

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:

OEP/DG2E/G3

Mountain Valley Pipeline LLC

PF15-3-000

§ 375.308(z)

August 11, 2015
Paul Diehl, Senior Counsel
Mountain Valley Pipeline LLC
625 Liberty Ave., Suite 1700
Pittsburgh, PA 15222

Re: Comments on Draft Environmental Resource Reports

Dear Mr. Diehl:

The enclosure contains the comments of the staff of the Federal Energy Regulatory Commission (FERC or Commission) and cooperating agencies on Mountain Valley Pipeline LLC's (Mountain Valley) first draft environmental resource reports (RR) 2 through 12, and second draft RRs 1 and 10 for the Mountain Valley Pipeline Project (Project) in West Virginia and Virginia. The comments ask for clarifications of discrepancies and identify missing information that we believe is necessary to begin substantive preparation of an environmental impact statement for the Project. Where there are information overlaps, you may address the comments of the cooperating agencies when answering the FERC staff questions. You should address our comments in your next set of RRs. To facilitate review of the revised RRs, Mountain Valley should include a matrix that provides a brief summary response and identifies the specific locations (i.e., section and page number) in the revised RRs where the information requested in these comments may be found.

When filing documents and maps, be sure to prepare separate volumes, as outlined on the Commission's website at <http://www.ferc.gov/help/filing-guide/file-ceii/ceii-guidelines.asp>. Any plot plans showing equipment or piping details or other Critical Energy Infrastructure Information should be filed as non-public and labeled **"Contains Critical Energy Infrastructure Information – Do Not Release"** (18 CFR 388.112). Cultural resources material containing location, character, or ownership information should be marked **"Contains Privileged Information – Do Not Release"** and should be filed separately from the remaining information, which should be marked **"Public."**

For all materials submitted, in addition to the copies filed with the Secretary of the Commission, please provide electronic copies directly to our third-party environmental contractor, Cardno (one each to Lavinia DiSanto and Doug Mooneyhan).

PF15-3-000

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Thank you for your cooperation. If you have any questions, please contact me at 202-502-8059 or paul.friedman@ferc.gov.

Sincerely,

Paul Friedman
Environmental Project Manager
Office of Energy Projects

Enclosure

cc: Public File, Docket No. PF15-3-000

Mountain Valley Pipeline Project

Docket No. PF15-3-000

ENVIRONMENTAL INFORMATION REQUEST**Second Draft Resource Report 1 – General Project Description**

1. As previously requested in our comments on the first draft of RRs 1 and 10 dated March 13, 2015, describe in detail realistic opportunities for Mountain Valley to provide natural gas service to local distribution companies (LDC) located along the pipeline route, including specifics on which LDCs are currently coordinating with Mountain Valley and which communities may be served.
2. Revise figure 1.2-1 to depict the planned interconnections.
3. Include a discussion of shippers for the proposed 2.0 billion cubic feet per day (bcf/d) of natural gas. Indicate how much of this volume is currently under binding contract.
4. Include information on the standard operating pressure of the proposed pipeline, as well as the maximum delivery capacity in dekatherms per day and cubic feet per day at its maximum operating pressure.
5. Identify any communication towers Mountain Valley would install along its proposed pipeline route. Describe the location, dimensions, and design of each tower. Include an analysis of impacts from construction and operation of the towers on environmental resources, and measures to avoid, reduce or mitigate impacts in all applicable RRs.
6. Clarify whether the natural gas transported would be odorized.
7. Discuss any potential advantages to installing automatically closing mainline block valves (MLVs). Further, estimate the amount of time between the issuance of a remote signal to close an MLV and the actual closing.
8. Include, in section 1.3.1, an analysis of the potential to reduce the nominal construction right-of-way width in forested areas where topsoil would not typically be segregated, with additional temporary workspaces (ATWS) justified by site-specific conditions.
9. Revise table 1.3-2 to include length units for the “distance” column (in feet or miles). Add a column for the off-set (in feet) between the proposed Mountain Valley Pipeline and the edge of the adjacent existing rights-of-way, and a column

for the overlap (in feet) of the existing rights-of-way and the Mountain Valley Pipeline construction right-of-way.

10. Revise table 1.3-4 to include a column for land ownership, and a column for current land use at all yards. Include figures that illustrate each pipe storage yard and contractor yard. Each figure should depict the boundary of the yard at a scale of 0.5-inch = 500 feet (1:12,000) on an aerial image. Revise appendix 1-B to include the locations of all pipe storage and contractor yards.
11. Include a table that lists all ATWS by milepost (MP), landowner (private, state, federal), dimensions (feet), current land use, and purpose of the ATWS (road crossing, etc.).
12. Summarize all applicable local, state, and federal laws and regulations regarding the burning of brush and slash (also include in table 1.7-1). In section 1.4.1.1, include a description of Mountain Valley's proposed Best Management Practices (BMP) for the burning of brush and slash in the construction right-of-way that would adhere to those fire control laws and regulations. Include a Fire Prevention and Suppression Plan that outlines the BMPs and other measures that would be implemented to reduce the impacts of proscribed burns on environmental resources. Document that the plan was developed in consultation with applicable agencies and local fire departments.
13. Clarify, in section 1.4.1.1, whether tree/brush windrows would be left permanently on the right-of-way or removed before restoration. If removed, describe how the trees and brush would be disposed. If left permanently, describe potential impacts on revegetation and wildlife. In addition, indicate whether the proposed "wildlife breaks/openings" in the windrows would allow for landowner passage by truck or tractor and the degree of landowner pre-coordination and approval required.
14. Revise section 1.4.1.1(c) to include depth of cover (in feet) over the pipeline, with and without consolidated rock cover, for all construction scenarios (such as under waterbodies, roads, and railroads).
15. Given that Mountain Valley stated in section 1.4.1.1 that it might use sand, clean fill, or limestone dust as backfill of the trench, describe any potential impacts on environmental resources, such as revegetation concerns or altered drainage patterns, associated with use of a backfill material that may not match the ambient soil/substrate conditions. Describe the characteristics of all trench fill materials, such as rock content, weed free certifications, and other relevant factors.
16. In the description of horizontal directional drills (HDD), clarify the specific diameter of trees that would not be cut during guide wire installation. Also, discuss the feasibility of not removing any woody vegetation during placement of the guide wires for an HDD.

17. Include, in section 1.4.1.1, a discussion of the feasibility of using Direct Pipe technology to cross specific waterbodies where that trenchless construction method may offer advantages relative to an HDD in certain situations such as unfavorable geology.
18. Include additional measures for construction in residential areas, such as preventing overnight access to the trench and the capping of open ends of pipe.
19. Include a table of both vertical and lateral (side) slopes between 15 and 30 percent grade and a table listing slopes greater than 30 percent grade that would be crossed by the pipeline route.
20. As previously requested in our comments on first draft RRs 1 & 10 dated March 13, 2015, describe special measures that would be used for construction or restoration in steep terrain (between 15 and 30 percent grade, and above 30 percent grade). Explain how Mountain Valley would prevent rocks from rolling off the right-of-way, and prevent post-construction landslides. Address the comment filed by stakeholders that steep ridge tops often form property boundaries, and that these boundaries could be affected by post-restoration changes in topography (i.e., steep ridgelines could be notably rounded off), and the associated concern that pre-construction topographic contours be returned to their original condition per the FERC Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) section V.A.5. Where applicable, list areas that would be subject to a proposed variance from the Plan section V.A.5. Include typical cross-sectional diagrams that illustrate both construction and restoration processes for the pipeline construction right-of-way for steep-vertical slopes and steep-lateral side slopes.
21. Include water supply springs in addition to water supply wells in the pre- and post-blasting surveys discussed in section 1.4.1.2.
22. Section 1.4.1.2 states a geotechnical contractor would evaluate uncovered karst features and determine the need for mitigation measures. Clarify if a geotechnical contractor would be on-site daily during construction.
23. Section 1.4.1.2 states that “MVP does not plan to conduct construction activities during the winter season,” yet table 1.4-2 states that clearing and grading would commence in January 2017. Resolve the apparent discrepancy.
24. Justify why a permanent right-of-way easement wider than 50 feet is necessary.
25. In section 1.5, include a tabular schedule for maximum intervals between inspections/patrols during operation of the pipeline based on class locations or other criteria.

26. Revise table 1.7-1 to include hydrostatic testing permits discussed in section 2.2.3 of RR 2.
27. In section 1.9, identify any non-jurisdictional facilities, including water or electrical transmission lines that would be needed to supply the proposed compressor stations, meter stations, MLVs, or cathodic protection beds. For each non-jurisdictional facility, include:
 - a. description, and dimensions;
 - b. company/owner;
 - c. maps showing location;
 - d. construction schedule; and
 - e. environmental reviews, and permits required and their status.
28. Mountain Valley referenced 0.25-, 0.5-, and 10-mile proximity zones for the geographic extent its cumulative impacts analyses in section 1.10. Revise the geographic extent of the cumulative impact analysis to include all recent past, current, and reasonably foreseeable projects within fifth-field hydrologic watersheds, or air basins for air quality, and county boundaries for socioeconomics. Modify table 1.10-1 to include data columns as previously requested in comments on first draft RRs 1 & 10 dated March 13, 2015.
29. Quantify cumulative impacts on resource by adding impacts from the planned Mountain Valley facilities to impacts from other projects in the same watersheds, mentioned above in question 28. Quantification of impacts should include the amount of impact (e.g., acreage, water volumes, sound decibels), the duration of impact (e.g., short-term, long-term, permanent), and the degree of impacts (e.g., negligible, minor, major). In addition:
 - a. Where cumulative impacts on soils may occur, quantify impacts on erodible soils and prime farmland;
 - b. Where cumulative impacts on waterbodies and groundwater may occur, quantify impacts from sedimentation, turbidity, and water uses;
 - c. Where cumulative impacts on forested areas may occur, quantify the acreage of forest land that would be impacted, the acreage of forest land that would be restored, and the acreage of forestland that would be permanently removed;
 - d. Where cumulative impacts on viewsheds would occur on public lands, evaluate visual impacts using parameters and methodologies developed in conjunction with the applicable land managing agency;
 - e. Where cumulative impacts on air quality may occur, identify each facility that would contribute to the cumulative impact, including the estimated type and amount of pollutant and the airshed(s) that would be affected; and
 - f. Where cumulative impacts from noise may occur, identify each activity or facility that would contribute to the cumulative impact.

Appendix 1-A Alignment Sheets

1. Update all alignment sheets to include the following information:
 - a. label all extra work spaces with extra work space number and dimensions (ensure labeling is consistent with table 8A);
 - b. depict the entire length of temporary and permanent access roads using different symbols or colors;
 - c. depict structures within 50 feet of the construction work space;
 - d. depict and label all waterbody and wetland features crossed by the Project, consistent with tables 2A-2, 2A-3, 2B-1, and 2B-2;
 - e. label all existing roadways crossed by the Project with roadway names;
 - f. ensure that font and labels are clear for all sheets. The white font is difficult to read on several of the alignment sheet pages; identify all affected landowners via an identification number that correlates to an affected landowner list;
 - g. depict location of all HDD entry and exit points; and
 - h. depict survey corridor on alignment sheets.

Appendix 1-C Draft Winter Construction Plan

1. Clarify whether or not Mountain Valley has already identified ATWS expected to be needed for snow storage (from both the right-of-way and access roads) or if it would be identified on an as-needed basis. Describe all equipment that would be used to remove snow from the right-of-way and access roads.
2. Indicate whether or not an open trench covered in snow would also be marked with high visibility poles to alert persons on all-terrain vehicles and others.
3. Explain why mulching would cover “at least seventy-five percent of the ground surface” and not 100 percent.
4. Clarify whether sediment barriers would be installed with the goal of “minimal reportable control failures” or with a goal of no control failures.
5. Clarify the statement “topsoil piles will be left in a stabilized condition and *replaced (emphasis added)* when weather conditions permit proper de-compaction of the areas.”
6. Include specific timeframes for “continuously” monitored and maintained erosion control devices (ECD) and “consistent” inspections of stabilized and active construction areas.

7. Clarify why the specialized “shoe” that may be fitted to the blade or bucket of heavy equipment discussed in section 1.4.1 of RR 1 is not discussed in the winter construction plan. Describe in more detail how soil would not be disturbed and mixed with snow when “blading” is conducted during snow management activities on both the construction right-of-way and access roads.
8. Describe in more detail how ECDs such as silt fence, staked hay bales, and slope breakers would be installed and repaired under frozen conditions or snow cover.

Appendix 1-D Typical Drawings

1. Revise appendix 1-D to include a drawing for a dam-and-pump waterbody crossing and wetland crossings.

Appendix 1-H Agency Correspondence

1. Include the “enclosed map” referenced in Mr. Lipford’s September 8, 2014 letter from the Nature Conservancy.

Appendix 1-J Public, Stakeholder, and Agency Participation Plan

1. Identify the libraries where copies of the FERC application would be placed.
2. Include Mountain Valley’s landowner dispute resolution procedures. Include information such as the format of communication (e.g., letter), when landowners would be notified of the procedures, contact number(s), and how quickly Mountain would respond to issues.
3. Indicate that the FERC Landowner Helpline via the telephone is toll-free 1-877-337-2237; and the e-mail address is LandownerHelp@FERC.Gov.

Draft Resource Report 2 – Water Use and Quality

Water Resources

1. Discuss the significance of minor surficial aquifers along the pipeline route, and the level to which domestic water supplies and wells depend on those aquifers. Indicate if the pipeline would have impacts on those aquifers, and outline the measures Mountain Valley would implement to avoid, reduce, or mitigate those impacts.
2. Revise table 2.1-1 to include average yield and approximate depth below the ground surface for each aquifer. Explicitly denote aquifers with shallow depths that may or are likely to be encountered by Project construction activities.
3. Revise section 2.1.1.3 to focus less on state-wide descriptions and more on county-specific information.

4. Revise table 2.1-2 to include data columns for well depth and yield, and the aquifer in which the well was completed.
5. The text of RR2 indicates that there were three springs identified in Virginia based on a review of the publication *Springs of Virginia*, but the exact location was not available. Consult with the appropriate state agencies to locate these springs.
6. For each spring identified within 150 feet of the planned workspaces (within 500 feet in karst areas), indicate the gradient and spatial relationship of its recharge area to the pipeline corridor.
7. Identify all groundwater sources, including wells and springs, in karst terrain within 500 feet of the pipeline crossing.
8. Include the measures that Mountain Valley would implement to avoid, reduce, or mitigate impacts on wells and springs that originate from karst substrata. In section 2.1.1.4, define what is considered to be “in close proximity to the pipeline.”
9. Revise table 2.1-3 to also include a data column for karst influence (yes or no), add swallets (or insert a comparable, separate table), and confirm that there are no known springs located between MP 0 to 194.
10. Clarify if the pipeline route would cross any swallets. If so, outline measures to avoid, reduce, or mitigate impacts on swallets.
11. Clarify whether Mountain Valley would conduct pre-construction and post-construction testing of all domestic water supply wells and springs located within 150 feet of the proposed construction work space. Include details regarding water yields and water quality that Mountain Valley would analyze for domestic water supply wells and springs. Discuss any additional compensation Mountain Valley would offer beyond repair or replacement of domestic water sources damaged during construction.
12. Discuss mitigation measures that would be implemented near wellhead protection areas (WHPAs) and source water protection areas (SWPAs) during construction and operation or further indicate why these resources wouldn't be affected.
13. Revise table 2.1-4 to identify if a SWPA is located upgradient, downgradient, or sidegradient of the Project alignment, and if any of these SWPAs are located within karst terrain.
14. Add a data column in table 2.1-5 to list the contaminants of concern, and media impacted (groundwater and soils). Include impact avoidance, minimization, and mitigation measures for unanticipated contamination sites.

15. Identify and provide the location and distance for former brine pit contamination sites along the Project route. Discuss the remedial status of these sites.
16. State whether any aboveground facilities would be located within flood zones or wetlands. Include in table 2.2-2 the FEMA flood zone classification, if applicable. Explain how Mountain Valley would ensure that its Project complies with 10 CFR 1022, including a floodplain assessment. Indicate any required loss of flood storage and describe the volume removed. Discuss the potential for flash flooding, including measures Mountain Valley would implement to protect the construction right-of-way and aboveground facilities from flooding.
17. Identify any waterbodies that may be affected by the proposed compressor stations, meter stations, MLVs, pipe or contractor yards, and new or existing access roads that may be improved. Include measures to avoid, reduce, or mitigate impacts on waterbodies during construction of those non-pipeline facilities.
18. Revise section 2.2.2 to include waters that have been designated for intensified water quality management and improvement and waters that support fisheries of special concern (such as trout streams). Include specific impact avoidance, minimization, and mitigation measures for sensitive waterbodies.
19. Include a reference for the statement “public surface water intake facilities are designed to handle surface waters with heavy sediment loads.” In addition, document consultations with applicable local authorities that own or manage public surface water intake facilities that may be impacted by the proposed Project. Include a discussion of impacts Project construction may have upon water intake equipment and filters, and offer measures to avoid, reduce, or mitigate those impacts.
20. Further clarify the terms used for waterbody crossing methods throughout RR 2 and appendices. Crossing methods should fall under one of the following methods: wet open-cut, dry open-cut, dam-and-pump, flume, bore, HDD, or Direct Pipe technology.
21. For all waterbodies greater than 100-feet-wide at the planned crossing location, include the width of the waterbody and the planned construction methods. Include detailed, site-specific construction mitigation and restoration plans for each crossing.
22. Identify all waterbodies crossed within karst sensitive areas. Discuss methods that would be used to cross waterbodies in karst terrain.
23. Include an explanation for why all major waterbodies are not being crossed by an HDD, including streams and rivers considered as sensitive resources or containing special-status mussels or fish species. Specifically, evaluate the potential for using

an HDD to cross under Leading Creek, Little Kanawha River, Elk River, and Pigg River.

24. Include site-specific HDD crossing plans, an HDD contingency plan in the event of a failure, and an Inadvertent Return Response Plan in the case of “frac-outs.”
25. For all HDD crossings, include the results of site-specific geotechnical and geophysical investigations. For HDDs in karst terrain, also provide a lineament analysis using remote sensing platforms such as LiDAR and aerial photograph to characterize:
 - a. the degree and maturity of karst at each crossing;
 - b. the potential for substantial loss of drilling fluids into the karst system; and
 - c. the potential to intersect any cave system along the HDD profile.
26. Include an assessment of the Direct Pipe construction method in lieu of conventional HDD in karst sensitive areas.
27. At each crossing where HDD is being considered through karst terrain, include a Best Drilling Practices Plan that addresses the following:
 - a. procedures to control significant loss of drilling fluids into the karst environment during drilling;
 - b. spring and well monitoring plan for all receptors down-gradient of the crossing. This plan should identify and incorporate into the monitoring scheme all receptors that are at a minimum 2,000 feet down-gradient;
 - c. the specific drilling muds and polymers that may be used; and
 - d. assess the potential for impact and describe how Mountain Valley would mitigate a lateral movement of drilling fluid during trenchless crossings that could affect source groundwaters such as wells, seeps, and springs.
28. Indicate how many miles downstream Spring Hollow Reservoir is from where the pipeline would cross the Roanoke River.
29. Regarding hydrostatic testing:
 - a. section 2.2.3 states municipal water may be used for hydrostatic testing. However, municipal water is not listed in table 2.2-9. Include specific details regarding whether municipal water would be used;
 - b. clarify the total gallons of water needed for hydrostatic testing. Table 2.2-9 states 95,722,73 gallons would be used however, the “Total Water Anticipated for Test Segment” column sums to 233,732,876 gallons. In addition it is unclear which values sum for the proposed “water usage” rows. Resolve the apparent discrepancies;
 - c. revise table 2.2-9 to include the expected month that the water would be withdrawn and discharged;

- d. indicate the anticipated withdrawal rates and its relation to the source water's anticipated discharge volume (e.g., the percent of water that would be withdrawn from a waterbody);
 - e. include the source and volume of water for each HDD pre-test segment and make-up of drilling fluid;
 - f. section 2.2.3 states "test water will be drawn from various sources...." Clarify if all possible sources have been included in table 2.2-9;
 - g. section 1.4.1.1 states that hydrostatic test water may be pumped to the next segment or discharged. Clarify if Mountain Valley would reuse test water between segments as depicted in table 2.2-9;
 - h. clarify if Mountain Valley would commit to discharging hydrostatic test water into the same watershed as the source water;
 - i. indicate the anticipated discharge location, volume, and rate for each hydrostatic test water discharge;
 - j. identify whether any surface waters that would be used as hydrostatic test water sources contain invasive aquatic or invasive plant species. For any such withdrawal where invasive species are present, identify the discharge location and describe how Mountain Valley would avoid the transfer of invasive species; and
 - k. outline measures Mountain Valley would implement to protect aquatic species, habitat, and stream flows during withdrawal of water for hydrostatic testing.
30. Include a Project-specific Dust Suppression Plan. The Plan should indicate:
- a. sources of water for dust suppression;
 - b. volumes taken from each individual source;
 - c. permission from owners of the water sources;
 - d. permits or authorizations required for water withdrawals;
 - e. any chemicals to be added to dust suppression water;
 - f. number of water trucks per spread, and volume of water placed on the right-of-way for each truck per day; and
 - g. involvement of the environmental inspector directing dust suppression activities.
31. Clarify the distance between the pipeline and a paralleling waterbody. Section 2.2.4 states 10 feet would be maintained between the pipeline and a parallel waterbody; however, our Procedures require 15 feet of separation (section V.3.c). Therefore, Mountain Valley would need to request a modification from our Procedures if a closer distance to waterbodies is planned.
32. Include a detailed justification for temporarily sidecasting trench spoil into a dry waterbody during an open-cut crossing. Include a detailed discussion of measures to remove all spoil from the waterbody bed. Further, describe plans for

compliance with our Procedures, including sediment and erosion control, in the event that a previously dry waterbody begins flowing after disturbance starts.

