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NORTH CAROLINA
Environmental Quality

September 10, 2018

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

Re: North Carolina Department of Environmental Quality Comment Regarding Notice of Intent to Prepare an Environmental Impact Statement for the Planned MVP Southgate Project, and Request for Comments on Environmental Issues, and Notice of Public Scoping Session: Docket Number: PF18-4-000

Dear Ms. Bose:

The following comments are submitted by the North Carolina Department of Environmental Quality (DEQ or Department) on the proposed Mountain Valley Pipeline-Southgate Extension Project (Project), Docket Number: PF18-4-000, in response to the August 9, 2018, Federal Energy Regulatory Commission's (Commission or FERC) Notice of Intent (NOI) to Prepare an Environmental Impact Statement (EIS) for the Planned MVP Southgate Project, and Request for Comments on the Environmental Issues under the National Environmental Policy Act (NEPA).[1] In its NOI, the FERC provides that staff will "prepare an … EIS that will discuss the environmental impacts of the [Project]….[and] will use this EIS in its decision-making process to determine whether the Project is in the public convenience and necessity."[2] Pursuant to NEPA, the Commission must "take into account the environmental impacts that could result from its action whenever it considers the issuance of a Certificate of Public Convenience and Necessity….[and directs] the Commission to discover concerns the public may have about proposals."[3]

I. Introduction

The Department is statutorily directed to protect human health and the environment, and we urge the FERC to prepare an EIS that considers and discloses fully the breadth and scope of the

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[1] *Federal Energy Regulatory Commission. (2018, August 9). Notice of Intent to Prepare an Environmental Impact Statement for the Planned MVP Southgate Project, and Request for Comments on Environmental Issues, and Notice of Public Scoping Session. Retrieved from http://www.mvpsouthgate.com/wp-content/uploads/2018/08/FERC-NOI.pdf*
[2] *Ibid.*
[3] *Ibid.*

impacts of the Project.[4] MVP's Project proposal to construct 72 miles of 24-inch diameter natural gas transmission pipeline from Virginia into Rockingham and Alamance counties in North Carolina affects our State's natural and cultural resources. The Department is concerned that the four alternatives proposed in the NOI excludes non-natural gas energy alternatives and the NOI presents only a vague description of how the Commission will address environmental issues and impacts for such alternatives. It is highly likely that the Project may result in the use of eminent domain to take private land for the routing and ancillary pipeline infrastructure. Furthermore, the Project induces additional natural gas production resulting in increased direct and cumulative environmental impacts, including reasonably foreseeable indirect impacts. Despite DEQ's September 4, 2018,[5] request to FERC to extend the period to comment on the EIS and recognizing the limited amount of time the Department has had to thoroughly evaluate the Project, DEQ submits the following comments to the FERC for its consideration in the preparation of the Project EIS.

II. Alternatives Examined in the Environmental Impact Statement

The alternatives analysis required under NEPA represents "the heart of the environmental impact statement."[6] Federal regulations require the Commission to explore all reasonable alternatives by addressing "the potential for accomplishing the proposed objectives through the use of other systems…[including] non-gas energy alternatives, and/or energy conservation or efficiency, as applicable."[7] In its 2002 Guidance Manual for Environmental Report Preparation, the Commission stated that the alternatives analysis should "[d]escribe the effect of any state or regional energy conservation, load-management, and demand-side management programs on the long-term and short-term demand for the energy to be supplied by the project."[8]

The NOI for the Project provides four project alternatives. Each of the alternatives only considers route options or deviations for the 72-mile natural gas transmission pipeline. The NOI acknowledges that several environmental issues "deserve attention," including "alternatives and their potential impacts on a range of resources."[9] Because the NOI does not specify how FERC plans to address these environmental issues or their range of impacts, the Department is unable to comment directly on these matters. The FERC must evaluate whether the affected region in North Carolina has a demand for natural gas capacity and whether the construction of a new pipeline – the Project as proposed – is the best alternative to meet that demand.

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[4] *Department of Environmental Quality – duties. N.C.G.S. §143B-279.2. Retrieved from https://www.ncleg.net/EnactedLegislation/Statutes/PDF/BySection/Chapter_143B/GS_143B-279.2.pdf*

[5] *Sheila Holman, Assistant Secretary for the Environment, North Carolina Department of Environmental Quality, "Request for Extension of Comment Period, Re Notice of Intent to Prepare an Environmental Impact Statement for MVP Southgate and Request for Comments on Environmental Issues (2018, September 4)*

[6] *Federal Register. National Environmental Policy Act of 1969. 40 C.F.R. § 1502.14. Retrieved from https://www.gpo.gov/fdsys/granule/CFR-2012-title40-vol34/CFR-2012-title40-vol34-sec1502-14/content-detail.html*

[7] *Federal Energy Regulatory Commission. (2017). Guidance Manual for Environmental Report Preparation for Applications Filed Under the NGA, Vol. I. Retrieved from https://www.ferc.gov/industries/gas/enviro/guidelines/guidance-manual-volume-1.pdf*

[8] *Federal Energy Regulatory Commission. (2002). Guidance Manual for Environmental Report Preparation. Retrieved from https://www.ferc.gov/industries/gas/enviro/erpman.pdf*

[9] *Federal Energy Regulatory Commission. (2018, August 9). Notice of Intent to Prepare an Environmental Impact Statement for the Planned MVP Southgate Project, and Request for Comments on Environmental Issues, and Notice of Public Scoping Session. Retrieved from http://www.mvpsouthgate.com/wp-content/uploads/2018/08/FERC-NOI.pdf*

We recognize that North Carolina's economy and population are growing and that natural gas is one of many resources that can meet customers' electric and thermal energy needs. As such, the Department recommends that the FERC evaluate the Public Service Company of North Carolina, Inc.'s (PSNC) demand forecast, examine the need for Southgate extension, and consider non-natural gas alternatives. These include: where applicable, renewable resources and other clean-energy resources, energy storage, electric system upgrades (e.g., transmission efficiency improvements); the use of demand response and other market-based programs; and the impact of the existing and projected increases in energy efficiency and energy conservation measures. In its alternatives analysis, the Commission should consider the State's existing energy policies including North Carolina's Renewable Energy and Energy Efficiency Portfolio Standard[10] and the 2017 Competitive Energy Solutions for North Carolina Act,[11] in addition to the large-scale voluntary actions underway across the State to increase the use of renewable energy, energy storage, and energy efficiency measures in the private sector.

The Department requests that FERC analyze each individual alternative applicable to North Carolina, as well as the combined effects of the possible environmental impacts of all alternatives to the proposed Project. In North Carolina, there is significant interest in such an analysis as pipeline projects can have long term implications on costs to consumers, economic benefits, and environmental, natural, and cultural impacts. In sum, the Department requests that the FERC thoroughly evaluate alternatives, in addition to the proposed Project that, cumulatively consider costs, benefits, and environmental impacts and offers the following overarching comments pertaining to the alternatives analysis process and its environmental impacts in North Carolina.

