently serving the market. The objective would be for the applicant to make a sufficient showing of the public benefits of its proposed project to outweigh any residual adverse effects discussed below.¹⁵¹

Those adverse effects include those against “the interests of landowners and surrounding communities.”¹⁵² “Traditionally, the interests of the landowners and the surrounding community have been considered synonymous with the environmental impacts of a project.”¹⁵³ After completing a thorough EIS with public scrutiny and comment on the New PennEast Project, FERC will have a comprehensive understanding of the environmental impacts of these projects. The cumulative adverse effects associated with the New PennEast Project are enormous, as the pipeline would cut through sensitive water bodies causing short-term and long-term harm to water quality, habitat, steep slopes, and recreation areas, would induce additional fracking activity in the Marcellus Shale region, and result in the emission of GHGs such as carbon dioxide and methane. The science and expert reports put on record and referenced in this comment outline some of these irreversible harms.

In balancing these adverse effects against the so-called public benefits of Phase 1, FERC should conclude that any benefit in transmitting 340,000 Dth/d of natural gas to existing pipelines simply cannot outweigh the harm that would be caused by Phase 1 of the New PennEast Project. In its application, PennEast asserts that FERC should “evaluate the public benefits of the stand-alone Phase 1 facilities against any potential adverse consequences of PennEast’s proposal to phase construction of the Project, including the construction of the Church Road Interconnects.”¹⁵⁴ This calculation both assumes that the New PennEast Project will inevitably be built, and puts a thumb on the scale in favor of finding public need.

¹⁴⁹ 15 U.S.C. § 717f(c).

¹⁵⁰ FEDERAL ENERGY REGULATORY COMM’N, Docket No. PL99-3-000, STATEMENT OF POLICY, 88 FERC ¶ 61,227 (Sept. 15, 1999).

¹⁵¹ *Id.* at 23.

¹⁵² *Id.*

¹⁵³ *Id.* at 24.

¹⁵⁴ *Phase 1 Application* at 12.

As an initial matter, PennEast must establish the need for the entire New PennEast Project, which should include, at least, a market study and precedent agreements. That information has not been provided by PennEast. Next, in order to evaluate Phase 1 as a stand-alone project accurately, FERC must consider the adverse effects of all construction and operational activity associated with Phase 1. This includes the siting of the sixty-eight-mile pipeline itself, the induced fracking, the new Church Road Facility, and the GHG emissions during construction and operation. This massive conglomeration of adverse effects simply does not outweigh the benefit of “provid[ing] new incremental capacity to meet market demand, as reflected by PennEast’s agreements with the Phase 1 shippers.”¹⁵⁵

PennEast also cites consumer access to stable, low-cost supplies, the creation of pipeline diversity, an increase in reliability of the natural gas transmission grid by providing a pipeline alternative, and reduction of system constraints and an increase in operational flexibility. These “benefits” could be used to describe every proposed new pipeline, and are not sufficient to overcome the permanent environmental harms that would be caused by the Phase 1 Project. Notably, the only Market Data included in PennEast’s Application is PennEast’s precedent agreements with its Phase 1 shippers,¹⁵⁶ despite the fact that FERC’s Certificate Policy Statement says that “the evidence necessary to establish the need for the project will usually include a market study.”¹⁵⁷ The need PennEast attempts to demonstrate with its shipper agreements is particularly weak because PennEast apparently has not found a single shipper to sign a precedent agreement for its Phase 1 Project besides the component companies of PennEast itself.¹⁵⁸

Accordingly, both Phase 1 and the New PennEast Project fail to meet the standard for public need because the public benefits of the project do not outweigh its adverse effects. FERC should not issue a certificate of public convenience and necessity to PennEast for Phase 1 or the New PennEast Project.

VIII. Both the Phase 1 Project and the New PennEast Project are Subject to Delaware River Basin Commission Jurisdiction and Approval.

Even if FERC is inclined to issue a certificate of public convenience and necessity to PennEast for the Phase 1 Project and the New PennEast Project, which would be in error and against the law, it must not do so until PennEast receives the approval of the Delaware River Basin Commission (“DRBC”). In its Phase 1 Application, PennEast states that it “will source water for hydrostatic testing and dust suppression from approved sources (e.g. commercial and municipal suppliers), and no chemicals will be added to hydrostatic test waters. Hydrostatic test water will not be discharged or used for dust suppression; all used hydrostatic test water will be removed from the site and disposed of at approved water treatment facilities.”¹⁵⁹ On the same

¹⁵⁵ *Id.* at 13.

¹⁵⁶ *Id.* at 22, Exhibit I.

¹⁵⁷ Statement of Policy at 25.

¹⁵⁸ See Answer of PennEast Pipeline Company, LLC, FERC Docket No. CP20-47-000 (Feb. 26, 2020).

¹⁵⁹ *Phase 1 Application*, Exhibit F-I at 14.

date that PennEast submitted its Application to FERC, it also wrote a letter to the DRBC withdrawing its Water Withdrawal and Discharge (“W&D”) Application due to the new “alternatives for water withdrawals and discharge.”¹⁶⁰

FERC must not issue a certificate without DRBC’s approval of the entire New PennEast Project. As previously discussed, PennEast is attempting to unlawfully segment the New PennEast Project by seeking approval for the construction of the Phase 1 Project from FERC.¹⁶¹ By attempting to withdraw its W&D Application from DRBC, PennEast hopes to evade review of a major pipeline project that would ultimately cross dozens of streams and wetlands in Pennsylvania and New Jersey, and the Delaware River itself. Even if FERC allows PennEast to take its desired piecemeal approach, the Phase 1 Project in Pennsylvania alone is subject to DRBC jurisdiction as a “project having a substantial effect on the water resources of the basin.”¹⁶²

Section 3.8 of the Delaware River Basin Compact provides:

No project having a substantial effect on the water resources of the basin shall hereafter be undertaken by any person, corporation or governmental authority unless it shall have been first submitted to and approved by the commission, subject to the provisions of Sections 3.3 and 3.5. The commission shall approve a project whenever it finds and determines that such project would not substantially impair or conflict with the comprehensive plan and may modify and approve as modified, or may disapprove any such project whenever it finds and determines that the project would substantially impair or conflict with such plan. The commission shall provide by regulation for the procedure of submission, review and consideration of projects, and for its determinations pursuant to this section.¹⁶³

The DRBC Rules of Practice and Procedure (“RPP”) classifies projects for review under Section 3.8 of the Compact into two categories: those deemed not to have a substantial effect on the water resources of the Basin and therefore not required to be submitted for DRBC review, and those deemed to have substantial effects on water resources of the Basin and therefore required to be submitted for Commission review.¹⁶⁴

With respect to natural gas pipeline projects, the RPP categorizes them as projects that *presumptively* do not have a substantial effect on the water resources of the Watershed and that therefore do not *automatically* require DRBC review. But then Section 2.3.5(A) says that:

¹⁶⁰ Letter from Jeffrey D. England, Project Manager, PennEast Pipeline Company, LLC to Steven J. Tambini, Executive Director, Delaware River Basin Commission (Jan. 30, 2020).

¹⁶¹ See Section II, *supra*.

¹⁶² DELAWARE RIVER BASIN COMPACT, § 3.8 (1961)

¹⁶³ *Id.*

¹⁶⁴ See DELAWARE RIVER BASIN COMMISSION, RULES OF PRACTICE AND PROCEDURE, Article 3, § 2.3.5 (July 1, 2019).

Except as the Executive Director may specifically direct by notice to the project owner or sponsor, or as a state or federal agency may refer under paragraph C., ... a project in any of the following classifications will be deemed not to have a substantial effect on the water resources of the Basin and is not required to be submitted under Section 3.8 of the Compact:

....

12. Electric transmission or bulk power system lines and appurtenances; major trunk communication lines and appurtenances; **natural and manufactured gas transmission lines and appurtenances**; major water transmission lines and appurtenances; unless they would pass in, on, under or across an existing or proposed reservoir or recreation project area as designated in the Comprehensive Plan; **unless such lines would involve significant disturbance of ground cover affecting water resources[.]**¹⁶⁵

A clear and straightforward reading of the DRBC Compact and Rules of Practice and Procedure clearly contain four exceptions to the exemption that, if the stated conditions are met, trigger DRBC review for natural gas transmission lines and appurtenances:

- 1) if the Executive Director of the Commission specifically directs;
- 2) if any state or federal agency refers a project under paragraph C.;
- 3) if the project in question crosses an existing or proposed reservoir or recreation area that has been incorporated into the Comprehensive Plan; or
- 4) if the project involves a significant disturbance of ground cover affecting water resources.

The New PennEast Project, including the Phase 1 Project in Pennsylvania standing alone, would involve significant disturbance of ground cover affecting water resources of the basin and clearly requires a docket from the DRBC before it can be allowed to proceed with any level of construction, including tree felling. The Phase 1 Project in Pennsylvania includes over sixty-eight (68) miles of pipeline right of way, the vast majority of which would be located within the Delaware River watershed basin. Dozens of waterways would be cut in Luzerne, Carbon, and Northampton Counties and these waterways would suffer temporary and permanent harm. There would be temporary and permanent impacts to wetlands, floodways, and upland habitats that would inflict direct, indirect, irreparable and enduring harm on the water resources of the

¹⁶⁵ *Id.* at § 2.3.5(A)(12).

basin. In addition, the project is still proposed to pass through Comprehensive Plan areas such as Beltzville State Park, Beltzville Reservoir, F.E. Walter Reservoir, Hickory Run State Park and Weiser State Forest which clearly triggers DRBC review.

Because of this significant disturbance of ground cover and the crossing of multiple reservoirs and recreation areas within DRBC's Comprehensive Plan, FERC cannot issue a certificate for the Phase 1 Project or New PennEast Project without the approval of DRBC. Furthermore, important Chapter 102 and 105 permits from the Pennsylvania Department of Environmental Protection as well as Army Corps permits have still not been issued for this pipeline, thus the issuance of the certificate without these approvals is inappropriate and premature. Should FERC erroneously issue a conditional certificate to PennEast for any project or amendment, it must not approve any construction or tree-felling to begin unless and until all relevant permits are issued.¹⁶⁶

IX. Conclusion

In processing PennEast's Application, FERC must recognize the wolf in sheep's clothing—PennEast is proposing an entirely different, multi-phase pipeline project that will have a much greater environmental impact on the region than the Original PennEast Project. Analysis of the Church Road Facility alone, as FERC currently proposes, would be a glaringly obvious segmentation of a much larger project. In analyzing the entirety of PennEast's proposed project, FERC must focus on the climate impacts of its approval, including the induced fracking it would cause as well as the emissions of GHGs associated with consumption of natural gas, and the social costs associated with those emissions. In analyzing the air pollution emissions associated with the projects, FERC must not narrowly focus on the Church Road Facility but look at the project as a whole. FERC should also determine acute emissions impacts, and require that PennEast use the latest science to document the projects' air impacts. FERC should also not undermine states' authority under the DRBC compact to regulate this harm.

¹⁶⁶ See Letter from Maya K. van Rossum, the Delaware Riverkeeper to Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission (Nov. 14, 2018).

FERC must also scrutinize PennEast's assertion of public benefit when analyzing whether the Phase 1 Project and New PennEast Project are deserving of a certificate of public convenience and necessity, ultimately concluding that the asserted public benefits are in fact hollow and that the environmental effects are staggering. Thus, PennEast has not shown that it deserves a certificate of public convenience and necessity and this scheme by PennEast should be rejected by FERC. Should FERC issue a certificate, however, that certificate cannot be issued prior to the approval of the DRBC, as the proposed projects will have a substantial effect on the water resources of the Delaware River Basin.

Maya K. van Rossum

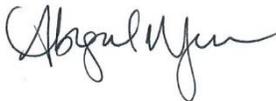


the Delaware Riverkeeper
Delaware Riverkeeper Network



Joseph Otis Minott
Executive Director & Chief Counsel
Clean Air Council

Abigail M. Jones



Senior Attorney
PennFuture

Exhibit F



September 2, 2020

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

**Re: PennEast Pipeline Company, LLC, Docket No. CP20-47-000
Comment on PennEast 2020 Amendment Project Environmental Assessment**

Dear Ms. Bose,

The Delaware Riverkeeper Network (“DRN”), Clean Air Council (“CAC”), and PennFuture provide the following comments to be considered by the Federal Energy Regulatory Commission (“FERC” or “Commission”) to address errors and inconsistencies within FERC’s PennEast 2020 Amendment Project Environmental Assessment (the “EA”) and to assist FERC in its decision whether to amend the PennEast Pipeline Company, LLC’s (“PennEast’s”) January 19, 2018, certificate of public convenience and necessity at docket number CP15-558-000 (“2018 Certificate”).

In order to assist the reader, we include the following brief glossary of terms used throughout this comment to describe the proposed actions. While the described actions overlap in some contexts, we find that it is useful to be as specific as possible when discussing the different components of PennEast’s plan.

- **2020 Amendment Project** – PennEast’s proposal in its Abbreviated Application for Amendment to Certificate of Public Convenience and Necessity in FERC Docket No. CP20-47-000.
- **Phase 1** – A pipeline running from MP 0.0 to MP 68.2R2 of the Original PennEast Pipeline, as modified by amendment in CP19-78-000, and terminating at the Church Road Facility with a capacity of 650,000 dekatherms per day (“Dth/d”), 338,000 Dth/d of which is currently contracted for.

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- **Phase 2** – Construction of the remaining pipeline route from MP 68.2R2 to MP 114.0 of the Original PennEast Pipeline, which, upon completion, will constitute the New PennEast Pipeline.
- **New PennEast Pipeline** – A pipeline running from MP 0.0 to MP 114.0 of the Original PennEast Pipeline route, as modified by amendment in CP19-78-000, plus the Church Road Facility, and interconnections with the Columbia Gas Transmission and Adelphia Gateway pipelines with a capacity of 1.1 million Dth/d.
- **Church Road Facility** – An interconnection with Adelphia Gateway Pipeline and Columbia Gas Transmission Pipeline, a metering and regulation facility, and a pig launcher/receiver.
- **PA Route Amendments** – Four amendments to the route of the Original PennEast Pipeline proposed by PennEast and approved by FERC in Docket No. CP19-78-000.
- **Original PennEast Pipeline** – The PennEast Pipeline as certificated in FERC Docket No. CP15-558-000.

The Commission’s EA fails to comply with the National Environmental Policy Act (“NEPA”)¹ because approval of PennEast’s 2020 Amendment Project is a “major Federal action[] significantly affecting the quality of the human environment,”² and accordingly, an environmental impact statement (“EIS”) is required. PennEast’s proposal is not a mere “phasing” of construction, but rather is a reconfiguration of the Original PennEast Pipeline—PennEast is asking FERC to approve a 68-mile greenfield pipeline to supply 380,000 Dth/d of natural gas to Adelphia Gateway Pipeline and Columbia Gas Transmission Pipeline in Bethlehem Township, Pennsylvania. Thus, although this pipeline shares the same route as the Original PennEast Pipeline, it serves an entirely different purpose. Because a project’s purpose is a fundamental component of any analysis under NEPA, the environmental impacts of Phase 1 must be reevaluated in light of its purpose.

PennEast also maintains that it intends to complete construction of the pipeline along the route originally certificated as “Phase 2” of the project, and that the original precedent agreements submitted in Docket No. CP15-558-000 remain intact for the full pipeline. FERC cannot ignore, however, that this New PennEast Pipeline will include interconnections with Adelphia Gateway and Columbia Gas Transmission—what role will these delivery points serve once the New PennEast Pipeline is complete? FERC must discern the New PennEast Pipeline’s purpose and need, and analyze the full pipeline’s environmental impact in light of that purpose and need.

The Commission’s EA is also factually deficient in several respects: it ignores acute health impacts from natural gas infrastructure; it utilizes outdated emissions information; it fails to meaningfully engage in an analysis of greenhouse gas emissions and the climate

¹ 42 U.S.C. §§ 4321–4370h.

² 42 U.S.C. § 4332(C).

change effects thereof; the noise impacts and air quality impacts analyses are incomplete; public safety analyses are outdated and incomplete; the site-specific analysis of the Church Road Facility fails to account for a massive residential retirement community directly across the street; the karst geology and groundwater features at the Church Road Facility are insufficiently accounted for; the cumulative impacts analysis is flawed; and the alternatives analysis is flawed in several respects, primarily as a result of an ill-defined purpose and need statement.

Even based on this incomplete EA, the Commission should conclude that the adverse environmental consequences of constructing and operating Phase 1 and the New PennEast Pipeline outweigh the public benefits, and that an amended certificate is not warranted. Should the Commission decide, despite law and evidence to the contrary, that an amendment is warranted, it must not amend the certificate, allow construction, or allow tree felling prior to the Delaware River Basin Commission's ("DRBC's") approval, as both Phase 1 and the New PennEast Pipeline are projects within DRBC's jurisdiction.

I. Administrative and Overarching Issues

A. Extension of Comment Deadlines

In our March 4, 2020 Comment in Opposition to the Abbreviated Application for Amendment,³ we requested that FERC extend the public comment period due to the short notice given to the public—notice had been provided on February 12, 2020, and a deadline of March 4, 2020 was given, for a total of twenty-one days for the public to comment on this radical reconfiguration of the PennEast Pipeline. On March 20, 2020, when it became clear that the coronavirus was a major public health catastrophe that would alter everyone's daily life, we sent a letter to FERC, among other regulatory entities, requesting that FERC alter its processes to ensure that the public's ability to participate was not scuttled by the pandemic. In our March 30, 2020 National Environmental Policy Act Scoping Comment,⁴ which was submitted in the early throes of the coronavirus pandemic amid regional shut-downs, we specifically requested that FERC extend the scoping process to May 1, 2020, which was the date to which FERC had extended non-statutory deadlines for the regulated community.⁵

The Commission has responded to requests for an extension of the scoping period by stating: "It is our policy to review and consider comments received after the scoping period expiration date, up until the time the NEPA document is prepared for issuance. Accordingly, we have considered and addressed late filed comments in this EA to [the] extent practicable, and therefore we find extension of the scoping period unnecessary."⁶ This "consideration to the extent practicable" is cold comfort to commenters who, while enduring a global pandemic and government-ordered lockdowns, either scrambled to put together a comment after absorbing all the necessary information about the Project yet missed the deadline, or were so overwhelmed that they decided it would be impossible for them to make a timely

³ Accession No. 20200304-5296 (Mar. 4, 2020) at 2.

