



Preserve Craig ~ Sustaining the Quality of Life We Value

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June 16, 2015

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

Docket PF-15-3-000

Re: Fragile mountaintop soils are unsuitable for pipeline construction and restoration

We respectfully call the attention of the FERC to critical issues related to the nature of fragile soils on the mountaintops that MVP proposes to cross in Craig County, Virginia, and elsewhere on the routes proposed for the MVP project.

The soils found on these mountaintops currently are held in place by sparse vegetation and roots of very mature trees. Clearing a pipeline right-of-way through this habitat will expose those steep slopes to severe erosion from even moderate rainfall events. The nature of these soils will virtually assure restoration failure if MVP's proposed methods are employed. In fact, scientists say that the type of restoration seeding proposed by MVP is completely inappropriate for these soils on these slopes.

We ask that the FERC require detailed study of these issues, appropriate site-specific soil surveys by qualified outside parties, and the elaboration of detailed construction and restoration plans that can be effectively judged as to their likelihood for success in these specific locations and circumstances. To ask less is to virtually guarantee irreparable harm to one of the most diverse and unique environments in the eastern United States.

Sincerely,

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and
Nan Gray, MS, LPSS (Licensed Professional Soil Scientist)

for the Science Committee, Preserve Craig

Fragile Mountaintop Soils are Unsuitable for Pipeline Construction and Restoration

Background

The Mountain Valley Pipeline (MVP) proposes to cross numerous severe slopes (42-85%) in Craig County, Virginia, particularly in the Jefferson National Forest. While such construction might be technically feasible, it will be virtually impossible to suitably and responsibly stabilize the soils on these mountaintops after removing vegetation and destroying soil structure.

The proposed construction will involve complete clearing of vegetative cover (\geq 125-foot corridor), and deep excavation of the soil to bury the pipeline. Significant amounts of rock will be encountered in this excavation. Restoration proposed involves seeding the disturbed surface with a mix of grasses and forbs. Long-term maintenance will require the prevention of all woody-vegetation growth in the permanent pipeline corridor (75 feet).

We contend that the soil types on these mountain slopes, and the severity of these slopes, will make it impossible to effectively restore the ecological integrity of this area. Subsequent erosion will wash downhill into other areas of the National Forest, private lands, and streams and wetlands that support rare and endangered species. Pipeline construction in these areas is ill-advised, and will result in severe, long-term environmental damage.

Examples of Failure

There is a perfect example of egregious failure of restoration efforts within the Jefferson National Forest itself, only a few miles from the proposed and alternative routes for the MVP. In 2014, Columbia Gas of Virginia built a 12-inch supply extension from an existing pipeline to an industrial plant in Giles County, Virginia (<http://pipelineupdate.org/national-forest-pipeline-overview/>). Numerous waivers were granted regarding erosion and sediment control requirements, and the result was extreme erosion and sediment deposition into streams below. A detailed explanation of this situation can be seen at <http://pipelineupdate.org/national-forest-pipeline-issues/>. This failed project still has not been repaired, and an eroding scar can be seen from many miles along an adjacent U.S. Highway. It is worth noting that many of the slopes proposed for the MVP crossing in Craig County are even more severe than in this bad example of restoration outcomes.

A recent scoping comment filed by our group (Preserve Craig) details another pipeline restoration failure that has been problematic for decades, despite being located on nearly flat terrain. The Transco pipeline, the very pipeline that the MVP proposes to connect to, is another example of failed restoration. Even after 30 years of “recovery,” that pipeline corridor continues to erode and discharge stream-impairing sediment. See http://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20150615-5296 for details.

Mountaintop Soils in Craig County

A simple analysis of terrain and soils that the MVP would cross quickly indicates the potential for serious environmental problems. Even activities much-less intrusive than pipeline trenching are not appropriate in these soils and on these slopes. Please allow us to illustrate with a few references and quotes.

