west virginia department of environmental protection

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Jim Justice, Governor
Austin Caperton, Cabinet Secretary
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November 1, 2017

Re: WV Permit No. WV0116815
Registration Application No. WVR310667
Mountain Valley Pipeline, LLC (MVP)
Responsiveness Summary

Dear Commenter,

The State of West Virginia, Department of Environmental Protection (DEP), Division of Water and Waste Management (DWWM) issued a State General Water Pollution Control Permit (WV0116815) to regulate the discharge of stormwater runoff associated with oil and gas related construction activities on May 13, 2013. This Stormwater Associated with Oil and Gas Related Activities General Permit authorizes discharges composed entirely of stormwater associated with oil and gas field activities or operations associated with exploration, production, processing or treatment operations or transmission facilities, disturbing one acre or greater of land area, to the waters of the State. The permit became effective on June 12, 2013 and expires on May 13, 2018.

The Mountain Valley Pipeline (MVP) is a proposed project that is comprised of approximately 196 miles of natural gas pipeline along with compressor stations, meter stations, access roads, and interconnects through: Wetzel, Harrison, Doddridge, Lewis, Braxton, Webster, Nicholas, Greenbrier, Fayette, Summers, and Monroe Counties in West Virginia. This registration under WV0116815 (registration #WVR310667) would be for the discharge of stormwater associated with the disturbance of approximately 4,214 acres of land for the construction of the project.

DWWM published Class I legal advertisement's (public notice for registration and public notice for a public hearing) in the Hinton News, WV Daily News, Register Herald, Monroe Watchman, Charleston Gazette-Mail, Wetzel Chronicle, Exponent Telegram, Weston Democrat, Fayette Tribune, Webster Echo, The Herald Record, Nicholas Chronicle and the Braxton Citizens' Review. These public notices allowed the DWWM to receive public comments on the proposed project. The public notice/public comment period closed on March 19, 2017.

Three public hearings were held for the State 401 Water Quality Certification application (WQC-16-0005) and the Oil & Gas Construction Stormwater General Permit Registration (WVR310667):

- Webster County at Webster County High School auditorium on Monday March 6, 2017
- Summers County at Summers Memorial Building (451 1st Ave in Hinton) on Tuesday March 7, 2017
- Harrison County at Robert C. Byrd High School Large Group Instruction Room on Thursday March 9, 2017

And one public hearing was held for the Natural Streams Preservation Act permit application (NSP-17-0001):

- Summers County at Summers Memorial Building (451 1st Ave in Hinton) on Tuesday March 7, 2017

Since the hearings were combined for the separate permits, there was some comment overlap and not all stormwater related comments were addressed in the July 14, 2017 "Response to Public Comments". As a result, on September 9, 2017, the West Virginia Department of Environmental Protection (DEP) issued Suspension Order No. 8763 to Mountain Valley Pipeline, LLC. This action was initiated to allow the DWWM to respond to all public comments received that were associated with Mountain Valley's Permit Registration No. WVR310667.

In total, there were over ~2300 pages of comments submitted to the DWWM in response to MVP's proposed project. Nearly 700 pages from four different commenters were contained in 9 "studies". There were over 540 pages from 200+ different commenters that had general comments/questions about the project. There were also ~1135 one-page letters received in support of the proposed project.

Several of the comments received were outside of the scope of the general permit and/or DEP's overall regulatory authority. Examples include comments related to deforestation, blasting, and post construction stormwater runoff effects. DEP, via this general stormwater permit, or other authorities, is not empowered to limit tree cutting, to manage changing land uses or post construction runoff. Nonetheless, to the extent it can, DWWM has provided information on MVPs plans and responses on these topics.

The DEP would like to take this opportunity to thank those who submitted written and oral comments on Stormwater Associated with Oil and Gas Related Activities general permit registration application for Mountain Valley Pipeline, LLC. Based on comment received, DWWM has asked for and received clarifying information from MVP on a number of topics including karst protection, antidegradation, and waters with approved, related, Total Maximum Daily Loads. The DWWM has made every attempt possible to ensure that all questions/concerns related to Stormwater Associated with Oil and Gas Related Activities (registration #WVR310667) were addressed. The Responsiveness Summary highlights the issues and concerns that were identified through written and oral comments received during the comment period.

The attached Responsiveness Summary is organized such that comments frequently mentioned, or general in nature, or outside the scope of DEP's authority, are responded to first, Section A (General and Permit Scope Exceedance Comments and Responses). More specific comments on the Construction Stormwater

Permit Registration, and the DEP's response, are second, Section B (Construction Stormwater Permit Registration - Specific Comments and Responses). Oral comments received at the Public Hearings are summarized in Section C (Oral Comments and Responses). Comments and updated responses initially mailed on July 14, 2017 can be found in Section D (Previous comments/response letter dated July 14, 2017 (UPDATED)). In many instances, multiple/similar comments were provided on specific sections or issues. Those comments and responses were summarized to the extent possible.

Again, thank you for your interest and comment on the Mountain Valley Pipeline Stormwater Permit Registration. If you have any further questions or concerns, please do not hesitate to contact Jon Michael Bosley of my staff at 304-926-0499 ext. 1059 or by email at Jon.M.Bosley@wv.gov.

Sincerely,

Scott G. Mandirola
Director

Attachment

Responsiveness Summary
Mountain Valley Pipeline (MVP)

SECTION A. Frequent, General and Permit Scope Exceedance Comments and Responses

1. Comments were received relative to deforestation, its effect on high gradient streams, reduced groundwater recharge/groundwater availability, aesthetics, its impact on impact the geomorphologic function of conserving water in the ecosystem as well as transporting wood and sediment to create diverse bed forms and dynamic equilibrium.

   Response 1: While there will be conversion of forest land to more of a grassland land use, this land use conversion is not something DEP has authority to restrict. However, as part of the Stormwater Pollution Prevention Plan (SWPPP) submittal, MVP, in an effort to provide enhanced protection and restoration, has developed a project specific Restoration and Rehabilitation Plan (RRP) in partnership with the Wildlife Habitat Council (WHC). The WHC is working with MVP on their commitment toward restoration of the Project right-of-way (ROW) and establishment of perennial vegetation using native seed mixes created in collaboration with local seed supplier, Ernst Conservation Seeds, Inc. These seed mixes, or an approved equivalent from another supplier, will be applied along the Project's ROW except where landowners request a specific seed mix or on state or federally managed land where agencies request alternative seed mixes. The mixes in the RRP include separate mixes for the following areas: upland, steep slopes; wetlands; herbaceous riparian; upland meadow; pollinator; and woody areas.

   The RRP will be implemented in conjunction with the FERC's 2013 Upland Erosion Control, Revegetation, and Maintenance Plan and the 2013 Wetland and Waterbody Construction and Mitigation Procedures.

   Mountain Valley intends to disc areas disturbed during construction activities to facilitate revegetation of the ROW. Topsoil will be disced prior to seed and mulch application. Severely compacted areas may require additional decompaction activities to be employed on an as needed basis using a plow or other deep tillage instrument. Alternatively, in agricultural areas, arrangements can be made with the landowner to plant and plow under a "green manure" crop, such as alfalfa, to decrease soil bulk density and improve soil structure. If subsequent construction and cleanup activities result in further compaction, additional tilling may be required along the pipeline.

   The existing ground surface topography within the project area will be restored as practical to pre-construction conditions, which will help maintain the preconstruction surface flow. Any excess rock and soil will be evenly distributed over the restored right-of-way.

By restoring the topography, taking measures to reduce soil compaction, and utilizing wildlife centric seed mixtures, disruption to the project area's aquatic resources and groundwater recharge will be minimized as will any potential long-term cumulative impacts within the project area. Loss of forest land and viewshed changes due to the project are undeniable, yet they are both outside of DEP's authority and its effect will be minimized by the measures just described.

2. Comments were received concerning the potential for landslides associated with the pipeline project, with specific mention of increased risk in steep slope areas, Hungard and Lick Creeks, deforested areas, and areas with soils associated with the Mauch Chunk formation.

Response 2: In recent years DEP has responded to numerous instances of landslides on pipelines and other oil & gas construction related projects. West Virginia's precipitation rates, clay soils, and steep terrain are key factors contributing to landslide development. In response to these occurrences, in 2016 DEP added Chapter 8 to its Best Management Practices Manual to include information identifying West Virginia's slip prone soils and, in the case of pipelines, to require bleeder drains in every other trench plug. As part of its registration application MVP has addressed slope stability for the project via the Landslide Mitigation Plan (LMP). The LMP identifies potentially problematic areas and soils and presents typical details to be employed during construction to minimize the risk of earth movement and specifies the use of these mitigation measures at predetermined locations along the pipeline. The mitigation measures are generally consistent with those recommended in the Interstate Natural Gas Association of America's - Mitigation of Land Movement in Steep and Rugged Terrain for Pipeline Projects Final Report (http://www.ingaa.org/File.aspx?id=28629), and go beyond what is recommend in DEP's updated BMP Manual.

During construction, MVP will deploy geotechnical inspectors to identify additional areas, not already specifically addressed in the LMP, where the landslide mitigation should be implemented. The geotechnical inspectors, in conjunction with Mountain Valley engineers, will develop additional mitigation measures to address slope stability, as necessary, based on subsurface conditions revealed during construction. DEP and MVP are both keenly aware that slip prevention is far more desirable than slip repair.

3. Numerous comments were received relating to karst concerns in Summers and Monroe Counties. Concerns about the lack of karst knowledge in the area were expressed and questions raised on how the pipeline's construction could affect water quantity, water quality, sinkhole collapse, unknown karst features, damage to water supplies, effect on caves and cave dwelling organisms, etc.

Response 3: **DEP is very aware of the concerns raised and the desire for enhanced karst protections. DEP staff have had boots-on-the-ground in karst areas, met with local and**

MVP representatives, assembled all known cave and drainage information and sought to further local karst knowledge by assisting with mapping the Rich Creek Cave. MVP has provided detailed information regarding karst features within at least 1/4-mile of the proposed alignment and associated Project work spaces, karst hydrology and resource protection in multiple agency filings. Such filings include Resource Report #6 (Karst Hazards Assessment, and Karst Mitigation Plan) provided to the Federal Energy Regulatory Commission (FERC), various responses to state and federal agency comments, and FERC Data Requests.

DEP in its original 401 Certification called for an enhanced karst management plan to be developed. Twelve enhancements were specified to be addressed either in the plan or by MVP action. With the 401 Certification being waived, the unaddressed components of the requested enhancements were provided by MVP in their final update submittal.

Mountain Valley made several major, and hundreds of minor route adjustments to avoid karst features and sensitive water resources that were identified in the Karst Hazards Assessment. The Karst Mitigation Plan calls for minor adjustments within the approved right-of-way to avoid karst features during construction if and when necessary. Mountain Valley will implement multiple avoidance and protective measures during construction to prevent impacts to karst and water resources.

Best Management Practices in the Erosion and Sediment Control Plan, and the Karst Mitigation Plan are designed to prevent uncontrolled releases to surface waters and karst features in order to protect the underlying aquifer.

Mountain Valley will deploy karst experts, as on-site inspectors, during all phases of construction in karst terrain to monitor karst resources, identify potential connectivity to the subterranean environment, prevent uncontrolled surface water releases, prevent impacts to karst features and ensure that prescribed measures (referenced above) are in-place to protect karst features, surface water and groundwater resources. DEP will periodically have agency geologists onsite during construction and the karst management plan requires DEP be contacted when unanticipated karst features are encountered.

While the document has broader applicability than just karst features, MVP also developed a Water Resources Identification and Testing Plan. This plan (Resource Report No. 2 Water Use and Quality; update February 2017) summarizes protocols for: (1) identifying and assessing water resources in the vicinity of the proposed alignment; (2) owner contacts and information gathering; and (3) conducting pre-construction baseline water quality testing. This effort includes Mountain Valley working with public water suppliers to ensure uninterrupted potable water supply to their customer base. Private water resources (wells and springs) were identified within 150 feet, and within 500 feet in karst terrain, of MVP work spaces that are associated with the proposed Filing Route.

Public water supplies (wells, springs, surface water intakes) were identified, at minimum, within 3 miles of the MVP alignment.

Finally, while much has been assembled in the way of enhanced karst protection, DEP has no specific authorities in the stormwater construction permit, or other regulations, to protect karst features outside of those found in the Underground Injection Control Program. One must also bear in mind that numerous water, sewer and other smaller pipelines have been constructed in the state with no known lasting impacts to karst systems/features.

4. Numerous comments were received concerned with the lack of specificity on what actual method of stream crossing would be deployed at each individual stream crossing, and related, comment was received questioning why the agency did not issue an individual permit for a project of this magnitude.

Response 4: The stream crossing details provided in Mountain Valley's Stormwater Permit Application show several different crossing methods– including cofferdams, flume and pipe, and temporary culverted crossings. The type of crossing will be determined during construction to provide the least amount of environmental impact to the resources. Variables including predicted and actual streamflow are factored in when making the final stream crossing decision. This practice is common in the utility line construction industry. Impacts to high quality streams are reduced and minimized by using instream diversions during construction, performing constructing activities during low flows, avoiding the streams during seasonal restrictions, and using more stringent E&S BMPs around the resources. The streams will be restored to preconstruction conditions by using approved construction techniques. All stream banks are immediately stabilized and restored as soon as the pipeline is installed and the temporary crossing is removed. For crossings of the larger Gauley, Greenbrier and Elk Rivers the applicant intends to use a Portadam structure that creates a dry-ditch work site for these stream crossings. The Portadam is an engineered, segmental or linked system that creates a dry workable area while minimizing instream and downstream impacts.

DEP's authority to permit this particular activity is derived from state code, as oil & gas construction activity is exempt from federal NPDES permitting. DEP issued the Stormwater Associated with Oil and Gas Related Construction Activities General Permit in 2013 specifically to regulate this type of activity. The general permit registration requires the development of a Site Registration Application, a Groundwater Protection Plan and a site specific Stormwater Pollution Prevention Plan (SWPP), much like would be required in an individual permit. Documents submitted with this application are in excess of one-thousand pages. Larger projects such as this one are also subject to public noticing requirements. Despite the permit being labeled as "general", DEP believes the practical level of review and overall permit would

essentially be the same, be it a registration under this general permit, or if an individual state permit was issued.

5. Multiple comments were received concerned with the effects of blasting in karst areas, headwater areas, possible introduction of sediment and harmful chemicals to the water, possible changes to the bedrock fractures, compromising the amount of groundwater flow and the direction of groundwater flow to seeps and springs with provide water to wetlands and to streams and rivers.

   Response 5: Blasting in not regulated by DWWM in this construction stormwater permit. In fact, blasting is only regulated by DEP at permitted mining or quarry operations. It is DEP's understanding that excavation of unrippable hard rock will be accomplished by one of the following methods: rock trenching machines, rock saws, hydraulic rams, jack hammers and blasting. Blasting for grade or trench excavation will be considered only after all other reasonable means of excavation have been evaluated and determined to be unlikely to achieve the required results. Areas where blasting may be required will be surveyed for features, such as karst terrain, structures, utilities, and wells.

   MVP provided an updated General Blasting Plan (GBP) to FERC in a response to information request in February 2017. The Plan outlines the procedures and safety measures that the contractor will adhere to while implementing blasting activities. All appropriate erosion and sediment control BMPs will also be installed at the blasting location, including but not limited to compost filter sock, silt fence, super-silt fence and belted silt fence. Blasting will not occur within a flowing stream channel. All pipeline stream crossings will be conducted as an open-cut dry-ditch construction procedure. Pipeline excavation is anticipated to be approximately 10 feet below ground.

   Despite its absence of regulation of blasting for this project, DEP does not anticipate any significant negative effect of blasting on surface or groundwater, quantity or quality, due to the relatively shallow construction depth and the use of BMPs to control all runoff from the project area

6. Numerous written, and many oral, comments were received voicing general support for the pipeline and/or citing the economic benefits and jobs that would accompany the project. Likewise, there were numerous comments in either general or specific opposition to the pipeline, with references to environmental and/or landowner impacts.

   Response 6: DEP's recognizes there are strong feelings and strong support both for, and against, the pipeline. §22-11-2 describes West Virginia's overarching policy relative to permitting actions. Essentially DEP is to maintain water quality consistent with public health, protection of aquatic life, and the expansion of employment opportunities. This endeavor is no easy task. State law does allow for the issuance of a permit, once required

information is submitted, public processes are conducted, and a determination is made that the provisions of Article 11 will be met, §22-11-8.

SECTION B. Construction Stormwater Permit Registration - Specific Comments and Responses

Comment 1: The Environmental Solutions & Innovations, Inc. (ESI) hydrologic study area included portions of the Rich Creek watershed in Monroe County WV. Indian Creek Watershed Association (ICWA) requests that the DEP considers the results of these analyses in its determination about whether to issue a permit that allows the pipeline to cross Monroe County.

ICWA notes that, in contrast to the ESI analysis submitted to the JNF, the MVP permit application to the WVDEP does not include sediment calculations. Monroe County is adjacent to the Jefferson National Forest and shares some of the same geology and hydrological factors. ICWA believes that the residents of Monroe County deserve the same depth of analysis of the pipeline effects on their land as the JNF requires for its land. ICWA therefore requests that the WVDEP require MVP to provide an analysis of sediment released during construction activities, such as that provided by the Universal Soil Loss Equation (USLE) or the Revised Universal Soil Loss Equation (RUSLE), developed by the U.S. Department of Agriculture Natural Resources Conservation Service, to evaluate the short--- and long---term increase in sediment to streams and rivers resulting from the increased stormwater discharge.

Response 1: The applicant provided the WVDEP the necessary information in accordance with permit requirements that were included in both the E&S plans and the SWPPP. The project has been designed using professionally accepted engineering and hydrologic methodologies. These methodologies include the placement of erosion and sediment controls/(BMPs) along with landslide mitigation techniques. The applicant will employ numerous environmental inspectors to ensure that not only are the BMPs installed correctly but are functioning at their designed capacity. The FERC will also have third party inspectors and the WVDEP will have full access to the construction project. To ensure that any impact to water quality will be minimal, any BMPs that are not properly functioning will be repaired and/or replaced to provide the required stream protection and erosion control.

Comment 2: ICWA requests that any permit issued to MVP by WVDEP include a requirement that MVP would not be allowed to construct any segment of the pipeline unless a WVDEP environmental inspector is present on site

ICWA calls on WVDEP to uphold the water quality standards of West Virginia: The ESI analysis states that “Based on this analysis, it is expected that sediment loads and yields will reach a new sediment equilibrium approximately four to five years from the start of the Project. For the majority of streams, this new sediment equilibrium represents a one percent or less increase in sediment load over baseline conditions; however, within both the Roanoke and New River drainages, new sediment equilibriums in excess of two percent over baseline are expected. For

several streams within the New River drainage, sediment loads in excess of 10 percent over baseline are expected to represent a new sediment equilibrium [emphasis added]" (ESI, p. 19).

Response 2: The applicant's construction techniques are consistent with state and federal requirements. The required supporting information has submitted by the applicant to the appropriate state and federal permitting agencies. The State's permit serves to reduce or eliminate potential impacts to all environmental resources, and protect sensitive resources in the project area.

Comment 3: The WVDEP must not issue the permit if it will lead to a violation of water quality standards and ultimately allow decreases in water quality.

In summary, Mountain Valley Pipeline's 401 and Stormwater WVDEP applications fail to address impacts of sedimentation to the state's water resources that will occur as a result of the project.

Response 3: The applicant's Erosion and Sediment Control Plan was designed to control project runoff and sedimentation, while providing protection to the aquatic resources within the Limits of Disturbance (LOD) and adjacent to the LOD. The controls include construction procedures: such as minimizing the amount of disturbance, proper grading and restoration, diverting/protecting stream flows during stream crossings, and operating efficiently. The applicant's construction techniques are consistent with the State's construction stormwater requirements. By implementing the procedures, sequencing, and erosion BMPs listed in the Erosion and Sediment Control Plan impacts to the states aquatic resources should be minimal during construction. Site inspections will also occur after the project area has been restored and reseeded. If any BMPs are not properly functioning – they will be repaired or replaced to provide the appropriate sediment control and stream protection, minimizing impacts to water quality. Please also see Section B. Response 129.

Comment 4: The DEP must request high quality sedimentation analyses before it can assess whether the project will be able to comply with the state's water quality standards.

DEP must have adequate information to evaluate the site specific and cumulative impacts of a project of this magnitude and its effect on the state's water resources.

In addition, DEP must be able to assure the public that it has adequate resources to ensure that its inspectors can provide oversight to a project of this magnitude.

Response 4: The applicant has provided the WVDEP and FERC the information required for review of the required permits. In the FEIS, that FERC has concluded that the project would have minimal environmental impacts. DEP will conduct on-site inspections of the pipeline during construction with inspectors from DWWM's Environmental Enforcement

Branch and agency Geologists will overview work in karst areas. Additionally, segments of the pipeline will be surveyed for permit compliance via helicopter.

Comment 5: MVP's descent from High Top is along relatively narrow forested shoulders and ridges that, in addition to being clear-cut of trees, will likely require additional leveling to achieve an adequate width for the construction easement. As shown on Figure 1, from the ICWA Interactive Environmental Map, most of the route traveled is down slopes with "severe" soil erosion potential. Soil erosion potential is based on a calculation factoring both slope and soil type. (See also Figure 5a, Photos.) Such deforestation along ridge-tops not only has adverse impacts on erosion, stormwater runoff, and landslide potential, but can affect the health of the entire stream and watershed because of the importance of the aquatic life in the headwaters of first order high gradient streams.

Response 5: The construction corridor is 125' in upland areas and, where possible, reduced to 75' at streams and wetlands. This narrow strip of project area does not result in complete deforestation and significant forested/vegetative buffers will remain between the construction area and downstream resources.

Also, please see Section A. Response 1., and Response 2.

Comment 6: With the steep slopes and severe soil erosion potential involved, the removal of forest canopy and land disturbance will permanently increase erosion and run-off potential, especially during construction but also for the lifetime of the ROW's existence. What will be the impact on the wetland's capacity to serve as a buffer for the watershed on Mr. Ragland's property, as well as for Indian Creek?

Response 6: Please see Section A. Response 1.

The wetland is located along the pipeline where the applicant will follow FERC's Wetland & Waterbody Construction & Mitigation Procedures, which requires segregating the top one-foot of soils within the wetland and immediately after backfilling is complete, restoring the segregated soil into the wetland.

The wetland is identified as a Palustrine Emergent system, which means it does not have a dominant presence of woody stem vegetation within its boundaries. The existing preconstruction vegetation will be restored and existing topography will be maintained minimizing permanent impacts.

Comment 7: Compounding this stress on the watershed, the proposed pipeline and construction easements are located in the middle of the wetland itself (Figures 2 and 3, p. 2, MP 181.5). Surely, this siting for a pipeline will significantly alter and impair the natural functioning of this wetland for as long as the pipeline is in place. MVP's 401 Water Quality Certification Application Table 6.1 Wetland Impacts Summary does not include a category for permanent

impacts to PEM wetlands such as this one in Monroe County. However, this is information that should be taken into consideration by the FERC and by the USACE and WVDEP in evaluating the potential negative impacts of the MVP project.

Response 7: The wetland is located along the pipeline where the applicant will follow FERC's Wetland & Waterbody Construction & Mitigation Procedures, which requires segregating the top one-foot of soils within the wetland and immediately after backfilling is complete, restoring the segregated soil into the wetland.

The wetland is identified as a Palustrine Emergent system, which means it does not have a dominant presence of woody stem vegetation within its boundaries. The existing preconstruction vegetation will be restored and existing topography will be maintained; minimizing permanent impacts.

Comment 8: This wetland is also fed by a sinking stream (S-A61 at MP 181.5), one of several karst features identified in close proximity to the pipeline in this area. In wet weather, the stream emerges bubbling up just below Mr. Ragland's dirt road. The stream was identified by MVP's field surveyors as ephemeral stream S-A61. (See Figure 3, Detail Map, p. 2; Figure 5b, Photos, p. 2.)

Response 8: Mile Post 181.5 of the currently proposed alignment is not located in mapped karst terrain; however, DEP staff have visited the site and are aware of karst features being likely present. Prior to construction, DEP will advise MVP and its karst specialists of the mapping error and also advise this type of karst mapping scale issue possibly exists in other fringe areas.

Comment 9: MVP is locating a 68,940 square feet Auxiliary Temporary Work Space (ATWS-331 at MP 181.7, Figures 2 and 3, p. 2) downstream from the wetland, on another area of the pasture. In MVP's Data Response to FERC (Accession # 20160712), the purpose of this ATWS is described as: "Material staging, which is anticipated to include, but not limited to, Sand Sacks, Sack Crete, Lumber Skids, Pipe Segments, Water Pumps, Rock-Shield, Timber Matts, Flume Pipe and Fittings, and additional vehicle/equipment parking if required."

Stormwater runoff during its use as a work space will add yet another source of sediment load into Slate Run just before it enters Indian Creek. The compaction that will take place will have long-lasting effects both on the area's ability to handle stormwater run-off and on its viability as a pasture.

Response 9: All auxiliary temporary work spaces, temporary workspaces and other areas with earth disturbance will have the state approved BMPs installed to protect sensitive resources from potential sedimentation. All fuel storage will be in secondary containment and will be located at least 100' from any sensitive resource. Compacted soils on areas targeted for restoration will be ripped to a depth of at least 6-8".

Comment 10: Access to the ATWS is a concern. In the July 2016 Data Response file sited above (p. 150/261), the Associated Access Road provided for this work site is cited as "Mainline". On the alignment sheets, access to the ATWS appears to take place from where the access road enters the construction easement. However, this will require a sharp switchback turn and additional heavy traffic over the wetland area. Once construction is under way, will a likely "shortcut" be to cross Slate Run where the access road comes close to the ATWS, adding yet another negative impact to the stream?

Response 10: Access to the auxiliary temporary work space will occur from the permitted boundary.