⁴ Accession No. 20200330

⁵ See *Extension of Non-Statutory Deadlines*, Docket No. AD20-11-000 (Mar. 19, 2020).

⁶ EA at 5.

submission and gave up their right to be heard. How are late commenters to determine whether their comments were actually considered or not? If a late filer seeks judicial review of the Commission's final decision, will the Commission tell the court that the late filer's arguments were not a part of the record because they were submitted after the deadline? The Commission's vague promise to "consider to the extent practicable" is not a solution to the problem of a too-short scoping period, and is therefore not a sufficient justification for failing to extend it.

Unfortunately for the communities who will bear the brunt of the PennEast Pipeline's impacts, the 2020 Amendment Project has been rushed through the NEPA process during a global pandemic. While it may be impossible to know exactly how many voices were shut out by FERC's refusal to extend the commenting deadline, it is abundantly clear that FERC chose to provide large energy companies with leeway that was denied to the public.

B. Lack of Public Hearing

Further curtailing community input, the Commission cited the "limited scope" of the Project as a justification for not extending the comment period and for not holding any public hearings.⁷ In doing so, FERC ignores the major impact that the Church Road Facility will have on Bethlehem Township. When compared to the Project's total area of disturbance, the Church Road Facility is indeed insignificant in terms of the footprint. However, as Bethlehem Township noted in its scoping comment, PennEast's application proposing "an above ground facility with a terminal, interconnections with other pipelines and a [metering and regulation] station is a serious deviation from what Bethlehem Township residents understood to be the project's scope."⁸

In addition, as of the scoping comment deadline, PennEast had not submitted any applications for local approvals in Bethlehem Township, so the residents of Bethlehem Township were not familiar with the Church Road Facilities, and would have benefitted from a public hearing to explain the Project.⁹ In sum, the community being asked to bear the greatest burden was blindsided by PennEast's application, and was given only thirty days to provide input on major above-ground natural gas infrastructure that will be located directly across the street from a 200-plus-unit residential community and near three local schools.¹⁰ A public hearing and extended comment period is necessary to satisfy NEPA's requirement that the Commission "[m]ake diligent efforts to involve the public in preparing and implementing their NEPA procedures."¹¹

⁷ EA at 6.

⁸ Comment of Bethlehem Twp., Northampton Cty., Pa. and Bethlehem Twp. Bd. of Comm'rs under CP20-47, Accession No. 20200330-5149 (March 30, 2020).

⁹ See Bethlehem Twp. Comment at 2.

¹⁰ See Section IV.H.3, *infra*.

¹¹ 40 C.F.R. §1506.6 (2019).

C. Effects of the COVID-19 Pandemic on the Construction Process

The EA is inaccurate as to the anticipated construction time set forth in Section 6.1.¹² PennEast states it “anticipates that construction of the Church Road Facility would take approximately six months and require an estimated labor force of 25 workers during peak construction”¹³ and that construction would not commence until sometime in 2020 when the proper authorizations and approvals are obtained.¹⁴ However, this estimation comes from PennEast’s January 30, 2020 Abbreviated Application for Amendment,¹⁵ which precedes the COVID-19 pandemic. It is very unlikely that such anticipated construction dates and times are still accurate considering the pandemic has affected almost all forms of commerce since it began in early spring of 2020, including delaying construction projects. Thus, the information about when construction on PennEast would start and the duration of the project are most likely inaccurate. New estimates of start and project duration should be determined and noted in the EA.

D. The EA Misconstrues the Status of Permitting

Table A.10-1 of the EA is incomplete and misleading.¹⁶ It shows only four permits that are pending, applied for, or actually issued, but fails to list *all* the needed permits and authorizations. The explanatory language before the table does not make up for the failure to provide all permit information.¹⁷ This table does not include major outstanding or denied permits such as state water permits. A member of the general public may think only the four permits listed in this table are necessary, and thus, the table is misleading. This table should be updated to include all required permit information.

II. The “Phasing” of the Project is Unprecedented and Unsupported by Law

PennEast has styled its request as an amendment that simply seeks to construct the Original PennEast Pipeline in two phases—a request that the Commission has fielded from several natural gas pipeline companies in the past. Precedent shows, however, that phasing was typically approved due to changes in market demand, that pipelines were fully or near-fully subscribed, and that the environmental impacts of the pipelines did not increase. PennEast, on the other hand, proposes construction of Phase 1 based on a legal roadblock preventing it from building the Original PennEast Pipeline, has subscribed only 52% of Phase 1’s capacity, and has increased environmental impacts by constructing the Church Road Facility. This tenuous justification for the construction of Phase 1, combined with the likelihood that Phase 2 will never be built, demands that FERC treat PennEast’s proposal as

¹² EA at 25–26.

¹³ EA at 26.

¹⁴ See PennEast Pipeline, *Frequently Asked Questions*, <https://penneastpipeline.com/faq/> (accessed 9/2/2020).

¹⁵ Abbreviated Application for Amendment to Certificate of Public Convenience and Necessity, CP20-47, Accession No. 20200130-5196 (Jan. 30, 2020) at Exhibit F-1: Environmental Report, at Section 1.4.2.

¹⁶ EA at 10.

¹⁷ See Section X, *infra* (discussing the role of DRBC in the review of Phase 1 and the New PennEast Pipeline).

a different project than the Original PennEast Pipeline, rather than a simple amendment thereof.

A. Prior “Phased” Projects Approved By FERC

PennEast has provided the Commission with examples of certificates of public convenience and necessity that were amended to allow phased construction.¹⁸ Those matters include *Tuscarora Gas Transmission Company*,¹⁹ *Gulfstream Natural Gas System, LLC*,²⁰ *Transcontinental Gas Pipe Line Corp.*,²¹ and *Bison Pipeline, LLC*.²² None of these instances are comparable to the phasing PennEast proposes.

PennEast argues that in “similar circumstances” to its own, FERC has routinely approved phasing of pipeline construction. PennEast focuses on *Tuscarora*, a pipeline project that cut through federal lands managed by the Bureau of Land Management (“BLM”), and, as originally proposed, would include a lateral to a proposed energy facility located on those public lands.²³ While BLM was prepared to approve the right-of-way for *Tuscarora*’s pipeline, the United States Fish and Wildlife Service (“FWS”) was still investigating the effects of the proposed energy facility.²⁴ Thus, BLM and FWS agreed to approve the facilities in two phases by first considering the pipeline, which would serve shippers other than the energy facility, and then by considering the energy facility separately.²⁵

Tuscarora requested an amendment to its certificate of public convenience and necessity to reflect this phasing and allow construction of the pipeline to go forward without the lateral.²⁶ An intervenor in the amendment process argued that “if the Phase 2 lateral facilities are not constructed, *Tuscarora* would have built mainline transmission facilities in excess of that under contract with Phase 1 expansion shippers” which would competitively harm other pipeline companies whose shippers may move to the *Tuscarora* pipeline.²⁷ The Commission concluded that the proposed amendment was in the public interest, specifically noting that “all the capacity proposed for construction in Phase 1 is under contract.”²⁸ Ultimately, Phase 2 and the corresponding energy facility never came to fruition.

In *Gulfstream I*, the pipeline company sought to phase construction based on its shippers requirements and market demands.²⁹ *Gulfstream* modified the timing of construction only, and did not change the scope or nature of the previously-authorized

¹⁸ See Supp. Answer of PennEast Pipeline Company, LLC to Comments on Application, Accession No. 20200417-5272 (Apr. 17, 2020) at 9-15.

¹⁹ 99 FERC ¶ 61,044 (2002).

²⁰ 98 FERC ¶ 61,349 (2002) (“*Gulfstream I*”), 105 FERC ¶ 61,052 (2003) (“*Gulfstream II*”), 119 FERC ¶ 61,250 (2007) (“*Gulfstream III*”).

²¹ 103 FERC ¶ 61,033 (2003).

²² 132 FERC ¶ 62,163 (2010).

²³ *Tuscarora* at 61,175.

²⁴ *Id.* at 61,177–78.

²⁵ *Id.* at 61,178.

²⁶ *Id.*

²⁷ *Id.* at 61,179.

²⁸ *Id.*

²⁹ *Gulfstream I* at 62,479.

facilities.³⁰ The Commission noted in approving the phasing amendment that the project was identical to the one already certificated, and that there were no additional environmental impacts.³¹ In *Gulfstream II*, FERC approved a further subdivision of Phase 2 for substantially the same reasons as the original phasing, and in *Gulfstream III*, FERC authorized minor modifications to the length and diameter of Phase 2I. All three modifications were based on market demands and involved no increase in environmental impacts.

In *Transcontinental Gas*, the pipeline company sought to reduce capacity and phase construction of its certificated pipeline based on changes in market demands.³² The Commission reasoned that because the amended project would be fully subscribed, and because it involved a reduction in environmental impacts, among other factors, the amendment was in the public interest.³³

Finally, in *Bison Pipeline, LLC*, Bison proposed an amendment to a previously-certificated 477 million cubic feet per day (MMcf/d) pipeline that would allow construction of the pipeline and appurtenant facilities in Phase 1, which would deliver 407 MMcf/d due to a decreased market demand. Phase 2 would involve construction of a single compressor station, which would modify the pipeline's capacity so that it could deliver the remaining 70 MMcf/d when market demand materialized.³⁴ Again, FERC emphasized that the proposed amendment would change only the timing of construction, that Phase 1 would provide the full contracted volumes of natural gas to its shippers, and that no additional environmental impact would occur.³⁵ Accordingly, the amendment was approved.

In the matters above cited by PennEast, FERC has focused on the reason for phasing construction, whether the first phase of each pipeline would be fully subscribed, whether the project has substantially changed from the certificated project, and whether environmental impacts have increased or decreased. PennEast is seeking an amendment to its certificate to phase construction not based on a changed market or a delay in environmental review, but because it failed to meet the conditions of its certificate.³⁶ NJDEP denied PennEast's request for a water quality certification, which is required by the federal Clean Water Act.³⁷ Additionally, Phase 1 of the proposed New PennEast Project is currently under contract for approximately only 52% of its total capacity. Furthermore, PennEast's project has substantially changed—there are new interconnections with two major pipelines. Environmental impacts have increased, due to the interconnection facility. Thus, PennEast's requested "amendment" is quite unlike the amendments requested in *Tuscarora*, *Gulfstreams I-III*, *Transcontinental Gas*, or *Bison Pipeline*. These differences mandate a more searching

³⁰ *Id.*

³¹ *Id.*

³² *Transcontinental Gas* at 61,152.

³³ *Id.*

³⁴ *Bison Pipeline, LLC* at 64,505-06.

³⁵ *Id.* at 64,506-07.

³⁶ See Order Issuing Certificates, PennEast Pipeline Company, LLC, CP15-558-000, 162 FERC P 61,053 (2018) at 85 (requiring receipt of "all applicable authorizations required under federal law (or evidence of waiver thereof)").

³⁷ 33 U.S.C. § 1341.

review from the Commission. Phase 1 should be evaluated as a proposed new project in lieu of the Original PennEast Pipeline.

B. Phase 1 Capacity is Only Half-Subscribed

On April 1, 2020, the Commission's Office of Energy Projects requested that PennEast explain the change in volume of gas to be moved by the Phase 1 Project.³⁸ On April 21, 2020, PennEast responded that Phase 1 is designed to provide 650,000 Dth/d of firm transportation capacity "based on the executed Phase 1 precedent agreements, ongoing negotiations with other shippers for Phase 1 service and the demand for natural gas in growing Northeast markets."³⁹ PennEast attempts to bolster its allegation of project need by referring to "ongoing negotiations" and generalized market trends.

Despite this thin justification, the Commission concludes in the EA that "[t]he purpose of the 2020 Amendment Project would be to allow Phase 1 delivery of up to 650,000 dekatherms per day (Dth/d) of firm transportation service to new delivery points"⁴⁰ The true purpose and need ostensibly demonstrated by PennEast's actually-existing precedent agreements is for delivery of 338,000 Dth/d, 52% of total Phase 1 capacity, or 30.7% of the originally-certificated 1.1 million Dth/d capacity.⁴¹ Phase 1 is by no means fully subscribed. In addition, the Commission should not rely on PennEast's assertions that the original precedent agreements for the Project's full capacity are still viable—especially considering that Phase 2 may never be constructed.

C. Future of Phase 2 is Extremely Uncertain

Last year, the Third Circuit blocked PennEast from condemning lands in which the State of New Jersey held an interest, ruling that the Natural Gas Act did not abrogate a state's Eleventh Amendment immunity, and it also did not delegate to private certificateholders the Federal government's exemption from that immunity.⁴² As a result, the New Jersey Department of Environmental Protection denied PennEast's application for various state permits and a Clean Water Act Section 401 water quality certificate, explaining that PennEast could not meet the administrative requirement of having the authority to submit the application with regard to the un-condemnable properties in question.⁴³ On February 18, 2020, PennEast petitioned the United States Supreme Court for a writ of certiorari.⁴⁴ As of the date of this comment, the petition has not yet been granted or denied. Absent a decision from the Supreme Court, the Third Circuit's ruling answers the question of whether Phase 2 will be constructed. The clear answer is no, with an uncertain possibility that the "no" might

³⁸ Environmental Information Request No. 2, Accession No. 20200401-3024 (Apr. 1, 2020) at 2.

³⁹ Response to April 1, 2020 Environmental Information Request, Accession No. 20200421-5192 (Apr. 21, 2020) at 22.

⁴⁰ EA at 3.

⁴¹ See Section IV.A, *infra*.

⁴² See *In re PennEast Pipeline Company*, 938 F.3d 96 (3d Cir. 2019).

⁴³ Letter from Diane Dow, Director, Division of Land Use Regulation, New Jersey Dept. of Env'tl. Prot. to Anthony C. Cox, V.P., PennEast Pipeline Co., LLC (Oct. 8, 2019).

⁴⁴ Petition for Writ of Certiorari, *PennEast Pipeline, LLC v. State of New Jersey*, No. 19-1039 (U.S.).

become a “yes” at some point in the future. While the Commission may believe that it makes sense to issue a certificate of necessity while state and local approvals are still pending, the NGA cannot be said to authorize a project *after* federally-required permits have been denied.

Recently, the North Carolina Department of Environmental Quality (“NCDEQ”) denied a Clean Water Act Section 401 Certification to Mountain Valley Pipeline LLC (“MVP”) for their Southgate project pipeline, because it depended on the completion of MVP’s Mainline project.⁴⁵ In that letter, NCDEQ acknowledged that “several federal permits necessary for the construction of the MVP Mainline project have been suspended or are pending, with some in litigation.” Accordingly, the “uncertainty of the MVP Mainline project’s completion presents a critical risk to the achievability of the fundamental purpose of MVP Southgate.”⁴⁶

Here, we are faced with the same dilemma, but in a single project. FERC must acknowledge the very likely outcome that Phase 2 of the PennEast Pipeline will never be constructed. In light of that possibility, FERC must start from scratch in its analysis of Phase 1—If PennEast had come to FERC with Phase 1 as a stand-alone project, would a certificate be warranted? Without answering this question via the NEPA and NGA process, FERC will be “[a]pproving construction activities and thereby allowing the most adverse environmental impacts . . . without certainty of the project’s utility upon completion”—a practice “inconsistent with principles of minimization.”⁴⁷

III. FERC Must Prepare an EIS

As it stands, PennEast will not be able to construct the Original PennEast Pipeline. Should the Commission choose to approve the 2020 Amendment Project, PennEast would be able to construct at least Phase 1. Thus, the Commission’s approval would be a “major Federal Action[] significantly affecting the quality of the human environment,” thus requiring a “‘detailed statement’ discussing and disclosing the environmental impact of the action.”⁴⁸ Even if the 2020 Amendment Project is styled as a simple amendment to an already-approved and ready-to-go pipeline project, the amendment warrants a supplemental EIS.

CEQ regulations provide that agencies “shall prepare supplements to . . . final environmental impact statements if . . . [t]here are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.”⁴⁹ Here, there are four particularly relevant new circumstances: (1) PennEast is currently prohibited from constructing its pipeline in New Jersey; (2) PennEast is seeking to add the Church Road Facility, which includes interconnections with two major pipelines; (3) PennEast proposed to connect its pipeline with the new Adelpia Gateway pipeline; and (4)

⁴⁵ See Letter to Kathy Salvador, Mountain Valley Pipeline LLC, from S. Daniel Smith, Director, Div. of Water Res. N.C. Dept. of Env’tl. Quality (Aug. 11, 2020) (Attached as Exhibit A).

⁴⁶ *Id.*

⁴⁷ See *id.*

⁴⁸ *Sierra Club v. Fed. Energy Regulatory Comm’n*, 867 F.3d 1357, 1367 (D.C. Cir. 2017) (quoting 42 U.S.C. S 4332(2)(C)); see also 40 C.F.R. S 1508.18(b)(4) (federal actions include approval of specific projects).

⁴⁹ 40 C.F.R. § 1502.9(c)(1)(ii).

PennEast has provided evidence of market demand for a much lesser amount of natural gas at 338,000 Dth/d.

These circumstances significantly alter the PennEast Pipeline from what the Commission initially approved and certificated in CP15-558-000. “It would be incongruous with . . . the Act’s manifest concern with preventing uninformed action, for the blinders to adverse environmental effects, once unequivocally removed, to be restored prior to the completion of agency action simply because the relevant proposal has received initial approval.”⁵⁰ Thus, “[i]f there remains ‘major Federal actio[n]’ to occur, and if the new information is sufficient to show that the remaining action will ‘affec[t] the quality of the human environment’ in a significant manner of to a significant extent not already considered, a supplemental EIS must be prepared.”⁵¹

When courts review an agency’s environmental analysis, decision not to prepare an analysis, or decision not to supplement an existing EIS, a “rule of reason” is used.⁵² “The overarching question is whether . . . deficiencies are significant enough to undermine informed public comment and informed decisionmaking.”⁵³ NEPA requires informed public comment and informed decisionmaking by “focusing Government and public attention on the environmental effects of proposed agency action,” and “ensur[ing] that the agency will not act on incomplete information, only to regret its decision after it is too late to correct.”⁵⁴ Without a proper framing of the 2020 Amendment Project within the structure of NEPA, there is a substantial risk that the Commission will act on incomplete information, and both the Commission and the public may regret the decision to allow a 68-mile greenfield pipeline to be constructed to deliver only 338,000 Dth/d, when other system alternatives were available to handle that demand.

