

**Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000**

**Response to Post-Draft Environmental Impact Statement
Environmental Information Request #2 Issued March 20, 2017**

General Project Description

1. Provide the following revised plans that Mountain Valley indicated in February 2017 filings are being updated based on agency consultations:
 - a. Water Supply Contingency Plan;
 - b. Migratory Bird Conservation Plan;
 - c. Acid Forming Materials Identification and Mitigation Plan;
 - d. Annual Standards and Specifications for Virginia (in accordance with the 1992 Third Edition of the Virginia Erosion and Sediment Control Handbook);
 - e. Spill Prevention Controls and Countermeasures Plan; and
 - f. Invasive Plant Species Management Plan.

Response Submitted March 30, 2017:

- a. There is no document titled Water Supply Contingency Plan. However, Mountain Valley is working with Red Sulphur PSD to develop a contingency plan for their water supply. Mountain Valley will file a copy of the plan with the Commission, but a final plan is not expected until at least mid-2017.
- b. Mountain Valley is finalizing the revised Migratory Bird Conservation Plan and expects to file the plan with FERC in the second half of April 2017.
- c. Mountain Valley is finalizing the Acid Forming Materials Identification and Mitigation Plan and expects to submit it by April 7, 2017.
- d. Mountain Valley is finalizing the Annual Standards and Specifications for Virginia (in accordance with the 1992 Third Edition of the Virginia Erosion and Sediment Control Handbook) for submittal to the Virginia Department of Environmental Quality (VADEQ). Mountain Valley expects to have the finalized version in fall 2017. There are no updates at

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this time. Mountain Valley will provide the final version to the Commission upon approval by the VADEQ.

- e. Please see the attached Spill Prevention Controls and Countermeasures Plan for the State of West Virginia (Attachment DR5 General 1e-1) and the Commonwealth of Virginia (Attachment DR5 General 1e-2). These plans are in the Plan of Development for the Jefferson National Forest.
- f. Mountain Valley is currently finalizing the Invasive Plant Species Management Plan and expects to file the plan with FERC in the second half of April 2017.

Supplemental Response Submitted April 7, 2017:

- c. Mountain Valley expects to submit the Acid Forming Materials Identification and Mitigation Plan in the second half of April 2017.

In addition to the plans listed above, Mountain Valley has also updated the Contingency Plan for the Proposed Crossing of the Appalachian National Scenic Trail. This updated plan is included as Attachment DR5 General 1g.

Respondent: Ricky Myers
Position: Engineering Manager
Phone Number: 724-873-3640

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2. Provide updated and/or track change versions of the following draft environmental impact statement (EIS) appendices:
 - a. Appendix P – Summary of Pipeline Collocation with Existing Rights-of-Way;
 - b. Appendix Q – Roads and Railways Crossed;
 - c. Appendix R – Structures within 50 feet of the Construction Work Area;
 - d. Appendix S – Visual Simulations (including photo simulations and descriptive narrative text); and
 - e. Appendix T – Traffic Counts.

Response Submitted March 30, 2017:

- a. Mountain Valley has updated Appendix P as Attachment DR5 General 2a. A track changes version was not provided due to an overabundance of minor changes to milepost start and end points in the table.
- b. See Attachment DR5 General 2b.
- c. See Attachment DR5 General 2c.
- d. Mountain Valley expects to file a response by April 7, 2017.
- e. See Attachment DR5 General 2e. Due to the number of changes in the table it is not in redline format.

Mountain Valley confirms that DEIS Appendix O does not require updates. In addition, table 4.3.2-4 from the DEIS has been updated and is included as Attachment DR5 General 2f. The table represents all intakes in a 3-mile proximity (both upstream and downstream) of any Project workspace (pipeline ROW, access roads, or yards).

Supplemental Response Submitted April 7, 2017:

- d. Mountain Valley is currently updating visual simulations and preparing additional visual simulations in response to additional requests by the U.S.

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Forest Service. Mountain Valley expects to submit a complete revised and expanded set of visual simulations in the second half of April 2017.

Respondent: John Uhrin
Position: Construction Director
Phone Number: 724-873-3497

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5. Address the issues raised in the following letters filed with the FERC:
 - a. Accession number 20170310-5024 (Dr. Robert Jones and Dr. Ernst Kastning);
 - b. Accession number 20161123-5028 (Smith Mountain Lake Association);
 - c. Accession number 20170222-5062 (Appalachian Trail Conservancy [ATC]);
 - d. Accession number 20170223-5090 (Roanoke Appalachian Trail Club);
 - e. Accession number 20161222-5518 (Hodges);
 - f. Accession number 20161216-5060 (Number 9 regarding torque probe values);
 - g. Accession number 20170306-5054 (U.S. Forest Service [FS]);
 - h. Accession number 20161221-5087 (U.S. Environmental Protection Agency [EPA]); and
 - i. Accession number 20161222-5521, regarding black powder sludge.

