November 9, 2016

Mr. Troy Anderson
U.S. Fish & Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Dear Mr. Anderson:

My name is (b) (6) I can be contacted at (b) (6) I have a RBA degree from Bluefield State College and an Associates Degree from Southern State Community College in Ohio majoring in Real Estate. I am and have been an active member of SAVE MONROE, Inc. I retired several years ago as (b) (6) (b) (6) where I had worked for over 20 years. During those 20 years, I came to know many Monroe County families and many Monroe County agencies, churches and local businesses. I have witnessed the generosity and caring given to families when they have suffered a loss and need help. I have lived other places and I feel blessed to be living here. I am a native Monroe Countian and can trace my ancestry back to 1810 in Monroe County (before there was a Monroe County). Monroe County is a special place and Peter's Mountain is exactly what is meant by the song words "Mountain Momma". I have many relatives that live here and feel the same as I do about Peter's Mountain. It is a sacred place to us.

The Federal Energy Regulatory Commission (FERC) has released the DEIS for Docket Nos CP16-10-000 and CP16-13-000. Over the next month, I plan to examine this DEIS and plan to send you important information about the Mountain Valley Project. This will include comments that I made during the scoping process and information contained in the Draft Environmental Impact Statement (DEIS). The first is about the St. Clair fault (an ancient thrust fault) that can actually be seen above ground in Monroe County and information about the Giles County Seismic Zone.

The St. Clair Fault is not mentioned within the DEIS. The Giles County Seismic Zone (GCSZ) is covered within the DEIS. The GCSZ is located between Mountain Valley Project mile marker 165 to 230. This area covers part of Summers County, West Virginia and all of Monroe County, West Virginia and all of the Jefferson National Forest and all of Giles County, Virginia and part of Montgomery, Virginia. The Jefferson National Forest to be crossed by this 42" frack gas pipeline is located within Monroe County, West Virginia and Giles County, Virginia. There is now serious talk about running a 500 foot corridor through the Jefferson National Forest. I visited the Forest Service in Roanoke several weeks ago. I asked if the MVP pipeline would cross the black bear habitat and the old growth forest. They said yes. These are protected habitats. I will send more information soon. Thank you.

Sincerely,

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no internet or e-mail - only slow internet available here
Attachments: St. Clair fault information sent to FERC during scoping; GCSZ information gleaned from DEIS

Listed below is information in DEIS CP16-10-000 & CP16-13-000 about the GCSZ, Giles County Seismic Zone located between Mps 165 to 230. This area covers part of Summers County, West Virginia and all of Monroe County, West Virginia and all of the Jefferson National Forest and Giles County, Virginia and part of Montgomery, Virginia.

1. The GCSZ is considered seismically active (12 earthquakes that span four orders of magnitude and two decades of time 1959 through 1980). See below Seismicity *4-21 Geology*
2. Soil liquefaction and lateral spreading hazards do exist along the MVP in the general area of the GCSZ where peak ground acceleration of 0.14 g could occur. A PGA of 0.14 depending on site conditions could be equivalent to a magnitude 5.0 earthquake. See below *Mountain Valley Project 4-25 Geology and 4-25 Geology*
3. The MVP would cross the Jefferson National Forest within the GCSZ See below 4.1.1.7 Jefferson National Forest *Geology 4-40*
4. In the area of the GCSZ, between about MPs 165 to 230, peak ground accelerations approach 14 percent of the force of g, and the potential for a magnitude 5.8 earthquake exists. See below 4.1.2.3 Seismicity and Potential for Soil Liquefaction *Geology 4-44 and 4-45 Geology*
5. The potential for landslides or slope failure could be triggered by seismicity from the GCSZ or from intense and/or prolonged rainfall events. See Below 4.1.2.4 Slopes and Landslide Potential *Geology 4-46*
6. We recommend that: • Prior to construction, Mountain Valley should file with the Secretary, for review and approval by the Director of OEP, a revised *Landslide Mitigation Plan* which includes: a. an analysis of the potential landslide hazards at the GCSZ, Peters Mountain, Sinking Creek Mountain, and Brush Mountain based on the results of investigations conducted by Schultz and Southworth (1989), and further identified and discussed in USGS Bulletin 1839-E; See below *4-47 Geology*
7. The MVP would cross the Jefferson National Forest within the GCSZ. There is potential for an earthquake to occur during the decades of operation and maintenance of the MVP. See below 4.1.2.9 Jefferson National Forest Seismicity *Geology 4-52*
8. Recommendations 23 through 37 apply only to Mountain Valley and shall be addressed before construction is allowed to commence. *5-21 Conclusions And Recommendations* Prior to construction, Mountain Valley shall file with the Secretary, for review and approval by the Director of OEP, a revised *Landslide Mitigation Plan* which includes: a. an analysis of the potential landslide hazards at the GCSZ, Peters Mountain, Sinking Creek Mountain, and Brush Mountain based on the results of investigations conducted by Schultz and Southworth (1989), and further identified and discussed in USGS Bulletin 1839-E;

Seismicity *4-21 Geology*

Earthquakes, however, do occur in the eastern United States, primarily due to trailing edge tectonics and residual stress released from past mountain building events. The MVP pipeline would be in close proximity to the Giles County Seismic Zone (GCSZ), between Mps 165 to 230. The GCSZ is located in the western part of the Valley and Ridge province, south of the Appalachian bend near Roanoke, Virginia. The area is underlain by Early Cambrian to Late Mississippian bedrock of the east Appalachian basin which occur in linear folds cut by thrust faults (McDowell et al., 1989). Seismicity from the GCSZ is considered to occur due to the reactivation of a series of Late Proterozoic to Early Paleozoic compressional faults (Bollinger and Wheeler, 1988). The GCSZ is considered seismically active and is defined by Bollinger and Wheeler (1988) by 12 earthquakes that span four orders of magnitude and two decades of time 1959 through 1980. The largest earthquake known to originate from the GCSZ is a magnitude 5.8 (on the Richter scale) event that occurred on May 31, 1897. An event of magnitude 4.3 also occurred near Elgood West Virginia on November 20, 1969. In addition, numerous microearthquakes (magnitude 2 or less) have occurred in the area of the GCSZ.