IV. FERC’s EA Is Arbitrary and Capricious in Several Respects

A. FERC’s Statement of Purpose and Need is Unsupported by the Record

A “purpose and need” statement under NEPA “briefly specif[ies] the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action.”⁵⁵ It also “defines the goals of the project to allow for the review of an appropriate range of alternatives.”⁵⁶ As we pointed out in our Comment in Opposition to the Abbreviated Application, an accurate statement of purpose and need should “include

⁵⁰ *Marsh v. Or. Nat. Res. Coun.*, 490 U.S. 360, 371 (1989).

⁵¹ *Id.* at 374 (quoting 42 U.S.C. S 4332(2)(C)).

⁵² *Mayo v. Reynolds*, 875 F.3d 11, 20 (D.C. Cir. 2017).

⁵³ *Id.* (quoting *Sierra Club*, 867 F.3d at 1368).

⁵⁴ *Marsh*, 490 U.S. at 371.

⁵⁵ 40 C.F.R. § 1502.13 (2019).

⁵⁶ *Stop the Pipeline v. White*, 223 F. Supp. 2d 957, 971 (S.D. Ohio 2002) (citing *Citizens Against Burlington v. Busey*, 938 F.2d 190, 195-96 (D.C. Cir. 1991)).

information such as ‘where the gas must come from, where it will go, [and] how much it will deliver[.]’⁵⁷

In crafting the statement of purpose and need, the Commission correctly recognized that PennEast is proposing two projects: (1) the Phase 1 Project, and (2) a new and expanded version of the PennEast project that includes the interconnection with the Adelpia and Columbia pipelines (“New PennEast Project”). However, the Commission has taken at face value PennEast’s assertion that Phase 1 requires a capacity of 650,000 Dth/d, and that Phase 2/the New PennEast Project will be exactly like the originally-certificated project in every way.

The Commission defines the purpose and need of Phase 1 as “allow[ing] Phase 1 delivery of up to 650,000 dekatherms per day (Dth/d) of firm transportation service to new delivery points with existing Columbia Gas Transmission, LLC (Columbia) and Adelpia Gateway, LLC (Adelpia) at the proposed new Church Road Interconnects facility.”⁵⁸ PennEast has provided evidence, in the form of precedent agreements, of the need for only 52% percent of this capacity—338,000 Dth/d. In support of the remaining capacity, PennEast vaguely refers to “ongoing negotiations,” which have apparently not produced contracts in the seven months since PennEast submitted its abbreviated application. Accordingly, the statement of purpose and need should be revised to reflect a lesser capacity. The Commission should also clarify whether delivery to Adelpia is truly a necessary component of the project, as both PennEast and FERC have alternately claimed that it is, in the context of the purpose/need and alternatives analysis,⁵⁹ and that it is not, in claiming that Adelpia is not a “connected action.”⁶⁰ Both cannot be true.

The purpose and need of Phase 2/the New PennEast Pipeline is then defined as “the same purpose and need reflected in the Final Environmental Impact Statement (FEIS) issued in Docket No. CP15-558-000, as supplemented by the EA in CP19-78-000.”⁶¹ The purpose and need of Phase 2/the New PennEast Pipeline requires additional clarification. As an initial matter, it is unclear what role the interconnection with Columbia Gas Transmission and Adelpia Gateway pipelines will serve once Phase 2 is completed. Will 650,000 Dth/d (or 338,000 Dth/d) continue to be delivered to those points while 1.1 million Dth/d are delivered to the original terminus—Transco’s Mainline Pipeline in New Jersey? Will the contracts for Phase 1 terminate and the New PennEast Pipeline operate exactly as contemplated in CP15-558-000 regardless of the new interconnections? Will PennEast seek to add compressor stations to increase the capacity of the pipeline to deliver gas to all three delivery points—Columbia Gas Transmission, Adelpia Gateway, and Transco’s Mainline? The purpose and need statement for Phase 2/the New PennEast Pipeline should accurately reflect exactly how PennEast plans to operate the completed pipeline with the new

⁵⁷ Comment of Del. Riverkeeper Network, et al. in Opposition of PennEast Pipeline Company, LLC’s Abbreviated Application for Amendment under CP20-47, Accession No. 20200304-5296 (Mar. 4, 2020) at 5 (quoting *Sierra Club, Inc. v. U.S. Forest Serv.*, 897 F.3d 582, 599 (4th Cir. 2008)).

⁵⁸ EA at 3.

⁵⁹ See EA at 3, 76-79; Section IV.J.6, *infra*.

⁶⁰ See EA at 7; Section IV.B, *infra*.

⁶¹ EA at 3.

interconnections. If Phase 1 is simply a placeholder, and the Church Road Facility and interconnections have no purpose after the completion of Phase 2, then FERC’s consideration of the public benefits of Phase 1 should be reduced in proportion to this temporal limitation.⁶²

B. FERC Has Improperly Segmented its Review of the Project

The scope of a NEPA analysis “consists of the range of actions, alternatives, and impacts to be considered” including connected, cumulative, and similar actions, as well as direct, indirect and cumulative impacts.⁶³ “An agency impermissibly ‘segments’ NEPA review when it divides connected, cumulative, or similar federal actions into separate projects and thereby fails to address the true scope and impact of the activities that should be under consideration.”⁶⁴

Here, the Commission has segmented its review of Phase 1 by excluding the construction and operation of the pipeline from MP 0.0 to MP 68.2R2 with the amendments approved in CP19-78-000, as well as by excluding the construction and operation of the Adelpia Gateway pipeline. The Commission also segmented its review of Phase 2/the New PennEast Pipeline by relying on the FEIS for the Original PennEast Pipeline and not considering those impacts in conjunction with the impacts of the Church Road Facility, interconnections with Columbia Gas Transmission and Adelpia Gateway pipelines, and construction and operation of the Adelpia Gateway pipeline itself.

In the EA for the 2020 Amendment Project, FERC defines the scope of its analysis as primarily “limited to potential impacts from construction and operation of the proposed new aboveground facility—the Church Road Interconnects.”⁶⁵ With regard to “air quality, socioeconomics, and cumulative impacts,” however, FERC “also consider[s] impacts from the proposed phasing of pipeline construction where those impacts could differ from the impacts evaluated under Docket Nos. CP15-558-000 and CP19-78-000.”⁶⁶ By adopting this narrow scope of review, FERC has impermissibly segmented its review of the project. The appropriate scope of FERC’s analysis must include the following actions for review with regard to Phase 1 as a stand-alone project: construction and operation of the pipeline through MP 68.2R2 in accordance with the amended route described in CP19-78-000, construction and operation of the Church Road Facility, and construction and operation of the Adelpia Gateway pipeline. The appropriate scope of FERC’s analysis of Phase 2/the New PennEast Pipeline must incorporate all of the above, plus construction and operation of the remainder of the pipeline.

In its response to scoping comments, PennEast repeatedly claims that commenters are asking the Commission to “dismiss” or “discard” the FEIS prepared in CP15-558-000 and

⁶² See Section V, *infra*.

⁶³ 40 C.F.R. S 1508.25.

⁶⁴ *Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1313 (D.C. Cir. 2014).

⁶⁵ EA at 4.

⁶⁶ *Id.*

the EA prepared in CP19-78-000.⁶⁷ These analyses need not be discarded, but must be incorporated and updated in a new EIS that provides a comprehensive analysis of the PennEast Pipeline as it will actually exist on the ground. If PennEast is asking FERC to approve a different pipeline than that certificated in CP15-558-000 and amended by CP19-78-000, then it is reasonable for FERC’s environmental analysis to evaluate that different pipeline.

PennEast goes on to correctly point out that the Council on Environmental Quality (“CEQ”) regulations implementing NEPA direct agencies to supplement an EIS when there are substantial changes to a proposed action relevant to environmental concerns.⁶⁸ However, PennEast’s response gets it wrong by claiming that there are no significant new circumstances warranting a supplementation.⁶⁹ As explained in Section III of this comment, *supra*, there are at least four significant new circumstances that dramatically alter the project. The FEIS prepared in CP15-558-000 still contains valuable and relevant information, however, that information must be amended and analyzed in light of the new purpose and need of the 2020 Amendment Project, which includes the PA Route Amendments, CP19-78-000, and the Adelphia Gateway pipeline, CP18-46-000.

When analyzing whether two or more projects are connected as “interdependent parts of a larger action and depend on the larger action for their justification,”⁷⁰ “the essential question is whether the segmented projects have independent utility.”⁷¹ “Projects have independent utility where ‘each project would have taken place in the other’s absence.’”⁷²

PennEast’s Response to Scoping Comments goes to great lengths explaining why Adelphia Gateway pipeline in particular should not be considered a “connected action” in the Commission’s NEPA analysis of the 2020 Amendment Project. PennEast creates its own rule based on the sequence of proposals: “as long as a first-in-time project will proceed regardless of the outcome of a second anticipated project (*i.e.*, the first project has independent utility), the two actions are not connected for purposes of NEPA.”⁷³ While it is true that courts have considered sequentially-proposed projects and found that the first proposed project had independent utility,⁷⁴ this does not translate into a hard-and-fast rule that so long as the first project has independent utility, an agency can conclude that any subsequent project is not connected. In fact, when two connected projects are proposed sequentially, the first-proposed project will *always* appear to have independent utility—otherwise, the proposal would be nonsensical. Hence, an agency must evaluate *each* proposed action to determine if it truly has independent utility. Otherwise, an agency or private party could propose a small project with independent utility, which would be subject to an EA/FONSI, and then

⁶⁷ Response to Comments Received During Scoping Period, Accession No. 20200427-5061 (Apr. 24, 2020) at 5–6.

⁶⁸ Response to Scoping Comments at 6; 40 C.F.R. § 1502.9(c)(1) (2019).

⁶⁹ Response to Scoping Comments at 23–24.

⁷⁰ 40 C.F.R. § 1508.25(a)(1)(iii) (2019).

⁷¹ *Twp. of Bordentown v. Fed. Energy Regulatory Comm’n*, 903 F.3d 234, 249 (3d Cir. 2018).

⁷² *Id.* (quoting *Webster v. U.S. Dep’t of Agriculture*, 685 F.3d 411, 426 (4th Cir. 2012)).

⁷³ Response to Scoping Comments at 9.

⁷⁴ *Wee, e.g. Hudson River Sloop Clearwater, Inc. v. Dep’t of Navy*, 836 F.2d 760, 763 (2d Cir. 1988).

continued to propose small additions to that project without independent utility, each subject to an EA/FONSI, until a very large project exists that would have been subject to an EIS if proposed in its complete form.

As the D.C. Circuit made clear in *Delaware Riverkeeper Network*, an agency or private party proposing an action may not know at the time it commences one project that it will be embarking on a series of other projects that will soon amount to a larger project—the relevant issue is whether the agency is “justified in rejecting commenters’ requests that it analyze the entire . . . project once [a later component] was under review and once the parties had pointed out the interrelatedness of the sequential [projects.]”⁷⁵ Here, like in *Delaware Riverkeeper Network*, “previous and following projects [are and] were also under construction or review,” and “each phase of the development fit[s] with the others like puzzle pieces to complete an entirely new pipeline.”⁷⁶ That is to say, CP15-558-000, CP18-46-000, CP19-78-000, and CP20-47-000 are all sequential projects, which, together, create an entirely new pipeline as compared to the pipeline certificated in CP15-558-000.

Finally, PennEast sets up the strawman argument that commenters seek to make all linear pipeline projects “connected actions” for the purposes of NEPA based on physical interconnection alone.⁷⁷ If this were true, commenters would argue that the environmental impacts of Columbia Gas Transmission and Transco pipelines should also be considered as part of the Commission’s analysis. Instead, what commenters argue, and what the rule against segmentation requires, is that while physically connected projects can be analyzed separately under NEPA when the Commission considers the projects non-contemporaneously and when the projects have substantial independent utility,⁷⁸ actions must be considered together in the same EA or EIS when the projects are “connected and interrelated,” are “functionally and financially interdependent,” and have “significant ‘temporal overlap’ because they [are] ‘either under construction’ or ‘pending before the Commission for environmental review and approval’ at the same time.”⁷⁹

The Original PennEast Pipeline (CP15-558-000), the PA Route Amendments (CP19-78-000), the Adelphia Gateway Pipeline (CP18-46-000), and the 2020 Amendment Project (CP20-47-000) are connected and interrelated: CP15-558-000, CP19-78-000, and CP20-47-000 are all part of the same pipeline; and CP18-46-000 serves as one of two delivery points for Phase 1 of CP20-47-000, and is a part of Phase 1’s purpose and need.⁸⁰ The projects also appear to be functionally and financially interdependent—although FERC and PennEast claim that Phase 1 could be built without an interconnection to Adelphia Gateway, the fact that Adelphia is included as a part of the 2020 Amendment Project’s purpose and need and that no alternatives without Adelphia were considered in FERC’s EA belies that claim. Again, CP15-558-000, CP19-78-000, and CP20-47-000 are all a part of the same proposed pipeline, therefore they are functionally and financially interdependent. Finally, there is a temporal

⁷⁵ *Del. Riverkeeper Network*, 753 F.3d at 1318.

⁷⁶ *Id.* at 1318–19.

⁷⁷ Response to Comments at 9.

⁷⁸ See *City of Boston Delegation v. Fed. Energy Regulatory Comm’n*, 897 F.3d 241, 251–52 (D.C. Cir 2018).

⁷⁹ *Id.* at 252 (citations omitted) (quoting *Del. Riverkeeper Network*, 753 F.3d at 1308, 1309).

⁸⁰ See EA at 3.

overlap—while CP18-46-000, CP19-78-000, and CP20-47-000 have moved or are moving through FERC’s environmental review and approval, construction on the PennEast Pipeline has not yet even begun. Because these proposals came to FERC’s attention and under FERC’s jurisdiction prior to the commencement of construction on the PennEast Pipeline, FERC has the opportunity and the obligation to consider them together in its environmental review of CP20-47-000, the 2020 Amendment Project.

A comprehensive EIS that analyses each of these actions and their impacts would not require that FERC start from scratch—the PennEast Pipeline FEIS, the Adelpia Gateway Pipeline EA, and the PA Route Amendments EA each provide a wealth of environmental analysis. FERC need only: (1) amend with missing information,⁸¹ (2) redefine the statements of purpose and need in accordance with updated information about Phase 1 and the New PennEast Pipeline.⁸²

C. FERC’s Baseline for its NEPA Analysis Improperly Includes the Original PennEast Pipeline as a Given, Rather than Evaluating the Environment as it Exists Today

The Commission claims that its EA “describes the affected environment as it currently exists,”⁸³ however, throughout the analysis, the Commission operates on the baseline assumption that the Original PennEast Pipeline is certain to be built and that the only additional impact that needs to be evaluated is the Church Road Facility. This error is evident in the Commission’s alternatives analysis, which includes the already-certificated PennEast Pipeline as a part of the “no action” alternative.⁸⁴ By analyzing the impacts of the Church Road Facility as if the Original PennEast Pipeline has already been built, the Commission disjoins its NEPA analysis from reality, thus rendering it useless as both a “hard look” at the environmental consequences of the 2020 Amendment Project, and as a public disclosure of those consequences.⁸⁵

Instead, because PennEast is currently legally prohibited from constructing the Original PennEast Pipeline, the Commission should have described the environment as it *actually* currently exists—without a pipeline. Then, while re-using some data and analysis from the FEIS and adding new and previously missing information,⁸⁶ FERC should have

⁸¹ Delaware Riverkeeper Network has identified several discrepancies in past NEPA analyses for these projects that should be remedied in a comprehensive EIS. *See* Request for Rehearing of Delaware Riverkeeper Network, PennEast Pipeline Company, LLC, Docket No. CP15-558-000, Accession No. 20180124-5153 (Jan. 24, 2018) (Attached as Exhibit B); Petition for Rehearing of Delaware Riverkeeper Network and the Delaware Riverkeeper, Adelpia Gateway, LLC, Docket Nos. CP18-46-000, CP18-46-001, Accession No. 20200121-5138 (Jan. 21, 2020) (Attached as Exhibit C); Delaware Riverkeeper Network and the Delaware Riverkeeper’s Petition for Rehearing, PennEast Pipeline Company, LLC, Docket No. CP19-78-000, Accession No. 20200420-5289 (Apr. 20, 2020) (Attached as Exhibit D).

⁸² *See* Section IV.A, *supra*.

⁸³ EA at 3.

⁸⁴ EA at 77; Section IV.J.2, *infra*.

⁸⁵ *See Sierra Club*, 867 F.3d at 1368.

⁸⁶ *See* Section IV.B, *supra*.

concluded that the impact of constructing and operating Phase 1 was a major Federal action significantly affecting the quality of the human environment.⁸⁷

D. FERC Failed to Consider the Environmental Impacts of the 2020 Amendment Project that Will Be Caused by Upstream Production and Downstream Consumption of Natural Gas.

In our March 30, 2020 scoping comment, DRN, CAC, and PennFuture highlighted FERC's obligation to consider the environmental impacts of upstream production of natural gas, including greenhouse gas emissions and their effect on climate change, as well as impacts associated with siting of wells such as drilling, land disturbance, water withdrawal, material handling and waste management, operation of equipment, drinking water impacts, health and safety impacts, harm to wetlands, habitat, forest, and floodplains.⁸⁸ We also provided an updated calculation of downstream emissions, and explained how the social cost of carbon could be used to measure the impacts of these emissions on the human environment.⁸⁹ We hereby incorporate our discussion of these upstream and downstream impacts by reference, as they should have been, but were not, analyzed in FERC's EA for this project.

In its EA, the Commission asserted that it has already addressed "climate change, upstream impacts, and downstream use for the PennEast Pipeline Project in Docket Nos. CP15-558-000, CP15-558-001, CP19-78-000, and CP19-78-001" and that "the limited scope of the proposed 2020 Amendment Project does not raise new impacts that would alter the staff's previous environmental analyses"⁹⁰ As highlighted in our scoping comment, however, the Commission in fact declined to analyze these impacts.⁹¹

"[O]ne of the fundamental purposes of NEPA is to require consideration of questions of general or broad significance, such as chemical pollution, alternative modes of transportation, and world resource exploitation. The act expressly requires recognition of 'the worldwide and long-range character of environmental problems,' and one of the specific elements to be studied . . . is 'the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity.'"⁹² FERC's failure to meaningfully engage in a climate change analysis violates NEPA.⁹³ Furthermore, as previously explained in Section IV.B of this comment, the Commission's scope in reviewing the 2020 Amendment Project is arbitrarily narrow, as it fails to evaluate the pipeline project as a whole, which, if the 2020 Amendment Project is approved, will be substantially different from the project originally certificated.