Comment 11: Hydrostatic Testing segments are located just below the ATWS area (MP 181.8). (See Figure 2, Alignment Sheet, p. 2.) This area is designated the end of Segment 07B and the beginning of Segment 07A. It is not clear where and how post-hydrostatic test waters will be disposed of, where the hydrostatic water supplies will be obtained, or where storage containers for either of those processes will be located. All of this activity takes place close to both Slate Run and Indian Creek.

Response 11: Hydrostatic discharge permits have been approved by the WVDEP. Included in the permit are water sources and discharge points. The dewatering procedure includes a controlled release of the fluids through a sediment filter bag, which is located inside straw bale dewatering structure that is lined with geo-texting. Sampling and testing will be completed in accordance with Hydrostatic Discharge permits.

All streams within the project's Limits of Disturbance (LOD) are protected using state approved erosion and sediment control BMPs, and landslide mitigation techniques. These BMPs are placed along the ordinary high water mark of the streams and/or along the wetland boundaries. The BMPs provide protection by filtering sediments, diverting flows, and providing avoidances.

Comment 12: Other karst features are present nearby. While this area is just beyond the official karst region as mapped by the U.S. Geological Society (see Figure 1), other karst features close to the MVP Project but outside the officially designated "karst areas" include: a cave approximately ¼ mile upstream from the MVP crossing of Indian Creek, a mapped sinkhole located in an area above that cave, and a cave located downstream from the Indian Creek MVP crossing. ICWA has reported on several of these and will discuss the issue of unmapped karst presence in a future comment.

Response 12: Please also see Response 8 of this Section and Section A. Response 3.

Comment 13: Slate Run enters Indian Creek immediately upstream from the proposed MVP crossing (MP 181.87). With so many open questions about a) the potential for significantly

increased run-off and soil erosion, b) impairments to the wetland, and c) the interconnectedness of groundwater in this area, impacts to Slate Run will compound the dangers posed by MVP's crossing of Indian Creek itself. (This stretch of Indian Creek and continuing downstream has also been noted for sightings of eagles, including pairs and families.)

Response 13: The applicant has provided the WVDEP the information required for review of the required permits.

The Project entails land clearing, surface construction, and excavation approximately 10 feet below ground to install the pipeline. The nature of this construction project is such that there is minimal risk to encounter an aquifer along the alignment, but where groundwater is encountered in the shallow subsurface (e.g., perched aquifers, flood plains near rivers and streams), these areas are typically groundwater discharge zones feeding the streams or wetlands. This reduces risk for subsurface transport of contaminants. In terms of maintaining the local hydrologic connections, the backfilled excavation will convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance.

The applicant's construction techniques are consistent with state and federal permitting requirements. The applicant has submitted appropriate state and federal permit applications.

According to the most up-to-date available data and agency consultation, no documented bald eagle nests occur in the vicinity of any proposed Project facilities. The applicant consulted with FWS regarding bald eagle surveys and occurrence data. The applicant has provided the WVDEP the information required for a complete review of the required permits.

Comment 14: In-depth, independent hydrogeological studies of critical watershed areas, especially in regions of karst and where public and private drinking water sources are affected.

Response 14: Please see Section A. Response 3.

The applicant's Water Resources Identification and Testing Plan (Resource Report No. 2 Water Use and Quality; update February 2017) summarizes protocols for: (1) identifying and assessing water resources in the vicinity of the proposed alignment; (2) owner contacts and information gathering; and (3) conducting pre-construction baseline water quality testing. Private water resources (wells and springs) were identified within 150 feet, and within 500 feet in karst terrain, of the applicant's work spaces that are associated with the proposed Filing Route. Public water supplies (wells, springs, surface water intakes) were identified, at minimum, within 3 miles of the project alignment.

In regards to groundwater, the Project entails land clearing, surface construction, and excavation approximately 10 feet below ground to install the pipeline. The nature of this construction project is such that there is minimal risk to encounter an aquifer along of the alignment, but where groundwater is encountered in the shallow subsurface (e.g., perched aquifers, flood plains near rivers and streams), these areas are typically groundwater discharge zones feeding the streams or wetlands. This reduces risk for subsurface transport of contaminants. In terms of maintaining the local hydrologic connections, the backfilled excavation will convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance.

Comment 15: View of pipeline route along ridgeline, with MVP survey marker center left. Ridge will be deforested and levelled to create construction workspace and pipeline trench.

What will be done with the vegetation, soil, and rocks removed? The sedimentation and erosion will degrade, if not overwhelm, first order streams on steep slopes to either side.

Response 15: Please see Section A. Response 1.

Comment 16: All of the "waters of the United States," including the "waters of West Virginia," are protected by statutes and regulations enforced by federal (USEPA and USACE) and state (WVDEP) agencies. It is the obligation of these agencies to ensure that all waters potentially affected by this project and covered by the Clean Water Act are protected from pollution—regardless of construction easement boundaries, and whether or not landowners have granted easements to MVP. We therefore request that the federal and state agencies with cooperating agency status on the MVP project require

In depth, independent hydrogeological studies of critical watershed areas, especially in regions of karst and all areas where public and private drinking water sources are affected.

Individual permits which include site---specific plans to prevent impacts on individual stream and wetland crossings and prevent stormwater pollution and groundwater degradation. The universal conditions in General permits are not sufficient to meet site--- specific requirements for environmental protection by the 404, 401, and Stormwater permits given the scale of this project, the diverse types of crossings involved, and the unacceptably poor quality of work demonstrated by MVP in its filings to date. Publicly available data are inadequate for a full understanding of issues at individual stream and wetland crossings and other vulnerable locations in proximity to the pipeline route.

Response 16: The applicant is coordinating with all state and federal agencies including the FERC, USACE, WVDEP, WVDNR, USFWS, and local floodplain coordinators throughout the development of this project.

Please see Section A. Response 3., and Response 4.

Comment 17: MVP's excavation and construction will take place on steep forested slopes here. Canopy removal will increase soil erosion and change the light and temperature conditions of high gradient springs and streams as well as the Narrows itself.

Response 17: Light and temperature conditions will not be permanently changed in the entire region. Any physical, and/or biological changes would be restricted to the project area and be temporary in nature. Long term, significant impacts to these resources are not anticipated.

Please see Section A. Response 1.

Comment 18: The proposed work corridor and access road north of the crossing will degrade headwater areas of the Greenbrier River.

The proposed work corridor in the area north of the proposed river crossing intersects 4 direct drain headwater areas to a headwater area tributary to the Greenbrier River. These direct drain headwater areas are within the Zone of Critical Concern of the Big Bend PSD. Bedrock in this area is within 20 inches to 40 inches of the ground surface and will probably require blasting. Deforestation, soil compaction, and blasting within these headwater areas will increase stormwater discharge and decrease groundwater recharge to seeps and springs in the headwater areas of the Greenbrier River.

Response 18: Permanent impacts to the Greenbrier River, its watershed, and its tributaries are not anticipated. These resources will be protected during construction using the state approved BMPs and will be restored according to the Restoration Plan. Based on the use of the BMPs, minimal instream construction, and the proposed restoration procedures indicate significant, long-term impacts or disturbance to the Greenbrier River or its associated habitats are not anticipated.

It is DEP's understanding that Mountain Valley met with the Big Bend Public Service District (PSD) on August 25, 2015, March 17, 2016, and again on August 30, 2017 to discuss the Mountain Valley Pipeline Project, and address the PSD's concerns. The March 17, 2016 meeting and August 30, 2017 meetings also included Mr. Troy Wills, District Engineer for the West Virginia Department of Health and Human Resources who assists the PSD. Mountain Valley prepared a Water Supply Contingency Plan in cooperation with the PSD, dated September 6, 2017. The PSD accepted the Plan via its signature on September 14, 2017. DEP has received and reviewed this document.

Please see Section A. Response 1., and Response 5.

In areas where unrippable subsurface rock is encountered, approved alternative methods of excavation will be evaluated including: rock trenching machines, rock saws, hydraulic rams, jack hammers and blasting. Blasting for grade or trench excavation will be considered only after all other reasonable means of excavation have been evaluated and determined to be unlikely to achieve the required results. The applicant may specify locations (foreign line crossings, nearby structures, etc.) where consolidated rock will be removed by approved mechanical equipment, such as rock trenching machines, rock saws, hydraulic rams, or jack hammers, instead of blasting. Areas where blasting may be required will be surveyed for features, such as karst terrain, structures, utilities, and wells. Before any blasting occurs, the Contractor will complete a project/site-specific blasting plan and provide it to the WVDEP

Comment 19: Blasting will be required to place the proposed gas pipeline in the area of the steep cliffs on the north side of the river crossing, impacting groundwater and creating the potential for landslides.

Bedrock outcrops are exposed in cliffs along the north side of the Greenbrier River at the proposed crossing location, immediately adjacent to 2 identified wetlands in the flood plain of the Greenbrier River. Blasting will be required to construct the trench for the placement of the pipeline. Blasting and soil compaction in the work corridor will reduce groundwater recharge and probably change the flow of groundwater to the wetlands in the flood plain as well as to seeps and springs along the river valley of the Greenbrier River. The bedrock consists of Mauch Chunk red shales, siltstone, and sandstone, which have been evaluated by the West Virginia Geological and Economic Survey (WVGES) as the most prone to landslides in West Virginia.

Response 19: Please see Section A. Response 1., and Response 2.

Comment 20: Construction of the proposed gas pipeline work corridor, access road, and additional work space area in the flood plain on the north bank of the Greenbrier River will destroy the ecological functions of the wetlands. Deforestation, soil compaction, and blasting in the work corridor will reduce groundwater recharge and the flow of groundwater to seeps and springs in headwater areas and in the wetlands on the Greenbrier River flood plain.
Wetlands provide environments for chemical cycling of nutrients. Headwater areas provide the essential aquatic habitats for aquatic species and associated terrestrial fauna and fowl within the entire length of the river continuum in the Greenbrier River watershed.

Response 20: Where the project area crosses the Greenbrier River floodplain there is minimal forest coverage; soil decompaction will occur as discussed in the Deforestation and Restoration Response and all blasting (if necessary) will be completed according to the approved blasting plan. Based on this information and the use of the erosion and sediment control BMPs significant, long-term impacts or disturbance to the Greenbrier River or it's associated habitats are not anticipated.

Comment 21: Construction will result in a cumulative impact of increased turbidity which will permanently degrade aquatic habitats with the Greenbrier River.

The MVP DEIS provides that an assessment was made to determine the monthly sediment load increase due to construction. For the Greenbrier River, the monthly sediment loads are estimated to increase 19 to 52 percent, which will permanently degrade aquatic habitats. Also, the Big Bend PSD is concerned about increased surface runoff, which transports sediment and chemicals to the river and can impact the public water supply intake. When the turbidity returns to baseline levels, the sediment remainsith increased stormwater discharge from the construction sites, increased stream volumes and velocities cause downstream stream bank erosion, resulting in more sediment accumulation in the stream beds. This cumulative damage to aquatic habitats, through time, will not disappear, but rather, will cause the death of aquatic organisms and will reduce water quality. The Greenbrier River is one of the few remaining locations where the Federally listed endangered Clubshell mollusk (Pleurobema clava) is able to survive. As a filter feeder, this species is very sensitive to turbidity and sedimentation.

Response 21: Permanent cumulative turbidity impacts are not anticipated on the Greenbrier River. The assessment of sediment loads to the Greenbrier River referenced by commenter was associated with wet open-cut crossing of the River. As explained in the final EIS, the applicant changed the proposed crossing methods for these waterbodies to dry opencuts, using cofferdam structures (or equivalent structured system).

In general, sediment and runoff will be controlled using erosion and sediment control BMPS and landslide mitigation techniques that are identified on the erosion and sediment control plans.

In addition, the applicant developed an enhanced Restoration and Rehabilitation Plan (RRP) identifying separate seed mixes for different areas of the project, such as Upland, steep slope seed mixes; wetland seed mixes; riparian herbaceous seed mixes; upland meadow, pollinator seed mixes, and a woody seed mix.

The RRP will be implemented in conjunction with the FERC's 2013 Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and 2013 Wetland and Waterbody Construction and Mitigation Procedures (Procedures) as well as the applicant's other construction, restoration, and mitigation plans (e.g., project-specific erosion and sedimentation control plans, Karst Mitigation Plan, and Exotic and Invasive Species Control Plan).

Also, DWWM has reviewed and approved the Natural Stream Preservation Act application to cross the Greenbrier River.

In accordance with the West Virginia Mussel Survey Protocol (WVMSP), streams crossed in West Virginia with upstream drainages greater than 25.9 square kilometers (10 mi2)

were surveyed for the presence of freshwater mussels from July to September 2015 and June to September 2016. Mussel surveys were successfully completed at nine Group 1 stream crossings and at three Group 2 stream crossings. One stream crossing, Gauley River, was not fully assessed because of high stream velocities (i.e., whitewater rapids) and unsafe diving conditions. The WVDNR waived the need for formal surveys at the Gauley River crossing via email correspondence on September 29, 2015. No federally listed mussels were encountered during 2015 and 2016 mussel survey efforts. Future relocation efforts of non-listed mussels are warranted at two proposed crossings including Sand Fork and Greenbrier River.

Comment 22: In order to evaluate the interactions of precipitation, stormwater discharge, groundwater recharge and retention, and stream baseflow, calculations must be performed at the headwater tributary level. Because first order high gradient streams are well defined (Rosgen, 1994) and are considered to provide the basis for watershed evaluation (USFWS, 2007), it is essential to select these smaller watersheds, typically 200 acres to 600 acres in size, to evaluate the impact of construction projects.

Forested ridges are our greatest defense against drought. The trees on the mountain ridges intercept rainfall so that it gently penetrates the ground as groundwater rather than flowing overland as runoff. This means that 1) the rain will gently fall to the ground and recharge groundwater and 2) the surface flow of rainwater on the ground will be slower than in cleared areas, thereby reducing the velocity and quantity of stormwater drainage. Conversely, where development occurs on forested ridges or where there are numerous roads constructed on forested ridges, the protective tree canopy is lost, the stormwater flow is greater in the cleared areas, groundwater is intercepted by road construction, and increased stormwater drainage results in habitat destruction within streams and the consequent death of aquatic organisms.

Response 22: Please see Section A. Response 1.

Deforestation for construction in the headwater areas of first order high gradient streams reduces the amount of precipitation to recharge groundwater.

Comment 23: Compaction of soils for roads and work areas reduces and/or destroys the process of soils to be saturated and to serve as an avenue for groundwater recharge. Blasting for gas pipeline trenches and also for leveling of road and work corridor surfaces destroys or changes the bedrock fractures, compromising the amount of groundwater flow and the direction of groundwater flow to seeps and springs which provide water to wetlands and to streams and rivers.

Response 23: Please Section A. Response 1.

The project area will not suffer complete deforestation and significant forested/vegetative buffers will remain between the construction area and downstream resources. Permanent impacts to this watershed are not anticipated.

Pipeline excavation is anticipated to be approximately 10 feet below ground. Due to the relatively shallow construction depth, restoration of surface area, decompaction of soils, impacts to groundwater recharge and discharge would not occur.

Comment 24: The work corridor north and south of the proposed Greenbrier River crossing is described by MVP as being approximately 125 feet wide. The work corridor will be leveled by deforestation, excavation, and grading (Figure 6.0.1). The MVP DEIS provides a description of trench dewatering procedures: "Trench dewatering may be necessary to inspect the bottom of the trench in areas where water has accumulated. Trench water would be discharged through sediment removal devices in well-vegetated upland areas away from waterbodies and wetlands." On the left side of Figure 6.0.1, a hill has been excavated to its intersection with a ravine. Water can be observed in the trench by the ravine where the pipeline is to be placed. Groundwater from the hillside would also flow toward the ravine and the pipeline trench. However, MVP provides no discussion concerning the interception of groundwater on cut slopes/hillsides.

Response 24: It is anticipated that the trench water will be from overland flow associated with precipitation or runoff events and not groundwater discharge. Project area runoff will be managed before leaving the site through the state approved erosion and sediment control BMPs.

The applicant offers the following response to potential groundwater encounters.

The Project entails land clearing, surface construction, and excavation approximately 10 feet below ground to install the pipeline. The nature of this construction project is such that there is minimal risk of encountering an aquifer along the vast majority of the alignment. Where groundwater is encountered in the shallow subsurface (e.g., perched aquifers, flood plains near rivers and streams), the backfilled excavation will convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance. The applicant has identified the assessment, avoidance, mitigation, and monitoring that will be applied to this Project to protect hydrologic resources. By planning and execution of construction practices, it is believed that groundwater will not be impacted

Comment 25: Within the Greenbrier River flood plain at the proposed MVP gas pipeline crossing, there are 2 wetlands identified by MVP: "TTWV-W-76, PFO wetland and W-MM20, PFO wetland". These wetlands will be impacted by the work corridor, an access road, and a work space area. Additionally, there are several wetlands along the proposed MVP work corridor within headwater areas to tributaries to the Greenbrier River within the Big Bend PSD ZCC.

Where MVP designated wetlands and intermittent and ephemeral streams in headwater areas are located, it is apparent that groundwater from seeps or springs maintains the hydrology within these locations. Deforestation, soil compaction, and blasting will reduce groundwater flow and reduce the hydraulic head that moves groundwater toward the tributary streams and toward the

Greenbrier River. Seeps and springs provide water to tributary streams and to the Greenbrier River during times of drought.

Response 25: Please see Section A. Response 1. and 5.

Comment 26: It is stated in the Big Bend PSD Source Water Assessment Report (2003) that turbidity and the biological and chemical health of the surface water in the ZCC are of the greatest concern to the Big Bend PSD. In relation to turbidity, surface runoff is expressed as a critical concern. The proposed MVP gas pipeline construction would cause increased surface runoff. Blasting bedrock in the river bed of the Greenbrier River would result in increased turbidity, death of aquatic organisms, and chemical contamination of the river water due to chemical by-products of the blasting materials.

The MVP DEIS provides the following description of the adverse impacts of sedimentation: "Increased sedimentation and turbidity resulting from in-stream and adjacent construction activities would displace and impact fisheries and aquatic resources. Sedimentation could smother fish eggs and other benthic biota and alter stream bottom characteristics, such as converting sand, gravel, or rock substrate to silt or mud. These habitat alterations could reduce juvenile fish survival, spawning habitat, and benthic community diversity and health.

Increased turbidity could also temporarily reduce dissolved oxygen levels in the water column and reduce respiratory functions in stream biota. Turbid conditions could also reduce the ability for biota to find food sources or avoid prey." Additionally, the Greenbrier River is one of the few remaining locations where the Federally listed endangered Clubshell mollusk (Pleurobema clava) is able to survive. As a filter feeder, this species is very sensitive to turbidity and sedimentation.

Response 26: It is DEP's understanding that Mountain Valley met with the Big Bend Public Service District (PSD) on August 25, 2015, March 17, 2016, and again on August 30, 2017 to discuss the Mountain Valley Pipeline Project, and address the PSD's concerns. The March 17, 2016 meeting and August 30, 2017 meetings also included Mr. Troy Wills, District Engineer for the West Virginia Department of Health and Human Resources who assists the PSD. Mountain Valley prepared a Water Supply Contingency Plan in cooperation with the PSD, dated September 6, 2017. The PSD accepted the Plan via its signature on September 14, 2017. DEP has received and reviewed this document.

Please see Section A. Response 1.

In accordance with the West Virginia Mussel Survey Protocol (WVMSP), streams crossed in West Virginia with upstream drainages greater than 25.9 square kilometers (10 mi2) were surveyed for the presence of freshwater mussels from July to September 2015 and June to September 2016. Mussel surveys were successfully completed at nine Group 1 stream crossings and at three Group 2 stream crossings. One stream crossing, Gauley River, was not fully assessed because of high stream velocities (i.e., whitewater rapids) and unsafe

diving conditions. The WVDNR waived the need for formal surveys at the Gauley River crossing via email correspondence on September 29, 2015. No federally listed mussels were encountered during 2015 and 2016 mussel survey efforts. Future relocation efforts of non-listed mussels are warranted at two proposed crossings including Sand Fork and Greenbrier River.

Comment 27: The MVP performed a quantitative modeling assessment for the Greenbrier River crossing at Pence Springs, with a resulting estimate that monthly sediment loads would increase by 19 to 52 percent. However, it is stated in the MVP DEIS that, "Construction and operation of the Projects would likely result in only short-term impacts on water resources... These impacts, such as increased turbidity, would return to baseline levels over a period of days or weeks following construction." The findings provided herein support the conclusion that there would be cumulative adverse impacts resulting from construction of the proposed pipeline within the headwater areas, within the tributaries to the Greenbrier River, and within the Greenbrier River. Increased turbidity results in increased sedimentation in the stream beds, which adversely impacts aquatic habitats.

When the turbidity returns to baseline levels, the sediment remains. With increased stormwater discharge from the construction sites, increased stream volumes and velocities cause downstream stream bank erosion, resulting in more sediment accumulation in the stream beds. This cumulative damage to aquatic habitats, through time, will not disappear, but rather, will cause the death of aquatic organisms and will reduce water quality within the Big Bend PSD ZCC. There is no indication from the proposed MVP work description or Best Management Practices (BMPs) that there is any comprehension or consideration of the in-stream aquatic habitats (Figure 2.0.2) that will be destroyed by open trenching. There is no mention of restoring the embeddedness required by aquatic organisms as adequate habitat.

Response 27: Please Section A. Response 1., and Response 4.

Streams will be crossed using a dry-ditch methodology which will include portadams, cofferdams, flumes, or dam-and-pumps. In each instance, the flowing water will be diverted from the construction area until the crossing is complete. Once complete, the dams/flumes will be removed and the stream flows will be restored. During excavation, the top one-foot of wetland soil or streambed substrate will be segregated and stockpiled separate from the trench spoil. This segregated material will be utilized during restoration of the waterbody or wetland to enhance restoration with the native seedbank and substrate. This helps protect the aquatic habitat by removing the substrate in the construction area and operating in a dry ditch environment.

Wetlands within the LOD that are not being excavated for pipeline installation will be crossed with timbermats. Once construction is complete, the timbermats will be removed from the wetlands. Permanent impacts to these wetlands are not anticipated.

Comment 28: The findings of this report provide evidence that construction of the proposed MVP gas pipeline will result in adverse impacts on the Greenbrier River, its tributaries, headwater areas, wetlands, and groundwater. The adverse impacts would be cumulative.

Response 28: Any impacts would be short term and temporary during construction activities. Mitigation will be provided for all permanently impacted wetlands and streams. The headwater areas are typically avoided, but are protected by using state and federally approved erosion and sediment control BMPs should an impact occur.

Comment 29: Construction of the proposed MVP gas pipeline will adversely impact headwater aquatic habitats which serve as the base of the food chain for the entire river continuum ecosystem.

Where seeps, springs, and wetlands are adversely impacted in the headwater areas, the effects will continue along the entire length of rivers within the overall watershed system. Watersheds along the proposed MVP gas pipeline construction route are predominantly those of first order high gradient streams, which typically have stream profile slopes greater than 4%. Springs, seeps, and wetlands occur in the headwater areas of the first order streams.

Where seeps, springs, and wetlands are adversely impacted in the headwater areas of the Greenbrier River and its tributaries, the effects will continue along the entire river continuum. Impacts to aquatic habitats and organisms at the base of the food chain in the headwater areas would cause negative impacts to successive downriver aquatic organisms.

The steep terrain within the Hungard Creek watershed in Summers County provides the unique geomorphology for first order high gradient streams which are tributaries to Hungard Creek. These headwater areas for Hungard Creek provide the essential aquatic habitats for aquatic species and associated terrestrial fauna and fowl within the entire length of the river continuum in the Greenbrier River watershed, into which Hungard Creek flows.

The steep terrain in Monroe County provides the unique geomorphology for first order high gradient streams. First order streams consist of a single tributary which forms in the headwater areas of a watershed. The watersheds of first order high gradient streams in Monroe County provide the essential aquatic habitats for aquatic species and associated terrestrial fauna and fowl within Indian Creek watershed and the entire lengths of the river continuums in the overall major watersheds downgradient of Indian Creek

The steep terrain on Keeney Mountain in Summers County provides the unique geomorphology for first order high gradient streams which are tributaries to Lick Creek. These headwater areas for Lick Creek provide the essential aquatic habitats for aquatic species and associated terrestrial fauna and fowl within the entire length of the river continuum in the major watersheds receiving water from Lick Creek.

Response 29: The majority of the stream and wetland crossings are temporary impacts associated with pipeline installation and are not located along ridgetops in first order streams. Permanent fill impacts are generally associated with constructing permanent access roads and the culvert installation along these access roads. The culverts will maintain flow throughout the watershed and continue to support the nutrient input into the watershed's streams.

Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the Stormwater permits and Nationwide permits are closed. These temporary impacts are anticipated to have a minimal impact on the biodiversity, aquatic life cycles, and trophic levels associated with the project area streams. Therefore, permanent impacts to first order streams are not anticipated.

Since the project is removing a narrow path in the forested areas, a vegetative buffer will remain that will support the watershed's ecosystem. Wetlands within the LOD that are not being excavated for pipeline installation will crossed with timbermats. Once construction is complete, the timbermats will be removed from the wetlands. Permanent impacts to these wetlands are not anticipated.

The majority of the stream and wetland crossings are temporary impacts associated with pipeline installation and are not located along ridgetops in first order streams. Other impacts are generally associated with culvert installation on access roads. The culverts will maintain flow throughout the watershed and continue to support the nutrient input into the watershed's streams.

Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the stormwater permit is closed. Permanent impacts to first order streams are not anticipated.

The headwater areas in Hungard Creek and throughout the project area will be protected through the procedures identified in the Erosion and Sediment Control Plan. Any impacts to these resources would be temporary and significant long term impacts to the first order tributaries or Hungard Creek and its watershed are not anticipated.

The applicant's Erosion and Sediment Control Plan was designed to control project runoff and sedimentation, while providing protection to the aquatic resources within the Limits of Disturbance (LOD) and adjacent to the LOD. The controls include construction procedures: such as minimizing the amount of disturbance, proper grading and restoration, diverting/protecting stream flows during stream crossings, and operating efficiently. The applicant's construction techniques are consistent with the State's construction stormwater requirements. By implementing the procedures, sequencing, and erosion BMPs listed in the Erosion and Sediment Control Plan impacts to the states aquatic resources should be minimal during construction. Site inspections will also occur after the

project area has been restored and reseeded. If any BMPs are not properly functioning – they will be repaired or replaced to provide the appropriate sediment control and stream protection, minimize impacts to water quality.