Response Submitted March 30, 2017:

- a. The referenced letter includes the same central premise and general arguments raised in Mr. Kastning's July 2016 report, except that it is focused on the Mount Tabor area. In December 2016, Mountain Valley provided a detailed, fact-based response to Mr. Kastning's July 2016 report. Mountain Valley's December 2016 response applies to the referenced letter as well. In addition, Mountain Valley has filed numerous detailed analyses and responses to federal and state agencies and landowners on the topics of karst terrain (including electrical resistivity surveys in the Mount Tabor area), hydrogeology, foundation and slope analyses, water resources, and seismic hazards analysis. In addition, Mountain Valley has developed the Karst Hazards Assessment, Karst Mitigation Plan, Seismic Hazards Assessment, Erosion and Sediment Control Plan, Spill Prevention, Containment and Countermeasures Plan,

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and the Water Supply Identification and Testing Plan. These Project-specific plans will be used to address concerns similar to those raised in the referenced letter.

- b. In regards to the Smith Mountain Lake Association comments regarding Mountain Valley's consideration of potential impacts from aquatic invasive species, Mountain Valley is currently working with the USACE and state resource agencies to obtain necessary waterbody crossing permits. Mountain Valley will adhere to FERC procedures, as well as conditions within the project-specific waterbody crossing authorizations. Mountain Valley will incorporate measures identified by permitting agencies to control non-native invasive species into the project mitigation plan, which is currently being finalized. In addition, several comments included inaccuracies, which are clarified below:

Page 9; Bullet 1.

Comment: The proposed MVP route crosses the Monongahela River close to its known points of infestation with zebra mussels thereby potentially contaminating any and all construction and related equipment used to construct and test the pipeline. This type of equipment, can, and has been shown in many locations, to be a vector (source of transmittal) for additional infestations of zebra mussels (*Dreissena polymorpha*).

Response: MVP does not cross the Monongahela River.

Page 9; Bullet 2.

Comment: The MVP intends to draw water from the Kanawha River, another river with known infestations of zebra mussels and employ that water for pressure testing of the pipeline, thereby potentially contaminating any and all construction and related equipment used to construct and test the pipeline. This type of equipment can, and has been shown in many locations, to be a vector (source of transmittal) for additional infestations of zebra mussels.

Response: MVP is not proposing to withdrawal water for hydrostatic testing from the Kanawha River. Sources waters for hydrostatic testing includes municipal water sources with the exception of two surface waterbodies in West Virginia (i.e., Greenbrier River and Meadow River).

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Page 9; Bullet 3.

Comment: The proximity of the proposed MVP route to known infestations of zebra mussels including within 30 miles of known infestations of the Buckhannon, Monongahela and Ohio Rivers, within 40 miles of known infestations of the Kanawha River is a major risk to the spread of AIS. The movement of MVP equipment, supplier and service equipment and even workers' private transportation and clothing can serve as vectors (sources) of zebra mussel contamination of additional streams, rivers and lakes.

Response: Aquatic invasive species such as zebra mussels (adult and veligers) are not airborne organisms and therefore not transmitted in such a manner. Adult zebra mussels are sessile animals and attach to various media (e.g., rocks, ropes, boat hulls, barges, intake facilities, dam walls, etc.) using byssal threads. Transmission of zebra mussels must involve the transfer of live adults or contaminated water. MVP does not plan to use equipment that comes in contact with contaminated waters or transport "contaminated" waters such as the Ohio, Monongahela, Buckhannon, or Kanawha rivers. MVP equipment, vehicles, and personnel are not likely vectors for AIS by simply traveling through 'contaminated areas' that are more than 30 miles away. By that rationale, vehicles (private and commercial) passing through 'contaminated areas' on roads and highways could be vectors for the transmission of AIS and potentially subject to inspections. The transmission of zebra mussels on equipment and personnel traveling through a 'contaminated area' that is 30+ miles away from the Project may not be plausible.

Page 9; Bullet 4.

Comment: The plan of the proposed MVP to return potentially infested pressure-test water back to the environment poses a major risk for the spread of AIS. Both adult mussels and their early life stage (referred to as veligers), can remain viable even with significant concentrations of 'cleaning and decontamination' agents. The concentration and holding (treatment) time for such decontamination must meet the specific requirements associated with zebra mussel and veliger decontamination.

Response: The comments regarding the viability of zebra mussels after exposure to "...significant concentrations of 'cleaning and decontamination' agents" are most relevant to adult zebra mussels. Adults

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are relatively more resilient to various treatment methods than larval veligers because adults can close valves (shells) during adverse environmental conditions and re-open once environmental conditions improve. Veligers are microscopic and planktonic. Numerous factors can affect the overall mortality rate of veligers including water quality conditions (Hincks and Mackie 1997, Matthews and McMahon 1999, Cohen 2001), desiccation, and turbulence and shear stressors (Horvath and Lamberti 1999, Rehmann et al. 2003). For example, air bubbles in water can cause enough turbulence and shear stress to cause mortality of veligers. In contrast, zebra mussel veligers are less resilient than adults.

Literature Cited

- Hincks, S.S. and G. L. Mackie. 1997. Effects of pH, calcium, alkalinity, hardness, and chlorophyll on the survival, growth, and reproductive success of zebra mussel (*Dreissena polymorpha*) in Ontario lakes Can. J. Fish. Aquat. Sci. 54: 2049–2057.
- Horvath, T.G. and G.A. Lamberti. 1999. Mortality of Zebra Mussel, *Dreissena polymorpha* Veligers during Downstream Transport. Freshwater Biology. 42:69-76.
- Matthews M. A. and R.F. McMahon. 1999. Effects of temperature and temperature acclimation on survival of zebra mussels (*Dreissena polymorpha*) and Asian clams (*Corbicula fluminea*) under extreme hypoxia. J. Moll. Stud., 65: 317–325
- Rehmann, C.R., J.A. Stoeckel, and D.W. Schneider. 2003. Effect of turbulence on the mortality of zebra mussel veligers. Can. J. Zool. 81: 1063–1069.