⁸⁷ See 42 U.S.C. § 4332(2)(C).

⁸⁸ See Scoping Comment at 13-19.

⁸⁹ See Scoping Comment at 19-22.

⁹⁰ EA at 5.

⁹¹ See Scoping Comment at 13; see also OFFICE OF ENERGY PRODUCTS, FEDERAL ENERGY REGULATORY COMMISSION, PENNEAST PIPELINE PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT at 4-258, FERC\EIS:0271F (Apr. 2017).

⁹² *Swain v. Brinegar*, 517 F.2d 766, 775 (7th Cir. 1975) (first quoting 42 U.S.C. § 4332(2)(E), and then quoting 42 U.S.C. § 4332(2)(C)).

⁹³ See *Sierra Club*, 867 F.3d at 1371-75.

DRN, CAC, and PennFuture provided FERC with updated analysis of upstream impacts based on new information presented in the 2020 Amendment Project.⁹⁴ There is no reason why the Commission could not or should not incorporate such an analysis in an EIS, as these impacts are caused by, and are a foreseeable result of, the 2020 Amendment Project.⁹⁵

E. FERC Failed to Address Information and Analyses Missing from Prior Evaluations of the PennEast Pipeline Project.

In our scoping comment, DRN, CAC, and PennFuture raised specific issues regarding data gaps from the Commission's environmental review of the original PennEast Pipeline.⁹⁶ Because FERC failed to address any environmental impacts beyond the Church Road Facility and the phasing of construction in its EA for CP20-47,⁹⁷ these issues remain unaddressed. Accordingly, FERC's erroneous decision to narrow the scope of its review resulted in the additional error of failing to address outstanding data regarding the environmental impacts of the PennEast Pipeline. We hereby incorporate by reference those issues raised in our Scoping Comment, and assert that the Commission was required to address them in its environmental analysis of the 2020 Amendment Project.⁹⁸ In addition, Exhibits B–D to this comment include Delaware Riverkeeper Network's requests for rehearing in FERC Dockets CP15-558-000, CP18-46-000, and CP19-78-000, which describe errors made by the Commission in its NEPA analyses for those projects.

F. FERC's Analyses of Air Quality, Health Impacts, and Noise are Deficient.

Section 7.0 of the EA,⁹⁹ on Air Quality and Noise, suffers from major omissions and deficiencies, in addition to several minor and correctable errors. Among the major problems are FERC's failure to consider acute health impacts from air pollution and its outdated information about the air quality permitting of the Kidder Compressor Station.

1. FERC Improperly Ignores Acute Health Impacts from Gas Infrastructure.

Acute health impacts are vital to consider and cannot be evaluated using mere annual emissions tallies. This is particularly important when considering blowdowns and other venting incidents. Blowdowns are known to cause acute illness in people living near gas compressor stations. The Attorney General of Pennsylvania convened a Grand Jury to investigate potential environmental crimes in the fracking industry in Pennsylvania. The Grand Jury produced a report recently, documenting many findings that a state judge then found to be proved.¹⁰⁰ Among these findings were descriptions of the impacts on residents

⁹⁴ See Scoping Comment at 13-22.

⁹⁵ See 40 C.F.R. § 1508.25 (2019); 40 C.F.R. § 1508.7 (2019); *Sierra Club*, 867 F.3d at 1373.

⁹⁶ See Scoping Comment at 27-45.

⁹⁷ See Section IV.B, *supra*.

⁹⁸ See Scoping Comment at 27-45.

⁹⁹ EA at 29-49.

¹⁰⁰ OFFICE OF THE ATTORNEY GENERAL, COMMONWEALTH OF PENNSYLVANIA, REPORT 1 OF THE FORTY-THIRD STATEWIDE INVESTIGATING GRAND JURY, available at <https://www.attorneygeneral.gov/wp->

from acute emissions from compressor stations—emissions which FERC does not consider whatsoever in the EA. The Grand Jury wrote:

Various homeowners all described emissions from compressor stations smelling like chlorine. Noxious gases generated from compressor stations would permeate the interior and exterior of peoples' homes, causing burning eyes, headaches, and sores in their mouths, and the development of serious illnesses. Blood tests would confirm the presence of contaminants in people who had been exposed to these gaseous emissions.

Health symptoms related to exposure to routine emissions were numerous and deeply troubling. Respiratory problems, headaches, dizziness, and burning eyes were commonplace. Children in particular experienced nosebleeds and extreme stomach pain. People told us that after the industry came into their lives they experienced weight loss, neuropathy (nerve pain), tremors and shaking, nose and throat pain.¹⁰¹

No EA would be complete without seriously considering the grave health impacts caused by acute emissions from gas infrastructure.

These emissions would affect residents of areas already burdened by elevated levels of pollution, since the areas are mostly in nonattainment of the NAAQS.¹⁰² It has been well-settled for decades that NEPA's ultimate goal is the protection of human health and welfare and the physical environment.¹⁰³ FERC must therefore undertake a full and substantive analysis of the potential environmental and health effects of NO_x, VOCs, greenhouse gases and other pollutants—including fugitive emissions and health impacts from short-term emissions—that would be generated if the Project were to go forward.

2. PennEast has Withdrawn its Application for a State-Only Operating Permit for the Kidder Compressor Station and the Emissions Data FERC Uses Contradicts the Latest Data PennEast Submitted to State Regulators.

The EA appears to have outdated and erroneous information about the emissions and air quality permitting of the Kidder Compressor Station. In Section 7.3.1.1, FERC writes that “The compressor turbines, emergency generator, and fuel gas heater at the Kidder Compressor Station would be required to apply to the PADEP for a preconstruction permit,

<content/uploads/2020/06/FINAL-fracking-report-w.responses-with-page-number-V2.pdf>, attached as Exhibit E.

¹⁰¹ *Id.* at 36–37.

¹⁰² See EA at Table B.7.3-2.

¹⁰³ See *Metropolitan Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 771 (1983) (“All the parties agree that effects on human health are cognizable under NEPA . . .”), 773 (“NEPA states its goals in sweeping terms of human health and welfare . . . [T]hese goals are ends that Congress has chosen to pursue by means of protecting the physical environment.”) (original emphasis omitted).

as well as a state-only operating permit, and the compressor turbines would be required to demonstrate the use of Best Available Technology for control of emissions.”¹⁰⁴ That is not true.

PennEast has *withdrawn* its application for a state-only operating permit for the Kidder Compressor Station. The announcement was made in the *Pennsylvania Bulletin* on August 15, 2020.¹⁰⁵ In place of seeking a state-only operating permit, PennEast is seeking a general permit for the station, which will not require it to make a demonstration of Best Available Technology.¹⁰⁶ However, PADEP has flagged the application as deficient multiple times.¹⁰⁷ As a result, it is entirely unclear what the end result of the permitting for the Kidder Compressor Station will look like. It will not, however, match what the EA has said it is.

Moreover, the Phase 1 Operating Emissions data that FERC lists for the Kidder Compressor Station in Table B.7.3-6 contradicts that which PennEast submitted to the Pennsylvania Department of Environmental Protection in July 2020. Table 1 in the Emissions Calculations sheet PennEast submitted in support of its GP-5 application lists Phase 1 Operating Emissions as well, and has different numbers for all of the tons per year emissions figures.¹⁰⁸ FERC needs to get to the bottom of this discrepancy and re-do the air quality analysis based on whatever the actual, accurate figures are.

3. *The Section on Air Quality and Noise Suffers from Several Deficiencies*

Beyond these major issues, there are other problems with Section 7 of the EA.

a) Attainment and Greenhouse Gas Analyses are Incomplete or Misleading

FERC analysis of air quality impacts on the Project area is based on inaccurate information because it misunderstands the current air quality and climate science. In Table B.7.2-3, “Attainment Status for 2020 Amendment Project Components,” Bucks County’s attainment is listed as “Marginal for O₃ 2008.”¹⁰⁹ But this only tells part of the story because this statistic has been updated since 2008 and Bucks County was categorized as “Marginal for O₃ 2015” as well.¹¹⁰ The Green Book also lists Hunterdon County as *serious* for 8-hour O₃ (2008) rather than *marginal* as FERC indicates in this table.¹¹¹ Thus, Table B.7.2-3 contains

¹⁰⁴ EA at 37.

¹⁰⁵ 50 Pa.B. 4146 (“13-00019A: PennEast Pipeline Company, LLC (835 Knitting Mills Way, Wyomissing, PA 19610) terminated on July 23, 2020 for the proposed construction and operation of Kidder Compressor Station, which will be constructed as part of the PennEast Pipeline Project to be located in the Kidder Township, Carbon County.”). See also PADEP eFACTS, Authorization Search Details for Permit No. 13-00019A (“Status: Withdrawn on 7/23/2020”)

(https://www.ahs.dep.pa.gov/eFACTSWeb/searchResults_singleAuth.aspx?AuthID=1131707).

¹⁰⁶ See PADEP eFACTS, Authorization Search Details for Permit No. AG5-13-00001A

(https://www.ahs.dep.pa.gov/eFACTSWeb/searchResults_singleAuth.aspx?AuthID=1324263).

¹⁰⁷ See *id.* (on both 8/26/2020 and 8/24/2020: “Applicant has been issued a deficiency letter.”)

¹⁰⁸ See <https://www.ahs.dep.pa.gov/ePermitPublicAccess/Public/DownloadFileFromOnBase/36554>, attached as Exhibit F.

¹⁰⁹ EA at 32.

¹¹⁰ See EPA GREEN BOOK, https://www3.epa.gov/airquality/greenbook/anayo_pa.html.

¹¹¹ *Id.*

outdated air quality attainment data that understates the pollution load residents of these counties experience. FERC needs to review the data shown in this table and provide the most up-to-date and complete information for this EA, including information for attainment for Bucks County.

FERC's discussion of greenhouse gases ("GHG") in the eponymously-titled paragraph of Section 7.0 is also erroneous and adds to the inaccuracy of the conclusion that FERC makes about PennEast's total contribution to global warming.¹¹² The EA needs to take into account the full effect of the PennEast pipeline on global warming. First, FERC states that "GHG, including CO₂, CH₄, N₂O, hydrofluorocarbons, and perfluorocarbons, are naturally occurring pollutants in the atmosphere and products of human activities, including burning fossil fuels."¹¹³ However, per the EPA, perfluorocarbons, with the exception of carbon tetrafluoride, are not naturally occurring.¹¹⁴ Hydrofluorocarbons are also not naturally occurring, per the National Oceanic and Atmospheric Administration.¹¹⁵ To lump these two man-made chemicals into the "natural" category is misleading and creates confusion in exactly how much and what kind of an impact a pipeline has in GHG generation and on global warming.

FERC also underestimates the total global warming effect of PennEast by failing to use the correct global warming potential value for methane. FERC states the global warming potential ("GWP") of methane is 25 years in its discussion of GHG. But 25 years is far from accurate because the EPA has identified the GWP of methane to be 28-36 over 100 years.¹¹⁶

FERC needs to update the EA and re-do the air quality analysis to base it on accurate information about how pipeline construction and operation affects air quality, GHG generation, and global warming.

b) Dust Suppression Plans are Outdated

In Section 7.3.2.1, FERC discusses the mitigation plans for dust creation at pipeline construction sites, but certain mitigation measures are outdated.¹¹⁷ FERC identifies "suitable dust suppression chemicals" might be used to control dust at construction sites as part of the "Fugitive Dust Control Plan" PennEast plans to use.¹¹⁸ However, this plan was drafted in 2015 or earlier,¹¹⁹ which was before the DEP stopped allowing the use of radioactive waste

¹¹² See EA at 33.

¹¹³ *Id.*

¹¹⁴ See <https://www.epa.gov/pfas/what-are-pfcs-and-how-do-they-relate-and-polyfluoroalkyl-substances-pfass>.

¹¹⁵ See <https://www.ncdc.noaa.gov/monitoring-references/faq/greenhouse-gases.php>.

¹¹⁶ See EPA, *Understanding Global Warming Potentials*, <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>, accessed August 23, 2020.

¹¹⁷ EA at 38-41.

¹¹⁸ EA at 39.

¹¹⁹ FERC cites to Appendix L-5 of the original September 2015 application under Docket No. CP15-558-000 (see Accession No. 20150925-5028).

as a roadway dust suppressant.¹²⁰ Therefore, PennEast might be considering spraying on roads radioactive frack brine or other potentially hazardous chemicals. FERC should not allow radioactive chemicals to be used as a means to control dust for this project and should restrict dust suppression materials to pure water. Thus, the Fugitive Dust Control Plan needs to be updated, as well as the EA, to reflect the usage of only water to suppress dust.

c) Project Impacts on Air Quality are Incomplete

The conclusion that FERC makes at the end of Section 7.3.2.1 on Construction Emissions is baseless. FERC states: “[d]ue to the temporary nature of construction activities, and with the implementation of the mitigation measures discussed in the FDCP, we conclude that construction of the 2020 Amendment Project would not have a significant impact on air quality.”¹²¹ FERC provides no rationale for this conclusion. In fact, FERC notes in a preceding paragraph that “2020 Amendment Project estimates that construction emissions would increase for most aspects of construction.”¹²² In addition, the totals for emissions that FERC computes in Table B.7.3-5 are quite large, with 87,000 tons of CO₂e, 2,000 tons of coarse particulate matter, over 200 tons of NO_x, and almost 3 tons of hazardous air pollutants. Under the Clean Air Act, those volumes of NO_x and coarse particulate matter are considered significant.

FERC also notes that “[f]ollowing construction, air quality would not revert back to previous conditions, but would transition to permanent operational-phase emissions after commissioning and initial start-up.”¹²³ Given that this is only one of the few conclusions FERC makes in this section, it does not follow that FERC concludes that this project would not have a significant impact on air quality. FERC needs to either remove this conclusion or provide evidence and reasoning to back up the statement that this project will not have a significant impact on air quality.

FERC’s lack of support and analysis on the amount and severity of emissions from the PennEast project also exists again, at the end of Section 7.3, which should either be removed or explained. FERC notes that “[d]ue to the temporary nature of construction emissions and with the implementation of the mitigation measures discussed for operational emissions, and the FDCP of the 2020 Amendment Project, we conclude that the construction and operation of the 2020 Amendment Project would not have a significant impact on air quality.”¹²⁴ This statement lacks evidentiary support and analysis, rendering it arbitrary.

d) Noise Impact Studies Need to be Redone or Updated

FERC should have the noise impact studies discussed in Section 7.4 redone to include noise effects on the planned “Traditions of America” age-restricted community subdivision.

¹²⁰ See <https://www.post-gazette.com/news/environment/2018/05/22/DEP-brine-prohibited-roadways-pennsylvania-warren-county-gas-oil-drilling/stories/201805220114>.

¹²¹ EA at 41.

¹²² EA at 40.

¹²³ EA at 41.

¹²⁴ EA at 44.

This planned retirement subdivision is much closer to the Church Road Facility than any of the noted “Noise Sensitive Areas” (“NSA”) at which FERC conducted noise tests. The closest NSA that FERC tested for noise is a residence 490 ft to the northeast of the Church Road Facility.¹²⁵ The Traditions of American residences may extend to immediately on the other side of Church Road to the west, which would mean it would be separated from the pipeline construction site by a mere 50 to 100 ft, making it the closest NSA to the PennEast site.

Not only is the distance to the nearest NSA smaller, taking the retirement community into account, but the sensitivity of the retirement community is likely to be higher. These residents are more likely to be home most of the day and probably chose to live in such a community because the rural area is more isolated and tranquil than living in a denser or more industrial community. Moreover, seniors are more sensitive to noise and not as able as younger people to tune out irrelevant noise such as the machinery that would be built at the Church Road location.¹²⁶ FERC needs to overhaul all of the studies done in Section 7.4 related to noise to factor in the much closer and more noise-sensitive Traditions of America age-restricted community. The noise-related studies currently noted in the EA here are thus woefully incomplete.

In addition, the noise studies for the Church Road Facility should be redone because their current distance calculations are broadly inaccurate. In each noise study, distances to noise-sensitive areas are calculated in feet from the center of the Church Road Facility. However, site construction does not all take place in the very center of the site. Construction equipment would be operating throughout the site, especially at road access points. Because construction will take place throughout the site, distances should be measured from the site border rather than the site center to obtain the most accurate noise data. FERC needs to perform the noise studies again using site border distances to specific noise-sensitive areas to make the noise studies of this EA accurate.

FERC also needs to update the EA to address inconsistencies in Section 7.4.3 describing noise impacts as compared to Section 5.2, describing Visual Resources. In Section 5.2, FERC describes the visual impacts of pipeline construction as being mitigated by a “number of line-of-sight features that would partially screen views and minimize the visual impact of the facilities,” in the form of existing mature and decorative trees in various locations.¹²⁷ No other specific mitigation measures are noted to be taken to mitigate the visual impacts of construction. In contrast, Section 7.4.3 describes the noise mitigation measures to include erecting a “three site-specific perimeter barrier walls along the southern, northwestern, and northern site boundaries.”¹²⁸ This proposed perimeter noise-reduction barrier wall directly conflicts with the tree-only visual barrier discussed previously. This inconsistency must be cleared up so that accurate information is set forth in both sections of the EA.

¹²⁵ See EA at 44–49.

¹²⁶ Jennifer Bieman, “Western University study: Aging brains over-sensitive to sounds,” *London Free Press*, August 21, 2018, available at <https://lfpres.com/news/local-news/western-university-study-aging-brains-over-sensitive-to-sounds>.

¹²⁷ EA at 25.

¹²⁸ EA at 48.

As alluded to above, the pipeline operational noise study noted in Section 7.4.3 should be re-performed. The operational noise impact study fails to take into consideration a close-by noise-sensitive planned retirement community. The residents of this community most likely will choose such a community because of the anticipated quieter and more peaceful environment and the operational noise studies noted in the EA fail to take this into consideration. To fail to take the planned retirement community into account in the noise studies leaves a significant part of the EA incomplete. And the existence or non-existence of sound barriers must be cleared up. Thus, the operational noise studies should be performed again.