With regards to the PNSC's filing, it is the Department's understanding that PSNC is the primary customer of Mountain Valley Pipeline (MVP) Southgate in North Carolina. On August 14, 2018, the North Carolina Utilities Commission (NCPUC) held a public hearing for the annual review of the cost of natural gas supply, storage, and transportation for PSNC.[12] According to testimony provided by PSNC filed pursuant to this review,[13] PSNC entered into a precedent agreement with MVP Southgate to contract 250,000 dekatherms per day of mainline extension capacity. PSNC noted that its anticipated base load of 90,000 dekatherms per day will remain approximately the same between 2018 through 2023, and the peaking capacity will be about 233,700 dekatherms per day. PSNC cited design peak day surplus of 27,577 dekatherms per day in 2018 (+3.52% reserve margin) and shortage of 62,111 dekatherms per day for 2023 (-7.12% reserve margin). This forecast illustrates a shortage of gas capacity in later years. However, PSNC noted that its contracted capacity with Atlantic Coast Pipeline scheduled to be in service

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[10] *North Carolina Session Law 2007-397, Senate Bill 3, North Carolina General Assembly, (August 20, 2007), https://www.ncleg.net/Sessions/2007/Bills/Senate/PDF/S3v6.pdf and http://www.ncuc.commerce.state.nc.us/reps/reps.htm.*

[11] *North Carolina Session Law 2017-192, House Bill 589, North Carolina General Assembly Competitive Energy Solutions for NC, July 2017. Retrieved from https://www.ncleg.net/gascripts/BillLookUp/BillLookUp.pl?Session=2017&BillID=H58*

[12] *State of North Carolina Utilities Commission, Order Scheduling Hearing, Requiring Filing of Testimony, Establishing Discovery Guidelines and Requiring Public Notice, Docket No. G-5, SUB 591, June 7, 2018.*

[13] *State of North Carolina Utilities Commission, Public Service Company of North Carolina, Inc., Direct Testimony of Rose M. Jackson, Docket No. G-5, SUB 591, June 1, 2018*

by 2019, was not included in calculating the shortage in capacity. It appears that PSNC's reliance on the Southgate extension is based on its best-cost supply procurement policy which consists of "supply security, operational flexibility, and cost of gas."[14]

Approximately half of PSNC's throughput during the review period was comprised of deliveries to industrial or large commercial customers that either purchased gas from PSNC or transported gas on PSNC's system. The remainder of PSNC's throughput consisted of firm sales service to residential and small and medium commercial customers. Applying this throughput information in combination with the expectation that other heretofore unknown subscribers to MVP Southgate may utilize the acquired natural gas for electricity generation purposes, we offer the following analysis on the demand for natural gas in the residential, commercial, industrial, and electricity sectors in North Carolina.

According to the 2018 Annual Energy Outlook (AEO), natural gas consumption in the residential and commercial sectors is projected to be largely flat due to efficiency gains and population shifts in the coming decades.[15] The AEO 2018 outlook also forecasts that after 2020, natural gas production grows at a higher rate than consumption, with a projected significant rise in liquefied natural gas (LNG) export. At a regional level, according to the Energy Information Administration, between the years 2017 and 2050, the annual growth in natural gas use for the electricity, residential, and commercial sectors in the Southeast Atlantic Region remains fairly flat as shown in Table 1.

This flat growth in natural gas use is due to energy efficiency in the residential, commercial, and industrial sectors. Furthermore, electrification of commercial buildings and the industrial sector will propel changes brought about by evolving technologies, customer choice, and policy actions taken at both the federal and state level.[16]

Table 1: South Atlantic Natural Gas Use by Sector (quads)

Sector	2017	2030	2050	Annual Growth	Total Growth
Residential	0.418	0.489	0.530	0.7%	27%
Commercial	0.393	0.429	0.517	0.8%	32%
Industrial	0.563	0.727	0.803	1.1%	43%
Electricity	2.166	2.418	2.753	0.7%	27%

Source: Annual Energy Outlook 2018 Reference Case[17]

[14] *Ibid.*
[15] *U.S. Energy Information Administration. (2018, February). Annual Energy Outlook with Projections to 2050. Retrieved from www.eia.gov/aeo*
[16] *Electric Power Research Institute. (2018, April 2). U.S. National Electrification Assessment. Retrieved from https://www.epri.com/#/pages/product/3002013582/*
[17] *U.S. Energy Information Administration. Annual Energy Outlook 2018: Energy Consumption by Sector and Source, Case: Reference case, Region: South Atlantic. Retrieved from https://www.eia.gov/outlooks/aeo/data/browser/#/?id=2-AEO2018&region=1-5&cases=ref2018&start=2016&end=2050&f=A&linechart=ref2018-d121317a.3-2-AEO2018.1-5&map=ref2018-d121317a.4-2-AEO2018.1-5&sourcekey=0*

There is also a significant transformation occurring in the electricity generation sector. North Carolina ranks as the second-largest state for installed solar capacity in the nation.[18] The forecasted growth in the use of renewable energy, specifically solar photovoltaics (PV), for electricity generation in North Carolina may likely reduce the forecasted demand for natural gas. Costs of electricity generation by renewables have decreased dramatically in the last several years and continued cost declines are projected. The levelized cost of electricity (LCOE) is used to compare the cost to build and operate different electricity generating technologies.[19] Table 2 presents the LCOE for natural gas combined cycle (NGCC) plants compared to solar PV. By 2022, the cost of a solar PV is less than the cost of an advanced NGCC with tax credits. By 2040, the cost of solar PV is less than NGCC both with and without tax credits. Given the already high adoption rate of solar PV in North Carolina, it is reasonable to expect that renewable electricity generation will be favored over combined cycle plants and decrease the future demand for natural gas by the electricity sector in North Carolina.

Table 2: Forecast of Levelized Cost of Electricity from NGCC and Solar PV

	Advanced NGCC		Solar PV**	
Indicator	**2022**	**2040**	**2022**	**2040**
Capacity-weighted*				
LCOE	48.1	47.6	59.1	44.1
LCOE with tax credit	48.1	47.6	46.5	40.8

Source: Annual Energy Outlook 2018[20]

Bloomberg's New Energy Outlook 2018 confirms this growth in renewable generation.[21] Bloomberg estimates that renewables will supply 55% of electricity in the United States, with support from battery storage, by 2050. It also projects decreased LCOE for renewables (wind and utility-scale PV) compared to combined cycle generation by 2040, as shown in the graphs presented in Figure 1.

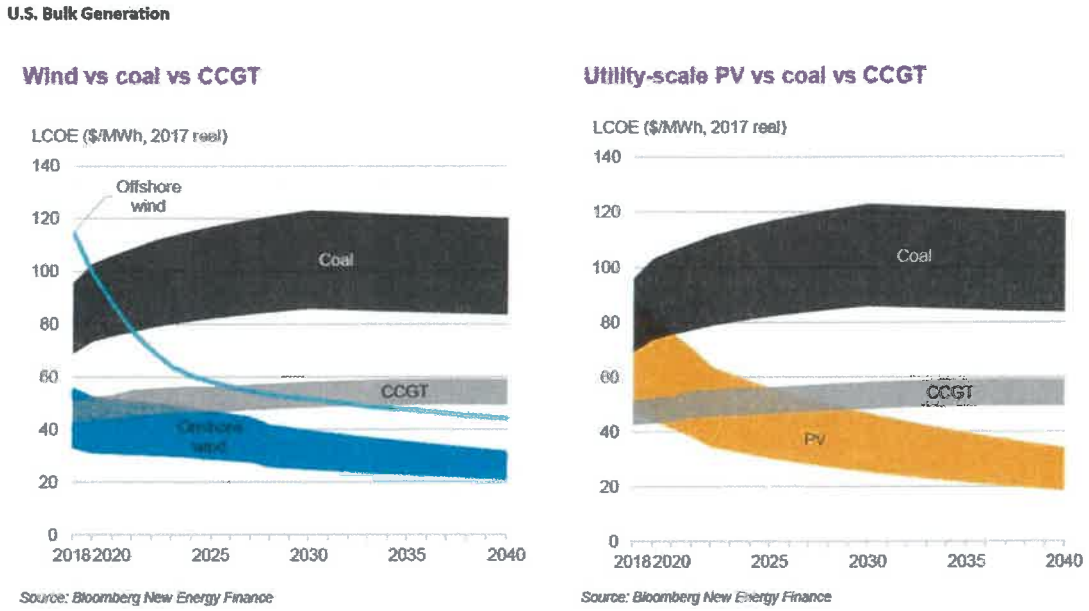
[18] *Solar Energy Industries Association. Solar Industry Data. Retrieved January 4, 2018 from https://www.seia.org/solar-industry-data*

[19] LCOE represents the per-megawatt hour of building and operating a generating plant over an assumed financial life and duty cycle. Key inputs include capital costs, fuel costs, fixed and variable operations and maintenance (O&M) costs, financing costs, and an assumed utilization rate for each plant type.