- c. Mountain Valley expects to submit a response by April 7, 2017.
- d. Mountain Valley expects to submit a response by April 7, 2017.
- e. Mountain Valley previously responded to a data request from the Commission with respect to a November 2015 submission by Mr. Hodges. See the response to Resource Report 6, Question 4, submitted April 21, 2016. Mr. Hodges's submittal on December 22, 2016 is largely identical to his November 2015 submittal. Mountain Valley supplements its prior response to Mr. Hodges with the following information.

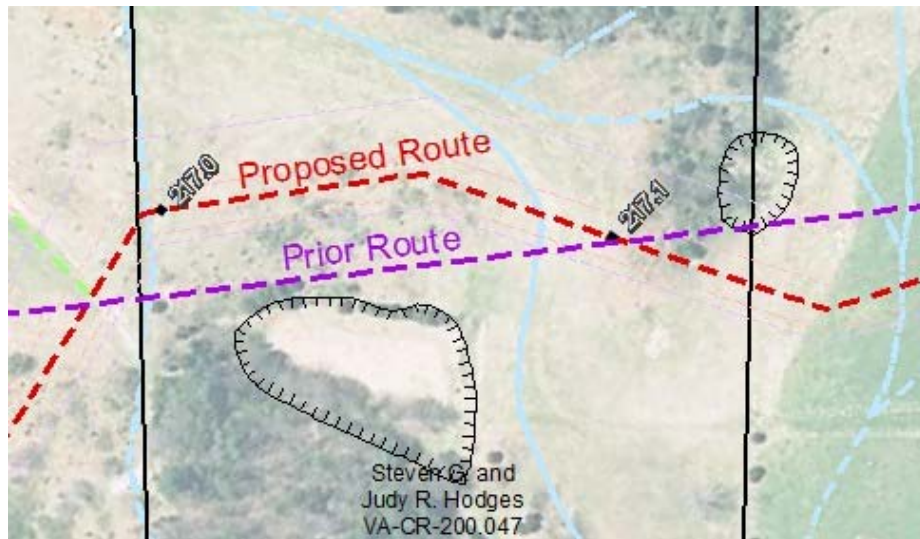
Alignment Adjustments:

Based on field visit observations by the Mountain Valley Karst Specialist Team, the Project alignment was adjusted on the Hodges property in

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October 2016 to increase the distance between the alignment and the two sinkholes Mr. Hodges identified in his December 2016 letter. This is demonstrated in the snippet below from the relevant alignment sheet. This alignment adjustment provides additional separation buffer from the sinkholes.



The sinkhole referenced by Mr. Hodges at MP 217.13 is a small sink with fieldstone-filled bottom. This configuration of sinkhole is commonly observed throughout the region. Observations and mapping by the Mountain Valley Karst Specialist Team (KST) (as part of the Karst Hazards Assessment) indicated the contributing watershed to this sinkhole is approximately 5.2 acres. Since there was no ponded water observed in the sinkhole during the September 2, 2015 KST field observation site visit for the Karst Hazards Assessment (on which Mr. Hodges accompanied the KST), it is clear that this sinkhole ultimately drains precipitation and overland flow into the subsurface during precipitation events. This is a normal and fully expected process in karst terrain, and the observation presented by Mr. Hodges in his December 2016 letter merely reflects reasonably expected conditions in karst terrain. Mountain Valley, aware of karst processes, has prepared a Karst Mitigation Plan and an Erosion and Sediment Control Plan with karst-specific BMPs in order to avoid or mitigate sinkholes and other karst features and to prevent the uncontrolled release of surface water from the limit of disturbance during construction. These measures will protect the karst features and the underlying karst hydrogeologic system.

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- f. The referenced discussion of torque probe values does not indicate the relevancy to pipeline construction and confuses two engineering concepts. Contrary to the referenced letter, torque probe values are not used to determine soil classifications or soil bearing capacities. Torque probe values (measured in distance unit multiplied by force – ex: inch-pounds) are a measure of soil torque capacity. Measurements are performed using a torque probe tool. The resultant values are used for design of anchoring systems. For example, torque probe values are used to design anchoring systems for storm protection of mobile homes. This concept is not related to soil bearing capacity.
- g. Mountain Valley expects to submit a response by April 7, 2017.
- h. The referenced filing is identical to the EPA’s filing in Accession No. 20161229-0033. Mountain Valley responded to Accession No. 20161229-0033 on February 23, 2017. See Attachment DR4 General 3d submitted on that date.
- i. Black powder is not a concern for the Mountain Valley Pipeline. Black powder is a solid pipeline contaminant that is known to occur in both gas and liquid pipelines worldwide. It is formed by chemical and/or biological reactions most often associated with either gathering systems that transport unprocessed natural gas or natural gas storage systems. It is associated with pipeline systems containing higher moisture contents. By contrast, the Mountain Valley Pipeline system will transport gas with low moisture content.

