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October 15, 2015

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

RE: Northeast Energy Direct - PF14-22-000

Dear Secretary Bose:

The Berkshire Regional Planning Commission (BRPC) respectfully submits the attached comments in relation to the Federal Energy Regulatory Commission Environmental Impact Statement Scoping for the proposed Northeast Energy Direct (NED) Project (PF14-22-000). These comments are submitted on behalf of the City of Pittsfield, Massachusetts, the Towns of Cheshire, Dalton, Hinsdale, Lanesborough, Lenox, Richmond, Washington and Windsor, Massachusetts, the Dalton Fire District, the Lanesborough Village Fire and Water District, Rensselaer County, New York (Rensco), and the Towns of Nassau, Stephentown, and Schodack, New York.

It is without question that the NED Project would have significant impacts on the natural resources, public infrastructure, socio-economics, and public health and safety within the region. The impacted communities within both Berkshire County, Massachusetts, and Rensselaer County, New York, without exception, have voiced their strong opposition to the NED Project. BRPC and Rensco have not analyzed the need for additional energy within the region or alternative energy sources. BRPC and Rensco do not have the technical expertise to weigh in on this issue and recognize that others with more expertise can make such arguments.

These comments are intended to provide a greater understanding with regard to our region along with considerations that should be incorporated into the EIS, as well as mitigation measures for both the construction and operation of the pipeline should the project move forward.

The Berkshire region, with a population of 128,715¹, consists of thirty towns and two cities located in western Massachusetts on the border of New York State. The Berkshires is a true region, well defined by physical features, geographic relationships, political boundaries, historical traditions and social organizations. Two major rivers drain the region, the Hoosic in the north and the Housatonic in the south, and the pipeline would impact both of their headwaters. Their adjacent valley lands contain the majority of the region's development and population. The region also includes small portions of the Deerfield, Westfield, and Hudson River watersheds, all of which would be impacted by the pipeline.

The Berkshire region is fortunate to have a wealth of valuable natural resources—the largest intact forests in southern New England, river valleys, clean upland streams, and abundant wetlands. These are important natural resources both ecologically and to support our tourism industry which is a critical component of the regional economy. The destruction of natural resources and fragmentation of open space inevitably degrades our landscape, and lessens economic and social values.

Rensselaer County, New York has a population of approximately 153,000 residing over 665 beautiful picturesque square miles. The quality of life as portrayed in the fourteen towns, six villages, and two cities, lends to the air of spirit and togetherness symbolic of what life should be about. The county slogan, "Life Looks Good From Here" is consistent with Rensselaer's identity. Rensselaer County strives to be an excellent place to live, to work, to shop, and to raise a family, while balancing economic, educational, and recreational opportunities.

The attached comments detail our concerns along with requested mitigation measures should the project be constructed. The comments include the following sections:

- Public Safety and Health
- Transportation and Local Infrastructure
- Compressor Stations
- Drinking Water
- Rivers, Streams, Waterbodies, and Wetlands
- Invasive Plants

¹ United States Census Bureau 2014 Population Estimate

- Special Species Status and Special Interest Areas
- Socio-Economic and Fiscal Issues
- Impacts to Property Owners

Key concerns and considerations include the following:

- The pipeline should avoid drinking water supply areas;
- Compressor Stations should be located within industrial areas;
- The municipalities should not incur any cost as a consequence of the project for local review processes, repair of infrastructure, emergency response or any other cost associated with the permitting, construction, or operation of the pipeline.
- Directly impacted property owners should not incur any cost as a consequence of the project during acquisition, construction or operations and should be fully compensated for unavoidable costs and impacts.

Thank you for your careful consideration of these comments.

Sincerely,



Nathaniel W. Karns, AICP
Executive Director

Cc: The Honorable Elizabeth Warren, U.S. Senate
The Honorable Edward Markey, U.S. Senate
The Honorable Richard Neal, U.S. House of Representatives
The Honorable Charlie Baker, Governor
The Honorable Benjamin Downing, State Senator
The Honorable Gailanne Cariddi, State Representative, 1st Berkshire
The Honorable Paul Mark, State Representative, 2nd Berkshire
The Honorable Tricia Farley-Bouvier, State Representative, 3rd Berkshire
Mr. Matthew Beaton, Secretary, Executive Office of Energy & Environmental Affairs

FERC Environmental Impact Statement

Scoping Comments

Northeast Energy Direct PF14-22-000

Submitted on October 15, 2015

by the

Berkshire Regional Planning Commission

on behalf of the Berkshire and Rensselaer Pipeline Working Group

Berkshire and Rensselaer Pipeline Working Group Participants:

- Berkshire Regional Planning Commission
- Cheshire, MA
- Dalton, MA
- Dalton Fire District
- Hinsdale, MA
- Lanesborough, MA
- Lanesborough Village Fire and Water District
- Nassau, NY
- Pittsfield, MA
- Rensselaer County, NY
- Schodack, NY
- Stephentown, NY
- Windsor, MA
- Lenox, MA
- Richmond, MA
- Washington, MA

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1 Public Safety and Health

This section sets forth the adverse impacts on public safety and health related to the NED Project as well as a list of requested mitigation measures. In particular, as discussed below, BRPC requests that the Commission ensure that: (1) access for emergency response would be fully maintained with no decrease in response times during pipeline construction; (2) TGP would conduct a full assessment of the training, equipment and supplies needed for emergency response to incidents involving the NED Project during both construction and operation of the proposed pipeline as part of the NEPA process (see Section X.B.2); and (3) all impacted emergency responders have the capacity (including, but not limited to, all necessary training) to respond appropriately to any pipeline-related incident that may be reasonably anticipated.

1.1. Adverse Impacts to Public Safety and Health

Interstate natural gas pipelines can have considerable impacts on public safety and potentially to public health, both during construction and over the years of operation. Based on the NED Project's proposed route, the pipeline would have various adverse impacts related to emergency response and public safety and health during construction. In Berkshire County and Rensselaer County, the pipeline corridor includes small rural and suburban towns and significant areas of primarily forested open space, often in relatively inaccessible and steep terrain. Existing development in the proposed pipeline route is mainly scattered rural homes with some rural and suburban development, including some areas where homes and businesses would be in close proximity to the pipeline. There would also be additional development in proximity to the pipeline over its multiple decades of operation.

The proposed pipeline would put a tremendous strain on already limited first response resources in both counties.

Fire: Every municipality in Berkshire and Rensselaer Counties traversed by the pipeline has a local fire department, but it is critical to note that these are **all-volunteer operations** with limited numbers of volunteers, equipment, training and supplies. Turnover in volunteer membership necessitates ongoing training. Replacement of out-of-date specialized supplies and equipment will be necessary. The adequacy of volunteer-based emergency response may dramatically decrease over the decades that the pipeline would be in operation due to the rapid aging of current volunteers and lack of younger replacements. This demographic challenge is a significant one across all of the pipeline route in both Berkshire and Rensselaer Counties for both fire and EMS services. Forest fire response is conducted through the local fire departments with support from state agencies. Many areas do not have public water systems to provide fire protection.

EMS Services: Similar to fire, EMS services rely heavily on volunteers (with the same turnover issue, discussed above), and have limited volunteer staff, training, equipment and supplies.

Police: Local law enforcement is also limited, primarily town police who are already working at capacity. A new pipeline corridor in these counties would increase demand on local law enforcement. For example, the corridors would likely be used for recreational use (perhaps illegally), particularly by All-Terrain Vehicles (“ATVs”) and snowmobiles.

A preliminary list of the capacities and capabilities of the local first responders along the pipeline route in Berkshire and Rensselaer Counties for the towns of Schodack, Nassau, and Stephentown, New York, and Lanesborough, Cheshire, Dalton, Hinsdale, and Windsor, Massachusetts is attached. As shown, emergency response capacity across the route in these two counties is very limited.

In addition to emergency response, the proposed pipeline presents adverse impacts on public health and safety during construction, including the following:

Emergency response access: The road network in the two counties consists of rural two lane highways and local roads with limited means of access for relatively large portions of communities. Closure or blockage of any road may increase emergency response times significantly or even preclude any ability to respond.

Water supply: The preferred route crosses several public drinking water supply wellhead protection and drinking watershed areas. Hazardous materials, petroleum, or erosion resulting from construction activities in the aquifers and reservoir watersheds would have significant impacts on public health and safety as these water sources would have to be taken off-line for potentially significant periods of time.

Noise: Construction activities, particularly operation of heavy machinery, blasting, and mechanical rock fracturing, have significant noise impacts. Additionally, pipeline compressor stations generate significant noise as a regular part of operations, and periodically create exceptionally high levels of noise. Excessive noise levels have well-documented health impacts.

Trench safety: Construction areas can be “attractive nuisances” and fatalities have occurred due to people falling into open trenches. In addition, according to the National Institute for Occupational Safety and Health (NIOSH), an average of 54 fatalities occur each year in the United States due to failure of trenches. Due to these occurrences, trench safety laws (in Massachusetts, “Jackie’s Law,” G.L. c. 82A, §1 et seq. and 520 C.M.R. 14.00 (“Trench Safety

Laws”) have been enacted to try to prevent these accidents. New York State has a similar law and regulations. TGP should be required to, at a minimum, comply with OSHA’s trenching and excavation requirements of 29 CFR 1926.651 and 1926.652.

Erosion, wash-out and slope failure: Significant erosion, wash-outs and slope failures are a real threat, given the steep topography, high precipitation and increased frequency of microbursts in Rensselaer and Berkshire Counties. This can be even more extreme in areas with highly erodible soil.

1.2. Safety and Health Impact Assessment

BRPC requests that the Commission require TGP to conduct an analysis of safety and health impacts both during construction of the proposed pipeline and during pipeline operations.

1.2.1. *Analysis of health and safety impacts during construction*

The goals of this analysis would be to: (1) determine the level of impact of construction activities on emergency response times in and around the project area; and (2) determine and quantify potential threats to public safety and health due to construction activity.

- Provide an analysis of the roads which would be impacted directly by construction activity either by partial or complete temporary closure. Determine the amount of delay or additional travel time and distance created for each impacted road for emergency vehicles to respond to incidents.
- Provide an analysis of the impact of construction related activity on each impacted road’s condition and its ability to continue to serve local emergency management vehicles responding to emergencies due to the impact of construction related activity on the road’s surface, structure, culverts and bridges. Quantify the “worst case” impacts on emergency response times if the road condition deteriorates to a level which makes it impassable for emergency response vehicles.
- Assess the capacity of local fire departments to respond to wildfires created by construction activities. “Capacity” must include assessment of staffing levels, training, materials, supplies, and equipment.
- Determine what hazardous materials and petroleum products would be used during construction and the threats to public health and safety created by them. Assess the capability of the local hazardous materials response team to respond to any incidents involving hazardous materials and petroleum products.
- Clearly identify all areas where TGP would use blasting. Analyze all of the impacts of blasting necessary for construction. Determine the area of potential concern regarding rock throw and seismic impacts due to blasting activities. Determine the

people, structures, public infrastructure, public use areas, and other facilities which are located within that area of concern.

- Identify the locations of public drinking water supply infrastructure and determine the impact of construction activities, particularly on reservoir dams and the Pittsfield aqueduct feeding Cleveland Reservoir, given the age and condition of this infrastructure and possible impacts due to pipeline construction activities.
- Analyze the noise impacts of construction activities and assess those against state and local noise regulatory standards. Measure the existing ambient noise levels along the construction path for both daytime and nighttime and provide quantified assessments of the expected increases in noise and the potential public health impacts resulting from the increases in noise. This should be analyzed for operation of machinery used for clearing and construction, for mechanical fracturing of rock, and for blasting necessary to remove rock.
- Assess the potential safety risks of trenches and the measures to be used to ensure compliance with, at a minimum, OSHA's trenching and excavation requirements of 29 CFR 1926.651 and 1926.652 and the Massachusetts Trench Safety Laws, as referenced above. The Pittsfield Fire Department is the closest full time department to the proposed pipeline in Berkshire County and would be responding to any trench collapse or major emergency during the pipeline construction and operation phase and needs to be included in the assessment. Similarly in New York trenching rescue teams would come from Troy, Albany or Colonie.
- Assess areas of steep slope for slope failure potential during construction. Determine all areas potentially impacted by slope failure and identify risks to the public using those areas for a variety of purposes. All structures and other facilities or areas used by the public or by private property owners which are in such areas should be identified.

1.2.2. Analysis of health and safety impacts during pipeline operations

The goals of this analysis would be to: (1) to reduce the possibility of a catastrophic failure of the pipeline or related facilities (e.g., compressor stations, meter stations, and main line valves); (2) to minimize risk to the public resulting from catastrophic failure; and (3) to ensure the adequacy and appropriateness of emergency responses to incidents.

- Clearly identify the protocols for inspection of welds during construction. What is the sample number of welds to be subject to inspection by radiological testing? If radiological testing finds weak welds, will the sample number be increased along the pipeline?
- Since most pipeline explosions involve excavation activities by third parties, provide detailed explanation of the measures that will be taken to clearly identify the

pipeline location in the field, to regulate/authorize construction activities in the corridor, and to monitor on a frequent basis for unauthorized construction in the easement.

- Clearly identify location of and safety risks associated with all pipeline above ground facilities: compressor stations, valve stations, main line valves, and pig launchers and receivers. Provide detailed explanation of the measures that will be taken to protect against safety risks. Provide detailed assessment of the ability of local emergency responders to respond to incidents involving above ground facilities and mitigation plans to keep their training, supplies and equipment to an adequate response standard.
- Clearly identify the potential impact radius for potential explosions for the entire pipeline infrastructure based on the proposed size and pressure of the pipeline, including the pipe, each compressor and valve station, each main line valve, and any potential blast hazard at pig launchers and receivers. Document the High Consequence Areas (“HCA”) and the method used to determine them, including quantification used as the basis for each HCA. Identify all structures including their use, public facilities, and areas commonly used by the public (e.g., trails, playfields, camping and picnic areas) within the potential impact radius.
- Clearly identify the proposed distance between all valves. Indicate for each valve whether it would be manually, remotely, or automatically operated in the case of a pipeline system failure. Document how much fuel would be released given the type of valve and resulting time required to shut the valve off and the distance between valves in the case of a failure.
- Clearly lay out the ongoing inspection protocols for the pipeline once in operation. What will be the frequency of monitoring for methane and where will the natural gas be odorized? What will be the frequency of internal inspection for corrosion or other damage to the pipeline? What will be the standards for when inspections reveal potential issues for further investigation and repair?
- Clearly lay out the protocols for the ongoing inspection of the condition of the cathodic protection used. What will be the standards for when inspections reveal potential issues for further investigation and repair?
- Given that much of the pipeline is proposed to be in proximity to high voltage electric transmission lines and overhead (as well as underground) power lines can induce harmful disturbances on nearby metallic pipelines, assess the:
 - Capacitive coupling disturbances for any above ground sections of pipeline that are electrically isolated from the ground. The evaluation of this disturbance should be performed for steady-state operation condition of the power line, assuming the line operates at its maximum operational voltage.

- Inductive coupling disturbances for any pipelines facilities which are located below-ground. This disturbance should be evaluated taking into account the maximum anticipated levels of steady-state and short-circuit currents.
- Conductive coupling disturbances for underground sections of the pipeline and for any grounded above-ground sections of the pipeline. This evaluation should be performed only for short-circuit condition of the power line and should take into account the maximum anticipated level of short-circuit current.
- Under short-circuit condition, the disturbances due to inductive and conductive coupling occur simultaneously.
- Assess the adequacy of proposed cathodic protection against corrosion given current research finding that traditional pipe-to-soil potential measurements do not guarantee efficient protection.²
- Conduct an analysis of the appropriate depth which the pipeline should be buried to minimize the potential of a pipeline failure based on the climate conditions for eastern New York and western Massachusetts. As outlined in Table 1.3-1 of Resource Report 1, at 1-60 (March 2015), TGP has proposed that only three feet of cover would be used in normal soil conditions or two feet in areas of consolidated rock. This depth is well above the frost line in New York and western Massachusetts and would result in a significant portion, if not all, of the pipeline being above the frost line. Would TGP's "minimum" specification for depth of cover provide adequate protection to the pipeline from temperature changes or frost heaves? BRPC notes that failure of welds can lead to a catastrophic explosion that could impact homes, businesses and wildlife habitat areas, including cold water fisheries and endangered species habitat, within 900-1,000 feet of the pipeline. Not only would the gas pipeline be damaged but a major interstate electric transmission line critical to a broad region may be rendered inoperable.
- Provide a summary and analysis of the safety record of interstate gas pipelines located under transmission lines for a period of at least 30 years. Provide examples of at least ten interstate gas pipelines constructed within 100 feet of an electric transmission line and include their safety record.
- Assess the training, supplies and equipment for public safety personnel in each municipality and Rensselaer and Berkshire Counties to respond to catastrophic pipeline failure.

² See Jose R. Daconti, *Power Technology*, "Electrical Risks in Transmission Line-Pipeline Shared Rights-of-Way", Newsletter Issue 96, October 2004; Ouahdah M'hammed, "Zergoug Mourad, Ziouche Aicha, Touhami Omar, Ibtlouen Rachid, Bouyegh Saida, and Dehchar Cherif, International Conference on Control, Engineering & Information Technology Proceedings, "AC Corrosion Induced by High Voltage Power Line on Cathodically Protected Pipeline" ISSN 2356-5608 (2014).

- Assess the ability of local public safety personnel to respond to public safety issues which may be created due to access by third parties along the pipeline route, such as use by ATVs and snowmobiles. Assess the training, equipment and supplies in relation to their ability to respond to incidents which may occur in remote sections of the pipeline, as well as in close proximity to homes and businesses.
- Assess the ability of local land use controls to reduce future increases in risk of potential failure due to future development along the pipeline route.

1.3. Requested Mitigation Measures to Protect Public Safety and Health During Construction

BRPC requests that the Commission direct TGP to mitigate the adverse impacts on public safety and health by requiring the following conditions.

- 1.3.1. Require TGP to abide by conditions consistent with those that would be required under local permits for construction in local roads and for driveway access permits.
- 1.3.2. Minimize use of open cut construction across public roadways.
- 1.3.3. Clearly identify any proposed locations where construction activities would potentially negatively impact emergency responses. Specify whether impact would be to constrict or to block access and the anticipated duration of such impact. Develop and implement a plan, subject to agreement by local emergency responders, to maintain emergency response levels of service existing at the time of the FERC Order during such constriction or closure.
- 1.3.4. Meet with emergency responders in each jurisdiction at least two weeks prior to commencement of any construction activity in their jurisdiction to review plans and the construction schedule in order to coordinate responses. Meet at least every two weeks with emergency responders in each jurisdiction during construction to determine if adjustments are necessary.
- 1.3.5. Require TGP to provide training to local volunteer fire departments for responses to fires created by construction activities. Assess materials and equipment available for their response to such incidents. Provide at no cost all necessary response training, materials and equipment.
- 1.3.6. Provide local fire departments and regional Hazard Response Teams with list of hazardous materials which will be present during construction; provide training to them on appropriate responses to incidents involving those hazardous materials; provide additional material or equipment necessary for them to appropriately and safely respond.
- 1.3.7. Require TGP to comply with current OSHA standards for workplace safety and provide sufficient First Aid trained workers on the job site.

- 1.3.8. Require TGP to abide by conditions consistent with those that would be required under local, county and state permits required for blasting.
- 1.3.9. Provide municipal and fire and water district public water suppliers with detailed plans for review and approval to protect municipal water supply infrastructure from damage due to pipeline construction and detailed erosion and slope stabilization control plans for review and approval for all pipeline construction activities within drinking water supply watersheds.
- 1.3.10. Require TGP to abide by conditions consistent with those that would be required under local noise protection bylaws/ordinances and with state noise standards. Require TGP to monitor noise during construction measured from the nearest sensitive receptors and to immediately adjust construction operations as necessary to comply with approved standards.
- 1.3.11. Require TGP to comply with adopted trench safety requirements. See Trench Safety Laws.
- 1.3.12. Provide Technician Level (40 hour) Trench Collapse training program to Pittsfield, Troy, Albany, and Colonie Fire Departments to refresh current staff and train additional members on trench rescue. The local Fire Departments should be consulted in choosing the vendor for the training.
- 1.3.13. Require TGP to provide detailed construction plans and specifications for all areas identified as being at-risk of slope failure during construction to the appropriate Town Boards of Supervisors or Select Boards for review and approval prior to the commencement of construction.
- 1.3.14. Require on-site inspectors with the legal enforcement authority to insure that all conditions are met during construction. Coordinate with local authorities and provide inspection reports to a designated point of contact within each municipality. The municipal point of contact should have the ability to engage with inspectors regularly and insure that all parties agree that all conditions are met.
- 1.3.15. Require TGP to enter into binding hold harmless agreements with each municipality which protects the municipality from damages resulting from pipeline construction activities.
- 1.3.16. Require TGP to establish a detailed inspection and maintenance schedule for above and below ground pipeline infrastructure and provide copies of this detailed schedule to each County along the entire proposed route.
- 1.3.17. Require TGP to provide funding to New York State and the Commonwealth of Massachusetts, on an annual basis, to each hire an independent environmental monitor to review compliance with TGP's inspection and maintenance

performance, along with post construction monitoring of sensitive natural resources that have been disturbed along the proposed NED path.

- 1.4. Requested Mitigation Measures for Operational Impacts to Public Safety and Health
 - 1.4.1. Consider requiring higher class pipe than may be minimally required in order to reduce the potential for incidents.
 - 1.4.2. Consider requiring more main line valves, with automatic cut-offs, than may be minimally required to reduce the scale and duration of potential incidents.
 - 1.4.3. Provide incident response plans and protocols to local and regional emergency responders for incidents which may require a response during operations for review and approval. Update those plans and protocols on no less than a five year basis or more frequently if conditions or new information warrant such update.
 - 1.4.4. Provide a binding protocol of inspections of signage and other measures to ensure that unauthorized construction or land disturbance activities are not taking place in the pipeline corridor.
 - 1.4.5. Require that TGP provide financial resources to local governments with land use regulatory authority to develop, on a voluntary basis, appropriate land use regulatory tools to reduce future land use and potential safety impacts within High Consequence Areas along the corridor. These might include measures such as pipeline corridor overlay zones, modifications in subdivision regulations to require that development areas are not within pipeline right-of-way, or other appropriate measures.
 - 1.4.6. Prior to the initiation of transport, the training and equipment needs of the community responders should be evaluated, revised, developed and maintained. The Pittsfield Fire department is the closest full time department to the proposed pipeline in Berkshire County and would be responding to any trench collapse or major emergency during the pipeline construction and operation phase and needs to be included in the assessment. Similarly in New York, in the event of a catastrophic failure, support would come from Troy, Albany and Colonie.
 - 1.4.7. Require TGP to provide local responders and regional Hazard Response Teams one-day Operations Level training for all personnel and three day Technician Level training for 20-30 personnel no less often than every three years.
 - 1.4.8. Require TGP to provide Nassau and Windsor additional training to respond to emergencies at the compressor station no less often than every three years.
 - 1.4.9. Require TGP to provide a 4-gas meter, compatible with the expected product, to each fire department for each response vehicle along the route as well as

providing for annual training, replacement of the sensors and annual maintenance.

- 1.4.10. Require TGP to provide training to local volunteer fire departments for responses to fires created by operation activities. Assess materials and equipment available for their response to such incidents. Provide at no cost all necessary response training, materials and equipment. This training and assessment should be conducted no less often than every three years.
- 1.4.11. Require TGP to have a written agreement with each community to replace any consumables (such as Class “A” foam) that are used in responding to any incident associated with the pipeline.
- 1.4.12. Require TGP to store a trailer full of foam containers (5 gal or 55 gal) at the Nassau and Windsor compressor stations for a rapid response to any pipeline involved fire in eastern New York and western Massachusetts.
- 1.4.13. Require TGP to provide local fire departments and regional Hazard Response Teams with list of hazardous materials which would be present during operations or as a result of pipeline cleaning or other activities. Provide training to them on appropriate responses to incidents involving those hazardous materials. Provide additional material or equipment necessary for them to appropriately and safely respond. This training and assessment should be conducted no less often than every three years.
- 1.4.14. Require TGP to relocate public use areas and facilities from HCAs if requested to do so by the appropriate local government or state agency.
- 1.4.15. Require TGP to provide local first responders with necessary training, equipment and supplies to respond to increased public use of the pipeline right-of-way for ATV and snowmobile use and to enforce trespassing laws along the corridor.
- 1.4.16. Require TGP to provide a binding protocol of inspections for slope failure and erosion along the corridor on an ongoing basis. Require TGP to immediately (within 24 hours) respond to any notice of potential slope failure or erosion. Require TGP to reimburse any municipal expense needed to inspect, enforce and if necessary mitigate or correct slope failures or erosion.
- 1.4.17. Require TGP to enter into binding hold harmless agreements with each municipality which protects the municipality from damages resulting from pipeline operations and potential incidents.

2 Transportation and Local Infrastructure

This section sets forth the adverse impacts to public infrastructure related to the NED Project as well as a list of requested mitigation measures. In particular, as discussed below, BRPC requests that the Commission ensure that (1) all infrastructure costs related to construction of the NED Project would be paid for by TGP, and (2) TGP would conduct a Transportation Impact Assessment Scope of Work for all Berkshire and Rensselaer roads used for the NED Project to guarantee that all impacted roads are in adequate condition and safe to travel during construction and in a good state of repair at the conclusion of pipeline construction. A proposed Transportation Impact Assessment Scope of Work is attached.