Comment 30: Construction of the proposed MVP gas pipeline will remove soil and compact soil, causing adverse impacts to springs and wetlands and to the hydrologic function of transporting water from the watershed to wetlands and first order stream channels.

Soil microorganisms require soil moisture in order to function in their capacity to 1) fix nitrogen for uptake by plant roots; 2) transform iron and manganese to increase their solubility and availability to higher organisms in the food chain; 3) detoxify sulfur; 4) oxidize organic carbon; and 5) transform phosphorus into soluble reactive phosphorus for uptake by higher organisms in the food chain. Dewatering and compaction of the soil during construction activities for a 125- foot wide work corridor and during trenching activities will destroy the soil microorganisms. Simple replacement of surficial topsoil after construction cannot restore the function of microorganisms in their capacity to provide organic compounds to the higher organisms in the headwater area ecosystem.

Water transport includes surface water flow necessary to create channels, both ephemeral channels in ravines as well as stream channels. It is stated in the MVP Erosion and Sediment Control Plan (E&SCP) for West Virginia counties (February 2016) that the gas pipeline construction requires leveling a 125-foot wide corridor on ridge tops as well as the mountain slopes between the ridges: "Given the ruggedness of the terrain and steep slopes, the full 125-foot construction right-of-way will be necessary in forested areas for the safe construction of the Project. MVP will neck down to a 75-foot construction right-of- way at streams and wetlands wherever possible." When the land above the headwater areas is destroyed by leveling the ground surface, there is destruction of the slopes that would normally provide the sufficient amount of surface water to the ravines and stream channel. By leveling the ground surface, the existing soils which normally become saturated during precipitation events are removed and the remaining soils are compacted. This results in destroying the condition of saturated soils that allow surface water to flow slowly into the headwater areas. Additionally, the storage of water in soils facilitates the creation of hydric soils necessary to establish wetlands. The wetlands provide environments for chemical cycling of nutrients. With removal of soils in the headwater areas and compaction of the subsoil, the stormwater surface flow will increase in velocity, causing erosion within the stream bed and along the stream banks. The resulting erosion will cause deposition of silt and clay within the pebbles and cobbles, destroying the aquatic habitats of the microbes and insect larvae. Additionally, trenching for the gas pipeline installation provides conduits which remove and lower the groundwater. When the groundwater is diverted into ditches, it is transported away as surface water and the groundwater table is lowered. The depletion of groundwater reduces the hydraulic head necessary to supply groundwater to downgradient seeps and springs in headwater areas and also along streams. Therefore, the reduction of groundwater recharge caused by deforestation, soil removal, and soil compaction removes the capacity for groundwater to supply water to the first order streams during drought conditions (baseflow), with the consequent death

of aquatic organisms. The depletion and redirection of groundwater along the pipeline trench, as well as changes in the direction of groundwater movement caused by blasting, destroys springs, seeps, and wetlands in the headwater areas of first order streams.

Response 30: Please see Section A. Response 1.

The majority of the stream and wetland crossings are temporary impacts associated with pipeline installation and are not located along ridgetops in first order streams. Permanent fill impacts are generally associated with constructing permanent access roads and the culvert installation along these access roads. The culverts will maintain flow throughout the watershed and continue to support the nutrient input into the watershed's streams.

Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the Stormwater permits and Nationwide permits are closed. These temporary impacts are anticipated to have a minimal impact on the biodiversity, aquatic life cycles, and trophic levels associated with the project area streams. Therefore, permanent impacts to first order streams are not anticipated.

Since the project is removing a narrow path in the forested areas, a vegetative buffer will remain that will support the watershed's ecosystem. Wetlands within the LOD that are not being excavated for pipeline installation will crossed with timbermats. Once construction is complete, the timbermats will be removed from the wetlands. Permanent impacts to these wetlands are not anticipated.

Steep slopes will be protected as identified in the Erosion and Sediment Control Plan. The existing ground surface topography within the project area will be restored as practical to pre-construction conditions, helping maintain the preconstruction surface flow.

The Project entails land clearing, surface construction, and excavation approximately 10 feet below ground to install the pipeline. The nature of this construction project is such that there is minimal risk of encountering an aquifer along the vast majority of the alignment. Where groundwater is encountered in the shallow subsurface (e.g., perched aquifers, flood plains near rivers and streams), the backfilled excavation will convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance. The applicant has identified the assessment, avoidance, mitigation, and monitoring that will be applied to this Project to protect hydrologic resources. By planning and execution of construction practices, it is believed that groundwater will not be impacted.

Comment 31: Construction of the proposed MVP gas pipeline will adversely impact the hydraulic function of transporting water in ephemeral channels in ravines, in the channel, and through the sediments.

Water within an ephemeral channel or in a stream will determine the existence of aquatic habitats within the sediments and will interact with groundwater in the sediments of the stream bed and stream banks. The flow of water determines the size and amount of sediments that are deposited.

Where the water velocity is great enough to move silt and sand away from areas of pebbles and cobbles, aquatic habitats are created for microbes and insect larvae which break down organic matter to provide food for larger aquatic species. Stream water velocities great enough to move pebbles and cobbles will obviously also result in the destruction of the aquatic habitats. Additionally, the velocity of the stream water controls the spacing and depth of stepped pools in the stream bed. The typical deep pools that form within the first order high gradient streams provide aquatic habitats for juvenile fish to live. In the MVP DEIS, the widths of access road easements are shown as 40 feet. In order to construct a flat roadbed, fill material will be required for construction, indicating wide embankment areas associated with the roadbeds. In the narrow ravines within first order stream tributaries to the Greenbrier River, the embankment area would extend into the stream beds if mountain slopes adjacent to the streams are not excavated/blasted to provide the necessary road widths. Therefore, either the streams will be directly impacted, or the seeps and springs in the adjacent mountain slope will be impacted, thereby reducing the flow of groundwater to the streams. The access roads are located not only in headwater areas, but also in the floodplains adjacent to the Greenbrier River at Pence Springs and in the ravines along Lick Creek and its tributaries. Additionally, Lick Creek and its tributaries are proposed for crossings by the MVP gas pipeline route and by access roads. Consequently, if the gas pipeline is installed, not only will the headwater areas be compromised by the gas pipeline construction activities, but also by the construction of substantial temporary and permanent access roads, which will cause additional destruction of riparian buffers and specific streams.

Response 31: Please see Section A. Response 1.

Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to certain roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs, widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways will be controlled with drainage channels, broad based dips, and waterbars. Additional BMPs would be installed as necessary to prevent potential uncontrolled release of sediments.

In addition, in areas where streams parallel the access roads, the roads have been shifted to avoid placing fill within the streams. Erosion and sediment control BMPs are also proposed along the access road. The slope of the roads will be constructed to drain to the inside, away

from the road. The drainage will then be directed to a culvert, to controlled discharge locations. It is also worth noting that first order streams, due to their ephemeral nature do not typically provide habitat for juvenile fish to live and do not interact with groundwater. By definition ephemeral channels have flowing water only during, and for a short duration, after a precipitation event.

The applicant has submitted the Summer's County Floodplain Application for work in the Greenbrier River and its floodplains. Mountain Valley will continue to coordinate with the County and state and federal agencies throughout the development of the project.

The majority of the stream crossings are temporary impacts associated with pipeline installation. Other impacts are generally associated with culvert installation on access roads. Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the Stormwater permits and Nationwide permits are closed. Ephemeral channels do not interact with groundwater, ephemeral channels have flowing water only during, and for a short duration, after a precipitation event.

The access roads have been located to avoid placing fill in several of the streams. In some areas, culverts are required but these are typically perpendicular road crossings and not significant fills of the adjacent streams.

Comment 32: Deforestation for construction of the proposed MVP gas pipeline will adversely impact the geomorphologic function of conserving water in the ecosystem as well as transporting wood and sediment to create diverse bed forms and dynamic equilibrium.

Pipeline construction requires deforestation within an area at least 125 feet wide. The relatively dense tree canopy in the headwater areas intercepts rainfall so that it gently penetrates the ground as groundwater rather than flowing overland as runoff. This means that 1) the rain will gently fall to the ground and recharge groundwater and 2) the surface flow of rainwater on the ground will be slower than in cleared areas, thereby reducing the velocity and quantity of stormwater drainage. Woody debris in the forested headwater areas constitutes an important contribution to first order streams because the small woody debris provides particulate organic matter and the large woody debris, when transported to the stream bed, provides protected areas for aquatic organisms and also helps create the stepped pools needed by juvenile fish. MVP states in its E&SCP that the permanent ROW will be 50 feet wide and that "Future land use will be a maintained vegetated natural gas pipeline ROW." (page 3, E&SCP). The disturbed ROW will, therefore, not provide the function of the original forested area. Also, the soil compaction in the remainder of the 125-foot will not facilitate growth of the original forested area. Therefore, the proposed MVP gas pipeline construction on forested ridge-tops will adversely impact the geomorphologic function of the forested ridges.

Response 32: Please see Section A. Response 1.

Comment 33: Construction of the proposed MVP gas pipeline on ridge-tops will adversely impact biological functions of biodiversity and life cycles of aquatic and riparian life.

The ecology of the entire watershed is embraced in the river continuum concept, starting at the headwaters of first order high gradient streams and continuing downstream with changes of predominant benthic aquatic organisms along the river continuum. Shredders, predominant in the forested headwaters, break down organic matter used downstream by collectors and filter-feeders. The filter- feeders are subsequently consumed by larger benthos and fish farther downstream. The downstream healthy fish populations can only exist with specific water velocities, stream bed forms, temperature, and water chemistry.

Response 33: Please see Section A. Response 1.

The majority of the stream and wetland crossings are temporary impacts associated with pipeline installation and are not located along ridgetops in first order streams. Permanent fill impacts are generally associated with constructing permanent access roads and the culvert installation along these access roads. The culverts will maintain flow throughout the watershed and continue to support the nutrient input into the watershed's streams.

Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the Stormwater permits and Nationwide permits are closed. These temporary impacts are anticipated to have a minimal impact on the biodiversity, aquatic life cycles, and trophic levels associated with the project area streams. Therefore, permanent impacts to first order streams are not anticipated.

Since the project is removing a narrow path in the forested areas, a vegetative buffer will remain that will support the watershed's ecosystem. Wetlands within the LOD that are not being excavated for pipeline installation will crossed with timbermats. Once construction is complete, the timbermats will be removed from the wetlands. Permanent impacts to these wetlands are not anticipated.

Comment 34: The proposed MVP mitigation approach for wetlands and streams is deficient.

The MVP mitigation approach does not incorporate an understanding of the importance of headwater areas that supply surface and groundwater to the headwater streams and wetlands. Additionally, the MVP mitigation approach does not recognize the importance of headwater aquatic organisms as being the base of the food chain in the river continuum. Purchasing mitigation credits in areas outside of the actual watersheds for first order high gradient streams will not compensate for the cumulative damage to the specific watershed impacted or to the receiving water bodies downstream.

Response 34: The applicant's mitigation approach is consistent with state and federal requirements. Permanent impacts to aquatic resources, such as wetlands and streams, have

been evaluated using the West Virginia Stream and Wetland Valuation Metric system (WV SWVM). This metric system, which is accepted by the WVDEP, West Virginia Division of Natural Resources (WVDNR) and the United States Army Corps of Engineers (USACE), considers the type of resource being impacted, the value of the resource, and the appropriate mitigation requirement. These forms are consistent with the state and federal mitigation requirements and Mountain Valley will continue to coordinate with the WVDEP and USACE on the required mitigation. These forms have been submitted to WVDEP.

The majority of the stream crossings are temporary impacts associated with pipeline installation. Permanent impacts are generally associated with the culvert installation along access roads and not placement of fill. The culverts will maintain flow throughout the watershed and continue to support the nutrient input into a higher order stream. Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the Stormwater permits and Nationwide permits are closed. These temporary impacts as identified in the Stormwater General Permit Application are anticipated to have a minimal impact on the biodiversity, aquatic life cycles, and trophic levels associated with the project area streams

Comment 35: Construction of the proposed MVP gas pipeline, both of which will reduce groundwater recharge and cause significant changes to the amount of groundwater available as a drinking water source, as well as to groundwater flow routes.

Groundwater flows along bedrock bedding planes and fractures, forming seeps and springs where the bedding planes and fractures intercept the ground surface. The seeps and springs also occur within streams and along stream banks, providing water to streams during drought conditions. Deforestation results in reduced groundwater recharge, with the consequent decreased availability of groundwater. Blasting causes changes in the bedrock fractures, resulting in changes in the direction of groundwater flow. Consequently, seeps and springs will not receive the groundwater that was available prior to construction.

Response 35: Please see Section A. Response 1.

The Project entails land clearing, surface construction, and excavation approximately 10 feet below ground to install the pipeline. The nature of this construction project is such that there is minimal risk of encountering an aquifer along the vast majority of the alignment. Where groundwater is encountered in the shallow subsurface (e.g., perched aquifers, flood plains near rivers and streams), the backfilled excavation will convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance. The applicant has identified the assessment, avoidance, mitigation, and monitoring that will be applied to this Project to protect hydrologic resources. By planning and execution of construction practices, it is believed that groundwater will not be impacted.

Comment 36: Construction of the proposed MVP gas pipeline will cause increased stormwater discharge and increased turbidity and sedimentation.

Increased stormwater discharge causes downstream stream bank erosion, introducing sediment into the streams. Increased amounts of silt and sand in the stream are deposited in openings between cobbles and pebbles, destroying the aquatic habitats and protective areas for minnows and juvenile fish. Blasting to remove bedrock at the proposed MVP crossing will introduce sediment and harmful chemicals to the water, impacting the water supply intake located less than 2 miles downstream.

Response 36: Please see Section A. Response 1.

The applicant has met with the Big Bend PSD on several occasions to discuss the Mountain Valley Pipeline Project, and address the PSD's concerns. The applicant has been made aware of theconcerns regarding pipeline construction in the vicinity of the PSD's surface water intake on the Greenbrier River, and has prepared a Water Supply Contingency Plan in cooperation with the PSD.

Comment 37: Construction of the proposed MVP gas pipeline will result in landslides on the pervasive steep slopes underlain by the Mauch Chunk red shale bedrock.

The West Virginia Geological and Economic Survey has provided documentation that landslides occur on steep slopes where the underlying bedrock is red shale. The Mauch Chunk red shale bedrock is the predominant unit in the area of Pence Springs where the MVP crossing of the Greenbrier River is proposed.

Regardless of best management practices, erosion and landslides will occur within these areas.

Response 37: Please see Section A. Response 2.

Comment 38: The proposed MVP construction zone is within areas of earthquake concern.

Earthquakes have occurred in the Pence Springs area. Earthquakes not only cause ground shaking, which assists in causing landslides, but also causes the soil to behave as a fluid. When this happens, the soil loses its integrity and supportive capability, such that the pipeline would not be supported and could collapse due to lack of support.

Response 38: While outside the scope of this permit registration, the applicant addressed seismic hazards in Resource Report #6, submitted to the FERC on in October 2015, and concluded that there is minor to negligible risk presented to the pipeline and does not consider there to be a significant seismic risk presented to pipeline, slopes, or karst features in the area referenced by the Indian Creek Report.

Comment 39: Construction of the Proposed MVP Gas Pipeline Will Cause Cumulative Damage.

The Council on Environmental Quality (CEQ) regulations that implement the National Environmental Policy Act define cumulative effects as "the impact on the environment which results from the incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions" (40 CFR § 1508.7). Cumulative effects include both direct and indirect, or induced, effects that would result from the Project, as well as the effects from other projects (past, present, and reasonably foreseeable future actions) not related to or caused by the Project. Cumulative impacts may result when the environmental effects associated with a Project are added to temporary (construction-related) or permanent (operations-related) impacts associated with other past, present, or reasonably foreseeable future projects. Although the individual impact of each separate project might not be significant, the additive or synergistic effects of multiple projects could be significant. The cumulative effects analysis evaluates the magnitude of cumulative effects on natural resources such as wetlands, water quality, floodplains, and threatened and endangered species, as well as cumulative effects on land use, socioeconomics, air quality, noise, and cultural resources. The CEQ regulations (40 CFR § 1508.8) also require that the cumulative effects analysis consider the indirect effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

The cumulative damage that would result from construction of the proposed MVP gas pipeline is inconsistent with the protection of West Virginia water resources and is in violation of the West Virginia Water Resources Protection Act (WV Code §22-26-1) et seq., which was enacted to determine the quantity of water resources in West Virginia. By enacting this statute, the Legislature provided for claiming and protecting state waters for the use and benefit of its citizens; evaluating the nature and extent of its water resources; and identifying activities that impede the beneficial uses of the resource ("West Virginia Water Resources Management Plan", Water Use Section, West Virginia Department of Environmental Protection, November 2013; http://www.dep.wv.gov/WWE/wateruse/WVWaterPlan/Documents/WV_WRMP.p df).

In the MVP DEIS, it is recognized that there will be cumulative impacts. However, these impacts are dismissed as insignificant because of the proposed mitigation and because the project is within a "narrow" corridor. There is no acknowledgement that the corridor, access roads, and work spaces are within areas that are environmentally critical to maintaining surface water and groundwater resources and to maintaining the functions of the river continuum.

The findings of this report support the conclusion that there would be significant environmental destruction and degradation within the Greenbrier River if the MVP pipeline were to be constructed.

Response 39: The applicant is coordinating with all state and federal agencies including the FERC, USACE, WVDEP, WVDNR, USFWS, and local floodplain coordinators throughout

the development of this project and has either obtained the required permit or is in the process of obtaining the clearances.

Please see Section A. Response 1.

A cumulative impact analysis is contained within the Final Environmental Impact Statement (FEIS) for the Mountain Valley Project. The FERC considered the cumulative impact of this project on geologic resources, water resources, soils, threatened and endangered species, historic resources etc. On Page 4-622 of the June 23, 2017 FEIS, it is stated "Given the project BMPs and design features, mitigation measures that would be implemented, federal and state laws and regulations protecting resources, and permitting requirements, we [FERC] conclude that when added to other past, present, and reasonably foreseeable future actions, the MVP and the EEP would not have significant adverse cumulative impacts on environmental resources with the geographic scope affected by the project."

Comment 40: The MVP gas pipeline construction will adversely impact springs and wetlands by soil removal.

The composition of weathering products from the underlying bedrock determines characteristics of soils relating to water retention, pore space, and acidity. The organic fraction of the soils results from interactions between the available vegetation and soil organisms such as microbial communities, worms, and tree roots. Soil scientists estimate that a time period greater than 100 years is required for one inch of soil to form. For this reason, soil is considered a non- renewable resource. The MVP gas pipeline construction on forested ridges and slopes will destroy the soils which regulate the transport of surface water and also carbon, nitrogen, and oxygen to headwater areas of first order high gradient streams and to wetlands. The destruction will result from access road construction and from leveling the 125-foot wide work corridor, causing soil removal and compaction of the underlying subsoils and bedrock residuum.

Response 40: Please see Section A. Response 1.

Comment 41: The MVP gas pipeline construction will require deforestation, which will decrease groundwater recharge and increase stormwater runoff. Reduced groundwater recharge will reduce the amount of groundwater to springs and seeps to streams and wetlands. The MVP gas pipeline construction will also require excavation/blasting within the construction area through the Hungard Creek watershed because the soil surveys indicate that the predominant depth to bedrock within the work corridor is 20 to 40 inches (1.7 to 3.3 feet), with scattered areas of 75 inches (6.25 feet) depth to bedrock. Only at the two crossing locations of Hungard Creek are there flood plain soils and soils developed on river terrace cobbles and gravel. The trench depth required for installation of the 42-inch diameter is at least 8.5 feet. Therefore, excavation/blasting will be required throughout most of the work corridor route in the Hungard Creek watershed. This

will deplete groundwater and change the route of groundwater flow to the abundant springs and wetlands that occur in the headwater areas of the first order high gradient streams.

Response 41: Please see Section A. Response 1.

The Project entails land clearing, surface construction, and excavation approximately 10 feet below ground to install the pipeline. The nature of this construction project is such that there is minimal risk of encountering an aquifer along the vast majority of the alignment. Where groundwater is encountered in the shallow subsurface (e.g., perched aquifers, flood plains near rivers and streams), the backfilled excavation will convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance. The applicant has identified the assessment, avoidance, mitigation, and monitoring that will be applied to this Project to protect hydrologic resources. By planning and execution of construction practices, it is believed that groundwater will not be impacted.

Comment 42: The MVP gas pipeline construction will cause increased stormwater discharge and also degrade stream functions at the numerous locations where stream crossings are proposed.

Streams will be degraded by increased stormwater discharge as well as disruption of streams at crossings and release of buried fertilizers and pesticides. Ground cover determines the amount of precipitation that will penetrate the ground as groundwater recharge or run off the surface. Forested areas intercept rainfall, allowing the rain to gently reach the ground surface. Therefore, in forested areas, the rain will penetrate the ground to recharge groundwater and will flow across the ground surface with less volume and velocity (discharge) than in non-forested areas. Even where sediment from stormwater discharge from construction areas is captured in erosion control structures, the increased discharge flowing into streams will result in stream bank erosion downstream and, consequently, increased sedimentation downstream. Where stream crossings are planned for the MVP gas pipeline construction, stream bedding forms will be destroyed, aquatic habitats will be destroyed, and buried layers containing fertilizer and pesticides will be disturbed, with the consequence of releasing fertilizer and pesticides to the stream water. Areas along streams within the Indian Creek watershed are commonly agricultural. Fertilizers and pesticides frequently enter the streams with the surface water runoff from agricultural fields. Through time, less toxic pesticides have been used, but the older, more toxic pesticides are now covered by sediment in the stream beds. When the stream bed sediments are disturbed, the older layers of fertilizer and pesticides will be released to the stream water. Algal blooms can result from the increased amount of fertilizer available. Algal blooms are known to cause death of aquatic organisms. Toxic pesticides are also known to cause death of aquatic organisms.

Response 42: A temporary increase in stormwater discharge and temporary stream impacts will occur during construction. However, these impacts will be minimized as discussed in the Deforestation and Restoration Response and Stream Restoration Response

Long-term, significant impacts to aquatic resources are not anticipated with this project. All permanent impacts to wetlands and streams will be mitigated, as required by state and federal regulations, described in the Mitigation Response.

Comment 43: The MVP gas pipeline construction will create the potential for landslides.

Red shale and siltstone of the Mauch Chunk Group is the predominant bedrock in the Hungard Creek watershed. The West Virginia Geological and Economic Survey (WVGES) has determined that landslide-prone areas occur mostly on slopes of 15% to 45% on red shale bedrock. Such slopes are pervasive throughout the Hungard Creek watershed where the MVP gas pipeline route is proposed. Therefore, there is a definite potential for significant landslide occurrences that would result from construction of the proposed MVP gas pipeline in the Hungard Creek watershed, Lick Creek watershed and other areas.

Response 43: Please see Section A. Response 2.

Comment 44: The MVP gas pipeline construction will create the potential for pipeline collapse in areas known to have experienced earthquakes.

The U.S. Geological Survey (USGS) 2014 Seismic Hazard Map depicts the Hungard Creek watershed area in Summers County in a zone of concern for earthquake events. The West Virginia Geological Survey 2014 earthquake map indicates several recent earthquakes in Summers County. Although MVP discounts the seismic activity as insignificant, the combination of earthquakes in landslide-prone areas where the proposed MVP gas pipeline would be located presents definite concern.

The Indian Creek watershed is located in earthquake hazard zones which have experienced significant numbers of earthquakes and which are considered to be at risk for future earthquakes. Construction of the proposed MVP gas pipeline in earthquake zones, especially in karst areas, creates the potential for pipeline collapse.

Response 44: While outside the scope of this permit registration, the applicant addressed seismic hazards in Resource Report #6 submitted to the FERC in October 2015, and concluded that there is minor to negligible risk presented to the pipeline (i.e., design criteria are well within acceptable factor of safety). The applicant does not consider there to be a significant seismic risk presented to pipeline, slopes, or karst features in the area referenced by the Indian Creek Report.

Comment 45: Cumulative damage would result from the MVP gas pipeline construction.

The findings provided in this report are in contrast to the MVP DEIS statement that, “Construction and operation of the Projects would likely result in only short- term impacts on water resources... These impacts, such as increased turbidity, would return to baseline levels over

a period of days or weeks following construction." The findings provided herein support the conclusion that there would be cumulative adverse impacts resulting from construction of the proposed pipeline within the headwater area and along the stream bed of Hungard Creek, Lick Creek and Indian Creek. Increased turbidity results in increased sedimentation in the stream beds, which adversely impacts aquatic habitats. When the turbidity returns to baseline levels, the sediment remains.,

The HUC designations were not intended to determine specific details for smaller watersheds of tributaries which provide water quality and biotic functions of aquatic organisms for the overall watershed evaluations

Response 45: Please see Section A. Response 1.

Comment 46: Deforestation for construction in the headwater areas of first order high gradient streams reduces the amount of precipitation to recharge groundwater. Compaction of soils for roads and work areas reduces and/or destroys the process of soils to be saturated and to serve as an avenue for groundwater recharge. Blasting for gas pipeline trenches and also for leveling of road and work corridor surfaces destroys or changes the bedrock fractures, compromising the amount of groundwater flow and the direction of groundwater flow to seeps and springs which provide water to wetlands and to streams and rivers.

Response 46: Headwater areas have been mostly avoided throughout the project area. In areas where impacts area anticipated, the appropriate erosion and sediment control BMPs will be implemented and monitored to ensure protection is being provided.

Please see Section A. Response 1.

Comment 47: Soil permeability is a measure of how water can be transported through the soil. Soils in the areas proposed for the MVP Route and access roads exhibit moderate to rapid permeability. Such soils facilitate the downward flow of rainfall penetrating the ground surface to recharge the groundwater and to flow to and through rock fractures that form springs or seeps where the ground surface intercepts the rock fractures. If these essential soils are removed for pipeline construction and/or if blasting is conducted that will alter the system of fractures, the amount of groundwater flow and the direction of groundwater flow will change, such that flow of water to sustain springs and seeps will be destroyed.