Mountain Valley has incorporated multiple layers of defense against the formation of this contaminant throughout the design, construction, and operation project phases:

- The first, and most important, is the quality of the natural gas product. Mountain Valley has developed a gas quality specification in its Tariff. This specification controls the quality of natural gas received and delivered by the system. The specifications include limits on the moisture content of the gas and other corrosion-inducing components. Mountain Valley will utilize instrumentation at receipt and delivery points to determine the quality of the gas. By controlling the quality of the gas, Mountain Valley will be able to

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prevent the possibility of formation of contaminants like black powder.

- The design of Mountain Valley Pipeline includes multiple layers of product quality assurance. For example, at multiple locations along the pipeline system, the gas passes through a series of filtration vessels specifically designed to remove any contaminants.
- As part of the construction procedures, the entire pipeline will be cleaned and dried before any natural gas is permitted to enter the system.
- Finally, throughout its operating life the pipeline will be periodically swept with internal devices known as pigs and inspected with internal robotic devices known as smart pigs to identify corrosion and limit the possibility of black powder formation.

Supplemental Response Submitted April 7, 2017:

- c. See Mountain Valley's March 30, 2017 response to Land Use, Question 12, regarding the ANST centerline. With regard to visual impacts and KOPs, Mountain Valley is preparing a revised VIA for the ANST. Mountain Valley expects to submit the revised VIA in the second half of April 2017. Below is a recent timeline of Mountain Valley's attempts to meet, and meetings, with relevant parties:

- On March 1, 2017, Mountain Valley scheduled a conference call with NPS, ATC, USFS, BLM, and RATC for March 9, 2017. On March 7, 2017, NPS and ATC declined to participate in that conference call.
- On March 17, 2017, Mountain Valley requested a joint in-person meeting with NPS and ATC to be held on April 5 or 6 in Roanoke, VA, as suggested by NPS and ATC. On March 28, 2017, USFS and NPS declined to participate in the proposed meeting. USFS and NPS suggested a meeting in late-April or early-May 2017. As

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suggested, Mountain Valley is currently in the process of coordinating a meeting with NPS, ATC, BLM, USFS, and RATC.

- On April 6, 2017, Mountain Valley met with the ATC to discuss ANST issues.
- d. With regard to visual impacts, KOPs, and methodologies, Mountain Valley is preparing a revised VIA for the ANST that addresses these issues. Mountain Valley expects to submit the revised VIA in the second half of April 2017. See also the response to Land Use, Question 13, regarding methodologies.
- g. This letter will be addressed in the revised VIA, which Mountain Valley expects to file in the second half of April 2017.

Respondent: Ricky Myers
Position: Engineering Manager
Phone Number: 724-873-3640

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Water Resources

8. Attachment DR4 General 3c (filed February 2017) stated that: “Mountain Valley will conduct further desktop reviews to identify private ponds located within 0.25-mile downslope of the limit of disturbance.” Clarify if these ponds have been previously identified and data about them filed with the FERC.

Response Submitted March 30, 2017:

Ponds located within the survey corridor have been identified and provided to FERC. Mountain Valley will perform desktop reviews of available mapping to identify ponds within 0.25 mile downslope of the limit of disturbance. Mountain Valley expects to submit this data by April 7, 2017.

Supplemental Response Submitted April 7, 2017:

A list that identifies the result of the desktop survey for ponds located within 0.25 mile downslope of the limit of disturbance is included as Attachment DR5 Water Resources 8.

Respondent: Ricky Myers
Position: Engineering Manager
Phone Number: 724-873-3640

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Cultural Resources

5. File copies of the respective reviews by State Historic Preservation Offices (SHPO) of the following cultural resources reports:
 - i. Espino et al. June 2016, *Mountain Valley Pipeline Project, Phase II Archaeological Investigations, Sites 46DO94, 46HS100, 46HS101, 46HS104, 46HS109, 46HS125, and 46LE77, Doddridge, Harrison, and Lewis Counties, West Virginia* (Tetra Tech, Pittsburgh) filed June 16, 2016;
 - j. Clement et al. February 2017. *Addendum 2 to Volume IV, Phase II Archaeological Investigations at Sites 46SU717, 46SU078, 46SU724, 46ME285, 46ME307, 46ME281, 46ME283, and 46ME284, Summers and Monroe Counties, West Virginia* (Search, Boston) filed February 2, 2017;
 - k. Clement et al. February 2017. *Mountain Valley Project, Phase II Investigations, Braxton County, West Virginia* (Search, Boston) filed February 17, 2017;
 - l. Barse et al. February 2017. *Mountain Valley Pipeline Project, Phase II Archaeological Investigations, Sites 46NI846, 46NI847, 46GB493, 46GB498, 46GB499, 46GB500, 46GB503, 46GB504, 46GB533, and 46NI827, Nicholas and Greenbrier Counties, West Virginia* (Tetra Tech, Pittsburgh) filed February 17, 2017;
 - m. Dye, February 2017. *Criteria of Effects Report, Mountain Valley Pipeline Project, Wetzel, Harrison, Doddridge, Lewis, Braxton, Webster, Nicholas, Greenbrier, Fayette, Summers, and Monroe Counties, West Virginia* (Tetra Tech, Pittsburgh) filed February 17, 2017;
 - n. Reeve et al. November 2016. *Mountain Valley Pipeline Project, Phase IB Archaeological Survey Report Addendum 2, and Phase II Archaeological Evaluation, Site 44PY0442, Pittsylvania County, Virginia* (Tetra Tech, Parsippany, NJ) filed December 22, 2016;
 - o. Reeve et al. December 2016. *Mountain Valley Pipeline Project, Phase IB Archaeological Survey Report Addendum 1, and Phase II Archaeological Evaluations, Sites 44CG0253, 44CG0254, 44GC0255, Craig County, Virginia* (Tetra Tech, Parsippany, NJ) filed December 22, 2016;