2.1. Adverse Impacts on Transportation and Local Infrastructure

Construction of the NED Project would have considerable negative impacts on public infrastructure in and around the project area, including roads and highways and water distribution pipes. Among other things, excavation and blasting activities and transport of large volumes of relatively heavy material and equipment would impact that infrastructure.

Given the fact that this is primarily a rural area, emergency response times and detour times for residents can be significantly negatively impacted by closures of roads due to construction activities or damage by heavy vehicles.

Many roads and highways in Berkshire and Rensselaer Counties would be adversely impacted by construction of the NED Project. Lacking significant information on the location of pipeyards, contractor yards, access driveways, etc., it is not possible to be complete regarding the locations of all roadways, bridges and culverts which would be impacted by construction activities or their condition at this early stage. However, given the pipeline route, and the considerable distance from the interstate highway system that pipe, valves, equipment for compressor stations and specialized heavy equipment would have to be transported from the most closely proximate interstate highway (I-90), we can develop some sense of the roads that will be impacted.

BRPC has identified the numerous local roads and state and federally numbered highways that it believes would be impacted based on the current preferred route, which is attached. Five state and federally numbered highways, all under the ownership and jurisdiction of MassDOT, are crossed by the pipeline route in Berkshire County, Massachusetts. Similarly, nine state and federally numbered highways, under the jurisdiction of NYSDOT, are crossed by the pipeline route in Rensselaer County, New York. Given their importance for regional transportation and public safety access, as well as no reasonable alternative routes, these highways cannot be

closed or constricted by open cut pipeline construction. The Commission should require boring or horizontal directional drilling under these roadways. Permits would be required from MassDOT, District 1 (Lenox) and NYSDOT requires Use and Occupancy Permits for utility siting and construction in NYS Highway ROW.

Berkshire and Rensselaer Counties are not in a position to absorb any costs related to repair or damage to public infrastructure from the NED Project. Much of the public infrastructure in both counties is old and was not constructed to current standards and thus is fragile in condition. Within Berkshire County, the 2015 Berkshire Regional Transportation Plan documents that the transportation system only has about twenty percent of the funding needed to maintain it in a state of good repair over the next thirty years. Other public infrastructure for water distribution and storm drainage suffers from similar gaps in funding resources. Thus the local and state governments do not have the financial resources to correct additional damage caused by construction of a natural gas pipeline.

Most of the State Highways in both Rensselaer and Berkshire Counties are two lane highways, with traffic speeds of 40-55 mph. It will be important both for traffic safety reasons as well as to maintain regional traffic flow that construction related traffic not back-up for turns onto pipeline access roadways or onto local roads to be used for access. Due to the very close proximity of the Ashuwillticook Rail Trail and Rte. 8 at Nobody's Road in Cheshire, Massachusetts (approximately MP 8.0), and the need to maintain safe rail-trail use, this is a special problem location in this regard and close coordination with MassDOT, Mass State Police, the Town of Cheshire Police, and the Mass Department of Conservation and Recreation, which owns the rail-trail, will be necessary.

2.1.1. Transportation Impact Assessment

Once pipeyards and contractors yards are identified, the routes to be used to deliver materials and equipment to those yards from the State and National Highway System and from the yards to the access roads for the project must be clearly identified. Every public road and highway which is classified as "Local" or "Collector" by MassDOT/Berkshire Metropolitan Planning Organization or by NYSDOT/Rensselaer County which will be used to transport materials and equipment should be identified and its ability to handle the significant number of heavy loads needs to be determined. In doing so, it is necessary for TGP to:

- Provide the maximum total weights and axel weights of transport vehicles and number of trips that will be required for each route.
- Clearly identify all public roads that will be used for transport and construction purposes.

- Inventory those for roadway condition, including surface, subbase, culverts and bridges and their ability to carry vehicle weights, with appropriate axel configurations, for delivery of construction equipment, removal of wood products from clearing and rock, delivery of pipe and other pipeline equipment, and delivery of necessary trench backfill material.
- List all “posted” bridges and culverts with their weight restrictions.
- Clearly identify any areas of deficiency which must either be avoided or rebuilt/repaired to carry such loads.
- Provide specific inventory of public road crossings by the pipeline and detail of the impacts of any traffic delays or detours during construction.
- Evaluate the impact on emergency response times for police, fire and rescue to any portion of a community which may be impacted by road closures during construction.
- Develop mitigation measures for unavoidable closures.
- Determine amount of detours necessitated by road closures during construction, both number of trips and length of detour.
- Develop a matrix to clearly layout the level of impact for each closed road and cumulatively for the entire project.
- Clearly identify all roadways crossed by the pipeline by their functional classification as contained in MassDOT’s Road Inventory and the method proposed to construct the pipeline across those roads. MassDOT, NYSDOT or local approval, depending on the ownership of the particular road, of the construction method for crossing must be obtained prior to proceeding to construction and should be at the owner’s discretion.

2.1.2 Water Distribution Infrastructure Impact Assessment

Due to the location of the preferred route, there is limited public water distribution infrastructure impacted by the pipeline in Rensselaer or Berkshire Counties. Known locations are:

- Town of Schodack, New York: 12” water main on north side of State Route 20 between Lape and Shufelt Roads. Boring should be required at that location.
- Lanesborough Village Fire & Water District:
 - Route 7
 - Water storage tank, off Prospect Street
 - Old Cheshire Road
 - In addition, other local roads to be used for transport of equipment and materials may contain water lines as well which may be negatively impacted by transport activities.

- Dalton Fire District:
 - Anthony Road / Reservoir Road to Power Lines. 8" D.I. Water Main to North Mt Road. Vintage 1980's. 10" C.I. Transmission Water Main to Town of Dalton. Vintage 1930's. 12" C.I. Transmission Water Main to Town of Dalton. Vintage 1930's,
 - Old abandoned 4" C.I. water main from Duncan Brook Headwall, into Dicken Crane's field, Mile Marker 12.1. This line may still be holding water. Vintage 1890's.
 - Chalet Rd / Duncan Brook Road, 1 ½" plastic water main, Vintage 1988. Mile Marker 12.14.
 - Route 9 crossing Mile Marker 12.22. Two water mains 1) 4" D.I. water main, part of Wahconah Falls Distribution System, Vintage 1988. 2) 10" C.I. water main, part of the Windsor Dam Reservoir Raw Water Transmission Main to Filter Plant, Vintage 1890's to 1900's

2.2. Requested Mitigation Measures for Transportation and Local Infrastructure

BRPC requests that the Commission direct TGP to mitigate the adverse impacts on public infrastructure by requiring the following conditions.

- 2.2.1. Pipeline Crossings of any Federal or State Highway should not use open cut construction methods but be required to use boring or directional drilling that do not delay or impede traffic flow on these arterial highways.
- 2.2.2. All normally required MassDOT or NYSDOT road use permits should be obtained.
- 2.2.3. Exact transport routes of materials, equipment and personnel between the interstate highway system and pipeyards, contractor yards, and the pipeline construction areas, as well as between pipeyards and contractor yards and the pipeline construction areas should be delineated and provided to the State, County, Regional Planning Agency and Local agencies for review and approval prior to commencement of use. Adjustments of routes to minimize negative impacts on residents, businesses and the public infrastructure may be required by the appropriate agency.
- 2.2.4. If local governments have an established road use policy, procedure, regulation or ordinance/bylaw, TGP should be required to abide by conditions consistent with those that would be required under local permits. Local permits are, at a minimum, in effect for:
 - Driveway construction permit – Towns of Nassau and Schodack, NY (Schodack Town Code: Section 185 Excavations)
 - Cutting and clearcutting regulations – Town of Nassau, NY

- 2.2.5. TGP should be required to follow all standard state/local regulations regarding the use of flaggers at road construction or access points.
 - 2.2.6. The location and condition of all local water distribution infrastructure along the pipeline and transport routes should be identified through engineering survey. The condition should include the approximate age (if known), material used in the pipes, and assess their current condition. Pre- and Post-Construction pressure tests should be performed in order to establish a base-line condition and then to determine if construction and transportation activities negatively impacted the pipes. TGP should be required at its expense to repair or replace any damaged infrastructure to the owner's satisfaction.
- 2.3. Requested Mitigation of Potential Public Safety Impacts from Road Delays/Closures
- 2.3.1. Clearly identify any proposed locations where construction activities will potentially negatively impact emergency responses; specify whether impact is to constrict or to block access and the duration of such impact.
 - 2.3.2. Develop and implement a plan, agreeable to local emergency responders, to maintain current emergency response levels of service during such constriction or closure.
 - 2.3.3. Meet with Emergency Responders in each jurisdiction at least two weeks prior to commencement of any construction activity in their jurisdiction to review plans and the construction schedule in order to coordinate responses; meet at least every two weeks with Emergency Responders in each jurisdiction while construction is occurring there to determine if there are adjustments which should be made.
- 2.4 Requested Mitigation of Regional Traffic Safety & Traffic Delay Impacts
- 2.4.1. Special provisions for traffic control at all intersections with State Highways and side roads used for construction access and pipeline construction access roads must be provided, with approval from MassDOT, NYSDOT, appropriate State Police, and local police as the means and methods for maintaining safe through traffic flow.
 - 2.4.1 A special management plan must be developed for Nobody's Road in Cheshire, MA given the very short distance (205 feet) between Mass. Rte. 8 and the Ashuwillticook Rail Trail. The mix of through traffic on Rte. 8 which travels at 45-55 mph, pedestrians and bicyclists using the rail trail, and a significant amount of heavy truck traffic will be very problematic. In addition, due to the very active farm market on the opposite side of Rte. 8, this is already a high accident cluster location. The management plan should be developed in consultation with MassDOT, Mass State Police, the Mass. Department of Conservation &

Recreation, the Town of Cheshire, and the Berkshire Bike Path Council and should be reviewed and approved by them.

2.5 Requested Mitigation of Potential Damage to Public Roadways

2.5.1 As discussed above, the Commission should require TGP to submit to a process for assessing the impact on public infrastructure. A Proposed Transportation Impact Assessment Scope of Work (attached) is intended to lay out a detailed process to ensure that local and state taxpayers are protected from bearing the costs of roadway infrastructure damage created by construction of the pipeline.

2.5.2 Any bridges or culverts which must be replaced due to damage caused by pipeline construction activities should be replaced meeting modern standards for such structures, including stormwater flow which accounts for increased precipitation due to climate change in the northeast. Bridge and culvert work should be consistent with the Massachusetts State Stream-Crossing Standards and New York stormwater standards that require no increase in run-off flows and no perceptible turbidity change above and below project. In New York, stream crossing standards are embodied in Article 15 permits. 6 NYCRR Part 608. TGP should be required to follow any guidelines in effect or anticipated to be in effect at the time of construction including stormwater standards based on climate change predictions for the years 2020, 2050, 2080, & 2100.

3 Compressor Stations

This section sets forth the adverse impacts resulting from the construction and operation of compressor stations related to the NED Project as well as a list of requested mitigation measures. In particular, as discussed below, BRPC requests that the Commission ensure that: (1) the compressor stations receive full and adequate review at the local level regardless of zoning requirements; (2) noise and lighting impacts are limited to the maximum extent practicable based on ambient levels both daytime and evening; and (3) alternatives in industrially zoned sites and/or communities are considered.

3.1. Adverse Impacts from Compressor Stations

The Town of Windsor, Massachusetts is a single zone town zoned for residential/agriculture. There are currently no industrial sites in town and just a handful of very small commercial sites. The impact of a compressor station on the Town of Windsor would be transformational. On the surface it may seem that locating a compressor station in a rural area with low density would have fewer or lesser impacts than a compressor station located in a densely populated area. However, the impacts from constructing a compressor station in the Town of Windsor would not be limited to the site itself or to an area within a certain radius of the station. Constructing a compressor station within the Town of Windsor would irrevocably and unequivocally change the very nature of the town and the quality of life for the residents within the community as well as those who recreate within the town.

The Town of Nassau, New York is home to several types of small commercial establishments such as a coffee shop, convenience store, hairdresser, agriculture-tourism farms, antique stores, and home-based businesses. Larger commercial enterprises include farming, a sawmill, laundromat, septic service, oil distribution company, auto repair facilities, and a trucking center. The majority of the Town is currently zoned rural residential with small commercial pockets located sparsely throughout the town. Large scale commercial and industrial development is absent because it is inconsistent with the town's rural residential character and not permitted in the rural residential land use district under the current zoning law. The lack of public water and sewer systems is another limiting factor. There is only one industrial noise source in the entire Town of Nassau. There are no such noise sources within the rural residential vicinity of the proposed Market Path Mid-Station 1 compressor station at Clarks Chapel Road.

3.1.1. *Noise Impacts*

Construction activities, particularly operation of heavy machinery, blasting, and mechanical rock fracturing, have significant noise impacts. Additionally, pipeline compressor stations

generate significant noise as a regular part of operations, and periodically create exceptionally high levels of noise. Excessive noise levels have well-documented health impacts.

TGP should be required to analyze the noise impacts of construction activities and assess those against state and local noise regulatory standards. Measure the existing ambient noise levels for both daytime and nighttime and provide quantified assessments of the expected increases in noise and the potential public health impacts resulting from the increases in noise. These measurements should be performed in accordance with industry standards in relation to where the decibel meters are placed, the time of year and time of day measurements are recorded, the frequency these measurements are taken and how extraneous noise is discounted. This should be analyzed for both noise associated with construction activity and operations.

3.1.2. Hazardous Materials

Liquid separation and filtering at compressor stations pose potential hazardous with regard to the transport and disposal of hazardous byproducts. Compressor stations typically include scrubbers, strainers or filter separators which remove liquids, dirt, particles, and other impurities from the natural gas. Though natural gas is considered “dry” as it passes through the pipeline, water and other hydrocarbons may condense out of the gas as it travels. Thus compressor stations will also remove these impurities from the gas so that they can be disposed of or sold as desired.

TGP should be required to determine what hazardous materials and petroleum products would be used during construction and the threats to public health and safety created by them. In addition, the capability of the local hazardous materials response team should be assessed in relation to their ability to respond to any incidents involving hazardous materials and petroleum products. The haz-mat teams should be provided with inventories of the hazardous materials present in order to be prepared prior to responding to any incident.

3.1.3. Lighting

As discussed previously, the Town of Windsor is a single zone town with no existing industrial activity. Similarly, the Nassau compressor station is proposed in a rural residential area. Locating a compressor station within the Towns of Windsor or Nassau could significantly change the character of the towns. In addition to noise pollution and air quality, lighting within the compressor station could have a significant impact on the towns.

The terms light pollution and light trespass are the result of many debates focusing on the over-lighting of our towns. Light pollution is excess light that spills into our sky at night obliterating the view of stars and forming a halo of light known as sky-glow. The International Dark-Sky

Association estimated that 30% of nightlight was lost on skyward illumination and over \$1.5 billion lost in producing light in the USA (1996). Light trespass refers to the unnecessary illumination of neighbors' homes and properties by misdirected outdoor lighting. Luminaires (fixtures) with insufficient screening are usually the cause of this and light pollution issues.

Uneven lighting and glare create problems for people walking and driving at night which are further exaggerated for older people whose eyes take longer to adjust to competing light levels. Effective outdoor lighting avoids the creation of shadows or glare. Shadow is created either by obstacles beneath the light source such as a tree, or by the fixtures being placed too far apart to illuminate the space between them creating an uneven lighting effect. Shadow can be avoided in some cases by using shorter fixtures beneath trees and in others by careful placement of the fixtures. Glare is often caused by insufficiently shielded or misdirected light sources which shine brightly into the viewers' eyes resulting in momentary blindness and creating a safety hazard. The glare factor is also effected by the height of a fixture. Very tall fixtures, out of keeping with the scale of the surrounding architecture, can negate the benefits of shielding. Lower poles, coupled with lower lamp wattages, help to reduce negative impacts, although if not properly designed there will still be unnecessary light pollution.

3.1.4. Emergency Response

TGP should be required to clearly identify the location of and safety risks associated with all pipeline above ground facilities: compressor stations, valve stations, main line valves, and pig launchers and receivers. Provide detailed explanation of the measures that will be taken to protect against safety risks. Provide detailed assessment of the ability of local emergency responders to respond to incidents involving above ground facilities and mitigation plans to keep their training, supplies and equipment to an adequate response standard.

TGP should be required to assess the training, supplies and equipment for public safety personnel in each municipality and Rensselaer and Berkshire Counties to respond to catastrophic pipeline failure.

3.2. Requested Mitigation Measures Related to Compressor Stations

3.2.1. Alternative sites for a compressor station should be considered. Industrially zoned sites or sites within a community that has existing industry and industrially zoned land would be preferable.

3.2.2. If a compressor station is to be located and constructed within the Towns of Windsor, MA or Nassau, NY, it is imperative that the compressor station be constructed in such a way as to have the least impact as possible to the Towns, their residents and visitors. Considerations should include:

- Careful consideration of the location of the compressor station within the selected site.
 - Retention of natural features to the maximum extent practicable.
 - Screening from adjacent properties and the roadway.
 - The compressors should be contained in a closed structure, with the highest sound muffling features feasible.
 - Consider constructing a fully or partially buried structure, depending on depth of ledge, and creating an earthen berm to the full height of any above-ground portions of the structure.
 - Minimize of lighting to the maximum extent practical. TGP should be required to adhere to the guidelines provided by the International Dark Skies Organization to minimize light pollution.
 - Minimization of noise and vibration to the maximum extent practical.
- 3.2.3 Require TGP to prepare lighting plans and receive approval from the Towns of Windsor and Nassau prior to construction. The facility should limit lighting to task lighting as necessary for maintenance work in station yard, rather than full time lighting of entire station yard. The lighting plans should be prepared by illumination engineer. The lighting plan should consider:
- full cut-off fixtures with no drop-down optics that direct light toward the ground
 - color temperature
 - fixture spacing and height
 - motion activated lights or timers to reduce unnecessary lighting
 - windowless facility or tinted windows to prevent outside visibility of interior nighttime lighting
- 3.2.4. Require TGP to provide training to local volunteer fire departments for responses to fires created by construction activities. Assess materials and equipment available for their response to such incidents. Provide at no cost all necessary response training, materials and equipment.
- 3.2.5. Provide local fire departments and regional Hazard Response Teams with list of hazardous materials which will be present during construction; provide training to them on appropriate responses to incidents involving those hazardous materials; provide additional material or equipment necessary for them to appropriately and safely respond.
- 3.2.6. Require TGP to comply with current OSHA standards for workplace safety and provide sufficient First Aid trained workers on the job site.
- 3.2.7. Require TGP to abide by conditions consistent with those that would be required under local noise protection bylaws/ordinances and with state noise standards.

Require TGP to monitor noise during construction measured from the nearest sensitive receptors and to immediately adjust construction operations as necessary to comply with approved standards.

- 3.2.8. Provide incident response plans and protocols to local and regional emergency responders for incidents which may require a response during operations for review and approval. Update those plans and protocols on no less than a five year basis or more frequently if conditions or new information warrant such update.
- 3.2.9. Require TGP to provide local responders and regional Hazard Response Teams one-day Operations Level training for all personnel and three day Technician Level training for 20-30 personnel no less often than every three years.
- 3.2.10. Require TGP to provide Nassau and Windsor additional training to respond to emergencies at the compressor station no less often than every three years.
- 3.2.11. Require TGP to provide training to local volunteer fire departments for responses to fires created by operation activities. Assess materials and equipment available for their response to such incidents. Provide at no cost all necessary response training, materials and equipment. This training and assessment should be conducted no less often than every three years.
- 3.2.12. Require TGP to have a written agreement with each community to replace any consumables (such as Class "A" foam) that are used in responding to any incident associated with the pipeline.
- 3.2.13. Require TGP to store a trailer full of foam containers (5 gal or 55 gal) at the Nassau and Windsor compressor stations for a rapid response to any pipeline involved fire in eastern New York and western Massachusetts.
- 3.2.14. Require TGP to provide local fire departments and regional Hazard Response Teams with list of hazardous materials which would be present during operations or as a result of pipeline cleaning or other activities. Provide training to them on appropriate responses to incidents involving those hazardous materials. Provide additional material or equipment necessary for them to appropriately and safely respond. This training and assessment should be conducted no less often than every three years.
- 3.2.15. Require TGP to treat all material precipitated during the compression process as hazardous materials all such waste to be removed from the site and disposed of at an approved hazardous waste facility. No hazardous material that has been separated, filtered or condensed from the pipeline operation should be stored on site. Any hazardous material should be shipped off site daily.
- 3.2.16. Require TGP to capture and reprocess all gasses released during blow down operations and do not allow gases to be released into the atmosphere.

3.2.17. Require TGP to enter into binding hold harmless agreements with each municipality which protects the municipality from damages resulting from pipeline operations and potential incidents.

4 Drinking Water

This section sets forth the potential adverse impacts and concerns on public drinking water related to the NED Project as well as a list of requested mitigation measures. In particular, as discussed below, BRPC requests that the Commission direct TGP to relocate the route of the pipeline out of public drinking water supply areas (aquifers and aquifer recharge areas, source water supply watersheds, and water supply infrastructure). If the route is not re-located, BRPC requests that the Commission ensure that there be no change in the quantity and the quality of the water supply sources and there be no short-term or long-term disruption to the delivery of the raw water. Specifically BRPC requests; (1) TGP will conduct a pre- and post-construction monitoring program to demonstrate that water quantity and quality are maintained at pre-construction levels for all public drinking water supplies and private water supply wells and springs (in New York within a 1 mile distance [to comply with the proposed Rensselaer County Drinking Water Protection Law] and in Massachusetts within 300 ft. to either side of the proposed pipeline route; (2) TGP will conduct pre- and post-construction monitoring of all drinking water infrastructure to demonstrate that all aqueducts, pipelines, pumps and other infrastructure do not suffer damage from construction and maintenance of the gas pipeline, and (3) TGP would be completely responsible to provide redundant sources and delivery of supply should the sources and delivery of supply be diminished in any manner.

4.1. Adverse Impacts

Adverse impacts to public drinking water supplies can result from short term construction-related impacts and longer term impacts (operation and maintenance, permanent land and vegetation alterations resulting in surface and groundwater flow patterns, damage to infrastructure and impacts from a possible incident.) The short- and long-term impacts to drinking water supplies mirrors that of water resources as discussed in Section 5 of our comments, with the added concern that these particular resources provide drinking water to a very significant portion of Berkshire and Rensselaer Counties' populations and key businesses. It is therefore essential that the water supply is in no way negatively impacted by the construction or presence of the proposed pipeline.

Of particular concern is the amount of land within the pipeline buffer in Massachusetts that involves soils susceptible to erosion within Surface Water Supply Protection Zones. Sedimentation is already a noted and costly management issue in regards to the Windsor and Cleveland Reservoir water systems, and efforts to avoid further sediment transport within these watersheds must be a high priority. As illustrated in Table 4.1.1 below, almost 23 acres of land within the 300' pipeline buffer zone are categorized as having erodible soils by the NRCS Soil Survey, as having steep slopes >15% , or encompass both erodible soils and steep slopes.

An additional 30 acres of erosion-susceptible soils are found in the Anthony and Egypt Brook water supplies.

Table 4.1.1. Erosion-susceptible soils within the Pittsfield Water Supply System

Location *	Steep Slope	Erodible**	Both Steep Slope and Erodible Soils
Anthony Brook Watershed	10.37	0	0
Egypt Brook Watershed	20.04	0	0
Cleveland Watershed (includes Windsor Res. & Windsor & Cady Brooks)	22.67	1.56	1.11
TOTAL	53.08	1.56	1.11

* Acres within 300' buffer

** Erodible as determined by the NRCS soil survey

Impacts to aquifers are of primary concerns to water managers in Schodack, Nassau, Stephentown (NY) and Lanesborough (MA). Drinking water supplies for these communities are drawn from unconfined aquifers that are vulnerable to surface land disturbances, overland flow and infiltration alterations, and chemical contamination. Blasting and trenching could interrupt or redirect groundwater flow paths, potentially impacting water yields in particular areas.

Removal of vegetation and subsequent soil compaction due to storage and moving of heavy equipment could significantly increase surface runoff and reduce natural infiltration rates, affecting both the surface waters receiving increased peak runoff and groundwater receiving less recharge. Repetitive movement of heavy vehicles, machinery and equipment can compact subsoils, leading to permanent reduction in stormwater infiltration and increased runoff. According to Penn State Extension, surface compaction is caused by the contact pressure (determined by tire pressure) while subsoil compaction is caused by axle load (very high in gas drilling and pipeline operations). Topsoil is subject to freeze-thaw and wetting-drying cycles and biological forces such as root growth and macro- and microbial activity that can alleviate the effects of soil compaction over time. However, research shows that subsoil compaction is not alleviated by freeze-thaw and wetting-drying cycles on any soil type and can lead to potential environmental degradation caused by decreased water percolation. This will cause increased periods of saturated conditions in the soil and increased surface runoff. While topsoil compaction can have an effect lasting from one year on sandy soils to five years on clay soils, deep subsoil compaction is virtually permanent for all soil types.

BRPC has conducted a GIS-based inventory of important natural and cultural resources in Berkshire County that could be impacted by the NED project. This inventory has been provided to TGP via the consulting firm of AECOM. It includes aquifers, public water supplies, interim wellhead protection areas, wellhead protection Zone II areas and surface water supply protection zones. It is included as an attachment (AECOM Response) in this comment document.