Soil erosion is a major concern in the area proposed by MVP for gas pipeline construction. The Soil Survey of Mercer and Summers Counties, West Virginia, by the USDA Soil Conservation Service in cooperation with the WV University Agricultural and Forestry Experiment Station, with fieldwork conducted 1971- 1979, published by the National Cooperative Soil, issued July, 1984, provides the interpretations for the best use of land according to the specific soils that are present. Within the Hungard Creek watershed, there are mostly forested areas, even though the referenced Soil Survey indicates the soils are appropriate for crops and pasture. Land use is

limited in the Hungard Creek watershed and Lick creek watershed areas due to the high erosion potential, as described in the Soil Survey.

Detailed soil descriptions in the Soil Survey also provide the depths to bedrock for specific soils. Within the Hungard Creek watershed, the depth to bedrock is 20 to 40 inches (1.7 to 3.3 feet) for most of the proposed MVP route and the depth to bedrock is 76 inches (6.3 feet) in isolated areas. Only at the two crossing locations of Hungard Creek are there flood plain soils and soils developed on river terrace cobbles and gravel. Excavation/blasting will be required for all areas less than 10 feet to bedrock in order to provide space for the required pipe bedding material below the pipe and cover material above the pipe.

The Soil Survey of Monroe County, West Virginia, by the USDA Soil Conservation Service in cooperation with the WV University Agricultural and Forestry Experiment Station, published by the U.S. Government Printing Office, 1965, provides the interpretations for the best use of land according to the specific soils that are present. The referenced Soil Survey provides recommendations for the best use for land. Except for floodplain areas, the best use for land along the proposed MVP gas pipeline route in Monroe County is 1) 49.5% wooded acreage, with the caution that erosion control is a major concern, especially on logging roads; and 2) 48.5% pastures, hay, or crops, with the caution that crops should be planted as contour strips with minimum tillage to control erosion and with diversion terraces to control erosion or divert runoff from gullies, or wooded acreage, with the caution that erosion control is a major concern, especially on logging roads. Soils within this area are of concern for severe erosion hazard on steep slopes.

An analysis of the detailed soil descriptions for the Indian Creek watershed area where the proposed MVP gas pipeline route is located demonstrates that the depth to bedrock is between 20 inches to 40 inches for up to 90% of the soils located between MP 179.1 and MP 190.4. Therefore, blasting will probably be required for all areas less than 10 feet to bedrock in order to provide space for the required pipe bedding below the pipe and cover material above the pipe. 27,78,106

Response 47: Information on the soils has been provided to the DEP and included with the Stormwater Permit application.

The applicant's Erosion and Sediment Control Plan has been specifically designed to control project runoff and sedimentation, while providing protection to the aquatic resources within the Limits of Disturbance (LOD) and directly adjacent to the LOD. These controls include logical construction procedures, such as minimizing the amount of disturbance, proper grading and restoration, diverting/protecting stream flows during stream crossings, and operating in a safe and efficient manner. In addition, construction techniques are consistent with all state and federal requirements. By implementing the procedures, sequencing, and erosion BMPs listed in the Erosion and Sediment Control Plan, impacts to the state's aquatic resources will be minimized during construction. Site

inspections will also occur after the project area has been restored and reseeded. If it is determined that any BMPs are not properly functioning, the BMPs will be repaired or replaced to provide the appropriate sediment control and stream protection.

See also Section A. Responses 2. and 5.

Comment 48: Numerous undocumented springs and seeps occur within the Hungard Creek watershed. In addition to the springs located along the proposed MVP gas pipeline route, numerous undocumented springs occur downslope where the bedrock bedding planes and fractures intercept the ground surface in the headwater areas of Hungard Creek. These smaller springs and seeps are critical to the ecosystems in the headwater areas of first order high gradient streams because they supply the water necessary for the headwater area aquatic species, which comprise the base of the river continuum food chain.

Response 48: Where property access was granted the applicant has conducted the state and federally required stream and wetland investigations. The results of these investigations were included in the Stormwater Management Plan. See also Section B. Response 62.

Comment 49: The route of the proposed MVP gas pipeline is located on ridges, intervening mountain slopes, and Hungard Creek headwater areas, as well as across Hungard Creek and its tributaries. The MVP DEIS states the construction right- of-way for the pipeline installation is 125 feet and that the construction right-of way at wetlands crossings would be 75 feet. The proposed MVP work corridor is shown to extend approximately 5.3 miles through subwatersheds of the Hungard Creek watershed. Therefore, approximately 80 acres would be deforested/de-vegetated, leveled, and compacted. The MVP DEIS also provides that 21.6 acres of additional work space will require deforestation in the Hungard Creek watershed. Three proposed access roads extend through portions of the Hungard Creek watershed. The access roads are described as 40 feet wide.

The additional acreage is approximately 10.6 acres for access roads proposed within the Hungard Creek watershed. The total acreage that will be deforested and compacted within the Hungard Creek watershed, impacting numerous headwater areas, is approximately 112.2 acres. The MVP DEIS emphasizes the deforested, compacted, leveled area is a small percentage of the overall area.

However, the more significant observation is that the construction areas are within the headwater areas and along first order high gradient streams, which are the most important areas for the existence of aquatic life in the river continuum.

Response 49: Please see Section A. Response 1.

Comment 50: Soil compaction and groundwater removal during leveling of the work corridor, access roads, and trenching for the pipeline installation will result in decreasing groundwater

recharge as well as intercepting groundwater for removal to other areas. These construction activities will deplete groundwater recharge to bedrock fractures which currently provide water flow to maintain seeps and springs. The seeps and springs provide water to maintain wetlands and headwater areas. The seeps and springs also maintain a flow of groundwater to streams during times of drought. Construction impacts to groundwater resources will negatively impact the river continuum.

Response 50: Please see Section A. Response 1.

Comment 51: The MVP gas pipeline construction will degrade karst environments.

Surficial bedrock underlying the proposed gas pipeline route within the Indian Creek watershed consists mostly of shale and sandstone of the Bluefield Formation, which is part of the Mauch Chunk Group. However, limestone of the Greenbrier Group underlies the shale and sandstone of the Bluefield Formation at relatively shallow depths in areas not identified as karst in the MVP documents. The presence of caves and sinking streams provides evidence of karst terrain present in the Indian Creek watershed. There is a strong potential for collapse of the gas pipeline where construction occurs in karst terrain.

Response 51: In addition to the Karst Response (Section A. Response 3.) the pipeline route predominantly follows ridges through non-karst areas of the Bluefield formation through Monroe County. In small side valleys and draws the Greenbrier is still deep below the ground surface. Based on geological mapping and field observations the Greenbrier is typically hundreds of feet below the surface along the proposed route in the majority of Monroe County.

Comment 52: The work corridor of approximately 125 feet will be leveled by deforestation, excavation, and grading (Figure 1.3.1). RR1 describes trench dewatering procedures: "The storm water will be pumped from the trench to a location down-gradient of the trench. The trench will be dewatered in a manner that does not cause erosion and does not result in heavily silt-laden water flowing into any waterbody or wetland. The storm water will be discharged to an energy dissipation/filtration dewatering device, such as a hay bale structure." On the left side of Figure 1.3.1, a hill has been excavated to its intersection with a ravine.

Water can be observed in the trench by the ravine where the pipeline is to be placed. Groundwater from the hillside would also flow toward the ravine and the pipeline trench. However, MVP provides no discussion concerning the interception of groundwater on cut slopes/hillsides.

Response 52: The Project entails land clearing, surface construction, and excavation approximately 10 feet below ground to install the pipeline. The nature of this construction project is such that there is minimal risk of encountering an aquifer along the vast majority of the alignment. Where groundwater is encountered in the shallow subsurface (e.g., perched aquifers, flood plains near rivers and streams), the backfilled excavation will

convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance. The applicant has identified the assessment, avoidance, mitigation, and monitoring that will be applied to this Project to protect hydrologic resources. By planning and execution of construction practices, it is believed that groundwater will not be impacted.

Comment 53: The MVP Landslide Mitigation Plan, February 2016, submitted to FERC in response to FERC's request dated December 2015, states: "Numerous landslides on the Appalachian Plateau have developed in soils derived from sedimentary rocks. Shale, especially red beds and shale-limestone sequences, disintegrate rapidly into clayey soil upon exposure. Most landslides involving soil and weathered bedrock consist of smooth, integrated, thin earth-flow slabs that may be many square yards in area but generally are less than about eight feet thick. Commonly, the slabs move no faster than about three feet or six feet per year and are normally underlain by material containing water with a hydrostatic head of as much as seven feet. In both the folded Appalachians and the Blue Ridge Mountains, numerous slow-moving debris slides form in colluvial soil and scree that are particularly abundant on slopes underlain by sandstone and metamorphic rocks."

In the abstract, "19 Landslides in West Virginia" (by Peter Lessing and Robert B. Erwin; West Virginia Geological Survey, P.O. Box 879, Morgantown, West Virginia 26505; http://reg.gsapubs.org/content/3/245.abstract), it is stated that landslide-prone areas occur mostly on slopes of 15% to 45% on red shale bedrock. The Mauch Chunk Group, which consists of red shale, siltstone, and sandstone, comprises the surficial bedrock in the Indian Creek watershed area where the MVP gas pipeline route is proposed.

In the MVP DEIS, Table 4.1.1-11 "Areas of Landslide Concern Along the mountain Valley Project" provides that from MP 181.5 to 181.9, for a distance of 808 feet, the percent slope is 18% to 28% and slope movement appears to have occurred within the past 20 years. Additionally, landowners in the area elsewhere within the Indian Creek watershed have reported landslide activity.

Excavation on steep slopes is of great concern for landslides. As provided in Appendix K, "Steep Slopes", of the MVP DEIS, approximately 52% of the proposed MVP gas pipeline corridor in the Indian Creek watershed exhibits steep slopes of 15% to greater than 30%. It is stated in the MVP Resource Report 6 that landslides "can also affect the reliability of the pipeline should failures occur that would result in displacement of the pipeline."

Response 53: Please see Section A. Response 2.

Comment 54: Forested ridges intercept rainfall so that it gently penetrates the ground as groundwater rather than flowing overland as runoff. This means that 1) the rain will gently fall to the ground and recharge groundwater and 2) the surface flow of rainwater on the ground will be slower than in cleared areas, thereby reducing the velocity and quantity of stormwater drainage.

Conversely, deforestation removes the protective tree canopy, causing increased stormwater discharge and decreased groundwater recharge. The proposed MVP gas pipeline construction would result in deforestation and soil compaction, causing increased stormwater discharge and decreased groundwater recharge. Leveling of the work corridor and access roads, along with trenching for pipe installation, will intercept groundwater, thereby reducing or eliminating the flow of water to rock fractures which serve as a conduit to provide water to seeps, springs, and wetlands, as well as to streams during times of drought.

Response 54: Complete deforestation of the project corridor will not occur. Please see Section A. Response 1.

Comment 55: In the MVP DEIS, numerous high gradient first order streams are identified at locations where they are crossed by the proposed MVP gas pipeline route. However, no evaluation is presented in the MVP DEIS with respect to construction impacts on these headwater streams.

Response 55: The majority of the stream and wetland crossings are temporary impacts associated with pipeline installation and are not located along ridgetops in first order streams. Permanent fill impacts are generally associated with constructing permanent access roads and the culvert installation along these access roads. The culverts will maintain flow throughout the watershed and continue to support the nutrient input into the watershed's streams.

Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the Stormwater permits and Nationwide permits are closed. These temporary impacts are anticipated to have a minimal impact on the biodiversity, aquatic life cycles, and trophic levels associated with the project area streams. Therefore, permanent impacts to first order streams are not anticipated.

Since the project is removing a narrow path in the forested areas, a vegetative buffer will remain that will support the watershed's ecosystem. Wetlands within the LOD that are not being excavated for pipeline installation will crossed with timbermats. Once construction is complete, the timbermats will be removed from the wetlands. Permanent impacts to these wetlands are not anticipated.

Comment 56: It is stated in the MVP Erosion and Sediment Control Plan, page 6, that "It is anticipated that all stream impacts within the pipeline limit-of-disturbance will be temporary, occurring during pipeline construction activities. These temporary waterbody impacts will not result in an adverse impact to water quality, physical or biological habitat, or aquatic species within the Project area due to the temporary stream crossing construction activities and implementing the Erosion and Sedimentation Control Plan's Best Management Practices. The methods used include silt fence or compost filter sock along disturbed areas and permanent vegetative cover." However, the proposed method for the MVP gas pipeline installation is to

excavate an open trench in the stream where the crossing is proposed. There is no indication from the proposed MVP work description or Best Management Practices (BMPs) that there is any comprehension or consideration of the in-stream aquatic habitats (Figure 4.3.3.1) that will be destroyed by open trenching. There is no mention of restoring the embeddedness required by aquatic organisms as adequate habitat.

Response 56: The applicant will restore stream channels disturbed during construction to preconstruction contours and conditions as required by the state and federal permits.

Where possible, the applicant has reduced crossing widths in streams and wetlands to 75-feet during construction. State approved E&S BMPs will be utilized around sensitive resources such as streams and wetlands. Reroutes and shifts around forested wetlands and scrub shrub wetlands have also been incorporated into the proposed alignment to reduce potential impacts. In addition, potential impacts to sensitive resources will be reduced by adhering to seasonal restrictions (for restricted streams) and planning construction during low-flow conditions. During construction, the existing stream substrate is separated and stockpiled. After the pipe is installed the pipe trench is backfilled and the stream material is the last material restored. This technique returns the native stream material to the stream channel, restoring the substrate and macroinvertebrate habitat.

Comment 57: Where the proposed MVP gas pipeline route and access roads are immediately adjacent to streams, it is probable that sediment will flow in stormwater from the construction site into the adjacent streams. Access roads constructed in ravines are specified to have rights-of-ways 40 feet in width. At most locations, this would require filling of the stream itself, which would destroy the aquatic habitats, or excavation/blasting of the adjacent hill slopes, which would disrupt the flow of water from seeps and springs to the streams.

When sediment is deposited in a stream bed, filling in the voids among cobbles and pebbles, aquatic habitats are destroyed. This is not a temporary impact. The impact of increased sediment deposition in any stream is cumulative and permanent.

Response 57: Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to certain roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs, widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways will be controlled with drainage channels, broad based dips, and waterbars. Additional BMPs would be installed as necessary to prevent potential uncontrolled release of sediments.

In addition, in areas where streams parallel the access roads, the roads have been shifted to avoid placing fill within the streams. Erosion and sediment control BMPs are also proposed along the access road. The slope of the roads will be constructed to drain to the inside, away from the road. The drainage will then be directed to a culvert, to controlled discharge locations. It is also worth noting that first order streams, due to their ephemeral nature do not typically provide habitat for juvenile fish to live and do not interact with groundwater. By definition ephemeral channels have flowing water only during, and for a short duration, after a precipitation event.

In-stream habitat is protected by implementing the erosion and sediment control BMPs, which include compost filter sock, silt fence, super-silt fence, belted silt fence, etc. Once construction is complete, the area will be restored to preconstruction contours and seeded according to the Restoration and Rehabilitation Plan. Significant, permanent impacts are not anticipated with this project.

Comment 58: The MVP mitigation approach for destroying wetlands and streams is to purchase credits in mitigation banks. All wetlands and first order high gradient streams within a watershed serve to maintain the aquatic ecology within that specific watershed. Simply creating a wetland bank in another watershed will never offset the damage completed in the watershed where the wetland is destroyed. Where a first order high gradient stream is destroyed, the damage can never be offset by restoring a stream in an entirely different watershed.

Response 58: Mountain Valley's mitigation approach is consistent with state and federal requirements. Permanent impacts to aquatic resources, such as wetlands and streams, have been evaluated using the West Virginia Stream and Wetland Valuation Metric system (WV SWVM). This metric system, which is accepted by the DEP, West Virginia Division of Natural Resources (WVDNR) and the United States Army Corps of Engineers (USACE), considers the type of resource being impacted, the value of the resource, and the appropriate mitigation requirement. These forms are consistent with the state and federal mitigation requirements and Mountain Valley will continue to coordinate with the WVDEP and USACE on the required mitigation. These forms have been submitted to DEP.

The majority of the stream crossings are temporary impacts associated with pipeline installation. Permanent impacts are generally associated with the culvert installation along access roads and not placement of fill. The culverts will maintain flow throughout the watershed and continue to support the nutrient input into a higher order stream. Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the Stormwater permits and Nationwide permits are closed. These temporary impacts as identified in the Stormwater General Permit Application are anticipated to have a minimal impact on the biodiversity, aquatic life cycles, and trophic levels associated with the project area streams.

Comment 59: Construction for the proposed MVP gas pipeline on ridge-tops will adversely impact biological functions of biodiversity and life cycles of aquatic and riparian life.
The ecology of the entire watershed is embraced in the river continuum concept, starting at the headwaters of first order high gradient streams and continuing downstream with changes of predominant benthic aquatic organisms along the river continuum. Shredders, predominant in the forested headwaters, breakdown organic matter used downstream by collectors and filter-feeders. The filter- feeders are subsequently consumed by larger benthos and fish farther downstream. The downstream healthy fish populations can only exist with specific water velocities, stream bed forms, temperature, and water chemistry.

Response 59: The majority of the stream and wetland crossings are temporary impacts associated with pipeline installation and are not located along ridgetops in first order streams. Permanent fill impacts are generally associated with constructing permanent access roads and the culvert installation along these access roads. The culverts will maintain flow throughout the watershed and continue to support the nutrient input into the watershed's streams.

Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the Stormwater permits and Nationwide permits are closed. These temporary impacts are anticipated to have a minimal impact on the biodiversity, aquatic life cycles, and trophic levels associated with the project area streams. Therefore, permanent impacts to first order streams are not anticipated.

Since the project is removing a narrow path in the forested areas, a vegetative buffer will remain that will support the watershed's ecosystem. Wetlands within the LOD that are not being excavated for pipeline installation will crossed with timbermats. Once construction is complete, the timbermats will be removed from the wetlands. Permanent impacts to these wetlands are not anticipated.

Comment 60: Construction of the proposed MVP gas pipeline will degrade karst environments by reducing and redirecting groundwater flow and by creating the potential for collapse.

Where deforestation and blasting reduce and redirect groundwater flow, cave environments are impacted due to changes in moisture. Blasting causes collapse of fractures and voids in limestone, which results in degradation of karst terrain and cave environments.

Response 60: Please see Section A. Response 3.

While outside the scope of this permit registration, Mountain Valley addressed seismic hazards in Resource Report #6, submitted to the FERC in October 2015, and concluded that there is minor to negligible risk presented to the pipeline (i.e., design criteria are well within acceptable factor of safety). The applicant does not consider there to be a significant seismic

risk presented to pipeline, slopes, or karst features in the area referenced by the Indian Creek Report.

Comment 61: Construction of the proposed MVP gas pipeline will result in landslides on the pervasive steep slopes underlain by the Mauch Chunk red shale bedrock.

The West Virginia Geological and Economic Survey has provided documentation that landslides occur on steep slopes where the underlying bedrock is red shale. The Mauch Chunk red shale bedrock is the predominant surficial unit in the Indian Creek watershed where the MVP gas pipeline construction is proposed.

Regardless of best management practices, erosion and landslides will occur within these areas.

Response 61: Please see Section A. Response 1. The applicant's Erosion and Sediment Control Plan has been specifically designed to control project runoff and sedimentation, while providing protection to the aquatic resources within the Limits of Disturbance (LOD) and directly adjacent to the LOD. These controls include logical construction procedures, such as minimizing the amount of disturbance, proper grading and restoration, diverting/protecting stream flows during stream crossings, and operating in a safe and efficient manner. In addition, construction techniques are consistent with all state and federal requirements. By implementing the procedures, sequencing, and erosion BMPs listed in the Erosion and Sediment Control Plan, impacts to the state's aquatic resources will be minimized during construction. Site inspections will also occur after the project area has been restored and reseeded. If it is determined that any BMPs are not properly functioning, the BMPs will be repaired or replaced to provide the appropriate sediment control and stream protection.

Comment 62: Trench water would be discharged through sediment removal devices in well-vegetated upland areas away from waterbodies and wetlands." On the left side of Figure 6.0.1, a hill has been excavated to its intersection with a ravine. Water can be observed in the trench by the ravine where the pipeline is to be placed. Groundwater from the hillside would also flow toward the ravine and the pipeline trench. However, MVP provides no discussion concerning the interception of groundwater on cut slopes/hillsides.

Response 62: The Project entails land clearing, surface construction, and excavation approximately 10 feet below ground to install the pipeline. The nature of this construction project is such that there is minimal risk of encountering an aquifer along the vast majority of the alignment. Where groundwater is encountered in the shallow subsurface (e.g., perched aquifers, flood plains near rivers and streams), the backfilled excavation will convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance. The applicant has identified the assessment, avoidance, mitigation, and monitoring that will be applied to this Project to protect hydrologic resources. By planning and execution of construction practices, it is believed that groundwater will not be impacted.

Comment 63: There is no mention of karst in Monroe County—"MVP has completed a karst hazard assessment and determined that portions of pipeline within Summers County will cross areas with the potential to contain karst features" (p. 9). ICWA has submitting several comments to the FERC and is submitting additional comments to the WVDEP concerning karst in Monroe County.

Response 63: The applicant Karst Specialist Team, prepared a detailed Karst Hazards Assessment (Resource Report #6; latest revision February 2017). Table 2 and Sheets 3 and 4 in Appendix A of the Karst Hazards Assessment present information on karst features in Monroe County, West Virginia.

Comment 64: The Stormwater Plan contradicts itself, demonstrating that there is lack of fundamental knowledge of karst and sinkholes: In the list of "enhanced BMP's" the Plan listed one of the important objectives as "Prevent blockage or filling of karst features." In the following paragraph MVP stated that "If karst features are uncovered, they will be evaluated by Karst Specialists to determine the need for mitigation measures, such as stabilization. A typical mitigation method for a sinkhole would be to excavate the feature to expose its throat, and then plug the throat using graded rock or sand fill to allow drainage and minimize alteration of flow patterns."

Response 64: The applicant's Karst Specialist Team, prepared a Karst Hazards Assessment (Resource Report #6; latest update February 2017) that identified karst features within ¼-mile of the proposed alignment and other Project components. The applicant has made hundreds of major and minor alignment adjustments in order to avoid karst features. Specialists will be on-site during all phases of construction in karst terrain. If sinkholes or other karst feature are encountered and cannot be avoided with a minor alignment adjustment within the construction easement, it will be addressed by the Specialist Team, under the terms of the Mountain Valley Karst Mitigation Plan.

Per the Karst Mitigation Plan, if a karst feature in encountered, the Karst Specialists will assess the feature, contact the WVDEP, and design appropriate site-specific mitigation measures. A typical mitigation method for sinkholes is to fill the sinkhole with a reverse-gradient aggregate set that provides structural stability, but allows water to readily infiltrate to maintain consistent hydrologic flow patterns and water balance. Such a karst mitigation measure would not seal the sinkhole throat.

Comment 65: There are neither references nor analyses to prove that 100 feet is a suitable buffer zone for water bodies or karst features for materials, chemicals, etc. In fact the spill that contaminated the Red Sulphur Public Water District water supply proves otherwise.

Response 65: The 100-foot buffer zone provides sufficient spatial separation between construction activities and a water feature that will provide time to mitigate an inadvertent

spill or release within the Limit of Disturbance. Fueling and equipment storage has been restricted upgradient of all 100' karst feature buffer areas. The applicant will deploy Environmental Inspectors, and Karst Specialists, during all phases of construction in order to surveille construction and operations, and ensure protection of karst features through adherence to the construction control documents prepared by the applicant.

Comment 66: Rather than a genuine Karst Mitigation plan, MVP is proposing a "wait and see what we find, and then we'll fix it as we go" strategy. This does not meet the requirements for site specific "mitigation" methods to be approved by WVDEP permitting staff.

Response 66: MVP has identified, and in many cases avoided, karst features on accessible lands. On lands not yet accessible, they have identified features using available mapping and imagery. DEP staff will field review suspect karst areas with MVP's karst specialists as the project moves to construction. The applicant proposes to deploy environmental inspectors, and Karst Specialists, during all phases of construction in order to monitor construction and operations, and ensure protection of karst features.

Comment 67: In---depth, independent hydrogeological studies of critical watershed areas, especially in regions of karst and all areas where public and private drinking water sources are affected.

Response 67: Please see Section A. Response 3.

Comment 68: Revised site---specific plans that include clarification and additions of required information.

Response 68: Every plan sheet submitted to the WVDEP is site specific. All information required in General WV Water Pollution Control Permit No. WV0116815 has been submitted to this office.

Comment 69: That MVP not be allowed to construct any segment of the pipeline unless a WVDEP environmental inspector is present on site.

Response 69: The WVDEP Environmental Enforcement (EE) Office will be monitoring the Mountain Valley Pipeline as often as time and resources allow. EE will remain in contact with the applicant, third party inspectors, FERC, etc., for the duration of the project.

Comment 70: That MVP not be allowed to use mitigation credits in lieu of guarantees that the pipeline can be built through the terrain chosen by MVP itself. Mitigation credits do not ameliorate the effects on landowners of degradation of water that is often relied on for drinking and agricultural use.

Response 70: The applicant will not be using any mitigation credits if drinking or agricultural water uses are affected. If this occurs DEP expects MVP to follow its' Water Supply Identification and Testing Plan.

Comment 71: Deforestation for the proposed MVP gas pipeline construction will cause increased stormwater discharge. Ground cover determines the amount of precipitation that will penetrate the ground as groundwater recharge or run off the surface. Forested areas intercept rainfall, allowing the rain to gently reach the ground surface. Therefore, in forested areas, the rain will penetrate the ground to recharge groundwater and will flow across the ground surface with less volume and velocity (discharge) than in non-forested areas. Even where sediment from stormwater discharge from construction areas is captured in erosion control structures, the increased discharge flowing into streams will result in stream bank erosion downstream and, consequently, increased sedimentation downstream. Where stream crossings are planned for the MVP gas pipeline construction, stream bedding forms will be destroyed, aquatic habitats will be destroyed.