1. MVP's own archaeological survey contractor (Tetra Tech) included this statement in MVP's Draft Resource Report 4, Appendix 4A, submitted to the FERC Docket PF15-3-000 for the MVP project (http://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20150424-5295).
 - a. **"Soils developed on slopes greater than 20% are classified as Inceptisols. Inceptisols are prone to erosion and are less likely to contain in-situ archaeological deposits regardless of their drainage classification."** (emphasis added)
 - b. Tetra Tech was pointing to the erodibility of those soils as the reason why they should not spend time looking for archaeological artifacts there. Such erodibility, quoted by MVP themselves, is clearly a reason why MVP should not be allowed to severely disturb these soils with forest clearing and trenching. We cannot give an exact reference for this quote because, in an unprofessional manner, Tetra Tech and MVP did not bother to put page numbers on this 46-page report. The quote can be found at the top of page 10 of 46 in the FERC PDF of RR4 Appendix 4A - WV (http://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20150424-5295).
2. Dr. Sabine Grunwald (Professor, Soil & Water Science Department, University of Florida, Gainesville) has stated that Inceptisol soils are only suitable for forestry or wildlife habitat:
 - a. **"Inceptisols occur under forested ecosystems, grassland or agricultural land. Although Inceptisols are not limited to forest environments, most of the soils classified into this order occur under forest ecosystems . . . Present use may be restricted by the shallowness of the solum (e.g. on steep slopes) or by poor drainage (e.g. in depression areas). Those Inceptisols are suited only to forestry and/or wildlife habitat."** (emphasis added; Inceptisols – Environmental Conditions):
<https://soils.ifas.ufl.edu/faculty/grunwald/teaching/eSoilScience/inceptisolss.shtml>
3. The *Handbook of Soil Sciences* (2011) clearly states that Inceptisols on steep slopes are virtually impossible to reclaim in any manner except allowing natural regrowth of the forest.

- a. **"Most Inceptisols under forested land occur in mountainous regions on slopes ranging from 3 to 90%. On steep terrains, management systems other than natural regrowth are *environmentally unacceptable and practically impossible.*"** (page E-253, emphasis added; Handbook of Soil Sciences: Properties and Processes, 2nd Edition. Huang, P.M., Y. Li, and M. E. Sumner, editors. 2011. CRC Press, Boca Raton, FL)
 - b. So seeding is an inappropriate management plan for restoration, as is anything other than allowing "natural regrowth." This also means that MVP's long-term maintenance plan to continually restrict tree regrowth is **"environmentally unacceptable and practically impossible."** Clearly a pipeline is simply an inappropriate land use for these soils and slopes, and allowing such use would lead to long-term land degradation, soil erosion, and sedimentation to downhill streams that contain sediment-sensitive endangered species.
4. The NRCS Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>) indicates that the Jefferson National Forest slopes of Johns Creek Mountain in Craig County are dominated by Berks-Weikert and DeKalb soils. Internet searches related to these soils reveal many references that caution about the shallowness, fragility, and erodibility of these soils, particularly on steep slopes. For example, an NRCS soil survey (http://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/virginia/VA005/0/Alleghany_VA.pdf) for Alleghany County, VA offers these recommendations regarding land uses on these soil types (see page 28):
- a. **Cropland** - These soils are unsuited to cropland.
 - b. **Pastureland** These soils are unsuited to pastureland.
 - c. **Woodland** Suitability: Well suited to chestnut oak; moderately suited to northern red oak; poorly suited to eastern white pine
 - d. The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings. The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment. Because of the slope, the use of equipment for planting and seeding is impractical. The low soil strength may create unsafe conditions for log trucks.
 - e. **Building sites** - The slope influences the use of machinery and the amount of excavation required. Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty of constructing foundations and installing utilities is increased.
 - f. **Local roads and streets** - Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased. Because of the slope, designing local roads and streets is difficult. Frost action may damage local roads and streets.
5. The US Forest Service has noted very severe erosion potential for mountain soils cleared of vegetation on very steep slopes in the Daniel Boone National Forest:

- a. “The large majority of the soils of the DBNF do not have high natural erosion potential as long as their vegetative and litter layer cover remain intact. Approximately 0.45% of the soils on the DBNF have severe or very severe erosion potential. These soils are found on all four districts on slopes that exceed 30%. Often the soils are included in a complex with rock outcrops.” (Erosion Potential of DBNF Soils: http://www.fs.usda.gov/detail/dbnf/home/?cid=fsbdev3_032604).