4.1.1. Construction Impacts

Construction impacts can be to the water supply source or to the water supply delivery system. Project construction activities that can affect public drinking water supply sources include clearing and grading, soil compaction, pipeline installation across aquifers and aquifer recharge area and source water protection zones, pipeline installation across aqueducts or water mains, drilling or trench construction, hydrostatic testing, and potential spills or leaks of hazardous materials. Pipeline construction can affect surface waters in several ways, including increasing runoff and the rate of in-stream sediment loading, and increasing turbidity levels. Clearing and grading of streambanks, in-stream trenching and backfilling, and trench dewatering can introduce sediment directly or indirectly into the water column. Surface water impacts can also result from inadvertent releases of drilling fluids in the water column during drilling operations, hydrostatic test water discharges that erode stream beds and banks, and potential spills of hazardous liquids such as fuels and lubricants. The clearing and grading of the waterbody banks associated with dry crossings could disturb riparian vegetation and soils. Blasting could permanently alter a stream channel or aquifer recharge area reducing the source of supply. Heavy equipment used during construction could also compact upland and riparian soils, which could reduce infiltration and cause greater runoff to waterbodies. Reduced infiltration could reduce recharge to groundwater supplies while increased runoff could accelerate sedimentation and turbidity in surface water supplies.

Construction impacts may also include damage to existing underground infrastructure. Municipal infrastructure systems can be several decades old and in various stages of operating condition. If not conducted carefully, heavy machinery and equipment could crush or otherwise damage old, deteriorating pipes, threatening delivery of quality water to residents and businesses.

4.1.2. Cathodic Protection Systems

Water supply managers are concerned about the potential impacts of metal water pipe corrosion due to cathodic protection (CP) systems that may be employed by TGP. In sacrificial anode CP (SACP) systems, sacrificial anodes are coupled to the structure under protection and conventional current flows from the anode to the structure as long as the anode is more

electronically active than the structure. As the current flows, all the corrosion occurs on the anode which “sacrifices” itself in order to offer protection from corrosion to the protected pipe. With an impressed current (ICCP) system the current is “impressed” or forced by an external power supply. The power source must be able to deliver direct current, such as transformer rectifier units or solar generating units. Stray currents from CP systems can flow out of the system through the earth and enter nearby, underground targets, such as metal pipes or underground storage tanks. The stray current flows from the CP system onto the unintended target pipe, travel along the pipeline to some other area where the current leaves the pipe to complete the circuit and return to the CP system. Corrosion is created at the site where the current left the unintended target pipe. The amount of metal lost from corrosion is directly proportional to the amount of current discharged from the affected pipeline. Pit corrosion is often the result, where the corroded pit is the discharge site of the stray current.

Another concern regarding stray current corrosion involves potential damage to pipe systems or underground tanks that exist within aquifer recharge areas or surface water supply protection zones. Stray current corrosion could cause hazardous materials to leak from pipes and tanks into the surrounding soil and water supplies, resulting in long-term or permanent loss of drinking water supplies.

The potential CP sources of stray current corrosion, including the pipes, their associated equipment and any pipe yard storage areas, must be identified in detail in the EIR. TGP must be required to conduct a thorough investigation of the route to identify any metal object that might suffer stray current corrosion, including municipal pipe systems and any pipe or underground tank that contains (or previously contained) hazardous or petroleum substances. Mitigation measures to isolate and protect unintended metal pipe and tank targets, and monitoring and verification of proper functioning of those measures, must be outlined in the EIS so that they adhere strictly to the requirements of Federal Title 49 Part 192 Sec 467.

The Dalton Fire District is concerned about stray current corrosion to its metal pipe system or to any metal infrastructure that may be in close proximity to the proposed pipeline. The Lanesborough Village Fire & Water District distribution system also contains iron and steel pipes that must be protected from stray current corrosion.

4.1.3. Hazardous Materials Contamination

Water supply managers are also concerned with possible contamination from leaks of the natural gas and other chemical components that may be present within the pipeline. Methane leaks have been widely discussed in recent years as it relates to the country’s greenhouse gas contribution (approximately 9% of total GHG emissions). A recent article in the Boston Globe, based on reports by gas utility companies across Massachusetts, reports that there are 20,000

existing leaks across the state, many decades old. Less widely discussed are other chemical compounds that leak out of gas pipelines. Leaks of volatile and synthetic organic compounds and other toxic chemicals used in the construction, maintenance and operation of the proposed pipeline are a concern within aquifer protection and recharge area and surface water watersheds and protection zones. Pre- and post-construction soil and water quality monitoring for toxic chemicals within recharge or watershed areas, and especially for waters within public drinking water supply systems, should be conducted by TGP and verified by an independent, third-party observer.

Pipeline construction involves the use and storage of heavy equipment and associated fuels, lubricants and other machinery-related hazardous chemicals that, if leak or spill could contaminate water sources over which the pipeline crosses or is in close proximity to. Accidental leaks or spills of these hazardous materials during construction present the greatest potential for contamination, although long-term threats from the operation and maintenance of the pipeline will continue. The aquifers in Schodack, Nassau and Lanesborough are of most concern in the proposed pipeline route, along with crossing surface water protection zones that contribute to streams and reservoirs that feed the Dalton and Pittsfield public water sources.

To reduce the potential for contamination due to leaks or breaks in the pipeline system, the water supply managers in Rensselaer and Berkshire County request that FERC consider directing TGP to increase the pipe safety standards for gas pipelines that are within 600 meters of all public drinking water supplies, including aquifer recharge and surface water protection zones. The pipe design and thickness standards for Class III or IV pipe locations may be more protective than that of the Class I or II locations in which most of the region's water supplies lie.

4.2. Public Drinking Water Supplies

Public and private drinking water supplies in Rensselaer County are withdrawn from groundwater, and the pipeline could impact the region's major three aquifers. The currently proposed route of the pipeline could impact the municipal drinking water supplies that serve more than 62,000 people in Berkshire County MA, which is 48% of the total population in the county. The City of Pittsfield drinking water system supplies drinking water to its own residents, to residents in the towns of Dalton and, as needed, Lenox. The system also serves the businesses in these communities, including several such as Crane & Company in Dalton and Berkshire Mall in Lanesborough, both of which are employers of regional significance. In total, the system serves approximately 60,000 people plus key employers. The Lanesborough Village Fire & Water District serves another 2,000 residents

BRPC has collected an inventory of public drinking water resources from both surface and groundwater sources, as determined by a MassGIS-based area review and supplemented by local sources. This inventory also attempts to locate private wells that could potentially be impacted, and indicates that there are 76 private residential wells within 1,000 feet of the pipeline, with 13 of these within 300 feet of the pipeline. The attached Water Supply Impact map(s) (see AECOM Response) shows locations of drinking water supplies, along with their contributing watersheds and aquifer recharge areas, and their proximity to the proposed pipeline.

Regarding drinking water supplies, TGP is referred to Massachusetts regulations at 314 CMR 4.00, the Massachusetts Surface Water Quality Standards and to 310 CMR 22.00, the Massachusetts Drinking Water Regulations. A Zone II is a wellhead protection area that has been determined by hydro-geologic modeling and approved by the MA DEP. In cases where hydro-geologic modeling studies have not been performed and there is no approved Zone II, an Interim Wellhead Protection Area (IWPA) is established based on DEP well pumping rates or default values. Certain land uses may be either prohibited or restricted in both approved (Zone II) and interim (IWPA) wellhead protection areas. As stated in 310 CMR 22.02, a Zone II is: "That area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at safe yield, with no recharge from precipitation). It is bounded by the groundwater divides which result from pumping the well and by the contact of the aquifer with less permeable materials such as till or bedrock. In some cases, streams or lakes may act as recharge boundaries. In all cases, Zone IIs shall extend up gradient to its point of intersection with prevailing hydrogeologic boundaries (a groundwater flow divide, a contact with till or bedrock, or a recharge boundary)." In the absence of an approved Zone II, DEP has adopted the Interim Wellhead Protection Area (IWPA) as the primary, protected recharge area for public water source groundwater sources.

4.2.1. Rensselaer County, New York

Residents in Rensselaer County rely almost exclusively on groundwater sources for all public and private water supplies. The Schodack and Valatiekill Aquifers are the most important aquifers in the county, providing water to 100% of the residents and businesses in the Town of Schodack. TGP is proposing to cross recharge areas that have been determined for these aquifers

The Schodack aquifer currently provides the water source for the Village of Castleton, the Hampton Manor Water District in East Greenbush, the Clearview Water District, and a number of Schodack-based public and private water systems. Several local and regional water

resources studies have examined the Schodack Aquifer as a potential source of groundwater for a growing southwestern Rensselaer County.

These aquifers are Glaciodeltaic outwash terraces consisting of ice-contact and outwash sand and gravel to form unconfined, stratified-drift aquifers. The high permeability of the deposits and a typically shallow depth to the water table make these aquifers vulnerable to contamination from land disturbance and point and non-point pollution. The Schodack aquifer is associated with a thin confined aquifer consisting of beds of glaciofluvial sand and gravel, confined and overlain by thick deposits of lacustrine silt and clay. The Valatiekill Aquifer is an unconfined, high yield aquifer which is capable of supplying in excess of 100 gallons/minute. Soils within the aquifer are composed of sand and gravel of high transmissivity and with saturated zone greater than 10 ft. thick.

TGP is proposing to cross recharge areas that have been determined for these aquifers. The proposed pipeline route will cross over 9 miles of these aquifers, including 3.5 miles of direct recharge areas.

In addition, the Tsatsawassa aquifer is located in the northeast corner of the Town of Nassau and western border of Stephentown. This is an unconfined, mid yield aquifer which is capable of supplying up to 100 gallons/minute. Soils within the aquifer are composed of sand and gravel with the saturated zone generally less than 10 feet thick, or thicker but with less permeable silty sand or gravel. Hundreds of residents within the Town of Nassau and the Town of Stephentown rely on private wells drawing groundwater from this aquifer. Approximately 3.5 miles of the direct recharge zones of the Valatiekill and Tsatsawassa will be downgradient of the proposed pipeline route.

4.2.1.1. Town of Schodack, NY

There are currently three municipal drinking water systems and six private systems that serve 10% of the population in the Town of Schodack. These drinking water systems have delineated Well Head Protection Areas for each of the groundwater wells serving the systems. The proposed pipeline will come within 1 mile of the Castleton well and 1.5 mile within the Battisti well and through 3.8 miles of direct recharge area.

The Town of Schodack has been interested in consolidating select drinking water systems, along with pursuing two additional wells, for several years. Such a system could potentially also serve the Village of Castleton and the Town of East Greenbush. The social and economic benefits of creating a comprehensive public drinking water supply are dependent on maintaining the high

water quality of the Schodack/Valatiekill aquifers. Along with the concern for its aquifers, the Town of Schodack notes that the proposed pipeline route will cross a 12" water line on the north side of State Route 20 between Lape and Shufelt Road. Directional drilling will be necessary at that location.

4.2.1.2. Town of Nassau

Residents and businesses in the Town of Nassau draw their drinking water supplies exclusively from groundwater resources. The proposed pipeline will cross over 0.5 miles of the Valatiekill Aquifer in the Town of Schodack (mile marker 39.2 - 39.7). This aquifer serves as the public drinking water supply for the Village of Nassau, and the proposed pipeline will cross the aquifer approximately six miles upgradient of the Village of Nassau's public water supply wellhead.

The pipeline will cross over 1.5 miles of the groundwater aquifer associated with the Tackawasick Creek (mile marker 44.4 – 45.9). Because much of the drinking water supplies are withdrawn from unconfined layers, they are susceptible to ground disturbance and contamination from land uses and inappropriate handling of toxic materials. This aquifer has been recommended for special protection by the town's Natural Resources Committee (NRC) in previous reports to the Town Board because it serves as the principal water supply for the numerous homes along Taborton and Dunham Hollow Roads. The aquifer roughly follows the Tackawasick Creek as it meanders through Dunham Hollow, both above and below State Route 43. This aquifer and its re-charge zones provides the water supply for many homes in the Town of Nassau and the Village of East Nassau.

As the Town of Nassau states in its comments to FERC, dated August 29, 2015, the TGP's resource reports and maps do not show the major aquifers noted above. Information on the aquifers, their recharge areas and wellhead protection zones must be inventoried and analyzed for potential impacts. Also not inventoried completely are all the many private drinking water wells and supply sources that are located along the proposed pipeline route. The pipeline trench, along with the blasting that may be necessary, has the potential to negatively impact artesian-influenced wells and springs along the proposed NED route. Approximately 1.5 miles of the route in the Town of Nassau is located on steep side hills, above approximately 15 private wells. The Town also notes that it's Groundwater Protection Overlay Zone and associated regulations are not cited in the resource reports. This local regulatory tool should not be overlooked within the EIS.

The Town of Nassau is particularly concerned with the proposal to withdraw water from the Valatie Kill (mile marker 40.8) and Tackawasick Creek (mile marker 45.3) for use in hydrostatic pressure testing. Withdrawal of water from these streams could not only severely impact the

quality of the surface water supply but could also impact the aquifers that lie below them. The aquifers in Rensselaer County are unconsolidated, and excessive withdrawal of surface waters could impact interconnected groundwater supplies within the aquifers themselves, resulting in low or dry well conditions.

Of particular concern is the withdrawal of water from the Valatie Kill, a trout stream that is contaminated from discharge of the Dewey Loeffel Superfund Site. This site was used as a disposal facility for more than 46,000 tons of industrial hazardous wastes, including solvents, waste oils, polychlorinated biphenyls (PCB), scrap materials, sludge, and solids. Some hazardous substances, including VOCs and PCBs, have migrated from the facility to underlying aquifers and downstream surface water bodies, resulting in contamination of ground water, surface water, sediments, and several species of fish. The U.S. EPA is overseeing a cleanup process that involves mapping the extent of the contamination, monitoring the movement of contaminated ground and surface waters, and ultimately designing and conducting the cleanup.

Withdrawal of large quantities of water from this stream could have negative environmental ramifications in many levels. Withdrawing water could spread contaminated water from the Valatie Kill to a receiving waterbody or upland area. Withdrawing water from the stream could cause contaminated groundwater to migrate to the surface water withdrawal site, possibly extending the groundwater plume past its existing boundaries. Any consideration to use the Valatie Kill as a potential source for hydrostatic pressure testing must be done in complete coordination with the U.S. EPA Region 2 to avoid contamination migration.

The Town of Nassau is also very concerned with the proposal to discharge water from the Hudson River into the Valatie Kill (mile marker 40.8) and Tackawasick Creek (mile marker 45.3) during the hydrostatic pressure testing process. Discharge of waters from the Hudson into these two headwater streams has a significant potential to introduce contaminated PCB sediments and other heavy metals. There is also a significant potential to introduce invasive species which are present in the waters of the Hudson into trout spawning headwater streams.

4.2.1.3. Town of Stephentown

The Town of Stephentown, like its neighboring communities, relies on groundwater for public drinking water service.

4.2.2. Berkshire County, Massachusetts

4.2.2.1. Town of Lanesborough

The Lanesborough Village Fire and Water District (LVFWD) provides public drinking water to approximately 2,000 people in the town of Lanesborough, which is 65% of the town's total population. The sources of supply for the LVFWD are two gravel packed wells located in the valley west of Route 7 in Lanesborough. The well along Miner Road is the main water source. It is an 18-inch diameter by 67 foot deep well, which has a pump yield of 10 gallons per second or 600 gallons per minute. The Bridge Street well is a standby water source. It is an 8-inch diameter by 54 foot deep well, which has a pump yield of 5 gallons per second or 320 gallons per minute. The Bridge St well capacity is not adequate to meet peak demand during the summer, so contamination of the Miner Rd. source would create an emergency shortage. The LVFWD draws approximately 70 million gallons of water per year.

Both the Miner Road and Bridge Street wells draw water from the same source, the Town Brook aquifer. The Town Brook aquifer has a well-defined Wellhead Protection Zone II delineation, as shown on the Town of Lanesborough Water Supply Impact Map. Because the aquifer supplies more than 50 percent of the drinking water consumed in the town, it can be considered a Sole Source Aquifer as defined by the US EPA. The proposed pipeline will cross the aquifer and its Zone II area at markers 5.8 – 6.1, upgradient of both drinking water wells. The pipeline itself would be less than less than ¼ mile upgradient of the Bridge Street well.

Contamination of the Aquifer: Protection of the Town Brook aquifer is critical because the LVFWD has no alternative drinking water source that could physically, legally and economically supply all those who depend on the Town Brook aquifer for drinking water. Extensive studies conducted in the 1980s revealed that there were only three aquifers in the town that have the yield to serve as a potential drinking water source, but that only the Town Brook aquifer is suitable. The high-yield Secum Brook aquifer is unsuitable because of the presence of PCBs and other toxins in groundwater due to previous industrial activity and by the presence of the town's old, unlined landfill. The Cheshire Aquifer already serves as the source for the Berkshire Cooperative Spring, and further withdrawals could degrade water quality and quantity from this existing water source. LVFWD is connected to the City of Pittsfield's water system if an emergency were to arise, but there is not adequate supply from their reservoirs to supply both Lanesborough and Pittsfield in the long term. Contamination of this aquifer would seriously jeopardize the ability of the LVFWD to provide for its customers.

Studies indicate that there is water exchange between unconsolidated soils between Town Brook and the shallow aquifer below. Analysis of data from pumping tests of Lanesborough's

wells by the LVFWD has concluded there is also a deep underground aquifer under the shallow Town Brook aquifer, and there is interchange between these two aquifer systems. Therefore it is likely that contamination of Town Brook or the shallow Town Brook aquifer would also lead to contamination of this deep underground aquifer, which could have impacts far beyond the Lanesborough Water District.

LVFWD has identified a site for a third well and drilled a test well yielding positive results. This is located on Bull Hill Road near Pontoosuc Lake, and is a deep well (500 feet) which accesses a deep underground aquifer protected by an impervious layer. The test well is only a 4 inch uncased hole not suitable for a production well, which would need to be at least 18 inches. If the pipeline project proceeds on its current route of crossing upgradient of the District's well sites, then it would be prudent to develop this well site so that the loss of a well or contamination of the aquifer would not leave the District without resources to supply its customers.

Disruption to the Distribution System: The LVFWD, with the support of a USDA loan, recently invested in a costly new 750,000 gallon storage tank (to replace the 1930's tank which failed). This tank is within the powerline right of way where the gas pipeline is being installed at mile marker 6.7. Blasting and/or heavy construction in this area raises significant concerns about damage to the tank. Appropriate precautions must be taken to avoid damage or degradation to the tank or the geological structure which supports it. Access to the tank is through a right-of-way shared with Verizon and others, and this access road will undoubtedly be utilized by the pipeline installers. Full access for the LVFWD must be maintained during the entire construction process. The main distribution lines leading from the storage tank are 12-inch diameter coated steel pipes. The potential for cathodic corrosion of both the tank and the water distribution line should be thorough analyzed.

The LVFWD water distribution system includes many miles of water mains, some of them as old as 75 years (they were installed shortly after the District was first organized in 1938). Technologies and materials in these old mains are far more susceptible to damage than those used today. Materials used in these old lines include asbestos pipes and brittle cast iron pipes with "leadite" sealed joints which have become very susceptible to breakage when disturbed even slightly. The unusually heavy equipment traversing roads where waterlines are buried and the shock loads from nearby blasting could damage these old pipes. Even the more modern installations of ductile iron and PVC plastic pipe could be damaged by the severe loading which will occur during construction. The installation process must include the capability to repair breaks introduced during installation and to evaluate and repair damage which increases susceptibility to future breaks. The proposed pipeline directly intersects one of the District's

main water lines that travel along Route 7, at mile marker 6.1, and another line between mile markers 7.0-7.1. The condition of both of these pipes should be evaluated during the EIR process and reevaluated after construction is complete. TGP should be required to replace any damaged sections of pipes to the LVFWD's satisfaction.

It is mandatory that LVFWD retain the use of two operational wells at all times to ensure water supply to customers in the event that the District must conduct maintenance on the system or if some type of accident were to occur.

4.2.2.2. City of Pittsfield

The City of Pittsfield, Massachusetts, maintains several reservoirs and can be considered a regional drinking water supply source. In addition to serving its own residents (44,000) and businesses this source of supply serves also 6,440 residents of the Towns of Dalton (95%) and its businesses, and provides a partial supply for the Town of Lenox and the supply for the Berkshire Mall in Lanesborough, for a total of 62,000 customers. The drinking water for the City of Pittsfield comes from two watershed systems, with the Cleveland Reservoir system being the primary one serving the largest number of people and businesses. The Cleveland Reservoir is a Massachusetts-designated Class A Waterbody, which includes a source of public water supply and its tributaries. Such a waterbody is also designated as excellent habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation, even if not allowed. These waters are protected as Outstanding Resource Waters and have excellent aesthetic value [314 CMR 405(3) (a)]. The Cleveland Reservoir system supplies the majority of the City's demand yielding approximately 7.5 million gallons per day.

The immediate Cleveland Reservoir watershed is relatively small (1.5 sq. mi.), with a portion of the waterbody and some of this shoreline within the ¼ mile buffer of the proposed pipeline. To insure demand is met, flow to Cleveland Reservoir is augmented from Windsor and Cady Brooks, which have much larger watersheds of 9.3 and 3.2 square miles, respectively. Both brooks are state-designated Outstanding Resource Waters. Windsor and Cady Brooks naturally flow into Windsor Reservoir, which is a back-up water supply source for the Dalton Fire District, but flows are redirected to the Cleveland Reservoir via an aqueduct system to meet Pittsfield's and Dalton's water needs. Diversion pipes from each of the brooks merge into a larger 78" aqueduct pipe that delivers water directly to Cleveland Reservoir, where water is treated prior to distribution into the municipal drinking water supply system. The proposed pipeline route (300' buffer) travels through almost 3 miles of surface water supply protection zones of Cleveland and Windsor Reservoir and Windsor and Cady Brooks, beginning at mile marker 14.2

and ending at mile marker 16.9. The proposed pipeline itself will cross the Cleveland Reservoir aqueduct at mile marker 13.6-13.7.

Contamination from Sedimentation: The City of Pittsfield is greatly concerned about land disturbance within the Windsor and Cady Brook watersheds, as these streams deliver approximately 90% of the water supply to Cleveland Reservoir via the aqueduct system. This concern is echoed by the Dalton Fire District, whose water supply is also drawn from Cleveland Reservoir. Sediment deposition and turbidity already threatens water quality at Cleveland Reservoir, prompting the City of Pittsfield to conduct studies and implement costly management projects. As documented in a *Windsor & Cady Brook Sediment & Turbidity Management for Cleveland Reservoir* (2011), supported with federal Section 604(b) funds, turbidity levels in raw water at the treatment plant intake (from Windsor and Cady Brooks) do respond to rainfall events, with an apparent lag time on the order of 2-4 days for the period of study. It appears that at times, the turbidity readings may spike as the small diversion impoundments are emptying. There are also several periods where turbidity levels increase sharply, without apparent relationship to flow events.

The 2011 study noted through field observations and sediment yield modeling that sediment loads in the Windsor Brook watershed, with only 14% of its land developed, are more than 400% greater than expected from a forested area, and that sediment loads in the Cady Brook watershed (4% developed) are 160% greater than expected. It is readily apparent small percentages of land disturbance in these watersheds result in significant increases in sediment load. Because of these identified sediment-related impacts, clearcutting of several acres of forest cover to accommodate the wider utility corridor across these surface water supply protection zones is a serious concern to public water supply managers in Pittsfield and Dalton. Measures to avoid increased runoff, erosion and sediment transport must be given a high priority in these protection zone watersheds.

ATV trails, particularly along the utility corridor that crosses through the watershed, was noted as contributors to streambank damage, erosion and sources of sediment load. A well-used ATV trail within the utility corridor crosses Cady Brook and, even though a bridge had been built to improve the crossing, ATV's avoided the bridge and drove directly through the stream. The combined impacts of land disturbance, including pipeline construction, removal of forest canopy and increased ATV activity due to the increased utility corridor width, could contribute to accelerated runoff rates. This would result in erosion of streambank and channel, increasing sediment loads within the stream systems and through the aqueduct system, and ultimately into the reservoir.

In 2013 the City of Pittsfield undertook costly major upgrades to the Windsor/Cady Brooks diversion pipe system to stabilize bank erosion, protect diversion pipes, reduce sedimentation, and ensure longevity of the infrastructure. This work involved stream channel sediment removal, streambank stabilization and repairs to the concrete diversion pipe structures.

Disruption to the Distribution System: As discussed above, water from the flow diversion structures in Cady and Windsor Brooks are channeled into a single aqueduct that feeds Cleveland Reservoir. The proposed pipeline crosses this aqueduct. Construction impacts could disrupt and/or contaminate the flow through the aqueduct jeopardizing the entire Cleveland Reservoir supply system, thereby threatening the water supply of 62,000 people and key businesses.

4.2.2.3. Town of Dalton

The Town of Dalton's public drinking water is supplied by the Dalton Fire District (the District). The vast majority of the District's distribution system currently receives its water through interconnections with the City of Pittsfield, and hence is dependent on a reliable Pittsfield source of supply. The District echoes the City's concerns regarding the potential increase in sedimentation and turbidity in the Windsor and Cady Brook surface water supply protection zones due to land disturbance and forest cover removal, and to potential contamination or disruption of the system due to damage to the aqueduct system that supplies water to the reservoir.

Most of the District's water is delivered out of the Cleveland Reservoir system, which is described in detail under the subheading City of Pittsfield. It is important to note that the District provides water to the Crane & Company, a federal government contracted facility that makes the paper that the majority of U.S. currency is printed on. Crane & Company relies on high volumes of high quality water for their processes. Although this company is only one of many businesses in Dalton, it is the most important due to its critical role in U.S. currency and its role as a major regional employer and as the primary tax payer in Dalton.