Response 71: Please see Section A. Response 1.

Comment 72: Soil removal and compaction for the proposed MVP gas pipeline construction will adversely impact headwater area functions and groundwater recharge to springs, wetlands, and streams.

The composition of weathering products from the underlying bedrock determines characteristics of soils relating to water retention, pore space, and acidity. The organic fraction of the soils results from interactions between the available vegetation and soil organisms such as microbial communities, worms, and tree roots. Soil scientists estimate that a time period greater than 100 years is required for one inch of soil to form. For this reason, soil is considered a non- renewable resource. Soil removal and compaction within the work corridor will destroy the soils which regulate the transport of surface water, and also carbon, nitrogen, and oxygen, to headwater areas of first order high gradient streams and to wetlands. Soil removal and compaction would also result in increased stormwater discharge and decreased groundwater
recharge to springs, wetlands, and streams.

Blasting conducted for leveling the proposed MVP gas pipeline work corridor and for trenching construction will adversely impact groundwater flow to springs, wetlands, and streams.
Blasting of bedrock to create a level work corridor and to install the proposed pipeline into trenches approximately 10 feet deep will intercept groundwater flow, thereby reducing the groundwater flow to seeps and springs. Reduced groundwater recharge decreases the hydraulic head that moves the groundwater downgradient to nearby seeps and springs and also to streams farther downgradient. Reduction of the hydraulic gradient decreases the amount of groundwater that can supply water to streams during times of drought.

Response 72: Please see Section A. Response 5.

Comment 73: The MVP gas pipeline construction will degrade karst environments.
Karst terrain is strongly developed in the limestone bedrock underlying Peters Mountain in the southeastern portion of Monroe County. This karst terrain contains a unique array of extensive cave systems, bedrock voids, and associated drainage basins. Proposed construction activities will result in increased stormwater discharge and decreased groundwater recharge, thereby increasing flow to sinkholes and changing the groundwater flow patterns through caves. Blasting along the proposed MVP work corridor will degrade fragile cave systems by causing collapse as well as by causing changes in the groundwater flow and direction responsible for maintaining the moist cave conditions. There is a strong potential for collapse of the gas pipeline where construction occurs in karst terrain.

Response 73: Please see Section A. Response 3.

Comment 74: The MVP gas pipeline construction will create the potential for pipeline collapse in areas known to have experienced earthquakes.

The U.S. Geological Survey (USGS) 2014 Seismic Hazard Map depicts Peters Mountain, Monroe County, in a zone of concern for earthquake events. The West Virginia Geological Survey 2014 earthquake map indicates several recent earthquakes in Monroe County. Although MVP discounts the seismic activity as insignificant, the combination of earthquakes in karst areas where the proposed MVP gas pipeline would be located presents definite concern because the karst areas are susceptible to collapse even without earthquakes.

Response 74: While outside the scope of this permit registration, the applicant has addressed seismic hazards in Resource Report #6. While earthquake triggered slope displacement cannot be ruled out, only slopes that are marginally stable in their existing state would be affected. These slopes are more likely to be destabilized by other causes, such as heavy precipitation. It is not considered for there to be a significant seismic risk presented to pipeline, slopes, or karst features in the area referenced by the Indian Creek Report.

Comment 75: Cumulative damage would result from the MVP gas pipeline construction.

It is stated in the MVP DEIS that, "Construction and operation of the Projects would likely result in only short-term impacts on water resources... These impacts, such as increased turbidity, would return to baseline levels over a period of days or weeks following construction." The findings provided herein support the conclusion that construction of the proposed MVP gas pipeline project across the karst area of Peters Mountain would result in cumulative adverse impacts to surface and groundwater resources. The increased stormwater discharge from the proposed construction areas would cause increased stream velocity downstream, with the result of increased downstream stream bank erosion, increased turbidity, and increased sedimentation in the stream beds, which adversely impacts aquatic habitats. This cumulative damage to aquatic habitats,

through time, will not disappear, but rather, will cause the death of aquatic organisms and will reduce water quality. When the turbidity returns to baseline levels, the sediment remains. The degradation of water quality will also adversely impact the public water supplies within the Red Sulphur PSD.

Increased surface water flow to sinkholes will cause warmer temperatures in karst environments, thereby adversely impacting cave-dwelling species.

Reduced groundwater recharge will change moisture conditions in caves, thereby adversely impacting cave-dwelling species. (139)

Response 75: Cumulative impact analysis is contained within the Final Environmental Impact Statement (FEIS) for the Mountain Valley Project. The FERC considered the cumulative impact of this project and others on geologic resources, water resources, soils, threatened and endangered species, historic resources etc. On Page 4-622 of the June 23, 2017 FEIS, it is stated "Given the project BMPs and design features, mitigation measures that would be implemented, federal and state laws and regulations protecting resources, and permitting requirements, we [FERC] conclude that when added to other past, present, and reasonably foreseeable future actions, the MVP and the EEP would not have significant adverse cumulative impacts on environmental resources with the geographic scope affected by the project.".

According to the applicant, a karst specialist will be available during all phases of construction in karst territory to identify potential connectivity to the subterranean environment, assess potential risks, and identify practices to limit potential negative impacts to karst features.

The applicant acknowledged and is aware, that karst terrain presents uniquely intertwined surface water and groundwater dynamics, which affect karst water resources. Where groundwater is encountered in the shallow subsurface (e.g. perched aquifers or springs), the backfilled excavation will convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance or karst temperature.

The applicant has made several major, and hundreds of minor, route adjustments to avoid karst features and sensitive water resources that were identified in the Karst Hazards Assessment.

Also, please see Section A. Response 3.

In the vicinity where the proposed alignment traverses Peters Mountain, the Red Sulphur Public Service District (PSD) provides public water. The proposed alignment is approximately 4 miles from the primary water source (Coburn Spring) for the PSD, and

approximately 1,500 feet from a secondary source (Rich Creek Spring, which is the headwaters for Rich Creek, and the PSD has a surface water intake approximately seven (7) river miles from the proposed alignment). These water sources are located on the northwest flank of Peters Mountain.

It is the WVDEP' understanding that the applicant is working with public water suppliers to establish water supply contingency plans for those suppliers having water sources located within 3 miles downstream of a water body crossing, or within 0.5-mile of a ZCC.

The applicant's Erosion and Sediment Control Plan has been designed to control project runoff and sedimentation, while providing protection to the aquatic resources within the Limits of Disturbance (LOD) and directly adjacent to the LOD. These controls include logical construction procedures, such as minimizing the amount of disturbance, proper grading and restoration, diverting/protecting stream flows during stream crossings, and operating in a safe and efficient manner. The applicant's construction techniques are consistent with all state and federal requirements. By implementing the procedures, sequencing, and erosion BMPs listed in the Erosion and Sediment Control Plan impacts to the states aquatic resources will be minimized during construction. Site inspections will also occur after the project area has been restored and reseeded. The inspections will occur at least once every seven days and within 24 hours following a 0.25-inch rainfall event. If it is determined that any BMPs are not properly functioning – they will be repaired or replaced to provide the appropriate sediment control and stream protection.

Comment 76: In the Red Sulphur PSD SWAPP, concern is expressed about the amount of stormwater runoff as it impacts the water quality within the PSD. The biological and chemical health are also of great concern. Increased stormwater runoff transports sediment to streams, causing turbidity. Increased stormwater discharge to streams causes downstream stream bank erosion, which releases sediment into streams, thereby reducing the water quality. The biological health of the stream is degraded where sediment accumulates in the stream bed, destroying aquatic habitats.

Response 76: To protect stream integrity, prevent degradation and soil loss, during construction, the applicant proposes to install and maintain erosion and sediment control BMPs that are identified on the E&S plans. These BMPs include silt fence, belted silt fence, super silt fence, compost filter sock, diversion berms, water bars, broad-based dips, aerial stream and wetland crossings, erosion control blanketing, hydraulically applied seed, enhanced seeding mixes, and landslide mitigation techniques. These devices protect the stream from sediment loads help reduce turbidity, and are used throughout the region for all types of construction projects, including pipeline construction.

In the vicinity where the proposed alignment traverses Peters Mountain, the Red Sulphur Public Service District (PSD) provides public water. The proposed alignment is approximately 4 miles from the primary water source (Coburn Spring) for the PSD, and approximately 1,500 feet from a secondary source (Rich Creek Spring, which is the headwaters for Rich Creek, and the PSD has a surface water intake approximately seven (7) river miles from the proposed alignment). These water sources are located on the northwest flank of Peters Mountain.

It is the WVDEP' understanding that the applicant is working with public water suppliers to establish water supply contingency plans for those suppliers having water sources located within 3 miles downstream of a water body crossing, or within 0.5-mile of a ZCC.

The applicant's Erosion and Sediment Control Plan has been designed to control project runoff and sedimentation, while providing protection to the aquatic resources within the Limits of Disturbance (LOD) and directly adjacent to the LOD. These controls include logical construction procedures, such as minimizing the amount of disturbance, proper grading and restoration, diverting/protecting stream flows during stream crossings, and operating in a safe and efficient manner. The applicant's construction techniques are consistent with all state and federal requirements. By implementing the procedures, sequencing, and erosion BMPs listed in the Erosion and Sediment Control Plan impacts to the states aquatic resources will be minimized during construction. Site inspections will also occur after the project area has been restored and reseeded. The inspections will occur at least once every seven days and within 24 hours following a 0.25-inch rainfall event. If it is determined that any BMPs are not properly functioning – they will be repaired or replaced to provide the appropriate sediment control and stream protection.

Comment 77: Deforestation within the proposed MVP work corridor will result in increased stormwater discharge and decreased groundwater recharge. Increased stormwater discharge within the karst terrain of Peters Mountain will increase the flow of surface water to sinkholes, introducing warmer water to the cave environment. Cave dwelling species require cooler temperatures and will be adversely impacted by the warmer conditions. The increased stormwater discharge flowing into streams will result in stream bank erosion downstream and, consequently, increased sedimentation downstream. Where the stream crossing is proposed for the MVP gas pipeline construction at MP 194.2, stream bedding forms will be destroyed and aquatic habitats will be destroyed. The increased stream bank erosion downstream of this crossing will result in turbid stream conditions and cumulative sedimentation.

The MVP DEIS provides the following description of the adverse impacts of sedimentation: "Increased sedimentation and turbidity resulting from in-stream and adjacent construction activities would displace and impact fisheries and aquatic resources. Sedimentation could smother fish eggs and other benthic biota and alter stream bottom characteristics, such as converting sand,

gravel, or rock substrate to silt or mud. These habitat alterations could reduce juvenile fish survival, spawning habitat, and benthic community diversity and health.

Increased turbidity could also temporarily reduce dissolved oxygen levels in the water column and reduce respiratory functions in stream biota. Turbid conditions could also reduce the ability for biota to find food sources or avoid prey."
It is stated in the MVP DEIS that, "Construction and operation of the Projects would likely result in only short-term impacts on water resources... These impacts, such as increased turbidity, would return to baseline levels over a period of days or weeks following construction." The findings provided herein support the conclusion that there would be cumulative adverse impacts resulting from increased stormwater discharge from the construction areas of the proposed pipeline. Increased turbidity results in increased sedimentation in the stream beds, which adversely impacts aquatic habitats. When the turbidity returns to baseline levels, the sediment remains. With increased stormwater discharge from the construction sites, increased stream volumes and velocities cause downstream stream bank erosion, resulting in more sediment accumulation in the stream beds. This cumulative damage to aquatic habitats, through time, will not disappear, but rather, will cause the death of aquatic organisms and will reduce water quality within the Red Sulphur PSD ZCC.

Response 77: Please see Section A. Response 1.

The applicant has acknowledged, and is aware that karst terrain presents uniquely intertwined surface water and groundwater dynamics, which affect karst water resources.

The applicant has made several major, and hundreds of minor, route adjustments to avoid karst features and sensitive water resources that were identified in the Karst Hazards Assessment.

To protect stream integrity, prevent degradation and soil loss, during construction, the applicant proposes to install and maintain the erosion and sediment control BMPs that are identified on the E&S plans. These BMPs include silt fence, belted silt fence, super silt fence, compost filter sock, diversion berms, water bars, broad-based dips, aerial stream and wetland crossings, erosion control blanketing, hydraulically applied seed, enhanced seeding mixes, and landslide mitigation techniques. These devices protect the stream from sediment loads, help reduce turbidity, and are used throughout the region for all types of construction projects, including pipeline construction.

Also Please see Section A. Response 1.

In the vicinity where the proposed alignment traverses Peters Mountain, the Red Sulphur Public Service District (PSD) provides public water. The proposed alignment is approximately 4 miles from the primary water source (Coburn Spring) for the PSD, and

approximately 1,500 feet from a secondary source (Rich Creek Spring, which is the headwaters for Rich Creek, and the PSD has a surface water intake approximately seven (7) river miles from the proposed alignment). These water sources are located on the northwest flank of Peters Mountain.

It is the WVDEP' understanding that the applicant is working with public water suppliers to establish water supply contingency plans for those suppliers having water sources located within 3 miles downstream of a water body crossing, or within 0.5-mile of a ZCC.

The applicant's Erosion and Sediment Control Plan has been designed to control project runoff and sedimentation, while providing protection to the aquatic resources within the Limits of Disturbance (LOD) and directly adjacent to the LOD. These controls include logical construction procedures, such as minimizing the amount of disturbance, proper grading and restoration, diverting/protecting stream flows during stream crossings, and operating in a safe and efficient manner. The applicant's construction techniques are consistent with all state and federal requirements. By implementing the procedures, sequencing, and erosion BMPs listed in the Erosion and Sediment Control Plan impacts to the states aquatic resources will be minimized during construction. Site inspections will also occur after the project area has been restored and reseeded. The inspections will occur at least once every seven days and within 24 hours following a 0.25-inch rainfall event. If it is determined that any BMPs are not properly functioning – they will be repaired or replaced to provide the appropriate sediment control and stream protection.

Comment 78: Increased stormwater discharge will result from deforestation for the proposed MVP gas pipeline construction.

Ground cover determines the amount of precipitation that will penetrate the ground as groundwater recharge or run off the surface. Forested areas intercept rainfall, allowing the rain to gently reach the ground surface. Therefore, in forested areas, the rain will penetrate the ground to recharge groundwater and will flow across the ground surface with less volume and velocity (discharge) than in non-forested areas. Even where sediment from stormwater discharge from construction areas is captured in erosion control structures, the increased discharge flowing into streams will result in stream bank erosion downstream and, consequently, increased sedimentation downstream. Where stream crossings are planned for the MVP gas pipeline construction, stream bedding forms will be destroyed, aquatic habitats will be destroyed.

Response 78: Please see Section A. Response 1.

Comment 79: Soil removal and compaction for the proposed MVP gas pipeline construction will adversely impact headwater area functions and groundwater recharge to springs, wetlands, and streams.

The composition of weathering products from the underlying bedrock determines characteristics of soils relating to water retention, pore space, and acidity. The organic fraction of the soils results from interactions between the available vegetation and soil organisms such as microbial communities, worms, and tree roots. Soil scientists estimate that a time period greater than 100 years is required for one inch of soil to form. For this reason, soil is considered a non-renewable resource. Soil removal and compaction within the work corridor will destroy the soils which regulate the transport of surface water, and also carbon, nitrogen, and oxygen, to headwater areas of first order high gradient streams and to wetlands. Soil removal and compaction would also result in increased stormwater discharge and decreased groundwater recharge to springs, wetlands, and streams.

Response 79: Please see Section A. Response 1.

Comment 80: Blasting conducted for leveling the proposed MVP gas pipeline work corridor and for trenching construction will adversely impact groundwater flow to springs, wetlands, and streams.

Blasting of bedrock to create a level work corridor and to install the proposed pipeline into trenches approximately 10 feet deep will intercept groundwater flow, thereby reducing the groundwater flow to seeps and springs. Reduced groundwater recharge decreases the hydraulic head that moves the groundwater downgradient to nearby seeps and springs and also to streams farther downgradient. Reduction of the hydraulic gradient decreases the amount of groundwater that can supply water to streams during times of drought.

Response 80: Please see Section A. Response 5.

Comment 81: The MVP gas pipeline construction will degrade karst environments.

Karst terrain is strongly developed in the limestone bedrock underlying Peters Mountain in the southeastern portion of Monroe County. This karst terrain contains a unique array of extensive cave systems, bedrock voids, and associated drainage basins. Proposed construction activities will result in increased stormwater discharge and decreased groundwater recharge, thereby increasing flow to sinkholes and changing the groundwater flow patterns through caves. Blasting along the proposed MVP work corridor will degrade fragile cave systems by causing collapse as well as by causing changes in the groundwater flow and direction responsible for maintaining the moist cave conditions. There is a strong potential for collapse of the gas pipeline where construction occurs in karst terrain.

Response 81: Please see Section A. Response 3.

Comment 82: Oil and Gas Construction Stormwater General Permit (WVR310667): MVP's application does not meet the permit requirements. WVDEP must request the following additional

information: The miles of pipeline within WV is inconsistent throughout the application, this discrepancy must be corrected**.**

Response 82: The pipeline is proposed to be approximately 196 miles in West Virginia.

Comment 83: The application must identify all streams receiving stormwater runoff.

Response 83: All streams within 300 feet of the project centerline have been identified and are illustrated on the erosion and sediment control plans. On properties where access has not been granted, Mountain Valley has completed a desktop analysis to identify potential wetlands and streams. These streams will be field verified once access is granted access.

Comment 84: Engineering calculations for sizing Best Management Practices (BMP's) are not provided so there is no evidence within the application that the Erosion & Sediment controls on the MVP pipeline and associated compressor stations were sized appropriately and to the standards of the WV DEP Erosion and Sediment Control Manual.

Response 84: The applicant has provided all of the required information in accordance with G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the Stormwater Pollution Prevention Plan (SWPPP). This information was provided to WVDEP in the Stormwater Permit Application. In accordance with DEP's General Water Pollution Control Permit Section G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the E&S Detail Sheets.

Comment 85: Documentation on the limit of disturbance from access must be included in the permit.

Response 85: The erosion and sediment control plans identify the width of the road surface and does not include the BMPs in the width. However, the BMPs are included in the Limits of Disturbance (LOD). Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to some roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs– widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow

along these roadways will be controlled with drainage channels, broad based dips, and waterbars.

Comment 86: WVDEP must require a sedimentation and turbidity analysis for the Greenbrier River crossing to determine that the project will not impair the Greenbrier River

Response 86: A turbidity and sedimentation analysis is not warranted nor required by the General WV Water Pollution Control Permit No. WV0116815 or from EPA's Stormwater Construction General Permit. Also, please see Section B. Response 129.

Comment 87: The applications indicate multiple areas of anticipated permanent watershed impacts, both in wetland areas and in streams. How sensitive the stream areas are is not specified. This is justified by a trade in for credits system which I don't feel is adequate. Each specific area affected should be addressed individually and extra care taken to minimize disturbance to aquatic life.

Response 87: The Applicant's mitigation approach is consistent with state and federal requirements. Permanent impacts to aquatic resources, such as wetlands and streams, have been evaluated using the West Virginia Stream and Wetland Valuation Metric system (WV SWVM). This metric system, which is accepted by the DEP, West Virginia Division of Natural Resources (WVDNR) and the United States Army Corps of Engineers (USACE), considers the type of resource being impacted, the value of the resource, and the appropriate mitigation requirement. These forms are consistent with the state and federal mitigation requirements and Mountain Valley will continue to coordinate with the WVDEP and USACE on the required mitigation. These forms have been submitted to DEP.

The majority of the stream crossings are temporary impacts associated with pipeline installation. Permanent impacts are generally associated with the culvert installation along access roads and not placement of fill. The culverts will maintain flow throughout the watershed and continue to support the nutrient input into a higher order stream. Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the Stormwater permits and Nationwide permits are closed. These temporary impacts as identified in the Stormwater General Permit Application are anticipated to have a minimal impact on the biodiversity, aquatic life cycles, and trophic levels associated with the project area streams.

Comment 88: I do not believe that the proposed Erosion and Sediment Control Best Management Practices are sufficient to be in compliance with West Virginia legislation pertaining to water quality and groundwater protection as best as I can ascertain. WV DEP states in its "General Water Pollution Control Permit" that "A Stormwater Pollution Prevention Plan and a Groundwater Protection Plan shall be developed for each project covered by this permit." MVP has not submitted a Groundwater Protection Plan (GPP) even though the porous surfaces that

would result from the proposed construction would result in decreased groundwater recharge. Additionally, the proposed Best Management Practices are designed to direct water away from the construction areas, thereby further reducing potential recharge to groundwater. Deficiencies in the Site Registration Application submitted by MVP include: Large scale deforestation in the proposed work corridor, access roads, pipe yards, and additional work areas will result in canopy loss and less leaf litter, thereby causing increased stormwater discharge, reduced groundwater recharge, and increased downstream stream bank erosion. Restoring the areas to meadows will not result in the lower stormwater discharge amounts characteristic of healthy forested land. Soil compaction in the proposed work corridor will create hard, compacted areas, resulting in increased stormwater discharge, reduced groundwater recharge, and the loss of soils ability to absorb water and runoff, especially in headwater areas of first order high quality streams. This cannot be mitigated once these soils have been irreversibly changed.

Response 88: In accordance with Section G.4 of WVDEP's Water Pollution Control Permit the GPP is not required to be submitted to the Division of Water and Waste Management for reviews. It is to be developed and maintained on site. However, due to comments received the WVDEP has required the applicant to submit the GPP to this office for review.

The applicants Stormwater Pollution Prevention Plan (SWPPP) identifies the BMPs that will be used to protect surface and groundwater resources.

Please see Section A. Response 1.

The majority of the stream and wetland crossings are temporary impacts associated with pipeline installation and are not located along ridgetops in first order streams. Permanent fill impacts are generally associated with constructing permanent access roads and the culvert installation along these access roads. The culverts will maintain flow throughout the watershed and continue to support the nutrient input into the watershed's streams.

Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the Stormwater permits and Nationwide permits are closed. These temporary impacts are anticipated to have a minimal impact on the biodiversity, aquatic life cycles, and trophic levels associated with the project area streams. Therefore, permanent impacts to first order streams are not anticipated.

Since the project is removing a narrow path in the forested areas, a vegetative buffer will remain that will support the watershed's ecosystem. Wetlands within the LOD that are not being excavated for pipeline installation will crossed with timbermats. Once construction is complete, the timbermats will be removed from the wetlands. Permanent impacts to these wetlands are not anticipated.

Comment 89: Section G.4 of DEP's "General Water Pollution Control Permit" specifies that a Groundwater Protection Plan (GPP) will be provided. It is further required by Section

G.4.e.2.C.iii. of DEP's "General Water Pollution Control Permit" that, "The applicant shall prepare a GPP that will satisfy the requirements of the Groundwater Protection Rule, 47 C.S.R. 58 § 4.11." However, MVP has not provided a GPP. It is my understanding that MVP is required to have a GPP but not necessarily submit it as part of their permit application, I request that the GPP be made available to the WVDEP and the public. Seeps and springs associated with the groundwater table are specified to be drained for the proposed construction areas. Seeps and springs provide water necessary to maintain headwater areas in watersheds of first order high quality streams.

Response 89: In accordance with Section G.4 of WVDEP's Water Pollution Control Permit the GPP is not required to be submitted to the Division of Water and Waste Management for reviews. It is to be developed and maintained on site. However, due to comments received the WVDEP has required the applicant to submit the GPP to this office for review.

The applicants Stormwater Pollution Prevention Plan (SWPPP) identifies the BMPS that will be used to protect surface and groundwater resources.

Comment 90: The drainage areas are not delineated on the construction plan sheets. The drainage direction arrows are not shown on the construction plan sheets, except maybe along the silt fencing locations. It is stated in Section G.4.e.2.B of DEP's "General Water Pollution Control Permit" that, "The permittee shall submit all… watershed mapping… necessary to explain the technical basis for the stormwater management plan." However, watersheds are not delineated on any MVP maps that have been submitted. The drainage basin areas are inconsistent with the actual watershed sizes for streams proposed for crossings. It is stated in Section G.4.e.2.B of DEP's "General Water Pollution Control Permit" that, "The permittee shall submit all… calculations… necessary to explain the technical basis for the stormwater management plan." However, apparently, MVP has not provided engineering calculations for sizing the Best Management Practices. There are major problems with their Scour Analyses, which does not provide post construction estimates of sediment that will be released by erosion and scour to areas downstream. They have not demonstrated by any sort of evidence or calculations and evaluations that the proposed Best Management Practices are adequate to prevent significant sediment from being released to the areas streams and rivers. In Section G.4.e.2.A.ii.b. of the "General Water Pollution Control Permit" WV DEP states that, "For drainage areas of greater than five acres, a sediment basin providing 3,600 cubic feet per drainage acre shall be installed. Half of the volume of the basin shall be in a permanent pool and half shall be dry storage. Sediment basins must be able to dewater the dry storage volume in 48 to 72 hours. A sediment basin must be able to pass through the spillway(s) a 25-year, 24-hour storm event, and still maintain at least one foot of freeboard." However, the sediment basins and/or /traps are not included as part of the MVP Best Management Practices/

Response 90: Drainage patterns are illustrated on the Erosion and Sediment Control Plans in the form of the 2-foot contours and contour labeling which provides the elevation above mean sea level.

The applicant has provided all of the required information in accordance with the General Water Pollution Control Permit, Section G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a for the stormwater management plan. Spacing requirements for the BMPs are provided on the Erosion and Sediment Control Detail Sheets included with the General Water Pollution Control Permit application.

In accordance with G.4.e.2.A.ii.e, Sediment basins are not typically used for pipelines or linear projects in general. Linear projects use other regulatory-acceptable best management practices (BMPs). The linear aspect of the disturbance for these projects would make it difficult and generally ineffective to place a sediment basin in a location that would catch the drainage throughout the project sites since they traverse the terrain in a linear fashion.