33. Section 2.2.4 states “chemicals, solvents, and fuels will be kept at least 100 feet from streams and riparian areas, unless placed within secondary containment.” Our Procedures state hazardous materials must be kept at least 100 feet from wetlands, waterbodies, or designated municipal watershed areas unless the location is designated for such use by an appropriate governmental authority. Clarify the apparent discrepancy.
34. Section 2.2.4 states “blasting in smaller streams would be done during low flow or dry periods.” Clarify specifically what is meant by “low flow” and “smaller streams.” Identify waterbody crossings where blasting may be required and the measures that would be implemented to minimize blasting impacts on surface waters.

Appendix 2-A Waterbody Crossing Tables

1. Combine tables 2-A-2 and 2-A-3 into one table. Denote which waterbodies were field delineated and which were taken from desktop data (include desktop data only where needed to fill in survey gaps). Include applicable construction windows for each waterbody crossing. Identify a specific crossing method (such as wet open-cut, dry open-cut, flume, dam-and-pump, bore, HDD, or Direct Pipe).
2. Clarify the number of HDD waterbody crossings. Appendix 2A tables states the Gauley River (MP 118.9) and the Greenbrier River (MP 170.5) would be crossed via HDD. However, table 2.2-5 states the Gauley River would be crossed via open cut. Resolve the apparent discrepancy.

Wetlands

1. Discuss the latest U.S. Environmental Protection Agency/U.S. Army Corps of Engineers (COE) rule (Docket ID: EPA-HQ-OW-2011-0880) regarding the definition of “Waters of the United States” and how it would apply to wetland and waterbody identification, permitting, and mitigation for the Project.
2. Revise table 2.3-1 to include the following:
 - a. temporary and permanent wetland acreage impacts broken out by county and state, and Project component (i.e., pipeline right-of-way, extra work spaces, aboveground facilities, contractor yards, pipe storage yards, and access roads);
 - b. construction and operational (include permanent impacts on palustrine emergent wetlands if a 10-foot-wide swath would be periodically mowed and permanent impacts on palustrine scrub/shrub wetlands if the swath is mowed and a 30-foot-wide corridor undergoes periodic removal of shrubs)

- impacts for each wetland type, and total impacts for each construction and operational impacts; and
- c. if no impacts, populate appropriate cells of table with 0.0, rather than blanks.
3. Explain why wetlands could not be avoided at contractor yards, pipe storage yards, and access roads;
 4. Include a list of all ATWS that may be located within 50 feet of a wetland or waterbody. For each, include site-specific justifications and the distance from the edge of the work space to the edge of the waterbody or wetland. In instances where an ATWS may be located within a wetland boundary evaluate an alternative to move the work space to an adjacent upland area.
 5. Include wetland impacts associated with each component of the Project (i.e., pipeline right-of-way, ATWS, aboveground facilities, yards, and access roads). For each component, identify the number of acres of wetlands affected by Project construction and operation.
 6. Describe typical conditions within each identified wetland class in the project area, including typical species identified during field surveys. Also include any state wetland classifications for West Virginia and Virginia (i.e., exceptional value or protected).
 7. Include more specific measures to avoid or minimize impacts on wetlands (i.e., crossing methods, BMPs, and decompaction).
 8. Document communications with the COE and appropriate state agencies regarding the development of a Project-specific Wetland Mitigation Plan, and file a copy of the Plan with the FERC.
 9. Discuss alternatives, including reroutes, that would locate the pipeline in uplands and avoid impacts on waterbodies and wetlands. Explain how the proposed route was chosen as the least environmentally damaging practicable alternative.

Appendix 2-B Wetland Crossing Tables

1. Combine tables 2-B-1 and 2-B-2 into one table. Denote which wetlands were field delineated and which were taken from desktop data (include desktop data only where needed to fill in survey gaps). Include length of the wetland crossing (in feet), state wetland classifications (if applicable), and list wetland impacts by wetland type for both construction and operation. Include appropriate units for each column (i.e., feet and acres). Identify a specific crossing method.

Draft Resource Report 3 – Fish, Wildlife, and Vegetation

1. General to all sections, include citations, where lacking, for species and habitat descriptions (e.g., mussels descriptions).

Fishery Resources

1. Describe the specific recommendations and guidelines Mountain Valley would adopt from the Virginia Chapter of the American Fisheries Society (VCAFS). Identify any VCAFS measures that were rejected, and explain why.
2. Include a detailed discussion of aquatic invasive species. Discuss the potential to spread aquatic diseases, such as largemouth bass virus. Outline measures Mountain Valley would implement to avoid, minimize, or mitigate the spread of aquatic invasive species and diseases.
3. Section 3.1.3.2 states “seventeen streams are identified in West Virginia as known mussel streams that may be traversed by the Project.” Table 3.1-2 identifies 18 streams. Resolve the apparent discrepancy.
4. Section 3.1.3.2 states “access roads that will be used for construction and operation of the Project traverse an additional 12 streams known to harbor mussels...” However, section 3.1.3.2 also states that “only two of the 12 streams...have upland drainage areas greater than 10 square miles and therefore warrant mussel surveys.” The West Virginia Mussel Survey Protocol states, “if impacts cannot be avoided, all streams which contain mussels or potential mussel habitat must be surveyed prior to any proposed streambed disturbance,” while the Virginia Department of Game and Inland Fisheries indicated that mussel surveys should be conducted in a 5 square mile drainage area. Clarify exactly what areas would be surveyed for mussels, whether all 12 streams known to contain mussels, or just the two streams with upland drainage areas greater than 10 square miles, or a 5 square mile drainage area. Document consultations with state agencies to develop a mussel survey plan, including timing, extent, and scope of planned mussel surveys and relocation efforts.
5. Include the measures Mountain Valley would implement to protect designated Tier III stream Bottom Creek.
6. Clarify what is meant by the term “salvage zone.” Define whether a salvage zone would also apply to fish located in a stream segment dewatered for a dry-ditch crossing.
7. Document communications with appropriate federal and state resource agencies regarding in-water blasting and its potential impacts on aquatic species. Based on those communications, outline the measures Mountain Valley would implement to avoid, minimize, or mitigate potential impacts on fish, mussels, and other sensitive aquatic species from in-water blasting.

8. Clarify why no impacts are anticipated to the green floater (*Lasmigona subviridis*) in Stony Creek. Include more detail to support the assertion that the installation and use of access roads would not affect mussels (regardless of whether they are listed species or not) in waterbodies crossed. Define “if necessary” regarding relocation efforts for mussels at access road crossings of occupied waterbodies.
9. Include a table showing waterbody crossing timing restriction and allowable construction windows for each fishery classification, and note whether the windows are mandated by the FERC standard or by either state’s guidelines. Clearly state whether Mountain Valley would abide by the designed construction windows or if a waiver would be sought. If a waiver would be sought, include either a copy of the approved waiver or an update regarding the status of agency coordination.
10. Include, in section 3.1.4.2, recent literature citations pertaining to stream restoration to describe the expected timeframe that invertebrate populations would recolonize the crossing area and revert to original conditions.

Vegetation

1. Ensure data and vegetation/land use type resource category consistency between RR 3 and RR 8. Table 3.2-1 does not appear to be consistent with table 8.1-1 despite the apparent use of the same data sources (e.g., note the discrepancy in agricultural miles crossed). Make the applicable data categories match between the vegetation/land use-related tables in RR 3 and RR 8 using sub-categories as appropriate (e.g., keep the upland forest/woodland sub-categories in table 3.2-1, but have them combine into a single upland forest category in table 8.1-1; keep the herbaceous and scrub-shrub sub-categories in table 3.2-1 under the umbrella of open-land, but have them combine into the open-land category in table 8.1-1). Include the data for wetlands in table 3.2-1 in table 8.1-1 as well. Carry this data and resource category consistency forward into table 8.1-2 so that it may be used to also fully characterize areal impacts on vegetation types.
2. List the proposed seeding mixes, and document that they were developed in consultation with appropriate agencies.
3. Include an estimate of the timeframe for successful restoration of the various forest and open land vegetation communities that would be temporarily impacted by construction of the Project.
4. Clarify whether Mountain Valley would seed, plant, or allow natural recruitment of trees and other native vegetation that is cleared from the temporary construction right-of-way, particularly in riparian areas. Discuss whether selective plantings at riparian areas would offer more rapid and successful restoration of these areas.

5. Include a list of observed and suspected invasive plant species occurring along the proposed Project facilities, a detailed discussion regarding the potential for invasive plant species to spread via Project activities, and agency-coordinated measures that Mountain Valley would incorporate in order to control the spread of invasive plant species during both construction and operation. Discuss measures that Mountain Valley would implement to control weeds without the use of herbicides.
6. Verify, in section 3.2.9.2, that no known special plant communities occur in the project area in West Virginia.
7. Include the results of inventories of natural heritage resources within the sensitive and rare plant communities identified by the Virginia Division of Natural Resources (VDNR). Also, include information on potential Project impacts on all conservation sites and units mentioned by the VDNR. Outline the measures Mountain Valley would implement to avoid, minimize, and mitigate impacts on those resources. Document communications between Mountain Valley and the VDNR about these issues, including reviews of survey results.
8. Document consultations with land managers in developing options to avoid the 35-foot-long crossing of the Stony Creek Stream Conservation Unit and the overlap with the Elliston Glades Conservation Site.
9. Identify by milepost where the project work areas, including aboveground facilities, yards, and access roads, would cross the following sensitive vegetation communities, including State/Commonwealth Natural Heritage Communities.
10. Supplement table 3.2-2 with additional data columns for county/state, consulting agency, and proposed mitigation.
11. Based on agency consultations, indicate whether the purple fringeless orchid and snowy campion are considered extirpated and therefore no longer of concern.
12. Supplement table 3.3-2 with additional data columns for county/state, existing habitat type(s) to be affected, acreages for both construction and operational impacts, and proposed mitigation.
13. Based on stakeholder comments, include a discussion of potential impacts on native plant and fungi species which have medicinal or commercial value, such as morels, golden seal, ginseng, and ramps.
14. Mountain Valley should support its definition of interior forest using relevant scientific literature. Identify (in miles and acres) the amount of interior forest that would be cleared during Project construction. Include a discussion of edge effects and forest fragmentation resulting from the Project, and related impacts on

ecosystems, and habitat. Indicate what measures Mountain Valley would implement to avoid, reduce, or mitigate edge effects and forest fragmentation.

15. Include a table with the following data for each forested interior tract: county, enter and exit milepost, length crossed (feet), and area affected directly (interior forest cutting) and indirectly (buffer zone areas of remaining forest immediately adjacent to one or both sides of the new corridor that would no longer be classified as interior forest due to the new, Project-related disturbances) for both construction and operation.
16. With regard to tree clearing activities, include:
 - a. clarification on how Mountain Valley intends to meet timing restrictions for tree clearing to avoid impacts on tree roosting bat species as indicated in applicable regulatory guidance; and
 - b. clarification on how Mountain Valley would meet tree clearing restrictions associated with the Migratory Bird Treaty Act.

Wildlife

1. Include a discussion of potential Project impacts, including construction and operation of the pipeline, aboveground facilities, yards, and access roads, on the Burnsville Lake, Elk River, and Meadow River Wildlife Management Areas. Include the actual distance (in feet) between the Lewis Wetzel Wildlife Management Area and the nearest Project construction work area.
2. Include a discussion of both direct and indirect impacts (for both construction and permanent operations) on individual forest interior wildlife species, including migratory birds. Document consultations with the U.S. Fish and Wildlife Service (FWS) and appropriate state resource agencies to develop BMPs and measures that would be implemented to avoid, minimize, or mitigate impacts on forest interior species.
3. Revise table 3.3-3 to add data columns for habitat type, habitat present within the Project area counties (yes or no), and confirmed as breeding within the Project area counties (yes or no).
4. Confirm that no Important Bird Areas, including the Atlantic Flyway, would be crossed or affected by the Project.
5. Include the results of raptor surveys, including nests for bald and golden eagles, and document the review of the surveys by the FWS and appropriate state resources agencies.
6. Discuss how Mountain Valley would incorporate appropriate measures outlined in the FWS' National Bald Eagle Management Guidelines.

7. Discuss the potential impacts of blasting on eagle nests in the vicinity of the Project, including, if applicable, on Eagle Nest CR 1301. Present measures that Mountain Valley would implement to avoid, minimize, or mitigate impacts on eagle nests discovered during surveys.
8. Clarify if Mountain Valley would adopt the state resource agency's suggestion to install drift fencing around open trenches to avoid impacts on timber rattlesnakes. Identify other measures Mountain Valley would implement to avoid, minimize, or mitigate impacts on snakes.
9. Include a list of game species by state or game management zones, including any known game corridors, herding or feeding areas, or game farms. Outline measures Mountain Valley would implement to avoid, minimize, or mitigate impacts on game species during construction and operation of Project.
10. Include a discussion of the potential for wildlife to be killed or injured by construction activities (e.g., run over by equipment or falling into an open trench). Outline measures Mountain Valley would implement to avoid or reduce potentially harmful impacts on wildlife, including ways to prevent or remove wildlife from falling into the open trench.
11. Include a discussion of potential impacts from HDD installation and other 24-hour construction activities, including use of artificial lights and noise, on wildlife, particularly nocturnal species such as bats. Outline measures Mountain Valley would implement to reduce impacts from HDD installation on wildlife.

Endangered, Threatened, and Special Concern Species

1. Revise RR3 to include a description of measures outlined in the 2015 Range-wide Indiana Bat Summer Survey Guidelines (April 2015).
2. Update the information on the Interim 4d rule for the northern long-eared bat. Include information regarding whether the rule will pertain to the projects, based on consultation with the FWS.
3. Document consultations with the FWS and appropriate state resource agencies regarding Project activities that may affect federally listed and state sensitive bat species. Outline measures that Mountain Valley would incorporate to protect caves identified within the Project area that are known or potential federally listed and state sensitive bat species hibernacula.
4. Include an explanation on why the 5-mile buffer surrounding Tawney's cave is not being avoided.
5. Confirm that Mountain Valley would follow FWS suggested survey timeframes and methods, using qualified professionals, to inventory for federally listed plant

species in the project area. Include the results of botanical surveys, and the review of those surveys by the FWS and appropriate state resource agencies.

6. In section 3.4, list the counties where federally listed and state sensitive species are known or suspected to occur. Also, list the MP ranges for terrestrial listed species and the MP crossings of waterbodies that contain listed aquatic species.
7. Revise section 3.4 to include a discussion for all species identified in table 3.4-1 (such as the yellow lance and the clubshell).
8. Include a description of which other “watersheds” that would be crossed by the Project would or could contain the candy darter.
9. Include a summary of the findings of all 2015 field surveys for all listed species. Further, document all communications between Mountain Valley, the FWS, and appropriate state agencies regarding the identification of federally listed species and state sensitive species that may be affected by the Project.
10. Expand the scope of the applicant-prepared draft biological assessment to include all federally listed threatened, endangered or candidate species and their habitats in the project area.

RR 3 Tables

1. Revise table 3.1-2 to include a definition for “ST,” the closest MP for each access road, and add data columns for allowable construction window, stream width, and proposed crossing method.
2. Revise table 3.4-1 to include all species discussed in section 3.4 (such as the gray bat, Mitchell satyr butterfly, and the yellow lampmussel).

Draft Resource Report 4 – Cultural Resources

1. Stakeholders have identified the following National Register of Historic Places (NRHP) listed Historic Districts or other NRHP listed or potentially eligible properties in the vicinity of the pipeline route or alternatives:
 - a. a Civil War camp at Ford Hollow, Greenbrier County, WV;
 - b. Cook’s Old Mill, Monroe County, WV;
 - c. Cook’s Fort, Monroe County, WV;
 - d. Woods Fort, Monroe County, WV;
 - e. Red Sulphur Springs Resort, Monroe County, WV;
 - f. McClung’s Mill, Monroe County, WV;
 - g. Reed’s Gist Mill, Monroe County, WV;
 - h. Hanging Rock Observatory on Peters Mountain, Monroe County, WV;
 - i. Elmwood, Monroe County, WV;

- j. Sweet Springs Resort, Monroe County, WV;
- k. Sinks Grove, Monroe County, WV;
- l. Old Rehoboth Church, Monroe County, WV;
- m. New Zion Church, Monroe County, WV;
- n. Waiteville Christian Church, Monroe County, WV;
- o. Potts Valley Railroad, Monroe County, WV;
- p. Indian Creek Bridge, Monroe County, WV;
- q. Laurel Creek Bridge, Monroe County, WV;
- r. Union Historic District, Monroe County, WV;
- s. Pickaway Rural Historic District, Monroe County, WV;
- t. Alderson Historic District, Monroe County, WV
- u. Colonel Gwin Plantation, Summers County, WV;
- v. Colonel James Graham Home, Summers County, WV;
- w. Pence Springs Hotel Historic District, Summers County, WV;
- x. Pence Springs prehistoric archaeological site complex, Summers County, WV;
- y. Salt Sulphur Spring Historic District, Summers County, WV;
- z. prehistoric archaeological sites along the New River, Giles County, VA;
- aa. Greater Newport Rural Historic District, Giles County, VA;
- bb. two historic covered bridges near Newport, VA;
- cc. a Civil War cemetery along Alternative 210;
- dd. North Fork Valley Rural Historic District, Montgomery County, VA;
- ee. Cahas Mountain Rural Historic District, Franklin County, VA; and
- ff. Bowman Farm, Franklin County, VA.

Include a table that lists all of these above sites, by county/state, ownership, MP location, NRHP-status, and provides the distance (in feet) between each site and the closest construction work area for the Project. Outline measures that Mountain Valley would implement to avoid, minimize, or mitigate impacts on these sites.

2. Define the “indirect” area of potential effect (APE) in relation to distance away from the proposed construction right-of-way. We suggest that the indirect APE should be 0.25-mile away from the pipeline and 0.5-mile away from all aboveground facilities. In addition, section 4.3.2 states “Virginia Department of Historic Resources (VDHR) requested minor modifications to the indirect affects APE and in response MVP will update the APE and the maps on which it is displayed and resubmit the draft plan for final approval.” Revise section 4.3.2 to include the updated APE and VDHR approval.
3. Include the dates when the site file searches were conducted by Mountain Valley at the West Virginia Division of Cultural and History and the VDHR. The site file searches should be updated to August 2015.
4. Based on the site file search, include a list of all archaeological surveys previously conducted within 0.5-mile of the proposed facilities. The list should include the

project name, state/county, date of the survey, company-investigator, acres inventoried, and sites recorded. Identify if any previous surveys overlap the direct APE.

5. Based on the site file search, include a list of all previously recorded archaeological sites and historic standing structures (houses, bridges, etc.) within 0.5-mile of the proposed facilities. The list should include the site number-name, type, distance (in feet) from edge of the construction work area, recorder-report reference, NRHP evaluation, and SHPO opinion and date of review. Superimpose the locations of all previously recorded archaeological sites and historic standing structures within the indirect APE on copies of 7.5-minute U.S. Geological Survey topographic maps with the pipeline and aboveground facilities.
6. Indicate the organizations and individuals who requested to be consulting parties that have executed a confidentiality agreement with Mountain Valley (and the date of signature).
7. Include copies of the:
 - a. *Mountain Valley Pipeline Project Archaeology and Historic Architecture West Virginia Work Plan;*
 - b. *Mountain Valley Pipeline Project Archaeology and Historic Architecture Virginia Work Plan;*
 - c. *Mountain Valley Pipeline Project Archaeological Sensitivity Model: Giles, Montgomery, Franklin, and Pittsylvania Counties, Virginia; and*
 - d. *Historic Architecture Background Research Letter Report.*

Document that Mountain Valley's cultural resources survey strategies and work plans were submitted to the State Historic Preservation Offices of West Virginia and Virginia, Indian tribes that may attach religious or cultural importance to properties within the APE, and appropriate consulting parties, and file all comments on the plans.