The District maintains the Windsor Reservoir in the Town of Windsor as backup supply. Once a main water source, Windsor Reservoir has been downgraded to backup supply status due to unacceptably high sediment and turbidity levels. The loss of Windsor Reservoir was due to a very localized microburst in 2003, which caused severe sedimentation and turbidity and rendered the slow sand filtration system unusable. Because the District has suffered the loss of this previously productive main water supply, it is all the more important that the Cleveland Reservoir system be protected from any impacts to its water supply quality or quantity.

In addition to the concerns for the Cleveland Reservoir aqueduct system, the District maintains additional back up water supplies involving Anthony Brook and Egypt Brook reservoirs. The proposed pipeline will cross directly through approximately 1.5 miles of Surface Water Supply Protection Zone area for these reservoirs, including crossing the headwater streams for each (mile markers 9.7 – 11.3). Steep slopes of more than 15% cover more than 30 acres within a 300' pipeline corridor of this land, which is located directly upstream of these reservoirs. Removal of forest cover for widening of the utility corridor could result in increased runoff, erosion and sedimentation within the watershed, and most importantly in the vicinity of the streams flowing in to the reservoirs. Measures to avoid increased runoff during and post-construction must be provided.

The District is concerned with short-term impacts due to construction, including streambank and channel erosion, sedimentation and turbidity, and possible contamination from fuel or chemicals used or stored during construction. The District is also concerned with long-term impacts such as stream geomorphology changes due to construction and placement of the pipeline across stream channels of Windsor, Cady, Anthony and Egypt Brooks. In addition to forest cover removal, the District is concerned with the additional vegetation management practices that will be employed to prohibit reforestation of the corridor. Herbicide use and runoff is particularly concerning given the steep slopes and shallow depth to bedrock soil cover in this area.

The Dalton Fire District is concerned about stray current corrosion to its metal pipe system or to any metal infrastructure that may be in close proximity to the proposed pipeline. Of particular concern is the District's 10" cast iron pipe system in the vicinity of Route 9 in Dalton. The pipe system in this vicinity is approximately 100 years old, with leaded joints, and is located three feet underground. As proposed, the pipeline will directly intersect with the District's pipe at mile marker 12.2. The District also maintains a 4" ductile iron distribution pipeline from a well in this general vicinity. In addition, TGP staff have indicated that a pipe yard is proposed in close proximity to this site, just north of Route 9. This site has not been recorded in resource reports. The potential cumulative effects of an intersecting CP gas pipeline, together with a pipe yard that may contain SACP and ICCP pipes and equipment, could increase the chance of stray current corrosion to the District's system in this vicinity.

In addition, the District maintains a public groundwater well which serves the residents of a densely developed neighborhood off of Wahconah Falls Road. At mile marker 12.3-12.4 the proposed pipeline will travel approximately 700 feet within the Interim Wellhead Protection Area of this water supply.

4.2.2.4 Maintaining Regulatory Standards

A common concern for all public water supplies is that MassDEP (and ultimately EPA) hold them accountable for any violation of Safe Drinking Water Standards, regardless of whether they are the source of the problem. Increased turbidity or other pollutants which are created by construction or existence of the pipeline become their problem as they are required to continue to meet the standards.

4.3. Non-municipal Public and Private Wells

BRPC has identified four non-community public drinking water sources, with corresponding Interim Wellhead Protection Areas, that lie within the 300-foot buffer along the proposed pipeline route (mile markers .6-.7, 8-8.1, 12.2, 12.3). These public water supplies are small businesses. In addition to these drinking water supplies, BRPC has identified 13 potential private wells within a 300-foot buffer around the proposed pipeline. To identify potential private wells, BRPC identified homes within the buffer which would likely have a well. The 13 wells are estimated at these mile marker locations:

Mile Marker	Street Address, Town
1.8	107 Potter Mt. Rd., Hancock
4.3	119 Old Orebed Rd., Lanesborough
7.9	37 Nobody's Rd., Cheshire
8.35	222 Brough Rd., Cheshire
8.4	255 Brough Rd., Cheshire
12.0	90 Chalet Rd., Dalton
12.3	1188 North St., Dalton
13.1	173 Adams rd., Hinsdale
13.15	141 Adams Rd., Hinsdale
13.2	121 Adams Rd., Hinsdale
13.55	240 Old Windsor Rd., Hinsdale
20.2	790 Shaw Rd., Windsor
20.85	471 River Rd., Windsor

TGP should consult with the owners of the wells, the local Boards of Health and the MA DEP about working within these wellhead protection areas to ensure water quality and quantity.

4.3. Drinking Water Supply Impact Assessment

BRPC requests that the Commission require TGP to conduct the following analyses of drinking water impacts during construction and pipeline operation.

- Comprehensive hydrogeologic study to assess the dangers posed by the proposed TGP pipeline and compressor stations to public and private drinking water resources, and infrastructure systems. Mechanisms of potential drinking water quantity, transport and quality impairment need to be identified in the context of existing site geology, topography, land use and water quality/geochemistry (naturally occurring and manmade contaminants). This study should contain engineering plans detailing the construction of TGP's pipeline and compressor station, the TGP's planned use of surface and groundwater and any hazardous chemicals or drilling fluids used in the drilling, construction and operation of the proposed pipeline and compressor stations.
- Assess the cumulative effects of the proposed drilling/dredging of a four foot wide permeable tunnel/trench through currently disconnected heterogeneous (naturally occurring) geologic formations. Such a high volume preferential pathway for contaminant transport is likely to despoil public/private drinking water wells that draw water from the affected geologic strata. Risks posed by TGP cannot be scientifically evaluated until such time FERC and EPA perform a competent "Investigation of Manmade Preferential Pathways for Contaminant Transport" equivalent to the attached Indiana Technical Guidance document.

4.4. Requested Mitigation Measures for Drinking Water Resources

BRPC requests that the Commission direct TGP to relocate the proposed route out of public drinking water supply protection areas referenced in 314 CMR 4.00 and 310 CMR 22.00, and other regulations as deemed appropriate by the MA DEP. If the route cannot feasibly or practicably be relocated, BRPC requests that the Commission ensure that there be no change in the quantity and the quality of the water supply sources, there be no short-term or long-term disruption to the delivery of the water, and that TGP be responsible for any necessary corrective actions. Specifically BRPC requests the following mitigation measures be included in FERC's Certificate.

- 4.4.1. Require TGP to delineate and provide exact transport routes, staging areas, pipeyards and other access for the pipeline, and provide these to all local public water supply managers for review and approval prior to commencement of construction. Adjustments of routes may be necessary where construction activity will cross over or nearby vulnerable water lines and other infrastructure, particularly aging pipes that may be brittle.
- 4.4.2. Where the pipeline route cannot be altered and could damage existing, vulnerable infrastructure, TGP should be required to upgrade or replace the

vulnerable infrastructure with modern materials that meet federal and state standards.

- 4.4.3. TGP must be required to conduct a thorough investigation of the route to identify any metal object that might suffer stray current corrosion, including municipal pipe systems and any pipe or underground tank that contains (or previously contained) hazardous or petroleum substances. Mitigation measures to isolate and protect unintended metal pipe and tank targets, and monitoring and verification of proper functioning of those measures, must be outlined in the EIS so that they adhere strictly to the requirements of Federal Title 49 Part 192 Sec 467
- 4.4.4. Require TGP to conduct a pre- and post-construction monitoring program, including pressure testing, for existing public and private water supply wells to determine if water quantity and quality are maintained at pre-construction levels. TGP should work with Rensselaer County Department of Health, NYS Department of Health, local municipal boards of health in Massachusetts and MA DEP to determine the water quality and quantify parameters to be monitored and the acceptable protocols for collecting and analyzing data.
- 4.4.5. Prohibit any withdrawals or discharges resulting from hydrostatic testing in aquifers or aquifer recharge areas or water supply protection zones. In addition, prohibit any discharges of Hudson River waters resulting from hydrostatic testing into headwater streams to prevent the potential for contamination from heavy metals and other hazardous materials and the introduction of invasive species.
- 4.4.6. Prohibit pipeyards, pipeline cleaning station, contractor yards, refueling or lubricating activities, storage areas and the pipeline construction staging areas in aquifers, aquifer recharge areas, surface water supply protection zones or wellhead protection zones. Where construction is absolutely necessary in these resource areas, require thorough daily inspections of equipment for leaks.
- 4.4.7. If blasting in waterbodies is required, TGP should follow procedures identified in an approved E&SCP and Rock Removal Plan to minimize impacts including permanent alteration of surface and groundwater flows.
- 4.4.8. TGP should be required to prepare Unexpected Contamination Encounter Procedures for approval for the length of the proposed pipeline route. The procedures should specifically outline procedures for work in and around surface and groundwater supply protection zones.
- 4.4.9. Require TGP to identify all hazardous materials that could be contained in the pipeline in the transport of the gas and all hazardous and petroleum materials that will be used during construction of the pipeline including drilling and blasting materials that could contaminate water supplies.
- 4.4.10. Require TGP to develop an approved Spill Prevention, Control and Countermeasure Plan (SPCC Plan) for hazardous materials handling and response

that proposes methods to ensure that releases will not occur and identifies methods to mitigate accidental releases, including procedures for thorough daily inspection of equipment and storage units, spill reporting and excavation and off-site disposal of any soils contaminated by leaks or spills. Specify how the plan will be implemented by the operator, contractor and subcontractors utilizing or storing hazardous materials in excess of household quantities during the construction and operation of the pipeline and related facilities, including training that will be required for their employees. These procedures will be drafted in coordination with FERC, Rensselaer County Health Department, NYS DEC, MA DEP and local emergency response departments.

4.4.11. Require TGP to prepare and implement a plan to provide redundant sources of supply should the sources of supply be diminished in any manner by TGP or any of its contractors or subcontractors during construction or as part of regular maintenance and operation. Costs to repair or restore supply and any fines levied by federal or state regulators shall be borne by TGP.

4.4.12. Require TGP to fund the daily presence of an independent Environmental Investigator (EI) to ensure compliance with all federal, state local permits associated with the construction of the proposed pipeline, including the hazardous materials handling and response plan. Referring to FERC Staff's Recommended Mitigation for the Algonquin Gas Transmission, LLC's project (Docket # CP14-96-000), we believe that the EI's should:

- monitor and ensure compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
- evaluate the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
- be empowered to order correction of acts that violate the environmental conditions of the FERC permit, and any other authorizing document;
- be a full-time position, separate from all other activity inspectors;
- be responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
- be responsible for maintaining status reports

4.4.13. TGP must consult directly with NYS DEC, Massachusetts local public water supply managers, and MA DEP to determine if the company has taken all feasible, practicable steps to avoid, minimize or mitigate crossing the aquifers, streams, reservoirs and their associated infrastructure systems that supply high concentrations of residents and businesses in the proposed pipeline route.

- 4.4.14. TGP should be required to maintain a log of complaints regarding impacts to all public or private water supplies. Complaints must be addressed in a timely manner. TGP should be required to file with FERC, within 30 days after construction within an area, a report describing water supply manager or landowner complaints received involving degradation of drinking water quality or quantity and how those complaints were resolved.
- 4.4.15. A Vegetation Management Plan for maintenance of the TGP right of way must be developed by the company that is protective of the region's drinking water supply. This plan should be developed in close coordination with local public water managers, Rensselaer County Health Department, Rensselaer County Environmental Management Council, NYS Department of Health, NYSDEC and the MADEP, and once approved by these entities, should be incorporated directly into the FERC permit.
- 4.4.16. Prohibit or severely constrict the use of herbicides in maintaining the rights of way within aquifer or surface water supply protection zones or recharge areas. Herbicides should be used only where need is absolute, soil and water conditions are such that human health will not be affected, and in a surgical manner to reduce overspray or drift. In addition, TGP must apply for all required NYSDEC permits associated with pesticide application and follow strictly all conditions and pesticide application prohibitions identified in the permit.

4.5. Requested Mitigation Measures for Surface Water Supplies

- 4.5.1. Pre-construction baseline water quality tests levels should be taken at all public water supplies that include sediment, turbidity and chemical components that are deemed appropriate by MADPH, MADEP and NYDOH . Monitoring should be conducted by an independent third party, and be funded by TGP. Post-construction water quality tests should be taken to verify that no degradation of drinking water quality or quantity has occurred due to construction of the pipeline.
- 4.5.2. Require TGP to use thicker, more protective pipe when crossing surface water supply protection zones to reduce the potential for contamination. Require TGP to use pipe standards and increased frequency of inspections to meet Class II or IV class location in these areas.
- 4.5.3. Require TGP to determine the most appropriate construction method across tributaries, intermittent as well as perennial, to any public surface water supply along the proposed pipeline route, particularly those tributaries within steeply sloped areas. In considering the most appropriate method, TGP, in consultation with FERC, ACOE, NYDEC, MADEP, will consider construction methods that avoid

or minimize environmental impacts while also reducing risk of water or soil contamination due to chemical leaks or spills during boring, drilling or excavation. Whereas the dry crossing method may be appropriate at some crossings to reduce the risk of accidental leaking or spilling of drilling fluid associated with HDD, the sediment and turbidity impacts associated with dry crossing methods will require additional and careful erosion and sediment control measures. A geotechnical survey should be conducted at each site where HDD is proposed within water supply protection areas. Each tributary should be assessed individually to determine the method that is most protective of water quality and quantity during construction. The methods to cross tributaries within the Windsor and Cady Brook watersheds should be thoroughly assessed to ensure that these streams, which are already prone to sedimentation, will not be additionally impacted.

- 4.5.4. Provide public drinking water supply managers with detailed erosion and slope stabilization control plans for review and approval for all pipeline construction activities within drinking water supply watersheds prior to any construction activities.
- 4.5.5. Require TGP to fully comply with the Massachusetts Erosion and Sediment Control Guidelines, Massachusetts River and Stream Crossing Standards, Massachusetts Stormwater Management Standards, NYSDEC Stormwater Pollution Prevention Plan (SWPPP) requirements. Require TGP to fully comply with the NYDEC “Blue Book” of Erosion and Sedimentation Controls which is currently pending revisions for utility corridor applications.
- 4.5.6. Require TGP to implement an approved Erosion and Soil Control Plan (E&SCP) in consultation with MA DEP and NYDEC that is consistent with the Massachusetts Erosion and Sediment Control Guidelines and the NYDEC “Blue Book” of Erosion and Sedimentation Controls. Detailed procedures for trench dewatering that will not result in sedimentation of water supply tributaries and reservoirs must be included in the E&SCP. The E&SCP should be required to be used by both TGP and its contractors as a guidance manual for minimizing soil disturbance and transportation of sediments off construction sites and the right-of-way into sensitive resources (wetlands, streams, and residential areas) during natural gas pipeline construction. The procedures presented in the E&SCP should represent BMPs designed to accommodate varying field conditions while maintaining strict minimum standards for the protection of soil resources and environmentally sensitive areas.
- 4.5.7. Require TGP to use erosion control fabric or matting on steep slopes to ensure that soils successfully revegetate. This will be most important in areas identified

as already suffering from sedimentation, such as the Windsor and Cady Brook watersheds.

- 4.5.8. All disturbed areas should be monitored each growing season after construction is completed until revegetation is established and then for a minimum of three years to evaluate revegetation success in accordance with an approved E&SCP. Areas that have not revegetated successfully should be corrected to ensure that conditions within the right-of-way and all construction sites are fully stable and monitoring of such areas should continue indefinitely until they have been determined to be stable for three years. Local inspectors employed by the appropriate municipality and paid for by TGP should have authority to inspect, order corrective actions, and have final sign-off before any area is considered to be successfully revegetated. However, if at any point inspection indicates that revegetation has failed, TGP shall promptly correct the problem and the monitoring shall be begun again.
 - 4.5.9. Require TGP to employ an independent monitor to conduct pre and post construction sediment and turbidity levels at all public water supply systems within ¼ mile of the proposed pipeline corridor. Where supplies are susceptible to impacts from runoff or upstream land disturbance, monitoring may need to be conducted in specific tributaries. Post construction monitoring should occur until an independent 3rd party monitor validates the successful implementation of short-term and long-term erosion control measures.
 - 4.5.10. Any impacts discovered through public water supply monitoring programs will be mitigated by TGP in close coordination with local water supply managers and the appropriate state and federal agencies.
 - 4.5.11. Require TGP to remove additional sedimentation amounts at the Cady and Windsor Brook intake structures as a result of the project.
 - 4.5.12. Require TGP to monitor post construction unauthorized motorized use for the life of the project of the pipeline right of way, correct all erosion resulting from that use, and remove additional sedimentation, including at wetland resource or the drinking water supply infrastructure, as a result of that use.
 - 4.5.13. TGP should be required to hold the public water suppliers harmless if due to its activities they are fined or have to implement changes in order to correct violations.
- 4.6. Requested Mitigation Measures for Ground Water Supplies
- 4.6.1. Require TGP to employ extraordinary measures to protect aquifers and aquifer recharge areas. We echo the Lanesborough FWD's request to install a dual containment system similar to what is used with gasoline storage systems so

that any leak will be contained and detected so it can be corrected before spills of the unknown and very suspect constituents of the fluid in the pipe are released into the ground. Such a containment system should also be employed in Schodack and Nassau.

- 4.6.2. Where a dual containment system has been shown by TGP not to be feasible or practicable, require the company to use thicker, more protective pipe when crossing aquifers and aquifer recharge areas to reduce the potential for contamination. Require TGP to use pipe standards and increased frequency of inspections to meet Class II or IV class location in these areas.
- 4.6.3. Require TGP to consult with and seek input from the Rensselaer County communities on the proposed route of the NED on the Rensselaer Plateau as it relates to potential impacts on the water quality and quantity of the region's aquifers.

4.7. Requested Mitigation Measures for Public Supply Distribution

- 4.7.1. Proper and detailed identification of existing public water pipeline systems should be conducted and, where the pipeline will come in close proximity to existing systems, pre-construction conditions of these systems should be assessed to avoid damage and interruption of water supply service. The results of the pre-conditions assessments should be shared with the owners of such pipe systems. Post-construction assessments of the pipe systems should also be conducted and the results shared with the owners.
- 4.7.2. Require TGP to prepare and provide municipal and fire and water district public water suppliers with detailed plans for review and approval to protect municipal water supply infrastructure from damage due to pipeline construction. These plans should contain a complete assessment of the pre-construction condition of the infrastructure to be impacted by the construction of the pipeline and include such items as age, type, size and condition of water mains and include infrastructure along transportation routes for equipment and pipe. A post-construction assessment should be conducted once construction is finalized. Particular pre- and post-condition assessments should be taken of the LVFWD's storage tank and water line and distribution lines, DFD's water line and the Cleveland Reservoir's aqueduct system to ensure uninterrupted supply and quality. Due to the length of time before damage may become evident after construction is completed, TGP should provide financial surety in an amount and form acceptable to the water supplier to correct any damage which is later found for a term of no less than five years.
- 4.7.3. TGP must be responsible for any damage to municipal infrastructure caused due to construction or maintenance of the TGP pipeline. This could be codified in FERC's permit. Alternately a fund could be established which would pay for all

water, sewer or other infrastructure damage or breaks which occur during installation and into the future for some period of time, such as 20 years. This fund should be overseen by an independent financial agent.

- 4.7.4. TGP should regrade the ground surface as closely as practicable to original contours and revegetate disturbed soil with native flora to restore overland flow and groundwater recharge as soon as possible. Compacted soils within surface water supply protection zones and wellhead protection zones should be evaluated to determine if plowing or subsoiling is necessary to mimic as closely as practicable to natural, pre-construction condition.
 - 4.7.5. Require TGP to prepare and implement a plan to provide redundant sources and delivery of supply should the sources and delivery of supply be diminished in any manner.
 - 4.7.6. Require TGP to enter into binding hold harmless agreements with each municipality which protects the municipality from damages resulting from pipeline construction activities.
 - 4.7.7. Require TGP to reimburse municipalities for all costs associated with construction quality assurance for all work in the vicinity of public water system infrastructure.
- 4.8. Requested Mitigation Measures for Small Public and Private Wells
- 4.8.1. BRPC has conducted a GIS-based inventory of potential private drinking water wells within the proposed pipeline buffer zones of 300' and ¼ mile. TGP should conduct a detailed inventory to clearly identify all private wells and their exact locations and distances from the pipeline or from any areas proposed for use in construction or blasting. TGP should coordinate this work with individual owners, Rensselaer County Department of Health, NYS Department of Health, Massachusetts local boards of health and the MA DEP.
 - 4.8.2. Require pre-construction testing of water quality and quantity, including pressure testing, for existing small public and private water supply wells. In accordance with State standards for proper sampling and laboratory protocol, identify pre-construction and post-construction water quality analysis and flow rate (gpm) testing that will be conducted for each existing private groundwater well within 500 feet of the pipeline unless surficial geology indicates a greater testing area is warranted. Water quality testing should be completed by an independent State certified water testing laboratory and parameters to be tested should include, but not be limited to: methane, chloride, sodium, TDS, pH, arsenic, barium and strontium, radon, and a subgroup of the volatile organic chemicals (VOCs) called BTEX (benzene, toluene, etc.).

- 4.8.3. Identify potential contamination pathways resulting from drilling underneath streams, rivers and through aquifers where adjacent land uses from Brownfield sites located along the pipeline route that could adversely impact surface and groundwater resources.
- 4.8.4. Should the integrity of any well, public or private, become compromised in either water quality or quantity, TGP must provide an alternate source for as long as the well is compromised. If the impact is deemed permanent, TGP must provide the landowner with a new, comparable or improved well meeting current regulatory standards at no cost to the owner.

5 Rivers, Streams, Waterbodies and Wetlands

This section sets forth the adverse impacts on rivers, streams, waterbodies and wetlands related to the NED Project as well as a list of requested mitigation measures. In particular, as discussed below, BRPC requests that the Commission ensure that TGP avoid, minimize and mitigate, to the fullest extent practicable: (1) impacts of construction to rivers, streams, waterbodies and wetlands; and (2) ongoing impacts from the pipeline, its appurtenant facilities, and operations to rivers, streams, waterbodies and wetlands.

In the project area, wetlands in the NED Project are regulated at both federal (Army Corps of Engineers, COE) and state (New York State Department of Environmental Conservation, NYSDEC and Massachusetts Department of Environmental Protection, MADEP) levels. Under Section 404 of the Clean Water Act (CWA), the COE is authorized to issue permits for activities that would result in the discharge of dredge or fill material, or the dredging of, waters of the United States such as wetlands. Under Section 401 of the CWA, states are required to certify that proposed dredging or filling of waters of the United States meets state water quality standards.

At the local level, the community's conservation commission administers the Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40 (310 CMR 10.00), which protects wetlands and other resource areas, such as land subject to flooding (100-year floodplains), the riverfront area (added by the Rivers Protection Act), and land under water bodies. MADEP oversees administration of the Wetlands Protection Act, develops regulations and policies, and hears appeals of decisions made by local conservation commissions. In accordance with the Environmental Conservation Article 24, New York Code (Freshwater Wetlands), the state of New York identifies, classifies, and protects freshwater wetlands with an area of 12.4 acres or more, by establishing a 100-foot-wide regulated adjacent area around each protected wetland (New York Code 1997).

5.1 Adverse Impacts to Rivers, Streams, Waterbodies & Wetlands

As proposed the NED Project would cross within 1,000 feet of 108 wetlands, 62 stream crossings, 11 floodplains, 4 surface waters and 1 Federally designated Wild & Scenic River within Berkshire County, Massachusetts. In Berkshire County, Massachusetts the NED Project would cross Kinderhook Creek in Hancock, Hollow Brook, Secum Brook, and Town Brook in Lanesborough, through Cheshire Reservoir in Cheshire, Weston Brook and Wahconah Falls Brook in Dalton, Cady Brook in Hinsdale, Westfield Brook, Shaw Brook and the Westfield Wild & Scenic River in Windsor, all of which are coldwater fisheries. In Rensselaer County, New York the NED Project would cross the Hudson River, Papscanee Creek, and tributaries all of which are tidal-influenced, regularly fluctuating from three to four feet between low and high tide

conditions. Within Berkshire County, Massachusetts, 83.85 acres of the proposed route are within 100 feet of a stream. In addition, the NED Project involves 20.5 acres of wetland impacts within Berkshire County, Massachusetts, including deep marsh (.84 acres), shallow marsh meadow or fen (2.94 acres), shrub swamp (9.28 acres), and wooded swamp (7.48 acres). Within Rensselaer County, the NED Project would cross the following streams: Vlockie Kill, East Brook, Tackawasick Creek, Papscanee Creek, Valatie Kill, Moordener Kill, Black River, Roaring Brook, West Brook, and Vierda Kill.

BRPC is concerned about the project construction activities that potentially can affect rivers, streams, waterbodies and wetlands, including clearing and grading, pipeline installation across waterbodies, horizontal directional drilling (HDD), hydrostatic testing, and potential spills or leaks of hazardous materials. Pipeline construction can affect surface waters in several ways, including modifying the existing aquatic habitat, increasing runoff and the rate of in-stream sediment loading, and increasing turbidity levels. Clearing and grading of streambanks, in-stream trenching and backfilling, and trench dewatering can introduce sediment directly or indirectly into the water column. Surface water impacts can also result from inadvertent releases of drilling fluids in the water column during HDD operations, hydrostatic test water discharges that erode stream beds and banks, discharge of hydrostatic test water containing pollutants, and potential spills of hazardous liquids such as fuels and lubricants. The clearing and grading of the waterbody banks associated with dry crossings (i.e., flume or dam-and-pump crossing methods) could disturb riparian vegetation and soils. Blasting could permanently alter stream channels. Heavy equipment used during construction could also compact upland and riparian soils, which could reduce infiltration and cause greater runoff to waterbodies.