Comment 91: The MVP's Landslide Mitigation Plan addresses mitigation measures associated with unstable soils overlying bedrock, where the bedrock is known to be associated with landslides. It is further stated by MVP that additional mitigation measures, such as buttressing, are not anticipated. MVP describes buttressing as "An earth, rock, or riprap fill buttress in front of an unstable slope [that] will increase the weight of the material at the toe of the slope, thereby increasing the slope stability factor of safety." This method is used on unstable slopes in highway construction. The description fails to specify that the buttress must be "keyed" in to solid material at the base. The MVP Landslide Mitigation Plan does not address the bedrock orientation or how this would increase the probability of landslides. This orientation of the bedrock and fractures must be obtained in order to determine if stabilization is even possible.

The MVP Landslide Mitigation Plan does not address the bedrock orientation or how this would increase the probability of landslides. This orientation of the bedrock and fractures must be obtained in order to determine if stabilization is even possible.

Response 91: The applicant has acknowledged that a slope buttress must be founded on stable material. During construction, the applicant proposed to have geotechnical inspectors deployed to identify additional areas, not already specifically addressed in the LMP, where the landslide mitigation typical details should be implemented. The geotechnical inspectors, in conjunction with the applicant's engineers, will develop additional mitigation measures to address slope stability as necessary based on subsurface conditions revealed during construction

Also, please see Section A. Response 2.

Comment 92: Engineering calculations for sizing Best Management Practices (BMP's) are not provided so there is no evidence within the application that the Erosion & Sediment controls on the MVP pipeline and associated compressor stations were sized appropriately and to the standards of the WV DEP Erosion and Sediment Control Manual.

Response 92: The applicant has provided all of the required information in accordance with G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the E&S Detail Sheets.

Comment 93: All streams receiving stormwater runoff must be identified in the application."

Response 93: All streams within 300 feet of the project centerline have been identified and are illustrated on the erosion and sediment control plans. On properties where access has not been granted, the applicant and the WVDEP having completed a desktop analysis to identify potential wetlands and streams. These streams will be field verified by the applicant once access is granted.

Comment 94: Engineering calculations for sizing Best Management Practices (BMP's) are not provided so there is no evidence within the application that the Erosion & Sediment controls on the MVP pipeline and associated compressor stations were sized appropriately and to the standards of the WV DEP Erosion and Sediment Control Manual.

Response 94: The applicant has provided all of the required information in accordance with G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the E&S Detail Sheets.

Comment 95: Documentation on the limit of disturbance from access roads including proposed contours, cut and fill slopes, road dimensions, and roadside drainage features must be included in the permit

Response 95: The erosion and sediment control plans identify the width of the road surface and does not include the best management practices (BMPs) in the width. However, the BMPs are included in the Limits of Disturbance (LOD). Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to some roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs– widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways will be controlled with drainage channels, broad based dips, and waterbars. Additional BMPs would be installed as necessary to prevent potential uncontrolled release of sediments.

Comment 96: The Slip Mitigation Plan is not included with the E&S Control Plan. The Attachment 3 Slip Mitigation Plan is missing from the application

Response 96: The Landslide Mitigation plan was included with the Erosion and Sediment Control Plan and is available online through our Electronic Submission System.

Comment 97: Seeps and springs associated with a perched groundwater table are specified to be dewatered for the proposed construction areas. Seeps and springs provide water necessary to maintain aquatic habitats in headwater areas in watersheds of first order high gradient streams

Response 97: The Project entails land clearing, surface construction, and excavation approximately 10 feet below ground to install the pipeline. The nature of this construction project is such that there is minimal risk of encountering an aquifer along the vast majority of the alignment. Where groundwater is encountered in the shallow subsurface (e.g., perched aquifers, flood plains near rivers and streams), the backfilled excavation will convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance. The applicant has identified the assessment, avoidance, mitigation, and monitoring that will be applied to this Project to protect hydrologic resources. By planning and execution of construction practices, it is believed that groundwater will not be impacted.

Comment 98: Baseline water quality analysis and sampling has not been conducted to evaluate the open-cut dry crossing of the Greenbrier River, which is a Tier 3 river and is a WV Natural Stream, NRI listed

Response 98: The Greenbrier River is not listed as a Tier 3 river at the point where the pipeline is proposed to cross. The applicant has submitted the appropriate state and federal

permits to construct the Greenbrier River crossing. The information contained within the USACE Nationwide Permit, WVDEP Natural Streams Preservation Act, and WVDEP Stormwater applications contains aquatic resource information of the Greenbrier River as well as surrounding resources.

Comment 99: MVP has refused the requests made by the U.S. Environmental Protection Agency (EPA) and FERC to conduct quantitative modeling for turbidity and sedimentation for the Elk, Gauley, and Greenbrier River crossings, including an analysis of the duration, extent, and magnitude of turbidity levels and an assessment of the potential impacts on resident biota

Response 99: The Mountain Valley Pipeline will be crossing the Elk, Gauley, and Greenbrier Rivers using a dry-ditch open cut method. A turbidity and sedimentation analysis is not warranted nor required by the General WV Water Pollution Control Permit No. WV0116815 or from EPA's Stormwater Construction General Permit.

Comment 100: MVP has not provided an analysis of sediment released during construction activities, such as that provided by the Universal Soil Loss Equation (USLE) or the Revised Universal Soil Loss Equation (RUSLE), developed by the U.S. Department of Agriculture Natural Resources Conservation Service, to evaluate the increase in sediment to streams and rivers resulting from the increased stormwater discharge

Response 100: Construction techniques are consistent with state and federal requirements. Increased E&S BMPS will be utilized around sensitive resources such as streams and wetlands. The BMPs have been approved and are used to reduce impacts to water quality. Long term impacts to water quality are not anticipated with this project due to the proposed temporary disturbances and restoration practices provided in the state and federal applications.

Comment 101: Drainage areas are not delineated on the construction plan sheets. Drainage direction arrows are not shown on the construction plan sheets, except along silt fencing locations

Response 101: Drainage patterns are illustrated on the plans in the form of the 2-foot contours and contour labeling which provides the elevation above mean sea level.

Comment 102: It is stated in Section G.4.e.2.B of DEP's "General Water Pollution Control Permit" that, "The permittee shall submit all… watershed mapping…necessary to explain the technical basis for the stormwater management plan." However, watersheds are not delineated on any MVP maps

Response 102: The applicant has provided all of the required information in accordance with WVDEP General Water Pollution Control Permit G.4.e.2.B., that includes a

description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the E&S Detail Sheets.

Comment 103: Drainage basin areas used in the scour analyses are inconsistent with functional watershed sizes for streams proposed for crossings

Response 103: These design discharges were estimated via the peak-flow regional regression equations developed by the United States Geological Survey (USGS). The equations require two input parameters: drainage area and location of the drainage area. Drainage areas located in the state were estimated via an online tool offered by the WVDEP Technical Applications and GIS Unit (7Q10 Flow Estimates).

Comment 104: It is stated in Section G.4.e.2.B of DEP's "General Water Pollution Control Permit" that, "The permittee shall submit all… calculations… necessary to explain the technical basis for the stormwater management plan." However, MVP has not provided engineering calculations for sizing Best Management Practices

Response 104: The applicant has provided all of the required information in accordance with the General Water Pollution Control Permit, Section G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a for the stormwater management plan. Spacing requirements for the BMPs are provided on the Erosion and Sediment Control Detail Sheets included with the General Water Pollution Control Permit application.

Comment 105: Analyses do not provide post-construction estimates of sediment released by scour to downstream areas and do not account for the increase in stormwater discharge resulting from deforestation, soil compaction, and dewatering

Response 105: Please see Section B. Response 86.

Comment 106: MVP has not demonstrated by evidence of calculations and evaluations that the proposed BMPs are adequate to prevent significant sediment quantities to be released to receiving

streams and rivers. Studies by the U.S. Geological Survey provide evidence that sediment yields to receiving streams during construction can increase as much as 107 times the pre-construction amounts. Even with less sediment yields after construction, the sediments reaching the receiving streams will increase embeddedness in the stream beds

Response 106: The applicant has provided all of the required information in accordance with G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the E&S Detail Sheets.

Comment 107: It is stated by DEP in Section G.4.e.2.A.ii.b. of the "General Water Pollution Control Permit" that, "For drainage areas of greater than five acres, a sediment basin providing 3,600 cubic feet per drainage acre shall be installed. Half of the volume of the basin shall be in a permanent pool and half shall be dry storage. Sediment basins must be able to dewater the dry storage volume in 48 to 72 hours. A sediment basin must be able to pass through the spillway(s) a 25-year, 24-hour storm event, and still maintain at least one foot of freeboard." However, sediment basins/traps are not included as part of the MVP Best Management Practices (BMPs)."

Response 107: In accordance with G.4.e.2.A.ii.e, Sediment basins are not typically used for pipelines or linear projects in general. Linear projects use other regulatory-acceptable best management practices (BMPs). The linear aspect of the disturbance for these projects would make it difficult and generally ineffective to place a sediment basin in a location that would catch the drainage throughout the project sites since they traverse the terrain in a linear fashion.

Comment 108: MVP's Landslide Mitigation Plan addresses mitigation measures associated with unstable soils overlying bedrock, where the bedrock is known to be associated with landslides. It is further stated by MVP that additional mitigation measures, such as buttressing, are not anticipated. MVP describes buttressing as "An earth, rock, or riprap fill buttress in front of an unstable slope [that] will increase the weight of the material at the toe of the slope, thereby increasing the slope stability factor of safety."

Response 108: The applicant has acknowledged that a slope buttress must be founded on stable material.

Also, Please See Section A. Response 2.

Comment 109: Application should include 600+ drawings for all [stream] crossings, as well as calculation used to [determine] number of silt fences, filter socks, etc per [drawing]. A drawing for 'typical' crossing is [completely] insufficient, given differences in slopes, soil, [ ] , and stream substrates, not to mention stream [ ]. There is no typical crossing.

Response 109: Please see Section A. Response 4.

Comment 110: "…never adequately or realistically addresses threats [to public] water systems

Response 110: Please see Section B Response 133.

Comment 111:…no justification for MVP's request for a waiver [during restriction] windows designed to protect spawning trout

Response 111: Impacts to high quality streams are reduced and minimized by using instream diversions during construction, preforming constructing activities during low flows, avoiding the streams during seasonal restrictions, and using more stringent E&S BMPs around the resources. The streams will be restored to preconstruction conditions by using approved construction techniques. All stream banks are immediately stabilized and restored as soon as the pipeline is installed and the temporary crossing is removed.

Comment 112: Most of the damage will be done in the construction phase to the streams and to water supplies. The stream damages will include sedimentation, siltation and subsidence including landslides that represent water pollution. The damages are to drinking water supplies and to wildlife as well as to the aesthetics of the streams and stream banks.

Surface drainage and storm drainage will add significantly to the sediment burden to the streams. Consider a recent project, the Stonewall Gathering Pipeline, over two years ago; yet, this is still causing sediment to streams and there are locations where the right of way is washing out into local streams without adequate reclamation. This is proof that the larger diameter 42 inch MVP project cannot adequately meet sediment specifications and reclamation requirements

Response 112: Aquatic resources will be protected within the project area by avoidance and impact minimization. The resources will be protected during construction using state approved BMPs, including but not limited to compost filter socks, silt fence, belted silt fence, and water bars. Construction techniques are consistent with state and federal requirements. The applicant's plans have been developed on a state and federal level to meet all NEPA requirements. Stabilization will occur immediately upon completion of construction and weekly/post rainfall inspections will continue until the permit is officially closed. The applicant will employ on-site inspectors during all phases of construction to monitor sensitive resources in the project area and ensure that all appropriate Erosion and

Sediment control BMPs are in place and properly functioning before construction. In addition, the applicant will use numerous environmental inspectors to ensure that the BMPs are installed correctly and functioning at their designed capacity. FERC and the WVDEP will have full access to the construction project. Any BMPs that are not properly functioning will be repaired and/or replaced to provide the required stream protection and erosion control, and thus ensure that any impact to water quality will be temporary.

Comment 113: Adequate study has not been given by MVP to soil composition and soil stability. Take Middle Island Creek, for example. This is a highly fragile stream as are most streams in the hills and valleys, in the mountains and meadows of West Virginia. Extreme siltation and sedimentation would occur with Middle Island Creek and other State streams. Public water supplies would be affected. Other water uses would be impaired

Response 113: Please see Section A. Response 1.

Comment 114: The size of the project is a major drawback that must be realized, since no record of success and no experience or data are available on which to base an approval of this project. The 42-inch line would be VERY destructive of the land and streams. Even the boring for tunnels cannot be supported due to the lack of data and knowledge and experience. It is not right to risk such an extreme departure from existing practice. There is no "good engineering practice" basis on which to rely!

Response 114: 42-inch pipelines have been successfully built in the United States. Boring or tunneling for a 42-inch pipeline has been successfully completed in mountainous terrain with sound and proven engineering practices.

Comment 115: Rock structures must be breached by blasting and drilling. There is not adequate consideration and protection from the dust including the fine and ultra-fine particulates. These are documented to cause silicosis and other respiratory diseases, including asthma

Response 115: Please see Section A. Response 5.

Comment 116: Service roads and road maintenance will be a continuing cause for sediment to the streams. Inadequate provisions are being made to protect the streams from trucks and heavy equipment moving through the streams

Response 116: Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to certain roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs, widening or significant grading is not

anticipated. The sheet flow along the "Maintained" roadway will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways will be controlled with drainage channels, broad based dips, and waterbars. Additional BMPs would be installed as necessary to prevent potential uncontrolled release of sediments.

In addition, in areas where streams parallel the access roads, the roads have been shifted to avoid placing fill within the streams. Erosion and sediment control BMPs are also proposed along the access road. The slope of the roads will be constructed to drain to the inside, away from the road. The drainage will then be directed to a culvert, to controlled discharge locations. It is also worth noting that first order streams, due to their ephemeral nature do not typically provide habitat for juvenile fish to live and do not interact with groundwater. By definition ephemeral channels have flowing water only during, and for a short duration, after a precipitation event.

Comment 117: The MVP project should not be approved since the WV-DEP is not currently adequately staffed to fully evaluate the project or inspect the project over its lifetime. Salaries are low and have resulted in a reduced staff. State laws are subject to the State Legislature where noise and light requirements (among others) are not adequately being managed. And, budget reductions have been and are being imposed that impairs the full evaluation and management of this MVP project

Response 117: **The WVDEP has diverse group of employees ranging from Geologists, to Ecologists, to Engineers. Mountain Valley's application has been reviewed to ensure that all requirements set forth in Water Pollution Control Permit No. WV0116815 are being met.**

Comment 118: Canopy loss due to deforestation in the proposed work corridor causing increased stormwater discharge and reduced groundwater recharge, and increased downstream stream bank erosion

Response 118: **Please see Section A. Response 1.**

Comment 119: Creation of impervious areas due to soil compaction in the proposed work corridor causing increased stormwater discharge and reducing groundwater recharge along with loss of soil functions, especially in headwater areas of first order high gradient streams, even if topsoil is placed over the compacted soil

Response 119: **Please see Section A. Response 1.**

Comment 120: I have concerns over erosion and sediment control, access road development, and the proposed use of open cut crossing techniques of many streams on the project. It is my understanding that MVP plans to open cut the majority of the streams and rivers crossed by the pipeline without regard to the sensitivity of the water resource or size of the river. Several of the stream crossings include open cut lengths greater than 100' bank-to-bank with some up to 300' wide. Additionally, many of these open cut crossings are located within Tier III watersheds as well as the New River Valley.

Response 120: All stream crossings will be completed using a dry-ditch open cut technique that diverts the stream flow during the active construction and pipeline installation. The entire project will be built according to the state guidelines. The access roads are proposed to be either permanent or temporary facilities; however, all access roads used during construction will have the appropriate erosion and sediment control BMPs and will be inspected during the construction and restoration phases. The applicant proposed to have inspections at least every seven days and immediately following a rain event of 0.25-inches or greater within 24 hours.

The project does not cross any waters that are listed as Tier 3 waters. For areas of the project that are upstream of Tier 3 waters, any impacts to water quality would be temporary and thus consistent with antidegradation requirements. Compliance with the conditions of this permit will result in stormwater discharges being controlled as necessary to meet applicable water quality standards and avoid any residual long-term influence on existing uses.

Comment 121: The Gauley River appears to be the largest river crossed by the pipeline and I have many concerns over the Gauley River crossing in particular. The proposed route goes through a known kayaking area known as the Top Gauley River, Crupperneck Section. This section of the river includes class II and III rapids and a named rapid known as the Ships Prow. The pipeline crossing location is proposed to intersect this section of rapids and will undoubtedly have a severe impact on kayaking activities along this river. Finally, the resource reports submitted by MVP to FERC and WVDEP do not appear to include mention of recreational kayaking as an impact by the project."

Additionally, this section of the Gauley River has had three rain events with flows exceeding 10,000 CFS within the past year. To open cut this river is dangerous and will require more than traditional open cut stream crossing techniques. Open cut stream crossings also have detrimental effects such as erosion of stream bed and banks, sediment pollution of the stream which can cause reductions in dissolved oxygen, and increases in turbidity and nutrient loading of the stream. This impact to the Top Gauley River is a violation of the Clean Water Act."

Response 121: The applicant intends to use a Portadam structure that creates a dry-ditch work site for these stream crossings. The Portadam is an engineered, segmental or linked

system that creates a dry workable area while minimizing instream and downstream impacts. When compared to open-cut/wet ditch or sandbag coffer dam techniques, the dry ditch/Portadam technique offers better environmental protection for the following reasons:

- **The structure creates a more reliable, controlled, dry workable area;**
- **Downstream sedimentation is reduced by constructing inside a dry workable area, which keeps the trench spoils contained and provides better control over trenching depth;**
- **Potential impacts to aquatic life are reduced by conducting earth disturbance within a controlled structure, maintaining upstream and downstream connectivity, reducing the need for sidecasting, and removing instream construction activities;**
- **The structure maintains water flow during construction; and**
- **The Portadam also allows for continued recreational uses during the construction process.**

In addition to the E&S BMPs that will be onsite during construction, a site specific spill response plan was developed and an Aid to Navigation (ATON) is proposed to be prepared to provide public information on construction, instream activities, and any potential user restrictions during construction. The installation process will include installing approximately one half of the crossing, completing required stream restoration in that area and then switching to the other side of the project to install the system and complete the project accordingly.

Comment 122: MVP's application does not meet the requirements for the Stormwater General Permit. It lacks specific information about each of the numerous streams receiving runoff. Private wells and springs have not been properly identified. Individual identification and plans must be required for each crossing, not one general "blanket" plan. There appears to be no mention by MVP in their application about Karst topography and how it can affect and divert runoff."

Response 122: Please see Section A. Response 3., and Response 4.

Comment 123: The applicant inaccurately claims that restoring cleared areas to meadow will not result in increases in stormwater discharge, yet the scientific record clearly shows that woody vegetation (forest) is significantly more efficient than grasses (meadow) at reducing the amount of stormwater that reaches a body of water. Similarly, the impact of access roads is inconsistent."

Response 123: See Section A. Response 1.

Comment 124: We are landowners on Peters Mountain near Lindside, West Virginia in Monroe County near, and for a short distance, on, the path of the proposed pipeline. Our property is located on active karst. The unpredictability of karst when disturbed contributes greatly to our

fear about the installation of the large Mountain Valley pipeline and the ramifications to our lives. Much is unknown.

The karst near our home seems to be overlooked in the "Erosion and Sediment Control Plan" (which is a major part of the Stormwater Permit and also included in the 401 Certificate). They both fail to mention that there is ANY karst in Monroe County. This is a huge oversight. On page 9, there is mention of potential karst features in Summers County, but no mention of the existing karst in Monroe. Another MVP contractor details several karst features on a map of our area but they are not included in the permit application.

In Mountain Valley's "Construction Plans" for the area just below Peters Mountain, there is no indication of karst on Robert Allen's property. The land nearby is riddled with ridges, fissures, and a disappearing stream. These are visible with the naked eye, even from the road. Furthermore, MVP proposes two "work spaces" on either side of the road for parking and materials storage. These areas will surely impact the karst and a stream that traverses our property and then disappears underground.

Response 124: Please see Section A. Response 3.

Comment 125: Significant concerns about stabilization during and post construction, specifically along SR 12/3

Response 125: Please See Section A. Response 2.

Comment 126: This proposal needs a stream by stream analysis. I am not convinced there is only 1 Tier 3 Stream in the project area. And what about Tier 2 streams? Shouldn't they have special treatment too, with regard to protection from sedimentation? Many of our rivers and streams in the watersheds affected are already overly burdened with sediment, which leads to flash flooding and sometimes worse. This project will increase this sediment burden. Increases in turbidity can cause catastrophic outcomes to stream bed life but no measures are discussed to mitigate this. Insufficient BMP practices are discussed for steep slopes to help mitigate the effects of runoffs, which will also increase the overall stress on ephemeral streams. Access roads will be another damaging factor, breaking up natural corridors and disrupting stream flows

Response 126: The project does not cross any streams that are listed as Tier 3 streams. The applicant's construction techniques are consistent with state and federal requirements. The applicant has submitted all appropriate state and federal permit applications and will continue to work with the state and federal agencies to identify and protect sensitive resources in the project area.

All streams and wetlands will be protected during construction using state approved erosion control devices such as compost filter sock, silt fence and sheet flow diversions. Stabilization

will occur immediately upon completion of construction and weekly/post rainfall inspections will continue until the permit is officially closed.

For areas of the project that are upstream of Tier 3 waters, any impacts to water quality would be temporary and thus consistent WVDEP requirements. WVDEP expects that the applicants compliance with the conditions of this permit, the E&S, RRP, SWPPP, and the FERC's 2013 Upland Erosion Control, Revegetation, and Maintenance Plan and 2013 Wetland and Waterbody Construction and Mitigation Procedures as well as other construction, restoration, and mitigation plans (e.g., project-specific erosion and sedimentation control plans, Karst Mitigation Plan, and Exotic and Invasive Species Control Plan) will result in stormwater discharges being controlled as necessary to meet applicable water quality standards and avoid any residual long-term influence on existing uses. Because the permit requires the applicant to comply with additional requirements in these areas, the short term of construction will not result in a lowering of water quality. Compliance with the permit's increased frequency of site inspections in waters upstream of Tier 3 waters will ensure that the applicant finds and correct any problems with BMPs promptly, especially after significant rain events.

Also please see Section B. Response 129.

Comment 127: The proposed Mountain Valley Pipeline threatens our state's water resources. The pipeline and associated projects would cross 1,021 waterbodies (617 in West Virginia), including major crossings of the Elk, Gauley, and Greenbrier rivers. The projects would impact 39.3 acres of wetlands and would disturb 4,100 acres of soils prone to severe water erosion. The pipeline would pass within one-tenth of a mile of two public drinking water sources and near countless private drinking wells that have not been surveyed

Response 127: Please see Section A. Response 3.

The proposed Elk, Gauley, and Greenbrier River crossings will be conducted using a dry-ditch open cut methodology. The crossing will have temporary impacts during construction that will temporarily restrict using approximately half of the river width at the crossing site. The installation process will include installing approximately one half of the crossing, completing required stream restoration in that area and then switching to the other side of the project to install the system and complete the project accordingly. In addition to the E&S BMPs that will be onsite during construction, a site-specific spill response plan will be developed and an Aid to Navigation (ATON) will be prepared to provide public information on construction, instream activities, and any potential user restrictions during construction at the Greenbrier River. Long term, permanent impacts are not anticipated with this project. The river bed will be restored and changes in flow are not anticipated. The adjacent banks will be immediately graded, seeded, and mulched.

Comment 128: Trout Streams: MVP identifies a total of 47 trout streams that will be impacted by

the project. Construction activities within trout streams will result in loss of habitat, changes in the thermal conditions of the waterbody, increase turbidity and erosion, and result in stream bank instability. The project will result in 100% loss of riparian vegetation within the right-of-way. The application fails to explain how they will avoid impacts to 47 trout streams and instead states that they will submit spawning season waiver requests to DNR. We find this section of the application inadequate. Please request specific measures that MVP will take to minimize sedimentation and turbidity in trout streams including a plan to avoid in-stream construction during the spawning season. This information should be provided for warm water fisheries as well."

Response 128: Impacts to high quality streams are reduced to the fullest extent practical and minimized by using instream diversions during construction, performing constructing activities during low flows, avoiding the streams during seasonal restrictions, and using more stringent E&S BMPs around the resources. The streams will be restored to preconstruction conditions by using approved construction techniques.

Where possible, the applicant has reduced crossing widths in streams and wetlands to 75-feet during construction. Enhanced E&S BMPS will be utilized around sensitive resources such as streams and wetlands. Reroutes and shifts around forested wetlands and scrub shrub wetlands have also been incorporated into the proposed alignment to reduce impacts. In addition, impacts to sensitive resources will be reduced by adhering to seasonal restrictions (for restricted streams) and planning construction during low-flow conditions. During construction, the existing stream substrate is separated and stockpiled. After the pipe is installed the pipe trench is backfilled and the stream material is the last material restored. This technique returns the native stream material and associated benthic organisms to the stream.

Comment 129: The proposed project is anticipated to impact 57 Tier 3 Outstanding National Resource Waters. MVP's previous 401 application stated "No Tier 3 Streams occur within the Project area." The DEIS states "Neither the MVP nor the EEP would cross Tier III waterbodies in West Virginia." Clearly, identifying 0 Tier 3 impacts where there are approximately 57 Tier 3 impacts is a significant omission and necessitates a full anti- degradation review.

Also

Construction plans do not provide any special treatment for Tier 3 streams – and the proposed route does not appear to have been influenced by any attempt to avoid protected waters. Without this information, it is impossible for WVDEP to fulfill its responsibilities to evaluate potential negative impacts to West Virginia water and water quality. State Code 60-5-6 requires that DEP conduct an anti-degradation review for each impacted Tier 3 stream."