G. FERC's Discussion of Public Safety is Outdated and Incomplete.

In Section 8.1, Pipeline Safety Standards, FERC needs to clear up an inconsistency in the Class designation for the Church Road Facility area in light of the current and potential community characteristics. This area, FERC states, is “consistent with a Class 2 designation.”¹²⁹ Further on, the EA states “PennEast proposes to utilize Class 3 pipe at this location to account for the anticipated growth along US Route 33 corridor.”¹³⁰ It is unclear in these characterizations what class FERC deems the Church Road Facility actually is, but PennEast notes that it expects that area to grow and, as such, that area should be deemed Class 3. By the time the Project would be built, it may *be* Class 3 and need not just be *deemed* Class 3, as a dense planned retirement community lies within the same area of the mainline pipe. Thus, the EA needs to be updated for the Class designation for the Church Road Facility to be clear about safety features of the pipe that will be constructed there, and that what PennEast proposes is the bare minimum required, not an instance of going above and beyond.

Section 8.0 on Reliability and Safety of the pipeline is inadequate because it lacks specificity and information particular to the PennEast project. While the several pages of discussion in this section regard many aspects of pipeline safety and the likelihood of accidents, no one paragraph discusses the safety aspects of the PennEast project specifically nor is there any discussion of the safety parameters applied to PennEast. In one section, FERC notes that it “received public comments expressing concern that the design class for some areas should be higher and the current list of HCAs does not contain some areas that should be classified as HCAs.”¹³¹ However, this is the only discussion that comes close to describing safety aspects of PennEast itself, as the rest is a general discourse on pipeline safety that appears to be a summary of the regulations that *may* apply to PennEast.

FERC needs to update the EA to describe how the regulations affect the planning and construction of PennEast as well as the limitations of PennEast's design with regard to safety so that the community is fully informed. Furthermore, FERC does not provide any information about special community groups that may be affected by a hazardous

¹²⁹ EA at 51.

¹³⁰ *Id.*

¹³¹ EA at 52.

construction project or pipeline, such as community members that may have limited mobility in the event of a disaster. FERC needs to update the EA to include safety measures of PennEast to account for its location near retirement communities or residents with limited mobility.

H. FERC's Site-Specific Analysis of the Church Road Facility is Incomplete

1. Karst Geology/Groundwater

In recent years, Pennsylvanians have endured a spate of dangerous, destructive incidents as a result of pipeline companies failing to fully investigate and properly account for geological hazards. The Revolution Pipeline, in Western Pennsylvania, exploded mere days after going into service as a result of avoidable geologic risks. A home was lost to the explosion and the family only narrowly escaped the fire. Massive sinkholes have erupted in residents' backyards, roads, and public spaces as a result of the ongoing construction of the Mariner East pipelines across Southern Pennsylvania. Groundwater has been disrupted and drinking water supplies destroyed as a result of similarly poor planning with respect to geology. One significant risk factor contributing to such incidents is Pennsylvania's karst geology.

In the EA, FERC acknowledges that PennEast construction, and the Church Road Facility in particular, is planned in karst areas.¹³² FERC's recommendation that additional geotechnical and geophysical analysis of the Church Road Facility be completed is appropriate and necessary but insufficient. First, the scope of an in-depth geohazards assessment must include, at a minimum, *all* karst areas to be traversed by the project, not just the Church Road Facility. Subsidence and other geohazards pose a significant threat both to above-ground facilities and pipeline integrity. As written, the geographic extent of geohazards analysis referenced in the recommendation is unclear. FERC must ensure the assessment is broad enough and thorough enough to account for all geologic risks.

Second, the recommendation calls out ground-penetrating radar as a geophysical method to be used for further geologic study, but the language should be more inclusive to ensure the most appropriate methodologies are chosen. The use of multiple, complementary geophysical methods would likely be best, and ground-penetrating radar might not even be an appropriate option. After numerous incidents related to the construction of the Mariner East pipelines, including in karst areas in Southeastern Pennsylvania, the pipeline company ultimately was made to conduct geophysical surveying that included the use of seismic, gravity, and electrical resistivity techniques to get a fuller picture of what was happening underground. Those methods may be the most appropriate approach to geophysical surveying here too and it is important that FERC's recommendation is not perceived as limiting the selection of a methodology.

Third, the geophysical surveying must be accompanied by robust geotechnical testing, such as test bores, to confirm results. FERC must ensure that locations chosen for

¹³² EA at 12.

test bores are representative of relevant conditions, drilled to adequate depth, and correspond to anomalies revealed in geophysical testing. It is important that FERC provide specific expectations with regard to both geophysical and geotechnical testing as, based on Commenters' experience with other pipeline construction in Pennsylvania, PennEast is likely to do as little as possible to meet requirements.

Finally, given the seriousness of public safety concerns at stake, the geohazards analysis should be made available to the public and subject to comment prior to issuance of any final decision from FERC. As it stands, the EA recommends geological studies be completed "Prior to construction." EA at 12. That is insufficient and allows PennEast to evade necessary public review of this critical aspect of its proposal.

2. Land Use and Vegetation

The EA considers land use and vegetation in Sections 1.2, 3.1, and 3.2, as well as cumulatively with other local impacts in Sections 9.6.2 and 9.6.3. In these sections collectively, FERC makes errors that need correcting.¹³³

FERC's errors start by assuming that residential use of the area will last forever. At page 13, it writes, "[t]he existing use of the site is residential and not farmland. It is unlikely that this small area of prime farmland soil would be used for agriculture in the future based on the existing use of the property as residential." FERC's attempts to speculate what the future will look like 100 years from now based on the present are a weak attempt to ignore the fact that this loss of prime farmland soil would be permanent and affect many generations to come. Soil regenerates over the course of centuries, not years. Meanwhile land uses change all the time. Residential areas sometimes return to commercial farming, as illustrated in a recent article about another suburban Pennsylvania area.¹³⁴ As populations shift, some residential land becomes abandoned and later recovered for farming.¹³⁵

Protection of prime farmland soil cannot be casually dismissed because the current use of the land happens to not be a farm. This is a non-analysis. FERC needs to actually consider the cumulative effects of piecemeal loss of prime farmland soil. Moreover, the Church Road Facility is across from a large area which is losing farmland, so cumulative impacts are especially important.

This same failure to take a hard look at land use impacts infects the consideration of cumulative impacts on soils in Section 9.6.3. That section contains no real analysis. FERC essentially just lists some projects and says that the pipeline company's "[a]dherence to

¹³³ In Section 3.3, FERC makes a more basic error of editing. On page 22, the EA has a paragraph which is repeated in full except for the addition of "post-construction" in one paragraph, and it is unclear which paragraph (if either) is correct. They do not mean the same thing. Whether the monitoring starts during construction or post-construction makes a difference. This error needs correcting as well.

¹³⁴ See *Philly Voice*, "An unconventional farmer: Tilling the backyards of suburbia," May 25, 2017, available at <https://www.phillyvoice.com/unconventional-farmer-tilling-backyards-suburbia/>.

¹³⁵ See *Fox News*, "Urban decay to be replaced with farmland in Detroit," November 24, 2013, available at <https://www.foxnews.com/us/urban-decay-to-be-replaced-with-farmland-in-detroit>.

these plans and requirements would minimize the potential for negative impacts on soil resources.”¹³⁶ FERC does not consider the significance of the impacts. Such a rote recital fails to comply with NEPA.

Regarding vegetation, FERC in Section 3.1 writes that “PennEast has committed to use only plant species that are native to the local area for revegetation of the Project area. Stormwater facilities would also utilize native vegetation or be allowed to grow naturally without mowing in accordance with PADEP BMPs and standards.”¹³⁷ While PennEast may have *said* that, its instructions to its contractors contradict its words. PennEast has specified that its seed mixes, as listed in its blueprints submitted to PADEP, use such non-natives as Penlawn Creeping Red Fescue and Kentucky Bluegrass.¹³⁸ These are not only non-native species, Pennsylvania’s Department of Conservation and Natural Resources actually recognizes Creeping Red Fescue and Kentucky Bluegrass as potentially invasive species.¹³⁹ FERC must make this a condition of any FONSI, rather than simply relying on PennEast’s false statements.

With respect to earthmoving at the Church Road Facility, the EA explains, “Minor temporary impacts on groundwater could include changes in percolation rates from clearing of vegetation, soil mixing and compaction, and permanent conversion of portions of the site to impervious or semi-impervious surfaces.”¹⁴⁰ It is unclear how permanent conversion of cover type will result in changes to water that are only minor and temporary.

Finally, FERC writes that “a number of line-of-sight occluding features would minimize the visual impact of the Church Road Facility including maintaining the existing tree line and highway sound barriers.”¹⁴¹ As explained above, the tree line will not be visible if there is a property line sound barrier up. The analyses need to be revised to account for the correction of this discrepancy.

3. *Traditions of America Retirement Community*

As it should, FERC spends much of the EA analyzing the surroundings of the Church Road Facility to determine its impact on the neighborhood and its cumulative impacts together with neighboring sources of pollution and other social harms. But astonishingly, FERC completely misunderstands the nature of the retirement community called “Traditions of America at Green Pond,” which is currently a massive construction site for 229 homes *adjacent* to the Church Road Facility.

¹³⁶ EA at 72.

¹³⁷ EA at 15.

¹³⁸ See PennEast Pipeline Project Site Restoration Plan - Recommended Seeding Mixture, available at http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/PennEast/August_2020/ESG02000160002/July%20202020/ESCGP%203-2%20SITE%20RESTORATION_COVER%20SHEET%20TO%20000-03-01-050%2007-02-2020.pdf.

¹³⁹ See http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20031625.pdf.

¹⁴⁰ EA at 14.

¹⁴¹ EA at 73.

Perhaps the reason FERC ignores the retirement community is that it incorrectly locates it at “0.5 mile W of Phase 2” rather than adjacent to the Church Road Facility, which is where it actually is.¹⁴² This could be because the street address listed for the new development is 5800 Green Pond Road, which indeed is about half a mile Northwest of the Church Road Facility. If FERC had visited the site, as commenters have, or inspected the site plan, copied below, FERC would see that the site spans the entire breadth of the former farmland between 5800 Green Pond Road and the Church Road Facility.

At page 24 of the EA, FERC writes: “There are no buildings identified within 50 feet of the proposed new facilities. The parcel is bordered to the south by currently undeveloped agricultural lands. West of the site is Church Road, beyond which is an agricultural field.” As a matter of fact, a Construction Office building for Traditions of America is not much more than 50 feet from the proposed facilities, and beyond Church Road is a massive construction site—there is no longer an agricultural field to the west. Photos taken on August 9, 2020¹⁴³ show the construction office from Church Road in front of the Interconnects site, the sign advertising the “55+ Resort Lifestyle Community,” and a vast construction site with heavy equipment, exposed dirt, a multi-acre retention pond, and hundreds of boulders where the farm field used to be. The size of the construction site is hard to overstate.

Further down on page 24 of the EA, FERC writes that:

PennEast consulted with local and county government planning officials to determine if new residential or commercial development is scheduled to occur within 0.25-mile of the Church Road Interconnects. Planned residential and commercial developments include developments on file with a local planning board or those included in a municipal master plan. One such commercial development project, the Mill Creek Corporate Campus Development, is located approximately 0.14-mile south of the proposed new facilities.

The Mill Creek Corporate Campus Development is the only one listed. This ignores the much more massive new retirement community that is zero miles from—directly abutting—the Church Road Facility. The failure to recognize the presence of the large abutting residential development has consequences across much of the EA.

In Section 5.2, FERC writes that “During operation, the presence of the new aboveground facilities would result in permanent visual impacts. The proposed Church Road Facility would be located between Route 33 to the east and Church Road to the west. The closest neighboring residence is to the north, more than 300 feet away.”¹⁴⁴ This ignores the dense residential road being built just across Church Road. A live version of the community site plan is available at <https://www.traditionsofamerica.com/find-new->

¹⁴² See EA at 65; see also EA at 70.

¹⁴³ Attached as Exhibit G.

¹⁴⁴ EA at 24.

[homes/communities/13/green-pond/site-plan](#), showing which homes have already been sold (in advance of building), and the plan without those indications, as of August 26, 2020, is copied here:



A zoomed-in version of the upper-left-hand corner of the live version of this plan, with red dots indicating houses already sold as of August 26, 2020, is below:



The small white structure at the top of this image is the Construction Office referred to above, which is *directly across* Church Road from the Interconnects site. Thus one of only two access roads—Loyal Lane—to this community of 229 homes, some of which have already been sold, would be *directly across* the street from this industrial facility. New homes would be at most a few hundred feet away.

FERC concludes that “keep[ing] the existing perimeter tree line intact” would leave the site with “minimal long-term impacts on visual and aesthetic resources.”¹⁴⁵ It is one thing to come to this conclusion for a site in a sparsely populated residential road bordered by a farm, which is FERC’s understanding of the site in the EA. When accounting for the fact that perhaps half of all traffic into a huge new residential community would pass directly by the site onto Loyal Lane, the conclusion does not hold. More screening would be needed, given the visual and aesthetic impact on this new “55+ Resort Lifestyle Community.”

Likewise, the traffic analysis at page 28 of the EA is not complete because it includes no analysis or quantification of impact, let alone when considering the addition of one of only two access roads to a 229-home community directly across the street from the site. This will have huge traffic implications that FERC must consider.

Section 6.6 on property values refers back to the analysis in the Certificated Project about abstract, industry-funded studies of the effect of construction and operation of

¹⁴⁵ EA at 25.

pipeline facilities on property values. This ignores the obvious fact that a retiree wanting to move to a tranquil suburban location by a country club will very likely be deterred from buying when the entrance to their community is at an industrial site. This renders the property value analysis incomplete and inaccurate.

Section 9.6.3 is also rendered inaccurate by FERC's failure to consider the impact on land use and visual resources by the Traditions of America development. FERC writes at page 72 (emphasis added):

The Church Road Interconnects' effect on geology and soils would be highly localized and primarily limited to the construction period. ***Cumulative impacts would only occur if other projects are constructed during the Church Road Interconnects' construction period in a shared location.*** Compaction due to construction activity could contribute to cumulative erosion impacts on soils. Large residential developments like Blue Ridge Real Estate Properties and Mill Creek Corporate Campus Development could also lead to soil exposure, compaction, and erosion.

Clearly, large residential developments are being considered, but FERC did not consider the adjacent Traditions of America development--precisely the type of other project that would be constructed during the Church Road Facility's construction period in a shared location.

Overall, FERC must revise the EA to take full account of the Traditions of America retirement community under construction.

4. FERC's Recommendations are Seriously Lacking

The EA's lack of serious analysis finds its logical conclusion in Section D, "Conclusions and Recommendations."¹⁴⁶ The first three recommendations, though necessary, should be standard FERC regulation rather than a needed recommendation, as they basically say that PennEast should do what it has already committed to do, and FERC should have leave to take protective measures. The only other two measures are both for PennEast to submit plans: one to address geophysical hazards and one to control the spread of the spotted lanternfly. While these are both good and needed measures, they are not enough.

First, they are not enough because, with all the problems identified in these comments and not addressed in the recommendations section, it is clear much more is needed. One overarching problem identified with the EA is a lack of serious analysis of the issues. It is no wonder that the EA lacks recommendations, because the issues have not been probed thoroughly enough to find the problems that need addressing.

¹⁴⁶ EA at 84.

Second, even these two measures would only require PennEast to draft up plans before construction begins, but presumably after FERC has already issued a certificate. This presumes that any plan that PennEast might come up with is enough to ensure that there would be no significant impact from the Project. This is putting the cart before the horse. FERC should be evaluating PennEast's plans to determine *whether* they are likely to cause a significant impact, not presuming that any plans it comes up with will not cause such an impact.

I. FERC's Cumulative Impacts Analysis is Flawed

The cumulative impacts analysis in Section 9.0 only considers PennEast pipeline construction in cumulative impacts for air quality.¹⁴⁷ For every other metric, only facilities near the Church Road Facility are considered, and the grounds that the earlier analysis undertaken years ago should suffice. No reasoning for why a years-old analysis of proposed projects in the area would be accurate is provided. Instead, FERC writes in Section 9.2:

Since the previous FEIS and EA were completed some new projects have been identified, and past, present, or reasonably foreseeable future projects or activities within the geographic scopes of Phase 1 and Phase 2 not previously identified or substantially changed since the analysis completed for the Certificated Project are included in Table B.9.2-1 and sections B.9.3 through B.9.5. However, the addition of these new projects or project updates does not change the cumulative impacts analysis and conclusions from the Certificated Project.¹⁴⁸

That last sentence is unexplained. The only way to determine that the additions of those new projects and project updates do not change the cumulative impacts analysis is to do a new or updated cumulative impacts analysis. The place for that analysis is Section 9.0 of the EA. But FERC does not put that analysis in the EA. As discussed below, FERC mentions new projects, but does not do any actual analysis of them, let alone a real, quantitative analysis to tally up their impacts. The reasonable conclusion, therefore, is that FERC has not actually done this analysis at all, and that conclusory sentence is unjustified. This does not satisfy NEPA.

FERC's consideration of the pipeline construction only when looking at air quality impacts also ignores that timing of impacts matters for more than just air quality. Stormwater and flooding impacts from land development, for example, require consideration of timing, because flooding happens during discrete events that last no more than days. But FERC does not take that into account, rendering its cumulative impact analysis incomplete in this additional way.

¹⁴⁷ EA at 58-76.

¹⁴⁸ EA at 60.

These general shortcomings in the cumulative impacts show up in particular in certain of the subsections of Section 9.0. As an instance of failing to take a hard look at the cumulative impacts from additional projects on vegetation, in Section 9.6.2, FERC merely acknowledges that the proposed development projects listed in Table B.9.2-1 are subject to permit approvals and each will need to adhere to vegetation protection measures.¹⁴⁹ However, merely stating that these projects are subject to vegetation protection rules does not provide narrative on what the cumulative impacts of them are, nor does it tally that impact, which is the purpose of the EA. Not only does FERC fail to assess the projects together or as a whole, but it also draws an unsubstantiated conclusion that the impacts of them are not significant. FERC needs to assess the projects' impacts together and describe, in detail, its reasoning on how it came to the conclusion that the impacts of the projects together are not significant.

