

DRBC, we thank you for separating your review and comment process from that of the Federal Energy Regulatory Commission. Your process, priorities, regulations and goals are entirely different and so separation is not just appropriate, but is critical.

At this point you are probably getting significant pressure from the PennEast Pipeline Company, as well perhaps from FERC, to hold your hearings and render a decision on the PennEast pipeline proposal.

We are here to make clear that scheduling hearings and developing a DRBC docket document for public comment would be sorely premature. The information provided by PennEast and FERC, to the DRBC, the Army Corps and the states of New Jersey and Pennsylvania is uniformly paralyzing if the goal is informed and objective decisionmaking.

The information provided by PennEast and advanced by PennEast is demonstrably false, misleading and deficient. The wealth of errors, inaccuracies, data gaps, as well as the tremendous volumes of misinformation, missing information and demonstrably false information is so prevalent and overwhelming that DRBC should not be wasting its time, or our time, on trying to review, comment and engage in decisionmaking.

To the degree there is helpful information on the record about the PennEast pipeline project, the information makes clear the unavoidable and unacceptable high level of harm the project will have on our water resources, our environment and our communities today; for decades and for future generations. In response, the DRBC is obliged to deny the PennEast Pipeline project a DRBC docket.

And so now, for the record, we will document just the tip of the iceberg of demonstrably false, misleading and missing information that prevents you from even considering a docket or public hearings. This information compliments the tremendous volumes of information you have received on the record that does nothing but demonstrate that you must reject the PennEast pipeline and deny it a DRBC docket.

Among the Environmental impacts that are inaccurately reported or incomplete we identify the following:

- It is impossible, from the materials submitted by PennEast, to directly determine how many stream crossings of Exceptional Value 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.**

- **PennEast materials fail 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.**
- **PennEast information 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.**
- **PennEast 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, 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 and water way 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 PennEast documents.**
- **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 PennEast application materials.**
- **PennEast 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 lists could alter this figure. PennEast has yet to update this list and ensure all designations are accurate.**

- **75% of the stream crossings will be undertaken using open cut methods. Only 26% of the 189 road crossings will 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 PennEast 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. PennEast 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.**
- **PennEast has also 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 by to be crossed by PennEast. Given that the method used for crossing waterways and wetlands has such a significant and severe affect, knowing exactly what crossings are being proposed or where is an important element to provide for DRBC decisionmaking. In the absence of specific plans and proposals for each waterbody, PennEast's application is markedly incomplete.**
- **The impacts of maintaining the cleared right of way as is intentionally and unintentionally planned for by PennEast, including enduring compacted soils, dramatically altered vegetative composition, increased 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 alteration of the channel substrate and riparian buffer. Approximately 55% of the dry stream crossings are in areas of Potential Blasting. PennEast 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.**

- PennEast 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 PennEast materials and analyses.
- The discussion of blasting provided by PennEast concerns worker safety, not environmental impacts. There are significant ramifications that result from blasting, among them is that blasting leaves 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 will negatively impact the C-1 stream it is designed to avoid. Discussion of this impact and the ways to avoid it are notably absent.
- Deviation P-1710 will cause crossing of two residential roads, impacting C-1 streams and wetlands, as well as 8 homes. Discussion of these water way impacts are notably absent.
- 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 by PennEast.
- 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 – mile post 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 by PennEast.
- The PennEast pipeline will induce the drilling of 3,000 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.