8. Include the updated Archeological Sensitivity Model and Unanticipated Discoveries Plan requested by the VDHR in its March 2, 2015 letter.
9. Include copies of the Project-specific cultural resources Overview and Survey reports that cover the entire direct APE in West Virginia and Virginia and meet the requirements outlined in sections V. and VI. of the FERC's Office of Energy Projects *Guidelines for Reporting on Cultural Resources Investigations for Pipeline Projects* (December 2002 version). Document that Mountain Valley also submitted copies of these reports to the appropriate SHPOs, interested Indian tribes, and other consulting parties, and file comments on the reports.

10. Mountain Valley stated that staff from the U.S. Forest Service (FS) conducted an archaeological survey of Project components within the Jefferson National Forest. Include a copy of the FS survey report.
11. Include correspondence discussed in RR4 from the FS and the U.S. National Park Service.
12. Include a detailed discussion of “cultural attachment” along the proposed pipeline route crossing the Jefferson National Forest. The study of cultural attachment should be conducted by a qualified professional cultural anthropologist.
13. Include comments from interested Indian tribes not documented on table 4.4-1 or not previously filed with the FERC.
14. Identify if blasting would be conducted near any historic structures. If so, describe the potential impacts that blasting and vibrations could have on those structures, and outline measures Mountain Valley would implement to reduce those impacts.

Draft Resource Report 5 – Socioeconomics

1. Update table 5.1-3 to include the workforce and construction schedule for each construction spread. Clarify if any of the construction spreads would be constructed in the same county during the same time period.
2. Clarify what the “county total” row represents in table 5.2-5.
3. Include the basis for the estimate that 10 percent of the workforce would be comprised of “local workers.” Revise section 5.3.1 to also include an estimate of the number of workers that would reside in West Virginia and Virginia (beyond commuting distance), respectively.
4. Clarify if union labor be used during construction of the Project, and if not explain why.
5. Revise section 5.3.2.1 to include a table and discussion of the expected construction and operational payroll by county and state. Where possible, include an estimate of total local worker payroll during construction and operation. Also include a table of expected materials costs by county and state. Where possible, include an estimate of total *local* material purchases during construction and operation.
6. Include the months of high and low season(s) for tourism and recreation in the project area and metrics to characterize the degree of tourism that occurs (e.g., visitors per day for parks, number of visitors a year to a particular destination) at the major tourism and recreation locations that could be affected by construction or operation of the Project.

7. We have received several comments questioning the ability for local emergency services to adequately respond to an emergency during construction and operation of the Project. Update section 5.3.5 to discuss the results of any coordination between Mountain Valley and local police departments, fire departments, and emergency medical services. Detail any arrangements for Mountain Valley to provide training, funding, or facilities to local first responders. If local departments have stated that they would have limited available resources, include mitigation measures to ensure enough fire, police, and emergency medical personnel would be available during construction and operation of the Project.
8. Clarify if Mountain Valley would utilize any temporary field “man-camps or worker camps” for housing workers during construction of the Project. If so, include details such as location, size, facilities, and utilities. Identify all permits that need to be obtained for such camps. Also analyze the potential effects the camps would have on soils, wetlands, waterbodies, wildlife, vegetation, cultural resources, land uses, traffic, and public services.
9. Update section 5.3.3 to include a more detailed discussion of those counties where housing for the workforce is expected to be limited or absent (i.e., Doddridge, Monroe, and Webster Counties). Include the areas/counties where workers are anticipated to be housed while working within these counties and the distance to the worksite. Discuss in more detail the potential conflict for hotels and temporary housing with tourism. Include a list, description, and capacity of existing recreational vehicle (RV) and campground facilities that would be located within commuting distance to the Project. Indicate what percentage of construction workers would bring their own RVs or pop-out trailers and utilize existing RV and campground facilities for temporary housing.
10. Include the results of research and interviews with major financial lenders in the counties crossed by the Project regarding any observed changes in the ability of persons to obtain a mortgage in relation to the presence of new or existing FERC-regulated pipelines and associated facilities (on the subject property or in the immediate vicinity), as well as in relation to other pipelines. Include full citations for all discussions.
11. Include the results of research and interviews with major insurers in the counties crossed by the Project regarding any observed changes in the ability of persons to obtain property or home insurance in relation to the presence of new or existing FERC-regulated pipelines and associated facilities (on the subject property or in the immediate vicinity), as well as in relation to other pipelines. Include full citations for all discussions.
12. Include an analysis of potential Project-related impacts on property values that reference the latest relevant studies on the subject. This literature review should include studies mentioned by stakeholders, such as:

- December 19, 2013 report by Joel Dyer in *Boulder Weekly*; and
 - 2013 study in *Conversations for Responsible Economic Development*.
13. Section 5.3.5 states “a small share of non-local workers” could relocate with their families. Include an estimate of the number of workers that would relocate with their families. Estimate the average family size for workers who would relocate, and include those numbers in the population analysis. Estimate the number of school age children who would relocate because of the Project, and analyze their enrollment impact on local school districts.
 14. Document consultations with state and local road and transportation agencies to develop a Residential Access and Traffic Management Plan. The Plan should address:
 - a. identification of existing roads that would be used for Project access;
 - b. current average daily traffic counts and anticipated daily traffic counts during construction on local roads that would be used for Project access;
 - c. increased traffic from Project-related activities (including commuting workers, construction equipment, and truck deliveries), including the number of workers cars, equipment, and trucks that would use local roads, and commuting periods;
 - d. workers being bussed from collection points to the right-of-way;
 - e. locations of commuting workers collection points and bus routes;
 - f. detours and road blockage
 - g. compaction on dirt roads;
 - h. dust suppression;
 - i. impacts on existing roads and measure to repair them;
 - j. prior notification;
 - k. maintaining access for home or business owners (including tourist venues and roads frequently used by tourists);
 - l. in-road work relative to peak-traffic periods;
 - m. safety measures (including signage, fencing and assurance of immediate backfill of trenches);
 - n. adherence to road and bridge weight limits;
 - o. locations of police detail (as specified in section 8.1.3.7);
 - p. noise impacts; and
 - q. tracking of soil and dirt onto paved roads from the right-of-way.
 15. Clarify if the estimated tax revenues in table 5.3-1 are for the entire construction period or an annual estimate.
 16. Include copies of FTI Consulting’s *Economic Benefits of the Mountain Valley Pipeline Project in West Virginia* and *Economic Benefits of the Mountain Valley Pipeline Project in West Virginia* reports dated December 2014.
 17. Revise table 5.3-2 to include tax revenue estimates for Fayette County.

18. Identify counties and sub-areas (e.g., census block groups) along the pipeline route that contain a disproportionate number of minorities, low income households, elderly, children, disabled, and non-English speaking households in comparison to the averages for the nation and state. Explain how the pipeline route was selected relative to communities which contain disproportionate numbers of disadvantaged, minority, and low income populations.

Draft Resource Report 6 – Geology

1. Include copies of the reports referenced in the citations for Draper Arden Associates 2015a, b, and c.
2. Revise figures in RR 6 (such as figure 6.4-1 and 6.4-2) to increase the size and clarity of the legend.
3. Revise RR 6 text and tables to include information regarding geology, mineral resources, and geologic hazards for all aboveground facilities including, compressor stations, meter stations, contractor yards, pipe storage yards, access roads, and extra work spaces.
4. Revise section 6.1.1 to include a more detailed discussion of the Blue Ridge and Piedmont Physiographic Provinces such as common geologic features, underlying bedrock, and potential geologic hazards associated with each province.
5. Revise section 6.1.2 to include a discussion of surficial geology crossed by the proposed Project.
6. Update table 6.1-2 to include:
 - a. surficial geology by MP;
 - b. a description of the general surficial geology within each physiographic province; and
 - c. the geology between mileposts 201.09 and 204.70.
7. Revise table 6.3-1 to include all Project components (such as pipeline, compressor stations, meter stations, MLVs, access roads, extra work spaces, pipe storage yards, and contractor yards), the type of mine being crossed (i.e. surface or underground), and the material that is being mined. Explain why many have a status of “unknown.”
8. Include proposed avoidance, minimization, and mitigation measures for oil and/or gas wells located within 100 feet of the proposed construction work spaces.
9. Assess the potential impact of the Project during operation upon future natural gas well drilling sites or lost or impaired mineral rights. Describe any setbacks or other measures that may hamper a landowner’s ability to drill a new gas well.

10. Section 6.3.3 states “final Project design will include more specific identification of all mines in the vicinity of the Project.” Include an estimated schedule when final Project design would be completed and this information would be provided to the FERC.
11. Include the following measures that would be instituted with regards to mining:
 - a. communication plans or procedures that would be used with mine operators including what activities would require mine operators to notify MVP;
 - b. specific limitations that may affect mining along the Project such as restrictions to excavation, heavy equipment movement, blasting, and planned subsidence for room and pillar mining operations; and
 - c. specific measures that would be used in regards to landsliding and slumping, blasting, excavation, heavy equipment movement, and planned mine subsidence within proximity to the proposed Project.
12. Include a detailed discussion of abandoned, active and reclaimed mine lands as discussed in West Virginia Department of Environmental Protection’s May 22, 2015 letter to the FERC. Include proposed avoidance, minimization, and mitigation measures.
13. Include a figure that depicts the USGS Seismic Hazard Maps for ground accelerations with a 10 percent probability of being exceeded within 50 years.
14. Section 6.4.1 states “MVP will evaluate soil texture class, presence of high water tables, surface hydrology, and floodplain information through the Project area to determine where concrete coating, concrete weights or gravel-filled blankets may be required.” Include a table of the locations where Mountain Valley intends to use concrete coating, concrete weights, or gravel filled blankets.
15. Revise section 6.4.2 to include a map and table which identifies areas with a high probability of containing karst features. Also revise section 6.4.2 to:
 - a. identify measures that would be implemented in areas of known or potential karst. The measures should address:
 - i. BMPs to prevent contamination of groundwater and karst systems from run-off from the right-of-way;
 - ii. pre- and post-construction monitoring of water quality and yield of wells and springs used for domestic supplies within 150 feet of the right-of-way;
 - iii. identify the construction set-back from wells, springs, and karst surface expressions;
 - iv. blasting in karst terrain, and potential impact on wells and springs;
 - v. equipment storage, fueling, and maintenance procedures;

- vi. procedures in the event of an unanticipated discovery of karst features during construction; and
 - vii. description of measures that would be implemented to repair or mitigate the development of a sinkhole in proximity to the pipeline, and the monitoring of these features during Project operation.
- b. include the results of geotechnical or geophysical evaluations and studies; and
 - c. documentation of consultations with federal, state, and local agencies with regards to karst features.
16. Include a detailed discussion regarding the structural integrity of modern pipelines and their performance in karst areas, including an assessment of the possible unsupported span width of the proposed pipeline.
 17. Clarify if Mountain Valley consulted with any appropriate West Virginia resource agencies about caves along the pipeline route.
 18. Include the information depicted in figure 6.4-2 in a table format by MP.
 19. Revise table 6.4.3 to include the depth of the caves and potential for bat habitat.
 20. Revise section 6.4.2 to include the results of the site evaluations for areas identified to contain potential landslide hazards (such as MP 144.6 and MP 232.5). Discuss if the evaluation will include on-site geologic reconnaissance, aerial photograph and LiDAR evaluation. Specifically, address how the results of this study would be used to reduce the potential for landslides to occur during construction and operation of the Project. Include a table that identifies areas of high potential for landslides by MP, ranks the potential hazards, how this ranking may trigger additional investigations or re-routing, and the construction mitigation measures and operational monitoring. This study should be conducted by a state certified geologist or geotechnical engineer.
 21. Clarify the asterisk found in table 6.4-4 at MP 144.6.
 22. Section 6.6.1.4 states “where MVP will dispose of excess rock outside of the approved right-of-way, an approved landfill or alternative upland area will be utilized.” Clarify what is meant by “alternative upland area.”
 23. Revise section 6.6.1.5 to discuss proposed avoidance, minimization, and mitigation measures for sinkholes identified in table 6.4-2 as “in alignment,” within 200 feet of the centerline, “crosses,” and at MP 194 (open throat sinkhole). This section should also include avoidance, minimization, and mitigation measures for caves identified in table 6.4-3 as “adjacent” and “crosses.”

24. Section 6.6.1.1 states “the pre-construction condition of structures and utilizes will be documented.” However, this section later states “pre- and post- blasting structural surveys will be conducted structures and water supply wells within 150-foot of the blasting as necessary.” Clarify the use of the term “as necessary.”
25. Section 6.6.1.3 states “pipeline design and construction should incorporate earthquake-induced seismic loading criteria listed in table 6.6-1.” Clarify what is meant by this statement and if Mountain Valley would adhere to the criteria in table 6.6-1.
26. Appendix 6C states that wells within 0.25 miles of the proposed Project are identified, while table 6-C-1 states wells within the vicinity of the proposed Project are identified. Clarify this apparent discrepancy.

Draft Resource Report 7 – Soils

1. Section 7.3 states “actual mitigation measures and controls will be developed based upon field conditions and permit requirements.” Revise section 7.3 to include Mountain Valley’s proposed avoidance, minimization, and mitigation measures.
2. Include a discussion of contaminated areas that may be located along the proposed route and the potential for discovery of unknown soil contamination that could be encountered during construction of the proposed Project. Include the following:
 - a. sources searched to identified potentially contaminated areas; and
 - b. an Unanticipated Discovery of Contamination Plan.
3. For soil limitation tables 7.2-1, 7-A1, 7-A2 include the following:
 - a. acres impacted in addition to miles crossed;
 - b. county crossed; and
 - c. soil impact information for all aboveground facilities (including compressor stations, meter stations, MLVs), extra work spaces, contractor yards, pipe storage yards, and access roads.
4. Generate a table to include soil limitation that identify the following:
 - a. impacts for all Project components including the pipeline, compressor stations, meter stations, contractor yards, pipe storage yards, extra work spaces, and access roads (separate tables for each);
 - b. total acres of soils impacted for all soil limitations by Project component and county; and
 - c. both permanent and temporary impacts that would be caused by the proposed Project’s construction and operation.

5. Include a discussion of potential hazards to the proposed pipeline from ground heaving.
6. Revise section 7.1.2.2 to include a separate discussion of prime farmland and hydric soils (using the example table below) and include the following:
 - a. a separate table that identifies total impacts on prime farmland and farmlands of statewide importance in acres by Project component and county; and
 - b. impacts on farmland types including active agricultural land, agricultural land/fallow field, managed forest land, and open field/open land for the proposed pipeline and aboveground facilities for both temporary and permanent impacts.
7. Clarify if Mountain Valley would use hydric soil mitigation methods for soils identified to be partially hydric and if not identify how partially hydric soils would be handled during construction of the proposed Project.
8. Revise section 7.2.1 to include a table of the number of Major Land Resource Area (MLRA) miles crossed by Project component.
9. Revise section 7.3.1 to include a discussion of monitoring in agricultural areas. Specify:
 - a. who would be responsible for monitoring;
 - b. what would be monitored;
 - c. the frequency of monitoring; and
 - d. how long monitoring would be conducted post construction.
10. Section 7.3.1.2 states Mountain Valley would either conserve topsoil or import topsoil in residential areas. Clarify who would make this decision, and indicate if landowner approval would be required.
11. Section 7.3.1.2 states “rock will not be used as upper backfill in rotated or permanent cropland.” Clarify that rock would only be used to backfill the trench to the top of the existing bedrock profile as stated in our Plan.
12. Specify the following details regarding soil decompaction mitigation measures:
 - a. how areas of heavy compaction would be identified by Environmental Inspectors;
 - b. the specific methods MVP would employ if shallow tilling is not effective in mitigating compaction; and
 - c. when decompaction would be considered complete.
13. Revise section 7.3.1.6 to include the type of soil amendments and conditions under which soil amendments would or would not be used. Also include all methods

Mountain Valley would use to aid in revegetation (i.e. seed bed preparation, seeding methods, seeding rates, and anchoring methods).

14. Revise section 7.3.1.7 to identify the method that Mountain would use to remove excess rock and stone greater than four inches.

Appendix 7A Pipeline Route Soil Map Units and Descriptions

1. Revise tables 7A-1 and 7A-2 to include descriptions of the soil series cross by the proposed Project.

Draft Resource Report 8 – Land Use, Recreation and Visual Resources

1. Revise tables 8.1-1 and 8.1-2 to split the “forested woodland” category into three categories: deciduous, conifer, and mixed.
2. Revise section 8.1.1.1 to indicate that tree removal in wetlands during operation could occur within 15 feet of either side of the pipeline as stated in our Procedures section VI.D, not “within 37.5 feet of either side of the pipeline.”
3. Ensure that the full extent of access roads are depicted on alignment sheets or other aerial imagery, not just “where they occur within the limit of the aerial photography.”
4. Mountain Valley states that it would interconnect with existing Equitrans H-302 pipeline in section 8.1.2, while Equitrans states that it would connect with Mountain Valley at the proposed Webster Interconnect near the intersection of Equitrans existing H-306 pipeline. Include additional explanation and reconcile the apparent discrepancy.
5. Update table 8.1-2 to:
 - a. include acreage impacts broken out by county and state;
 - b. clarification why construction and operational impacts would be the same for land uses such as open land. Once construction has been completed the temporary right-of-way in many land types would be permitted to revert to pre-construction land uses;
 - c. combine the permanent operational right-of-way row and the temporary construction right-of-way row into a single row titled “Pipeline Right-of-Way.” Construction impacts should be the sum of both temporary and operational impacts;
 - d. combine the temporary access roads and permanent access roads into a single row titled “Access Roads;”
 - e. ensure that access road impact numbers include all access roads, including those for the right-of-way and aboveground facilities; and
 - f. add all aboveground facilities to the table and list each facility separately.

6. Section 8.1.2 discusses the use of slats within fencing to screen aboveground facilities and implies that they are not needed now, but could be utilized if “unanticipated visual impacts are identified post-construction.” Include an assessment documenting existing potential visual receptors at each aboveground facility, potential impacts, and justify the apparent conclusion that screening is not needed at this time. Note that the FERC will consider potential visual impacts on private receptors where appropriate despite Mountain Valley’s statement in section 8.4 that “private lands.....are not subject to federal or state visual management standards.” Include a discussion of natural vegetation as a screen.
7. Update the drainage tile discussion in section 8.1.3.1 to:
 - a. verify that Mountain Valley would flag any known drain tiles prior to the start of construction;
 - b. include a schedule for when permanent tile repairs would be completed (i.e. within so many days of pipeline installation); and
 - c. Mountain Valley’s willingness to hire a local train tile expert.
8. Update the farmland reserve program discussions to include information regarding any fees or penalties that may be assessed against a landowner due to the Project as well as any mitigation for such fees or penalties that Mountain Valley may provide for Project-related activities.
9. Include a discussion of special farming designations such as the Virginia Century Farm Program. Identify by milepost where MVP would cross special farming designated areas and the construction and operation impact (acres). Describe the program and, if construction or operation of the project would conflict with requirements of the program, how MVP would mitigate impacts.
10. Update the specialty crop and organic farms discussions to include a description of each crossing site that includes specific mitigation measures and details of coordination with landowners, farm operators, and/or program administrators. Additionally, include a table that identifies each tract that would be crossed and include the following information in the table:
 - a. type of specialty crop;
 - b. county/state;
 - c. start of crossing milepost;
 - d. end of crossing milepost; and
 - e. acres of impact for construction and operation.
11. Include a description of general impact avoidance, minimization, and mitigation measures that would be used by Mountain Valley to prevent impacts on certified organic farming operations and which could be fine-tuned to match site-specific conditions.

12. Include a discussion of potential direct or indirect impacts upon orchards, syrup-producing trees, bush crops, and apiaries.
13. Revise section 8.1.3.3 to include a discussion of mitigation proposed by Mountain Valley to allow logging operations to continue adjacent to the proposed pipeline.
14. Include a table that lists the name of each existing road that would be crossed by the Project. The table should include the following:
 - a. milepost of each crossing;
 - b. type of road (i.e. dirt, asphalt, concrete);
 - c. the name of the road crossed;
 - d. county and state;
 - e. jurisdiction (i.e. state, county, local);
 - f. public or private status; and
 - g. crossing method.
15. Clarify if Mountain Valley would install safety fencing around roadway crossings at night and on non-construction days.
16. Clarify whether Panther Creek Elementary School and the Greenbrier Academy for Girls mentioned in section 8.1.3.7 are the closest schools to the proposed pipeline, and whether they are the only two schools located within 0.5-mile of the pipeline.
17. Update table 8.2-1 to include all structures within 50 feet of construction work space. The table should include residences, commercial buildings and secondary structures (e.g., sheds, pools, barns, garages). For those structures within the work space, indicate whether Mountain Valley plans to relocate or purchase the structures. Include a list and description of any homes that Mountain Valley proposes to purchase outright.
18. As required in our *Guidance Manual for Environmental Report Preparation* section 8.2.2, include written landowner agreements for all residences that would be within 10 feet of any construction work space. For each location where a residence is within 10 feet of the construction work space, and the landowner has not yet provided a written agreement to Mountain Valley, include a discussion on why measures, such as reducing the work space, shifting the working side of the construction right-of-way, or moving or removing extra work spaces to maximize the offset between the residence and construction work areas are not feasible.
19. Section 8.2.2 states “homeowners will be notified in advance of any scheduled disruption of utilities.” Define “in advance.” In addition, revise section 8.2.2 to state that the right-of-way would be restored within 10 days after backfilling in residential areas.