Also missing from the EA's discussion of cumulative impacts to vegetation is a discussion of the impacts on vegetation from the retirement community. FERC lists nine other development projects that have the potential to occur in the same timeframe as PennEast and none of these include the "Traditions of America" retirement community. Perhaps, as described above, that is because it does not realize that the community is adjacent to the Church Road Facility.¹⁵⁰

The same failure to consider the retirement community renders the cumulative impacts from traffic analysis fatally flawed. In the EA at page 74, FERC reasons that "Construction of the Church Road Interconnects would be expected to be completed prior to any earthwork or increase in construction traffic related to the Mill Creek Corporate Center, which is still in the preliminary planning stages. Therefore, no cumulative impacts from construction traffic are expected." This is not the case for the retirement community. By FERC's own reasoning, therefore, cumulative impacts are to be expected. Therefore, a real traffic analysis needs to take place. The same is true of FERC's consideration of fugitive dust impacts, which also neglects the contemporaneous retirement community construction project.¹⁵¹

A theme throughout the EA's cumulative impacts analysis is that it is based on speculation rather than the administrative record. FERC guesses that the actors in question will abide by best practices, that those best practices are protective, and that therefore any harms will be minor. Guesswork does not satisfy NEPA, however.

In doing the air quality cumulative impacts analysis, for example, FERC writes, "Projects that are constructed concurrently with the Church Road Interconnects may also impact air quality during construction, but these impacts would be short-term and local."¹⁵² There is no basis whatsoever for this conclusion. The EA does not contain information on the

¹⁴⁹ EA at 73.

¹⁵⁰ Compare EA at 70 (identifying retirement community as 0.5 miles from Project) with EA at 73 (not mentioning retirement community in discussion of vegetation impacts).

¹⁵¹ See EA at Section 9.6.5.

¹⁵² EA at 74.

duration of the construction projects in question. Nor does it contain air modeling information that would inform it of how local the air quality impacts would be. This is all speculation.

FERC goes on to write, “The Mill Creek Corporate Campus Development and Highway Restoration PennDOT Project: SR22-Bethman Road to Farmsville Road will likely implement similar minimization measures”¹⁵³ “Will likely implement.” FERC does not know. The information is not in the record. This is speculation.

When FERC discusses on page 75 the additional pipeline projects in the area, it writes, “The consideration of these other projects does not change the conclusion contained within the Certificated Project FEIS that the proposed Kidder Compressor Station and interconnect stations are considered nonmajor sources of emissions, do not exceed NAAQS, and would not be expected to contribute significantly to cumulative impacts on air quality.” The whole point of a cumulative impacts analysis is to consider these things together, not to mention them and then fall back on the conclusion that in isolation, they are not a big deal.

A cumulative impacts analysis requires information in the record on the details of the other projects that the analyst then needs to lay side-by-side with the project in question and tally up quantitatively. FERC errs in failing to gather that data, failing to consider all new projects, and failing to do any sort of quantitative analysis. The result is speculation and conclusions masquerading as a cumulative impacts analysis.

J. FERC’s Alternatives Analysis is Flawed

An alternatives analysis is “the heart of the environmental impact statement.”¹⁵⁴ It is based upon the “underlying purpose and need” of the proposed action,¹⁵⁵ and “present[s] the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public.”¹⁵⁶ “The purposes of NEPA are frustrated when consideration of alternatives and collateral effects is unreasonably constricted.”¹⁵⁷ An unreasonable constriction may “result if proposed agency actions are evaluated in artificial isolation from one another.”¹⁵⁸

1. FERC Improperly Ignores the Transco REAE Expanded Case Alternative

In evaluating alternatives in the EA, FERC improperly failed to consider Williams Transco’s REAE Expanded Case. The two project proposals parallel each other. And while PennEast denied that they are alternatives, Transco readily admits it.

¹⁵³ EA at 74.

¹⁵⁴ 40 C.F.R. § 1502.14 (2019).

¹⁵⁵ 40 C.F.R. § 1502.13 (2019).

¹⁵⁶ 40 C.F.R. § 1502.14 (2019).

¹⁵⁷ *Greene Cty. Planning Bd. v. Fed. Power Comm’n*, 559 F.2d 1227, 1232 (2d Cir. 1976), cert. denied 434 U.S. 1086 (1978).

¹⁵⁸ *Id.*

Considering alternatives in an earlier filing, PennEast wrote, “PennEast considered a loop of Transco’s Leidy Line pipeline system as a system alternative to the proposed Project. A loop of Transco’s Leidy Line could access the same production region that the PennEast Project accesses. However, the Transco Leidy Line does not offer the same access to specific delivery point locations provided by the PennEast Project.” PennEast rejected the alternative for this reason.¹⁵⁹ What PennEast wrote then has been exposed as false now.

In Transco’s Resource Report 10 (Alternatives) in Docket ID No. PF20-3-000, Transco writes:

Transco also evaluated whether the scope of the Project could be expanded to provide a feasible alternative that meets the objectives of PennEast’s proposed Phase 1. To support the combined capacity and meet the objectives of both projects, including the ability to deliver all of PennEast’s currently subscribed 338,000 Dth/d to PennEast Phase 1 subscribers, Transco determined that the scope of the proposed Project would only need to be modified to include the following facilities (the Project, together with the following modifications, is referred to herein as the REAE Expanded Case):

- one additional 46,930 HP greenfield compressor station in Northampton County, PA;
- one new regulator in Bucks County, PA; and
- facility modifications at two existing meter stations in Northampton County, PA.¹⁶⁰

Transco went on to say that “the analysis clearly shows that (1) PennEast is not a viable alternative to the Project, but (2) the Project, with few modifications, would be able to meet the market needs of PennEast with significantly less environmental impact, at a lower cost for shippers, and with greater security of supply and resiliency for energy consumers.”¹⁶¹

Setting aside Transco’s assumptions about what market needs exist at all, the REAE Expanded Case is a true alternative to PennEast that FERC failed to consider in the EA. “The existence of a viable but unexamined alternative renders an [EA] inadequate.”¹⁶² FERC must consider the Transco REAE Expanded Case as a true alternative to PennEast.

¹⁵⁹ PennEast, “Prior Alternative 4 (Originally Filed As “Transco Leidy Line Alternative” In Draft Resource Report 10),” accessed August 22, 2020, <https://penneastpipeline.com/prior-alternative-4/>.

¹⁶⁰ Resource Report 10, June 2020, at 10-17.

¹⁶¹ Resource Report 10, June 2020, at 10-17.

¹⁶² *Western Watersheds Project v. Abbey*, 719 F.3d 1035, 1050 (9th Cir. 2013) (alteration in original) (quoting *Westlands Water Dist. v. U.S. Dept. of Interior*, 376 F.3d 853, 868 (9th Cir. 2004)).

2. FERC Improperly Describes “No-Action” Alternative As Construction of Original PennEast Pipeline

A no-action alternative “allows policymakers and the public to compare the environmental consequences of the status quo to the consequences of the proposed action. The no action alternative is meant to ‘provide a baseline against which the action alternative’ . . . is evaluated.”¹⁶³ In describing the “no-action” alternative, FERC makes the conclusory statement that “[i]t is reasonable to expect that if the 2020 Amendment Project is not authorized (the no-action alternative), PennEast would instead construct the Certificated Project as authorized by the Orders in Docket Nos. CP15-558-000 and CP19-78-000.”¹⁶⁴

This assumption is unreasonable, as the current factual and legal circumstances clearly prohibit the construction of the Certificated Project. PennEast has been denied a water quality certificate from the State of New Jersey, and it is prohibited from exercising its delegated eminent domain power over lands in which New Jersey holds an interest.¹⁶⁵ Accordingly, the presumption should be that the Certificated Project will *not* be built, and thus, the no-action alternative should involve no pipeline construction at all.

FERC’s failure to describe the baseline environmental conditions/no-action alternative as the absence of the PennEast Pipeline forecloses an accurate determination of the New PennEast Project’s environmental impact.¹⁶⁶ The Commission’s no-action alternative is thus arbitrary and capricious and violates NEPA.

3. FERC Improperly Considers a Capacity Expansion of Existing Infrastructure to be “No-Action” When it Should Be Considered as An Action Alternative

Additionally, in describing the no-action alternative, FERC states that “[i]f the proposed amendment is not constructed, Columbia and Adelpia may seek other means to obtain an equivalent supply of natural gas from new or existing pipeline systems.”¹⁶⁷ Reasoning that “any replacement project capable of transporting similar volumes of natural gas may result in the expansion of existing natural gas transportation systems or the construction of new infrastructure” the Commission concluded that the no-action alternative was “likely to result in impacts comparable or greater than those described in . . . this EA . . .”¹⁶⁸

¹⁶³ *Ctr. for Biological Diversity v. U.S. Dept. of Interior*, 623 F.3d 633, 642 (9th Cir. 2010) (quoting *Friends of Southeast’s Future v. Morrison*, 153 F.3d 1059, 1065 (9th Cir. 1998)).

¹⁶⁴ EA at 77.

¹⁶⁵ See *In re PennEast Pipeline Co., LLC*, 938 F.3d 96 (3d Cir. 2019).

¹⁶⁶ See *Northern Plains Research Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067 (9th Cir. 2011) (finding that a government agency who failed to provide adequate baseline data to assess project impacts to aquatic resources failed to consider an “important aspect of the problem,” resulting in an arbitrary and capricious decision) (internal quotations omitted); see also *Half Moon Bay Fisherman’s Mktg. Ass’n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988) (“Without establishing the baseline conditions . . . there is simply no way to determine what effect the [action] will have on the environment . . .”).

¹⁶⁷ EA at 77.

¹⁶⁸ *Id.*

Immediately after the no-action alternative section, FERC goes on to analyze in a separate section “system alternatives,” which are “alternatives to the proposed action that would make use of other existing, modified, or proposed natural gas transmission facilities that would meet the stated purpose of the proposed actions.”¹⁶⁹ Apparently, according to FERC’s analysis, the use or modification of existing or soon-to-be-existing infrastructure is *both* a no-action alternative, *and* a system alternative. Clearly both cannot be true. The use of existing, modified, or proposed natural gas transmission facilities should be properly considered as a system alternative, that is, an action alternative.

Furthermore, in discussing existing infrastructure’s capacity to handle “similar volumes of natural gas,” FERC does not identify what volumes it considered. Was it the 650,000 Dth/d that Phase 1 is capable of handling, or the 338,000 Dth/d for which PennEast has provided evidence of market demand? Without identifying the volume of natural gas that would be handled by the system alternative, FERC’s alternatives analysis is incomplete. To the extent that FERC considered, based on the stated purpose and need for Phase 1, the capacity for existing infrastructure to handle 650,000 Dth/d, the EA should have explain how it determined that there was a market demand for the additional 312,000 Dth/d beyond the volume that PennEast is currently under contract to deliver. As stated previously in Section IV.A of this comment, PennEast’s claim that it is engaged in ongoing negotiations to subscribe this remaining capacity is insufficient to support a finding of market need.

4. FERC Improperly Incorporates the Alternatives Analysis for CP15-558, A Project that May Not Be Built

In its alternatives analysis, the Commission states that it “evaluated system alternatives in the final EIS prepared for the Certificated Route . . . and concluded that there are no reasonable system alternatives that would provide a significant environmental advantage to the Certificated Project. That previous analysis remains valid and applicable to the proposed 2020 Amendment Project.”¹⁷⁰ This application is based on the belief that the 2020 Amendment Project “consists of only a minor addition to the Certificated Project, and phasing of construction of the facilities approved”¹⁷¹

As explained elsewhere in this comment and in previous comments submitted on the CP20-47-000 docket, the purpose and need of Phase 1 is substantially different from that of the Original PennEast Pipeline, and according to the Third Circuit Court of Appeals, Phase 2/the New PennEast Pipeline cannot be built under the current circumstances. Thus, the alternatives analysis conducted in the FEIS cannot be adopted wholesale, as an alternatives analysis is based on a proposed project’s purpose and need.

¹⁶⁹ *Id.*

¹⁷⁰ *Id.*

¹⁷¹ *Id.*

5. *FERC Improperly Rejects the More Environmentally Protective Alternative Natural Gas Delivery Point Alternative 2*

One of the “system alternatives” considered by the Commission was to construct Phase 1 along the originally-certificated route up to and including the Hellertown Lateral, which was previously approved under Docket CP15-558 to interconnect with the Columbia Gas Transmission pipeline.¹⁷² This alternative would include a new interconnection with Adelphia in order to meet the 2020 Amendment Project’s purpose and need.¹⁷³ The Commission considered two options for connecting the Hellertown Lateral to Adelphia: Alternative 1, which would involve greater land disturbance than the Church Road Facility; and Alternative 2, which would involve less land disturbance and would provide better natural screening at a location further away from residential areas.¹⁷⁴

In considering Adelphia Gateway Interconnect Alternative 2, FERC says that it presents not enough benefit as compared to the “minor” impacts to the adjacent land uses at the Church Road Facility.¹⁷⁵ But this conclusion is flawed because the Commission did not consider impacts of the Church Road Facility on the retirement community.¹⁷⁶ FERC needs to re-do this analysis to take those impacts into account. However, even without considering the retirement community, the Commission fails to adequately explain why an alternative that meets the purpose and need of the 2020 Amendment Project while reducing environmental impact is not the “preferred” alternative.

6. *FERC Fails to Consider Any Alternatives Not Including Connection to Adelphia*

The Commission states that the “first consideration for including an alternative in our analysis is whether or not it could satisfy the stated purpose of the project.”¹⁷⁷ In this case, the Commission chose not to consider any alternatives that did not connect to the Adelphia pipeline. Accordingly, the Commission’s alternatives analysis concludes that the project as proposed by PennEast is “the preferred alternative that meets the purpose and need as defined in this EA.”¹⁷⁸ While the Commission is not required by NEPA to “provide a detailed study of alternatives that do not accomplish [the] purpose or objective” of the proposed action, it “may not ‘define the objectives of a proposed action so narrowly as to preclude a reasonable consideration of alternatives.’”¹⁷⁹ By failing to consider alternatives that do not involve a connection to Adelphia, the Commission improperly narrowed its consideration of alternatives.

¹⁷² EA at 78.

¹⁷³ *Id.*

¹⁷⁴ EA at 78-79.

¹⁷⁵ EA at 79.

¹⁷⁶ See Section IV.H.3, *supra*.

¹⁷⁷ EA at 76.

¹⁷⁸ EA at 82.

¹⁷⁹ *High Country Conservation Advocates v. U.S. Forest Serv.*, 951 F.3d 1217, 1223 (10th Cir. 2020) (quoting *Wyoming v. U.S. Dept. of Agriculture*, 661 F.3d 1209, 1244 (10th Cir. 2011)).

As PennEast has pointed out in its response to scoping comments, “the interstate pipeline grid is a highly integrated transportation network.”¹⁸⁰ The Commission must explore the possibility that this highly-integrated network has the ability to deliver the natural gas to the shippers without requiring an interconnection with Adelpia.

If the inclusion of Adelpia Gateway pipeline as necessary is to be accepted on its face, however, that required acceptance belies PennEast’s and the Commission’s assertion that Phase 1 and Adelpia Gateway pipeline are not “connected” actions for the purpose of NEPA.¹⁸¹ Indeed, PennEast itself claims that the Phase 1 facilities do not need Adelpia to function, as they “can deliver gas to the Columbia Gas Transmission delivery point at the Church Road Interconnects.”¹⁸² Without an evaluation of these possibilities, the conclusion that a connection with the Adelpia Gateway pipeline is a necessary component of the 2020 Amendment Project is unsupported, and in fact directly contradicted, by the record.

V. FERC Should Ultimately Deny PennEast’s Request to Amend the 2018 Certificate

The Commission’s Certificate Policy Statement describes its decisionmaking process in issuing or denying a certificate of public convenience and necessity.¹⁸³ While PennEast’s application under CP20-47-000 is styled as an “amendment” to its already-existing certificate under CP15-558-000, PennEast is in fact proposing two new projects: (1) Phase 1, a Pennsylvania pipeline terminating at an interconnection with Adelpia and Columbia pipelines at the Church Road Facility; and (2) the New PennEast Pipeline, which is essentially the original PennEast Pipeline plus the interconnections and the Church Road Facility. The Commission implicitly recognizes this in the EA by setting out two separate statements of purpose and need.¹⁸⁴ Because the nature of the original PennEast Pipeline Project has changed, the Commission should analyze both Phase 1 and the New PennEast Pipeline as new pipelines within the framework of its Certificate Policy Statement.

The threshold question is “whether the project can proceed without subsidies from . . . existing customers.”¹⁸⁵ This is typically answered by a demonstration of market need, often in the form of precedent agreements. Since PennEast is a new pipeline, however, it has no existing customers who would subsidize the project. Although the question of subsidization may not be relevant to this particular project, the Commission must still take the second step

¹⁸⁰ Response to Scoping Comments at 10.

¹⁸¹ *Compare* EA at 7 (“Regardless of whether or not the Adelpia Gateway Project were constructed, PennEast could still move forward with its Project; similarly, without the PennEast Pipeline Project, the Adelpia Gateway Project would be able to proceed.”) *with* EA at 3 (“The purpose of the 2020 Amendment Project would be to allow Phase 1 delivery of up to 650,000 dekatherms per day (Dth/d) of firm transportation service to new delivery points with existing Columbia Gas Transmission, LLC (Columbia) and Adelpia Gateway, LLC (Adelpia) at the proposed new Church Road Interconnects facility.”).

¹⁸² Response to Scoping Comments at 10.

¹⁸³ *See Certification of New Interstate Natural Gas Pipeline Facilities*, 88 FERC P 61,227 (Sept. 15, 1999), *clarified*, 90 FERC P 61,128 (Feb. 9, 2000), *further clarified*, 92 FERC P 61,094 (July 28, 2000).

¹⁸⁴ *See* EA at 3; Section IV.A, *supra*.

¹⁸⁵ 88 FERC at 61,745.

of weighing the “public benefits against the potential adverse consequences” of Phase 1 and the New PennEast Project.¹⁸⁶

The public benefits of Phase 1 are significantly reduced from the public benefits provided by the Original PennEast Project--Phase 1 will provide 338,000 Dth/d and has the potential to provide 650,000 Dth/d. The Original PennEast Project was fully subscribed to deliver 1.1 million Dth/d. The potential adverse consequences have also changed--the pipeline route has been truncated, with new interconnections and the Church Road Facility. The Commission should find that the adverse consequences of Phase 1 outweigh the public benefits of Phase 1 based on the substantial environmental disturbance that will occur along the pipeline route,¹⁸⁷ as well as the environmental impacts of the Church Road Facility, which is nestled among residences and schools in Bethlehem Township.¹⁸⁸

With regard to the New PennEast Project, PennEast claims that the shippers from the Original PennEast Project remain fully committed to the completed route, including Phase 2. PennEast is not clear, however, on what purpose the interconnections and Church Road Facility will serve once the New PennEast Project is fully constructed.¹⁸⁹ Thus, based on the record, the public benefits of the New PennEast Project appear to be identical to the public benefits of the Original PennEast Project, but with greater adverse consequences due to the environmental impacts of the Church Road Facility.