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- p. Reeve et al. December 2016. *Mountain Valley Pipeline Project, Phase IB Archaeological Survey Report Addendum 1, Franklin County, Virginia* (Tetra Tech, Parsippany, NJ) filed December 22, 2016;
- q. Reeve et al. January 2017. *Mountain Valley Pipeline Project, Phase IB Archaeological Survey Report, Addendum 1, Roanoke and Montgomery Counties, Virginia* (Tetra Tech, Parsippany, NJ) filed February 17, 2017;
- r. Reeve et al. January 2017. *Mountain Valley Pipeline Project, Phase IB Addendum 1 Archaeological Survey, and Phase II Evaluations of Sites 44GS0227, 44GS0229, 44GS0230, 44GS0231, and 44GS0236, Giles County, Virginia* (Tetra Tech, Parsippany, NJ) filed February 17, 2017;
- s. Reeve et al. February 2017. *Mountain Valley Pipeline Project, Phase II Archaeological Evaluations of 18 Sites, Franklin County, Virginia* (Tetra Tech, Parsippany, NJ) filed February 17, 2017; and
- t. Jacoby and Marshall, February 2017. *Mountain Valley Project, Avoidance Plans for 19 Archaeological Sites and Rock Overhands, Craig, Franklin, Giles, Montgomery, and Pittsylvania Counties, Virginia* (Tetra Tech, Parsippany, NJ) filed February 17, 2017.

Response Submitted March 30, 2017:

Table 1 provides the dates of SHPO comments received and the dates that SHPO comments were filed with FERC. The letter for row 2 is included as Attachment DR5 Cultural 1a.

Although not specifically requested in the question, Mountain Valley received comments from the Virginia SHPO on March 22, 2017 regarding the *Mountain Valley Pipeline Letter Report, Results of Criteria of Effects Assessment Tasks 2 and 3-Viewshed and Viewpoint Analysis*. The comments are listed in Table 1 as item (13) and filed as Attachment DR5 Cultural 1b.

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Table 1 SHPO Comments Received and Filed with FERC		
Report Title	SHPO Comments Received	SHPO Comments Filed with FERC
1. Espino et al. June 2016, Mountain Valley Pipeline Project, Phase II Archaeological Investigations, Sites 46DO94, 46HS100, 46HS101, 46HS104, 46HS109, 46HS125, and 46LE77, Doddridge, Harrison, and Lewis Counties, West Virginia (Tetra Tech, Pittsburgh) filed June 16, 2016	7/14/2016	7/18/2016
2. Clement et al. February 2017. Addendum 2 to Volume IV, Phase II Archaeological Investigations at Sites 46SU717, 46SU078, 46SU724, 46ME285, 46ME307, 46ME281, 46ME283, and 46ME284, Summers and Monroe Counties, West Virginia (Search, Boston) filed February 2, 2017	3/13/2017	3/30/2017
3. Clement et al. February 2017. Mountain Valley Project, Phase II Investigations, Braxton County, West Virginia (Search, Boston) filed February 17, 2017	No Comments to date	Comments will be filed when received
4. Barse et al. February 2017. Mountain Valley Pipeline Project, Phase II Archaeological Investigations, Sites 46NI846, 46NI847, 46GB493, 46GB498, 46GB499, 46GB500, 46GB503, 46GB504, 46GB533, and 46NI827, Nicholas and Greenbrier Counties, West Virginia (Tetra Tech, Pittsburgh) filed February 17, 2017	No Comments to date	Comments will be filed when received
5. Dye, February 2017. Criteria of Effects Report, Mountain Valley Pipeline Project, Wetzel, Harrison, Doddridge, Lewis, Braxton, Webster, Nicholas, Greenbrier, Fayette, Summers, and Monroe Counties, West Virginia (Tetra Tech, Pittsburgh) filed February 17, 2017	No Comments to date	Comments will be filed when received
6. Reeve et al. November 2016. Mountain Valley Pipeline Project, Phase IB Archaeological Survey Report Addendum 2, and Phase II Archaeological Evaluation, Site 44PY0442, Pittsylvania County, Virginia (Tetra Tech, Parsippany, NJ) filed December 22, 2016	No Comments to date	Comments will be filed when received
7. Reeve et al. December 2016. Mountain Valley Pipeline Project, Phase IB Archaeological Survey Report Addendum 1, and Phase II Archaeological Evaluations, Sites 44CG0253, 44CG0254, 44GC0255, Craig County, Virginia (Tetra Tech, Parsippany, NJ) filed December 22, 2016	No Comments to date	Comments will be filed when received
8. Reeve et al. December 2016. Mountain Valley Pipeline Project, Phase IB Archaeological Survey Report Addendum 1, Franklin County, Virginia (Tetra Tech, Parsippany, NJ) filed December 22, 2016	No Comments to date	Comments will be filed when received
9. Reeve et al. January 2017. Mountain Valley Pipeline Project, Phase IB Archaeological Survey Report, Addendum 1, Roanoke and Montgomery Counties, Virginia (Tetra Tech, Parsippany, NJ) filed February 17, 2017	No Comments to date	Comments will be filed when received
10. Reeve et al. January 2017. Mountain Valley Pipeline Project, Phase IB Addendum 1 Archaeological Survey, and Phase II Evaluations of Sites 44GS0227, 44GS0229, 44GS0230, 44GS0231, and 44GS0236, Giles County, Virginia (Tetra Tech, Parsippany, NJ) filed February 17, 2017	No Comments to date	Comments will be filed when received
11. Reeve et al. February 2017. Mountain Valley Pipeline Project, Phase II Archaeological Evaluations of 18 Sites, Franklin County, Virginia (Tetra Tech, Parsippany, NJ) filed February 17, 2017	No Comments to date	Comments will be filed when received
12. Jacoby and Marshall, February 2017. Mountain Valley Project, Avoidance Plans for 19 Archaeological Sites and Rock Overhands, Craig, Franklin, Giles, Montgomery, and Pittsylvania Counties, Virginia (Tetra Tech, Parsippany, NJ) filed February 17, 2017.	No Comments to date	Comments will be filed when received