Also

Comments were received on both the Stormwater Construction Permit and the 401 Certification generally asking how the permitting actions would be protective of the state's antidegradation policy. Specific to Tier 3 waters, one commenter asked DEP to determine "whether increases in, among other things, sedimentation, iron and temperature will result in a long-term lowering of water quality". Another commenter asked for baseline water quality to be collected so that a Tier 2 and Tier 3 antidegradation review could be completed along with potential degradation calculated.

Response 129: The DEP's approach to construction general permits, whether for NPDES or Oil and Gas, follows the same path as EPA's construction general permit. Both EPA's and DEP's permits rely on best management practices (BMPs) to control the discharge of sediment or sediment-related parameters. EPA has taken this approach and provides a detailed explanation in their 2017 Construction General Permit(CGP) fact sheet and in the previously issued 2012 CGP fact sheet. Notably, the DEP NPDES Construction General Permit is approved by EPA and the Stormwater Associated with Oil and Gas related Construction Activities General Permit (Oil & Gas Construction Stormwater General Permit) is mirrored from it as a state-only permit. It is a state-authority-only issued permit as Oil and Gas activity is exempt from the federal requirement to obtain an NPDES permit.

EPA addresses construction stormwater permitting via a three-pronged approach which includes technology-based effluent limitations, water quality-based effluent limits (WQBELs) and Site Inspection Requirements and frequencies. Although it may sound as if specific limits are assigned to these discharges through technology based limitations or WQBELS, what is addressed in these sections of the permit and explained in the fact sheet are BMP's necessary to stop, minimize and/or control sediment from leaving the disturbed area and discharging into a stream. These non-numeric effluent limitations are designed to prevent the mobilization and stormwater discharge of sediment or sediment-related parameters, such as metals and nutrients, and prevent or minimize exposure of stormwater to construction materials, debris and other sources of pollutants on construction sites. Nationwide, source control through minimization of soil erosion is relied on as a pragmatic and effective way of controlling the discharge of these pollutants from construction activities.

EPA states in section 3.1 of the 2017 CGP that "EPA expects that compliance with the conditions in this permit will result in stormwater discharges being controlled as necessary to meet applicable water quality standards". In parallel, DEP believes the same rationale applies to a permit, approved by EPA, for use by a state with delegated primacy to implement the NPDES program. Further, applying this same rationale to a state-authority-only issued Oil & Gas Construction Stormwater General Permit is a natural and logical extension.

In the simplest of terms antidegradation involves protecting a stream's designated uses at a Tier 1 level if the stream is impaired for a particular pollutant of concern, keeping high

quality streams better than criteria unless a lowering of water quality if justified based on socioeconomic considerations (Tier 2) and providing for only short term degradation of Outstanding National Resource Waters (Tier 3).

EPA's approach, in the 2017 CGP, to address discharges to a water impaired for sediment or sediment-related parameters, and/or nutrients, or to a water that is identified by the state, as Tier 2, or Tier 3 for antidegradation purposes is to comply with increased inspection frequencies and stabilization deadlines outlined in the permit. As set forth in the EPA permit, the normal inspection frequencies are either to conduct a site inspection once every seven (7) calendar days or conduct a site inspection once every 14 days and within 24 hours of the occurrence of a storm event of 0.25 inches or greater. For a discharge to sensitive waters, EPA requires that the operator must conduct inspections once every 7 calendar days and within 24 hours of a storm event of 0.25 inches or greater. The operator must keep a record of rainfall measured in both instances.

The standard stabilization requirements in the EPA approach are to initiate the installation of stabilization measures immediately in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days and complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days after stabilization has been initiated. For a discharge to sensitive waters EPA requires the completion of the installation of stabilization measures as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated. The rationale for the more stringent requirements for Tier 2 and 3 designated waters as explained in the EPA 2012 CGP fact sheet is as follows: "As stated in Part 3.1 of the [2012] permit, in the absence of information demonstrating otherwise, EPA expects that compliance with the conditions in this permit will result in stormwater discharges being controlled as necessary to meet applicable water quality standards (which include state antidegradation requirements). More specifically, by imposing on operators that discharge to Tier 2, Tier 2.5, or Tier 3 waters the requirement to comply with the additional requirements, on top of the permit's other effluent limits and conditions, to stabilize exposed areas faster and to conduct more site inspections than other sites, it is EPA's judgment that authorizing these discharges will not result in a lowering of water quality. Thus, EPA has determined that compliance with the CGP generally will be sufficient to satisfy Tier 2 and Tier 3 antidegradation requirements because the controls will not result in a lowering of water quality, making individualized Tier 2 or Tier 3 review unnecessary."

The Oil & Gas Construction Stormwater General Permit issued by WVDEP requires that stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than seven days after the construction activity in that portion of the site has permanently ceased. It also requires at a minimum all erosion controls on the site are inspected at least once every seven calendar days and within 24 hours after any storm event of greater than 0.5 inches of rain per 24-hour period. These standard requirements are more stringent than the

standard requirements for the EPA permit and nearly as stringent and protective as the EPA permit requirements to address discharges to waters impaired for sediment or sediment-related parameters, and/or nutrients, or to waters that are identified by the state, as Tier 2, or Tier 3 for antidegradation purposes. There are no tier 3 waters being directly discharged to in this project (see attachment A, Analysis of Tier III Streams Downstream of Mountain Valley Pipeline) but the Stormwater Pollution Prevention Plan (SWPPP) for this project requires that additional protective measures will be employed at crossings of and in proximity to Tier 3 and trout streams. The additional measures include permanent seeding and mulching must be accomplished within 4 days of reaching final grade; temporary seeding and mulching must be accomplished within 4 days when areas will not be disturbed for more than 14 days; the use of reinforced filtration devices (defined as belted silt retention fence, triple stacked compost filter sock and/or super silt fence) at all downslope perimeters; stream crossings in these areas will be completed within 72 hours once the crossing has begun; and disturbance will be limited as much as practicable. Additionally, the SWPPP requires at a minimum all erosion controls in these areas are inspected at least once every seven calendar days and within 24 hours after any storm event of greater than 0.25 inches of rain per 24-hour period. MVP has also indicated in the SWPPP that the inspection frequency for the entire project will be seven calendar days and within 24 hours after any storm event of greater than 0.25 inches of rain per 24-hour period which exceeds requirements of the Oil & Gas Construction Stormwater General Permit and should help ensure compliance.

Since in EPA's 2012 CGP fact sheet it was determined that by imposing on operators that discharge to sensitive waters additional requirements to stabilize exposed areas faster and to conduct more site inspections than other sites, results in these discharges not resulting in a lowering of water quality, and since the additional requirements to stabilize exposed areas faster and to conduct more site inspections than other sites in the Oil & Gas Construction Stormwater General Permit registration in sensitive waters are equal to or more stringent than those used by EPA, it is DEP's position that following the requirements of the Oil & Gas Construction Stormwater General Permit registration will not result in the lowering of water quality. Thus, compliance with the Oil & Gas Construction Stormwater General Permit will be sufficient to satisfy Tier 2, and the additional controls outlined in the SWPPP associated with this registration, which exceed EPA required controls to satisfy Tier 3 antidegradation, are sufficient to not result in a lowering of water quality, making individualized Tier 2 or Tier 3 review unnecessary.

Further, specific to West Virginia law pursuant to per Section 3.7 of the Antidegradation Rule 60CSR5, a Tier 2 review is not required for general permit registrations. Section 3.7 states that "On or after July 2, 2001, the effective date of these implementation procedures, new and reissued WV/NPDES general permits will be evaluated to consider the potential for significant degradation as a result of the permitted activity. Regulated activities that are granted coverage by a WV/NPDES general permit will not be required to undergo a Tier 2 antidegradation review as part of the permit registration process." Although EPA has not

approved this section for use in federal Clean Water Act NPDES permits the Oil & Gas Construction Stormwater General Permit is a state- only permit issued under the authority of the WV Water Pollution Control Act. As part of 60CSR5, which was passed by the Legislature and signed into law by the Governor in 2008, it is in effect and the law for state only permits.

Additionally, as discussed above the standard requirements in the Oil & Gas Construction Stormwater General Permit addressing stabilizing exposed areas and conducting site inspections are nearly as stringent as EPA's additional requirements that are used to meet a Tier 3 review, which allows no degradation. By implementing these controls on all disturbed area under the permit registration coverage Tier 2 antidegradation is fully addressed and an individual Tier 2 review and its associated baseline water quality is not required.

With respect to waters with Total Maximum Daily Loads (TMDLs) or 303(d) listings for sediment, when TMDLs are developed a waste load allocation for some amount of new construction stormwater acreage is included in the TMDL. This allocation is only for NPDES construction stormwater permits and has previously not been applied to Oil & Gas Construction Stormwater General Permits. TMDLs only directly dictate what happens to activities on the land that have a discharge permit. Activities like farming or logging may disrupt the soil, but are not regulated or given effluent limits. They are considered nonpoint sources in the TMDLs and thus not given a waste load allocation.

In waters with approved TMDLs for sediment, MVP will be required to operate within the acreage limitations and/or disturbance alternatives as specified in the TMDL. In waters listed as sediment impaired, where TMDLs have not yet been developed, as per the SWPP commitments, MVP will utilize controls as described above in the EPA methodology for sensitive waters.

Comment 130: MVP identifies a total of 63 trout streams that will be impacted by the project. Construction activities within trout streams will result in loss of habitat, changes in the thermal conditions of the waterbody, increased turbidity and erosion, and stream bank instability. The project will result in 100% loss of riparian vegetation within the right-of-way. The application fails to explain how they will avoid impacts to 63 trout streams and instead states that they will submit spawning season waiver requests to DNR. We find this section of the application to be inconsistent with the information in the MVP-DEIS which states that "Mountain Valley would adhere to all federal and state permit conditions regarding the minimization of impacts on fisheries of special concern including adhering to recommended work windows for in-water construction". MVP must clarify this discrepancy

Response 130: Impacts to high quality streams are reduced to the fullest extent practical and minimized by using instream diversions during construction, performing constructing activities during low flows, avoiding the streams during seasonal restrictions, and using

more stringent E&S BMPs around the resources. The streams will be restored to preconstruction conditions by using approved construction techniques.

Where possible, the applicant has reduced crossing widths in streams and wetlands to 75-feet during construction. Increased E&S BMPS will be utilized around sensitive resources such as streams and wetlands. Reroutes and shifts around forested wetlands and scrub shrub wetlands have also been incorporated into the proposed alignment to reduce impacts. In addition, impacts to sensitive resources will be reduced by adhering to seasonal restrictions (for restricted streams) and planning construction during low-flow conditions. During construction, the existing stream substrate is separated and stockpiled. After the pipe is installed the pipe trench is backfilled and the stream material is the last material restored. This technique returns the native stream material and associated benthic organisms to the stream.

Comment 131: "MVP has identified approximately 630 streams and 425 wetlands potentially impacted as a result of this project. With impacts of this magnitude on waters of the state, we find the 2-page restoration section of the 401 application grossly inadequate to quantify the restoration work needed for a project of this magnitude."

Response 131: The applicant's mitigation approach is consistent with state and federal requirements. Permanent impacts to aquatic resources, such as wetlands and streams, have been evaluated using the West Virginia Stream and Wetland Valuation Metric system (WV SWVM). This metric system, which is accepted by the WVDEP, West Virginia Division of Natural Resources (WVDNR) and the United States Army Corps of Engineers (USACE), considers the type of resource being impacted, the value of the resource, and the appropriate mitigation requirement. These forms are consistent with the state and federal mitigation requirements and the applicant Valley will continue to coordinate with the WVDEP and USACE on the required mitigation. These forms have been submitted to the WVDEP.

The majority of the stream crossings are temporary impacts associated with pipeline installation. Permanent impacts are generally associated with the culvert installation along access roads and not placement of fill. The culverts will maintain flow throughout the watershed and continue to support the nutrient input into a higher order stream. Once pipeline construction is complete, the temporarily impacted wetlands and streams will be restored and monitored until the Stormwater permits and Nationwide permits are closed. These temporary impacts as identified in the Stormwater General Permit Application are anticipated to have a minimal impact on the biodiversity, aquatic life cycles, and trophic levels associated with the project area streams.

Comment 132: "Effectiveness of best management practices is unsupported: To support the assertion that the proposed project will comply with the CWA and will not cause violations of water quality standards, MVP relies primarily on its compliance with best management practices

(BMPs) outlined in FERC's procedures and MVP stormwater pollution prevention plan. Past experience demonstrates, however, that those measures are insufficient to prevent water quality standards violations."

Response 132: The applicant has provided all of the required information in accordance with G.4.e.2.B of the WVDEP's General Water Pollution Control Permit that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed.

The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the E&S Detail Sheets.

See also Section B. Response 129.

Comment 133: "MVP would cross 5 source water protection areas for public water utilities. Excess sediment in source water accelerates the formation of haloacetic acid when chlorine is added to treat the raw water. Haloacetic acid has been linked to increased risk of cancer. Haloacetic acid is regulated by EPA under the Safe Drinking Water Act. Excess levels of sediment in source water can cause the utility to exceed the maximum contaminant level."

Response 133: Please see Section A. Response 3.,

It is DEP's understanding that Mountain Valley met with the Big Bend Public Service District (PSD) on August 25, 2015, March 17, 2016, and again on August 30, 2017 to discuss the Mountain Valley Pipeline Project, and address the PSD's concerns. The March 17, 2016 meeting and August 30, 2017 meetings also included Mr. Troy Wills, District Engineer for the West Virginia Department of Health and Human Resources who assists the PSD. Mountain Valley prepared a Water Supply Contingency Plan in cooperation with the PSD, dated September 6, 2017. The PSD accepted the Plan via its signature on September 14, 2017. DEP has received and reviewed this document.

In the vicinity where the proposed alignment traverses Peters Mountain, the Red Sulphur Public Service District (PSD) provides public water. The proposed alignment is approximately 4 miles from the primary water source (Coburn Spring) for the PSD, and approximately 1,500 feet from a secondary source (Rich Creek Spring, which is the headwaters for Rich Creek, and the PSD has a surface water intake approximately seven (7) river miles from the proposed alignment). These water sources are located on the northwest flank of Peters Mountain.

The applicant's Erosion and Sediment Control Plan has been designed to control project runoff and sedimentation, while providing protection to the aquatic resources within the Limits of Disturbance (LOD) and directly adjacent to the LOD. These controls include logical construction procedures, such as minimizing the amount of disturbance, proper grading and restoration, diverting/protecting stream flows during stream crossings, and operating in a safe and efficient manner. The applicant's construction techniques are consistent with all state and federal requirements. By implementing the procedures, sequencing, and erosion BMPs listed in the Erosion and Sediment Control Plan impacts to the states aquatic resources will be minimized during construction. Site inspections will also occur after the project area has been restored and reseeded. The inspections will occur at least once every seven days and within 24 hours following a 0.25-inch rainfall event. If it is determined that any BMPs are not properly functioning – they will be repaired or replaced to provide the appropriate sediment control and stream protection.

In addition, the applicant has identified all public water supplies that have a surface water intake within three (3) miles downstream of a crossing (e.g., Big Bend PSD). The applicant has also identified all public water supplies that are within a HUC-10 watershed traversed by the proposed alignment. Finally, the applicant identified public water supply "Zone of Critical Concern "(ZCC) located within 0.5-mile of the alignment or an associated Project work space. The applicant then notified public water suppliers, such as the Big Bend PSD and the Red Sulphur PSD (and many others). The applicant is working with public water suppliers to establish water supply contingency plans for those suppliers having water sources located within 3 miles downstream of a water body crossing, or within 0.5-mile of a ZCC.

Comment 134: "Long-term impacts associated with land cover change not analyzed: MVP's application fails to adequately analyze the increase in sedimentation and runoff that would result from the conversion of upland forest to herbaceous cover within vulnerable segments of the pipeline right-of-way."

Response 134: The applicant has provided all of the required information in accordance with G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has provided information necessary to provide a technical basis for the stormwater management plan.

The applicant has also developed a Restoration and Rehabilitation Plan to address post-construction restoration, rehabilitation, and habitat mitigation activities. This plan will be implemented in conjunction with the FERC's 2013 Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and 2013 Wetland and Waterbody Construction and

Mitigation Procedures (Procedures) as well as MVP's other construction, restoration, and mitigation plans (e.g., project-specific erosion and sedimentation control plans, Karst Mitigation Plan, and Exotic and Invasive Species Control Plan).

See also Section A. Response 1.

Comment 135: The proposed Mountain Valley Pipeline threatens our state's water resources. The pipeline and associated projects would cross 1,021 waterbodies (617 in West Virginia), including major crossings of the Elk, Gauley, and Greenbrier rivers. The projects would impact 39.3 acres of wetlands and would disturb 4,100 acres of soils prone to severe water erosion. The pipeline would pass within one-tenth of a mile of two public drinking water sources and near countless private drinking wells that have not been surveyed.

Response 135: The proposed Elk, Gauley, and Greenbrier River crossings will be conducted using a dry-ditch open cut methodology. The crossing will have temporary impacts during construction that will temporarily restrict using approximately half of the river width at the crossing site. The installation process will include installing approximately one half of the crossing, completing required stream restoration in that area and then switching to the other side of the project to install the system and complete the project accordingly. In addition to the E&S BMPs that will be onsite during construction, a site-specific spill response plan will be developed and an Aid to Navigation (ATON) will be prepared to provide public information on construction, instream activities, and any potential user restrictions during construction at the Greenbrier River. Long term, permanent impacts are not anticipated with this project. The river bed will be restored and changes in flow are not anticipated. The adjacent banks will be immediately graded, seeded, and mulched. Inspection will occur in this area and the entire area in accordance with the approved WVDEP issued permit.
The applicant has provided all of the required information in accordance with G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has provided information necessary to provide a technical basis for the stormwater management plan.

The Water Resources Identification and Testing Plan summarizes protocols for identifying and assessing water resources in the vicinity of the proposed Mountain Valley Pipeline (MVP), owner contacts and information gathering, and conducting pre-construction baseline water quality testing. This effort includes the applicant developing agreements with public water suppliers that are determined to be at-risk in order to ensure an uninterrupted potable water supply to their customer base.

Private water resources (wells and springs) were identified within 150 feet, and within 500 feet in karst terrain, of MVP work spaces that are associated with the proposed October 2016 Proposed Route Filing Route. Public water supplies (wells, springs, surface water intakes) were identified at minimum within 3 miles of the MVP alignment

Comment 136: "The miles of pipeline within WV is inconsistent throughout the application, this discrepancy must be corrected."

"The application must identify all streams receiving stormwater runoff."

"Engineering calculations for sizing Best Management Practices (BMP's) are not provided so there is no evidence within the application that the Erosion & Sediment controls on the MVP pipeline and associated compressor stations were sized appropriately and to the standards of the WV DEP Erosion and Sediment Control Manual."

"Documentation on the limit of disturbance from access must be included in the permit."

Response 136: The pipeline is proposed to be approximately 196 miles in West Virginia

All streams within 300 feet of the project centerline have been identified and are illustrated on the erosion and sediment control plans. On properties where access has not been granted, the applicant and the WVDEP having completed a desktop analysis to identify potential wetlands and streams. These streams will be field verified by the applicant once access is granted

The applicant has provided all of the required information in accordance with the General Water Pollution Control Permit, Section G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the Erosion and Sediment Control Detail Sheets included with the General Water Pollution Control Permit application.

The erosion and sediment control plans identify the width of the road surface and does not include the best management practices (BMPs) in the width. However, the BMPs are included in the Limits of Disturbance (LOD). Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to some roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs– widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway

will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways will be controlled with drainage channels, broad based dips, and waterbars. Additional BMPs would be installed as necessary to prevent potential uncontrolled release of sediments.

Comment 137: As you know, this pipeline is proposed to cross numerous streams, rivers and wetlands, as well as pass very close to numerous residents wells, springs and intakes for public water supplies. As you know even a small disturbance in the vicinity of our water resources may result in drastic changes in our ability to have safe drinking water.

Most people along the pipeline route rely on wells and springs for their drinking water. If our wells and springs are damaged, how will residents obtain their water?

Response 137: Please see Section A. Response 3.

Comment 138: Construction of the MVP would require blasting in many areas...blasting will produce a very high risk of damage to our wells and springs.

Response 138: Please see Section A. Response 5.

Comment 139: MVP proposes to dig/blast a trench across the Greenbrier River near Pence Springs...how will this effect the numerous residents in the vicinity of this trench? How will it effect the drinking water of the Talcott PSD? How will this effect the numerous tourists that fish, raft and swim in the Greenbrier River?

Response 139: The applicant has taken reasonable steps to identify resources at risk and to establish protective measures. Streams will be crossed using a dry-ditch methodology which will include portadams, cofferdams, flumes, or dam-and-pumps. In each instance, the flowing water will be diverted from the construction area until the crossing is complete. Once complete, the dams/flumes will be removed and the stream flows will be restored.

Big Bend PSD provides water to Talcott. It is our understanding that the applicant has met with the Big Bend PSD on several occasions to discuss the Mountain Valley Pipeline Project, and address the PSD's concerns. The applicant has been made aware of concerns regarding pipeline construction in the vicinity of the PSD's surface water intake on the Greenbrier River, and has prepared a Water Supply Contingency Plan in cooperation with the PSD.

Comment 140: Since the MVP proposes to cross the many steep ridges across our region, how will the runoff created by cutting a 125 foot wide path through our forests and digging a trench eight to 10 feet deep effect our streams and water supplies?

Response 140: Please See Section A. Response 2.

Comment 141: As noted in the West Virginia Rivers Coalition comments submitted to DEP, the application for the O&G Permit fails even to list all of the waterbodies to which discharges may or will occur from MVP activities. Further, evidence in the application fails to provide the detailed calculations that can prove the pollution control measures were adequately designed for the conditions in which they would be used.

Response 141: The WVDEP's 401 application and the USACE's Nationwide Permit 12 identify the streams to be crossed with the project. In addition, all streams within 300' of the project centerline have been identified and are illustrated on the erosion and sediment control plans. On properties where access has not been granted, the applicant has completed a desktop analysis to identify potential wetlands and streams. These streams will be field verified once access is granted.

The applicant has provided all of the required information in accordance with G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the E&S Detail Sheets

Comment 142: Likewise, the selection of standard "Best Management Practices" ("BMPs"), from which MVP proposes to choose on a site-by-site basis, but which are not detailed for specific waters, have very poor application in some circumstances. For example, one of the BMPs that the applicant here proposes to use in some situations is silt fencing.

Aside from the contribution of pollutants to streams from work on the pipeline, roads, and other features, changes to the land surface and the normal infiltration and flow patterns of stormwater can be very damaging to streams. The removal of native forest stands and other plant communities, the disturbance and compaction of soils, and replacement of those conditions with new ones will change the hydrologic flow patterns in these areas.

As stated above in these comments, the segmentation of reviews for different aspects of the MVP project, between the narrowly-focused 401 application and the O&G Permit application, prevents the DEP from adequately considering the cumulative impacts of multiple activities and factors on water quality. It is beyond question that effects caused by habitat disruption in and around stream and wetland crossings, in combination with runoff from upland construction areas and features will be greater than would result from those activities in isolation.

Response 142: Aquatic resources will be protected within the project area by avoidance and impact minimization. The resources will be protected during construction using state approved BMPs including but not limited to compost filter socks, silt fence, belted silt fence, and water bars. Mountain Valley's construction techniques are consistent with all state and federal requirements. The applicant has submitted all appropriate state and federal permit applications which address impacts to aquatic resources. The applicant is committed to implementing these permits and the associated permit conditions to help reduce impacts to all environmental features. Stabilization will occur immediately upon completion of construction and weekly/post rainfall inspections will continue until the permit is officially closed. The applicant will employ on-site inspectors during all phases of construction to monitor sensitive resources in the project area and ensure that all appropriate Erosion and Sediment control BMPs are in place and properly functioning before construction. In addition, the applicant will employ numerous environmental inspectors to ensure that not only are the BMPs installed correctly but are functioning at their designed capacity. FERC and the WVDEP also has full access to the construction project. Any BMPs that are not properly functioning will be repaired and/or replaced to provide the required stream protection and erosion control, and thus ensure that any impact to water quality will be temporary.

Also, please see Section A. Response 1.

Comment 143: The terrain through which the MVP is proposed to cross poses very serious risks. Highly erodible and shallow soils, areas with high landslide potentials, and the presence of karst formations have not been adequately assessed for the threats they pose to water quality, either in isolation or in combination.

Response 143: The applicant has addressed slope stability for the project via the Landslide Mitigation Plan (LMP). The LMP presents typical details to be employed during construction to minimize the risk of earth movement and specifies the use of these mitigation measures at predetermined locations along the pipeline. The mitigation measures are generally consistent with those recommended in INGAA's Mitigation of Land Movement in Steep and Rugged Terrain for Pipeline Projects, which presents best management practices for landslide mitigation in the Appalachian region.

During construction, geotechnical inspectors will be deployed to identify additional areas, not already specifically addressed in the LMP, where the landslide mitigation typical details should be implemented. The geotechnical inspectors, in conjunction with the applicant's engineers, will develop additional mitigation measures to address slope stability as necessary based on subsurface conditions revealed during construction

Comment 144: "No estimations or calculations are provided of sediment released during construction."

Response 144: The applicant has provided the required information in accordance with G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the Stormwater Pollution Prevention Plan (SWPPP). This information was provided in the Stormwater Permit application in February 2016 and December 2016. In accordance with The General Water Pollution Control Permit Section G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the E&S Detail Sheets.

Comment 145: Watersheds and drainage areas are not delineated on the Construction Plan sheets and drainage direction arrows are not provided except along silt fencing locations. Neither WVDEP permit reviewers nor the public can adequately interpret the very standardized information provided.

Response 145: The applicant has provided all of the required information in accordance with the General Water Pollution Control Permit, Section G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the Erosion and Sediment Control Detail Sheets included with the General Water Pollution Control Permit application.

Comment 146: A delineation of watersheds and drainage areas is also needed to determine drainage area size. As noted by Dr. Dodds, DEP's General Water Pollution Control permit states that "For drainage areas of greater than five acres, a sediment basin providing 3,600 cubic feet per drainage acre shall be installed. ICWA found no mention of such devices in the application."