[20] *U.S. Energy Information Administration. (2018 March). Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2018. Retrieved from https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf*

[21] *Bloomberg New Energy Finance, Bloomberg Finance L.P. New Energy Outlook 2018, Public Report. Retrieved August 31, 2018 from https://about.bnef.com/new-energy-outlook/#toc-download*

Figure 1: Forecast of LCOE for Renewables in the U.S. out to 2040



As these projections indicate, the rapidly changing energy economy that is dependent on natural gas production and usage calls into question the FERC's traditional process for evaluating the need of a pipeline project and whether a pipeline project is in the public interest. Therefore, the Department recommends that the FERC evaluate whether the affected region in North Carolina demands additional natural gas capacity and whether the construction of a new pipeline – the Project as proposed – is the best alternative to meet that demand.

III. Accounting for Greenhouse Gases in the Environmental Impact Statement

As part of the alternative analysis process in the EIS, FERC must take a close look at the impacts of the proposed action, accounting for direct and cumulative impacts, including reasonably foreseeable indirect impacts. The Department recommends that FERC analyze both the upstream and downstream greenhouse gas (GHG) emissions associated with the MVP Southgate Project as part of its alternative analysis.

With over 3,375 miles of shoreline, a robust economy dependent on agriculture and forestry resources, tourism, and coastal estuaries, North Carolina is particularly vulnerable to the effects of climate change. These effects have been felt, in varying degrees, from the mountains to the sea and across every sector of our State's economy in the form of hurricanes, sea level rise, heat waves, droughts, heavy precipitation, salt water intrusion, extreme flooding, and fire events. These phenomena pose serious public health risks, especially to vulnerable populations such as the elderly and children, disadvantaged communities located in vulnerable areas, and local economies most affected by weather events.

The current and anticipated impacts of climate change in North Carolina are consistent with the scientific community's understanding of the earth's climate system and the well-accepted

consensus by multi-disciplinary scientific data, analysis, and predictive modeling that the climate system is changing rapidly primarily due to human activities and particularly from emissions of GHGs.[22,23] The predictions indicate that early actions to curb GHG emissions can stabilize global temperatures and effective mitigation activities must be implemented to achieve the desired emission reductions. As North Carolina's lead agency responsible for safeguarding the State's air, water, waste, land resources, coastal fisheries, and the public's health, we take seriously our responsibility to protect the citizens of North Carolina, the environment, and the State's natural resources from the effects of climate change.

FERC has a legal responsibility to document and consider how its approval of the Project will lead to changes in emissions of GHGs that contribute to climate change. In 2017, the D.C. Circuit Court of Appeals vacated the Commission's decision on a pipeline project in Florida due to FERC's failure to properly analyze GHGs. The court stated that the Commission should do more as part of its environmental review to analyze the climate impacts of pipeline projects.[24] In a recent pipeline approval, FERC maintained that it is not required to consider the full range of GHG emissions associated with pipeline projects because the impacts of such emissions are too speculative or not causally related to approval of a proposed pipeline project.[25] In its order denying rehearing in this case, FERC stated that when it lacks meaningful information about potential future natural gas production or about future power plants, storage facilities, or distribution networks, these impacts are not reasonably foreseeable. FERC concluded that neither NEPA nor the Natural Gas Act (NGA) requires the Commission to quantify or consider GHGs.

The Department believes that "the Commission should be doing more as part of its environmental reviews" to analyze the climate impacts of pipeline projects and to both address "the need for the Projects and their contribution to the harm caused by climate change – [which] are critical to determining whether the Projects are in the public interest."[26,27] There is a high degree of certainty that a significant portion of the natural gas resources that will be transported by pipeline projects will be combusted for electrical generation purposes, for residential or commercial heating purposes, or for industrial fuel purposes. There exists several analytical tools and inventory systems to assist the Commission to estimate upstream and downstream GHGs. The Commission has used U.S. Department of Energy (DOE) studies to estimate upper bound emission levels. The U.S. Environmental Protection Agency's (EPA) GHG Reporting Program

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[22] *The U.S. Global Change Research Program. (2017). Climate Science Special Report: Fourth National Climate Assessment, Volume 1. Retrieved from https://science2017.globalchange.gov/*

[23] *The National Academies of Sciences and the Royal Society. (2014, February 27). Climate Change: Evidence & Causes. Retrieved from http://nas-sites.org/americasclimatechoices/events/a-discussion-on-climate-change-evidence-and-causes/*

[24] *District of Columbia Circuit. (2017). Sierra Club v. FERC, F.3d 1357. Retrieved from https://www.leagle.com/decision/infco20170822186*

[25] *Federal Energy Regulatory Commission. (2018). Dominion Transmission, Inc. Docket CP14-497. 163 FERC*

[26] *Federal Energy Regulatory Commission. (2018, July 19). Northwest Pipeline LLC. Docket NO. CP17-441-000 and CP17-441-001. Retrieved from https://www.ferc.gov/whats-new/comm-meet/2018/071918/C-3.pdf*

[27] *Federal Energy Regulatory Commission. (2018, June 15). Mountain Valley Pipeline, LLC and Equitrans, L.P., Dockets CP16-10-001 and CP16-13-001. Retrieved from https://www.ferc.gov/CalendarFiles/20180615134229-CP16-10-001.pdf?csrt=11895629351220810012*

provides facility level and geographically specific datasets related to upstream operations (e.g. onshore/offshore production, gathering and boosting, natural gas processing, natural gas transmission) and downstream utilization options (e.g., liquefied natural gas (LNG) export, LNG storage, electricity generation, industrial combustion).[28] Another resource is the emissions data compiled by state and EPA efforts under the National Emissions Inventory Program (available on a triennial basis).[29] Both of these inventory systems address emissions from large industrial sources.

For smaller emitters, such as homes and buildings, estimation techniques for downstream GHG emissions is relatively straightforward. Emissions test data collected by state and federal agencies and private industries show that carbon dioxide (CO2) represents over 99% of GHGs present in natural gas combustion exhaust streams. The remaining portion – made up of methane and nitrous oxide – is dependent on the type of combustion technology and operating conditions. Since the carbon content of natural gas is well known and measured through standard methods, CO_2 emissions can be estimated by applying a simple emission factor (assuming full combustion efficiency). The Commission should apply emission factors that are most representative of the region to compute GHG emissions based on the amount of natural gas energy diverted to the new pipeline project.

Where essential information is lacking, NEPA requires the Commission to conduct independent research or otherwise compile missing information.[30] NEPA also directs the Commission to use its best efforts to do all that it reasonably can and consider reasonably foreseeable significant adverse environmental impact of its final decisions.

IV. Addressing Socioeconomic Impacts

The EPA defines Environmental Justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.[31] The Department recommends the Commission affirm that environmental justice is a major consideration and address Environmental Justice throughout its evaluation of the Project. In particular, the Department suggests that the FERC consider the long-term effects on the communities impacted by the Project, impacts that derive from the construction and maintenance of the Project that include, but are not limited to: machinery and equipment driven through communities, disruption of soil which may result in long-term vegetation issues, increased likelihood of invasive species growth, disturbance to farming due to altered terrain which may

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[28] *United States Environmental Protection Agency. GHG Reporting Program Data Sets. Retrieved July 23, 2018, from https://www.epa.gov/ghgreporting/ghg-reporting-program-data-sets*

[29] *United States Environmental Protection Agency. (2017). EPA National Emissions Inventory (NEI) Data. Retrieved from https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-development-documentation*

[30] *Federal Register. National Environmental Policy Act of 1969. 40 C.F.R. § 1502.22(a). Retrieved from https://www.govregs.com/regulations/expand/title40_chapterV_part1502_section1502.22#title40_chapterV_part1502_section1502.22*

[31] *United States Environmental Protection Agency. Learn About Environmental Justice. Retrieved July 23, 2018, from https://www.epa.gov/environmentaljustice/learn-about-environmental-justice*

affect future crop yields, soil compaction or shifting hydrological patterns, and destruction of wetlands, which among their many benefits, provide essential flood control for impacted communities. In addition to these long-term impacts, in the conduct of its review, it is vital that the Commission evaluate and understand the very real consequences that the short-term effects of the Project's construction may have on vulnerable populations. A household living in poverty likely has a different consideration of the definition of 'long-term' or may not even be able to consider long-term issues when they are overburdened with hardships they may face in their daily lives.