The primary impacts of the construction of the pipeline on wetland vegetation would be the temporary and permanent alteration of forested wetland vegetation. Other impacts on wetlands could include temporary changes in hydrology and water quality during construction. Temporary removal of wetland vegetation during construction could alter the capacity of wetlands to function as habitat and flood and erosion control buffers. Mixing of topsoil with subsoil could alter nutrient availability and soil chemistry, thereby inhibiting recruitment of native wetland vegetation. Blasting may be required for trench excavation along portions of the pipeline route due to the presence of shallow bedrock. Blasting could result in changes in wetland hydrology due to disturbance of impermeable layers of soil or shallow bedrock. Heavy equipment operating during construction could result in soil compaction or rutting that would alter natural hydrologic and soil conditions, potentially inhibiting germination of native seeds and the ability of plants to establish healthy root systems. Additionally, discharges from stormwater, dewatering structures, or hydrostatic testing could transport sediments and pollutants into wetlands, affecting water quality.

Wetlands could be impacted by pipeline facilities, above ground facilities, contractor yards and access roads. TGP has not completed the identification and delineation of wetlands along the proposed pipeline route. Wetland boundaries should be carefully delineated based on methods agreed upon by COE, NYSDEC and MADEP. For areas where TGP is unable to obtain survey access, alternative measures to approximate the locations and boundaries of wetlands within the project are should be agreed upon by COE, NYSDEC and MADEP. In Massachusetts, whenever access is available for a particular wetlands area, TGP should submit the required Notice of Intent to the local conservation commission and follow the standard wetlands permitting procedures and time-line.

In addition, BRPC is concerned about long-term impacts on water resources from the construction process and during operation of the pipeline. Long-term impacts on water quality can result from alteration of the waterbody banks. If not stabilized and revegetated properly, soil erosion can continue after construction, depositing sediments in the waterbodies. The level of impact of the NED Project on surface waters would depend on precipitation events, sediment loads, stream area/velocity, channel integrity, and bed material.

TGP should be required to provide local Conservation Commissions with ample time and financial resources to obtain outside expertise and to fully analyze the complexities of the NED Project. The issuing authority under the Wetlands Protection Act is the local Conservation Commission, Mayor, or Select Board, whichever is applicable, which must be in a position to solicit outside expertise at no expense to the town. Conservation Commissions are volunteer boards with between three and seven members appointed by their Select Boards or Mayors. Within Berkshire County, the communities impacted by the proposed pipeline rely strictly on volunteers and do not have the benefit of assistance from paid staff such as Conservation Agents. In addition, the Conservation Commissions should be engaged early in the project design while changes necessitated by the Order of Conditions can be reasonably accommodated.

5.1.1 Surface Water Resources

Pipeline construction and maintenance has effects on both the surface and underground. Post-construction water runoff characteristics will inevitably be different from pre-construction conditions. Land contours will be different. Vegetation, water retention capacity and the concentration of precipitation runoff will all change to some extent. While some changes may be benign, in most situations these pose problems. There will be increased rates and volume of runoff during storm events due to the creation and maintenance of more cleared land.

In addition, construction, particularly blasting, and the presence of a buried 30" diameter pipeline, could alter groundwater flows and result in a chain reaction that could impact a variety of environmental resources or could create a berm which obstructs the flow of water. Such a berm has resulted from a natural gas line within the Town of Stockbridge, Massachusetts, and has resulted in a flow obstruction at Stockbridge Bowl which has impacted water quality and is requiring over \$4 million to mitigate.

5.1.2 Waterbody Construction Methods

Waterbody construction methods including hydrostatic test water, trench dewatering, dry crossings and blasting could have significant adverse impacts to water resources.

Hydrostatic testing could have serious adverse impacts in relation to both water withdrawals and discharge. During water intake, downstream flow rates should be maintained to protect aquatic life, waterbody uses, and provide downstream withdrawals of water by existing users. TGP should ensure that water sources used for hydrostatic test water are not contaminated. As an example, the Hudson River is an Environmental Protection Agency ("EPA") Superfund Site due to PCB contamination. Consequently, withdrawals from the Hudson River, if discharged in other watersheds, might contain PCBs which would contaminate the receiving lands or waterways. Sampling of discharge water should be conducted in accordance with TGP's Erosion and Soil Control Plan ("E&SCP") to document water quality at the time of discharge in accordance with applicable discharge permits. Additionally, discharge rates should be regulated using energy dissipation devices to prevent erosion, streambed scour, suspension of sediments, flooding, or excessive stream flow.

Trench dewatering could have impacts during construction such as the open trench accumulating water, either from the seepage of groundwater or from precipitation. Where dewatering is necessary, measures should be taken to remove the trench water and sediment or other contaminants and prevent heavily silt-laden water from flowing into any adjacent waterbodies or wetlands. TGP should commit to isolating shorter portions of trench to reduce the volume of trench water that would need to be handled at one time consistent with concerns raised by NYSDEC about trench dewatering during the Algonquin Incremental Market Project ("AIM Project").

Construction-related impacts associated with the dry crossing method should be limited to short periods of increased turbidity before installation of the pipeline during the assembly of the upstream and downstream dams and following installation of the pipeline when the dams are pulled and flow across the restored work area is re-established. Potential short- and long-term impacts should be minimized, including minimization of clearing of streamside vegetation,

installation and maintenance of temporary and permanent erosion controls, and minimization of the duration of in-stream construction. If blasting in waterbodies is required, the impacts could include permanent alteration of the stream channel, degradation of water quality, and an alteration of the flow as a result of cracks and fissures. TGP should follow procedures identified in an approved E&SCP and Rock Removal Plan to minimize impacts associated with blasting.

National Pollutant Discharge Elimination System (NPDES)

The NED Project would require an application for coverage under the Construction General Permit (CGP) in Massachusetts and New York. As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The NPDES stormwater program requires construction site operators engaged in clearing, grading, and excavating activities that disturb 1 acre or more, including smaller sites in a larger common plan of development or sale, to obtain coverage under an NPDES permit for their stormwater discharges. Most states are authorized to implement the Stormwater NPDES permitting program. EPA remains the permitting authority in a few states, territories, and on most land in Indian Country. In areas where EPA is the permitting authority, operators must meet the requirements of the EPA CGP. Within Massachusetts the US Environmental Protection Agency (EPA) is the permitting authority. Within New York the state of New York is authorized to implement the Stormwater NPDES permitting program. TGP should be required to develop a Stormwater Pollution Prevention Plan (SWPPP) in accordance with NPDES. A SWPPP is a site-specific, written document that: identifies potential sources of stormwater pollution at the construction site; describes practices to reduce pollutants in stormwater discharges from the construction site; and identifies procedures the operator will implement to comply with the terms and conditions of a construction general permit.

In addition, the Town of Schodack, New York and the Towns of Dalton and Lanesborough, MA are operators of regulated municipal separate storm sewer systems (MS4) under the NPDES Phase II. The Town of Cheshire, MA will be a regulated community once the current draft Massachusetts MS4 Permit becomes final, which is anticipated in early 2016. Operators of regulated small MS4s are required to design their programs to: reduce the discharge of pollutants to the “maximum extent practicable” (MEP); protect water quality; and satisfy the appropriate water quality requirements of the Clean Water Act. Construction site runoff control and post-construction runoff control are two required components of each municipal plan. TGP should be required to fully comply with the local requirements of regulated MS4s under the Clean Water Act, such as the Town of Dalton Stormwater Management and Erosion Control Bylaw (see attached Bylaw and Regulations).

5.1.4 Contamination

Soil contamination along the NED Project may result from at least two sources: hazardous material or fuel spills during construction and/or those occurring before construction in pre-existing contaminated areas that are encountered during construction. Contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely affect soils. Contamination may be present within surficial soils at HDD locations and potential hydrostatic testing water withdrawals. TGP should be required to conduct a review of each of the planned locations.

5.1.5 Erosion

The construction of an interstate natural gas pipeline could have considerable impacts due to erosion. In addition, post-construction conditions and ongoing maintenance of the right-of-way could increase erosion potential. Erosion is known to be a continuing natural process that can be accelerated by human disturbance. Factors such as soil texture, structure, slope, vegetative cover, rainfall intensity, and wind intensity can influence the degree of erosion. Soils most susceptible to erosion by water are typified by bare or sparse vegetative cover, non-cohesive soil particles with low infiltration rates, and moderate to steep slopes. Soils typically more resistant to erosion by water include those that occupy low relief areas, are well vegetated, and have high infiltration capacity and internal permeability. Given topography and soil types in those parts of Berkshire and Rensselaer Counties proposed to be crossed by the NED Project, many areas tend to be more susceptible to erosion by water. Given that the natural vegetative conditions for the region (i.e., forests) will not be allowed to be reestablished along the permanent pipeline right-of-way, the natural vegetation which serves to reduce erosion will be permanently eliminated and all steep slope areas will continually be susceptible to erosion.

Construction activities, such as clearing, grading, trench excavation, backfilling, and the movement of construction equipment, along the right-of-way may result in conditions that have adverse impacts on water resources. Clearing removes protective vegetative cover and exposes the soil to the effects of wind and rain, which increases the potential for soil erosion and sedimentation of sensitive areas. Grading, spoil storage, and equipment traffic can compact soil, reducing porosity and increasing runoff potential. Excess rock or fill material brought to the surface during trenching operations could hinder the restoration of the right-of-way.

Steep slopes along the NED Project could increase erosion during both construction and post-construction as steep slopes may make the reestablishment of vegetation difficult. Soils that occur on slopes greater than eight percent are considered areas with a revegetation concern. Along the proposed route in Berkshire County, Massachusetts, 183.79 acres of land impacted

involve slopes of fifteen percent or greater. In addition, 29.14 acres of impacts would take place in highly erodible soils.

Location	Steep Slopes acres (>15%)	Erodible Soils acres
Hancock	39.27	10.58
Lanesborough	52.04	5.39
Cheshire	17.21	5.10
Dalton	21.93	5.30
Hinsdale	17.77	1.18
Peru	0.32	0.00
Windsor	35.25	1.59
Berkshire County	183.79	29.14

5.1.6 Coldwater Fisheries

Coldwater fisheries within Berkshire County, Massachusetts, impacted by the NED Project include:

- Kinderhook Creek, Hancock MA
- Hollow Brook, Lanesborough MA
- Secum Brook, Lanesborough MA
- Town Brook, Lanesborough MA
- Cheshire Reservoir, Cheshire MA
- Weston Brook, Dalton MA
- Wahconah Falls Brook, Dalton MA
- Cady Brook, Hinsdale, MA
- Westfield Brook, Windsor MA
- Shaw Brook, Windsor MA
- Westfield River, Windsor MA

Coldwater fisheries within Rensselaer County, New York, impacted by the NED Project include:

- Valatiekill Creek (route crosses the main creek and 3 additional headwater tributaries)
- Pikes Pond Outlet Creek (tributary of the Valatiekill is crossed 3 times)
- Tackawasick Creek (route crosses the main Creek and 4 additional headwater tributaries)

5.2 Requested Mitigation Measures for Rivers, Streams, Waterbodies & Wetlands

5.2.1. Require TGP to fully comply with the Massachusetts Stormwater Management Policy pursuant to Section 401 of the Federal Clean Water Act.

5.2.2. Require TGP to abide by conditions consistent with the Massachusetts Erosion and Sediment Control Guidelines, Massachusetts River and Stream Crossing Standards and the Massachusetts Stormwater Management Standards.

5.2.3. Require TGP to apply for and receive local permits consistent with the Federal Clean Water Act including those required under the:

- Wetlands Protection Act, M.G.L. c. 131, §40 (310 CMR 10.00)
 - Massachusetts Riverfront Protection Act, M.G.L. c. 131, §40 (310 CMR 10.58)
 - Massachusetts Environmental Policy Act, M.G.L. Ch. 30 §61-62 (301 CMR 11.00)
 - Environmental Conservation Article 24, New York Code (Freshwater Wetlands)
 - Town of Dalton Stormwater Management & Erosion Control Bylaw (Clean Water Act MS4 permit requirements)
 - Town of Schodack run-off and drainage requirements (Clean Water Act MS4 permit requirements)
- 5.2.4. Minimize use of open cut construction across streams and wetlands and prohibit the use of open cut construction across protected streams in favor of boring.
- 5.2.5. Require TGP to provide municipalities with funding consistent with M.G.L. c. 44 §53G to obtain independent expertise necessary for the review of the NED Project.
- 5.2.6. Require on-site inspectors with the legal ability to enforce ion inspectors with legal enforcement authority to insure that all conditions are met during construction. Coordinate with local authorities and provide inspection reports to a designated point of contact within each municipality. The municipal point of contact should have the ability to engage with inspectors regularly and insure that all parties agree that all conditions are met.
- 5.2.7. Require TGP to enter into binding hold harmless agreements with each municipality which protects the municipality from damages resulting from pipeline construction activities.
- 5.2.8. The EIS should quantify the acres of wetlands impacted by the proposed pipeline by wetland type (i.e. Construction would impact a total of XXX.X acres of wetland, including XX.X acres of forested wetlands, XX.X acres of scrub- shrub wetlands and XX.X acres of emergent wetlands.) The EIS should include whether the NED Project’s wetland impacts would occur from construction within temporary workspaces or would be maintained as a corridor through the operational life of the NED Project.
- 5.2.9. FERC should require that TGP provide a compensatory mitigation plan in accordance with the 2008 Final Rule for Compensatory Mitigation for Losses of Aquatic Resources (33 C.F.R. 332) and subject to agreement by COE, NYDEC, and MassDEP.
- 5.2.10. Areas of wetlands disturbed by construction within temporary workspace should be restored to the wetlands type existing prior to construction, except in cases of noticeable presence of invasive species, such as Phragmites or purple loosestrife.

The goal of the restoration should be that the temporarily disturbed wetlands is restored to its pre-construction condition, using native, non-invasive species as soon as practicable.

- 5.2.11. TGP should consult with appropriate federal and state agencies and appropriate local conservation commissions to develop a project-specific wetland restoration plan. TGP should be required to prepare and implement approved revegetation and noxious weed control plans. TGP should continue annual monitoring for a minimum of three growing seasons after restoration is complete and a minimum of three years following successful revegetation (as determined by the FERC staff) and should clean maintenance equipment during operations before moving to a new location. Wetlands should be restored with seed and mulch based upon specifications of the NYSDEC, MADEP, the COE, and/or other applicable agencies.
- 5.2.12. TGP should be required to implement an approved Erosion and Soil Control Plan (E&SCP) in consultation with NYDEC and MADEP and consistent with the Massachusetts and New York Erosion and Sediment Control Guidelines. The E&SCP should be required to be used by TGP and its contractors as a guidance manual for minimizing soil disturbance and transportation of sediments off the right-of-way into sensitive resources (wetlands, streams, and residential areas) during natural gas pipeline construction. The procedures presented in the E&SCP should represent BMPs designed to accommodate varying field conditions while maintaining strict minimum standards for the protection of soil resources and environmentally sensitive areas.
- 5.2.13. TGP should be required to develop an approved hydrostatic testing procedure that is included in its E&SCP and describes how the hydrostatic testing would be conducted and how the water would be discharged. During water intake, downstream flow rates should be maintained to protect aquatic life, waterbody uses, and provide downstream withdrawals of water by existing users. The water quality of intake water should be sampled prior to use for hydrostatic testing. Water that is not equal to or exceeding water quality standards for the receiving area should not be permitted to be used in hydrostatic testing. Hydrostatic test water should be tested for presence of invasive aquatic species such as zebra mussel veligers and, if found, such water should not be permitted to be used for hydrostatic testing. Sampling of discharge water should be conducted to document water quality at the time of discharge in accordance with applicable discharge permits. Additionally, discharge rates should be regulated using energy dissipation devices to prevent erosion, streambed scour, suspension of sediments, flooding, or excessive stream flow.

- 5.2.14. Boring or HDD should be evaluated for use at all stream crossings. Such methods should be used at all such crossings unless determined infeasible or having greater adverse impacts than open cut construction by NYDEC or local Conservation Commissions, as the case may be.
- 5.2.15. Construction-related impacts associated with the dry crossing method should be limited to short periods of increased turbidity before installation of the pipeline during the assembly of the upstream and downstream dams and following installation of the pipeline when the dams are pulled and flow across the restored work area is re-established. Potential short- and long-term impacts should be minimized, including minimization of clearing of streamside vegetation, installation and maintenance of temporary and permanent erosion controls, and minimization of the duration of in-stream construction.
- 5.2.16. If blasting in waterbodies is required, the primary impact that could occur is a permanent alteration of the stream channel. TGP should follow procedures identified in an approved E&SCP and Rock Removal Plan to minimize impacts associated with blasting.
- 5.2.17. Where necessary, erosion control fabric or matting would be used on steep slopes to ensure that soils successfully revegetate. TGP should be required to annually monitor all disturbed areas for a minimum of three growing seasons after construction to evaluate revegetation success of the Project area in accordance with an approved E&SCP. Areas that have not revegetated successfully should be corrected to ensure the right-of-way conditions are fully stable and subject to erosion and monitoring of such areas should continue indefinitely until they have been determined to be stable for a minimum of three years. Local inspectors employed by the appropriate municipality and paid for by TGP should have authority to inspect, order corrective actions, and have final sign-off before any area is considered to be successfully revegetated.
- 5.2.18. TGP should be required to develop an acceptable Spill Prevention, Control and Countermeasure Plan (SPCC Plan) that specifies cleanup procedures to minimize the potential for soil contamination from spills or leaks of fuel, lubricants, coolants, or solvents. TGP and its contractors should use the SPCC Plan to minimize accidental spills of materials that may contaminate soils, and to ensure that inadvertent spills of fuels, lubricants, or solvents are contained, cleaned up, and disposed of as quickly as possible and in an appropriate manner.
- 5.2.19. TGP should research locations where assessment for potential contamination may be necessary and work with the NYDEC and MADEP. TGP should file with the Secretary of the Commission ("Secretary"), for review and written approval

of the Director of the Office of Energy Projects (“OEP”), a Field Sampling Plan for potential contaminated sites that could be encountered during construction.

- 5.2.20. TGP should be required to prepare Unexpected Contamination Encounter Procedures for approval.
- 5.2.21. Require TGP to conduct in-stream work in coldwater fisheries only during the appropriate timing window for coldwater fisheries (June 1 through September 30) unless expressly permitted or further restricted by the appropriate federal or state agency in writing on a site-specific basis.
- 5.2.22. Required TGP to file with the Secretary a schedule identifying when blasting would occur within each waterbody greater than ten feet wide and within any designated coldwater fishery.
- 5.2.23. Require TGP to restore stream beds following blasting and installation of the pipeline. Prior to backfilling, the trench should be inspected for any significant bedrock cracks or fissures. Any fissures should be filled with bentonite to seal the gap and prevent any infiltration of stream flow into the ground. Restoration of the stream bed should include backfilling the trench with sand to protect the newly installed pipeline and then replacement of appropriately sized trench spoil. TGP should replace the native stream bed material on top of the excavated trench-line to restore the original stream bed contours. Impacts should be restored as near as practicable to preconstruction contours.
- 5.2.24. TGP should consult with NYDEC and MADEP during the review of its Section 401 WQC application. TGP should address any impact minimization or mitigation measures for blasting in streams during the review process. TGP should also consult with NYSDEC during the state’s review of the New York Section 401 WQC.

6 Invasive Plants

TGP's removal of existing vegetation and disturbance of soils during construction of the proposed facilities could create conditions conducive to the establishment of invasive weeds, particularly where new corridors are established in previously forested areas. Invasive species are those that display rapid growth and spread, becoming established over large areas (USDA 2013a). Most commonly they are exotic species that have been introduced from another part of the United States, another region, or another continent, although some native species that exhibit rapid growth and spread are also considered invasive. Invasive plant species can change or degrade natural vegetation communities, which can reduce the quality of habitat for wildlife and native plant species. Similar to invasive species, noxious weeds are frequently introduced but occasionally are native. Noxious weeds are defined as those that are injurious to commercial crops, livestock, or natural habitats and typically grow aggressively in the absence of natural controls (USDA 2013b).

Invasive species could spread throughout the project area due to the extent of forest clearing that would occur and there is an increased potential for encroachment of invasive species in areas cleared during construction. Invasive species could also spread during operation due to transmission of seeds or viable plant fragments from infested areas via mowing equipment.

6.1. Requested Mitigation Measures to Reduce Impacts from Invasive Plants

- 6.1.1. Require TGP to apply for and receive local permits consistent with the Federal Clean Water Act including those required under the:
 - Wetlands Protection Act, M.G.L. c. 131, § 40 (310 CMR 10.00)
 - Massachusetts Riverfront Protection Act, M.G.L. c. 131, § 40 (310 CMR 10.58)
 - Massachusetts Environmental Policy Act, M.G.L. Ch. 30 § 61-62 (301 CMR 11.00)
 - Environmental Conservation Article 24, New York Code (Freshwater Wetlands)
- 6.1.2. Require TGP to provide municipalities with funding consistent with M.G.L. c. 44 §53G to obtain independent expertise necessitated for the review of the NED Project.
- 6.1.3. Require on-site inspectors with the legal ability to enforce ion inspectors with legal enforcement authority to insure that all conditions are met during construction. Coordinate with local authorities and provide inspection reports to a designated point of contact within each municipality. The municipal point of contact should have the ability to engage with inspectors regularly and insure that all parties agree that all conditions are met.

- 6.1.4. To minimize the potential spread of invasive species, TGP should be required to develop state-specific Invasive Species Management Plans in consultation with the applicable state regulatory agencies (NYSDEC, NYSDAM, and MADEP). The Management Plans should contain measures designed to control invasive plant species during project construction and operation through limited use of herbicides, installation of wash stations, and rapid restoration and reseeding following installation of the pipeline, which would promote the establishment of desirable plant species and deter the spread of unwanted plant species.
- 6.1.5. TGP should control the potential transport of invasive terrestrial and aquatic species, such as the emerald ash borer and didymo, through adherence to federal and state-specific regulations for preventing the land transport of such species, and by discharging hydrostatic test waters within the source watershed. TGP should be required to commit to the rapid restoration and reseeding of construction areas to promote establishment of native species within disturbed areas and limit colonization by invasive plants. TGP should be required to conduct invasive species monitoring within the maintained right-of-way for as a routine component of its operations and management procedures. TGP should not move mowing and maintenance equipment from an area where invasive species have been encountered during operation of the project unless it is cleaned prior to moving.

7 Special Species Status and Special Interest Areas

7.1. Adverse Impacts to Special Species & Special Interest Areas

Special status species are those species for which state or federal agencies afford an additional level of protection by law, regulation, or policy. Special Interest Areas within Berkshire County, Massachusetts, include BioMap2 Core Habitat and Critical Natural Landscapes, bat hibernacula, karst geology, Areas of Critical Environmental Concern, a Federally designated Wild & Scenic River and the Appalachian National Trail. One of the primary concerns when crossing recreation and special interest areas is the impact of construction on the recreational activities, public access, and resources the area aims to protect. Construction would alter visual aesthetics by removing existing vegetation and disturbing soils. Construction would also generate dust and noise, which could be a nuisance to recreational users, and may interfere with or diminish the quality of the recreational experience by affecting wildlife movements or disturbing trails.

Special Interest Areas within Rensselaer County, New York include the Hudson River National Heritage Area, Rensselaer Plateau Forest Area, and Natural Heritage Program Significant Habitat locations. An evaluation by Dr. David Hunt for the NED Pipeline Corridor identifies many local and regionally significant natural habitat sites along the pipeline in Nassau and the Rensselaer Plateau area. This evaluation includes a detailed list of habitat and species of interest and concern and was provided in the Nassau Natural Resource Committee Report on Potential Impacts to the Natural Resources from the Proposed Natural Gas Pipeline in the Town of Nassau. The “Report on the Potential Impacts to the Natural Resources from a Proposed Natural Gas Pipeline in the Town of Nassau” is attached.

7.2. BioMap2

To capture all the elements of biodiversity, BioMap2 approaches the conservation of Massachusetts’ biological resources at multiple scales. Thus, BioMap2 combines hundreds of individual pieces of geospatial data about the state’s species, ecosystems, and landscapes.

These elements of biodiversity falls into one of two complementary categories, Core Habitat and Critical Natural Landscape. Core Habitat identifies key areas to ensure the long-term persistence of species of conservation concern, exemplary natural communities, and intact ecosystems across the Commonwealth. Critical Natural Landscape identifies larger landscape areas that are better able to support ecological processes, disturbances, and wide-ranging species.

BioMap2 Core Habitat and Critical Natural Landscape overlap in many locations. Together, Core Habitat and Critical Natural Landscape identify 2.1 million acres that are key to the protection of our state's biodiversity.

The two elements of the BioMap2 protection strategy have a varied interplay across the Commonwealth. At times, the elements that drive the focused delineation of Core Habitat are nested within a buffer of Critical Natural Landscape. In other locations, Core Habitat or Critical Natural Landscape stands alone, taking the lead in identifying locations that warrant protection for specific elements of biodiversity or for the protection of larger ecological functions.

7.2.1. Core Habitat

The specific subcomponents of Core Habitat within Berkshire County are:

- Species of Special Concern/Conservation Concern - include native Massachusetts species that are listed under the state Endangered Species Act or listed in the State Wildlife Action Plan.
- Priority Natural Communities - include natural communities with limited distribution and the best examples documented of more common types of communities.
- Priority Natural Communities - include natural communities with limited distribution and the best examples documented of more common types of communities
- Aquatic Core - identifies core habitat for fish and other Species of Conservation Concern.
- Forest Core - identifies the best examples of large, intact forests that are least impacted by roads and development, providing critical "forest interior" habitat for numerous woodland species.
- Wetland Core - identifies the most intact wetlands within less developed landscapes
- Vernal Pool Core - identifies the highest quality most interconnected clusters of Potential Vernal Pools and the habitat between them

Wetlands Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future. Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Rich, Mesic Forests are a variant of northern hardwood forests, dominated by sugar maple with a diverse herbaceous layer that includes many spring wild flowers, in a moist, nutrient-rich environment.