- **Horizontal Directional Drilling long borings should be, but are not, considered and analyzed for feasibility for each and every waterbody crossing along the route to reduce impacts to sensitive habitats.**
- **Groundtruthing 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 PennEast tables documented the presence of only 2 vernal pool habitats and no groundwater seeps. There has been a clear misrepresentation of water resources that will 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, 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. Ted Stiles Preserve has some of the last remaining forest in the region. PennEast has not justified the failure to use the existing right of way versus expanding it.**
- **PennEast has 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.**
- **PennEast 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 Pa. Code Chapter 1028. Yet PennEast project drawings do not identify any existing or proposed riparian buffers around any Exceptional Value or High Quality waters.**
- **PennEast claims, 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 it 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.**

- PennEast asserts it 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 the DRBC or the public to determine whether PennEast will in fact ensure protective flows.
- PennEast 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 weeds in these altered, nutrient-enriched, high pH soils, and stormwater runoff will pollute local waterways with these added nutrients. These implications and impacts are not discussed or addressed by PennEast, nor are alternatives considered for avoiding these impacts altogether.
- PennEast has failed to assess or address comments and experience that shows that the use of standard construction practices will 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 by PennEast is incorrect.
- PennEast greatly underestimate 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.
- 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 has over 12 miles of marked trails for hiking, horseback riding, mountain biking, and trail running. According to the PennEast alignment sheets, 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. DRBC 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 was not delineated on the PennEast alignment sheets 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 is unreliable because it is largely “based on available remote sensing mapping, and not on field-based investigations.”**
- **Expert groundtruthing 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.**
- **PennEast has failed to assess how the functions and values of each wetland cut, crossed and/or otherwise impacted, will be changed by pipeline construction, operation and/or maintenance.**

- **There are even internal discrepancies in the reported acreage of many delineated wetlands in the PennEast 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 they physically visited and assessed each and every wetland along the proposed route is needed as it speaks to the veracity of PennEast's assertions about all of its data and impacts how the public and regulators may view the data itself.**
- **The wetlands tables submitted by PennEast 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 by PennEast 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 by the applicant. 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.**
- **PennEast asserts that emergent vegetation regenerates quickly in wetlands, typically within one to three years. PennEast asserts it would maintain a 10 foot wide corridor centered over the pipeline in an herbaceous state. And PennEast asserts it would selectively cut trees within a 30-foot-wide corridor centered over the pipeline. The remainder of forested and scrub-shrub vegetation, PennEast says, 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 PennEast 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. PennEast has not addressed these demonstrated ongoing impacts that are documented in the PennEast record.

- PennEast is proposing 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.
- PennEast has asserted 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 PennEast stated they 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.
- PennEast reviews do 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 PennEast 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.
- PennEast information does not include the thermal and likely hydrological impacts that will change vernal pools compromising water temperature and flow for breeding amphibians.
- PennEast information does not include the temperature changes, dry compacted soil conditions and changes to vegetation of a right of way that will make it near

impossible for migrating amphibians to return to their breeding pool post pipeline construction.

- PennEast assessments do not include the repetitive pipeline maintenance impacts like herbicide applications to the proposed right of way and routine cutting and unauthorized ATV use that will impact amphibians long term.
- PennEast information does not include a thorough mapping of all vernal pools and wetlands that will be impacted.
- PennEast information does not consider the climate change impacts that will result to vernal pool 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 DRBC or the public adequate time to field verify information and to use the results of that verification for decisionmaking purposes.
- Private drinking water supplies are to be protected as Exceptional Value wetlands. PennEast 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 notes as being, quote, "fully surveyed parcel", the wetland proposed to be crossed was not field surveyed but is in fact 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 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 PennEast 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.**
- **PennEast 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 its calculations and assessments of impacts are simply wrong.**
- **In addition, PennEast 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 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. As a result of pipeline construction, there will be permanent long term water quality impacts. PennEast materials on the record, fail to address the**

increase in stormwater runoff, erosion, water quality degradation and habitat impacts that will result from the permanent, long term changes to land use cover and soil conditions, and the corresponding.

- 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 by PennEast.
- PennEast identified 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 by PennEast in their assessments, alternatives analyses, or plans.
- PennEast 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 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 by PennEast in its 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 by PennEast in its alternative analyses or construction and maintenance plans.