VI. FERC Must Not Amend PennEast’s Certificate Without DRBC Approval

As we stated in our March 30, 2020 Scoping Comment, both Phase 1 and the New PennEast Project are subject to the jurisdiction of the Delaware River Basin Commission (“DRBC”), and, accordingly, FERC may not amend PennEast’s certificate without DRBC’s prior approval.¹⁹⁰ Both Phase 1 and the New PennEast Pipeline are “project[s] having a substantial effect on the water resources of the basin,” , thus, both projects must be “submitted to an approved by” the DRBC if it determines that Phase 1 and the New PennEast Pipeline “would not substantially impair or conflict with the comprehensive plan.”¹⁹¹ This substantial effect is based on Phase 1’s and the New PennEast Pipeline’s “significant disturbance of ground cover affecting water resources.”¹⁹² Because of this requirement, FERC may not amend the certificate without DRBC approval. Should FERC choose to issue an amended certificate conditioned on DRBC’s approval, it must not authorize any construction, tree-felling, or tree-clearing prior to DRBC’s decision.

DRBC also submitted a scoping comment on March 30, 2020, which made clear that Phase 1 is subject to review under Section 3.8 of the Delaware River Basin Compact at least based on its crossing of reservoirs and recreation areas designated in the DRBC’s

¹⁸⁶ *Id.*

¹⁸⁷ See Scoping Comment, attached comments on Docket Nos. CP15-558-000 & CP19-78-000.

¹⁸⁸ See Sections IV.F–I, *supra*.

¹⁸⁹ See Section IV.A, *supra*.

¹⁹⁰ See Scoping Comment at 47–50.

¹⁹¹ DELAWARE RIVER BASIN COMPACT, § 3.8 (1961).

¹⁹² DELAWARE RIVER BASIN COMMISSION, RULES OF PRACTICE AND PROCEDURE, Article 3, § 2.3.5(A)(12) (July 1, 2019).

Comprehensive Plan.¹⁹³ DRBC also raised the possibility that additional Section 3.8 review and approval may be required for water withdrawals and discharges used for horizontal directional drilling, depending on the source and discharge location of the HDD fluid.¹⁹⁴ DRBC concluded in its comment that DRBC review and approval are required “prior to the commencement of any substantial construction activity or related preparation of land.”¹⁹⁵ DRBC also submitted comments to FERC on April 28, 2020, and PennEast submitted an application to DRBC for Section 3.8 review on May 11, 2020, maintaining its argument that DRBC does not have jurisdiction over Phase 1.

In its EA, FERC arbitrarily fails to acknowledge DRBC’s jurisdiction over Phase 1 and the New PennEast Project: “Given that PennEast submitted an application, we included the DRBC in the table [of major permits, approvals, and consultations for the 2020 Amendment Project] below; however, we clarify that FERC staff is not making any determination of jurisdiction or opinion on this ongoing matter.”¹⁹⁶ Contrary to FERC staff’s equivocal statement, DRBC’s jurisdiction over both Phase 1 and the New PennEast Pipeline is clear.

VII. Conclusion

For the foregoing reasons, the Commission’s conclusion that “approval of this proposal would not constitute a major federal action significantly affecting the quality of the human environment” is not supported by the record, or by NEPA. The Commission should prepare an EIS for the 2020 Amendment Project, incorporating the corrections, information, and recommendations made in this comment.

Maya K. van Rossum

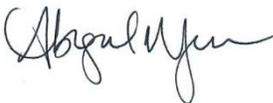


the Delaware Riverkeeper
Delaware Riverkeeper Network



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PennFuture

¹⁹³ Comment of Delaware River Basin Commission under CP20-47, et al., Accession No. 20200331-5071 (Mar. 30, 2020) at 2 (hereinafter “DRBC Scoping Comment”).

¹⁹⁴ DRBC Scoping Comment at 2–3.

¹⁹⁵ DRBC Scoping Comment at 3.

¹⁹⁶ EA at 10.

Exhibit G

Impacts of the PennEast and Adelphia Gateway Pipelines on Gas Drilling in Pennsylvania

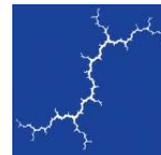
An estimate of induced new gas wells and
associated greenhouse gas emissions

Prepared for Delaware Riverkeeper Network

March 30, 2020

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1. INTRODUCTION

Economics dictate that expansion of natural gas pipeline infrastructure in constrained zones will cause an increase in the total production of natural gas. This is particularly likely in the constrained zones in Pennsylvania, where shale gas is being produced from the Marcellus and Utica Shales. Two proposed connected and interrelated pipeline projects in Pennsylvania—PennEast and Adelpia Gateway—would greatly expand the capacity of natural gas leaving the region, thereby leading to increased gas production and drilling. This report provides a background on the economic relationship between pipeline infrastructure and resource extraction, describes the two pipeline projects of interest, and estimates the number of new wells that would be drilled if the pipelines are built. Next, we provide an estimate of the increased emissions associated with the drilling and completion of these new wells. Finally, we calculate the climate damages associated with the drilling emissions and the increased utilization of natural gas using two values for the Social Cost of Carbon.

2. BACKGROUND

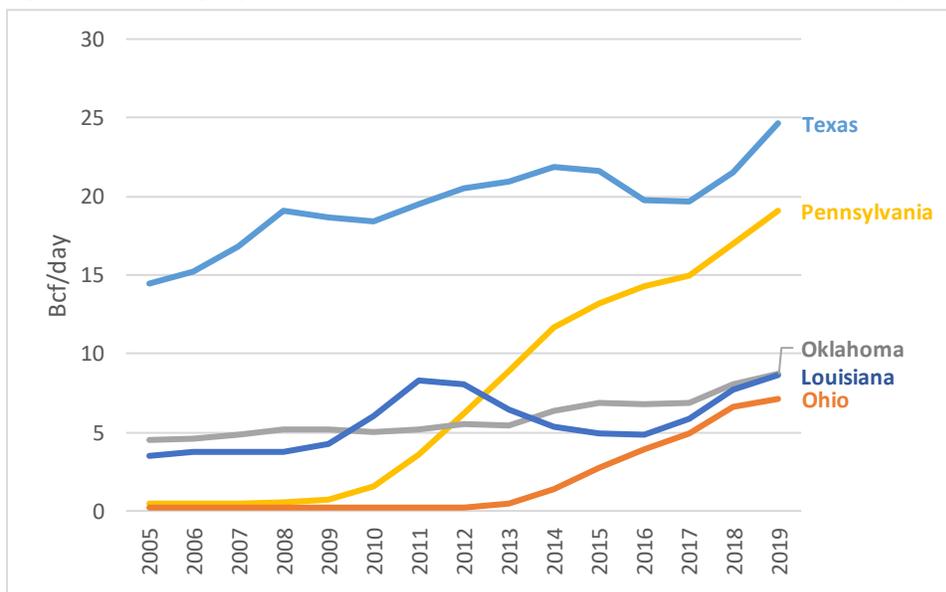
2.1. Appalachian Basin Natural Gas Pipeline Constraints

Natural gas prices are lowest in the regions in which gas is produced. For many years, the lowest natural gas prices in the East were found at Henry Hub, located near the Gulf of Mexico where much of the natural gas in the United States was produced. With the increase in shale gas production, however, the lowest natural gas prices in the country are now found at trading points in and around the Marcellus and Utica shale plays in Pennsylvania, West Virginia, and Ohio (i.e., the Appalachian Basin). The availability of pipeline infrastructure to send natural gas from the Appalachian Basin to other parts of the country has a direct impact on the price of natural gas in those regions. Greater gas take-away capacity allows more natural gas to be produced, and an increase in supply will lead to a decline in price in those regions that receive additional gas. The improved access to higher priced markets via additional pipeline infrastructure will raise the price of natural gas in the producing region, which also will increase production.

Due to increased drilling in the Appalachian Basin, Pennsylvania is now the second largest gas-producing state behind Texas and accounted for 19 percent of total U.S. marketed gas production in 2017. Historical production for the top five gas-producing states is shown in Figure 1, below.



Figure 1. Natural gas production in selected states (2005-2019), billion cubic feet per day



Source: US EIA. *Natural Gas Gross Withdrawals and Production*. Available at: https://www.eia.gov/dnav/ng/ng_prod_sum_a_EPGO_VGM_mmcf_a.htm.

The U.S. Energy Information Administration (EIA) notes that gas production in Pennsylvania has historically outpaced the growth in pipeline capacity to transport it out of the state. However, both permitting and gas drilling activity have increased in Pennsylvania as regional pipeline capacity has grown, enabling gas to be exported to market centers outside of production areas.¹ Two pipeline projects began operations in the fourth quarter of 2016: The Rockies Express Zone 3 expansion project moves gas west from southwest Pennsylvania and the Algonquin Incremental Market pipeline moves gas from northeastern Pennsylvania into New England. With the addition of the Rover Pipeline, the NEXUS Gas Transmission pipeline, and Phase II of the Atlantic Sunrise Pipeline, which entered service in 2018 with a combined capacity of more than five billion cubic feet per day (Bcf/d), EIA forecasted continued growth in gas production from the Appalachian Basin.²

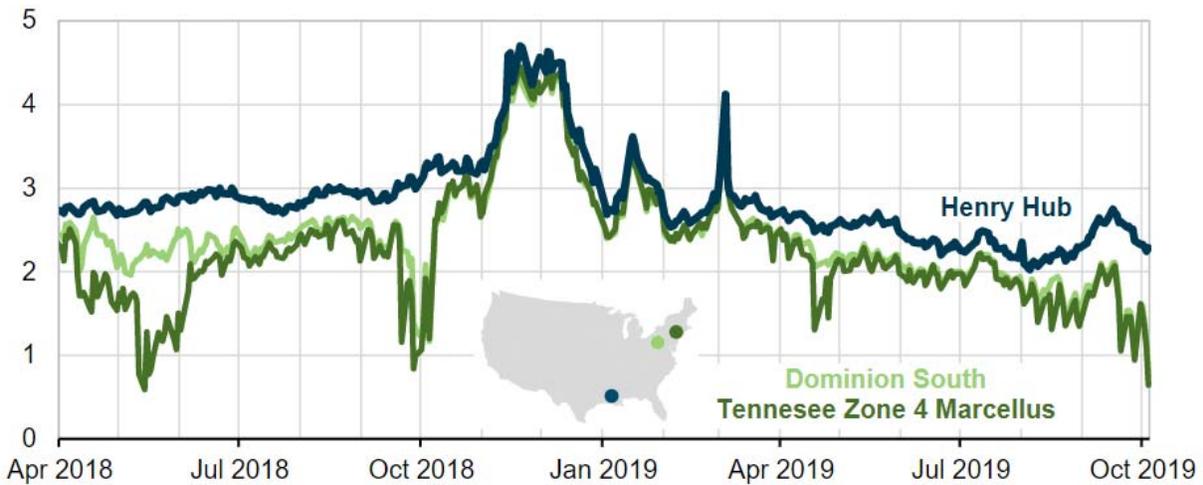
Towards the latter part of 2019, natural gas prices in the Appalachian Basin region dropped to \$0.65 per million British thermal unit (MMBtu), while Henry Hub prices remained above \$2 per MMBtu (Figure 2).³ This price differential indicates that the pipelines transporting natural gas out of the Appalachian Basin region have been filling up, and less gas is able to reach other parts of the country.

¹ U.S. Energy Information Administration (EIA). 2018. *Pennsylvania’s natural gas production continues to increase*. Available at: <https://www.eia.gov/todayinenergy/detail.php?id=35892>.

² EIA. October 18, 2018. *Natural Gas Weekly Update*. Available at: https://www.eia.gov/naturalgas/weekly/archivenew_ngwu/2018/10_18/.

³ EIA. 2019. *Northeast natural gas spot prices fall as pipelines fill*. <https://www.eia.gov/todayinenergy/detail.php?id=41673>.

Figure 2. Marcellus shale gas spot prices relative to Henry Hub (\$/MMBtu)



Source: EIA. "Northeast natural gas spot prices fall as pipelines fill." Today in Energy. Daily natural gas prices for select trading hubs (Apr 1, 2018—Oct 4, 2019). Available at: <https://www.eia.gov/todayinenergy/detail.php?id=41673>.

In response to the sustained low natural gas prices over the past year, the largest shale gas producers in the Appalachian Basin region have reported plans to slow production. EQT Corporation, Cabot Oil & Gas Corporation, and Range Resources Corporation all have planned to cut their drilling budgets and natural gas production for the year 2020.^{4,5,6} Chesapeake Energy Corporation halted drilling in late 2019 and has been experiencing financial losses due to low gas prices.⁷ Cabot Oil & Gas stated that it and other regional operators have been eagerly seeking opportunities for transport of their produced gas, given that pipeline buildout has slowed in recent years. Should pipeline construction move forward, much of the overproduced natural gas would be able to hit the regional market, and drilling in the Appalachian Basin would likely resume its original pace.

⁴ Gough, P. January 2020. BizJournals.com. <https://www.bizjournals.com/pittsburgh/news/2020/01/07/range-resources-cuts-drilling-budget-drops.html>.

⁵ Gough, P. October 2019. BizJournals.com. <https://www.bizjournals.com/pittsburgh/news/2019/10/31/eqt-cuts-spending-on-natural-gas-drilling-in-2019.html>.

⁶ Cocklin, J. July 2019. Natural Gas Intel. <https://www.naturalgasintel.com/articles/119092-cabot-to-cut-spending-production-in-2020-as-natural-gas-market-weakens>.

⁷ Hiller, J. October 2019. Reuters. <https://www.reuters.com/article/us-usa-naturalgas-chesapeake-energy-idUSKBN1X92AN>.

2.2. PennEast and Adelpia Gateway Proposed Pipelines

In 2018 and 2019, the Federal Energy Regulatory Commission (FERC) approved eight pipeline projects to transport gas coming out of the Appalachian Basin, with six others still pending.^{8,9} Of the approved projects, two of the largest pipelines are the PennEast Pipeline and the Adelpia Gateway Pipeline. The remainder of this report focuses on these two pipelines.

PennEast

The PennEast pipeline received its Certificate of Public Convenience and Necessity (CPCN) from the FERC in January 2018. The project has a proposed capacity of 1,107,000 dekatherms per day (Dth/d) over 116 miles of 36-inch diameter pipeline across Pennsylvania and New Jersey. At the time of FERC approval, the pipeline had 990,000 Dth/d of service commitments for gas transport. Since receiving regulatory approval, the project has encountered delays in obtaining permits and property rights in New Jersey. As a result, PennEast is now requesting approval from the FERC to split the project into two phases. Phase 1 includes only facilities in Pennsylvania, including an interconnection with the Adelpia Gateway pipeline and the Columbia Gas Transmission pipeline in Northampton County, while Phase 2 includes the remaining facilities in New Jersey. Dividing the project into two phases would allow pipeline construction in Pennsylvania to move forward while the company awaits receipt of the necessary permits in New Jersey.

Table 1. Capacity and service commitments for the proposed phases of the PennEast pipeline

PennEast Phase	Gas Capacity (Dth/d)	Service Commitments (Dth/d)
Phase 1	650,000	340,000
Phase 2	457,000	-

Source: Abbreviated Application for Amendment to Certificate of Public Convenience and Necessity of PennEast Pipeline Company, LLC. Available at: https://elibrary.ferc.gov/IDMWS/file_list.asp?document_id=14832180.

Adelpia Gateway

The Adelpia Gateway pipeline project would purchase two existing oil and gas pipelines (currently owned by Interstate Energy Company) and build new natural gas pipeline infrastructure in southeastern Pennsylvania. The project is organized into three zones: Zone North A, Zone North B, and Zone South. Zones North A and B only include existing natural gas pipeline infrastructure—34.5 miles of 18-inch diameter pipeline and 4.4 miles of 20-inch diameter pipeline. Zone South would repurpose 50 miles of

⁸ Federal Energy Regulatory Commission. Approved Major Pipeline Projects. <https://www.ferc.gov/industries/gas/industry/pipelines/approved-projects.asp>.

⁹ Federal Energy Regulatory Commission. Major Pipeline Projects Pending. <https://www.ferc.gov/industries/gas/industry/pipelines/pending-projects.asp>.

an 18-inch diameter oil pipeline to instead transport natural gas.¹⁰ This newly converted Zone South pipeline would have a capacity of 250,000 Dth/d with a service commitment of 100,000 Dth/d.¹¹ All Adelpia Gateway calculations following in this memo include only the Zone South project, since the Zone North project would not develop additional pipeline capacity for natural gas.

3. POTENTIAL IMPACTS OF PENNEAST AND ADELPHIA GATEWAY

Given current pipeline capacity limitations to deliver gas to high-value markets, the economics do not favor increased drilling for natural gas. With additional transport capacity from pipelines like the PennEast and Adelpia Gateway, gas producers will again have an economic incentive to drill additional wells in the Appalachian Basin region. In addition to advancing new drilling, additional pipeline infrastructure will advance gas production in wells that have been drilled but from which the industry has not yet extracted gas due to a lack of available pipeline infrastructure.

3.1. Unconventional Gas Wells in Pennsylvania

As of early 2020, the state of Pennsylvania has 11,744 unconventional natural gas wells that have received a permit and are producing gas. Those wells are found largely in the counties located in the northeast and southwest regions of the state, which contain 85 percent of active wells. In the northeast region, near the start of the PennEast pipeline, four counties contain large volumes of producing gas wells: Bradford County (12 percent of producing wells in the state), Lycoming County (8 percent), Susquehanna County (15 percent), and Tioga County (7 percent). Figure 3 shows the distribution of the actively producing wells across the state.