In summary, even a very cursory review of erosion potential for soils on steep National Forest slopes in Craig County indicates that there are multiple reasons to eliminate MVP Alternate Routes 110, 110J and 110R from consideration immediately. They simply are not viable routes due to the unacceptable level of permanent environmental damage that the pipeline would cause, and this damage cannot be effectively mitigated. Specifically:

- The slopes in the Jefferson National Forest that MVP proposes to cross are extreme (42-85%+).
- Soils on those slopes are shallow, fragile, and known to be highly prone to erosion.
- Limited forest cover, associated roots, and leaf litter are the only things holding the soil on those slopes in place; there is very little understory in those mature forests.
- Pipeline construction would remove all vegetative cover and leaf litter that now protect those fragile soils.
- The soils will erode immediately upon exposure, as was seen at the Giles County pipeline project.
- Erosion from project lands will deliver sediment to nearby creeks, which are home to endangered headwater species that are highly sensitive to sediment.
- Sediment from inadequately protected mountain slopes will leave the Jefferson National Forest and impact private lands below.
- The shallow depth to bedrock on those mountain slopes will likely require MVP to use explosives during construction, despite their claims to the contrary. Such blasting adds a whole new list of potential problems related to groundwater and surface water supplies from the JNF that are critical to **EVERY** resident of Craig County.
- MVPs reclamation plans include grass seeding and permanent control of tree regrowth, both of which are known to be environmentally unacceptable and practically impossible on these slopes and soils.
- Even if seeding were environmentally acceptable, it cannot be fully successful in a forest corridor where the corridor edges will not receive sufficient sunlight. The result will be permanent erosion problems as seen on the Transco Pipeline for decades. Erosion problems on the proposed MVP pipeline would be even more severe than the Transco, due to the extreme slopes to be crossed by the MVP.

The environmental costs of such a pipeline through this area are simply too high to consider these routes. We ask you to help protect this area of exceptional biodiversity from damage. The Southern Appalachians Region is the most biodiverse area in the USA east of the Rocky Mountains (<http://applcc.org/cooperative/operational-plan/section-1/biodiversity-hotspot>), and also one of the top temperate biodiversity hotspots in the world (<http://highlandsbiological.org/nature-center/biodiversity-of-the-southern-appalachians/>).

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Construction activities that have such a high probability of causing severe environmental damage simply should not be allowed in such a region.

REQUEST: Critical FERC Actions

1. Deny any pipeline construction in areas that have a high probability of suffering significant ecological damage.
2. Require MVP to commission detailed, site-specific soil surveys by qualified outside soil professionals for ALL areas of construction. Soil surveys published by NRCS (Natural Resources Conservation Service, USDA) are not suitable decision aids for this type of project. Those surveys were created as a simplified starting reference, primarily for agricultural purposes. NRCS surveys cover areas as large as 5 acres or more, are not site-specific, and do not reflect the natural medium- and small-scale variations that will be critical to making responsible construction decisions. Responsible engineering will require site-specific, corridor-scale evaluation by qualified soil professionals.
3. MVP must be required to specifically address the serious concerns regarding slopes and soils detailed in this report. They should not be allowed to proceed with cursory descriptions of generalized mitigation measures, many of which have failed in similar or even less-demanding situations. All construction plans should be site-specific discussions of conditions and challenges, and site-specific mitigation plans with detailed explanations demonstrating why such measures are likely to succeed here when they have failed elsewhere. Pipeline construction projects in our area have a dismal environmental record, and MVP should be required to offer specific evidence that their construction and mitigation plans will actually work. Demanding less than that is a disservice to citizens who pay the exorbitant externalities associated with these projects while corporations reap profits from the very actions that cause these problems.