- Impacts to stream baseflow due to land use alterations that will alter the surface hydrological response, increasing runoff and decreasing infiltration is not addressed by PennEast 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 by PennEast.
- The record 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 PennEast's proposal and assessments of waterway and water quality impacts.
- PennEast 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.
- PennEast has failed to recognize potential arsenic contamination and given much of Hopewell Township, for example, is a sole source aquifer, this is of significant concern, and is un-mitigatable
- The pipeline trench will need to be 7.3 feet deep and because most of the soil in Hunterdon County 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, will 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 PennEast.

- PennEast 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.
- Groundtruthing from about Mile Post 51.1 to Mile Post 51.6 in the the Blue Mountain 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 very high likelihood of erosion and increased stormwater runoff from tree removal. These issues are not addressed by PennEast.
- "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 by PennEast 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 by PennEast 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 following 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. PennEast does not consider such factors in its comparison of alternatives.
- Trench plugs are used to interrupt flow along trenches. Penn East 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. PennEast does not provide for accommodating this surface flow or consider how it changes groundwater flow.
- PennEast 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.

- PennEast 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.
- PennEast 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.
- PennEast should, but does not, discuss and assess the roll of topography in controlling conductivity and how fractures control conductivity and how deep recharge may reach in the bedrock.
- PennEast 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 PennEast 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 soils contamination along the pipeline route. However, they do not show the type of contamination at those sites. There is provided no discussion 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.
- PennEast 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.

- PennEast 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 the DRBC to review the impacts of the proposed preferred route and alternative routes on water resources if the inventory of resources is not complete.
- PennEast 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.
- PennEast 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.
- PennEast 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 by PennEast 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 decisionmaking.
- PennEast completely fail to consider how pipeline construction will affect the water balance of wetlands with groundwater inflow.
- Materials on the record completely fail to consider how pipeline construction will affect recharge into bedrock by not considering how compaction will prevent water from accessing fracture zones.
- PennEast 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.
- PennEast needs to assess details about the pipeline leak detection it asserts it will implement, including what rate of leak can be detected and what responsive actions would be triggered.
- PennEast 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. PennEast failed 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.
- PennEast 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 pipe line 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 PennEast materials and record.
- Final planned design of each Horizontal Directional Drilling crossing are missing from the PennEast materials and 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 PennEast materials and record.**
- **Documentation of the final hydrostatic test water withdrawal sources and locations are missing.**
- **Documentation of all necessary permits and approvals for each hydrostatic test water withdrawal source are missing**
- **Identification of special construction methods for construction in extremely saturated wetlands are missing from the PennEast materials and record.**
- **Justification for required additional workspace to accommodate special construction methods for extremely saturated wetlands are missing from the PennEast materials and record.**
- **A revised/final table of impacts on vernal pools within or near the proposed workspaces based on completed surveys are missing from the PennEast materials and 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 PennEast materials and 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 PennEast materials and 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 PennEast materials and record.**
- **PennEast fails to provide a table of bedrock aquifers that includes relevant properties, including specific capacity statistics or well yields, and conductivity where available.**
- **PennEast fails to include map, analysis and evaluation of the recharge, runoff, pollution, vegetation, habitat, soil, and erosion impacts resulting from the combination of soil type, slope, compaction potential and depth to bedrock for each section of pipeline along the proposed preferred route as well as alternatives.**