Table 2. Unconventional gas wells in Pennsylvania by region

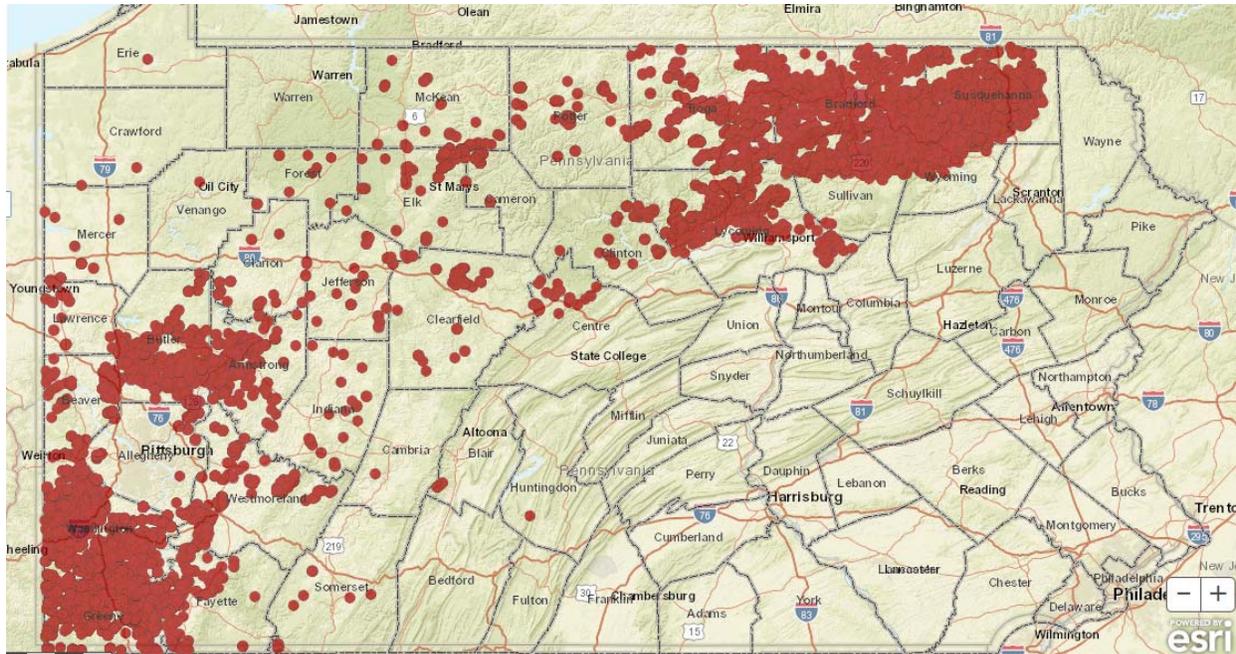
Region	Drilled	Proposed But Never Materialized	Operator Reported Not Drilled
Northeast	5,416	728	3,813
Southwest	4,575	1,120	1,258
Northwest	1,001	302	353
Central	752	315	649
Capital	0	0	0
Southeast	0	0	0
Total	11,744	2,465	6,073

¹⁰ The Zone South portion of the Adelpia Gateway pipeline project also includes the construction of two new laterals (total of 4.65 miles), which would not increase the total gas capacity leaving Pennsylvania.

¹¹ Abbreviated Application of Adelpia Gateway, LLC for Certificates of Public Convenience and Necessity. Available at: <https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=14796855>.

Source: PA Geospatial Data Clearinghouse. Oil Gas Locations 2020. Dataset available online at: <http://www.pasda.psu.edu/uci/DataSummary.aspx?dataset=1088>.

Figure 3. Map of producing unconventional gas wells in Pennsylvania



Source: PA Department of Environmental Protection, Oil and Gas Mapping. Available at: <http://www.depgis.state.pa.us/PaOilAndGasMapping/OilGasWellsStrayGasMap.html>.

The state of Pennsylvania also tracks natural gas wells that are Proposed but Never Materialized (PBNM), in which a permit was issued but expired prior to the commencement of drilling, as well as Operator Reported Not Drilled (ORND), in which a permit was issued but the operator reported that the well was never drilled. These sites are logical and likely candidates for new drilling in Pennsylvania. A total of 2,465 wells are classified as PBNM and 6,073 wells are classified as ORND (Table 2). Like active wells, most of these undrilled well permits are in the northeast (53 percent) and southwest (28 percent) regions of Pennsylvania.

Given the large number of wells that have been permitted but not drilled, one can reasonably expect that new natural gas wells drilled as a result of the construction of the PennEast and Adelpia pipelines would most likely be in the northeast and southwest regions of Pennsylvania. Those counties with the highest number of wells that received permits but were never drilled are Bradford, Susquehanna, Greene, Washington, Tioga, and Lycoming. Bradford County contains the greatest percentage of undrilled permitted wells in the state—21 percent.

Complete counts of producing, PBNM, and ORND wells by county and region in Pennsylvania can be found in the Appendix.

Table 3. PBNM and ORND wells by county in Northeast and Southwest Pennsylvania.

Region/County	Proposed but Never Materialized (PBNM)	Operator Reported Not Drilled (ORND)
Northeast	728	3,813
Bradford	102	1,731
Carbon	0	0
Lackawanna	0	27
Luzerne	1	12
Lycoming	139	447
Monroe	0	0
Pike	0	0
Sullivan	21	226
Susquehanna	199	661
Tioga	236	484
Wayne	5	4
Wyoming	25	221
Southwest	1,120	1,258
Allegheny	54	66
Beaver	45	101
Bedford	1	0
Blair	2	0
Cambria	4	15
Fayette	86	38
Greene	404	292
Indiana	23	32
Somerset	3	15
Washington	375	537
Westmoreland	123	162

Source: PA Geospatial Data Clearinghouse. Oil Gas Locations 2020. Dataset available online at: <http://www.pasda.psu.edu/uci/DataSummary.aspx?dataset=1088>.

3.2. Impacts on Drilling Activity and Drilling-Related Emissions

If the PennEast and Adelpia Gateway pipelines move forward, a significant amount of existing shale gas production that has been curtailed would come online thereafter. At a minimum, permitted wells that were not previously completed would start producing gas for transport to New Jersey and Pennsylvania. This section of the memo estimates how many wells would likely come online as a result of each of the following pipeline projects: PennEast Phase 1, PennEast Phase 2, and the Adelpia Gateway Zone South. We also present results for the two following combinations of pipeline development: PennEast Phase 1 and Adelpia Zone South; PennEast Phases 1 and 2 and Adelpia Zone South.

The total number of wells induced by any given pipeline depends on the lifetime production, or estimated ultimate recovery (EUR), from a given well. EUR is typically measured in billion cubic feet (Bcf) per well. There is significant variability in EUR across wells in the state of Pennsylvania. As such, we have only included data from the counties where future drilling is most likely, based on the analysis above (Bradford, Susquehanna, Greene, Washington, Lycoming, and Tioga Counties). Further, there is additional variability due to increasing lateral lengths of horizontal wells in recent years, which have steadily been increasing average well EURs in the region.¹²

Our analysis begins with average EUR data by county in Pennsylvania and assumes each pipeline will have a lifetime of 40 years.¹³ Given that the EUR data is only available through 2014 and the amount that EURs have increased since then is uncertain, we present a low and high estimate of likely well additions (Table 4). The low estimate assumes that average EURs have not changed from 2008 to 2014, whereas the high estimate assumes that average EURs have increased about 60 percent from 2015 to 2018.¹⁴ The low and high estimates are both calculated using a weighted average based on the number of wells in each county. The resulting weighted average EURs (low and high) are 6.47 and 10.35 Bcf per well. Using this EUR range, we calculate the estimated number of new wells that will come online for each pipeline project in Table 4 below.

Table 4. Estimated number of future wells and drilling-related emissions (metric tons CO₂e), as a result of PennEast and Adelpia Gateway pipeline construction

Pipeline Project	Low Estimate of New Wells	High Estimate of New Wells	Low Estimate of Drilling-Related Emissions (mt CO ₂ e)	High Estimate of Drilling-Related Emissions (mt CO ₂ e)
PennEast Phase 1	917	1,466	1,254,641	2,007,425
PennEast Phase 2	644	1,031	882,109	1,411,374
Adelpia Zone South	353	564	482,554	772,086
PennEast Phase 1 + Adelpia Zone South	1,269	2,030	1,737,195	2,779,511
PennEast Phases 1 and 2 + Adelpia Zone South	1,913	3,061	2,619,303	4,190,885

If both the PennEast and Adelpia Gateway pipelines are constructed, between 1,900 and 3,100 new wells are likely to be drilled to fill the new capacity. These new wells will most likely be located in

¹² Westwood Energy. 2018. Super Laterals Trending in the US Northeast. Available at: <https://www.westwoodenergy.com/blog/super-laterals-trending-in-the-us-northeast>.

¹³ Swindell, G. 2018. Estimated Ultimate Recovery (EUR) Study of 5,000 Marcellus shale wells in Pennsylvania (February 2018 Update). Available at: http://www.gswindell.com/marcellus_eur_study.pdf.

¹⁴ Synapse communications.

northeast Pennsylvania (Bradford, Susquehanna, Tioga, and Lycoming Counties) and southwest Pennsylvania (Greene and Washington Counties).

The drilling and completion of these anticipated new wells will contribute to increased greenhouse gas emissions. Unconventional gas wells release CO₂ and CH₄ (methane) through combustion emissions, equipment leaks, and vented emissions from the wells themselves. To calculate the associated emissions from drilling these wells, we utilized an assessment from the U.S. EPA that reports the average emissions, in CO₂ equivalent (CO₂e), associated with unconventional natural gas drilling well pads, at 4,927 metric tons (Mt) per well pad.¹⁵ We converted this value into emissions per well¹⁶ using the total number of active unconventional gas well pads in Pennsylvania, reported at 3,263.¹⁷ This yields an average unconventional drilling emissions value for Pennsylvania of 1,369 Mt per well. This value was applied to the low and high estimates for new wells associated with each pipeline project. Results are shown in the fourth and fifth columns of Table 4. If both the PennEast and Adelpia Gateway pipelines are constructed, between 2.6 and 4.2 million Mt of CO₂e will be emitted into the atmosphere as a result of drilling and completion alone. The following section describes the CO₂e emissions associated with the combustion of the produced natural gas and the emissions associated with pipeline operations.

3.3. Impacts on Climate Damages

Climate damages associated with increasing greenhouse gas emissions can include, but are not limited to, property damage from floods, changes in agricultural productivity, extinction of endangered species, and loss of unique environments. These damages translate to increased health care costs, destruction of property, and increased food prices, which cost families and businesses billions of dollars. We calculated the social cost of the greenhouse gas emissions associated with the PennEast and Adelpia pipelines using the Social Cost of Carbon (SCC), as estimated by both the Obama and Trump administrations. The SCC is a value used to measure the climate damages—the monetized value of the net impacts—associated with carbon dioxide (CO₂) emissions. It values the incremental damages done by an additional ton of emitted CO₂ and discounts the sum of the total damages to the present value. These SCC estimates vary substantially because the Obama administration value (roughly \$50/ton of CO₂) includes global damages, while the Trump administration value (about \$7/ton of CO₂) only includes damages that occur within the United States.

¹⁵ The EPA assumed that drilling and completion of an unconventional gas well takes place early in the year with the well producing gas the remainder of the year with a full complement of common, higher process emissions equipment on the well pad, including a compressor, glycol dehydrator, gas pneumatic controllers, and condensate tank without vapor recovery. Furthermore, the EPA assumed that unconventional well completion does not employ "Reduced Emissions Completion" practices. Data taken from page 32 of https://www.epa.gov/sites/production/files/2015-05/documents/subpart-w_tsd.pdf.

¹⁶ A single well pad is a location which houses the wellheads for a number of horizontally drilled wells. The EPA reports average emissions per well pad, and here we estimate emissions per well.

¹⁷ Pennsylvania Department of Environmental Protection. Available at: http://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil_Gas/Well_Pads.

First, we calculate the social cost of the carbon value, on a net present value basis, associated with the High and Low estimates of the drilling of new wells presented in Table 4, above. We make the conservative assumption that the drilling of new wells is evenly distributed over the 40-year assumed lifetime of the pipeline projects. The costs are shown in Table 5, below, for both the Low and High estimates of new wells drilled as a result of the pipeline projects under both Social Cost of Carbon values.

Table 5. Social cost of emissions of CO₂e associated with the drilling of new wells as a result of the pipeline projects

Pipeline Project	Total Costs (2019\$, Obama SCC)		Total Costs (2019\$, Trump SCC)	
	Low Wells	High Wells	Low Wells	High Wells
PennEast Phase 1	\$46,012,770	\$73,620,432	\$6,300,293	\$10,080,470
PennEast Phase 2	\$32,350,517	\$51,760,827	\$4,429,591	\$7,087,346
Adelphia Zone South	\$17,697,219	\$28,315,551	\$2,423,190	\$3,877,104
PennEast Phase 1 + Adelphia Zone South	\$63,709,989	\$101,935,982	\$8,723,483	\$13,957,573
PennEast Phases 1 and 2 + Adelphia Zone South	\$96,060,506	\$153,696,809	\$13,153,074	\$21,044,919

We find that the total climate damages resulting from the drilling of new gas wells using the Trump administration’s values range from \$13 million to \$21 million, on a net present value basis. Total climate damages using the values from the Obama administration range from \$96 million to \$153 million.¹⁸

The new capacity of the various components of this pipeline project could carry large quantities of natural gas, resulting in the potential release of enormous quantities of greenhouse gas emissions. In addition to emissions generated by combustion of the gas that flows through the pipeline, additional emissions result from pipeline operations (including gas consumed by compressor stations, leaks, and other sources). The results are shown in Table 6.

Table 6. Social cost of maximum potential carbon emissions associated with PennEast pipeline project

		PennEast Phase 1	PennEast Phase 2	Adelphia	Total
Total Costs (million 2019\$)	Obama Administration SCC	\$20,473	\$14,582	\$7,960	\$43,016
	Trump Administration SCC	\$2,803	\$1,997	\$1,090	\$5,890

¹⁸ According to the Institute for Policy Integrity, experts agree that the Obama administration’s central estimate of the social cost of carbon does not yet include all of the accepted economic impacts of climate change and is lower than the true cost of climate damages from greenhouse gases. Available at: <https://www.edf.org/sites/default/files/expertconsensusreport.pdf>

The present value cost over a projected lifetime of 40 years, discounted at 3 percent each year, ranges from a low of almost \$6 billion using the Trump administration’s values to a high of just over \$43 billion using the estimates developed by the Obama administration. These numbers are likely conservative, as studies have found that emissions leakage is up to 60 percent higher than U.S. EPA estimates.¹⁹ Valuation of increased leakage would increase the climate damages.

¹⁹ Alvarez, R., et al. Assessment of methane emissions from the U.S. Oil and gas supply chain. *Science* 361, 186-188 (2018).



Appendix A. PERMITTED WELLS IN PENNSYLVANIA

Region/ County	Drilled and Producing	PBNM	ORND	% Drilled and Producing	% PBNM	% ORND
Capital	0	0	0	0%	0%	0%
Adams	0	0	0	0%	0%	0%
Cumberland	0	0	0	0%	0%	0%
Dauphin	0	0	0	0%	0%	0%
Franklin	0	0	0	0%	0%	0%
Fulton	0	0	0	0%	0%	0%
Lancaster	0	0	0	0%	0%	0%
Lebanon	0	0	0	0%	0%	0%
Perry	0	0	0	0%	0%	0%
York	0	0	0	0%	0%	0%
Central	752	315	649	6%	13%	11%
Cameron	73	3	46	1%	0%	1%
Centre	31	19	110	0%	1%	2%
Clearfield	101	85	127	1%	3%	2%
Clinton	85	12	50	1%	0%	1%
Columbia	0	8	2	0%	0%	0%
Elk	202	26	132	2%	1%	2%
Huntingdon	1	1	1	0%	0%	0%
Jefferson	47	49	31	0%	2%	1%
Juniata	0	0	0	0%	0%	0%
McKean	119	51	55	1%	2%	1%
Mifflin	0	0	0	0%	0%	0%
Montour	0	0	0	0%	0%	0%
Northumberland	0	0	0	0%	0%	0%
Potter	93	61	95	1%	2%	2%
Snyder	0	0	0	0%	0%	0%
Union	0	0	0	0%	0%	0%
Northeast	5,416	728	3,813	46%	30%	63%
Bradford	1,414	102	1,731	12%	4%	29%
Carbon	0	0	0	0%	0%	0%
Lackawanna	0	0	27	0%	0%	0%
Luzerne	0	1	12	0%	0%	0%
Lycoming	968	139	447	8%	6%	7%
Monroe	0	0	0	0%	0%	0%
Pike	0	0	0	0%	0%	0%
Sullivan	149	21	226	1%	1%	4%
Susquehanna	1,753	199	661	15%	8%	11%



Region/ County	Drilled and Producing	PBNM	ORND	% Drilled and Producing	% PBNM	% ORND
Tioga	816	236	484	7%	10%	8%
Wayne	0	5	4	0%	0%	0%
Wyoming	316	25	221	3%	1%	4%
Northwest	1,001	302	353	9%	12%	6%
Armstrong	301	62	48	3%	3%	1%
Butler	591	110	258	5%	4%	4%
Clarion	38	22	25	0%	1%	0%
Crawford	2	3	0	0%	0%	0%
Erie	1	0	0	0%	0%	0%
Forest	12	14	13	0%	1%	0%
Lawrence	28	57	5	0%	2%	0%
Mercer	27	25	1	0%	1%	0%
Venango	1	3	3	0%	0%	0%
Warren	0	6	0	0%	0%	0%
Southeast	0	0	0	0%	0%	0%
Berks	0	0	0	0%	0%	0%
Bucks	0	0	0	0%	0%	0%
Chester	0	0	0	0%	0%	0%
Delaware	0	0	0	0%	0%	0%
Lehigh	0	0	0	0%	0%	0%
Montgomery	0	0	0	0%	0%	0%
Northampton	0	0	0	0%	0%	0%
Philadelphia	0	0	0	0%	0%	0%
Schuylkill	0	0	0	0%	0%	0%
Southwest	4,575	1,120	1,258	39%	45%	21%
Allegheny	183	54	66	2%	2%	1%
Beaver	157	45	101	1%	2%	2%
Bedford	0	1	0	0%	0%	0%
Blair	6	2	0	0%	0%	0%
Cambria	1	4	15	0%	0%	0%
Fayette	335	86	38	3%	3%	1%
Greene	1,539	404	292	13%	16%	5%
Indiana	36	23	32	0%	1%	1%
Somerset	16	3	15	0%	0%	0%
Washington	1,961	375	537	17%	15%	9%
Westmoreland	341	123	162	3%	5%	3%
Grand Total	11,744	2,465	6,073	100%	100%	100%

Source: PA Geospatial Data Clearinghouse. Oil Gas Locations 2020. Dataset available online at: <http://www.pasda.psu.edu/uci/DataSummary.aspx?dataset=1088>.