The current environmental justice analysis conducted by the FERC lacks adequate demographic considerations and as the Commission reviews this Project it should be more inclusive of other factors such as disability, age, household income, and level of education. Of note, these would not all need to be present in an area for that location to be flagged as a potential area of concern. Rather, these indicators should guide the FERC and MVP in their conduct of specific outreach and the mitigation strategies considered to best protect different population groups.

The traditional cost-benefit analysis is a fiscal analysis, and as such, does not address the potential socioeconomic impacts of the Project. The distribution of costs and benefits across different areas are not spread equally; marginalized communities often bear a disproportionate share of the costs and may derive little benefit, which exacerbates their current disenfranchised status. Furthermore, other costs like environmental degradation the result of increased greenhouse gas emissions or rising sea levels will negatively impact low-income individuals first. It is imperative that the Commission recognize those stakeholders who will bear most of the costs when MVP files for its certificate so that appropriate and effective mitigation strategies are applied to minimize the burden on those stakeholders. The Commission must conduct or require MVP to provide follow-up communications and outreach activities with potential Environmental Justice populations identified during the EJ analysis. Meaningful engagement with vulnerable populations will be essential to MVP and the FERC as they gather public input during the certification process.

The impacts of the Project expand well beyond both its proposed physical route (and alternative routes) and the conduct of construction operations. This Project may affect communities more broadly, especially when possible disasters or pipeline failures are considered. Under the existing certification process, emergency response plans are required due to the legitimate risks of unforeseen failure that could affect workers, landowners, and the broader community. Recognizing this very real risk, the Department suggests that the Commission expand its public outreach efforts beyond only those affected landowners. In order to include all potentially impacted parties, the Commission should require MVP to contact individuals within a designated geographic buffer area that extends along the proposed pipeline route. Every stakeholder who resides, works, or recreates within this buffer area of the Project should be notified early and often throughout the certification process. Due to the known risk of failures for pipeline

construction and maintenance, lands located beyond the route may be subject to adverse impacts and FERC should consider those lands in its evaluation of the Project's application.

V. The Applicant's Compliance History

The Department strongly encourages the FERC to evaluate MVP as the owner operator and all of its affiliates, parents, subsidiaries, and contractors for their history of compliance with federal, state, and local environmental and other applicable laws and regulations, as well as the applicant's financial affiliations. Knowledge of MVP's past compliance would provide the FERC and all other stakeholders (federal, state, and local governments and residents) with the information necessary to ask pertinent questions, determine the MVP's credibility, identify any trending concerns related to the applicant, and establish or require additional controls to protect human health and the environment.

VI. Geographically-Based Assessment of Impacts

Recent federal court decisions provide that the Commission's segmented evaluation does not align with NEPA requirements and increases legal risks. Each state and geographic region has unique environmental and resource characteristics (e.g. geology, soils, ground and surface water, wetlands, aquatic resources, vegetation, wildlife, cultural resources, socioeconomics, air quality, climate change, etc.) and the Commission should assess the impacts of and alternatives to the proposed Project based on North Carolina's unique or regional features, while conducting a similar geographic assessment of need.

Such a geographically-based approach has been employed by other federal agencies such as the EPA, and offers the opportunity to review proceedings through data, metrics, projections, and other information that the Commission may use to evaluate the Project specific to North Carolina in terms of the cumulative and indirect impacts of pipeline projects. FERC's current policy of approving natural gas infrastructure projects singularly, rather than evaluating projects cumulatively within states or regions, inherently increases risks to and the impacts on the environment. As such, the Department recommends that the FERC evaluate the Project in conjunction with its consideration of any other existing or proposed projects within North Carolina or located in this region of the nation.

VII. Media-Specific Comments and Recommendations

As was previously provided, the Department has had little time to adequately review the NOI for the Project to inform our comment on the EIS scoping and has requested additional time to both evaluate the Draft Resource Reports prepared by MVP and incorporate the review of those Reports into the DEQ's EIS scoping comment. As a result, the following media-specific recommendations are broad-based and lack the specificity with which the Department would require to fully and adequately address environmental impacts of the Project in the manner and depth that is accustomed and protective of our citizen's public health and the environment.

Air Quality

The Project will likely require an air quality permit issued by the Division of Air Quality (DAQ) in the Department for the compressor station associated with the proposed pipeline. When DAQ is in receipt of specific details about the compressor station design and operation, the Division will be better equipped to advise the Project applicant on the overall air quality permitting requirements.

Wetlands and Waterways

The routes and alternative routes of the proposed Project may encroach into conservation easements held by the State or private entities. If there is any suspicion or likelihood of encroachment into conservation easements, the applicant must consult with the easement holder(s) as early in the application process as possible. Any proposed encroachments may also require coordination with the DEQ Stewardship Program, the Division of Mitigation Services, and the North Carolina Interagency Review Team (IRT).

Hazardous Waste Management

Any hazardous waste generated from the demolition, construction, operation, maintenance, and/or remediation (e.g. excavated soil) from the proposed Project must be managed in accordance with the North Carolina Hazardous Waste Rules. The demolition, construction, operation, maintenance, and remediation activities conducted will potentially generate a solid waste, and a determination must be made whether it is a hazardous waste. If a Project site generates equal to or greater than 220-pounds of non-acute hazardous waste in a calendar month, the Hazardous Waste Section of the Division of Waste Management must be notified, and the site must comply with the small quantity generator (SQG) requirements. If a project site generates equal to or greater than 2,200-pounds of non-acute hazardous waste or more than 2.2 pounds of acute hazardous waste in a calendar month, the Section must be notified, and the facility must comply with the large quantity generator (LQG) requirements. Both SQGs and LQGs must obtain a site EPA Identification number for the generation of hazardous waste.

Inactive Hazardous Sites/Superfund

Ten sites were identified within one mile of the Project as shown on the attached report (Attachment 1). The Superfund Section of the Division of Waste Management recommends that site files be reviewed to ensure that appropriate precautions are incorporated into any construction activities that encounter potentially contaminated soil or groundwater. Superfund Section files can be viewed at: http://deq.nc.gov/waste-management-laserfiche.

Solid Waste Management

The proposed pipeline Project location and alternative locations may be in proximity to lined and unlined active and closed landfills permitted by the Solid Waste Section (Municipal Solid Waste Landfills, Industrial Landfills, Construction and Demolition Landfills, and Landclearing and

Inert Debris Landfills) in the Division of Waste Management. Notified Landclearing and Inert Debris Landfills (less than two acres in size) may also be located near or within the Project areas. Landfills have the potential risk to generate landfill gas and contaminants that may be released into the environment. A map view of solid waste management facilities within the proposed Project areas is included as Attachment 2.

A list of permitted solid waste management facilities and facility locations are available on the Solid Waste Section portal site at: http://deq.nc.gov/about/divisions/waste-management/waste-management-rules-data/solidwaste-management-annual-reports/solid-waste-permitted-facility-list.
Documents for those facilities are available at:
https://edocs.deq.nc.gov/WasteManagement/Search.aspx?cr=1.

In addition to solid waste management facilities, there is a closed unpermitted solid waste disposal site located at Stone Street Extension in Melville Township, Alamance County, which may also be in proximity to the proposed Project locations. A Notice of Closed Unpermitted Solid Waste Disposal Site and plat for this site are recorded in the Alamance County Register of Deeds at Deed Book 859 on Pages 926 through 928 and in Plat Book 13 on Page 75.

During the Project, every feasible effort should be made by the applicant to minimize the generation of waste, to recycle materials for which viable markets exist, and to use recycled products and materials in the development of this Project where suitable. Any waste generated by this Project that cannot be beneficially reused or recycled must be disposed of at a solid waste management facility approved to manage the respective waste type. The Section strongly recommends that any contractors are required to provide proof of proper disposal for all waste generated as part of the Project.

§401 Programming
This Project proposes to impact stream, wetland, and protected riparian buffers in the Jordan Lake Watershed. It is the Division of Water Resources' (DWR) understanding that the U.S. Army Corps of Engineers has determined a 404 permit is required, therefore a 401 water quality certification from DWR is also required. Impacts to the protected riparian buffer will likely trigger a riparian buffer authorization from DWR and could require a variance depending on the proposed impacts.