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Table 1 SHPO Comments Received and Filed with FERC		
Report Title	SHPO Comments Received	SHPO Comments Filed with FERC
13. Mountain Valley Pipeline Letter Report, Results of Criteria of Effects Assessment Tasks 2 and 3-Viewshed and Viewpoint Analysis	3/22/2017	3/30/2017

Supplemental Response Submitted April 7, 2017:

- c. Concurrence regarding Clement et al. February 2017. *Mountain Valley Project, Phase II Investigations, Braxton County, West Virginia* (Search, Boston) filed February 17, 2017 was received from the West Virginia Division of Culture and History on March 22, 2017. A copy of that concurrence letter is included as Attachment DR5 Cultural 1c.

In addition, Mountain Valley has received acceptance of the following reports:

- *Mountain Valley Pipeline Project Phase I Archaeological Investigation, MVP Alternative 3, in Blue Ridge Parkway, Roanoke and Franklin Counties, Virginia;* and
- *Mountain Valley Pipeline Project Phase II Archaeological Evaluations of Sites BLRI 00231 (44RN0383) and BLRI 00233 (44FR0402), in Blue Ridge Parkway, Roanoke and Franklin Counties, Virginia* from the National Park Service.

Copies of these letters are included as Attachment DR5 Cultural 1d.

Respondent: Megan Neylon
Position: Supervisor - Environmental Permitting
Phone Number: 724-873-3645

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Land Use, Transportation, Recreation, and Visual Resources

13. Address the following comments regarding the JNF Visual Impact Assessment:
- a. Page 7: The bulleted environmental factors do not include all of those contained in the Bureau of Land Management (BLM) Visual Resource Contrast Rating Manual (missing are Season of Use, Light Conditions, Recovery Time, Spatial Relationships, Atmospheric Conditions, and Motion). While some of these factors may not be relevant (like Motion), Recovery Time and Season of Use would appear to be relevant. Provide clarification regarding these factors;
 - b. Page 8, Section 4: This section describes temporary, long-term, and short-term impacts, but the only impacts addressed seem to be temporary (“The simulations demonstrate what the Project right-of-way would look like post construction but before revegetation.”). Provide a discussion of revegetation, in addition to the mitigation measures that are listed in Section 5. Also discuss the types of maintenance activities that would occur and their frequency, along with their impacts;
 - c. Page 16, 1st full paragraph: State definitively whether the right-of-way would be feathered to soften the edges;
 - d. Page 17, first paragraph: This states that there will be no visible notch in the vegetation at the top of Peters Mountain. Appendix B, Figure 7, however, shows what appears to be a visible notch. Provide clarification;
 - e. Page 18, 3rd full paragraph: The text says that: “The ROW is not visible in the simulation due to screening terrain and vegetation as well as the distance to the ROW. The simulation demonstrates that the ROW will be effectively screened with the vegetation; thus, contrast levels are not perceptible.” However, Appendix B, Figure 9 says: “The red arrow indicates where the proposed pipeline would be visible crossing over Peters Mountain.” Provide clarification;
 - f. Page 26, first full bullet, last line: The text says there would be no visual impact, but Figure 19 in Appendix B says that modifications would be apparent. Provide clarification;