- PennEast 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.
- PennEast 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.
- PennEast 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 on 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 PennEast needs to legitimately and scientifically analyze this issue.
- PennEast 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”.
- PennEast 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”.
- PennEast 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.
- PennEast 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, PennEast 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.**
- **PennEast Claims it 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 by PennEast.**
- **On the record, there is discussion of areas where the route crosses Special Flood Hazard Areas; is are references to two tables, Table 2.3-6 and Table 2.3.6. Yet neither table appears on the record.**
- **The DEIS 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. PennEast 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 PennEast record.**
- **PE failed to map Interior Forest Impacts wherever they claimed the project was “collocated” in Luzerne and Carbon Counties, Pennsylvania, and Hunterdon and Mercer, New Jersey. PE appears to encroach 150’ deep into Poconos forest. White cross-hatching on maps which denotes Interior Forest Impacts is missing on the following DEIS 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.**
- **PennEast 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.**
- **PennEast 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 will 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 includes water quality protection, flood protection, erosion prevent, and more. These costs are entirely overlooked by PennEast.**
- **PennEast fails to consider the adverse impacts to recreation and ecotourism due to healthy and attractive water resources in the watershed.**
- **PennEast 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 be foisted upon the shoulders of local towns and residents are given short shrift if they are not assessed by PennEast.**
- **The DEIS fails to identify where exactly 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.

- **PennEast will 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 PennEast glosses over lightly.**
- **Deviation P-1710 will negatively impact bobcat habitat, which New Jersey has said should be avoided.**
- **Deviations proposed to avoid Important Bird Areas will inflict significant impacts on water resources and watershed landscapes. The impacts have not been put forth by PennEast for public or agency consideration.**
- **PennEast has 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 groundtruthing, consideration and comment.**
- **Alignment sheets fail to include mile posts. The absence of this critically important information renders the 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 aerials 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 is using desktop information for design purposes rather than completed “in-situ” evaluations. As such, PennEast is not using the best, publicly-available information.**
- **PennEast 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 will be an influx of invasive plant and animal species that will have cascading impacts on the forest ecosystem, which will spread along the right of way and back into the core of the adjacent forest. These impacts are not addressed by PennEast.**
- **An Invasive Plant Species Management Plan for use during construction and operation is not provided by PennEast.**
- **A Migratory Bird Conservation Plan is missing from project materials.**
- **Identification of appropriate seed mixes to be used during revegetation efforts is not provided by PennEast.**
- **Completed surveys identifying all potential suitable habitats for special status species in the project area is not provided by PennEast.**
- **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 PennEast.**
- **Update 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 PennEast.**
- **Identification of National Park Service concerns with regards to effects to trails and cultural resources is not provided.**
- **A vibration monitoring plan and modification of blasting plan that include a review of potential effects to environmental resources is not provided by PennEast.**
- **Evaluation of liquefaction hazards along the pipeline route and at the compressor station site are not provided by PennEast.**
- **Final landslide hazard inventory is not provided by PennEast.**
- **Necessary mitigation measures and post construction monitoring plan for liquefaction hazards and landslide hazards are not provided by PennEast.**
- **Evaluations to support routine/mitigation measures through geologically hazardous areas is not provided by PennEast.**

- **Final landslide inventory is not provided by PennEast.**
- **Landslide mitigation measures with locations is not provided by PennEast.**
- **Post construction landslide monitoring plan is not provided by PennEast.**
- **Final karst mitigation plan is not provided by PennEast.**
- **Identification of the management and field environmental professionals responsible for notification for contaminated sites is not provided by PennEast.**

This partial listing of the many failings of the various PennEast filings provided to DRBC, FERC and other agencies makes clear that for DRBC to be planning hearings on the project or even beginning the process of crafting a draft docket for the project is highly premature. The number of errors, inaccuracies, data gaps; the volumes of misinformation, missing information and demonstrably false information are so prevalent and overwhelming that DRBC should not be wasting its time, or our time, on trying to review, comment and engage in decisionmaking.

To the degree there is helpful information on the record about the PennEast pipeline project, the information makes clear the unavoidable and unacceptable high level of harm the project will have on our water resources, our environment and our communities today, for decades and for future generations. In response, the DRBC is obliged to deny the PennEast Pipeline project a DRBC docket.

Respectfully provided by all the members of the public who signed up to testify on this subject, including those that had the opportunity to testify and those that did not due to the time constraints on the open public comment sessions at the March 15, 2017 DRBC meeting.