The cumulative impacts analysis should include potential secondary[32] and cumulative[33] impacts (e.g. from anticipated development resulting from the construction of the pipeline). This analysis

[32] *"Secondary impact" means actions, or actions directly linked to an activity, that may affect classified surface waters or wetlands that would not occur but for the proposed activity.*

[33] "Cumulative impact" means environmental impacts resulting from incremental effects of an activity when added to other past, present, and reasonable foreseeable future activities regardless of what entities undertake such other actions.

should be for both past and reasonably anticipated future impacts, including expansion of the pipeline Project beyond the current proposed terminus near Graham in Alamance County.

Water Resources Planning

The Water Planning Section of the Division of Water Resources recommends that MVP:

1. Conduct an inventory of all wetlands and perennial and intermittent waterways that may be impacted directly or indirectly by the Project. Such impacts may be associated with the techniques for clearing riparian right-of-way, crossing waterways, and the withdrawal and discharge of surface waters during the construction, installation, and testing of the pipeline.
2. Detail the proposed techniques for the use of surface waters--including the amounts required in cubic feet per second, the clearing of right-of-way, the crossing of waterways, (e.g., directional boring, ditching, etc.), the seasonal schedule for crossings, and the mitigation measures that will be employed to avoid or lessen all impacts.
3. Register any Water Withdrawals associated with hydrostatic testing of pipeline as required pursuant to N.C.G.S. §143-215.22H and Administrative Rules 15A NCAC 02E.0600, for withdrawals of 100,000 gallons or more on any single day of the year.

Intergovernmental (North Carolina) Review

- Any open burning associated with subject proposal must be in compliance with 15A NCAC 02D.1900.
- Demolition or renovations of structures containing asbestos material must be in performed in compliance with 15A NCAC 20.1110(a)(1), which requires notification and removal prior to demolition. The Health Hazards Control Unit (HHCU) of the North Carolina Department of Health and Human Services, must be notified of plans to demolish a building, including residences for commercial or industrial expansion, even if no asbestos is present in the building.
- The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion and sedimentation control plan is required if one or more acres of land are disturbed. The plan must be filed with and approved by the applicable Departmental Regional Office (Land Quality Section, in the Division of Energy, Minerals, and Land Resources) at least 30 days before beginning activity. A National Pollutant Discharge Elimination System (NPDES) Construction stormwater general permit (NCG010000) is also usually issued should design features meet minimum requirements.
- 401 Water Quality Certification requires compliance with15A 02H .0500. Certifications are required whenever construction or operation of facilities will result in a discharge into navigable water as described in 33 CFR 323.
- Abandonment of any wells, if required, must be performed in accordance with 15A. NCAC 02C .0100.
- Provide notification to the proper Regional Office if "orphan" underground storage tanks (USTs) are discovered during any excavation operation. The following incidents are located in the general area of the proposed Project; however, it was infeasible to know specifically where the Project would be located based upon the general nature of the maps submitted by the applicant:
    - Incident # 10008, Scott's Lawn and Garden Center, still open

- Incident # 14394, Roadway Express, Inc.-Burlington, closed 5/1/2001
- Incident # 95219, Marquardt-Skyway Trans Spill, closed 9/26/2012
- Incident # 15324, Trans Service Bus Lines, closed 4/17/1996
- Incident # 6944, Lawrence Industries, still open
- Incident # 13916, Lawrence Industries-Nonreg, closed 7/19/1995
- Incident # 44022, GoForth Property, closed 9/7/2012
- Incident # 37861, Thigpen Estate, Rebecca, closed 5/15/2012
- Incident # 21549, Dunn Property, Anne, still open
- Incident # 44930, MK's Grocery, still open
- Incident # 3199, Sandy Cross Mini Mart, still open
- Incident # 11593, Ashby's Grocery, closed 9/19/2002
- Incident # 37075, Martin-Marietta-East Alamance, closed 1/3/2008
- Incident # 87529, Riley Paving-Haw River Martin Marietta, closed 11/16/2006

- If existing water lines will be relocated during construction, plans for the water line relocation must be submitted to the Public Water Supply Section of the Division of Water Resources.

Wildlife Resources

Biologists in the Habitat Conservation Division of the North Carolina Wildlife Resources Commission (NCWRC) reviewed the proposed Project description and provided detailed comments to MVP on the proposed route and aquatic and terrestrial species surveys in a letter dated August 10, 2018 (Attachment 3). Comments particular to the NOI to prepare an EIS and the proposed alternative routes presented herein are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667e), the North Carolina Environmental Policy Act (N.C.G.S. §113A-1 through §113A-10; and 1 NCAC 25) and the Jurisdiction of Conservation Agencies (N.C.G.S. §113-131 et seq.).

The proposed Project will traverse parts of the Dan and Haw river basins. Several rare, threatened, and endangered species are found in this region of the state, including the Federal Endangered Roanoke Logperch (Percina rex).

The request for scoping comments includes four alternative pipeline routes in Alamance County: Sandy Cross Road Alternative, Alamance Eastern Alternative, Alamance Southern Alternative, and the Duke Powerline Alternative. In general, when assessing pipeline routes and their potential impacts on aquatic and terrestrial wildlife resources, the Division looks for routes where impacts can be lessened by reducing the number of stream crossings, following existing rights-of-way (ROW), reducing fragmentation of forested blocks, and minimizing impacts to riparian zones. Without GIS layers of the pipeline route alternatives, the Division staff cannot adequately compare the environmental impacts of the alternatives with the preferred route and recommend a route. The Division has the following specific comments about the proposed Project alternative routes:

1. For the Duke Power Alternative, the MVP Southgate pipeline is co-located with an existing Duke Energy transmission line and other ROW for approximately 3.8 miles. This alternative has merit because it avoids new forest fragmentation south-southwest of SR 1594 by co-locating the pipeline along an existing ROW. It also avoids fragmentation of a forest located southwest of SR 1602.
2. The Sandy Cross Road Alternative appears to avoid the forest fragmentation caused by the preferred route where it crosses Boyds Creek.
3. At 9.6 miles, the Alamance Eastern Alternative is double the length of the preferred pipeline route. This alternative will reduce some of the Haw River riparian zone impacts associated with the preferred route between US-70 and I-40.
4. The Alamance Southern Alternative will also reduce some of the Haw River riparian zone impacts but will likely cross Back Creek once or twice.

VIII. Conclusion

In summary, the Department is directed under North Carolina law to protect human health and the environment. In order to fulfill our obligations under the law, we urge the FERC to evaluate, review, and finally prepare an EIS that considers and discloses fully the breadth and scope of the impacts of the MVP-Southgate Extension Project. The Department is concerned that the Project and the four project alternatives proposed in the NOI lack consideration of all reasonable non-natural gas energy alternatives and that the NOI presents only a vague description of how the Commission will address environmental issues and impacts. As previously discussed, DEQ submitted a request to the FERC for an extension to the period to comment on the EIS. Due to the short amount of time to respond to the NOI, the comments and recommendations included above do not account for the whole of the potential environmental impacts that may result from the Project. For example, these comments do not address: Public safety and security; visual impacts; cultural or heritage resources; transportation system reliability; impacts to forestlands and agricultural lands, both private and public; noise and light pollution; EJ communities; natural disasters and geologic hazards; or the protection of flood control structures.

Thank you for the opportunity to comment on this NOI. I trust that the Department's comments contained herein will be considered as the Commission prepares the Environmental Impact Statement for the MVP Project. If you have any questions regarding our comments, please contact me at (919) 707-8619 or sheila.holman@ncdenr.gov.