Spruce-Fir Boreal Swamps are forested wetlands dominated by red spruce and balsam fir. These swamps are typically found at stream headwaters or in poorly drained basins in the higher, western and north-central parts of the state.

Forest Cores are the best examples of large, intact forests that are least impacted by roads and development. Forest Cores support many bird species sensitive to the impacts of roads and development and help maintain ecological processes found only in unfragmented forest patches.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Vernal pools are small, seasonal wetlands that provide important wildlife habitat, especially for amphibians and invertebrate animals that use them to breed. BioMap2 identifies the top 5 percent most interconnected clusters of Potential Vernal Pools in the state.

7.2.1.1 Core 2341

The NED Project would cross Core Habitat in the Towns of Hancock and Lanesborough including 11,593-acres of Forest Core, Wetland Core, Aquatic Core, Vernal Pool Core, Priority Natural Communities, and Species of Conservation Concern.

Species of conservation concern include:

Common Name	Scientific Name	Status
Comb Water-milfoil	<i>Myriophyllum verticillatum</i>	Endangered
Ogden's Pondweed	<i>Potamogeton ogdenii</i>	Endangered
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	Special Concern
Bridle Shiner	<i>Notropis bifrenatus</i>	Special Concern
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened
Bristly Black Currant	<i>Ribes lacustre</i>	Special Concern
Crooked-stem Aster	<i>Symphyotrichum preanthoides</i>	Special Concern
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	Special Concern

Much of the Town of Hancock and of Pittsfield State Forest is in Core 2341B, a large Forest Core that stretches north-south along the Taconic Range here. Although this part of the Core Habitat is not a rare species hotspot, it does support three rare species, including several good populations of Jefferson Salamander.

7.2.1.2 Core 2546

The NED Project would cross Core Habitat within the Towns of Cheshire and Dalton including 11,410-acres of Forest Core, Wetland Core, Aquatic Core, Vernal Pool Core, Priority Natural Communities, and Species of Conservation Concern. The Hoosic River, Dry Brook, and several of their tributaries in this part of a larger Core Habitat support seven rare plants and animals, including the globally rare Schweinitz’s Sedge.

Species of Conservation Concern include:

Common Name	Scientific Name	Status
Bailey’s Sedge	<i>Carex baileyi</i>	Threatened
Frank’s Lovegrass	<i>Eragrostis frankii</i>	Special Concern
Hairy-fruited Sedge	<i>Carex trichocarpa</i>	Special Concern
Intermediate Spike-sedge	<i>Eleocharis intermedia</i>	Threatened
Schweinitz’s Sedge	<i>Carex schweinitzii</i>	Endangered
Longnose Sucker	<i>Catostomus catostomus</i>	Special Concern
Bristly Black Currant	<i>Ribes lacustre</i>	Special Concern
Dwarf Scouring-rush	<i>Equisetum scirpoides</i>	Special Concern
Large-leaved Sandwort	<i>Moehringia macrophylla</i>	Endangered
Long-styled Sanicle	<i>Sanicula odorata</i>	Threatened
Thread Rush	<i>Juncus filiformis</i>	Endangered
Woodland Millet	<i>Milium effusum</i>	Threatened
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	Special Concern
American Bittern	<i>Botaurus lentiginosus</i>	Endangered
Least Bittern	<i>Ixobrychus exilis</i>	Endangered
Northern Harrier	<i>Circus cyaneus</i>	Threatened
Sedge Wren	<i>Cistothorus platensis</i>	Endangered
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Special Concern

7.2.1.3 Core 2228

The NED Project would cross Core Habitat in the Towns of Hinsdale, Windsor and Peru including 2,580-acres of Wetland Core, Aquatic Core, and Species of Conservation Concern.

Species of conservation concern include:

Common Name	Scientific Name	Status
Bailey's Sedge	<i>Carex baileyi</i>	Threatened
Bartram's Shadbush	<i>Amelanchier bartramiana</i>	Threatened
American Bittern	<i>Botaurus lentiginosus</i>	Endangered
Sharp-shinned hawk	<i>Accipiter striatus</i>	Special Concern

7.2.1.4 Core 2331

The NED Project would cross Core Habitat within the Town of Windsor including 12,656-acres of Forest Core, Wetland Core, Aquatic Core, Priority Natural Communities, and Species of Conservation Concern. This area of Core Habitat includes many important features:

- The East Branch of the Westfield River, a National Wild and Scenic River, runs southeastward through Cummington and then turns southward at the confluence with the Swift River and flows through the dramatic and narrow Chesterfield Gorge. This free-flowing river and its tributaries support 22 rare and uncommon species, including the Endangered Lake Chub and Harpoon Clubtail dragonfly.
- Forest Seeps are in areas on wet slopes in hardwood forests where groundwater seeps out of the earth. The overstory is similar to that of the surrounding forest, but many typical wetland ferns, herbs, and shrubs occur as well. This example of Forest Seep runs parallel to the Westfield River, and is home to healthy population of a very unusual plant species. It is in good condition, and is relatively inaccessible.
- Hemlock Ravine Communities are evergreen forests made up primarily of hemlocks, with dense, nearly closed canopies that cast deep shade so that very few plants grow below. They occur on moist, north-facing slopes, or along north-facing ravines. This small Hemlock Ravine is in good condition, with good size and age structure, although it has hiking trails and a small population of volunteer Norway Spruce is present.
- Hickory-Hop Hornbeam Forests are open, hardwood forests dominated by various hickory species with significant hop hornbeam in the subcanopy. This community is characterized by a sparse shrub layer, and a nearly continuous cover of grasses and sedges. This mature example of Hickory-Hop Hornbeam Forest has high species diversity and little sign of anthropogenic disturbance. It is part of a larger mosaic of natural communities that provide it with a good buffer to human impacts.
- High-Energy Riverbank communities are sparse, open graminoid communities found on cobble and sand deposits along fast-flowing rivers that experience severe flooding and ice scour. This example of High-Energy Riverbank is in excellent condition, with high species diversity, intact natural processes of flood and scour, and is well buffered by natural vegetation.

- High-Terrace Floodplain Forests are deciduous hardwood forests that occur along riverbanks, above the zone of annual flooding. Although they do not flood annually, they flood often enough for the soil to be moderately enriched. This example of High-Terrace Floodplain Forest is small and in somewhat degraded condition, with two exotic invasive species present.
- Rich, Mesic Forests are a variant of northern hardwood forests, dominated by sugar maple with a diverse herbaceous layer that includes many spring wild flowers, in a moist, nutrient-rich environment. Three examples of Rich, Mesic Forest are found within this Core Habitat, including a large one that has great structural and age diversity, with areas recovering from past disturbances. It is generally in good condition, largely buffered by naturally vegetated areas, and with few exotic invasive species.

7.2.1.5 Core 2206, 2219 and 2230

Also in the Town of Windsor the NED Project would cross distinct 19, 14 and 6 acre Core Habitats, featuring Aquatic Core and a Species of Conservation Concern.

Species of Conservation Concern include:

Common Name	Scientific Name	Status
Barren Strawberry	<i>Geum fragarioides</i>	Special Concern
Dwarf Scouring-rush	<i>Equisetum scirpoides</i>	Special Concern
Foxtail Sedge	<i>Carex alopecoidea</i>	Threatened
Hitchcock's Sedge	<i>Carex hitchcockiana</i>	Special Concern
Muskflower	<i>Mimulus moschatus</i>	Endangered
Purple Giant Hyssop	<i>Agastache scrophulariifolia</i>	Endangered
Wild Senna	<i>Senna hebecarpa</i>	Endangered
Woodland Millet	<i>Milium effusum</i>	Threatened
Ostrich Fern Borer Moth	<i>Papaipema sp. 2 nr. Pterisii</i>	Special Concern
Twelve-spotted Tiger Beetle	<i>Cicindela duodecimguttata</i>	Special Concern
Harpoon Clubtail	<i>Gomphus descriptus</i>	Endangered
Ocellated Darner	<i>Boyeria grafiana</i>	Special Concern
Riffle Snaketail	<i>Ophiogomphus carolus</i>	Threatened
Ski-tipped Emerald	<i>Somatochlora elongate</i>	Special Concern
Wood Turtle	<i>Glyptemys insculpta</i>	Special Concern
Bridle Shiner	<i>Notropis bifrenatus</i>	Special Concern
Lake Chub	<i>Couesius plumbeus</i>	Endangered
Longnose Sucker	<i>Catostomus catostomus</i>	Special Concern
Water Shrew	<i>Sorex palustris</i>	Special Concern
American Bittern	<i>Botaurus lentiginosus</i>	Endangered

7.2.1.6 Core 2165

The NED Project would cross a 5-acre Core Habitat within the Town of Peru featuring Aquatic Core and a Species of Conservation Concern.

Species of Conservation Concern include:

Common Name	Scientific Name	Status
Great Laurel	<i>Rhododendron maximum</i>	Threatened

7.2.2. Critical Natural Landscapes & Landscape Blocks

The NED Project would cut through an 84,791-acre Critical Natural Landscape featuring Aquatic Core Buffer, Wetland Core Buffer and Landscape Block in the Towns of Hancock, Lanesborough, Cheshire and Dalton. In addition, the NED Project would cross a 13,026-acre Critical Natural Landscape featuring Aquatic Core Buffer, Wetland Core Buffer and Landscape Block in the Towns of Hinsdale, Windsor and Peru. This largely forested Landscape Block is among the largest 20% of all Blocks across Massachusetts. These large forested landscapes provide invaluable wildlife habitat and other ecosystem values such as clean drinking water and absorbing carbon from the atmosphere. This Landscape Block is contiguous with other large Blocks and is partially protected.

Landscape Blocks, the primary component of Critical Natural Landscapes, are large areas of intact predominately natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds, as well as coastal habitats such as barrier beaches and salt marshes. Pastures and power-line rights-of-way, which are less intensively altered than most developed areas, were also included since they provide habitat and connectivity for many species. Collectively, these natural cover types total 3.6 million acres across the state. An Ecological Integrity assessment was used to identify the most intact and least fragmented areas. These large Landscape Blocks are most likely to maintain dynamic ecological processes such as buffering, connectivity, natural disturbance, and hydrological regimes, all of which help to support wide-ranging wildlife species and many other elements of biodiversity.

In order to identify critical Landscape Blocks in each ecoregion, different Ecological Integrity thresholds were used to select the largest intact landscape patches in each ecoregion while avoiding altered habitat as much as possible. This ecoregional representation accomplishes a key goal of BioMap2 to protect the ecological stages that support a broad suite of biodiversity in the context of climate change. Blocks were defined by major roads, and minimum size thresholds differed among ecoregions to ensure that BioMap2 includes the best of the best in each ecoregion.

7.3. Bat Hibernacula

There are a minimum of two reported, active bat hibernacula in the Town of Lanesborough. The northern long-eared bat is a state-listed endangered species in Massachusetts (MDFW, 2014d). In addition, the northern long-eared bat received federal protection as a threatened species under the Endangered Species Act. The northern long-eared bat is one of the species of bats most impacted by the disease white-nose syndrome. Due to rapid and profound declines in Northeast bat populations due to white-nose syndrome, the species was proposed for listing as endangered by the FWS in October 2013.

During the summer, northern long-eared bats hunt and roost in forests, roosting in stands of dead hardwoods with large vertical cavities (FWS, 2014h; MDFW, 2014d). During the winter months, from late October to April this species returns to historic hibernacula sites. Suitable winter hibernacula for this species includes underground caves and cave-like structures (such as mines or railroad tunnels), typically with large passages and significant cracks and crevices for roosting. Northern long-eared bats typically occupy their summer habitat from early April through mid-September each year.

If northern long-eared bats are present, tree clearing could potentially kill, injure, or disturb breeding or roosting bats. Northern long-eared bats could also be affected by the loss of tree habitat if significant amounts of tree clearing were to occur. To determine if northern long-eared bats are present within the Project area, acoustic surveys should be conducted in potential northern long-eared bat summer habitat. The Northern long-eared bat Interim Conference and Planning Guidance document (FWS, 2014i) should be utilized to guide identification of suitable summer habitat prior to implementing acoustic surveys, as recommended by the FWS.

To avoid direct and incidental take of northern long-eared bats during the maternity season TGP should be required to adhere to the FWS-recommended tree clearing restriction window (April 1 to September 31) within the accepted home range of the species (3-mile radius). Therefore, TGP should conduct any required tree clearing for the Project within the 3-mile known bat habitat protection area between October 1 and March 31 when the bats are in hibernation.

In addition to the seasonal restrictions applied to all vegetation management practices, disturbance to non-transient habitats should be avoided at all times. Roads, skid trails, and landings should be kept at least 330 feet from all known or potentially suitable basking and gestating habitats, and to minimize the potential for collapse or disturbance of dens, heavy

equipment and site preparation work (e.g., disk-harrowing, shearing, root raking) should be prohibited within 660 feet of any known hibernacula.

7.4. Karst Geology

According to the U.S. Geological Survey, portions of the NED Project would traverse through carbonate karst in the Towns of Hancock, Lanesborough, and Cheshire within Berkshire County Massachusetts.³ Carbonate karst in this region is classified as carbonate rocks buried under less than or equal to 50 feet of glacially derived insoluble sediments in a humid climate. When used in its broadest sense, the term encompasses many surface and subsurface conditions that give rise to problems in engineering geology. Most of these problems pertain to subterranean karst and pseudokarst features that affect foundations, tunnels, reservoir tightness, and diversion of surface drainage. Environmental aspects of karst lead to additional problems in engineering geology, especially in site selection. Subterranean openings may be the habitat of unique and, in some cases, endangered fauna. The openings are also conduits for water and refuse disposal from the surface or, in caves, for pollutants that can be carried for great distances. Many caves contain features of beauty and scientific interest that can be important esthetic factors in site selection for structures, transportation routes, and impoundments. The surface features of karst terrain, primarily sinkholes, solution valleys, and solution- sculptured rock ledges, are significant in engineering geology.

Common causes of ground subsidence include the presence of karst terrain. Karst features such as sinkholes, caves, and caverns can form as a result of the long-term action of groundwater on soluble carbonate rocks (e.g., limestone and dolostone). A field review of potential karst features should be completed and a Karst Mitigation Plan should be developed to address potential issues associated with the presence of shallow carbonate sedimentary (i.e., limestone) rock. The plan should include provisions for the use of geotechnical specialists, exploratory testing, and geophysical assessment as necessary to prevent or minimize potential impacts. TGP should employ a geotechnical expert to identify and develop mitigation measures (where applicable) regarding potential landslide hazards during construction of the pipeline.

7.5. Lag Gravel Formations

According to the “Report on the Potential Impacts to the Natural Resources from a Proposed Natural Gas Pipeline in the Town of Nassau” (see attached), an extremely uncommon geologic formation called Lag Gravel is present along the Northern route in at least two known areas.

³ Weary, D.J., and Doctor, D.H., 2014, Karst in the United States: A digital map compilation and database: U.S. Geological Survey Open-File Report 2014–1156, 23 p., <http://dx.doi.org/10.3133/ofr20141156>.

7.6. Areas of Critical Environmental Concern

Areas of Critical Environmental Concern (ACECs) are places in Massachusetts that receive special recognition because of the quality, uniqueness and significance of their natural and cultural resources. These areas are identified and nominated at the community level and are reviewed and designated by the state's Secretary of Energy and Environmental Affairs. ACEC designation creates a framework for local and regional stewardship of critical resources and ecosystems.

The NED Project would cross the Hinsdale Flats Watershed ACEC within the Towns of Dalton, Hinsdale, Peru, and Washington. The Hinsdale Flats Watershed ACEC covers approximately 14,500 acres and is located at the headwaters of the East Branch of the Housatonic River in four communities in central Berkshire County. The ACEC is generally defined by several watershed subbasins that contribute to the northward-flowing headwaters of the East Branch of the Housatonic above the Old Grist Mill Dam in the town of Hinsdale.

Beginning in the town of Washington, the East Branch flows through extensive wetlands and floodplains known as the Hinsdale Flats. Tributary streams flow into the Flats and East Branch from higher elevations and ridges to the east, west, and south. The Appalachian National Scenic Trail forms the western boundary of the ACEC. The unique topography and contrasting land forms provide scenic vistas of the lowlands of the Flats and the predominantly wooded uplands that surround it. Open fields and farmlands, extensive forestlands, and historic and archaeological resources are integral parts of the ACEC.

The excellent water quality of the East Branch and its tributaries, the wetlands and floodplains of the Hinsdale Flats, and the surrounding uplands support an outstanding variety of natural communities and wildlife, including six state-listed rare species. Several summer camps, vacation homes, and public recreation areas (including the Hinsdale Flats Wildlife Management Area, Ashmere Lake, and Plunkett Reservoir) benefit from the natural beauty and resources of the area. Surface and ground water provide drinking water for residents of the area, and the headwaters contribute to important water supplies downstream. The unique environmental qualities of the area are important to the entire Berkshire region.

Water Bodies included (partially or entirely) in the ACEC:

- East Branch of Housatonic River(Hinsdale, Washington)
- Ashmere Lake
- Belmont Reservoir (Hinsdale)
- Fernwood Reservoir (Hinsdale)
- Plunkett Reservoir (Hinsdale)

Water Bodies included (partially or entirely) in the ACEC (continued):

- Muddy Pond (Hinsdale)
- Tracy Pond (Peru)
- Muddy Pond (Washington)
- Bennett Brook (Hinsdale)
- Bilodeau Brook (Hinsdale & Peru)
- Cady Brook (Hinsdale)
- Frisell Brook (Hinsdale)
- Russo Brook (Hinsdale)
- Tracy Brook (Hinsdale & Peru)
- Welch Brook (Hinsdale)
- Kilburn Brook (Peru)
- Depot Brook (Washington)

7.7. Wild & Scenic River

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection.

Rivers may be designated by Congress or, if certain requirements are met, the Secretary of the Interior. Each river is administered by either a federal or state agency. Designated segments need not include the entire river and may include tributaries. For federally administered rivers, the designated boundaries generally average one-quarter mile on either bank in the lower 48 states and one-half mile on rivers outside national parks in Alaska in order to protect river-related values. Rivers are classified as wild, scenic, or recreational.

Wild River Areas: Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic River Areas: Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational River Areas: Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Regardless of classification, each river in the National System is administered with the goal of protecting and enhancing the values that caused it to be designated. Designation neither prohibits development nor gives the federal government control over private property. Recreation, agricultural practices, residential development, and other uses may continue. Protection of the river is provided through voluntary stewardship by landowners and river users and through regulation and programs of federal, state, local, or tribal governments. In most cases not all land within boundaries is, or will be, publicly owned, and the Act limits how much land the federal government is allowed to acquire from willing sellers. Visitors to these rivers are cautioned to be aware of and respect private property rights.

The Act purposefully strives to balance dam and other construction at appropriate sections of rivers with permanent protection for some of the country's most outstanding free-flowing rivers. To accomplish this, it prohibits federal support for actions such as the construction of dams or other instream activities that would harm the river's free-flowing condition, water quality, or outstanding resource values. However, designation does not affect existing water rights or the existing jurisdiction of states and the federal government over waters as determined by established principles of law.

Over 78 miles of the Westfield River's headwater tributaries and three major branches are designated as a National Wild & Scenic River. Here are just some of the reasons why the Westfield River is so special and what made it eligible for the National Wild & Scenic Designation:

- One of the best cold water fisheries in the Commonwealth
- One of the finest whitewater canoeing and kayaking areas in the northeastern U.S.
- The grand and historic Keystone Arch Bridges, circa 1840s
- Glendale Falls, one of the highest waterfalls in the Commonwealth
- Historic river-side villages and remains of colonial-era bridges
- Unique geological features, such as the Windsor Jams and the Chesterfield Gorge
- Scenic picnic locations and places to wade into the river along the East Branch Trail
- One of the largest roadless wilderness areas remaining in Massachusetts

- Critical habitat for fish, waterfowl, turtles, dragonflies, black bear, otter, and other creatures, including many rare species
- Clean, high quality water for wildlife and a source of public drinking water

7.8. Appalachian National Scenic Trail

The proposed pipeline crosses the Appalachian National Scenic Trail approximately at milepost 9.6 in Dalton, Berkshire County, Massachusetts. The Appalachian Trail is a major resource for through hikers, as well as heavily used by local ones. Disrupting use of the trail should not be permitted during construction. Further comments are provided in the Socio-Economic Impacts discussion.

7.9. The Rensselaer Plateau

The Rensselaer Plateau is one of the largest and most ecologically intact native habitats in New York State. The preservation of this landscape for future generations is the vision of the Rensselaer Plateau Alliance. The Plateau covers about 118,000 acres in the towns of Berlin, Brunswick, Grafton, Hoosick, Nassau, Petersburg, Pittstown, Poestenkill, Sand Lake, Stephentown and the Village of East Nassau.

An escarpment steeply rising from the surrounding lower elevations marks the Plateau's boundary. The Plateau's relatively high elevations (1,000 – 1,800 feet) and cool climate, acidic soils, and its poor drainage contribute to plants, forests, and wetlands more similar to the Adirondacks than to the surrounding local area.

7.10 Notchview Reservation, Windsor MA

Notchview Reservation is maintained by the Trustees of Reservations. Renowned for its Nordic skiing, Notchview also entices year-round adventurers for hiking and birdwatching. With more than 3,000 acres of rolling terrain, Notchview offers seventeen kilometers of groomed trails and track-set for classical cross-country skiing and eight kilometers groomed for skate skiing. A separate trail system is groomed for "skijoring," or skiing with dogs. Visitors can also go off track and explore the backcountry, or snowshoe alongside the ski trails. Notchview is a part of the Hoosac Range, an extension of Vermont's Green Mountains. Much of the reservation is above 2,000 feet, with Judge's Hill the highest point at 2,297 feet – which results in snow on the trails for more than 80 days each year.

The NED Project would cut through a portion of Notchview Reservation. In addition, the proposed compressor station in Windsor, MA would be visible from the Reservation which is a concern for the Trustees of Reservations, citizens, and visitors alike.

7.11 Requested Mitigation Measures for Special Species & Special Interest Areas

- 7.11.1 Require TGP to consult with FWS and the Natural Heritage and Endangered Species Program (NHESP) and apply for and receive local permits including those required under the:
- Wetlands Protection Act, M.G.L. c. 131, § 40 (310 CMR 10.00)
 - Massachusetts Riverfront Protection Act, M.G.L. c. 131, § 40 (310 CMR 10.58)
 - Massachusetts Endangered Species Act, M.G.L. c.131A (321 CMR 10.00)
 - Massachusetts Environmental Policy Act, M.G.L. Ch. 30 § 61-62 (301 CMR 11.00)
 - Environmental Conservation Article 24, New York Code (Freshwater Wetlands)
 - Stormwater Management & Erosion Control Bylaw (Dalton)
- 7.11.2 Require TGP to provide municipalities with funding consistent with M.G.L. c. 44 §53G to obtain independent expertise necessitated for the review of the NED Project.
- 7.11.3 Require on-site inspectors with the legal enforcement authority to insure that all conditions are met during construction. Coordinate with local authorities and provide inspection reports to a designated point of contact within each municipality. The municipal point of contact should have the ability to engage with inspectors regularly and insure that all parties agree that all conditions are met.
- 7.11.4 Acoustic surveys should be conducted in potential northern long-eared bat summer habitat utilizing the Northern long-eared bat Interim Conference and Planning Guidance document (FWS, 2014i) to guide identification of suitable summer habitat prior to implementing acoustic surveys, as recommended by the FWS.
- 7.11.5 TGP should be required to adhere to the FWS-recommended tree clearing restriction window (April 1 to September 31) within the accepted home range of northern long-eared bats (3-mile radius). Therefore, TGP should conduct any required tree clearing for the Project within the 3-mile known bat habitat protection area between October 1 and March 31 when the bats are in hibernation.
- 7.11.6 Roads, skid trails, and landings should be kept at least 330 feet from all known or potentially suitable basking and gestating habitats, and to minimize the potential for collapse or disturbance of dens, heavy equipment and site preparation work (e.g., disk-harrowing, shearing, root raking) should be prohibited within 660 feet of any known hibernacula.

- 7.11.7 A field review of potential karst features should be completed and a Karst Mitigation Plan should be developed to address potential issues associated with the presence of shallow carbonate sedimentary (i.e., limestone) rock. The plan should include provisions for the use of geotechnical specialists, exploratory testing, and geophysical assessment as necessary to prevent or minimize potential impacts.
- 7.11.8 TGP should employ a geotechnical expert to identify and develop mitigation measures (where applicable) regarding potential landslide hazards during construction of the pipeline.
- 7.11.9 TGP should be required to consult with the U.S. National Park Service regarding proposed construction within the area of the Westfield Wild and Scenic River and within 500 feet of the Appalachian National Scenic Trail.

8 Socio-Economic and Fiscal Issues

This section sets forth the adverse impacts on socio-economic and fiscal issues related to the NED Project as well as a list of requested mitigating conditions. In particular, as discussed below, BRPC requests that the Commission ensure that: (1) TGP avoid, minimize, and mitigate to the fullest extent practical impacts of the pipeline and its operations on the local economy, including agricultural, heritage/recreational, forestry and lodging businesses; and (2) TGP avoid, minimize, and mitigate to the fullest extent the risk to the public resulting from changes in the municipal tax base, liability exposure, or increased expenses related to the pipeline.