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- g. Page 26, 2nd full bullet: The text says there would be low visual impacts to the ANST, but Figure 20 in Appendix B says that modifications would be apparent. Explain why this would be a low visual impact;
- h. Page 26, 3rd full bullet: The text says there would be no visual impact, but Figure 21 in Appendix B says that modifications would be apparent. Provide clarification;
- i. Site photographs should be taken which best represent the human visual perception. Standards include lens was set at 31 mm to compensate for crop factor (31 mm lenses setting X 1.6 crop factor = 49.6 mm output view); thereby creating a 50-mm equivalent focal length. The 50-mm equivalent focal length produces a 38.6° horizontal field of view which best represents the human visual perception (HFOV) [National Research Council. 2007 Environmental Impacts of Wind-energy Projects. Board on Environmental Studies and Toxicology, Division on Earth and Life Sciences. National Academies Press, Washington, D.C. 376 pp.] Photo simulations presented in the JNF report are not at this standard. They are panoramic and cropped which inhibits HFOV. Explain the apparent deviation from the standard and describe any corrective actions that Mountain Valley intends to apply.
- j. Simulation PT-02 shows no change even though the pipeline would cross. Clarify this apparent discrepancy; and
- k. Many of the simulations were created using photos that were taken when weather conditions were not conducive to the analysis. Numerous KOP locations (KOP 115, KOP 113, KOP 114, KOP 103, KOP PR-1, KOP PR-2, KOP PR-3, KOP PR-4, KOP PR-5, and KOP PR-6) were clouded by fog and ground levels were not visible. Provide updated photographs for these locations that are taken on clear days.

Response Submitted March 30, 2017:

Mountain Valley expects to file a response by April 7, 2017.

Supplemental Response Submitted April 7, 2017:

- a. Light conditions were included in the version of the Jefferson National Forest Visual Impact Analysis (VIA) previously reviewed by the USFS. Mountain Valley will revise the VIA text to include recovery time, season

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of use, spatial relationships, and atmospheric conditions. Mountain Valley expects to file the revised VIA in the second half of April 2017.

- b. The VIA will be revised to include the additional requested discussion. Mountain Valley expects to file the revised VIA in the second half of April 2017.
- c. The requested text will be clarified to definitively state that Mountain Valley proposes to feather the portion of right-of-way visible from key observation point (KOP)-OID-113. Mountain Valley expects to file the revised VIA in the second half of April 2017.
- d. The simulation included in Appendix B, Figure 7 showed the previously proposed crossing configuration with a buffer of 100 feet on either side of the Appalachian National Scenic Trail (ANST) crossing. The current proposed configuration includes a buffer of 300 feet on either side of the ANST crossing. The analysis and text in the VIA were based on the current proposed 300-foot buffer, which will not result in a visible notch in Peters Mountain from KOP 125. Appendix B, Figure 7 of the VIA will be revised to include an updated simulation showing the 300-foot buffer, with leaf-off conditions, that will be consistent with the text and analysis. Mountain Valley expects to file the revised VIA in the second half of April 2017.
- e. The note in question on Appendix B, Figure 9 should read: “The red arrow indicates the location of the pipeline crossing over Peters Mountain.” The note will be revised. Also, a new photographic simulation will be prepared for Appendix B, Figure 9 that includes clearer viewing conditions. Mountain Valley expects to file the revised VIA in the second half of April 2017.
- f. The subject text will be revised to clarify that gravel added to Pocahontas Road is apparent in the post-construction visual simulation, but that addition of gravel to the existing road will not be a visual impact on ANST users. Mountain Valley expects to file the revised VIA in the second half of April 2017.
- g. The subject text will be revised to clarify that gravel added to Pocahontas Road is apparent in the post-construction visual simulation, but that addition of gravel to the existing road will not be a visual impact on ANST

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users. Mountain Valley expects to file the revised VIA in the second half of April 2017.

- h. The subject text will be revised to clarify that gravel added to Pocahontas Road is apparent in the post-construction visual simulation, but that addition of gravel to the existing road will not be a visual impact on ANST users. Mountain Valley expects to file the revised VIA in the second half of April 2017.
- i. The methodology used to prepare Mountain Valley's photo simulations is consistent with the standard discussed in the comment. All photography was shot using a 50-mm lens, which best simulates the human eye, as well as avoids distortion and ensures spatial accuracy. The camera used for these simulations is set up to take 50-mm (52-mm to be exact) aspect photos. Photos were then stitched together to make a panoramic image. No cropping was performed, and no wide-angle lenses were used. The photography and simulation process followed the accepted industry standard as discussed in Technical Bulletin #12 – 001: Visual Impact Assessment Methodology (May 10, 2012), prepared by Richard C. Smardon, Ph.D., Professor of Environmental Studies, SUNY College of Environmental Science and Forestry, who is a national expert in visual analysis.

Mountain Valley also references guidance from Stephen R. J. Sheppard's *Visual Simulation; A User's Guide for Architects, Engineers, and Planners*, which states (page 67):

In any given view, the field of view – the amount of scenery that is included in the simulation – is important. In real views, our sight covers almost 180 degrees from side to side, including peripheral vision, but we tend to focus on objects within the central 50-degree range. In a simulation, the frame or edge of the picture (usually rectangular) limits the breadth and height of the scene that is shown. Given a particular viewpoint and direction of view, a simulation may show a wider or narrower view than we would see on-site.

The stitching of 50-mm photography not only accounts for the central 50-degree range, but also takes the peripheral views into account. Stitching 50-

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mm photos together, rather than using a wide-angle lens, allows for the creation of the wider view without adding distortion.

Mountain Valley notes that the study and standards cited in this comment (National Research Council (NRC)) also recognize the importance of considering panoramic view when conducting visual analysis, provided the view is not distorted by use of a wide-angle lens. The NRC study states:

Photographic simulations generally show only a narrow window of a particular view (wide angle lenses result in inaccurate perspectives). In understanding visual impacts it is useful to understand the broader context of the view. Whether the broader panorama will contain turbines as well, or whether it will remain undeveloped, will be an equally important part of the analysis.