Sincerely,

Sheila C. Holman
Assistant Secretary for the Environment

Attachment 1: Inactive hazardous/Superfund sites within one mile of the Project
Attachment 2: Map of solid waste management facilities within proposed Project area
Attachment 3: August 10, 2018, letter from NCWRC to MVP on the proposed route and aquatic and terrestrial species surveys

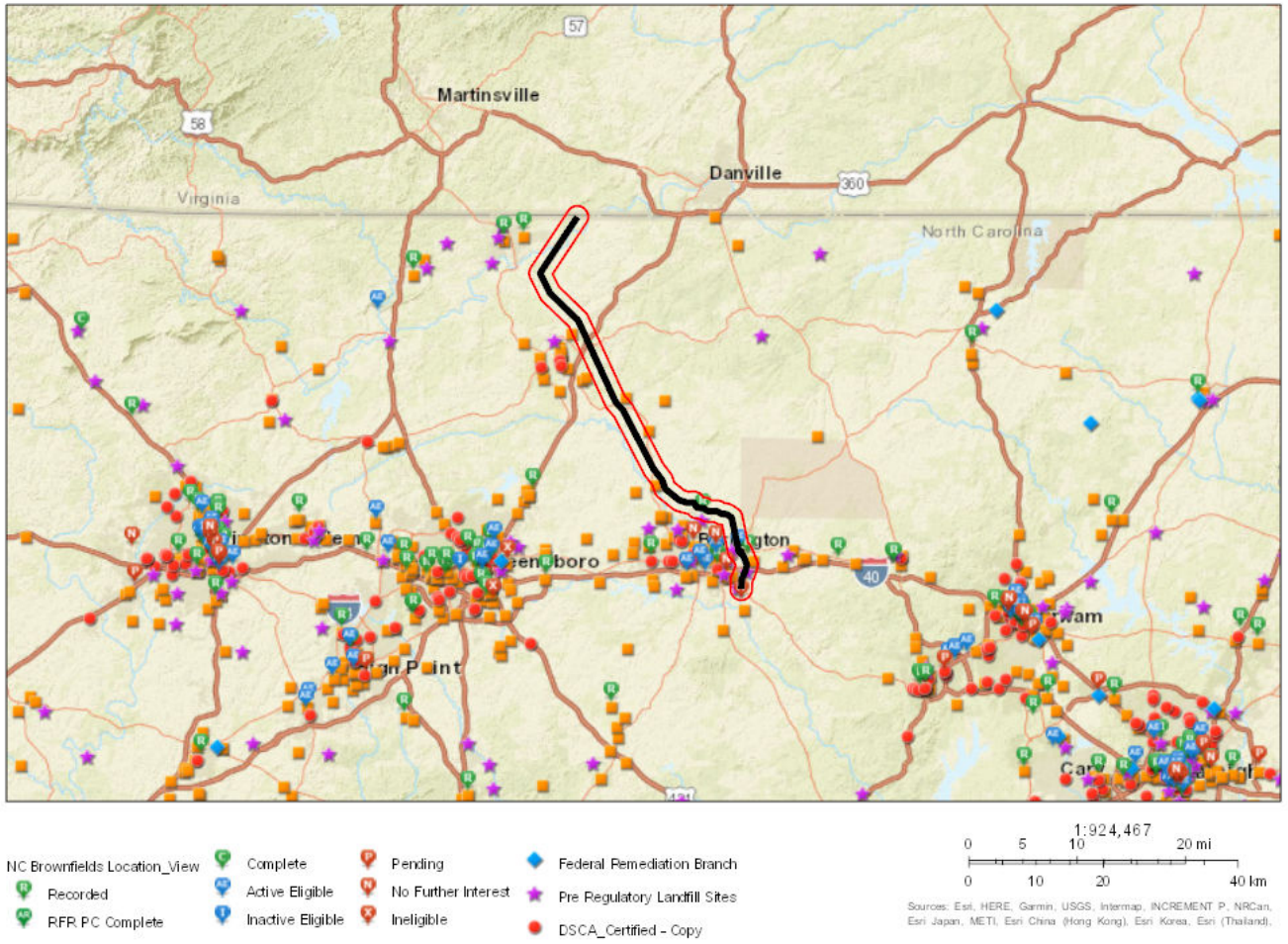
NCDEQ EIS Scoping Comment
Attachment 1: Sites Located within 1/2 mile of MVP Southgate

SEPA/NEPA Review Report

Area of Interest (AOI) Information

Area : 57,538.86 acres

Aug 21 2018 9:11:17 Eastern Daylight Time



NCDEQ EIS Scoping Comment
Attachment 1: Sites Located within 1/2 mile of MVP Southgate

DEQ 1726

Summary

Name	Count	Area(acres)	Length(mi)
Certified DSCA Sites	0	N/A	N/A
Federal Remediation Branch Sites	0	N/A	N/A
Inactive Hazardous Sites	3	N/A	N/A
Pre-Regulatory Landfill Sites	4	N/A	N/A
Brownfields Program Sites	3	N/A	N/A

Inactive Hazardous Sites

#	EPAID	SITENAME	Count
1	NONCD0002837	B & C GROCERY	1
2	NONCD0001777	GLEN RAVEN MILLS - CONSUMER PROD DIV - C	1
3	NONCD0002041	MASSEY RESIDENCE, GLEN	1

Pre-Regulatory Landfill Sites

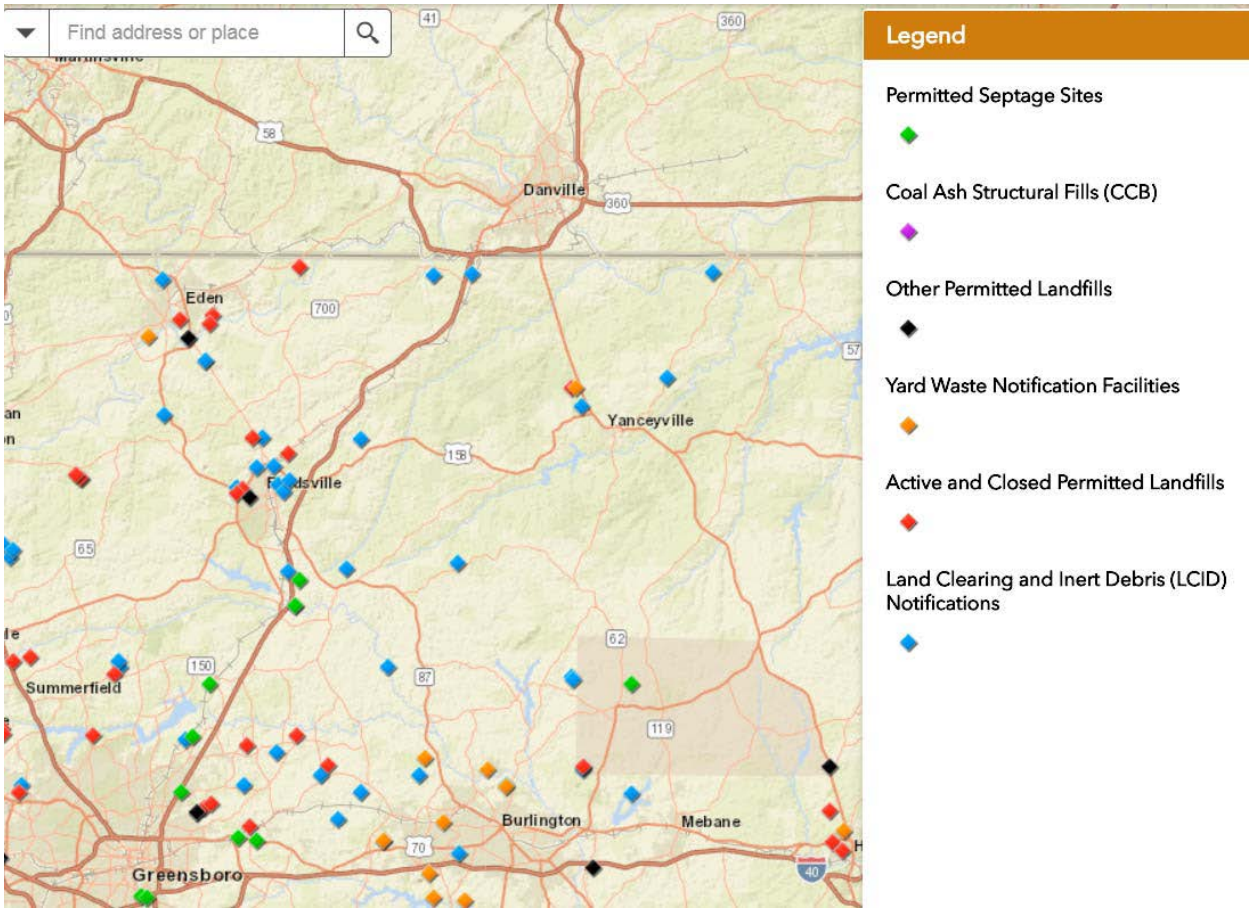
#	EPAID	SITENAME	Count
1	NONCD0000102	ALAMANCE GARBAGE SERVICE	1
2	NONCD0000104	GRAHAM DISPOSAL	1
3	NONCD0000727	PORTER AVENUE LDFL	1
4	NONCD0000721	STONE QUARRY RD LDFL	1