20. Section 8.3 refers to agency correspondence located in appendix 1-G. However, agency correspondence is actually located in appendix 1-H. Update the text to reference the appropriate appendix.
21. Update table 8.3-1 to:
 - a. include a crossing method and any special construction measures for each special recreation land crossed by the Project;
 - b. resolve inaccuracies and inconsistencies within the table and between the table and text. Section 8.3 states the Jefferson National Forest would be impacted however, table 8.3-1 indicates the feature is not crossed by the pipeline. Several areas show an impacted area but are listed as “not crossed;”
 - c. describe land use / vegetation type(s) that would be affected; and
 - d. include and denote (give actual distance away) all recreation areas identified within 0.25 mile of the Project. Several areas are discussed in section 8.3, but are not listed in the table (i.e., Appalachian Trail; Camp Roanoke; and Great Eastern Trail).
22. Include a discussion of any potential Project impacts on any existing special use permits associated with FS lands.
23. Section 8.3.2 states that the crossing of the Blue Ridge Parkway would occur at MP 234.6, however table 8.3-1 reports the crossing at MP 238.9. Clarify the apparent discrepancy and update the section and/or table as necessary.
24. Update section 8.3.5 to include a discussion of impacts and mitigation for all recreation areas listed in table 8.3-1 due to construction and operation of the Project.
25. The following special use and recreation areas are discussed in section 8.4.3 as being crossed by or within 0.25 mile of the Project, but are not listed in table 8.3-1 or discussed in section 8.3.5. Update both the section and the table with a discussion of the following areas:
 - a. Appalachian Trail;
 - b. American Discovery Trail;
 - c. Staunton-Parkersburg Turnpike (National Scenic Byway);
 - d. Weston Gauley Bridge Turnpike (NPS National Recreation Trail);
 - e. Coal Heritage Trail/Midland Trail;
 - f. Farm Heritage Road (Scenic Byway);
 - g. Peters Mountain Wilderness (within 0.2 mile of the Project);
 - h. Pig Hole Cave (within 0.2 mile of the Project);
 - i. Blue Grass Trail;
 - j. Newport Recreation Area;
 - k. Blake Preserve; and

1. Catawba Road (scenic byway).
26. Revise section 8.4.2 to include a discussion of proposed mitigation measures developed with the landowner(s) for visual impacts due to the Stallworth Compressor Station.
27. Revise section 8.4.3 to include mitigation for areas that would be impacted by the Project (such as Staunton-Parkersburg Turnpike, Interstate 79, and the Coal Heritage Trail/Midland Trail).
28. Include an assessment of any potential direct or indirect impacts (actual, visual, recreational) upon Pembroke Waterfall, Allegheny Trail, Potts Valley Trail, Orvis Fly Fishing School, and the Hanging Rock / Raptor Observatory.
29. Resolve milepost differences between table 8-C and section 8.4.3. For example, section 8.4.3 states the Project would cross Little Stoney Creek at MP 202.8 while table 8-C lists this crossing at Little Stoney River at MP 202.9. Resolve the discrepancies about the name of the waterbody.
30. Section 8.4.3 states the Project would not cross the Bluegrass Trail at a perpendicular angle which would lengthen the visual impact. Clarify why Mountain is not using a perpendicular angle for the trail crossing.

Appendix 8A Preliminary Locations of Extra Workspaces

1. Update table 8-A to include the dimensions and a justification for each extra work space along the proposed right-of-way.

Appendix 8B Access Roads

1. The MPs listed for each access road within appendix 8-B and appendix 1-G do not match between the tables. Combine appendix 8-B and appendix 1-G tables to create a single table for all access roads (temporary and permanent). The table should include the following information:
 - a. access road ID;
 - b. MP;
 - c. county and state;
 - d. ownership (federal, state, county, private);
 - e. whether the access road is temporary or permanent;
 - f. whether the access road is existing or new;
 - g. the existing surface type of the road (e.g. dirt, paved, gravel);
 - h. specific modifications that would be made to each access road;
 - i. the dimensions of the access road (length and width);
 - j. acres of impacts (temporary and permanent separately) by land use type for any land disturbance beyond the existing footprint of an existing road; and

- k. explicit site-specific justification for all permanent access roads. Also include justification for all new temporary and permanent access roads in wetlands, open water, or upland forest.

Appendix 8C Key Observation Points

1. Many locations in table 8-C are not discussed in section 8.4.3. Revise section 8.4.3 to include a discussion of all locations found in table 8-C. Update appendix table 8-C to include the following:
 - a. Key Observation Points (KOP) for all Project components, including aboveground facilities;
 - b. distance and direction from each KOP to the closest Project component;
 - c. state what specific resource(s) that the KOP would be viewing; and
 - d. county and state of each KOP.

Draft Resource Report 9 – Air Quality and Noise

Air Quality

1. Revise section 9.1.1.1 to include a general description of the climate regions within the states of West Virginia and Virginia.
2. Revise section 9.1.1.2 to include the current State Ambient Air Quality Standards for West Virginia and Virginia.
3. Revise section 9.1.3.1.2, to include an analysis of the applicability of the National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers (NESHAP Subpart JJJJJ) for the heaters.
4. Revise section 9.1.2 to include:
 - a. a list of all Project-related emission sources and quantified emissions of criteria air pollutants (NO_x, CO, PM-10, PM-2.5, SO₂, VOC, HAP, GHG) and fugitives in tons per year during each phase of construction and operations. Include supporting calculations, emission factors, fuel consumption rates, vehicle and equipment power ratings, utilization rates, hours of operation, and list all specific control measures assumed in the emission calculations. Identify all mitigation measures that would be implemented to reduce air pollution from Project-related activities; and
 - b. include regional cumulative air emissions data for the Project. Include an inventory of proposed and reasonable foreseeable air emission sources in the counties (or other distance as necessary) where stationary sources are proposed, documenting their location, distance from the proposed Project, estimated or permitted emissions, for each criteria pollutant in tons per year and identify the potential incremental cumulative impacts of the Project.

The emissions sources should include, but not be limited to: FERC jurisdictional projects, intrastate pipelines and compression, gathering pipelines, gas processing facilities, gas wells, industrial or commercial facilities, housing developments, etc.

5. Include an air quality screening (AERSCREEN) or refined analysis (AERMOD or EPA-approved alternative) of the proposed Bradshaw, Harris, Stallworth and Swann Compressor Stations demonstrating that the increase in emissions of criteria pollutants do not result in local exceedance of the National Ambient Air Quality Standards (NAAQS); state ambient air quality standards; or cause or contribute to any violations of the NAAQS. This modeling should:
 - a. include all input parameters (emission rate, stack height, stack temperature, exit velocity, etc.) and justify the basis of any assumptions;
 - b. include a narrative describing and justifying the use of meteorological data, terrain data, etc. For any mitigation measures, or air pollution control equipment, include data to justify control efficiency; and
 - c. include output data showing maximum impacts outside the fenceline (the EPA-defined ambient air boundary), and at sensitive receptors in the area (schools, hospitals, nursing homes, etc).
6. Revise section 9.1.4 to include specific details regarding MVP's fugitive dust control plan.
7. Indicate whether Mountain Valley would install any blowdown facilities, if so, estimate the number of yearly releases and the volume of VOC released per blowdown.

Noise

1. Revise tables 9.2-2, 9.2-3, and 9.2-4, to include the existing ambient noise levels at each nearest sensitive area (NSA) identified. Clarify whether the modeled predicted noise levels at the NSAs include the resulting noise impacts from the Project combined with the NSAs' existing ambient noise level, or only the noise impact from the Project. If the latter, include the resulting combined noise levels from the Project and the existing ambient noise at each NSA combined and explain the calculation methodology used.
2. Include specific mitigation measures to be employed for each location of noise sources to minimize noise impacts on the NSAs during construction and operation.
3. Revise section 9.2.1 to include any applicable noise regulations at the state or county level that would apply to HDD construction and/or any other nighttime construction activity.
4. Revise section 9.2.3 to include:

- a. a list of all noise generating equipment, including meter stations and MLVs, that would be operated and corresponding noise levels during each of construction and operations;
 - b. for each NSA, the corresponding distances from the noise source, general land use of the affected areas, vegetation type and topography, and existing ambient noise levels at the NSA and noise source locations; and
 - c. resulting noise levels due to Project activities, and the predicted noise levels at the NSA, taking into account the existing ambient noise levels at the Project and the affected NSA locations. Indicate assumptions and the methodologies used in estimating the predicted noise levels.
5. Consult with the appropriate agencies and if applicable, consider and assess potential noise impacts on other noise sensitive resources such as the Brush Mountain, Peters Mountain, and Cranberry Wilderness Areas.
 6. Include the same figures and data tables noted above for all NSAs located near HDD sites. Include a discussion of potential noise mitigation measures that could be used at NSAs near HDD sites such as sound walls or tents, as well as the potential to offer alternate temporary accommodations (i.e., hotel) if applicable.
 7. Include a key for color codes and other features depicted in figures 9.2-2, 9.2-3, and 9.2-4.
 8. Indicate whether (and if so how) Mountain Valley would perform measurements of actual noise levels during both construction and operation at all applicable locations to confirm modelling results and to confirm that produced sound levels are below the criteria.
 9. Indicate whether Mountain Valley would install any blowdown facilities and indicate whether the blowdown would be installed with a silencer and estimate the noise impact at the nearest NSAs.

Second Draft Resource Report 10 – Alternatives

1. Include a quantified evaluation of the facilities, equipment, and processes that would be required to transport a Project-equivalent volume of natural gas from the supply area to the destination(s) locations via alternative modes such as truck and rail.
2. Describe the ability to relocate the natural gas receipt and delivery points with planned customers to accommodate route alternatives or route variations.
3. As previously requested in our comments on the first draft of RRs 1 & 10 dated March 13, 2015; list, quantify current capacity, and discuss any existing interstate pipelines that could serve as system alternatives. These pipelines should include those that Mountain Valley described as “other existing interstate pipelines that

have the ability to essentially move gas due east out of the basin and interconnect with other separately owned interstate pipelines that move essentially due south.” In particular, examine any existing systems or combinations of systems, that may connect directly or indirectly to Transco Station 165.

4. Supplement all alternative comparison data tables to also include the following parameters: forested wetlands (miles and acres affected during both construction and operation), interior forest (miles and acres affected during both construction and operation), major river crossings (number), streams with drinking water designation (number), shallow bedrock (miles), and residences within 125 and 250 feet of a work area (number).
5. Discuss in section 10.4.3 the possibility of a single pipeline that could accommodate the firm transport capacity required of both the Mountain Valley and Atlantic Coast Pipeline (ACP-Docket No. PF15-6-000) projects combined, following a single route from near their points of origin in West Virginia to near the existing Transco Station 165 in Virginia. Using the environmental data available in both the Mountain Valley and ACP dockets, compare impacts for general resources (geology, soils, waterbodies, wetlands, vegetation, wildlife, cultural resources, land use, and air quality) along both the Mountain Valley and ACP routes to determine if one route would have less impacts than the other.
6. Include in section 10.5 actual (e.g., desktop) data to support and quantify the assertion that much of Route Alternative 1, Modified Route Alternative 1, and Hybrid Alternative 1 are located along severe side slopes and therefore are not suitable for construction and that they “represented insurmountable construction challenges.” If applicable, identify substantive alternative, partial route segments that do not have excessive side slopes relative to the proposed route.
7. Revise section 10.5 to further assess in detail the viability and constructability of the Northern Pipeline Alternative. Specifically, address the advantages of this alternative being collocated with existing pipelines (i.e., approximately 60 miles along Transco) and proposed pipelines (i.e., ACP).
8. Perform a more detailed analysis of the viability and constructability of the Supply Header Collocation Alternative, and support with data the generalized statement that ridgetops “in the region are not wide enough for placement of two adjacent pipelines.” Include collocation with proposed rights-of-way as an additional data category for these analyses. Revise table 10.5-3 to include the number of landowner parcels crossed by the Supply Header Collocation Alternative.
9. Revise figure 10.5-3 to depict the latest route of the proposed Supply Header pipeline, in addition to the proposed Mountain Valley pipeline route, and the Supply Header Collocation Alternative.

10. Include individual sections within RR10 for both the Appalachian Trail and the Blue Ridge Parkway explicitly comparing all alternative crossing sites to each other and include topographic maps, aerial photography, ground-level photography, data comparison tables, and descriptive text. If geotechnical analyses indicate that an HDD or a bore of the Blue Ridge Parkway and Appalachian Trail are infeasible, describe how Mountain Valley would modify its route to find feasible crossings.
11. Include an analysis of a re-route and HDD of Roanoke Road.
12. Reformat sections 10.6.4, 10.6.5, and 10.6.6 so that the proposed route and alternate routes 110, 110J, and 110R are all collectively and simultaneously compared to each other in one section including the utilization of one comprehensive comparison table covering all four routes.
13. Based on stakeholder comments, include an assessment of potential designated black bear habitat and the Mountain Shadow Trail that may affect Alternative 110.
14. Include actual data to quantify the statement that “Alternative 135 would cross more of the easement” for the Nature Conservancy/Ducks Unlimited Conservation Easement described in section 10.6.11. Describe the setting and use of this property, and report the extent and nature of the impacts that would result from selection of the proposed route.
15. Based on stakeholder comments, include an assessment of whether the intermodal rail yard’s status as “under construction” would affect Alternative 135.
16. Clarify whether the Higginbotham property is owned or managed by the Blue Ridge Nature Conservancy, describe the setting and use of this property, and report the extent and nature of the impacts that would result from selection of the proposed route.
17. Include data and an explanation to clarify the statement “the alternative does move the route closer to several residences” regarding Alternative 192 in section 10.6.17. That statement is not supported by data in table 10.6-17.
18. Supplement table 10.6-19 to also include data columns for individual tract/parcel numbers as well as a conclusion statement (where applicable) regarding whether a stakeholder’s routing or specific resource avoidance concern (e.g., Project proximity to a home, well, spring, wetland, future residential development, etc.) expressed at any time to either to Mountain Valley directly and/or filed on the docket has been resolved (resolution including not just route or work space adjustments, but also potentially changes in construction method or other mutually agreeable mitigation). The analysis should be based on direct stakeholder

discussions and on-site evaluations, if the landowner is willing, and on available desktop imagery and data if landowner access is denied. Include two additional, comparable tables with one detailing any requested route modifications/mitigation that were rejected by Mountain Valley and the other describing any such requests that are pending while under review by Mountain Valley.

19. Include a comparison table and map for the Columbia Gas Peters Mountain Variation in section 10.6.19.
20. Revise figure 10.6-10 to depict the boundaries of the Blake Preserve (Mill Creek Springs Natural Area Preserve).
21. Revise figure 10.6-14 to depict the boundaries of the Higginbotham property.
22. Revise figure 10.6-15 to depict the boundaries of the Town of Boones Mill water source treatment plant.
23. Prior to submittal of the application, file on the docket the proposed location of the Swann Compressor Station and an assessment of viable alternatives so that the public and stakeholders will have a reasonable opportunity to review and comment on that facility during the pre-filing period.
24. Section 10.7.1 indicates that the proposed site of the Bradshaw Compressor Station would be located directly along the proposed route, however figure 10.7-1 shows a gap in between. Clarify the apparent discrepancy in the text and/or map, and indicate whether a small section of pipe would be needed to connect the proposed Bradshaw Compressor Station with the proposed pipeline. Revise section 10.7.1 to discuss the need for an additional connecting pipe, if applicable, and discuss any additional pipeline needed in all other RRs. Further, section 10.7.1 states that Bradshaw Compressor Station alternate sites 1A and 1B are not located directly along the pipeline route. However, figure 10.7-1 depicts both locations as being directly along the pipeline route. Clarify the apparent discrepancy in the text and/or map.
25. As previously requested in our comments on the first draft of RRs 1 & 10 dated March 13, 2015, include applicable information for all proposed and alternate compressor station sites as described in section 10.4 of our *Guidance Manual for Environmental Report Preparation*. Include information on NSAs for all four directions (not just the closest), tree size and composition (hardwood or evergreen) for the vegetation buffers as well as the width of vegetative buffers in relation to NSAs, and topographic considerations for noise and visual screening for the NSAs. Include topographic maps as well as aerial photography depicting the above-mentioned features. Describe and assess in detail the “two residences in close proximity to the proposed site” of the Stallworth Compressor Station.

26. Mountain Valley reported that the alternative sites described for the Bradshaw and Stallworth Compressor Stations are essentially non-viable because of site topography that would require extensive cut and fill during construction. Identify and fully assess at least one viable, constructable alternative site for those two stations as well as for the Swann Compressor Station.
27. Section 10.7.2 states the need for additional pipeline to tie the Harrison Compressor Station with the WB-TCO Interconnect would be minimal. Clarify whether additional pipeline or facilities, beyond those described in the draft RRs, would be needed to tie into the proposed WB-TCO Interconnect. If so, this additional pipeline component should be discussed in all other RRs.
28. Section 10.7.3 states that the selection of the preferred Stallworth Compressor Station location would require MVP to purchase two nearby residences. Revise section 10.7.3 to discuss the landowner's willingness to sell these residences to MVP, as well as all other tracts that would be used to accommodate compressor stations. Further, report each landowner's willingness to accommodate all other aboveground facilities, such as pig launchers/receivers, meter stations, MLVs, and communication towers.
29. Include a discussion of the feasibility of using electric-motor-driven compressors at the proposed new compressor stations. Include the rate of electricity required and the number of electric motors required. Compare the size of the electric transmission line necessary under the current proposal with what would be required for the electric motors. Quantify the footprint of all facilities needed to use electric-driven compressor units.
30. Provide a discussion regarding the feasibility of using waste heat electric generation (cogeneration) for the proposed turbines at each of the new compressor stations. Provide the rate of electricity potentially generated on a kilowatt/month basis and compare this with the amount of electricity used by the compressor station(s) per month. Describe the average load factor of the facility and any impediments that would prevent the operation of the compressor station continuously at 60 percent minimum load.

Draft Resource Report 11 – Reliability and Safety

1. Describe other actual or potential components of natural gas, with emphasis on likely other or trace components that may be particular to any known source areas for the natural gas to be transported for this Project. Describe potential risks to public health from leakage, venting, compressor stations, or any other Project component, along with any plans to avoid, minimize, or mitigate potential impacts.

2. Describe how Mountain Valley would monitor for changes in population density around the pipeline. If population density changes such that higher classification standards of safety must be met, discuss how and when MVP would be required to meet the new standards.
3. In addition to schools, include a listing of nursing homes, hospitals, and other facilities with sensitive sub-groups that may be difficult to evacuate located within 0.5-mile of any Project facility as well as their distance (from the nearest milepost or facility) and direction relative to the Project.
4. Clarify whether both methods to calculate high consequence areas (HCA) would be used and that all applicable sites would be reported, in order to provide the most comprehensive listing possible. Section 11.1.3 states the HCA analysis is pending. Include a timeline for when this analysis will be complete and provided to the FERC.
5. Include a more detailed overview of how steep topography, land instability, geology, and other natural forces could affect reliability and safety for the Project, and describe any associated proposed impact avoidance, minimization, and/or mitigation measures proposed. Clarify whether MVP anticipates the use of strain gauges in steep or unstable areas, and if so describe their features and usage.
6. Mountain Valley states that it's "procedures and practices will meet or exceed the pipeline safety regulations." Describe any Project safety features that would result in facilities or measures that are more stringent than required by the U.S. Department of Transportation.
7. Identify where the pipeline control center would be located.
8. Discuss whether Mountain Valley would sponsor and financially support "periodic emergency response drills" conducted with local emergency responders. Include an analysis of existing emergency responders, equipment, labor, status (full-time or volunteer), and capability along the Project route, particularly for fire departments in remote or relatively inaccessible areas. In addition, page 11-16 indicates Mountain Valley would meet with emergency responders annually while page 11-17 says "periodically." Resolve the apparent discrepancy.

COMMENTS OF FEDERAL & STATE COOPERATING AGENCIES

Please address the following comments from other federal and state cooperating agencies. If there are data overlaps with the FERC staff questions, include the answers to cooperating agencies comments when answering the FERC questions. It is not necessary to address comments on spelling or grammar.