Mountain Valley Project *4-24 Geology and 4-25 Geology*

There have been no documented occurrences of soil liquefaction from seismicity in the MVP area. Generally, soil liquefaction has not been observed during earthquakes with a magnitude less than 5.0. The potential for soil liquefaction in the areas north and south of Mps 161 to 230 can be ruled out due to the low potential for a significant seismic event. However, soil liquefaction and lateral spreading hazards do exist along the MVP in the general area of the GCSZ where peak ground acceleration of 0.14 g could occur. A PGA of 0.14 depending on site conditions could be equivalent to a magnitude 5.0 earthquake (D.G. Honegger Consulting, 2015a).

4.1.1.7 Jefferson National Forest *Geology 4-40*

The MVP would cross the Jefferson National Forest within the GCSZ. The GCSZ is a seismically active area known for small local seismic events and one historic quake that took place in 1897 before modern seismic monitoring equipment but was estimated to be magnitude 5.8 (Bollinger et al., 1988).

4.1.2.3 Seismicity and Potential for Soil Liquefaction Mountain Valley Project *Geology 4-44 and 4-45* The majority of the MVP is sited in an area with low probability of localized earth movements. However, in the area of the GCSZ, between about MPs 165 to 230, peak ground accelerations approach 14 percent of the force of g, and the potential for a magnitude 5.8 earthquake exists. Soil liquefaction could also result if a significant seismic event were to occur. The potential for soil liquefaction exists mainly in the area of the GCSZ between MPs 165 and 230. PGAs in this area are on the order of 0.14 g, and could produce an earthquake of magnitude MMI VI.

4.1.2.4 Slopes and Landslide Potential Mountain Valley Project *Geology 4-46*

Several steep slopes along Mountain Valley's proposed pipeline route have experienced landslide activity in the past. Additionally, there are areas along the pipeline route that are characterized by both steep slopes and red shale bedrock, which as discussed in section 4.1.1.5 are prone to landslides. As discussed above, construction and operation of Mountain Valley's proposed pipeline could result in unstable slopes including cut slope failures and fill slope failures. The potential for landslides or slope failure could be triggered by seismicity from the GCSZ or from intense and/or prolonged rainfall events. The USGS identified a clustering of landslides near the GCSZ suggesting that recent seismic shaking may have triggered these landslides, and that topographic effects on seismic shaking may have been amplified on mountain crests by a factor of 1.7 to 3.4 (Schultz and Southworth, 1989).

4-47 Geology

Our review of Mountain Valley's *Landslide Mitigation Plan,* along with stakeholder comments identified additional areas for landslide analysis and additional BMPs that would be effective in mitigating hazards from potential landslides. Therefore, we recommend that: • Prior to construction, Mountain Valley should file with the Secretary, for review and approval by the Director of OEP, a revised *Landslide Mitigation Plan* which includes: a. an analysis of the potential landslide hazards at the GCSZ, Peters Mountain, Sinking Creek Mountain, and Brush Mountain based on the results of investigations conducted by Schultz and Southworth (1989), and further identified and discussed in USGS Bulletin 1839-E;

4.1.2.9 Jefferson National Forest Seismicity *Geology 4-52*

The MVP would cross the Jefferson National Forest within the GCSZ. The GCSZ is a seismically active area known for small local seismic events and one historic quake that took place in 1897 before modern seismic monitoring equipment but was estimated to be magnitude 5.8 (Bollinger et al., 1988). There is potential for an earthquake to occur during the decades of operation and maintenance of the MVP.

Recommendations 23 through 37 apply only to Mountain Valley and shall be addressed before construction is allowed to commence. *5-21 Conclusions And Recommendations*

24. Prior to construction, Mountain Valley shall file with the Secretary, for review and approval by the Director of OEP, a revised *Landslide Mitigation Plan* which includes: a. an analysis of the potential landslide hazards at the GCSZ, Peters Mountain, Sinking Creek Mountain, and Brush Mountain based on the results of investigations conducted by Schultz and Southworth (1989), and further identified and discussed in USGS Bulletin 1839-E;

MVP should not be allowed to cross the GCSZ area due to multiple hazards listed above. A scoping comment paper was mailed to FERC on June 2, 2015 containing information about the St. Clair Fault. Page 7 (attached) and attachment #1 of this scoping comment paper included the following information. The St. Clair fault, which is the northern segment of a 600 km long fault system, strikes in a northeasterly fashion through Russell, Tazewell and Giles Counties in Virginia, Mercer and Monroe Counties in West Virginia and Alleghany County in Virginia (Figure 3) (Butts 1940 and Gustafson 1982). The St. Clair fault, which is located in the northern end of the southern Appalachians, has been traced from its northern terminus in the core of an anticline in Allegheny County, Va. southwestward to the Clinchport and related faults of southwestern Virginia and Tennessee (McDowell and Schultz, 1989).

The St. Clair Fault was not even mentioned in the DEIS. Following is a map that was included within the scoping paper mailed to FERC on June 2, 2015. (added to copy mailed to FERC); Please add the following map to the DEIS CP16-10-000 & CP16-13-000 and include researched data about the St. Clair Fault. Thank you.

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