Brownfields Program Sites

#	BF_ID	BF_Name	Count
1	80300401	L.I. Building, LLC	1
2	90620501	Glencoe Mill	1
3	210431701	Granite Mill	1

NCDEQ EIS Scoping Comment

Attachment 2: Solid Waste Management Facilities Within MVP Southgate Project Areas



NCDEQ EIS Scoping Comment

Attachment 3: NC Wildlife Resources Commission Comments on Proposed MVP-Southgate Project

North Carolina Wildlife Resources Commission

Gordon Myers, Executive Director

MEMORANDUM

TO: Megan Stahl, Permitting Coordinator
MVP Southgate

FROM: Vann Stancil
Research Coordinator
Habitat Conservation Division

DATE: August 10, 2018

SUBJECT: Comments on proposed route and species surveys for MVP Southgate Project, Rockingham and Alamance counties.

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have met with representatives of the MVP Southgate Project and have reviewed the proposed project description. Comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667e), North Carolina Environmental Policy Act (G.S. 113A-1 through 113A-10; 1 NCAC 25) and North Carolina General Statutes (G.S. 113-131 et seq.).

The MVP Southgate Project is an interstate natural gas pipeline project that will extend approximately 72 miles from Pittsylvania County, Virginia to delivery points in North Carolina. Approximately 46 miles of the pipeline will traverse the Dan and Haw river basins in Rockingham and Alamance counties. The project will terminate in Alamance County on the east side of the Haw River between Graham and Swepsonville. The applicant has provided detailed information on the current proposed pipeline route and has requested information to guide aquatic and terrestrial surveys for this project.

Mailing Address: Habitat Conservation • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 707-0220 • **Fax:** (919) 707-0028

The NCWRC has reviewed the MVP Southgate route. In general, we have identified locations where impacts can be lessened by reducing the number of stream crossings, following existing rights-of-way (ROW), reducing fragmentation of forested blocks, and reducing impacts to riparian zones. Locations of stream crossings are based on GIS stream layers; on-the-ground surveys may reveal that actual stream locations differ from what is shown on maps. We have the following specific concerns and recommendations about the current pipeline route:

Rockingham County

- The route crosses Cascade Creek in NC beside an existing utility ROW that is cleared along the riparian zone. There are records for the Federal Endangered Roanoke Logperch and other rare aquatic species in the North Carolina portion of Cascade Creek. Given the high quality of the aquatic community in Cascade Creek, we recommend that horizontal directional drilling (HDD) or conventional bore be used to cross this waterbody.

- The route crosses Rock Creek three times near its confluence with the Dan River and the route does not follow the existing ROW. Following the existing ROW would result in one creek crossing and less forest fragmentation. We recommend that the route be modified to reduce forest fragmentation so that Rock Creek is only crossed once, preferably along the existing ROW.

- Town Creek is crossed twice, the southern crossing is not along the existing ROW. If the MVP Southgate route followed the existing ROW, it would still cross Town Creek twice, but forest fragmentation would be reduced. Another alternative is to move the route farther east and avoid crossing Town Creek altogether, but this option could result in more forest fragmentation.

- There is an intermittent stream in the Town Creek watershed located between SR 1978 and SR 1979. The MVP Southgate route crosses it five times, as does the existing ROW. Four of the five current crossings are shared with the existing ROW. The route could be modified slightly to reduce the number of crossings from five to three. At the southernmost crossing of this intermittent stream, the pipeline diverges from the existing ROW and crosses a forested area north of SR 1980 and west of SR 1979. The proposed route continues to cross a forested block between SR 1982 and SR 1941 before it eventually reconnects with the existing ROW prior to crossing Wolf Island Creek. The preferred route would be to continue co-location with the existing ROW in this area.

- The pipeline route crosses an unnamed tributary to Wolf Island Creek two times on the north side of the Wolf Island Creek crossing. The Piedmont Land Conservancy controls an easement for a parcel on the west side of the unnamed tributary near the pipeline

location. The route could be modified to reduce the number of crossings along this unnamed tributary. There are records for the Federal Endangered Roanoke Logperch and other rare aquatic species in Wolf Island Creek. Given the high quality of the aquatic community in Wolf Island Creek, we recommend that HDD or conventional bore be used to cross this waterbody.

- The proposed route deviates from the existing ROW and crosses a forested area spanning from U.S. Highway 158 south to Daisy Drive east of Reidsville. Forest fragmentation could be reduced if the route followed the existing ROW on the west side to SR 2579. This could also shorten the length of the route.

- Forest fragmentation could also be reduced by following the existing ROW near the SR 2588 crossing.

- East of Williamsburg between SR 2571 and NC Highway 150, the pipeline crosses a large forested area with intermittent agricultural lands, Hogans Creek, and its unnamed tributaries. We prefer the pipeline to be co-located with the existing ROW.

Alamance County

- The pipeline crosses a forested area located south-southwest of SR 1594 and northwest of SR 1595 near Burlington. Forested fragmentation could be reduced by continuing to collocate the line southward until the existing east-west ROW (36.16604 N, -79.48789 W) and co-locate the line with the existing ROW eastward to SR 1595. Alternatively, the pipeline could extend to the southernmost end of the agricultural field south of the pond (36.1745 N, -79.48869 W), then continue south-southeast to SR 1595.

- After crossing SR 1598, the proposed route deviates from the existing ROW. The proposed pipeline is also only 700 feet south of a NC Division of Mitigation Services easement. A new pipeline corridor south of the mitigation project may reduce the effectiveness of the mitigation project. Forest fragmentation could be reduced if the route followed the existing ROW across SR 1601. This could also shorten the length of the route.

- There are records for Eastern Lampmussel (*Lampsilis radiata*) in Deep Creek upstream from the proposed crossing location. Therefore, we recommend that HDD or conventional bore be considered for crossing this waterbody.

- The Stony Creek Natural Heritage Natural Area occurs near the pipeline centerline on the east side of Stony Creek Reservoir. We recommend stringent erosion and sedimentation controls if the pipeline route remains close this natural area.

- The proposed route bisects a large forested block where it crosses Boyds Creek. Alternative routes may reduce forest fragmentation.

- The proposed route is within 250' of the Haw River south of US 70 and also north of I-40. The route is within 150' of the Haw River south of I-40 and within 200' north of NC 54 near the end of the route. We recommend examining alternative routes farther east that will be located farther from the Haw River. If alternative routes are not practical, when the route parallels the Haw River, it should be located farther away from the river to maintain the riparian zone and reduce forest fragmentation.

NCWRC offers the following comments regarding aquatic surveys:

- NCWRC requests freshwater mussel surveys for the following streams in the Dan River basin: Cascade Creek, Dan River, Hogans Creek, Jones Creek, Lick Fork Creek, Machine Creek, Rock Creek, Town Creek, and Wolf Island Creek. Please notify T. R. Russ, Foothills Region Aquatic Wildlife Diversity Coordinator (thomas.russ@ncwildlife.org, 928-803-6035), of the dates when sampling will occur in Dan River basin waterbodies.