RR Page/Section	Comment
U.S. Forest Service Comments on Resource Report 1	
<p>The following comments are specific to National Forest land as well as project effects that could occur outside NFS lands (e.g., downstream effects of project activities).</p> <p>It is unclear if the draft resource reports discussed only the preferred alternative only, or all alternatives combined. The final resource reports should include a detailed comparison of alternatives.</p> <p>Data collection and analysis of all proposed alternatives should be considered in sufficient detail to allow the FS to make informed decisions about the differential impacts of each proposal.</p> <p>In order for the Forest Service to make a reasoned decision as it relates to the Mountain Valley Pipeline proposal, the effects disclosure must be complete. This disclosure of impacts should include all vegetation disturbing activities such as access roads, staging areas, temporary workspace, etc. in addition to the pipeline ROW itself.</p>	
1-16	Please replace the graphic on page 1-16 with a graphic that is legible.
1-17	On page 1-17, please determine what meets the Forest Plan direction and site specific objectives with regards to the merchantable timber, topsoil, etc. that are removed during construction and made available to the "landowner." The same comment applies if there is an option of burning the slash.
General	Please note that the "Appalachian Trail" should be universally referred to by its official and formal name in all instances for this proposal – Appalachian National Scenic Trail.
U.S. Forest Service Comments on Resource Report 2	
General	<p>The final resource reports should include information on data collection and analysis of all proposed alternatives. This information should be considered in sufficient detail to allow the FS to make informed decisions about the differential impacts of each proposal.</p> <p>Comparisons between the relative impacts of tons of sediment, miles of impacted streams and acres of wetlands, and other metrics necessary to communicate the effects of proposed action on water resources should be reported to the FS.</p> <p>All proposed crossing of any stream or wetland on NFS lands should be discussed and designed in cooperation with the FS specialist and will be approved on a case-by-case basis. Section 2.2.1.3 and 2.2.1.4 of the final resource reports should include crossings of streams and wetlands and should document the discussions with the FS about the crossings.</p>
General	<p>The Resource Report in describing the affected environment for groundwater needs to address the Jefferson National Forest (JNF) specifically in these sections:</p> <ul style="list-style-type: none"> • 2.1.1 Aquifers – Geology, Hydrology, Uses, and Quality • 2.1.2 Sole-Source Aquifers • 2.1.3 Water Supply Wells and Springs
General	<p>The Resource Reports in assessing environmental consequences needs to address the potential for the MVP project on the Jefferson National Forest (JNF) to affect groundwater resources in this section:</p> <ul style="list-style-type: none"> • 2.1.4 Construction Impacts and Mitigation
General	Identify any hazardous or toxic chemicals or materials that would be transported to and used in the pipeline corridor. Describe the spill prevention and control procedures for transporting and using such materials.
2.3	The final draft resource reports should discuss and analyze the potential for the proposed pipeline project to effect wetlands (swamps, bogs, springs/seeps, etc.), streams, floodplains, wells, and public water supplies.

RR Page/Section	Comment
2.3	The Draft Resource Report for the MVP states that wetlands will be delineated according to the appropriate Corps of Engineers (COE) publications including but not limited to the <i>Corps of Engineers Wetland Delineation Manual, 1987</i> . Wetlands identified and delineated for the analysis of the proposed project on NFS lands should use the new standards clarified by the Clean Water Rule under the Clean Water Act, finalized by the EPA on May 27, 2015.
2.3	Under the FS's interpretation of the Clean Water Rule, all streams identified as perennial, intermittent, and ephemeral are subject to the Rule. Therefore, the final resource reports should include an inventory and assessment of all streams, springs/seeps, bogs, fens, swamps, and other water bodies. The final resource reports should also include a map which identifies all streams in the disturbance corridor and immediate area of effect as perennial intermittent or ephemeral.
2.3	The final resource reports should include a map of all delineated wetlands, total acreage of all delineated wetlands, and a report that includes the delineated wetland type per the guidelines in the <i>Classification of Wetlands and Deepwater Habitats of the United States</i> . If the wetland extends outside the proposed area of disturbance, then the report should include the total acreage of the wetland with the amount of proposed disturbance identified.
2.3	The final resource reports should include a discussion of any crossing of wetlands on NFS lands, including a discussion of the necessity of crossing wetlands on NFS lands versus other practical alternatives.
2.3	The final resource reports should also include an assessment of the direct and indirect effects of the proposal to wetlands as well as any measures proposed to mitigate effects of project construction on wetlands.
Sedimentation	According to the draft resource reports, proposed actions include ground disturbance that exceeds state regulatory thresholds. Therefore, Erosion Control Plans should be developed that criteria set by both the Virginia Department of Environmental Quality (Virginia DEQ) and the standards provided in the Jefferson National Forest Plan. Please note <i>the FS may require higher, site-specific standards for Erosion Control Plan, as compared to state requirements, on a case-by-case basis</i> .
Sedimentation	<p>The final resource reports should include an analysis and assessment of impacts based on the use of a sediment modeling program that includes the delivery estimates of sediment to streams through evaluation of the following variables at a minimum:</p> <ul style="list-style-type: none"> • Proposed disturbance area: including the disturbed area of the pipeline corridor, access roads, staging areas, and any other ground disturbance associated with the installation and maintenance of the pipeline and associated facilities. Any sedimentation from illegal use by ATV's, horses, vehicles, or other unauthorized activities that are possible as a direct result of the pipeline construction should also be estimated and modelled. The decision to include these activities in monitoring should be based on the existing legal and illegal uses of FS and adjacent lands in the immediate vicinity. • Slope (both the slope of the disturbed surface and the side slope in the vicinity of the proposed disturbance) • Soil type (to include the fine fraction of the soil) • Distance to a sediment delivering channel (for the FS, this is equivalent to the flow path that begins at an 11-acre watershed).
Sedimentation	The analysis should estimate the amount of sediment delivered to the channel (generally expressed in tons), and the fate and impact of that sediment in the context of the natural background sediment of the watershed. Discussions of sediment impacts should be related to the beneficial use of the waterbody and should quantify the amount of sediment produced by the proposed action and its effects on the stream habitat. The analysis should be performed in sufficient detail so that the FS can evaluate the impacts to Threatened, Endangered, and the Regional Forester's Sensitive Species and the stream health. Sufficient stream habitat information should be collected to assess these impacts. These should one or more of the following: pebble counts or other physical habitat assessments, benthic macroinvertebrates monitoring, stream chemistry and turbidity. Selection of the appropriate assessment and monitoring strategy should be coordinated in advance with a FS specialist. Cumulative effects of associated activities and pipeline construction on private property in the analyzed watersheds, past activities, and anticipated future activities in the modeled watersheds on public and private property must be considered and included in the estimated disturbance as is appropriate.
U.S. Forest Service Comments on Resource Report 3	
3.1	In addition to the agencies listed in paragraph 1, please include the Forest Service as a coordinating agency when identifying fishery resources in the Project area.

RR Page/Section	Comment
3.1.1	The draft resource reports should identify all streams, waterbodies, wetlands, floodplains and other riparian areas crossed or potentially affected by the proposed pipeline, not just those categorized as supporting a recreational fishery or as significant according to FERC definition. The beneficial uses of streams in the affected area should be identified including any ecological and human benefits, as the FS will require this information for its review of project effects on NFS lands.
3.1.2	Some streams in the project area do not support a fishable population of game fish, however, they support aquatic and riparian biota that are important to the functioning of the aquatic community, and thus, should be addressed in the final resource reports. The FS will require this information for its review of project effects on NFS lands.
3.1.2	In the final resource reports, please clarify the contents of section 3.1.2. This section is confusing because it identifies only warmwater and coldwater fisheries as existing fishery resources, and then goes on to address freshwater mussels, including T&E species which are also discussed in section 3.1.3 .
3.1.2.2	Table 3.1-1 referenced in this section does not include some species of fish or mussels known from streams crossed by the proposed pipeline near or downstream from FS land. Streams within the project area need to be identified along with the associated species.
3.1.2.2	Aquatic species other than fish or mussels need to be addressed either in this section or the next. Specifically, but not necessarily limited to amphibians (ie. hellbenders which are known from the area), aquatic insects, and crustaceans (ie. Spiny stream crayfish and Teays River crayfish).
3.1.2.2	In addition to Federally and State endangered or threatened species, MVP needs to address Forest Service Sensitive Species, Locally Rare species, and management indicator species. These need to be addressed either in this section, the next section, or 3.4 Endangered, Threatened, and Special Concern Species .
3.1.3	In addition to Federally and State endangered or threatened species, MVP needs to address Forest Service Sensitive Species, Locally Rare species, and management indicator species. These need to be addressed either in this section, the previous section or 3.4 Endangered, Threatened, and Special Concern Species .
3.1.3	Not all the species listed in this section are in Table 3.1-1.
3.1.3	Forest Service Sensitive Species, Locally Rare species, and management indicator species should be included in Table 3.1-2 or their own table.
3.1.3	Identify any Priority and Reference watersheds from the Revised Jefferson National Forest Plan 2004, as well as Management Prescriptions 9A4 (Aquatic Habitat Areas, specifically Craig Creek), and 9F (rare communities).
3.1.4	MVP states that it agrees to follow the recommendations of the VA Chapter American Fisheries Society outlined in a February 23, 2015 letter <u>to the extent most practical</u> , and then states that “therefore, fishing or recreational activities near these resources will experience only minor and temporary nuisances.” The recommendations made by the VAAFS, and underlying concerns leading to those recommendations, need to be addressed prior to making a determination of effect.
3.1.4	Please include a more thorough discussion on short and long-term impacts on stream and riparian habitat and biota associated with pipeline construction activities, including sedimentation, turbidity, water pollutants, dissolved oxygen, pH, and temperature. Biota should include all those identified in sections 3.1.2 and 3.1.3.
3.1.4	Please include an analysis of potential contamination to water (and any other resource) that could result from construction equipment (i.e., oils, fuels, and fluids) and materials used to construct the pipeline or associated facilities. A response plan for equipment failures resulting in spills of contaminants should be described and submitted for approval to the FS.
3.1.4	Include an analysis and monitoring plan of potential water contamination and in-stream effects resulting from long-term operation and maintenance of the proposed pipeline.
3.1.4	Include a detailed description of the proposed stream crossings on National Forest and their associated impact to the stream and riparian resources. Provide to the FS a stream crossing monitoring plan to be implemented during operation of the pipeline. The plan should include the rationale for scheduling the timing of stream monitoring, monitoring locations, and the specific criteria MVP would use to determine whether stream stability and bank conditions are being maintained, as well as remediation actions what would occur should crossing not meet the criteria. The plan should include documentation of MVP’s consultation with the appropriate agencies in developing the plan.

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3.1.4	A mussel study plan needs to be approved through not just VDGIF but the FWS for federally listed species. The FS should receive any draft study plans. Mussel relocation should not be considered a substitute for minimizing effects to streams.
3.1.4	Cumulative effects of associated activities and pipeline construction on private property in the analyzed watersheds, past activities, and anticipated future activities in the modeled watersheds on public and private property must be considered and included in the estimated disturbance as is appropriate.
3.1.4	Describe hydrostatic testing in relation to FS land and streams. Determine how much water will be used and where it will come from and how it will be discharged for the process, and evaluate in effects. Water withdrawal and discharge plans should be reviewed by the FS for impacts to National Forest land, prior to approval from regulatory agencies.
3.2.1	In addition to the descriptions of ecoregions derived from the EPA, ecological descriptions used by the Nature Conservancy and located on the NatureServe website are commonly used, accepted in the vegetation scientific and management communities, and are recommended to be used in this document to provide continuity with vegetation descriptions used by the Jefferson National Forest in documents such as the Revised Land and Resource Management Plan.
3.2.1	Regarding the discussion of the Ridge and Valley and Blue Ridge, a reference is made to longleaf pine, loblolly pine and post oak being dominants in these ecoregions. Please note that longleaf pine and loblolly pine are not native to these ecoregions and post oak is found occasionally.
3.2.1	Ecologically important pine species to this region, such as table mountain pine (<i>Pinus pungens</i>), pitch pine (<i>Pinus rigida</i>), and shortleaf pine (<i>Pinus echinata</i>), should be included in the description of evergreen forest. Complete common names for Red spruce and balsam fir, as well as accompanying scientific names, should be included for consistency.
3.2.9	All Special Biological Areas designated on the Jefferson NF and located on or near the proposed pipeline corridor and all alternative locations should be described.
3.2.9	All Sensitive plant species for the Jefferson NF should be identified in this section or a biological evaluation by suitable habitat type for all proposed alternatives, and in table 3.3-1.
3.2.9	All locally rare plant species for the Jefferson NF should be identified by suitable habitat type for all proposed alternatives in this section and in table 3.3-1.
3.2.9	Section 3.2.9.2 of the final resource reports should include the small whorled pogonia, <i>Isotria medeloides</i> . The species occurs in the vicinity of the project area and two occurrences are known about 2 miles from the proposed project route on NFS lands.
3.2.10	All Sensitive plant species for the Jefferson NF whose habitat occurs along any proposed route alternative and/or are documented in route surveys on the Jefferson NF should be addressed in this section of the final resource reports.
3.2.10	All locally rare plant species for the Jefferson NF whose habitat occurs along any proposed route alternative and/or are documented in route surveys on the Jefferson NF need to be addressed in this section of the final resource reports.
3.2.10	No mention is made of non-native invasive plant (NNIP) species. Rights-of-way are often areas where NNIP get started and may be corridors through which they can move to other sites. This document should describe how they will treat NNIP before construction, prevent the construction operations from introducing NNIP, and how they intend to monitor and treat NNIP after construction is completed.
Table 3.2-1	Disclose the acres (not miles) of Vegetation Types affected in Table 3.2-1 by ownership. Include the impacts of the ROW itself as well as any access roads. The FS requires this information so that a decision can be made based on impacts to NFS lands.
3-45 through 3-75	Describe impacts to vegetation on NFS lands in terms of Major Forest Community Types as described in the Jefferson National Forest Final Environmental Impact Statement for the Revised Land and Resource Management Plan (Forest Plan FEIS) pages 3-45 through 3-75.
3-114	Disclose acres impacted in forested stands greater the 40 years and 100 years old by Major Forest Community types per objectives 8A1-OBJ2 and 8A1-OBJ3 on page 3-114 of the Jefferson National Forest Revised Land and Resource Management Plan (Forest Plan).

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General	The final draft resource reports should include results of an extensive vegetation survey that documents stand age and height and species by 2" diameter class for all areas potentially impacted by the proposed ROW and any access required during construction. This will be necessary to disclose the impacts described in the first three items above. We also recommend that site index should be measured as that information can be useful in preliminary estimates of volume and value of any wood products. We encourage the use of the Forest Service Common Stand Exam methodology.
General	Please disclose the impacts to vegetation immediately adjacent to the temporary construction zone due to root disturbance from excavation and root compaction resulting from heavy equipment operation. Evaluate the likelihood of initiating oak decline as a result of these activities.
3-16	Do not "stack" brush and slash on NFS lands as described on page 3-16 of DRR due to fuel loading concerns. Burning or chipping and blowing are acceptable mitigations for disposable of non-merchantable material.
3-17	Please discuss mitigation measures to reasonably assure successful restoration through natural revegetation of the temporary construction zone, as described on Page 3-17 of the DRR; i.e. "right-of-way surface condition is similar to adjacent undisturbed lands." Mitigation measures would likely include control of non-native invasive plants (NNIP's) and tree planting.
2-26 and Appendix B	Disclose the acres of existing and future old growth as identified by the Forest Plan (page 2-26 and Appendix B) that would be impacted. Existing old growth will be defined pursuant to the Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region (R8 Guidance).
General	The final draft resource reports should include results of vegetative surveys designed to address the four operational criteria that define old growth per the R8 Guidance. This will be necessary to address the impacts described above. These surveys may coincide with the vegetation surveys described earlier with the addition of coring of trees that represent the oldest age class of a given stand so that criteria 1 of the R8 Guidance is addressed.
General	Discuss the potential for NNIP's introduction from construction, access, and increased human accessibility. Incorporate Integrated Vegetation Management (IVM) practices for mitigating the likely introductions.
General	Disclose all impacts in terms of cumulative impacts, as well as the direct and indirect impacts discussed in the draft resource report. There appears to be no recognition of impacts in the context of the surrounding landscape and in consideration of other past, current, and reasonably foreseeable actions as required by the National Environmental Policy Act.
3.3.1	In addition to the agencies listed, MVP should list the USDA Forest Service as a coordinating agency used to identify potential wildlife species in each habitat type.
3.3.1	Management Indicator Species (MIS) and locally rare species for the Jefferson NF should be identified in existing resources or a separate report by suitable habitat type, and in table 3.3-1.
3.3.1	Evergreen forest species should include table mountain pine, pitch pine, and shortleaf pine.
3.3.2	Locally rare species for the Jefferson NF should be identified in this section or a separate report by habitat type, and in table 3.3-1.
3.3.2	All special biological areas designated on the Jefferson NF that are in the proposed alternatives should be identified.
3.3.2	All known hibernacula, as well as maternity colonies and roost trees for all listed bat species that the proposed and alternative routes come within FWS determined activity zones, should be identified in this section.
3.3.3	A significant Golden eagle wintering population is known on the Jefferson National Forest along mountain ridges. This species should be included in Table 3.3-3, as well as described in this section.
3.3.3	Virginia Audubon's Important Bird Areas Program identifies the Blue Ridge Mountains as an IBA for cerulean warbler, and the Radford Army Ammunition Plant as an IBA for Henslow's sparrow. Both IBA's should be included in the IBA section.
3.3.3	All MIS and locally rare migratory bird species for the Jefferson NF should be included in this section or a separate report (not a Biological Evaluation) and effects of proposed actions be addressed, by alternative. Effects to both the bald and golden eagle for all alternatives should be addressed in this section, specifically pertaining to the Bald and Golden Eagle Act.

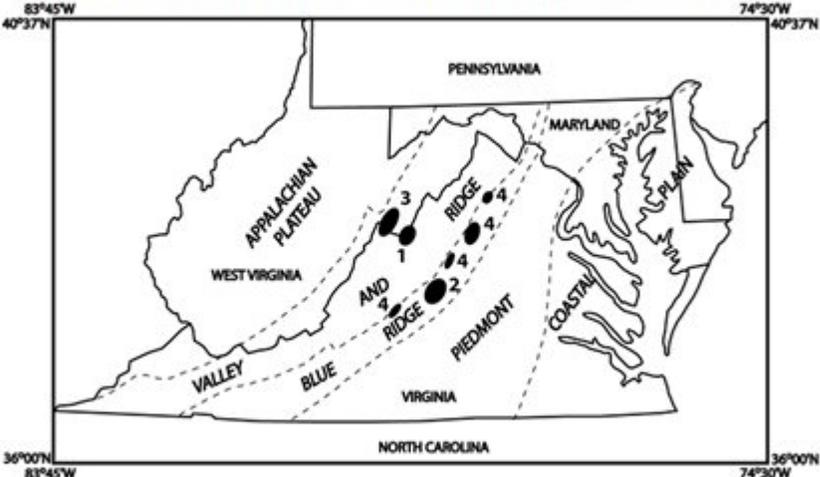
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3.3.4	All MIS and locally rare species (who are not migratory birds) whose habitat occurs along any proposed route alternatives and/or are documented in route surveys on the Jefferson NF need to be addressed in this section or a separate report (not a Biological Evaluation), by alternative.
3.3.4	In addition to native seed mixes to benefit pollinators, consideration should be given to providing shrub vegetation on the outer edges of the permanently maintained gasline corridor, next to the naturally regenerating forest section post gasline construction. This would reduce the sharp edge effect of the final gas pipeline corridor and provide as much escape cover as possible for species like small mammals, reptiles, and amphibians needing to cross the permanently maintained corridor.
3.3.4	The draft resource reports indicate that no pesticides or herbicides will be used in ROW maintenance. There may be situations where using pesticides or herbicides will be desirable. For example, non-native invasive plants are often controlled via herbicide applications, and insect infestations are often treated with aerial applications of insecticides.
3.4	The Forest Service should be listed as an agency from which information was requested.
3.4	Section 3.4.1 should include the James spinymussel as it is known to occur in Little Oregon Creek and Johns Creek, both in or near the project.
3.4	Table 3.4-1 should include all FS sensitive species and other locally rare species with habitat along proposed route alternatives and/or that have been documented in surveys on the Jefferson NF. All Sensitive species with potential habitat along all proposed route alternatives and/or are documented in route surveys on the Jefferson NF should be addressed in this section of the final resource reports and a comparison of effects to these species needs be evaluated by alternative.
3.4	Overall the document only superficially deals with plant species. Extensive lists are provided for animal taxa, but only six federally listed plants species are noted. The final resource reports should include an adequate assessment of project effects on botanical species.
3.4.3	Regarding section 3.4.3, all known hibernacula, as well as maternity colonies and roost trees for all listed bat species that the proposed and alternative routes come within FWS determined activity zones should be identified, and effects of proposed actions be analyzed in this section of the final resource reports.
3.4.4	Section 3.4.4 should include Peregrine falcons. Peregrine falcons are known to breed in eastern West Virginia and western Virginia. Recently verified peregrine falcon activity has been documented in spring 2015 in Ripplemeade, near the current proposed route. VDGIF's avian biologist should be consulted for more specific information.
U.S. Forest Service Comments on Resource Report 5	
General	Draft Resource Report 5 is focused on fire safety as it relates to pipeline incidents; this report should also address incidents originating beyond the pipeline whose management would be influenced by the pipeline. Address the impacts of an unplanned ignition (wildfire) on the pipeline, appurtenant facilities, valves, PCV markers along the pipeline, etc. Disclose the effect of the pipeline on wildfire suppression tactics that may, or may not, be used for incidents not originating from the pipeline.
U.S. Forest Service Comments on Resource Report 6	
6.4 - General Comment	<p>Geologic hazards are geologic processes or conditions (naturally occurring or altered by humans) that may create risks to public health and safety, infrastructure, and resources. The environmental analysis (process) needs a site-specific assessment of the potential for the MVP project on the Jefferson National Forest (JNF) to affect or be affected by geologic hazards. Section 6.5 PALEONTOLOGICAL RESOURCES contains an example of including an analysis specific to the JNF for paleontological resources.</p> <p>The 6.4 sections need to address the affected environment of geologic hazards in a site specific manner for the MVP project on the Jefferson National Forest. Depending on the particular geologic hazard and its relevance to the project on the JNF, the documentation of the analysis for the JNF can vary in 1) the sections for each geologic hazard, 2) appendices, and 3) process records.</p>
6.4.1.2	Consider changing title of section from "Seismicity" to a title such as "Ground shaking and ground acceleration" or "Ground motion" in order to reflect the specific seismic hazard addressed in this section.