8.1 Adverse Impacts

The Berkshire economy has, like many other regions across the US, undergone significant economic change over the past several decades. The decline of manufacturing and the changing role of more rural regions in an increasingly global economy have resulted in steady job and population loss since 1970. Berkshire County's natural and cultural resources serve as the basis for the tourism economy, which brings in \$645 million annually. Degradation of these natural and cultural resources would have a serious impact on the local economy. Moreover, affected communities have limited organizational and financial capacity to handle increased expenditures or mitigate adverse impacts caused by pipeline construction or operation; any costs associated with the proposed pipeline would likely be unbearable by the municipality.

Impact on the Productivity of Agricultural Lands and the Local and Regional Agricultural

Economy: The March 2015 Resource Report submitted by TGP outlines several prevention and mitigation measures to protect soil compaction and loss of agricultural productivity.

Approximately one third of the prime farmland along the proposed route is anticipated to be permanently lost to construction (540.78 out of 1,681.04 acres, Page 7-11), which is a significant amount. After several decades of declining farmland, and now with a scarcity of agricultural land available for new generations of farmers, the loss of any additional farmland (particularly prime) is extremely detrimental to the agricultural economy.

TGP plans to engage in compaction prevention techniques (Page 7-8), topsoil segregation practices (Page 7-10), drainage/erosion issues, and prevention of bedrock migrating to topsoil (Page 7-9). Despite these mitigation activities, it is important to provide an analysis of potentially lost agricultural land (i.e. pipeline ROW located amid other active crops) and to evaluate the impact of the lost acreage on the viability and economy of scale of agricultural crops. Long-term crop-specific impacts of the pipeline and related activities that will impact the productivity of agricultural lands should be understood. For example, mature orchard trees lost to construction or ROW may not be replaced, despite achieving restored soil conditions.

Impact on Heritage & Recreational Tourism: The natural landscape of the Berkshires and Rensselaer County are one of our most defining characteristics and one that greatly contributes to the quality of life and economy of the region. In a recent survey conducted by the Berkshire Visitors' Bureau, scenic beauty was the principal reason 88% of all visitors cited for having selected the region as their destination, and 42% of visitors engaged in some form of outdoor recreation during their stay. The annual economic impact of visitors to Berkshire County alone totals \$645 million, making the preservation and maintenance of recreational tourism sites essential to the local economy.

8.1.1 Disruptions to Heritage & Recreational Sites during Construction

Certain recreational aspects of the proposal are discussed in Draft Resource Report 8, submitted by TGP. Parks, trails, tracts of land, tourist destinations, vistas, and other sites under all types of ownership exist throughout the study area. Direct economic patronage to and indirect expenditures associated with visits to these sites may be disrupted by construction activities associated with a pipeline construction project.

Direct economic patronage to and indirect expenditures associated with visits to these heritage and recreational sites may be permanently disrupted by the proposed project and its associated facilities. Changes to scenic vistas, the physical character of the land, and liabilities/restrictions on certain activities near the facilities in question will impact these sites and their public benefit.

8.1.2 Disruptions to Trails during Construction

Both the Appalachian National Scenic Trail, which will be crossed by the pipeline in western Dalton, and the Ashuwillticook Rail Trail, which is on the abandoned Boston & Maine rail bed between Cheshire Reservoir and Mass. Route 8 in Cheshire, are major north-south recreational trails. Special consideration must be given to their users and maintaining their connectivity during construction.

The proposed pipeline crosses the Appalachian National Scenic Trail approximately at milepost 9.5 in Dalton, Berkshire County, Massachusetts. Coordination with the National Park Service regarding the crossing of the Appalachian Trail to the north of Anthony Pond on the western edge of Dalton is needed. Use of the trail by hikers must be maintained during construction. Special consideration should be given to trail users and their use and safety during construction.

Contact: National Park Service
Wendy Janssen

Appalachian National Scenic Trail Superintendent
Appalachian Trail Park Office
PO Box 50
Harpers Ferry, WV 25425

Also contact: Appalachian Mountain Club
5 Joy Street
Boston, MA 02108

Construction would also impact the nearby Crystal Mountain Campsite (Lat 42.515203314, Lon - 73.159891385) and the worksite and associated destruction of existing vegetation will be very close to (if not impinging upon) this campsite. The wetland (NWI-tr4) area east of MP9.5 serves as a recharge zone for the stream that serves as the water source for Crystal Mountain Campsite. Contamination or disruption of flow of this stream will render the campsite unusable. In addition, illegal ATV access is already troublesome in this area on both the Appalachian Trail Corridor lands and the adjacent Chalet Wildlife Management Area. This traffic will be enhanced when the existing cleared area is widened, particularly where it crosses roads to the east and west of the Appalachian Trail. Mitigation of these effects must be addressed.

The Ashuwillticook Rail Trail is a regional paved multi-use trail built on the abandoned Boston & Main railroad bed between Cheshire Reservoir and Mass. Route 8 in Cheshire. The pipeline crosses the trail at approximately milepost 7.9. Trail users primarily are bicyclists, with a heavy mix of walkers, joggers and rollerbladers. During heavy use summer and fall weekends, trail use can exceed 2,000 people per day; on weekdays the numbers are less but still exceed 300 users per day. During the winter the trail is used less frequently by cross-country skiers and snow shoe-ers. The pavement width is 10 feet and the current pavement condition is good.

Use of the trail during construction must be maintained. This rail trail cannot be closed or constricted by open cut pipeline construction. Boring or horizontal directional drilling under it should be required. Special consideration should be given to trail users and their use and safety during construction.

The Ashuwillticook Trail crosses Nobody's Road to the immediate north of the proposed pipeline. Nobody's Road will almost certainly be used as a significant means of access to the pipeline construction areas across Cheshire Reservoir and towards Old Cheshire Road in Lanesborough, including the Meter Station proposed at the juncture with the existing North Adams lateral. Thus there will be significant heavy vehicle use of Nobody's Road. Special provisions to maintain access for trail users as they cross Nobody's Road must be provided. Damage to the rail trail crossing on Nobody's Road must be immediately repaired to maintain

safe use by the trail users. At the completion of construction activities using Nobody's Road, TGP should be required to repair or replace the rail-trail crossing to meet DCR's standards. Already discussed is the potential problem created by the proximity of the rail trail and Rte. 8 in this area, being about 200 feet apart. This will create a special need to consider the construction impacts at both crossings and their interrelationship. Since HDD is called for under Cheshire Reservoir, immediately to the west, extended HDD under the lake, the rail trail, and Rte. 8 might be considered.

In addition to the two major trails, there are multiple lesser trails in both Rensselaer and Berkshire Counties in state parks and wildlife management areas. These are used by hikers, mountain bikers, ATVs, hunters, and snowmobilers. These should be mapped and should be available for public use during construction and operations.

8.1.3 Impact on Forestry Businesses

The proposed natural gas pipeline has potential to create long-term disruptions to forestry activities in the ROW. Approximately 44% of the forested land along the proposed route is anticipated to be permanently lost to construction (1,458.69 out of 3,293.34 acres, Page 7-11). Additional fragmentation of forested areas may impact businesses relying on this resource. The 2011 Massachusetts Climate Change Adaptation Report, developed by Massachusetts Executive Office of Energy and Environmental Affairs, estimates that each acre of forest in the state provides approximately \$1,500 annually in economic value from forest products, water filtration, flood control and tourism. This suggests that forested land permanently lost due to the pipeline construction would amount to an estimated economic loss of \$2,188,035 annually. In addition to businesses, the loss of forestry income would affect residents, Town Forest, and Fire District lands in Dalton, Hinsdale, Windsor and Peru.

8.1.4 Impact on Community Tax Base

In Massachusetts, municipal revenues that support local spending on education, public safety, physical infrastructure and other public services are obtained through one of four types of revenue sources. These revenue components are the property tax levy, state aid, local receipts and other sources. Since the passage of Proposition 2 ½ in 1980, which caps a community's annual property tax levy, the ability to maintain or increase a community's level and/or quality of services is depend on other revenues or careful planning. As in Massachusetts, real property taxes represent the largest single source of revenue for local governments in New York.

Cash-strapped communities rely heavily on the property tax levy which ultimately represents 68-79% of towns' revenue in Lanesborough, Dalton, Hinsdale, Peru and Windsor. There is essentially no local capacity to increase local property taxes to fund new initiatives or programs,

and the municipalities are very close to tax limit capacity with limited reserve funds. For example, the Town of Dalton is experiencing decreased property values. Seventy-five percent of Dalton’s budget comes from its tax levy, and the town only has \$10,288 in excess levy capacity. At the same time, the town’s largest employer is divesting and has significantly downsized. Any decrease in property values, and consequently community property tax revenue, is a major concern for both Dalton and other municipalities. Local government organizational capacity is also strained. Four towns no town manager/administrator, only Schodack has a community development or planning staff, and all rely heavily on volunteer-run boards merely to keep the towns going.

The chart below provides a snapshot of each town’s financial situation for FY 2015, organized by excess levy capacity.

State	Municipality	Town Budget	Total Tax Levy	Excess Levy Capacity	Tax Levy as Percentage of Budget
MA	Dalton	\$15,431,696	\$11,489,078	\$10,288	74.5%
MA	Cheshire	\$5,360,363	\$3,528,760	\$25,149	65.8%
MA	Lanesborough	\$10,997,750	\$7,644,979	\$26,210	69.5%
MA	Windsor	\$2,029,855	\$1,484,806	\$44,618	73.2%
MA	Peru	\$2,048,412	\$1,575,192	\$223,358	76.9%
MA	Hinsdale	\$5,187,524	\$3,556,546	\$617,173	68.6%
MA	Hancock	\$2,148,317	\$835,062	\$1,221,475	38.9%
NY	Stephentown	\$1,525,339	\$887,589	N/A	58.2%
NY	Schodack	\$12,279,902	\$6,523,383	N/A	53.1%
NY	Nassau	\$2,073,815	\$887,157	N/A	42.8%

Source: MA Department of Revenue, Town of Nassau 2015 Annual Budget, Town of Schodack 2015 Annual Budget, Town of Stephentown 2015 Annual Budget

Given the current state of municipal finances, it is important to be able to quantify and understand the impact of the natural gas pipeline on future property tax revenues and residential property values in each community along the proposed main line and laterals.

8.1.5 Impact on Local Economy Due to Imported Versus Local Workers, Contractors and Suppliers

The March 2015 Resource Report (#5) submitted by TGP estimates that the construction workforce will include both local and non-local workers, with approximately 50 percent coming from the local workforce. The proposed pipeline is divided into seven distinct spreads, each with 350-950 workers. Construction of each new compressor station is expected to require 60-70 construction workers. While the majority of project inspectors will be non-local (due to

specialized knowledge required), there are ample opportunities to employ local workers and firms who already have the proper skills and experience needed for the construction work. Likewise, local firms can be utilized for supplies and transport. One local manufacturing firm, Unistress, with a plant located in Pittsfield, manufactures pre-cast concrete structures and steel components for bridges and power plants among other things, but also has a fleet of over-sized trucks for regional transport of large structures.

8.1.6 Impact on Commercial Businesses

Construction of the proposed natural gas pipeline may lead to business owners, suppliers, and patrons in or near the ROW unable to access their site. Noise and construction activities may also serve as a deterrent for patrons who would otherwise visit the businesses. There is a not uncommon perception among some residents that it is dangerous to be in close proximity to a potentially hazardous site such as a natural gas pipeline.

Along the proposed route, there is no anticipated commercial business impact in the towns of Hancock, Hinsdale, Peru, and Windsor. The following businesses are located along the proposed route in Lanesborough, Cheshire, and Dalton, MA and Nassau NY and may be adversely impacted during pipeline construction:

Town	Road	Business
Lanesborough	Route 7	Lamp Post Motel (closed-property for sale)
Lanesborough	Route 7	Olde Forge and Ski Fanatics
Lanesborough	Route 7	O’Connells Gas Station
Lanesborough	Route 7	Laurel Ridge (Assisted Living)
Lanesborough	Route 7 (south of Bridge St)	small commercial building for sale
Lanesborough	Route 7	Weider Auto Body
Lanesborough	Route 7	Lanesboro Market & Hardware
Lanesborough	Route 7	Lanesboro Junction (home décor)
Lanesborough	Old Cheshire Road	Mountain View Farm, Square Roots Farm, Lakeview Orchard; assorted farm stands and Pick Your Own locations
Cheshire	Nobodys Road	Saldo’s Auto Salvage (closed)
Cheshire	Route 8	Whitney’s Farm Market & Country Gardens
Cheshire	Route 8	Green Acres Plaza (Green Acres Package & Variety. Canine Connection. ARh+ Lab Tattoo)
Dalton	Route 8/Orchard Road	Wahconah Country Club
Dalton	Route 9 (North Street)	Holiday Brook Farm
Dalton	Route 9 (North Street)	Former Dalton Tractor (Ford/New Holland
Dalton	Cleveland Road	Nichols Farm
Nassau	Clarks Chapel Rd	Riley’s Organic Beef Farm
Nassau	Hoags Corners Rd.	Wells Maple Sugar Farm

Town	Road	Business
Nassau	Hoags Corners Rd.	Goebel's Beef and Dairy Farm
Nassau	Totem Lodge Road	Totem Lodge Country Club
Nassau	Hoags Corners Rd.	Maggie's Llama Farm
Nassau	Radley Rd.	Freed's Beef Farm
Nassau	Rt. 43	Alps Mt. Family Campground

8.1.7 Impact of Housing Temporary Construction Workers on Local Tourism Industry

The March 2015 Resource Report (#5) submitted by TGP states that the demand for temporary housing for construction workers will generally be the greatest during the summer months. TGP states that fifty percent of the construction workers are expected to be local and the rest will re-locate temporarily. Construction crews are anticipated to seek short-term housing through local hotels, motels, campgrounds, and rental apartments. In Berkshire County, tourism is at its highest point during the summer. In August 2014, the occupancy rate was at 75% for the 25 largest short-term rental properties in Berkshire County, according to Smith Travel Research. The local tourism industry brings 2.6 million visitors to Berkshire County each year. Local cultural and supporting businesses work in tandem with hotels to provide amenities to visitors. Construction workers that spend 10 hours per day and 6 days per week on the job, as TGP is projecting, are less likely to contribute to the regional economy in the same way as tourists who spend their time experiencing the local cultural events (e.g. seeing Tanglewood performances, visiting the Clark Art Institute). Ultimately, it is important to understand the impact of housing construction workers during peak tourism and whether it would put a strain on the availability of short-term housing for tourists. Recreational and historical tourism is also a major part of the economy in Rensselaer County. Very limited housing is available in the Towns of Nassau or Stephentown. Limited hotel/motel accommodations are available in Schodack. Most of the temporary housing will come from Albany, Colonie and Troy areas, which will require a significant commute to reach the eastern construction sites in Rensselaer County.

8.1.8 Impact on Municipal Liability Exposure

Gas pipeline line development has the potential to involve municipalities in lawsuits related to their installation and operation. Municipalities need information on the insurance coverage carried by the gas pipeline company and any exposure that the municipality may have. While the operation of a natural gas pipeline is generally very low risk, when a failure or explosion does occur it is often catastrophic, resulting in fatalities or major environmental damage.

8.1.9 Impact on Major Interstate Electric Transmission Line

A major east-west transmission line, providing one of the few interconnections between the grid systems serving New England and New York, brings electricity into Massachusetts from its western border. This line runs along the same ROW as the proposed pipeline. An electrical

substation is located in Hinsdale (approximately milepost 14.6). An explosion on the pipeline would affect the adjacent transmission line and could potentially significantly affect the electric supply to a considerable portion of New England. BRPC has received some information that due to the issue of the significant cathodic interaction between a high voltage transmission line and a metal natural gas pipeline, co-location tends to be avoided. Obviously TGP's planned co-location is contrary to that understanding.

8.1.10 Impact on Community Quality of Life in Vicinity of Compressor Stations

Compressor stations are proposed for Windsor, Massachusetts, and Nassau, New York, both quiet, rural towns with a low population density. Windsor's low ambient noise level make it one of the quietest places in the state. Tech Environmental estimates that the ambient noise level at the three properties closest to the proposed compressor station in Windsor are at or below 20 dBA. Any increase in noise will be noticeable and will degrade the local quality of life. Families choose to live in Windsor because of the quality of life: it is a quiet, safe community with minimal traffic and ample scenic vistas. Changes to the overall quality of life is irreparable. A compressor station in Windsor, with its associated noise and other impacts could change the nature of the town and ultimately affect the salability of properties in the community.

Similar effects are probable in Nassau, affecting more people as it is slightly less rural and more developed in the vicinity of the proposed compressor station than is Windsor. An ambient noise level study should be performed at the Nassau site in order to better understand the potential quality of life impacts in that community.

8.2 Socio-Economic & Fiscal Impact Assessment

BRPC requests that the Commission require TGP to conduct the following two analyses of socio-economic and fiscal impacts of the proposed pipeline for the time periods during construction and pipeline operation.

8.2.1 Analysis of socio-economic and fiscal impacts during construction

The goal of this analysis would be to determine the level of impact of construction activities on heritage, recreational and forestry businesses in and around the project area.

- Provide an inventory of heritage and recreational sites along the proposed route, including their locations and extents.
- Provide the locations, total areas, and durations of impacts, such as temporary road closures in the vicinity of each inventoried site.
- Determine how the operation of sites will be disrupted as a result of temporary construction impacts through a fiscal impact analysis quantifying loss of revenue due to required closures, decreased patronage, and other disruptions.

- Quantify the local work force and “imported” work force which will be used.
- Evaluate impact on local economy based on relative use of imported versus local workers, contractors and suppliers.
- Detail measures to maximize use of local workers, contractors and suppliers during construction, and provide firm commitments for such use.
- Evaluate the impact on tourism in Berkshire County due to the loss of short-term lodging facilities if construction is to occur between June 1 and October 31 which are the prime season for tourists for this tourist-dependent region.

8.2.2 Analysis of socio-economic and fiscal impacts during operation

The goals of this analysis would be to: (1) understand and quantify adverse long-term impacts to the local economy, including agricultural, heritage, recreational and forestry businesses; and (2) determine the risk to the public resulting from changes in the municipal tax base, liability exposure, or additional expenses related to the operation of the pipeline.

- Identify the types of agricultural land directly and indirectly impacted by acreage, number of owners, and soil types and anticipated radius of impact.
- Identify impacts of soil disturbance, altered drainage patterns, and mitigation activities on the various types of agricultural activities, including disruption of economies of scale.
- Identify impacts of the pipeline itself to long-term soil productivity, due to increased temperatures, altered drainage, and/or anticipated maintenance activities (such as applications of herbicides).
- Provide a fiscal impact study showing the value of lost agricultural productivity on the local and regional economy, in terms of lost revenue, income, and jobs.
- Provide an assessment of the potential impacts on access to local food for area residents.
- Provide an assessment of impacts on organic farms potentially impacted along the pipeline route.
- Provide an assessment of the potential loss of tourism revenues for farms that host visitors (e.g. agri-tourism).
- Determine whether a site’s operations will be disrupted as a result of permanent installation of a natural gas pipeline, its associated facilities, or its rights of way.
- Summarize the acreage of heritage and recreational land that will be permanently impacted by the proposed facilities.
- Determine the occupancy of recreational and heritage sites throughout the year, and during appropriate peak times where number of visitors and human impacts on an area may be significantly higher than normal.

- Determine how the operation of heritage and recreational sites will be disrupted as a result of permanent construction impacts through a fiscal impact analysis.
- Conduct an economic impact study showing the potential negative impacts on recreational and heritage tourism and forestry businesses in terms of lost revenue, income, and jobs as a result of the pipeline.
- Assess the potential property value impacts in each community along the main line and laterals should be clearly outlined, and the methodology for arriving at the calculations should be thoroughly explained.
- Evaluate the liability exposure for every municipality along the main line and laterals and determine municipalities affected by the proposed project, including abutting communities.

8.3. Requested Mitigation Measures for Socio-Economic Impacts

BRPC requests that the Commission direct TGP to mitigate the adverse socio-economic and fiscal impacts by requiring the following conditions:

- 8.3.1. Require TGP to maximize use of local labor force, truck drivers (who are familiar with local road conditions), contractors, and suppliers, including under-utilized local trucks, such as at Unistress, when appropriate.
- 8.3.2. Provide a traffic management plan that addresses traffic and commercial business impact during construction. Provide a mechanism for compensating these businesses for overall loss of revenue due to construction.
- 8.3.3. Provide a construction worker housing plan that outlines where temporary workers will stay, while minimizing adverse impacts to local lodging for tourism. For each heritage and recreational tourism site or facility impacted by the proposal, provide a mitigation plan to ensure their continued operation during any construction activities.
- 8.3.4. Require TGP to list each affected community as additional insured's on their liability insurance policy and provide to each affected municipality a copy of the insurance policy with the affected municipality listed as an additional insured.
- 8.3.5. Require TGP to provide a mitigation plan for heritage and recreational sites to address potential losses in views, changes to the physical character of the land, and any potential hazards due to pipeline activities. Address impacts on the safety of visitors to each heritage and recreational facility, and to assets of the facility, including insurances, emergency preparedness, and increased liabilities associated with the proposed facilities.
- 8.3.6. Require TGP to provide a mechanism for reimbursing forestry businesses and farms for lost revenue associated with pipeline operation.

- 8.3.7. Establish redundancies in case of accident, including any resulting in major high voltage electric transmission line failure. Establish a reimbursement mechanism for any lost revenue created by a pipeline incident.
- 8.3.8. Require TGP to reimburse municipalities for all costs associated with pipeline, including, but not limited to, legal and technical expert costs to participate in the permitting process, costs for consultants to assist the municipalities in reviewing required permits and establishing appropriate conditions, costs to provide traffic details during construction, costs to hire independent construction monitors and for inspectors post-construction, and reimbursement for lost tax revenues due to declines in property values due to the pipeline.

9 Property Owners

This section sets forth the adverse impacts on property owners related to the NED Project as well as a list of requested mitigating conditions. In particular, as discussed below, BRPC requests that the Commission ensure that (1) TGP fully reimburse property owners for all costs incurred by those owners associated with acquisition of any right to their property, (2) TGP avoid, minimize and mitigate to the fullest extent practicable impacts of construction on proximate properties, and (3) TGP avoid, minimize and mitigate to the fullest extent practicable ongoing impacts of the pipeline, its appurtenant facilities, and operations on proximate properties.

9.1 Adverse Impacts to Property Owners

An estimated 111 property owners in Berkshire County, MA and 196 owners in Rensselaer County, NY will have property taken for easements. There are an estimated eight residences in Rensselaer County within 100 feet of the pipeline and an additional estimated 19 residences in Berkshire County and 50 residences in Rensselaer County within 300 feet. All of these property owners and residents are directly impacted in varying degrees by this pipeline. These are all estimated numbers and the exact right-of-way acquisitions could greatly change them.

9.1.1 *Impact of the Acquisition Process*

The process of TGP acquiring an easement requires the property owner to incur costs to adequately protect their interests, such as hiring legal counsel with expertise in such matters, having an independent appraisal conducted to ensure they are receiving fair value, and in some circumstances obtaining specialized services for timber valuation or to assess physical issues such as cost to replace landscaping, roadways, etc. These costs can be significant. Lower income property owners are more likely to not have the funds available to hire such needed expertise. Probably none of the property owners have asked for this project to be on their land and thus they have been involuntarily pulled into a costly process which impacts them purely due to the decisions of TGP and, ultimately, FERC.

The mere mapping of the preferred route for the project has already caused an impact on property owners as they must now disclose that they are along this route if they are trying to sell their property. This required disclosure makes their property less marketable and has an economic impact due to increased time on market and lower offer prices.

Establishing a fair value to the easement is a critical analysis. Kinder Morgan asserts that the presence of the pipeline will not negatively impact local property values. However, there are a number of paired-sale studies that suggest that there may be long-term loss of property value due to the presence of a natural gas transmission line. It is difficult to determine the extent to

which those published studies reflect transactions involving knowing buyers, who were fully aware of the presence of the pipeline. According to the Pipeline Safety Trust, one reason that there is limited available information about changes in property values is that, in the settlement of eminent domain cases, operators typically require a confidentiality agreement from the affected landowner, promising not to disclose the amount of the payment received by the landowner for the loss in value of the property. Moreover, public awareness of pipeline safety has been elevated as a result of incidents in September 2010 in San Bruno, California and in February 2011 in Allentown, Pennsylvania, creating a stigma relative to living in close proximity to such facilities.

According to the Forensic Appraisal Group, Ltd., the effect of a gas pipeline easement is measured by the market. Depending on the size of the pipeline, size of the easement, how it is located on the property, the size of the property, property use, etc., the impact range could be nominal to substantial.⁴ It could be as little as 50% of the easement land value, or up to 30% or more of the whole property value. The more intrusive the easement on the land (runs diagonal across the whole property vs. just down the property line), the more impact it will have. If the property were purchased at market value with consideration for the pipeline, the owner may be able to resell it for the price previously paid; assuming overall market conditions do not diminish. Clearly, this will not be the case for most current property owners along the proposed NED right-of-way. There does not appear to be an upside to having a pipeline easement on a property. Inconvenience, restrictions on use, unsightly paths cut through wooded areas, and potential stigma could have a negative impact on property values.

Based on guidance received by BRPC from experienced legal counsel, initial offers from pipeline companies are typically much less than what a negotiated fair settlement will arrive at and the least knowledgeable and vulnerable owners will be pressured to accept those initial offers by threats that going further into negotiations or the eminent domain process will result in a smaller settlement and also due to them not having the financial resources to hire competent experts. Negotiated settlements also provide more opportunity for clear language regarding avoidance, minimization, or mitigation of impacts to property owners caused by construction and operations.