- In the Haw River basin, freshwater mussel surveys should be conducted in all perennial streams first order and higher. Using the current route shapefile, this would include Boyds Creek, Deep Creek, Giles Creek, Stony Creek, and 4 unnamed tributaries to the Haw River. Using the current shapefile, these 4 unnamed tributary crossings are located at 36.17242, -79.48576; 36.22968, -79.5274; 36.24187, -79.53111; and 36.2643, -79.55023.

- If the pipeline route crosses one of these streams more than once, surveys should be conducted at each crossing location. If the current proposed route changes to include new stream crossings, additional sites may require surveys.

- Preliminary mussel surveys are needed to determine appropriate pipeline crossing methods and crossing locations. If any live mussels are collected, a second mussel survey will be needed prior to pipeline installation to relocate mussels that may be impacted by pipeline construction activities.

- Preliminary mussel surveys should extend 100 meters upstream and 300 meters downstream of the proposed crossing location.

- Habitat data, depth, substrate, habitat type (riffle, run, pool) should be mapped for each survey reach. Survey reaches should be divided into 20-meter sections to better determine areas of high mussel densities for crossing locations.

- Surveys for the Greensboro Burrowing Crayfish, *Cambarus catagius*, should be conducted in work areas within 200 ft of any mapped stream, both intermittent and perennial in the Haw River basin. Effort should cover all areas which will be excavated (i.e., for pipeline burial) as well as 25 feet on either side to allow for equipment space. Work pads for HDD access and conventional boring should also be included, along with any other areas where ground disturbance may lead to crayfish mortality through burrow destruction and crushing. If there are signs of burrowing crayfish activity (holes), burrows should be investigated, and inhabitants relocated.

- The Greensboro Burrowing Crayfish has been found in all types of soils from sandy loams to hard clay and burrows are not usually directly associated with any drainage or stream flow (McGrath 1994). The species has never been found in any flowing water. The full extent of its distribution in this watershed is unknown due to lack of targeted surveys. Please notify Brena Jones, Central Aquatic Wildlife Diversity Coordinator (brena.jones@ncwildlife.org, 919-707-0369), if any Greensboro Burrowing Crayfish are located.

- For burrowing crayfish surveys, we recommend using a device called a Yabby Pump to remove the crayfish from its burrow. This devise is far less invasive and labor-intensive than excavating burrows. We can provide additional information on the device, including photos and demonstrations, as needed.

- We recommend conducting burrowing crayfish surveys during winter months when burrows are more likely to be visible and water tables are typically higher. Collected crayfish should be identified, photographed, and relocated to suitable habitat nearby that will not be impacted by pipeline construction activities.

- No targeted surveys for Greensboro Burrowing Crayfish are needed in the Dan River basin; this endemic species is only known from the upper Cape Fear and a portion of the Yadkin-Pee Dee basins. However, if any crayfish burrows or tunnels are observed in the Dan River basin tributaries, they should be surveyed using the techniques described for Haw River basin surveys.

- Stream crayfish surveys should be conducted in all first to third order streams in the Dan and Haw river basins. These surveys should include 20 kicks into a seine approximately 8 feet wide. The area upstream of the seine should be disturbed by flipping rocks or kicking under banks or root wads to dislodge crayfish. The primary purpose of these surveys is to determine abundance and distribution of the Carolina Ladle Crayfish, *Cambarus davidi*, but other crayfish species may also be encountered. Collected crayfish should be identified, photographed, and enumerated. Seining effort should be spaced to include the 400-meter mussel survey area that extends above and below the proposed crossing location.

- No targeted fish surveys are necessary, but any state listed, federal listed, or Species of Greatest Conservation Need (SGCN) as listed in the 2015 NC Wildlife Action Plan that are encountered during surveys for freshwater mussels or crayfish should be denoted.

- If temporary dams are used for stream crossings, any aquatic species (fish, crayfish, mussels, reptiles and amphibians) found within the temporary dam footprint and dewatered area should be removed and relocated to suitable habitat away from the construction area.

NCWRC offers the following comments regarding surveys for terrestrial species:

Bats

NCWRC received the revised study plan for bat surveys dated 23 July 2018. We concur with the presence/probable absence survey methodology as described within the bat survey plan. However, we recommend the following changes and/or additions to the proposed survey sites, if landowner access is feasible:

- NC-SB01 – Map 1: Shift the survey block south approximately 0.3 km to include the creeks (Dry Creek and unnamed tributaries) that flow into the Dan River. In this area, Dry Creek and its unnamed tributaries flow through a large forested area.
- NC-SB04 – Map 5: Include forested area above this block near TA-RO-105.
- NC-SB06 – Map 7: Area north of this block seems less fragmented and potentially better habitat, especially on the west side of the pipeline ROW. Consider adding a survey block or extending the survey block to include this area.

- NC SB08 – Map 8 & 9: There is more forested habitat and less agriculture north of TA-RO-140 to about TA-RO-133 than seen in the current survey block. Consider adding or substituting this area for NC SB08.
- NC SB15 – Map 15 & 16: Some of the industrial/highway areas in this block could be omitted. Consider starting the survey block around Stone Street/NC HWY 1935 and extend it farther south towards the end of the line. This would provide more options for good net sites, especially along the Haw River and its tributaries.

In the study plan, ESI requests concurrence that the project area may be cleared at any time of the year without restriction unless a federally-listed bat roost is found in the project vicinity. NCWRC prefers the avoidance of mature tree clearing activities during the maternity roosting season (May 15 – August 15), if ESI finds state-listed bat species.

Reptiles and Amphibians

Jeff Hall, the Reptile and Amphibian Conservation Biologist for NCWRC, has requested a desktop review of the MVP Southgate pipeline corridor to identify potential suitable habitat for four-toed salamanders and mole salamanders. Jeff Hall will review the findings and identify a subset of potentially suitable habitats to be surveyed for these salamander species.

Birds

Co-locating of the proposed pipeline with other linear projects reduces the fragmentation of forests. Many forest birds that breed in North Carolina are sensitive to habitat patch size. As patch size decreases and more edges are created, nest parasitism and nest predation increase. Fragmentation also impacts important ecosystem function, such as decreased forest biomass and nutrient cycling, thereby reducing abundance, biodiversity, persistence, and movement of wildlife (Haddad et al. 2015). The effects of fragmentation increase over time and the smaller and more isolated fragments are impacted most (Haddad et al. 2015). To reduce impacts of forest fragmentation on birds, we recommend limiting the number of large forested patches bisected by the pipeline.

Migratory birds and their eggs are protected from "take" by the Migratory Bird Treaty Act of 1918. Therefore, we recommend avoiding any clearing activities during the migratory bird nesting season, roughly March to August, or conduct surveys for active nests prior to construction to avoid "taking" migratory birds, which includes wounding or killing.
We recommend surveys for active colonial nesting birds (i.e., rookery) and bald eagle nests within 0.5 miles of the pipeline corridor. Aerial surveys for bald eagle nests and colonial nesting birds should be conducted during winter months when deciduous trees have shed their leaves. If

active rookeries are located, construction activities should not occur within 0.5-mile of each rookery from February 15 - July 31. Therefore, any construction activities begun prior to February 15th should cease by February 15th, allowing the birds to return to their rookeries with no added disturbance. We recommend adhering to the U.S. Fish and Wildlife National Bald Eagle Management Guidelines for high disturbance activities if nests occur within 0.5 miles of project activities.

Thank you for the opportunity to review and comment on this project. If the NCWRC can be of further assistance, please contact Olivia Munzer at (919) 707-0364 and olivia.munzer@ncwildlife.org or me at (919) 284-5218 and vann.stancil@ncwildlife.org.

Literature Cited

Haddad, N.M, L.A. Brudvig, J. Clobert, K.F. Davies, A. Gonzalez, R.D. Holt, T.E. Lovejoy, J.O. Sexton, M.P. Austin, C.D. Collins, W.M. Cook, E.I. Damschen, R.M. Ewers, B.L. Foster, C.N. Jenkins, A.J. King, W.F. Laurance, D.J. Levey, C.R. Margules, B.A. Melbourne, A.O. Nicholls, J.L. Orrock, D. Song, and J.R. Townshend. 2015. Habitat Fragmentation and its Lasting Impact on Earth's Ecosystems. Science Advances 1:e1500052.

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