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6.4.1.3	Consider changing title of section from "Active Faults" to a title such as "Surface rupture potential from faulting" or "Active surface faults" or "Active surface faults and rupture potential from surface faulting" in order to reflect the specific hazard addressed in this section.
6.4.2	Address the JNF specifically as to whether any karst is identified on the JNF portion of the project, and if present, provide site specific karst information.
6.4.3	Describe the affected environment for landslides in a site specific manner for the MVP project on the Jefferson National Forest.
6.4.3	This section states: "MVP has performed a preliminary inventory of potential areas of landslide or rockfall concern along the proposed pipeline alignment. Areas where the alignment crosses steep hill slopes are identified in Table 6.4-4, and Appendix 6-D includes a map set depicting these areas." What is criteria for "steep" (in slope gradient %) for identifying "steep hill slopes". Why are the steep slopes on the JNF not included in Table 6.4-4 and Appendix 6-D? What are the criteria for the "Areas of Potential Landslide Concern Crossed by the MVP Pipeline" in Table 6.4-4 ?
6.4.3	<p>In describing the affected environment for existing and potential landslides for the MVP project on the Jefferson National Forest consider the types of landslide specific to this geologic setting, such as debris slides, debris flows, rockslides, and rockfalls. Consider such sources of geologic information as:</p> <p>Schultz, A.P., Stanley, C.B., Gathright, T.M., II, Rader, E.K., Bartholomew, M.J., Lewis, S.E., and Evans, N.H., 1986, Geologic map of Giles County, Virginia: Virginia Division of Mineral Resources Publication 69.</p> <p>Schultz, A.P., Bartholomew, M.J., and Lewis, S.E., 1991, Surficial Geology of the Radford 30x60° quadrangle, Virginia and West Virginia: U.S. Geological Survey I Map 2170A.</p> <p>Schultz, A.P., Miller, E.V., Bollinger, G.A., Gathright, T.M., Rader, E.K., and Hubbard, D.A., 1985, Geologic and seismic hazard potential, Giles County, Virginia, including a discussion and map of bedrock geology: Prepared by the Virginia Division of Mineral Resources; the Department of Geological Sciences, Virginia Polytechnic Institute and State University and the United States Geological Survey under contract #14-08-0001-A0076, 44 p., 2 maps at 1:50,000.</p> <p>Schultz, A.P., 1986, Ancient, giant rockslides, Sinking Creek Mountain, southern Appalachians, Virginia: <i>Geology</i>, v. 14, no. 1, p. 11-14.</p> <p>Southworth, C.S., and Schultz, A.P., 1986, Characteristics of giant rock-slides in the Appalachian Valley and Ridge, Virginia, West Virginia, Maryland, and Pennsylvania: U.S. Geological Survey Open-File Report 86-94, 4 p. with 3 oversized sheets.</p> <p>Southworth, C.S., and Schultz, A.P., 1986, Photogeologic interpretation reveals ancient, giant rockslides in Appalachian Valley and Ridge Province, Virginia and West Virginia, <i>in</i> Association of Engineering Geologists Newsletter, v. 29, no. 2, p. 31-33 and back cover.</p> <p>Schultz, A.P., 1987, Failure kinematics of ancient giant block slides and rock slumps, southern Appalachian Valley and Ridge Province, <i>in</i> Schultz, A.P., and Southworth, C.S. (eds.), Landslides of eastern North America: U.S. Geological Survey Circular 1008, p. 32-33.</p> <p>Schultz, A.P., and Southworth, C.S., 1989, Large bedrock landslides of the Appalachian Valley and Ridge of Eastern North America, <i>in</i> Schultz, A.P., and Jibson, R.W. (eds.), Landslide processes of Eastern United States: Geological Society of America Special Paper 236, Chapter 4, p. 57-74.</p> <p>Schultz, A.P. (ed. & compiler), 1989, Roadlog and site description for the 1989 Southeast Friends of the Pleistocene Field Excursion: surficial geology of the New River Valley, southwest Virginia: U.S. Geological Survey Open-File Report 89-635, 72 p.</p> <p>Whisonant, R.C., Watts, C.F., and Kastning, E.H., 1991. Neotectonic Investigations in the Southeastern United States: Part 1 – Potential Seismic Triggering of Giant Bedrock Landslides and Suspected Mass Movements in the Giles County Seismic Zone. A report prepared of Ebasco Services Incorporated, Greensboro, North Carolina.</p> <p>Whisonant, R.C., Watts, C.F., and Kastning, E.H., 1991. Neotectonic Investigations in the Southeastern United States: Part 2 – Preliminary Investigation of Caves in the Giles County Seismic Zone Possibly Containing Evidence of Seismic Events. A report prepared of Ebasco Services Incorporated, Greensboro, North Carolina.</p> <p>Whisonant, R.C. and Watts, C.F., 1991. Comprehensive Stability Analysis of Ancient Giant Landslides, Valley and Ridge Province, (abs), <i>In Proceedings of the 34th Annual Meeting of the Association of Engineering Geologists</i>, Chicago, IL, pp 612-620.</p>

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6.4.3	Correct the author identified for this reference: "Watt, 1982".
6.5	Revise "Paleontological resources on federal lands are regulated, as outlined in 36 CFR Ch. 11 261.9 (i)." to "Paleontological resources on National Forest lands are regulated as outlined in 36 CFR 291."
6.5	Check and verify the Mileposts in this statement: "The Project crosses the Jefferson National Forest (Forest) from MP 195.2 to MP 196.5, and from MP 212.7 to MP 214.3."
6.5 Floods	Add a section under Geologic Hazards titled "Floods" and describe the affected environment for floods in a site specific manner for the MVP project on the Jefferson National Forest.
6.6 – General Comment	General comment: Geologic hazards are geologic processes or conditions (naturally occurring or altered by humans) that may create risks to public health and safety, infrastructure, and resources. The environmental analysis (process) needs a site-specific assessment of the potential for the MVP project on the Jefferson National Forest (JNF) to affect or be affected by geologic hazards. The 6.6 sections need to address the environmental consequences relating geologic hazards in a site specific manner for the MVP project on the Jefferson National Forest. Depending on the particular geologic hazard and its relevance to the project on the JNF, the documentation of the analysis for the JNF can vary in 1) the sections for each geologic hazard, 2) appendices, and 3) process records.
6.6.1	<p>In order to assess impacts on the Jefferson National Forest (JNF), the location and magnitude of the proposed slope modifications (excavations and fills) need to be identified in a site specific manner. Provide plans and typical drawings showing the dimensions of the slope modifications (cut and fill) for each type of MVP project footprint to be located on the JNF such as:</p> <ul style="list-style-type: none"> • Access roads to pipeline right-of-way (ROW) corridor (includes new construction and reconstruction) • Pipeline ROW excavation for trench (ditch). • Pipeline ROW excavation for roads (travel area and working area) • Pipeline ROW loose material from trench excavation (ditch spoil storage) • Pipeline ROW topsoil (topsoil storage). • Pipeline ROW loose material from construction road excavation (travel area and working area). • Additional Temporary Workspace (ATWS). • Contractor yards and equipment staging/storage areas. • Disposal areas for excess excavation or other materials. <p>For each type of footprint (such as listed above), state whether it will be or will not be located on the JNF.</p>
6.6.1	In draft Resource Report 1 Appendix 1-D, most of the Typical Drawings are for flat ground where the only excavation is for the trench. These flat-land Typical Drawing show "Ditch Spoil Storage" and where applicable "Topsoil Storage". But for sloping ground requiring side hill excavation, the Typical Drawing MVP-9 does not separately identify or label the loose material from construction road excavation (travel area and working area). Provide construction Typical Drawings for the range of slopes (%) requiring side hill excavation on the JNF, including a Typical Drawing for the maximum slopes (%) to be excavated on the JNF. Provide post-construction Typical Drawings for the reclamation showing the areas of reclaimed cut and fill in relation to original ground surface.
6.6.1	Bedrock excavation of the side hill and in trenches will swell loose volumes compared to in-place volumes. Some trench excavation may not be suitable backfill, and fill may need to be imported into ROW for trench backfill. Considering these two factors, calculate a mass balance to determine if there will be excess excavation that will need to be disposed of outside the ROW.
6.6.1	In draft Resource Report 1 Appendix 1-D, correct the Typical Drawing MVP-9 which shows the original ground surface extending from the top of the soil (on the uphill side) to the bottom of the soil (on the uphill side).

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6.6.1	<p>In addition to side hill excavation that is parallel or sub-parallel to slope contours, a second type of construction is downslope excavation that is perpendicular or sub-perpendicular to slope contours, such as between MP 196 and MP 196.5. <u>Most of the ROW excavation on JNF appears to be this second type of excavation (“downslope excavation”). It is important for the environmental analysis to provide construction Typical Drawings for the range of slopes (%) requiring downslope excavation on the JNF, including a Typical Drawing for the maximum slopes (%) to be excavated on the JNF.</u> Provide post-construction Typical Drawings for the reclamation showing the areas of reclaimed cut and fill in relation to original ground surface.</p>
6.6.1	<p>In draft Resource Report 8 Appendix 8-B, the Table 8-B Proposed Temporary Construction Access Roads does not indicate any Proposed Temporary Construction Access Roads for the JNF. Verify, and if correct, describe how the pipeline right-of-way (ROW) on the JNF will be accessed.</p>
6.6.1	<p>In draft Resource Report 8, Section 8.1.1.3 Additional Temporary Workspace states:</p> <p>“In addition to the typical construction right-of-way, additional temporary workspace (ATWS) will be required to facilitate construction at road, railroad, utility, wetland, and waterbody crossings as well as for areas requiring specialized construction techniques such as horizontal directional drilling (HDD). The initial list of locations where ATWS will be required is included in Table 8-A in Appendix A.”</p> <p>Table 8-A Preliminary Locations of ATWS Along the Proposed Pipeline does not indicate any ATWS on the JNF. Verify whether this preliminary information is correct. <u>Because the JNF occupies mountain sideslopes, it is important for the environmental analysis to identify any ATWS on the JNF.</u></p>
6.6.1	<p>In draft Resource Report 1 – General Project Description, the Special Construction Procedures section 1.4.1.2 states:</p> <p>“Rugged Terrain</p> <p>In mountainous areas where the pipeline will encounter steep side slopes, MVP will employ special construction techniques where the slopes typically exceed 30 to 35 percent. The construction techniques will require expanded workspace areas. The dimensions of these ATWS will vary, depending upon the degree and length of the slope. Land requirements for ATWS are identified in Draft Resource Report 8.”</p> <p>Table 8-A Preliminary Locations of ATWS Along the Proposed Pipeline does not indicate any ATWS on the JNF. <u>Because the JNF occupies mountain sideslopes, it is important for the environmental analysis to identify any ATWS on the JNF.</u></p>
6.6.1	<p>The Rugged Terrain section also states:</p> <p>“Construction activities on rugged terrain will be similar to the typical construction described in Section 1.4.1.1; however, equipment will be tethered via winch lines to other equipment at the top of the slopes to ensure the safety of the construction personnel and surrounding areas.”</p> <p>Winch line construction is a major category of construction, and it may be a subset of the downslope excavation that is perpendicular or sub-perpendicular to slope contours discussed above. <u>It is important for the environmental analysis to provide construction Typical Drawings for the range of slopes (%) requiring winch line downslope excavation on the JNF, including a Typical Drawing for the maximum slopes (%) to be excavated on the JNF.</u> Provide post-construction Typical Drawings for the reclamation showing the areas of reclaimed cut and fill in relation to original ground surface.</p>
6.6.1	<p>Provide a map with symbols along the pipeline on the JNF showing sections with major differences in types of construction, including as a minimum:</p> <ul style="list-style-type: none"> • Side hill excavation that is parallel or sub-parallel to slope contours. • Downslope excavation that is perpendicular or sub-perpendicular to slope contours and using winch lines. • Downslope excavation that is perpendicular or sub-perpendicular to slope contours and not using winch lines.
6.6.1	<p>Provide a table listing the mileposts on the JNF for sections with major differences in types of construction.</p>

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6.6.1	<p>For the purposes of addressing slope failure and landsliding, the pipeline ROW on JNF can be divided into 4 sections: the west flank of Peters Mountain, the east flank of Peters Mountain, the east flank of Sinking Creek Mountain, and the west flank of Brush Mountain. Provide a slope map (%) for:</p> <ol style="list-style-type: none"> 1. The watershed drained by the single hollow the pipeline crosses on JNF between the top of Peters Mountain and Rte. 219, 24. 2. The Kimballton Branch watershed the pipeline crosses between the top of Peters Mountain and Stony Creek. 3. The watersheds the pipeline crosses between the top of Sinking Creek Mountain and Craig Creek. 4. The watersheds the pipeline crosses between the top of Brush Mountain and Craig Creek. <p>The slope map for the watershed above and below the pipeline is needed in order to assess the debris flow potential upslope from the pipeline, as well as potential for debris flows caused by fill slope failure from the pipeline project.</p>
6.6.1	Provide a vertical profile along ROW centerline that displays slope % along the profile. Provide vertical profiles perpendicular to ROW centerline that display slope % at representative sections of ground slope variations along the ROW. Provide a slope map for the ROW based on the best available survey data.
6.6.1	Provide engineering geologic assessment of impacts and mitigation for Slope Failure and Landsliding sections and other sections as needed below.
6.6.1.1	Address areas of blasting and potential impacts on the JNF.
6.6.1.2	Provide engineering geologic assessment of the potential for natural landslides to impact the project as well as the potential for MVP project slope failures (cut slopes and fill slopes) to impact resources and public safety downslope. Because of the overarching influence of geologic structures (dip slopes and antidip slopes) on both natural landslides and project-related slope failures, provide engineering geologic assessment divided into 4 sections on JNF: the west flank of Peters Mountain, the east flank of Peters Mountain, the east flank of Sinking Creek Mountain, and the west flank of Brush Mountain.
6.6.1.2	1. – Natural landslides: Identify existing slope stability conditions in the footprint of, or relevant to, the proposed facilities (such as existing landslides; streamside slopes subject to undermining by streams; geologic structures that may be adverse to slope stability such as dip slopes; debris flow paths). Assess potential for various types of landslides (mass movements, mass wasting) to affect pipelines, access roads

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6.6.1.2	<p>2. – Natural debris flows: Assess the potential for debris flow type of landslides to impact the pipeline and associated facilities. Consider the frequency of debris flow events, including the major debris flow events in Virginia and West Virginia from 1949 to 1996 (Figure 1 from Eaton, L.S. et. al., 2003).</p> <p>Figure 1. Areas affected by debris-flow events in Virginia and West Virginia from 1949 to 1996. 1—June 17–18, 1949, storm in western Virginia and eastern West Virginia; 2—August 19–20, 1969, storm in western Nelson County, Virginia; 3—November 3–5, 1985, st...</p>  <p>Eaton L. S. et al. <i>Geology</i> 2003;31:339-342</p> <p>©2003 by Geological Society of America</p> <p>THE GEOLOGICAL SOCIETY OF AMERICA</p>
	<p>Credit: Figure 1 from Eaton, L.S., Morgan, B. A., Kochel, R.C. and Howard A. D., 2003, Role of debris flows in long-term landscape denudation in the central Appalachians of Virginia, <i>Geology</i> 2003;31:339-342. http://geology.gsapubs.org/content/31/4/339.short</p>

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6.6.1.2	<p>3. - Assess the potential impacts on pipeline and access roads of swarms of debris flows, such as occurred in June 1949 in Augusta County (Figure 2) and in August 1969 in Nelson County (Figure 3).</p>  <p>Figure 2 - A June 17-18, 1949 storm triggered more than 100 debris flows in the Little River area on the North River Ranger District in Augusta County, Virginia. Credit: Plate 1 from Hack, J. T., and Goodlett, J. C., 1960, USGS Professional Paper 347. http://pubs.er.usgs.gov/publication/pp347</p>  <p>Figure 3 - Debris flows in Davis Creek area triggered by remnants of Hurricane Camille August 19/20, 1969 in Nelson County, Virginia. Credit: Map excerpt from Morgan, B.A. et al., 1999, INVENTORY OF DEBRIS-FLOW AND FLOODS IN LOVINGSTON AND HORSESHOE MOUNTAIN, VA: 7.5 MINUTE QUADRANGLES FROM THE AUGUST 19/20, 1969 STORM IN NELSON COUNTY, VA, USGS OFR-99-518. http://geology.er.usgs.gov/eespteam/terrainmodeling/ofr99_518.htm</p>
6.6.1.2	<p>3a. – Project-related slope failures (landslides): Assess the slope stability of proposed cut slopes and fill slopes during construction and operation of the pipeline, access roads, and associated facilities. Identify any risks to people, facilities, and resources associated with potential failure of slopes modified for the project.</p>
6.6.1.2	<p>3b. – Road fill slope stability: In considering the stability of road fill slopes, determine the slope % at which road construction would switch from cut-and-fill to full bench construction. Prepare a slope map of the project area including areas of potential access road construction. Use slope % for cut-and-fill to full bench construction as one of the slope breaks in classifying slopes on the slope map. Identify methods and locations for disposal of excess excavation (such as from full bench road construction).</p>

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6.6.1.2	<p>3c. – Trench backfill stability: In considering the stability of fill in pipeline trenches, determine the slope % at which fill in trenches would be unstable and subject to fill slope failure. Prepare a slope map of the project area. Use slope % at which fill in trenches would be unstable as one of the slope breaks in classifying slopes on the slope map. Identify methods and locations for disposal of excess excavation from the trenches.</p>
6.6.1.2	<p>3d. – Corridor road slope stability: The access roads to reach the pipeline corridor are a familiar type of road. In contrast, the road built in the pipeline corridor is a different type of road, cutting a wide swath across the landscape in order to accommodate heavy construction equipment traffic to dig the trench and install the pipeline. While different in scale and layout than an access road, the construction within the corridor is basically a wide road with an adjacent pipeline trench (Figure 4).</p>  <p>Figure 4 – Example of construction road with adjacent pipeline trench. Material excavated for the road is piled on uphill side of road; material excavated for the trench is piled in a berm on downhill side of trench.</p> <p>Assess the slope stability of the corridor road and adjacent pipeline trench during construction and operation of the pipeline. Of special concern is the loose, unconsolidated material (soil, colluvium, weathered or fractured bedrock) resulting from the excavation and stored in temporary piles or berms. What will be the volume (cubic yards) of loose, excavated materials and how long will these piles or berms remain before some or all of the material is used for backfill or is graded as part of reclamation?</p> <p>If a significant rainstorm occurs during the time these temporary piles or berms are present (such as in Figure 4), it could result in a mass failure of the temporary piles or berms, and then, a debris flow that could produce off-site damage downslope and in stream channels. To estimate the volume and stability of these temporary piles or berms, a cross-section of this stage of the construction process is needed. The project design would have at least two types of cross-sections: 1) original ground surface, 2) final cut-and-fill. But project design needs a third cross-section to show temporary piles or berms as well as excavations (cut-slope); this design cross-section would show the construction at the point of maximum loose excavated material, that is, before the trench is backfilled (such as in Figure 4). Longitudinal profiles showing the slope % or grade along the corridor road at this stage of construction would also be needed to assess slope stability.</p>