While taking advantage of the eminent domain process may assist the property owner to achieve a higher and more rational payment for the value of the easement, eminent domain is a costly process to the property owner and will probably result in fewer protections from issues caused by construction and operations.

⁴ http://www.forensic-appraisal.com/gas_pipelines_q_a

It is also important to note that there may not be a sound method to determine the psychological cost to the property owners of having their lives disrupted as they deal with first, the permitting process, second, the construction process, and third, the ongoing operational impacts. The pipeline runs primarily through a rural landscape, inhabited by people who either inherited long-held family property or who made a conscious choice to live in a more rural environment in order to enjoy its relative quiet, solitude and nature. Thus they are incurring a cost to them which will probably never be fully compensated. Therefore it becomes even more important to insure that they are not incurring financial costs or being pressured into accepting low-ball offers which do not provide reasonable protections from impacts.

9.1.2 Impacts During Construction

Construction of an interstate natural gas transmission line has obvious impacts during construction to the properties along its path. For occupied properties, the impacts are significant during the period of construction.

Noise is one of the very critical impacts. Clearing activities, operation of construction equipment, blasting and mechanical rock fracturing all produce significant noise. Noise is complex to measure and control as the ambient background noise levels, weather and atmospheric conditions, topography and vegetation make a difference in how much noise impact specific properties in the neighborhood will experience.

If there are residences or other sensitive receptors in hearing range of the construction activities how the noise impacts them will vary also by the time of day. Daytime hours are generally a bit noisier than night time hours anyway, and the fact that most people are sleeping at night also creates a situation where night time noise is perceived to be louder and can interfere with sleep. Sleep deprivation for any reason can have health impacts which is well documented in medical studies.

Given the geologic characteristics of the areas in Berkshire and Rensselaer Counties which the pipeline will cross, there are considerable areas with shallow depth to bedrock or presence of sizeable erratic rocks which will require blasting or mechanical fracturing. Private and public wells are located in close proximity to the construction area and may be impacted by blasting or fracturing of that rock. Shock waves/vibrations can affect the turbidity, volume and pressure of wells. Blasting or mechanical rock fracturing can also affect the water bearing fissures in the rock and thus change groundwater flows into wells.

Similarly, blasting and mechanical fracturing of rock can create shifting and cracks in building foundations which are located in proximity of those activities.

Construction hours can impact residents negatively if they begin too early or end too late, or if they are round-the-clock or some other schedule outside of “normal” operating hours. Similarly, construction activities on weekends will more negatively impact people who normally are at work or in school during the day. For homes and other sensitive receptors in close proximity to construction activities, the level of noise, dust, and other impacts may be at such a level that they cannot stay in their homes during the period of construction.

Construction workers will be constantly be on people’s property during the construction and in some cases will be working in people’s yards, sometimes in close proximity to their residence. That will have a definite negative impact on the property owner’s ability to freely use their property during the construction period. Once the work area and construction area has been cleared, there will be a clear pathway for unauthorized people to use the construction area, including using motorized vehicles, with resulting annoyance to the residents.

The clearing of the pipeline easement and temporary work space involves removal of a very large amount of woody vegetation. There are various ways to deal with that, including removing the marketable timber, leaving logs outside the construction zone as “firewood” for the property owner, and chipping smaller trees, limbs and woody vegetation and either leaving those chips behind or removing them. Unless they have been educated, the property owner is likely not knowledgeable about the options available or the actual usability of wood or chips left on their property. For instance, the “firewood” typically consists of logs which will need to be cut into fire wood lengths and split by the property owner and the wood chips are not in a form which can be used for mulch around homes. In addition, the volume actually produced often will be much larger than the property owner perceived when deciding they wanted to retain them. Dealing with the “firewood” and the wood chips left behind can involve a substantial cost to the property owner.

During the period of construction, the property owner will be restricted from accessing across the construction area. During the period of construction, the construction area may have various hazards including open trenches, piles of debris (woody or rock), and untended equipment. These can all have negative impacts or create safety hazards for the property owner. They may also create a potential liability to the property owner if others, even unauthorized individuals, should suffer an injury while on their property.

Potential insurance liability for accidents or injuries occurring on their property during construction, by workers or trespassers, is an area of concern for property owners. In our litigious society, unfortunately they may be sued for damages along with other parties, simply because they are the property owner.

9.1.3 Impacts During Operation of the Pipeline

One overriding impact of continued operation of the pipeline is presence of the pipeline on the owner's land and the fact that whenever there is a news story about a pipeline incident elsewhere, they cannot help but think about what could happen to their family and property. To some extent, every time they view the pipeline or any above ground facilities, they can't help but think about the fact that it is there.

While FERC and the pipeline companies repeatedly claim that there is no proven impact on the value of properties with a pipeline easement across them, apparently the only studies are ones conducted by the industry. The lack of any robust independent study on this issue is troubling as common sense would dictate that the loss of use alone would create some diminution in the value. Certainly during and immediately after construction, prior to the land restoration having had a chance to become well established, the appearance of a scar could reasonably be viewed as a negative on a property and thus on its value. If there are any above ground facilities, since the property owner loses all use of the fenced-in area and has a visible above ground facility in their property, there would almost certainly have an impact on the value. Also, if the easement land was currently in active forestry, nursery, tree farm use or to grow crops other than for haying, the loss in income potential due to the inability to grow trees, bushes or vegetables commercially is indisputable. Properties in some proximity to compressor stations would also suffer a diminution in value; we comment more fully on this in a later section of our comments dealing with the unique issues involving compressor station impacts.

The marketability of a property with a pipeline easement, particularly if there are above ground facilities on the property or if there is a permanent access, would logically be affected. Many potential buyers would find having the easement for the above ground facilities unattractive and would not consider purchasing such a property. Having a permanent access point to the pipeline on a property would potentially create an impediment to its sale as well. We expect that any property with a pipeline across it would remain on the market for a longer time than similarly situated properties without a pipeline. As we noted above, we also expect that they might bring less in a sale.

A pipeline easement across a property creates a loss of use for the easement itself but also potentially for remaining portions of the property. If the pipe is not buried deeply enough,

driving across the pipeline may not be permitted which would preclude any construction on the back portion of the property. If the easement is located towards the front of a parcel, all use other than for agriculture or forestry may be precluded for the entirety of the parcel. Even agriculture and forestry use might suffer impacts if loaded vehicle weights exceeded the maximum for crossing the pipeline. Minimum zoning requirements for lot areas often may require that the minimum lot size must be met by land which is not encumbered by any easement (or wetlands) and thus fewer lots can be created on a given parcel of land. If zoning setback requirements infringe enough into a parcel and the easement is situated across the middle, it is also quite possible that there is no actual ability to place a building on a property. The exact location of a pipeline across a property can have a substantial impact on the burden placed on that property and thus its value. If the easement is on a property line, the impact may be less; if the easement runs diagonally across a property, the impact may be complete (essentially the property is useless except to grow hay or for pasturage).

Another issue is not being able to use the easement for any productive purpose other than essentially growing grass. If the land to be used for either permanent easement or temporary work space is currently used for orchards, growing crops other than hay, or commercial forestry, the property owner will lose essentially all current economic use of the property. For temporary workspace, if the soil is compacted due to construction activity, most value will be lost even if the land is returned to its previous use. In some cases, the loss of some portion of the farmer's or forester's land may reduce their ability to use the land commercially to such a degree that they cannot sustain their business (and a farm or commercial forestry operation are businesses).

Access to or across a pipeline easement can create issues for the property owner. There will be permanent access points along the line which will have a permanent impact on the property. The ability to drive across the pipeline is also limited and will create a limitation on full use and enjoyment.

Property owners with easements will be impacted by physical above ground inspections of the pipeline and potentially by future repair activities. In addition a utility right-of-way typically is viewed by many members of the public as an access way and will be used by ATV users and snowmobilers. Even with gates, these users find a way around the gates and then use the right-of-way. Thus property owners will be subjected to regular intrusions by others.

Recent anecdotal evidence provided to the Pipeline Safety Trust suggests that insurance underwriters are responding to the presence of gas transmission lines near residential properties, and raising rates, or in some instances, suggesting that insurance might not be

available for a new buyer of a property where a transmission line was recently constructed.⁵ While it may be true that some underwriters do not consider the presence of a transmission line to be a rate factor, some do.

Many parcels being impacted in Berkshire and Rensselaer Counties are managed for commercial forestry. A noticeable example is Holiday Farm in Dalton, but there are many other private properties used in this way. Land crossed by the proposed pipeline owned for watershed protection purposes by both the Dalton Fire District and the City of Pittsfield is also managed for commercial forestry. Some State Forests are also managed for commercial timber cutting. Commercial forestry provides a renewable resource and an ongoing source of income to the property owners, be they private or public. To the extent that areas being maintained as pipeline right-of-way reduce the recurring amount of timber which can be harvested, there is a resulting loss of income to the property owner. The clearing and establishment of a right-of-way may have a negative impact greater than the right-of-way width if it results in a “Mohawk” of remaining trees (a relatively thin strip of trees left behind between two open sections) as the trees remaining in such areas are much more susceptible to wind damage and thus lose all commercial value as saw logs and are also not worth the effort of logging companies to cut since they are relatively small, isolated areas.

A utility corridor across a property undisputedly has an impact on the appearance of the property, with the possible exception of a hayfield or pasture which can be returned to a condition which closely resembles its previous appearance. During the construction period and before significant revegetation occurs, which can take several years, all properties experience a negative aesthetic impact. In its initial Resource Report filing, TGP indicated that temporary work space and additional temporary workspace would revegetate “naturally”. This would take multiple years and could result in primarily invasive plant species having a heavy presence. While potentially beneficial to certain species which need early successional habitat, the visual impact of an early successional area to a resident is probably negative.

Pipelines also contain various above ground facilities, including signage, main line valves, pig launchers and receivers, and meter stations. These above ground facilities all have negative visual impacts on the affected properties. Exactly where they are placed and whether they are screened in some fashion can impact how much of an impact there is. However, since tall evergreen bushes, which would typically be used to screen industrial looking equipment or buildings from abutting non-industrial uses, are not permitted in the permanent easement, close-up screening is not an option.

⁵ Pipeline Safety Trust, Landowner’s Guide, p. 27

The initial TGP Resource Reports indicated that temporary workspace and additional temporary work space could be left to revegetate somewhat naturally, simply spreading a seed mix to initiate some level of revegetation. Depending on the season of construction and weather conditions during that season, whether simply seeding will be sufficient or will even become established is highly questionable. Clearly leaving an area which was once primarily woodland to go through a full process of returning to its natural state will take many years.

9.2 Property Owner Impact Assessment

BRPC requests that the Commission require TGP to conduct an analysis of impacts on property owners during acquisition, construction and pipeline operation of the proposed pipeline.

9.2.1 *Analysis of Impacts to Property Owners During Acquisition*

The goals of this analysis would be to: 1) determine the costs to property owners to have their interests fully protected during the acquisition process; and 2) quantify the additional length on market to be expected for property put for sale during the Preliminary Filing and formal Permitting Process period and establish a methodology to determine cost to the property owner for that additional carrying time; 3) document, based on previous pipelines similar in nature and siting, the ongoing financial impacts property owners can expect to confront and establish a cost to those property owners which is reasonable to expect.

- Provide an analysis of costs to property owners to retain legal counsel experienced in utility easement acquisitions to represent their interests during negotiations and eminent domain proceedings regarding land acquisitions for the pipeline. Provide an analysis of costs to property owners to retain appraisers and, as needed, experts such as, but not limited to, foresters, soil scientists, groundwater/well experts, hydrologists, structural engineers, and landscaping experts to assist in determining them in establishing fair compensation for easements and construction impacts on their property. The cost analysis should be “tiered” for costs for a fairly negotiated easement agreement versus costs for a contested easement agreement versus costs for acquisition of an easement through eminent domain with the property owner being represented by experienced legal counsel and with submittal of expert testimony and its related costs.
- The DEIS and FEIS should provide tangible, substantiated data to support claims made by TGP regarding the proposed project’s negligible impact on property values. Hard data should be provided outlining the impacts that other projects of this magnitude have had on residential property values and marketability. The methodology for arriving at the calculations should be thoroughly documented.

- Analyze the physical impacts and restrictions placed on each property where an easement is proposed and determine the effect of the pipeline on the continued and future use and marketability of each property. Determine, based on pair-based studies, what the probable effect on the property's value is likely to be.
- Analyze each property with a proposed above-ground facility and determine the effect of those above-ground facilities on the continued and future use and marketability of each affected property. Determine, based on pair-based studies, what the probable effect on the property's value is likely to be.
- Determine the ongoing loss of economic productivity of any agricultural or commercial forestry lands impacted by construction or ongoing pipeline operations. Long-term crop-specific impacts of the pipeline and related activities that will impact the productivity of agricultural lands should be documented. For example, mature orchard trees lost to construction or ROW may not be replaced, despite achieving restored soil conditions.
- Provide an analysis of the additional time on market properties with proposed easements may expect. Determine a methodology to establish a fair means of compensation to those property owners for an inability to sell those properties during the period prior to acquisition of a known easement when uncertainty is at its highest level. Determine the opportunity cost for the additional time on market that can be expected for those property owners.
- Document the potential insurance impacts of the project on private property owners including an assessment of whether property owners will have difficulty purchasing insurance and if insurance premiums will increase due to the presence of the pipeline. This analysis should be verified by assessing the recent (within the past five years) insurance impacts on private property owners in other parts of the United State that have been impacted by the construction or existence of a gas pipeline of this size and scale.
- Based on community income information, assess the number of low to moderate income households and individuals who may be presumed to have inadequate financial resources to pay for experienced legal counsel, appraisers, and technical experts.

9.2.2 Analysis of Impacts on Property Owners During Construction

The goals of this analysis would be to determine the impacts to residents and property owners due to construction activity.

- Monitor ambient background noise using the applicable State guidance or regulations prior to commencement of any clearing activity. Such measurements should be conducted with sufficient frequency to establish noise thresholds across

- the construction corridor sufficient to determine that applicable noise standards are met during the construction phase. Develop a noise contour which identifies the sensitive receptors that are expected to be subjected to construction noise above the established noise level. Provide a detailed list of those receptors.
- Map the area of potential blast or rock fracturing impacts through seismic activity, including potential areas of impact to groundwater fissures. Provide a detailed list of the buildings, other structures, and water and sewer lines which are within the impact areas.
 - Identify those buildings and structures which will be impacted to a degree that their use during construction is unhealthy or hazardous. Impact of noise, dust and other hazardous conditions should be assessed and thresholds requiring temporary or permanent relocation established based on state or federal thresholds, whichever is stricter.
 - Clearly identify the trench and construction safety measures that will be used during construction. Identify the local, state, and federal requirements regarding those measures. Clearly identify the measures that will be used to eliminate potential legal liability to the property owner due to construction activity on their land.
 - Clearly identify the measures that will be used to prevent and control public access to the construction corridor during construction. Clearly identify the measures that will be used to eliminate potential legal liability to the property owner due to public access, whether authorized or not, to the pipeline corridor during construction.
 - Clearly identify for each property the specific amount of use by workers and equipment that can be expected. This should include duration for each type of activity during the clearing and construction process and the total amount of time and limits of activity that they can expect. What limitations on use of their property can they expect will be in place during construction?
 - Clearly identify for each impacted property the amount and type of potential saw timber, timber suitable for firewood, and wood chip and slash that will be removed in order to clear the pipeline easement (permanent and temporary). Quantify the amount of orchard land and the number of orchard trees (or bushes for berry farms) that will be removed from production both permanently (in the case of permanent easement and access roads) and within temporary workspace or temporary access roads.
 - For businesses directly impacted, such as Lakeview Orchard in Lanesborough, or Whitney's Farm Market in Cheshire, evaluate the loss of access by customers during construction and the active use areas of those businesses which will be temporarily or permanently lost due to the pipeline. As examples, Lakeview Orchard is primarily a "pick-your-own" orchard and the public will not be able to access portions of the

orchard; the proposed pipeline route essentially eliminates a corn-maze at Whitney's Farm Market which is a very big customer draw in the Fall season.

9.2.3 Analysis of Impacts to Property Owners During Pipeline Operations

The goals of this analysis would be to determine the impacts to residents and property owners due to the ongoing presence and operation of the pipeline.

- Based on background ambient noise levels along the pipeline route, establish the areas which will be impacted by noise increases above local or state noise regulatory levels. A noise contour map should be developed for the entire pipeline corridor showing existing ambient noise levels and those projected with and without mitigation due to the pipeline and all associated facilities and activities.
- Clearly identify the loss of use to be expected for each property with a permanent easement or access road. Clearly identify the total loss of use for portions of properties used for any ancillary facilities such as valve and meter stations and pig launchers and receivers.
- Clearly identify the frequency of use and level of personnel and equipment that will be used to maintain the pipeline and the ancillary facilities. Each property may be impacted to a different degree depending on the exact facilities on that property and such information should be provided to the property owners during the easement acquisition phase.
- Clearly document the restrictions on use of the easement and for any access ways across the pipeline which restrict in any way access to "back" portions of any property or to other proximate property in the same or related ownership.
- Establish a future productive value lost analysis for all commercial forest, orchard or agricultural used land impacted by the pipeline. This would include the recurring value for land in permanent easement and permanent access and an appropriate reduction in production for lands used for temporary work space, pipeyards, contractor yards, and temporary access.
- Document the potential property and casualty insurance impacts of the project on private property owners including an assessment of whether property owners will have difficulty purchasing insurance and if insurance premiums will increase due to the presence of the pipeline. This analysis should be verified by assessing the insurance impacts on private property owners in other parts of the United State that have recently been impacted by the construction of a gas pipeline of this size and scale.

9.3 Requested Mitigation of Impacts of the Easement Acquisition Process on Private, Non-Profit & Municipal Property Owners

- 9.3.1 Require TGP to provide a fund prior to commencing the process to acquire easements to pay for the legal, appraisal and any technical expert costs for property owners in order for the property owners to obtain fair and equitable compensation from TGP for the easements being acquired. The amount of such fund should be based on the analysis of requested of those costs, with a requirement that if it should be depleted, additional funds will be added by TGP before the acquisition process can proceed. The fund should be administered by a regionally based organization with the expertise to administer such a program and such fund should not be administered or controlled by TGP. Property owners should be able, based a reasonable cost estimates and direct impact, to retain appropriate professional assistance to be paid from this fund after approval by the fund administrator. Alternatively, the fund administrator may make arrangements to obtain such professional assistance on behalf of multiple property owners. Any funds remaining would be returned to TGP after the construction process is complete.
- 9.3.2 Require TGP to provide a detailed layout for each impacted parcel of the land to be acquired for each purpose (permanent pipeline easement, temporary additional workspace, meter, mainline valve, pig launchers and receivers, temporary and permanent access), a detailed list of prohibited uses or any other impacts on the property owner’s use of or ability to restrict use by others on their property, and a detailed explanation of the rights of TGP for future access to their property for monitoring, maintenance or emergency response.
- 9.3.3 Prohibit the use by TGP of “non-disclose” clauses in property owner agreements.

9.4 Requested Mitigation of Construction Impacts on Property Owners:

- 9.4.1 Provide a detailed noise mitigation plan for all sensitive receptors expected to experience construction noise levels above local or state standards.
- 9.4.2 No construction should occur prior to 7 a.m. EST nor after 6 p.m. EST. Construction on Sundays and federal holidays should be prohibited.
- 9.4.3 Provide on-going noise monitoring during construction in any area where construction is occurring. The results of such monitoring should be provided to any local or state entity with noise regulations or guidance on a weekly basis. If violations are in evidence, all construction work should cease in any

- area experiencing such violation until a mitigation plan is in place which has been approved by the local or state entity responsible.
- 9.4.4 A mechanism to report noise complaints should be required, with each property owner provided information on how to report such complaints prior to any construction activity commencing in the noise impact area. Noise monitors should be immediately checked for that area and, if a violation is found, construction immediately ceased until a mitigation plan is in place which has been approved by the local or state entity responsible.
- 9.4.5 If adequate noise mitigation is not possible, TGP should pay all costs for the receptor to be temporarily relocated during the construction in their area to a facility the receptor finds acceptable.
- 9.4.6 Test all wells within 500 feet of the proposed pipeline for water quality, quantity and pressure prior to the commencement of any construction activities. Re-test those wells for water quality, quantity and pressure after construction in their area has been completed and three years after the pipeline is in operation. In areas of karst geology, more specific geologic research may indicate that the potential area of impact is larger and wells within that larger area should be tested.
- 9.4.7 If, during construction or operation any property owner reports a problem with their well, the well should be tested. A mechanism to report such problems should be required with each well-owner to be provided in writing information on that reporting.
- 9.4.8 If a problem with water quality, quantity or pressure is found, TGP should be legally required to immediately respond with a temporary and permanent solution. TGP should be required to provide any affected property owner with funds to hire independent outside experts to review any technical responses TGP provides and the property owner should have the right to accept or reject the approach suggested by TGP if, based on outside technical review, the TGP response is deemed inadequate.
- 9.4.9 All building foundations within 500 feet of the proposed pipeline should be inspected and the condition documented with a copy of the documentation provided to the building owner prior to commencement of any construction. These should be re-inspected and documented after construction has been completed. If any foundations evidence damage, TGP should provide the property owner with funds to hire a qualified structural engineer or other expert of their choosing to determine how best to repair the damage and TGP should provide the property owner with the funds necessary to correct the damage.

- 9.4.10 The construction sites should be monitored on an ongoing basis during construction for dust and other air emissions due to construction. NY and Mass Air Quality Standards should be continually met. The independent construction monitor should have the authority to require immediate correction of any problem and to halt work on the site if violations are found. Results of monitoring should be provided to NY DEQ and MassDEP on a regular basis. If there are violations of standards, all construction activity should be ceased until the standards can be met. A mechanism for residents to report possible violations should be required with each resident being provided in writing information on that mechanism.
- 9.4.11 If adequate dust and air quality mitigation is not possible, TGP should pay all costs for the receptor to be temporarily relocated during the construction in their area to a facility the receptor finds acceptable.
- 9.4.12 TGP should be required to provide a mechanism for residents to report unauthorized use of their property during construction by workers or other potential unauthorized persons and with each resident being provided in writing information on that mechanism.
- 9.4.13 TGP should be required to provide each property owner with a detailed assessment of the amount of woody debris which will be removed in order to clear the permanent right of way, additional temporary work space, and points of access. This should include the amount of marketable saw logs, logs suitable for firewood, and wood chips. Exact descriptions of the condition of these should be provided in order to the property owner to make an educated determination regarding their desire to retain these or require that TGP dispose of them.
- 9.4.14 TGP should be required to enter into binding hold harmless agreements with each property owner which protects the property owner from damages resulting from pipeline construction activities. Each property owner should be named as a "Additional Insured" on TGP's and its contractors liability insurance and copies of those policies should be provided to the property owners showing they are so named.
- 9.5 Requested Mitigation of Operational Impacts on Public Health and Safety
- 9.5.1 TGP should be required to provide each property owner a minimum two weeks notice of any need to access their property for monitoring or maintenance and should provide them notice as soon as practicable of any access to respond to emergencies.

- 9.5.2 TGP should provide a detailed description to each property owner of the ongoing limitations to their access across the pipeline easement and of use of the easement in perpetuity. Such limitations should be recorded with the property's deed at the appropriate land records registry (Registry of Deeds in Massachusetts and the Rensselaer County Clerk's Office in New York).
- 9.5.3 If the property owner requests that in order to maintain full utilization of the rest of their property that any access across their property should be at a greater depth to allow equipment to access other portions in the future, TGP should be required to modify its construction plans in order to accommodate that request. If they cannot do so, the property owner should be further compensated for that additional loss of use.
- 9.5.4 TGP should provide each property owner with a detailed survey of their property, showing all proposed permanent easements and access, with local building setback requirements and existing buildings super-imposed in order for the property owner to have an accurate depiction of the remaining viability of their property for building purposes. If the added burden created by the easements and access preclude all of the primary permitted uses under the community's zoning absent a zoning variance, TGP should be required to purchase the property in its entirety, unless the property owner determines they would prefer to retain ownership and then TGP should provide additional compensation for the easement acceptable to the property owner up to and including the full market value of the property.
- 9.5.5 For lands used for additional temporary work space, temporary access, pipeyards or contractor yards, TGP should be required to return the land to a condition which is acceptable to the property owner, including providing landscaping, grading, reforestation, placement of non-compacted topsoil, placement of mulch or other sediment control, which is potentially far in excess of allowing the process of "natural revegetation" to occur.
- 9.5.6 TGP should commit to ongoing invasive species management on all permanent or temporary areas impacted by construction or operation of the pipeline. If the property owner identifies an invasive species problem, TGP should provide commitments that it will develop and implement a response plan at no cost to the property owner.
- 9.5.7 TGP should provide in writing to each property owner a mechanism to report invasive species issues.
- 9.5.8 TGP should commit to correcting storm drainage, erosion and sedimentation problems along the pipeline easement in perpetuity. The ongoing lack of forest cover along the easement will change run-off velocities and locations

and projected climate change impacts make this even more problematic. If a property owner identifies a storm drainage or erosion and sedimentation plan, TGP should provide commitments that it will develop and implement a response plan at no cost to the property owner. Since increased runoff can create disputes between property owners, TGP should hold each property owner legally harmless from future disputes involving down-slope or stream property owners alleging increased flooding from the affected properties.

- 9.5.9 Require TGP to enter into binding hold harmless agreements with each property owner which protects the property owner from damages resulting from pipeline operations and potential incidents.