Mountain Valley's photo simulations are prepared using a methodology that allows for a panoramic view to consider the broad context of each view, but without distortion of perspective.

- j. KOP PT-02 is not located at the crossing of the ANST, but is at the border of Peters Mountain Wilderness about 0.4 mile east of the ANST pipeline crossing. The text and simulation PT-02 (Appendix B, Figure 8) accurately reflect that from KOP PT-02 the right-of-way will be entirely screened by terrain and vegetation and will not be visible.

- k. Mountain Valley is preparing revised simulations based on additional photographs and expects to file the revised simulations with FERC in the second half of April 2017.

Respondent: Ricky Myers
Position: Engineering Manager
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Land Use, Transportation, Recreation, and Visual Resources

14. Address the following issues, noted in the In the February 2017 filing of the Blue Ridge Parkway Visual Impact Analysis:
- a. Simulations for KOPs 44 and 65 both state that the project would be visible, however, the pipeline route is not readily discernable in the photos. Provide updated simulations that point out the pipeline route or provide clearer photos that make the changes in the post construction views more recognizable;
 - b. Visual simulations for KOPs 52, 53, 56, 57, 58, 59, 60, 62, and 64 outline the pipeline right-of-way, but do not illustrate views with vegetation removed. Provide updated simulations that show tree clearing impacts and other disturbances;
 - c. Page 1, 3rd paragraph, the text stated that: “The proposed location is the only feasible location to cross the BLRI within relatively flat, non-forested, open land, thereby minimizing tree clearing and other construction disturbance on or near the BLRI.” However, Page 14 indicates that Alternative 3 is the preferred alternative and would avoid clearing mature trees in a certain area, among other reasons. Clarify this apparent discrepancy;
 - d. Page 14, 1st full paragraph, explain why future visibility would be higher once surrounding vegetation was reestablished and why it would not be lower;
 - e. Page 16, bullets, clarify when “the Project” is mentioned, whether this is applicable to Alternative 3 or Mountain Valley’s Proposed Route;
 - f. Site photographs should be taken which best represent the human visual perception. Standards include lens was set at 31 mm to compensate for crop factor (31 mm lenses setting X 1.6 crop factor = 49.6 mm output view); thereby creating a 50-mm equivalent focal length. The 50-mm equivalent focal length produces a 38.6° horizontal field of view which best represents the human visual perception (HFOV) [National Research Council. 2007 Environmental Impacts of Wind-energy Projects. Board on Environmental Studies and Toxicology, Division on Earth and Life Sciences. National Academies Press, Washington, D.C. 376 pp.] Photo simulations presented

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in BRP report are not at this standard. They are panoramic and cropped which inhibits HFOV. Not all represent the human visual perspective. Explain the apparent deviation from the standard and describe any corrective actions that Mountain Valley intends to apply.

- i. KOP 52 – the simulated permanent ROW floats in the air. No actual tree clearing or right-of-way is simulated. Clarify this apparent discrepancy;
- ii. KOPs 53-58 – the simulated permanent ROW is not a simulation. An outline of where the potential ROW would be is drawn, but no simulation showing any disturbance, tree removal, or post construction mitigation is shown. Clarify these apparent discrepancies;
- iii. KOPs 59-64 - the simulated permanent right-of-way floats in the air. No actual tree clearing or right-of-way is simulated. Clarify these apparent discrepancies.

Response Submitted March 30, 2017:

Mountain Valley expects to file a response by April 7, 2017.

Supplemental Response Submitted April 7, 2017:

- a. Arrows have been added to simulations for KOPs 44 and 65 to show the location of the pipeline right-of-way. The simulations will be included in the revised VIA, which Mountain Valley expects to file in the second half of April 2017. The simulations accurately reflect that, although the pipeline right-of-way may be visible from these KOPs, it would not be readily discernable. The photography used for the simulations was shot with a 12.3-megapixel resolution on a clear sunny day, so the images are as clear as the human eye would see.
- b. Simulations for KOPs 52, 53, 56, 57, 58, 59, 60, 62, and 64 will be updated as requested. Mountain Valley expects to file the revised VIA in the second half of April 2017.
- c. The text in the VIA detailing the crossing location will be clarified to state that while most alternative crossing locations would require the removal of

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vegetation, Alternative 3 would require the least amount of mature-vegetation removal. Mountain Valley expects to file the revised VIA in the second half of April 2017.

- d. The referenced text describes where the pipeline right-of-way crosses a recently clear-cut forested area, and it is assumed this clear-cut area will revegetate to a forest condition over time. Following construction, the pipeline right-of-way will be nearly indistinguishable where it crosses this clear-cut area, but over time, as surrounding forest regenerates, the maintained pipeline right-of-way across this area may be distinguishable from some viewpoints. However, regenerating forest vegetation would also screen the right-of-way from some viewpoints. The VIA will be revised to clarify. Mountain Valley expects to file the revised VIA in the second half of April 2017.
- e. The text in the VIA will be clarified as requested. Mountain Valley expects to file the revised VIA in the second half of April 2017.
- f. Please see response to Land Use, Question 13i.
 - i. Please see response to sub-part (b) above.
 - ii. Please see response to sub-part (b) above.
 - iii. Please see response to sub-part (b) above.

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