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6.6.1.2	<p>3e. – Project-related debris flows: Assess the potential for debris flows caused by failure of fill slopes created by the project (such as access roads, corridor road and pipeline construction, and associated facilities). Assess the potential for debris flows caused by failure of waste disposal areas (such as disposal areas for excess excavation along access roads, corridor road and pipeline). Assess risks to public safety, downslope infrastructure, streams and other resources associated with potential failure of fill slopes or disposal areas for the project.</p> <p>Collins, T. K., 2008, Debris flows caused by failure of fill slopes: early detection, warning, and loss prevention. Landslides. 5:107–120 http://link.springer.com/article/10.1007/s10346-007-0107-y#page-1</p>
6.6.1.2	<p>4. –Seismically induced landslides: Assess potential for seismically induced landslides to impact the pipeline. Assess potential for large rockslides, such as found along Sinking Creek Mountain, to occur on Peters Mountain as well as Sinking Creek Mountain. Assess potential for earthquakes to trigger cut slope failure or fill slope failures originating on slopes modified by MVP project.</p>
6.6.1.3	<p>Assess the potential effect of earthquake-generated ground shaking and ground acceleration on the MVP project on the JNF. Provide a cross-reference to seismically induced landslides section 6.6.1.2.</p>
6.6.1.4	<p>Assess rock disposal specifically in regard to the MVP project on the JNF.</p>
6.6.1.5	<p>Address the JNF specifically as to whether any karst is identified on the JNF portion of the project, and if present, assess how the MVP project may impact or be impacted by karst and sinkholes.</p>
6.6.1.5 - Floods	<p>Add a section under Impacts and Mitigation titled “Floods” and assess 1) the potential for floods to impact the MVP project, and 2) the potential for the project to affect flooding, for example, by failure of constructed slopes resulting in temporary landslides dam in narrow mountain valleys and hollows. Assess potential for flooding to affect pipelines, roads, and associated facilities. Assess the how the slope modifications in the pipeline corridor and access roads would affect surface water flows and runoff.</p>
6.6.1.5 – Paleontological Resources	<p>Add a section under Impacts and Mitigation titled “Paleontological Resources” and assess the potential impact on paleontological resources on JNF. Some of Section 6.5 is assessing impacts and can be moved or restated in this new section.</p>
6.7	<p>Correct the author identified for this reference: “Watt, James G. 1982. Landslide Overview Map of the Conterminous United States. Geological Survey Professional Paper 1183. http://pubs.usgs.gov/pp/p1183/pp1183.html.”</p>
U.S. Forest Service Comments on Resource Report 7	
General	<p>The final resource reports should indicate that MVP will include the use of Virginia Erosion and Sediment Control Handbook (Virginia Department of Conservation and Recreation) to minimize impacts to soils, which is also required by the Jefferson NF Land and Resource Management Plan.</p>
General	<p>NRCS local contacts Jeannine Freyman (Jeannine.Freyman@va.usda.gov) and/or Don Flegel (Donald.Flegel@va.usda.gov) should be used for soil resource information verification and potential impacts as well as the FS (thomasbailey@fs.fed.us).</p>
General	<p>Soil resource information must come from the NRCS SSURGO Soil Survey for the Jefferson National Forest available from the NRCS Web Soil Survey and other NRCS SSURGO databases. This soil survey was mapped at 1:24000. The STATSGO database and mapping is not appropriate to use for this project due to scale of mapping. MUID’s are not appropriate to use due to availability of more detailed mapping available for the Jefferson National Forest.</p>
General	<p>The final resource reports should include a comparison of MVP’s method of determining erosion potential with the NRCS Erosion Hazard rating for soil series found in the corridor, which uses K-factor, slope and rockiness. The FS will review the comparison. The FS is not concerned about wind erosion.</p>
General	<p>Display on a map the prime farmland and hydric soils and explain how they affect design, construction and maintenance of the pipeline.</p>
General	<p>The final resource reports should display pipeline corridor and additional facility sites, and display and describe any new access construction needed for construction and maintenance.</p>
General	<p>The final resource reports should identify the total acres and location of pipeline corridors and construction of new road and facilities.</p>

RR Page/Section	Comment
General	The final resource reports should identify the width of the expected equipment/vehicle use area within the 300 foot ROW. Unless specified in the final resource reports, the FS will assume this width multiplied by length will be used for compaction effects.
General	<p>Final resource reports should address the following requirements on NFS lands:</p> <ul style="list-style-type: none"> • All erosion and sediment control plans will be reviewed and approved by USFS; • any variances requested by MVP to State or Federal permit requirements will be reviewed by the USFS; • Straw bales (not hay) should be used for erosion and sediment control where appropriate; • Slopes disturbed greater than 5% will be revegetated using plant species selected for erosion control purposes; • Erosion control seed and fertilizer mixtures will be approved by the USFS.
U.S. Forest Service Comments on Resource Report 8	
8-iii	The list of acronyms on page 8-iii should include SIO for Scenic Integrity Objective, which is described in the body of the report.
8-1 through 8-2	On pages 8-1 and 8-2, there is a description of land use classifications including the Open Water category. These are defined as water crossings greater than 100 feet wide and streams visible on aerial photography but less than 100 feet in width. A scale for that aerial photography is needed for better clarity about which streams are likely to be included and which ones are not.
Table 8.1-3 – pg 8-11	Table 8.1-3 on page 8-11 provides information about the number of public road crossings. Please improve the information by differentiating between the owners/maintainers of the roads and road rights-of-way, such as state, county or other local municipality, Forest Service, and others.
8-12	On page 8-12, the information about railroad crossings states that the typical method for the pipeline to cross an existing railroad is by conventional bore. Please provide more information about this method. (Is the conventional bore the same as, or different from, the typical construction methods for burying the pipe?)
8.3.1.1	In section 8.3.1.1, at the end of first paragraph, the sentence summarizing the overall management and purposes of the National Forest should be significantly reworded, based on FS existing documents.
8.3.1.1 & 8.3.2	In sections 8.3.1.1 and 8.3.2, there is no explicit mention of the Appalachian National Scenic Trail in this section on Federal Lands. It should be listed, and explained that NPS is the lead federal agency for the entire ANST, and that in this area, the USFS-Jefferson National Forest is the federal land-managing agency partner for the federal lands specifically protected for the ANST.
Table 8.3-1	Please revise Table 8.3-1 to include the Appalachian National Scenic Trail should be explicitly listed as an Area.
8.3.5	In section 8.3.5, the first paragraph only lists “recreational hunting,” and fails to state all the other non-hunting dispersed recreational activities that occur off-trail in the general forest area on all national forest lands in the proposal area. These include, but are not limited to: off-trail exploration, bushwhacking, bird-watching, nature exploration, berry picking, mushroom hunting. Please include these activities in the final resource reports.
8.3.5.1	In section 8.3.5.1, on page 8-22 and 23, there is a description of potential impacts to hunters during the construction, including details about safety measures to be taken by MVP employees and contractors. This section lacks information about the availability of the right-of-way to hunters on national forest (and other lands) post-construction and what limitations might be placed on them, particularly in the areas where there are appurtenances. Also, this section needs to include other dispersed recreational opportunities that occur on general forest area lands of the national forest.

RR Page/Section	Comment
8.4	<p>In section 8.4, the report does an adequate job of describing the Scenery Management System (beginning on page 8-23), but then falls short of applying it in describing the impacts to scenery when viewed from the key observation points. The report does not use the terminology of form, line, color, texture and pattern to describe the changes from the existing landscape character to determine whether or not the SIO would be achieved. For those that are deemed not to meet the SIO, there is no hint at the potential range of mitigations that might be applied. The FS offers the suggestions below.</p> <ul style="list-style-type: none"> • Undulate and feather the trees along the edges of the portion of the right-of-way that will be converted to herbaceous ground cover so that it is not a stripe with parallel lines running across the landscape. • Where there is a SIO of high that cannot be achieved, consider leaving additional trees in the right-of-way to break up the open area. • For the Appalachian National Scenic Trail, consider using a horizontal directional drilling method instead of clearing a surface right-of-way. • Crossing of forest roads and trails should be at right angles whenever possible. • Structures and appurtenances should be set as far back from road and trail crossings as possible. They should be non-reflective and, if possible, treated or painted to blend with the natural environment. • Part of the pipeline is proposed to be co-located with existing utility rights-of-way. This is typically encouraged and benefits the visual resources. However, there have been instances where expansion of an existing corridor was deemed to be more impactful than providing a separate corridor in a different location. The potential impacts of both methods should be assessed to determine which would be the least impactful to the visual resource. • To the extent possible, follow natural topographic lines to reduce the visual impact of structures, soil disturbance and vegetation removal. • Consider an alignment that locates utilities behind landforms when otherwise visible from trails, roads used to access recreation and tourism destinations, recreation sites, etc. • Avoid running over the top of a forested ridge at a right angle. The square notch that creates in the ridgeline is typically highly visible.
General	<p>This Resource Report should include a discussion of the advantages and disadvantages of the route running laterally up and over mountains, crossing diagonally over mountains, and those that follow natural topographic lines to traverse mountainous terrain. Though construction techniques, including collocating with utilities on steep sideslopes, are discussed in Draft Resource Report 1, there is no discussion of the advantages and disadvantages for scenery.</p>
8.4	<p>In section 8.4, please note the visual resource assessment must include all associated temporary and permanent clearings, roads, ATWS, MLVs that would have an effect on visual resources on NFS lands in addition to the pipeline.</p>
8.4.2	<p>In section 8.4.2, it is stated that the location of Swann Compressor Station is not yet identified, but anticipated in Roanoke County. Section 8.1.2, on page 7, includes a similar statement, but another statement indicates the location is anticipated in Montgomery County near MP 220.5. Please correct the inconsistencies in the document and clearly identify the proposed location of the Swann Compressor Station.</p>
8.4.3	<p>In section 8.4.3, on page 8-25, the report states that the assessment of potential impacts only includes foreground and middleground distance zones (up to three miles). The Forest Service includes all distance zones – foreground, middleground and background. The impacts to scenery when viewed in the background distance zone should be incorporated into the assessment.</p>
General	<p>There are a total of ten observation points on the Jefferson NF for the 12,055 linear feet of the proposed route on the NF. It is unclear which observation points off of the NF are directed toward the proposed route on the NF. This is insufficient information for the report and for establishing a basis for the assessment of potential impacts to the scenery resource. For example, there is one KOP for Peters Mountain Wilderness and it's on the Appalachian Trail near the Wilderness boundary. The report describes this Wilderness as having numerous sandstone outcroppings along the crest of the mountain and a number of high mountain bogs on Pine Swamp Ridge. These special features are attractive to visitors and stone outcrops typically provide openings in the forest canopy that allow distant views. KOPs from the high elevation areas within Peters Mountain should be established and used in the assessment of impacts to scenery.</p>

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8.4.3	In section 8.4.3, the number of KOPs on and near national forest lands appears inadequate. There is insufficient rationale listed for KOP selection. Statements under "Appalachian Trail A" about "referred to as the Virginia's portion" and "least-traveled" are confusing, misleading, and inaccurate.
8.4.3	Section 8.4.3 does not make clear whether all state scenic byways are including in the analysis. All national and state scenic byways should be included in the analysis.
8-33	On page 8-33, a description of Appalachian Trail A includes a statement that the Appalachian Trail on Flat Ridge and Mystery Ridge are among the least traveled portions of the entire Trail system. A reference for the source of this information should be added.
8-34 & 8-35	The KOPs for Cascade Falls appear to be repeated, occurring on pages 8-34 and 8-35.
Table 8-C	Table 8-C that lists the Key Observation Points should include columns for County name, latitude, and longitude (and perhaps elevation and direction of view).
General	The final resource reports should include a "seen area" analysis from the entire route on the Jefferson National Forest. The seen area should include a distance of five miles from the proposed route of the pipeline. This should be used to determine additional locations of KOPs and to determine locations for preparation of photographic simulations.
8.6	Section 8.6 lists a reference for the Great Eastern Trail, but no references for the Appalachian National Scenic Trail. Development of this section should have included research into current ANST centerline locations and history, found at the NPS-APP and ATC websites, at an absolute minimum.
Appendix B, Table 8-B	For Appendix B, Table 8-B, please clarify if there are no proposed temporary roads proposed beyond Greenbrier County, WV, or if information is missing from the draft resource report. Because there are multiple ATWS (Appendix A) proposed in each county that the pipeline is proposed to cross, it seems unlikely that there are no temporary roads in 5 counties.
General	For recreation, the final resource reports should offer more information about how MVP will control/allow access to trails during construction.
Appendix 1-B, pg 36 of 56	In Appendix 1-B, Page 36 of 56, the map of the proposed route shows the NPS-acquired and USFS-administered lands (tract J-492-07 on the north side of Peters Mountain from MP 195 to MP 195.15). However the narrative in DRR-1 and DRR-8 does not explicitly identify that this is NPS land which the USFS-GWJeff administers under a memorandum of agreement.
Appendix 1-B, pg 36 of 58	In Appendix 1-B, Page 36 of 58, the map does not show the USFS easements (Z-542 and Z-542a) on the area just south of the crest of Peters Mountain (state line). This land is shown as privately owned, when in fact the USFS has a partial ownership interest in this land (approx. MP 195.15 to MP 195.25).
Appendix 1-B, pg 36 of 58	In DRR-1, Appendix 1-B, Page 36 of 58. This map shows the approximately 107-acre private parcel in the area of MP 195.15 to MP 195.7. This parcel is in process of being donated to the USFS. The deed should be recorded shortly and these 107 acres should be considered and analyzed as national forest (public federal) land throughout the proposal.
Appendix 1-B, pg 39 of 56	In Appendix 1-B, Page 39 of 56, the Blacksburg Shooting Range should be identified on this map as a point of reference.
8.1.3.3	Add a Prescribed Fire discussion under Section 8.1.3.3. Evaluate if prescribed fire will still be a viable management tool allowed within and/or adjacent to the corridor. Prescribed fire is at least as important as logging as a tool to manage Forest/Woodland.
Table 8-B	Closely coordinate with FS District and Engineering staff as locations for access roads in Virginia are developed (it is noted that Table 8-B lists no access roads in Virginia which seems unlikely). Specifically, the improvement of FSR 11080 and 11082 in western Giles County, VA is desirable. Access routes departing from this road to reach farther up Peters Mountain should be closely coordinated; they will likely serve as permanent access for pipeline maintenance as well as NFS resource management.
General	Disclose the acres and percent of Forest/Woodland impacted that is suitable for timber production . Not all Forest/Woodland acres are appropriate for this land use. We can provide designations of those lands currently suitable for timber production.

RR Page/Section	Comment
U.S. Forest Service Comments on Resource Report 10	
General	The initial pages of the report refer to the project's "open season" (page 10-2) which significantly influences the alternatives (10.4.2 on page 10-6 and 10.4.3 on page 10-7). Most notably, "The results of the open seasons demonstrate the demand for more than one pipeline project in the region." Please explain what the open season is or was.
10.7.4	Section 10.7.4 of the final resource reports should identify the exact location of Swann Compressor Station.
General	The final resource reports should address effects on scenery caused by other aboveground facility site alternatives, either in section 10.8 or by reference to another appropriate section.
General	<p>Though difficult to provide meaningful review and comment on the route alternatives, route variations and site alternatives without the same level and type of mapping provided in DRR-1 for the proposed route, the FS identifies its concerns about alternatives below.</p> <ul style="list-style-type: none"> • Route Alternative 1. Similar concerns to the Proposed Route with respect to the Appalachian National Scenic Trail and all other Land Use, Recreation, and Aesthetics considerations. • Northern Pipeline Alternative. This route appears similar to earlier proposed route of another proposed project, now discredited primarily for biophysical resource concerns. FS concerns about this route are similar to the concerns for the Proposed Route with respect to the Appalachian National Scenic Trail and all other Land Use, Recreation, and Aesthetics considerations. • Alternative 110. FS concerns about this route are similar to the concerns of the Proposed Route with respect to the Appalachian National Scenic Trail and all other Land Use, Recreation, and Aesthetics considerations. Increased concerns due to proximity to, potential impacts on, and visual impacts on three Wildernesses – Mountain Lake, Brush Mountain, and Brush Mountain East. • Alternative 110J. Concerns for this route are similar to the concerns for the Proposed Route with respect to the Appalachian National Scenic Trail and all other Land Use, Recreation, and Aesthetics considerations. Increased concerns due to proximity to, potential impacts on, and visual impacts on two Wildernesses – Mountain Lake and Brush Mountain East. • Alternative 110R. Concerns for this route are similar to the concerns for the Proposed Route with respect to the Appalachian National Scenic Trail and all other Land Use, Recreation, and Aesthetics considerations. The FS also has increased concerns due to proximity to, potential impacts on, and visual impacts on three Wildernesses – Mountain Lake, Brush Mountain, and Brush Mountain East. • Peters Mountain Variation. This alternative proposes to route portions of the pipeline within Peters Mountain Wilderness. Approval of this route within the Wilderness can only be approved by the President "upon his determination that such use or uses in the specific area will better serve the interests of the United States and the people thereof than will its denial;"¹ • Peters Mountain Variation. Figure 10.6-7 should include the labels for Peters Mountain Wilderness and the Appalachian National Scenic Trail. • Alternative 93. The final resource reports should clarify the need to impact additional NFS lands, as would result under this alternative. Concerns of the FS for this route are similar to the FS's concerns to the Proposed Route with respect to all non-ANST considerations for Land Use, Recreation, and Aesthetics.
U.S. Environmental Protection Agency Comments on Resource Report 1	
General	Since impacts to air quality can occur from construction and operation of the proposed action, EPA recommends that the resource reports and the draft EIS address what the project will have on the increase of greenhouse gas and what will the indirect effects the project will have on climate change and greenhouse gas. This could include the annual project operation emissions as well as best management practices that will be adopted to reduce methane leakage from the proposed action's operations. ² Additionally, the resource reports and the draft EIS should also discuss the effects climate change could have on the long-term operation of the project such as increase in flooding and the increase in intense storms.
1-1	The resource report and draft EIS should explain to the readers how horsepower for each station is determined. The report should discuss how the compressors will be powered and if there are adequate power to perform the needed tasks.

¹ Public Law 88-577 (16 U.S.C. 1131-1136) 88th Congress, Second Edition, September 3, 1964

² EPA has compiled information on technologies and practices to facilitate methane reductions from natural gas systems that FERC may find useful, see: http://www.epa.gov/gasstar/methaneemissions/onshore_transmission_storage.html

RR Page/Section	Comment
1-3	A map where the pipelines interconnect with the customers would be helpful for the reader to understand the route and facilities.
1-3	Wetlands present on, or immediately surrounding the site should be delineated according to the 1987 Federal Manual for Identifying and Delineating Jurisdictional Wetlands [they use the Modified Routine Wetland Delineation Method described in the USACE Wetland Delineation Manual]. Impacts to wetlands should be avoided or minimized whenever possible. The total size of the wetlands should be provided, in addition to the size of the wetland in the study area and size of the direct impact. The draft EIS must analyze the size and functional values of all impacted wetlands and develop a mitigation plan for the replacement of the functions in the watershed.
1-3	The project resource report should discuss crossings the Appalachian Trail and National Parks and the process for working with the Department of Interior for the proper permissions.
1-7	The square footage of the stations and height should be included in Table 1.2-2. It is suggested to add a diagram or picture for the above ground facilities/surface appearance would help the public better understand the visual changes created by the project.
1-10	Table 1.3-1 needs additional information when the project plans are finalized. Swann station should be included in this table.
1-12	Information for Table 1.3-3 should be supplied in the next version of the resource report and the draft EIS.
1-16	The reasons for burning trees versus chipping and hauling away the chips should be discussed in the report. Burning is not environmentally preferred because of the potential of particulate matter in the air.
1-17	The use of explosives will be disruptive to the environment with possible effects to aquatic resources and terrestrial habitats (as well as the human environment/communities/water supply). The use of explosives for water crossings should be described in complete detail and permitting should be described. Additionally, mitigation and alternatives for the use of explosion should be described. Zone of potential impact from blasting should be identified.
1-18	The report should mention if any hazardous waste will be generated or stored from construction and operation of the project. If so, the draft EIS should also explain and list the state and Federal permits or reporting requirements in correlation to hazardous waste generation.
1-21	The resource report and the draft EIS should explain what topsoil segregation is what it is used for. Any extra soil from pipeline placement and disposal locations should be identified.
1-24	Crossings should be accounted for in the draft EIS. Construction of the pipeline will have potential harm to the environment when it crosses streams and rivers. Streams, especially impaired streams, are sensitive to issues like increased sedimentation and nutrients, disruption of hydrology. Best management practices should be listed in the report for each construction technique, and if possible, each crossing.
1-27	For Table 1.4-1, the "unknown" size diameters should be investigated and put into the report.
1-33	The report should explain how MVP will communicate and work with the public and municipalities to convert the pipeline corridor to "industrial use".
1-35	This section of the report should show how the public can find FERC Plan and Procedures.
1-35	The resource report and draft EIS should discuss any hazardous waste from site construction, maintenance or operation of the compressor stations.
U.S. Environmental Protection Agency Comments on Resource Report 2	
General	Clearly state how the construction and operation may impact the listed public drinking wells, springs, and sites identified as source water protection areas near or adjacent to the proposed alignment. Each site should have an analysis of how the project may impact, to what degree, and what mitigation steps will be taken to minimize impacts.
General	The document should discuss the current condition, including water quality and existing watershed conditions and land use, for each of the HUC 10 watersheds proposed to be impacted. This analysis would determine the potential of the proposal to further impact the watershed and account for cumulative and secondary impacts.

RR Page/Section	Comment
General	The discussion of potential crossings was limited to the NHD dataset and did not include ephemeral channels. Field delineation may show that additional intermittent and ephemeral channels will be impacted and should be included in the discussion and analysis of impacts to the watersheds as cumulative and potential significant degradation.
General	As currently proposed there are hundreds of stream crossings associated with the alignment. The document states that the majority of the crossings will be open pit in design. EPA suggests the applicant utilize the least environmentally damaging method with full cadre of available BMPs for each crossing to minimize impacts to the stream and the receiving waters.
General	The wetland discussion is largely limited to the NWI dataset. The NEPA analysis should have field verification. As a CWA Section 404 permit application is anticipated, jurisdiction determination of aquatic resources will be performed and the types and acres of wetlands will need to be delineated. Avoidance and minimization of impacts to aquatic resources is required prior to identification of appropriate compensatory mitigation. Alternatives analysis for impact avoidance and minimization will be part of the CWA 404 application.
General	The document should discuss the impact of clearing 3,658 acres of forest to construct the pipeline as it relates to habitat destruction, fragmenting of ecosystems and wildlife habitat and carbon sequestration.
2-7	Geology should identified for the project area. Areas in the final alignment that have karst should be discussed in the next resource report and the draft EIS. The effects and potential mitigation of the pipeline operation and construction should also be included in the next resource report and draft EIS. FERC should consult with the U.S. Geological Survey's district staff on the geology being traversed by the project. Any potential for exposure of acid-producing rock should be identified.
2-10	Surveying of wells should be completed and reported in the next draft of the resource report and be put into the draft EIS. This should also include a map of the location of where the pipeline meets the affected water district. Sole source aquifers should be identified.
2-10	The resource report mentions, "MVP will not provide a temporary water source for crops, but would compensate landowners for any losses in crops resulting in well damage." The draft EIS needs to discuss long term mitigation measures if the operation and construction of the pipeline effects water supplies to crops.
2-14	The draft EIS should discuss the potential to contamination of wells if there is a leak or rupture in the pipeline. Additionally, MVP should conduct outreach with municipalities/well administrators that have well heads close to the construction and alignment to discuss any concerns.
2-18	The report should discussed what the effect of pipelines into a wetland area and the potential for flooding, change in the flow of water in an area, loss of habitat, changes to soil composition, and other effects to the environment.
2-22	The resource report and draft EIS should use maps to illustrate the locations the project and construction operations intersects FEMA flood zones with populations. This will help the public understand potential flooding.
2-25	It seems the HDD is the least environmentally damaging method of a water crossing. It should be discussed why this method was not used more often than other methods of water crossings.
2-31	In addition to listing the impaired waters that the project will cross, the resource report and the draft EIS needs to discuss how it will increase sediment and nutrients into impaired waters. The report needs to also discuss how the project will mitigate to prevent further nutrient and sediments into these waters.
2-33	It seems that the water for hydrostatic testing will come from three sources for the entire pipeline. The effects on pressure and use by the large volume of water used in hydrostatic testing should be discussed in the draft EIS.
2-39	The report should discuss the percentage of wetlands that had been reviewed and on-the-ground delineation. It should also report the linear feet of the project that used a desktop review as well as the method used to do the desktop review.

RR Page/Section	Comment
U.S. Environmental Protection Agency Comments on Resource Report 3	
General	Some undisturbed forest and wetland habitat may be bisected by the project which would negatively affect species of wildlife and vegetation. This could also create habitat for invasive species. The draft EIS and the resource report does not discuss the potential for the project to segment wetland and forest habitat. The draft EIS and resource report should discuss how the pipeline has the potential to affect prime or undisturbed habitat.
General	EPA would like to emphasize trying to avoid impacts to the environment. The reports say they could avoid stream impacts with construction methods but don't commit to full or maximized avoidance. They should try to avoid and minimize all impacts. If impacts to wetlands are unavoidable, the resource report should describe the BMPs that will be used to avoid and minimize impacts resources.
3-14	The report should clarify what the 2011 National Land Cover Database (NLD) and what was the origin of the database. Wetlands should be described using our standard classification system. It is important that the detail of the location be included in the reports in order to evaluate the project impacts.
3-15	It appears that the report identifies only 0.7 acres of wetland crossed by the pipeline; which seems very small especially since there will be numerous stream crossings. The report should detail the location of the 0.7 acres of crossed, the temporary and permanent impacts, the amount of acres permanently impacted by the project, document the number of converted from one type of wetland to another, as well as verify the total acres delineated for the project. Mitigation and alternatives to avoid the wetlands should also be discussed in the draft EIS.
3-16	All FERC Procedures should be properly sited with dates, page numbers, and sections. Web links should be provided for the readers and the public so they can follow the procedures necessary for evaluation and mitigation methodology. The use of FERC Procedures should be coordinated with the proper resource agencies.
3-10	The draft EIS and resource reports should mention how the project will abide with the Executive Order 13112 on invasive species. Replanting should use native/non-invasive species. The report should discuss the best management practices to avoid the spread invasive species during construction and during maintenance once the project is operational. Maintenance requirements for vegetation control on the alignment should be discussed.
3-17	Though it is important to work with non-government organizations to help with protecting resources such as wetlands and wildlife, it is important that the Federal and state agencies are used to approve best management practices and permitting of certain actions.
U.S. Environmental Protection Agency Comments on Resource Report 4	
General	Potential impacted resources (direct and/or indirect) should be depicted on a map with the proposed pipeline right-of-way to allow for a visual of the project in relations to resources.
General	Section 4.3, Agency Consultation, references correspondence initiated to and from agencies, particularly the SHPOs—West Virginia Division of Culture and History (WVDCH) and Virginia Department of Historic Resources (VDHR). It is assumed that the correspondence will be provided in Appendix 4-A, Agency Correspondence. The text should indicate that referenced correspondence is in Appendix 4-A, Agency Correspondence.
General	In addition, Section 4.4, Native American Consultation, also references correspondence to and from the Bureau of Indian Affairs (BIA) and tribes. EPA appreciates the contacts table provided in Table 4.4-1, Contacts with Federally-Recognized Native American Tribes, that provides a summary of the responses. However, the letter of correspondence should be included as a record in the NEPA document. Again, although it may be assumed that the correspondence will be included in Appendix 4-A, it should be stated in the text that correspondence can be found in the Appendix.
4-2 through 4-5	These pages indicate sites (within WV and VA) that have not been evaluated for the potential to meet the criteria to be eligible to the NRHP. Please address whether these sites will be evaluated and if no evaluation is planned then provide reason (for no evaluation).
4-3 and 4-6	The Construction and Operation Impacts sections for WV and VA discusses the goal to avoid adverse effects to NRHP-listed and eligible cultural resources and that indirect effects may be in the form of potential partial views of the Project. As the Mountain Valley Pipeline (MVP) moves along in the NEPA process, formal documentation should identify potential resources that may be impacted (direct or indirect) and visuals should be provided, if feasible, in the report.

RR Page/Section	Comment
4-7	This resource report should indicate where MVP addresses concerns of the Appalachian Trail in other resource reports so that the public/reader can find it easily.
4-7	Section 4.2, Regulatory Requirements, states "Another concern brought to the attention of FERC and MVP is possible impact to the cultural attachment local people have to their land in areas of Monroe County." In addition, "MVP continues to work with local stakeholders to site the Project in a way that would minimize effects to stakeholders' cultural attachment." The NEPA documentation should identify who the local stakeholders are and discuss how the local people are engaged to fully understand the cultural attachment and to best address potential impacts and avoidance.
U.S. Environmental Protection Agency Comments on Resource Report 5	
General	The Environmental Justice (EJ) assessment designed to identify minority populations and low income populations is incomplete and inadequate. The methodology used for the assessment is not described in detail and should include the following: 1) the benchmark values for West Virginia and Virginia; 2) the method and calculations used to create the percentages and figures; 3) the benchmark values in all the tables. Additionally, it is unclear if the assessment has been conducted in an appropriate manner because the values are not given, the methodology is not laid out in a plain and straight forward manner, and meaningful information related to such comparisons is not presented.
General	The tables presented in this document do not provide sufficient information to gain a full and meaningful understanding of where the at-risk populations in the study area are located. The report needs to name the census tracts, block groups, or communities that are areas of concern. The EJ study needs to show where these communities are. Afterwards, the report needs to discuss why it is an area of concern compared to other areas and how MVP will develop any needed mitigation or communicate with communities.
5-3	Table 5.1-1 should have a title as clarify as to what "Percent Total" means.
5-9	There should be discussion on the number of farms that the final alignment and stations intersect. It should also discuss the number type of crops that will be affected and potential short-term mitigation for crops lost and long-term mitigation during operation.
U.S. Environmental Protection Agency Comments on Resource Report 7	
7-12	As mentioned in this report, there is a high possibility of erosion. BMP's for mitigation for soil erosion should be discussed with the proper state and Federal agencies.
7-13	The page number and a link to the FERC Plans and Procedure should be included in the resource report. It also should be mentioned if additional review of erosion post-completion of the project will be done to check if permanent erosion control worked.
7-14	Topsoil segregation should be defined for the reader. An example should also be given.
7-15	The resource report and the draft EIS need to show how hydric soils are determined along the alignment wither it is using USDA mapping or on-sight delineation. Hydric soils are an important part of wetlands and should be determined using methods used by one of the Federal agencies.
U.S. Environmental Protection Agency Comments on Resource Report 8	
General	In the next version of the resource report, all of Section 8.1 should have the amount of land (acres) that will be used for the specific uses.
8-8	The report should discuss reimbursement to farmers for long-term effects from the pipeline such as damage to land from pipeline placement.
8-9	The report should put in a table the amount (acres) of preserved or historic farmland that will be affected and the mitigation for affected farmland.
8-9	Proper mitigation should be discussed in the resource report if irrigation is damaged due to construction of the pipeline. Temporary lack of water due to construction could affect crop yields and crop quality. These discussions should be made to farmers as soon as possible.
8-11	The number of acres of roads crossed should be added to Table 8.1-3 for each county.
8-11	Mitigation for road crossings should be included. The report should state if MVP will pay the private road owner, county, or state for repair of road surfaces.

RR Page/Section	Comment
8-12	Table 8.1-4 should be complete with the names of the first two railroad crossings.
8-13	In addition to a police detail, coordination should be made with the municipality and special land uses to make sure that planning can be made for traffic and any events that may occur at the special land uses.
8-14	A picture should be made before construction in order for MVP to replicate what the site looked like prior to construction.
8-19	'Virginia' should be added to the title 'County Land' for clarity.
8-19	MVP should discuss mitigation measures for construction and land that is crossed into NGO land. The report should discuss how MVP will cooperate and communicate with NGO's for land affected by the construction.
8-20	The next version of the resource report should have a list/table of potentially affected scenic areas and model renderings of how it will be affected. Pictures are important for the public to fully understand the affected area.
8-21	The final version of the resource report should have all the Superfund and RCRA sites that would have any potential impact on the project and the environment. This should include above and underground storage tank facilities.
8-24	Above ground facilities should have pictures of how the project will affect visual effects to the environment. Section 8.4.3: It is encouraged to include pictures in the next draft of the resource report and draft EIS so that the public is able to see what the changes to the environment will have due to the construction of the project.
8-41	The next draft of the resource report should discuss the needed applications for rights-of-ways, cited documents in any agreements or permits from the Federal agencies, and highlights of mitigation and references to said agreements or permits.
U.S. Environmental Protection Agency Comments on Resource Report 9	
General	If this pipeline project intends to have laterals connecting specific end users to the pipeline or make other connections using the compressor stations along the route, then the project may need to be reviewed for source aggregation requirements as they relate to PSD applicability. Not considering source aggregation while determining PSD applicability could lead to sham permitting in contravention to the requirements of 40 CFR 52.21. As such, since the draft report at this time does not provide enough information on this topic, the report has not been reviewed for applicability of source aggregation to one or more of the air pollution sources of this project. EPA does not consider air sources along long distance pipelines to be a single source under the common sense notion of a plant, but these types of determinations are made only on a case-by-case basis, and only after reviewing full project details.
9-10 and 9-11	This report is still a draft project report. The four compressor stations along the pipeline route envisioned for this project are only conceptual in nature and thus the report does not provide enough details to ascertain the quality of the applicability analysis done with regards to multiple potentially applicable air regulatory requirements. For example, the project notes that the 294.1 mile long, 42-inch diameter (internal) natural gas pipeline will have approximately 210,000 horsepower of compression along its route divided over four compressor stations, the project report does not provide exact amount of horsepower for each location other than providing an estimate; for one compressor station (Swann compressor station), even a list of projected types of associated equipment is not provided. As such, it is not possible to fully review this draft report at this time since it is lacking the most basic information on projected air emissions from its main and ancillary equipment.
9-10	The largest compressor station (Bradshaw) is projected to house more than 120,000 hp of compression equipment, in the form of four turbines. Additional equipment at this site is listed to include five microturbines to provide power, two natural gas-fired emergency engines, two natural gas-fired heaters, two storage tanks, and associated equipment. Such an assemblage of turbines and engines could potentially lead to emissions of at least one PSD pollutant at greater than 250 tpy threshold. Additionally, the listed projected layout of this and other compressor stations in this project do not include any equipment for handling gas dehydration, such as triethylene glycol dehydrator or a molecular-sieve, as well as a high pressure or low pressure separator; a dehydrator and separator are usually included at compressor stations as methods of protecting the compression systems from non-compressible hydrates, and such methods also lead to additional air pollution and may be subject to specific federal and state air regulations.

RR Page/Section	Comment
9-11 through 9-16	The segment of the draft report concerning applicability of air regulations to the potentially proposed set of equipment only mentions major air regulations and is not a comprehensive list of potentially applicable regulations. The final report must include not only a full analysis of PSD applicability along with appropriate engineering estimates for expected air emissions from each site associated with this project, but also must include a full review of all state and federal air regulations. For example, aside from major source NESHAPs, there may be area source NESHAPs applicable to certain of the facilities if the HAP emissions from those facilities do not exceed major source thresholds.
9-16	It is mentioned that construction and operating emissions and GHG impacts will be presented after the design of the Project is final. Since impacts to air quality can occur from construction and operation of the proposed action, EPA recommends that the next draft of the resource report and/or the proposed draft EIS address what the project will have on the increase of greenhouse gas and what will the indirect effects the project will have on climate change and greenhouse gas. This could include the annual project operation emissions as well as best management practices that will be adopted to reduce methane leakage from the proposed action's operations. ³ Additionally, the draft EIS should also discuss the effects climate change could have on the long-term operation of the project such as increase in flooding and the increase in intense storms. The draft and final EIS should make clear whether commitments have been made to ensure implementation of design or other measures to reduce GHG emissions or to adapt to climate change impacts. Please consider the Council on Environmental Quality's December 2014 Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts.
U.S. Environmental Protection Agency Comments on Resource Report 10	
General	The alternatives should describe aquatic resource impacts, condition of the resource (including any impairment), permanent and temporary impacts.
General	The document should clarify for the public the potential effects of alternatives to the environment.
General	Important or scarce resource crossings should include potential acreage affected. An example would be the crossing of the Appalachian Trail and the acres temporary and permanently affected.
General	Effect on residential properties should be clarified for each alternative. Description of impacts should include taking of the residence (partial loss property), or total displacement of the residents.
General	Alternatives 93 and 87 should have maps that have plot the locations of homes and major roads to help the public understand which properties will be affected with each alternative.
10-1	The purpose should have a location of the starting point or county where it will start and end. It should also have the clients that the pipeline will serve and their locations. This will help the public and resource agencies understand why routes were selected.
10-1	The location of the replacement pipes should be put into the purpose and need section.
10-6	Will customer demand (company/amount) be put into resource report 10? The location of the customers end points should also be discussed in order to confirm with the public the demands are equal to the supply.
10-14	The use of the term, "suitable location for placement" should be clarified with a possible diagram and a map of the location of the pipelines collocated with the Supply Header project. It should be clarified why the section along the ridge tops would not accommodate the proposed pipeline.
10-24	The resource report should state if Alternative 110J is still under consideration pending continued evaluation or other decisions.
10-25	The type of wetlands and the quality of the wetlands should also be considered in the alternatives. The resource reports should discuss the volume of high quality wetlands that would be affected by all the alternatives.
10-32	A discussion on the potential affect from the pipeline on reservoir water quality should be discussed in this section or in another section of the resource reports.
10-46	The report should also clarify how far (in feet) the compressor is from the pipeline for the proposed, 1A and 1B.

³ EPA has compiled information on technologies and practices to facilitate methane reductions from natural gas systems that FERC may find useful, see: http://www.epa.gov/gasstar/methaneemissions/onshore_transmission_storage.html

RR Page/Section	Comment
10-46	The width of the corridor for the piping from the compressor to the pipeline should be described for Site 1A as well as the construction methods and any crossings it may have.
10-47	The report should describe the type of vegetation that is between the NSA for the Harris Station and the compressor. The type of vegetation will affect the ability for noise to reach the NSA.
10-48	A table explaining and comparing the amount of cut and fill that would have to be done for all the alternatives would help the reader understand how MVP made the decision on the project. Any needed disposal of soils should be described.
U.S. Environmental Protection Agency Comments on Resource Report 11	
11-8	For Table 11.1-2, the next resource report should include the township and the type of land use to help readers not familiar with the mile markers distinguish if the pipeline will affect themselves or their community.
11-10	It is understandable that the fatalities from pipelines are small compared to other types of accidents. It should be detailed how some of the accidents happened (by percentage), for example if it was through explosions or leaking. It is suggested to add if there was any environmental damage resulting from the accidents.
U.S. Army Corps of Engineers, Norfolk District Comments on Resource Reports 1-12	
General	<p>In order for the Norfolk District to make substantive comments the following information will be necessary.</p> <ul style="list-style-type: none"> • All Waters of the U.S. including wetlands need to be delineated and flagged in the field through the entire Virginia portion of the proposed corridor and a wetland delineation report (to include data sheets and wetland/waters maps) must be submitted to the Corps of Engineers, Norfolk District for field/desktop confirmation. • All aquatic resources will have a description as to whether or not there is a downstream connection to navigable waters. • All impacts to waters of the U.S. including wetlands will need to be identified describing the type of aquatic resource and the quantity of impacts. • All threatened and endangered species need to be identified for the project corridor. • All cultural resources need to be identified for the project corridor.
West Virginia Division of Natural Resources Comments on Resource Report 2	
Appendix 2A	<p>Table 2-A-3 Surveyed Waterbodies Crossed by the MVP Project lists only streams in Nicholas, Greenbrier, Summers and Monroe Counties in West Virginia.</p> <p>No surveyed waterbodies are listed for Webster, Braxton, Lewis, Harrison, Doddridge or Wetzel Counties in West Virginia.</p>
Appendix 2A	<p>Table 2-A-3 The crossing method for the Gauley River is HDD, but in Table 2-A-2, the proposed method is open cut.</p> <p>We recommend HDD by considered for all major waterbody crossings.</p>
West Virginia Division of Natural Resources Comments on Resource Report 3	
3-5	<p>Construction time restrictions are listed as October 1 through April 30 for B-2 coldwater streams.</p> <p>Spawning season dates for West Virginia State 401 Water Quality Certification Conditions for Nationwide Permits are April-June for warm water streams and September 15 - March 31 for trout waters and adjacent tributaries. If stream work cannot be avoided during these dates, for the respective stream designation, WRS requests that the impacts be evaluated to aid in our determination to grant or deny a spawning season waiver.</p>
Table 3.3-2	<p>Table 3.3-2 Significant Wildlife Habitats Potentially affected by the Project lists the pipeline crossing and access roads on Burnsville Lake WMA and contractor yards on Elk River WMA and Meadow River WMA.</p> <p>Information regarding the access roads and contractor yards has not been presented to this office for review and consideration.</p>

RR Page/Section	Comment
West Virginia Division of Natural Resources Comments on Resource Report 8	
8-18	<p>Table 8.3-1 Federal, State, Recreation, and Conservation Lands Crossed by or Located within 0.25 mile of the Proposed MVP Project lists the proximity of the pipeline to these public lands, including Burnsville Lake WMA, Elk River WMA and Big Ditch WMA. However, the potential impacts listed in RR3 for Burnsville Lake WMA, Elk River WMA and Meadow River WMA are not addressed in RR8.</p> <p>The potential impacts and any necessary mitigation for construction of, or use of access roads, contractor yards, staging areas, or additional temporary workspace on lands owned and/or managed by WRS has not yet been determined. Correspondence concerning use of property managed by WRS for the MVP Project should be directed to the District Wildlife Biologists, Mr. Robert Silvester and Mr. Todd Dowdy and also to Mr. Clifford L. Brown, Environmental Coordination Unit.</p>

Document Content(s)

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