Response 146: In accordance with G.4.e.2.A.ii.e, Sediment basins are not typically used for pipelines or linear projects in general. Linear projects use other regulatory-acceptable best management practices (BMPs). The linear aspect of the disturbance for these projects would make it difficult and generally ineffective to place a sediment basin in a location that would catch the drainage throughout the project sites since they traverse the terrain in a linear fashion.

Comment 147: Karst in Monroe County is conspicuously missing from the Erosion and Sediment Control Plan (ESCP) text, as well as from Construction Plans. This includes significant features on Peters Mountain reported in MVP in other materials to the FERC and karst features reported by ICWA to the FERC and WVDEP near Indian Creek crossing.

Response 147: The applicants has prepared a detailed Karst Hazards Assessment (Resource Report #6; latest revision February 2017). Table 2 and Sheets 3 and 4 in Appendix A of the Karst Hazards Assessment present information on karst features in Monroe County, West Virginia. The applicant provided to FERC detailed technical responses to replicate private citizen comments, as well as state and federal agency comments regarding karst in West Virginia. These documents can be accessed from either the FERC website or the applicant's website.

Pages 9 and 10 of the applicants "Erosion and Sediment Control Plan", Mountain Valley Pipeline Project, Wetzel, Harrison, Doddridge, Lewis, Braxton, Webster, Nicholas, Greenbrier, Fayette, Summers, and Monroe, Counties, West Virginia" specify enhanced Best Management Practices for karst terrain. These are applicable to any karst terrain encountered by pipeline construction, including project components such as access roads, laydown yards, etc.

Best Management Plans specified in these documents are designed to prevent uncontrolled releases to drainage ways to protect surface waters and karst features in order to protect groundwater. The applicant has made several major, and hundreds of minor route adjustments to avoid karst features and associated sensitive water resources that were identified in the Karst Hazards Assessment. Additionally, the applicant will deploy on-site inspectors, including the Karst Specialists, during all phases of construction to monitor karst resources and ensure that prescribed measures are in-place to prevent uncontrolled surface water releases, prevent impacts to karst features, and protect groundwater. These measures, in concert with exclusion buffers, will minimize potential impacts to surface water in karst terrain.

Comment 148: For both existing and new access roads, the easements being sought by MVP are for 40 feet, and the limits of disturbance are also for that width, but all references on construction plans are for 25 feet. Erosion and sedimentation calculations should reflect the larger impervious footprint."

For existing roads, references use the standard wording, "Existing 25' Access Road …", which makes it sound like these are "traffic---ready", when most often what exists is a 10---ft. to 15---ft. dirt road or trail, often through woods and up steep slopes. Most will require significant new deforestation and grading, and in some cases (e.g., MO---227) major excavation."

For new construction, too, the only reference is to 25 feet, rather than 40 ft. In several cases, access roads will require a combination of existing and new construction to reach the proposed ROW and construction corridor. This is not always clearly marked on tables or plans"

Response 148: Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to certain roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs, widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways will be controlled with drainage channels, broad based dips, and waterbars. Additional BMPs would be installed as necessary to prevent potential uncontrolled release of sediments.

In addition, in areas where streams parallel the access roads, the roads have been shifted to avoid placing fill within the streams. Erosion and sediment control BMPs are also proposed along the access road. The slope of the roads will be constructed to drain to the inside, away from the road. The drainage will then be directed to a culvert, to controlled discharge locations. It is also worth noting that first order streams, due to their ephemeral nature do not typically provide habitat for juvenile fish to live in. By definition, ephemeral channels have flowing water only during, and for a short duration, after a precipitation event.

Comment 149: "Construction plans do not indicate steep slopes for access roads and ATWS areas. The same kind of demarcations used for the ROW and construction corridor should be required of all project--- related construction sites."

Response 149: The 2-foot contours associated with the access roads illustrate topography within the access road areas.

Comment 150: For temporary access roads, the ESCP states: "Once construction is complete, the use and ownership of the temporary access roads will be returned to the private landowner" (ESCP, 3). Some landowners might be pleased to have a wide new road. However, for others, the cost and equipment required to properly maintain a road of this size may be prohibitive, especially where there has been significant disruption of vegetation and land contours. Who is responsible for the increased erosion and sedimentation that is likely to occur when a tree-covered trail through the woods has been converted ("temporarily") into 40---ft. unshaded highway?

Response 150: The restoration of the project area will be completed according to state and federal regulations. Additional or future maintenance of restored access roads is not

anticipated. Ultimately the roads will be inspected prior to permit release and future use activity would dictate the need for continued maintenance.

Comment 151: Deforestation in the proposed work corridor, access roads, pipe yards, and additional work areas will result in canopy loss, thereby causing increased stormwater discharge, reduced groundwater recharge, and increased downstream stream bank erosion. Restoring the areas to meadows will not result in the lower stormwater discharge amounts characteristic of forested land because it is the tree canopy which is most effective in reducing rainfall intensity, that is, reducing the impacts of raindrops on the ground.

Soil compaction in the proposed work corridor will create impervious areas, resulting in increased stormwater discharge, reduced groundwater recharge, and loss of soil functions, especially in headwater areas of first order high gradient streams, even if topsoil is placed over the compacted soil

Response 151: Please see Section A. Response 1.

Comment 152: Access road widths, stated to be 25 feet in the SRA, are inconsistent with the road construction easements, stated to be 40 feet, as provided in the Draft Environmental Impact Statement submitted by MVP to the Federal Energy Regulatory Commission (FERC). The disturbed/impervious areas created by access roads will be greater in size if the widths are 40 feet rather than 25 feet

Response 152: Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to certain roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs, widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways will be controlled with drainage channels, broad based dips, and waterbars. Additional BMPs would be installed as necessary to prevent potential uncontrolled release of sediments.

In addition, in areas where streams parallel the access roads, the roads have been shifted to avoid placing fill within the streams. Erosion and sediment control BMPs are also proposed along the access road. The slope of the roads will be constructed to drain to the inside, away from the road. The drainage will then be directed to a culvert, to controlled discharge locations. It is also worth noting that first order streams, due to their ephemeral nature do not typically provide habitat for juvenile fish to live and do not interact with groundwater.

By definition ephemeral channels have flowing water only during, and for a short duration, after a precipitation event.

Comment 153: Section G.4 of DEP's "General Water Pollution Control Permit" specifies that a Groundwater Protection Plan (GPP) will be provided and that groundwater "means the water occurring in the zone of saturation beneath the seasonal high water table or any perched water zones." It is further specified in Section G.4.e.2.C.iii. of DEP's "General Water Pollution Control Permit" that, "The applicant shall prepare a GPP that will satisfy the requirements of the Groundwater Protection Rule, 47 C.S.R. 58 § 4.11." However, MVP has not provided a GPP. Although MVP is not necessarily required to submit the GPP with the SRA, Indian Creek Watershed Association requests that the GPP be made available to the WVDEP website for public review

Response 153: In accordance with Section G.4 of WVDEP's Water Pollution Control Permit the GPP is not required to be submitted to the Division of Water and Waste Management for reviews. It is to be developed and maintained on site. However, due to comments received the WVDEP has required the applicant to submit the GPP to this office for review.

The applicants Stormwater Pollution Prevention Plan (SWPPP) identifies the BMPS that will be used to protect surface and groundwater resources.

Comment 154: Seeps and springs associated with a perched groundwater table are specified to be dewatered for the proposed construction areas. Seeps and springs provide water necessary to maintain aquatic habitats in headwater areas in watersheds of first order high gradient streams."

Response 154: The Project entails land clearing, surface construction, and excavation approximately 10 feet below ground to install the pipeline. The nature of this construction project is such that there is minimal risk of encountering an aquifer along the vast majority of the alignment. Where groundwater is encountered in the shallow subsurface (e.g., perched aquifers, flood plains near rivers and streams), the backfilled excavation will convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance. The applicant has identified the assessment, avoidance, mitigation, and monitoring that will be applied to this Project to protect hydrologic resources. By planning and execution of construction practices, it is believed that groundwater will not be impacted.

Comment 155: It is stated in Section G.4.e.2.B of DEP's "General Water Pollution Control Permit" that, "The permittee shall submit all… watershed mapping…necessary to explain the technical basis for the stormwater management plan." However, watersheds are not delineated on any MVP maps
It is stated in Section G.4.e.2.B of DEP's "General Water Pollution Control Permit" that, "The permittee shall submit all… calculations… necessary to explain the technical basis for the

stormwater management plan." However, MVP has not provided engineering calculations for sizing Best Management Practices

Response 155: The applicant has provided all of the required information in accordance with G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the Stormwater Pollution Prevention Plan (SWPPP). This information was provided to DEP in the Stormwater Permit application in February 2016 and December 2016. In accordance with DEP's General Water Pollution Control Permit Section G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the E&S Detail Sheets.

The applicant has provided all of required information in accordance with the General Water Pollution Control Permit, Section G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the Erosion and Sediment Control Detail Sheets included with the General Water Pollution Control Permit application.

Comment 156: Scour Analyses do not provide post-construction estimates of sediment released by scour to downstream areas and do not account for the increase in stormwater discharge resulting from deforestation, soil compaction, and dewatering Lateral Erosion Analysis of stream banks was confirmed by the Tetra Tech report prepared for MVP; however, calculations were not performed to show the increase in stream bank erosion due to the increase in stormwater discharge caused by deforestation, soil compaction, and dewatering

Response 156: The scour report estimates scour depths and potential mitigation measures. Post construction information cannot be created until after construction

To prevent erosion and scour, the stream banks will be immediately stabilized once the stream crossing is complete and before stream flow is returned to the channel. The streams and project area will be inspected at least once every seven days and within 24 hours following a 0.25-inch stormwater event. If erosion is observed, the applicant will perform the appropriate restoration. To reduce post-construction soil compaction, the applicant intends to disc areas disturbed during construction activities to facilitate revegetation of the ROW. This will include discing subsoil prior to returning topsoil to the ROW. Topsoil will be disced prior to seed and mulch application.

Please see Section B. Response 86.

Comment 157: Cumulative impacts were not assessed. The proposed construction will impact numerous first order high gradient streams which are tributaries to specific larger streams or rivers. For example, the proposed construction will impact headwaters and first order high gradient stream tributaries to Hungard Creek, which is one of the tributaries to the Greenbrier River. Other first order high gradient streams are tributaries to the Greenbrier River, as well. Therefore, there would be cumulative negative impacts to the Greenbrier River due to increased turbidity, increased embeddedness, increased stormwater discharge, increased vertical scour, and increased stream bank erosion."

Response 157: Cumulative impact analysis is contained within the Final Environmental Impact Statement (FEIS) for the Mountain Valley Project. The FERC considered the cumulative impact of this project and others on geologic resources, water resources, soils, threatened and endangered species, historic resources etc. On Page 4-622 of the June 23, 2017 FEIS, it is stated "Given the project BMPs and design features, mitigation measures that would be implemented, federal and state laws and regulations protecting resources, and permitting requirements, we [FERC] conclude that when added to other past, present, and reasonably foreseeable future actions, the MVP and the EEP would not have significant adverse cumulative impacts on environmental resources with the geographic scope affected by the project."

Comment 158: "The miles of pipeline within WV is inconsistent."

Response 158: The pipeline is proposed to be approximately 196 miles in West Virginia

Comment 159: "All impacted streams are not identified"
"Engineering calculations for sizing Best Management Practices (BMP's) are not provided."
"Access road impacts are inconsistent"
"Request to Review GPP"
"Sediment and erosion control measures are not effective"

Response 159: Please see Section A. Response 1. Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to certain roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs, widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways will be controlled with drainage channels, broad based

dips, and waterbars. Additional BMPs would be installed as necessary to prevent potential uncontrolled release of sediments.

In addition, in areas where streams parallel the access roads, the roads have been shifted to avoid placing fill within the streams. Erosion and sediment control BMPs are also proposed along the access road. The slope of the roads will be constructed to drain to the inside, away from the road. The drainage will then be directed to a culvert, to controlled discharge locations. It is also worth noting that first order streams, due to their ephemeral nature do not typically provide habitat for juvenile fish to live and do not interact with groundwater. By definition ephemeral channels have flowing water only during, and for a short duration, after a precipitation event.

All streams within 300 feet of the project centerline have been identified and are illustrated on the erosion and sediment control plans. On properties where access has not been granted, the applicant and the WVDEP having completed a desktop analysis to identify potential wetlands and streams. These streams will be field verified by the applicant once access is granted.

The applicant has provided all of the required information in accordance with the General Water Pollution Control Permit, Section G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. In accordance with G.4.e.2.B, the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed. The applicant has also provided information necessary to provide a technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the Erosion and Sediment Control Detail Sheets included with the General Water Pollution Control Permit application.

In accordance with Section G.4 of WVDEP's Water Pollution Control Permit the GPP is not required to be submitted to the Division of Water and Waste Management for reviews. It is to be developed and maintained on site. However, due to comments received the WVDEP has required the applicant to submit the GPP to this office for review.

The applicants Stormwater Pollution Prevention Plan (SWPPP) identifies the BMPS that will be used to protect surface and groundwater resources.

Comment 160: I write in support of the Mountain Valley Pipeline (MVP) project and urge approval of the State 401 Water Quality Certification, Natural Streams Preservation Act Permit, and the Oil and Gas General Water Pollution Control Permits.

The Project will provide for transportation of prolific natural gas supplies to Station 165, the pooling point for natural gas in Transco Zone 5, where this natural gas can serve the growing demand for natural gas use by industrial users and power generation facilities along the Eastern seaboard.

Benefits of the MVP include: economical access to new sources of natural gas supply from the Appalachian Basin production regions by natural gas markets in the Mid-Atlantic, southeastern, and Appalachian regions of the United States, and for new and existing electricity generation facilities to obtain access to greater sources of cleaner burning natural gas supply. This in turn would create opportunities to improve regional air quality.

The current routing of the project resulted in the Roanoke Gas Company (Roanoke Gas) becoming a Project shipper and requesting a specific tap location to support its LDC system's growth and expansion. Roanoke Gas' involvement as a shipper and its site-specific delivery point are concrete evidence of the Project's purpose and the need to provide opportunities for economic growth and development along the route of the Project.

Minor route modifications were made to avoid or minimize potential impacts to major waterbodies and wetlands, specifically palustrine forested and palustrine scrub-shrub wetlands. MVP will adhere to the FERC "Plan and Procedures" for pipeline construction thereby minimizing impacts. Additionally, MVP has implemented Erosion and Sedimentation Control Plan best management practices for the entire Project. Where practicable, activities were located and designed to avoid stream and wetland impacts. Many streams and wetlands will be protected by Erosion & Sedimentation BMPs. Many streams that need to be crossed during construction will be spanned entirely by temporary stream crossing structures. There will be no permanent unmitigated stream impacts. Some impacts to wetlands are unavoidable. Timber mats will be utilized during construction to cross wetlands, resulting in temporary impacts to wetlands. There will be no permanent impacts from the placement of fill in wetlands habitat.

Please approve all related environmental permits for the Mountain Valley Pipeline

Response 160: The WVDEP appreciates your interest in the Mountain Valley Pipeline Project and your comments regarding some of the purported economic, and energy producing aspects of the project. See also Section A. Response 6.

Comment 161: The demand for energy in this country is growing substantially every year and does not look to be slowing any time soon. As we look to resources to meet this rising demand, natural gas has proven to be the most viable option. This clean-burning source is reliable, cost-effective, abundant and best of all — it's found right here in our own backyard. Americans are ready for complete independence from foreign oil, and while renewable energy is a respectable long-term goal, we are not at a point where renewables are a viable option. Families simply cannot afford the costs, and our power grid cannot bank on an unreliable power source that is unable to meet our current power needs, let alone the power demands of future generation.

The Mountain Valley Pipeline will bring affordable, clean natural gas to families and small businesses in Virginia and West Virginia. This will offer much-needed new job opportunities for our hard-working men and women, while providing a welcomed and overall economic boost to the region.

I believe that we should all be committed to creating jobs for our dedicated labor force. Mountain Valley Pipeline is a multi-billion-dollar private investment in our region's energy infrastructure,

providing an opportunity to put thousands of Americans in our region to work and helping millions of residents to gain access to affordable, reliable, environmentally responsible and domestically produced energy. The benefits associated with Mountain Valley are exactly why elected officials work so hard to develop strategies for safe and responsible pipeline developments that will bring resources to markets throughout the region.

It is crucial that our elected officials and decision makers fully recognize the significance of this critical energy infrastructure project in order to secure the economic and energy future of Virginia, West Virginia and the surrounding region. Please support Mountain Valley Pipeline and encourage the completion of this critical project without delay.

Response 161: The WVDEP appreciates your interest in the Mountain Valley Pipeline Project and your comments regarding some of the purported economic, and energy producing aspects of the project. See also Section A. Response 6.

SECTION C. Oral Comments and Responses

Comment 1: I am now a resident of Monroe County and when I became aware of the route of the pipeline across Peters Mountain, I was concerned about the impacts of such a large disturbance on a fragile karst topography and hydrology.

Layers of limestone and dolomite outcrop along the contour of the eastern flank of Peters Mountain, the western plank of Peters Mountain, has water runoff from the precipitation events flows off the mountain and encounters these bands of limestone and dolomite and goes underground via solution cavities, caves and sinking streams and resurges in other locations as springs, and these springs are used by individuals for their water supply, but in particular the Red Sulphur Public Service District uses these springs as their primary and secondary water supply. Trying to control erosion using the guidelines set forth in the general stormwater permit would be woefully inadequate for such a large disturbed area. Regardless of the extent of the sediment control system, the disturbance will continue to produce settable and suspended solids until the area is reclaimed, stabilized and a permanent vegetative cover.

It would not be appropriate to issue a General Stormwater Permit for the area that includes Red Sulphur Public Service District's spring recharge area. An erosion and sediment control plan relying upon the guidelines outlined in a General Permit would not be adequate. An Individual Stormwater Permit requiring site-specific erosion and sediment control plan should be required for that area in order to control settable solids, suspended solids and contaminants.

Response 1: Please see Section A. Response 3.

In the vicinity where the proposed alignment traverses Peters Mountain, the Red Sulphur Public Service District (PSD) provides public water. The proposed alignment is approximately 4 miles from the primary water source (Coburn Spring) for the PSD, and approximately 1,500 feet from a secondary source (Rich Creek Spring, which is the headwaters for Rich Creek, and the PSD has a surface water intake approximately seven (7) river miles from the proposed alignment). These water sources are located on the northwest flank of Peters Mountain.

It is the WVDEP' understanding that the applicant is working with public water suppliers to establish water supply contingency plans for those suppliers having water sources located within 3 miles downstream of a water body crossing, or within 0.5-mile of a ZCC.

Also, please see Section B. Response 4.

Comment 2: … MVP has 600 crossings I think in this pipeline proposal, and they submitted a template for, you know, one size fits all when commonsense would indicate that each one of these

things has to be engineered, site specific. That is also applicable to some of the runoff proposals that they have made that they weren't going to cut it basically.

Response 2: Please see Section A. Response 4.

Comment 3: So my first comment is since you guys know this is a stream crossings and stormwater permits, but you guys are also in charge of groundwater, and I managed a bottle water company for 24 years, and I'm pretty well familiar with the challenges of protecting springs and groundwater, and in the draft DEIS that was issued in September on page 4.73, Table 4.3.1-2 springs and swallets identified within 500 feet of the MVP construction work area, there is not one spring listed in Monroe County in this whole table, and I will submit this to DEP, but as you can see, there is numerous springs all along Peters Mountain from the north end 20 all the way to the southern end, and then we have 38 springs within a five-mile area located along the Ellison's Ridgeand the Hans Creek valley. But MVP for some reason couldn't find any of them.

Also, on page 4-76 under the wellhead 1 and source water protection area, it states that the pipeline will cross approximately two miles above the Big Bend PSD river intake, which is in their zone of critical concern, and will cross the Red Sulphur PSD source water protection area, and within .25 miles. So there's a critical concern. Now, this is people's drinking water we are talking about so I would request that DEP require a much greater distance than .25 miles or two miles above somebody's public drinking water supply.

Response 3: Please see Section A. Response 4.

It is DEP's understanding that Mountain Valley met with the Big Bend Public Service District (PSD) on August 25, 2015, March 17, 2016, and again on August 30, 2017 to discuss the Mountain Valley Pipeline Project, and address the PSD's concerns. The March 17, 2016 meeting and August 30, 2017 meetings also included Mr. Troy Wills, District Engineer for the West Virginia Department of Health and Human Resources who assists the PSD. Mountain Valley prepared a Water Supply Contingency Plan in cooperation with the PSD, dated September 6, 2017. The PSD accepted the Plan via its signature on September 14, 2017. DEP has received and reviewed this document.

Comment 4: Then, Draper Arden, who is MVP's karst specialist team, in a report of December, 2006 states and submits to FERC that in July 2016 report there is a concern that pipeline construction will affect Indian Creek, Hans Creek, Dixie cavern and Goodwin cave, and this is a quote in their report. "All of these resources are separated from the project by a distance of one mile or more."

Well, the pipeline crosses Indian Creek at milepost 182.2 and crosses Hans Creek at 187.6, but the karst specialist, MVP's contractor, says it doesn't come within a mile of either one of these streams.

On page 9 of the erosion and sediment control plan, it mentions Summers County as having potential karst features but does not mention Monroe County as having karst. Draper Arden, who is MVP's karst specialist wrote in their 2015 report regarding the Red Sulphur PSD. This highly karsified and fractured nature of bedrock presents stability challenges to construction activities. The karst and cave resources and their hydraulic patterns were poorly documented.

Draper Arden also states in the report that the Rich Creek Cave, the headwaters of the Red Sulphur PSD surface water intake potentially extends easterly to areas below the pipeline route. Now, this is MVP's karst specialist team saying that there's a cave that probably goes underneath the pipeline route that is the headwaters to the Red Sulphur PSD's surface water intake that supplies drinking water to over 5,000 residents in southern Monroe County. So the DEP should take a note of that.

The erosion and sediment control plan on page 18 states in number six, the preconstruction drainage surrounding the project will be maintained. All disturbed areas within the pipeline land of disturbance will be restored to a meadow in good condition. As a result of restoring the pipeline land of disturbance and associated work spaces to a meadow in good condition maintain preconstruction drainage patterns, there will be no increase in stormwater runoff rate or volume.

So my question to DEP guys, if you remove 125-foot swath of trees on a slope, on a run that's 800-foot going up above Indian Creek with a 35 degree plus slope heading to the stream bank, excavate a ditch eight to 10 feet deep and wide, compacting the soils in the process, install pipeline and then compact the soil over the pipeline, how is this maintaining preconstruction drainage patterns, and how would this not impact the recharge area of that watershed? How can that compaction and the removal of the trees not affect the volume and velocity of the water?

Then on attachment --the same report on the soils report, it says that Indian Creek crossing the slope is 35 to 60 degrees, and the depth of bedrock is 41 inches. On the Hans Creek, which is milepost 187.6, the slope is 25 to 35 percent, and depth to bedrock is more than 84 inches. Now that is such BS. I will challenge anybody in this room to come with a posthole digger and try to dig a foot and a half in the ground anywhere in the Hans Creek valley or the Narrows of Hans Creek because it is not going to happen.

Trying to limit streamlines for almost a year in Hans Creek, Narrows to Hans Creek and Indian Creek, and Hans Creek is solid bedrock. So, MVP once again is supplying the DEP with false information about the area and the challenges these guys are going to face.

Then on page 4-98 of the DEIS Table 4.3.2-8, waterbodies crossed by MVP in areas of shallow bedrock, Hans Creek is not even included in the chart. It's a creek that is solid bedrock, and they don't even have it in their charts, and they are going to have a major crossing and steep slopes in that area.

They also state in their erosion and sediment control plan that if there is a rain event that has a half inch of rain or more in a 24-hour period, that they would have to do an inspection within 24 hours, and my question to DEP is, does DEP do that inspection or does MVP's own contractor do that inspection, and then give you guys a rosy report?

And page 16 and 17 of that same erosion and sediment control, it says that DEP will have an inspector on site during construction at each stream crossing, access road or temporary work space within 50 feet of a stream to ensure/enforce that no equipment will ford a flowing stream.

So when these guys are doing a stream crossing where the DEP has an inspector on site at each stream crossing to make sure these guys don't go around there or their temporary bridge and go trucking a dozer through the creek spilling hydraulic fuel in our creeks.

Response 4: Please see Section A. Response 3.

In the vicinity where the proposed alignment traverses Peters Mountain, the Red Sulphur Public Service District (PSD) provides public water. The proposed alignment is approximately 4 miles from the primary water source (Coburn Spring) for the PSD, and approximately 1,500 feet from a secondary source (Rich Creek Spring, which is the headwaters for Rich Creek, and the PSD has a surface water intake approximately seven (7) river miles from the proposed alignment). These water sources are located on the northwest flank of Peters Mountain.

It is the WVDEP' understanding that the applicant is working with public water suppliers to establish water supply contingency plans for those suppliers having water sources located within 3 miles downstream of a water body crossing, or within 0.5-mile of a ZCC.

Comment 5: On karst, we have a mountain that's going to be denuded of trees right into karst, we will have a tremendous amount of sedimentation.

They dismiss things that shouldn't be dismissed. We had multiple die tracings done. All went into a very protective cave and a significant biodiverse area, and they just dismissed it in their response saying there's no need for dye tracing.

Response 5: Best Management Practices established in the Erosion and Sediment Control Plan, and the Karst Mitigation Plan are designed to prevent uncontrolled releases to surface waters and karst features in order to protect the underlying aquifer. Mountain Valley made several major, and hundreds of minor route adjustments to avoid karst features and sensitive water resources that were identified in the Karst Hazards Assessment. Additionally, Mountain Valley will deploy on-site inspectors during all phases of construction to monitor karst resources and ensure that prescribed measures are in-place to prevent uncontrolled surface water releases, prevent impacts to karst features, and

therefore protect groundwater. These measures, in concert with exclusion buffers, will minimize potential impacts to surface water in karst terrain.

Mountain Valley's Karst Specialist Team (KST) is well aware of past dye tracing study results in the Mount Tabor area (the most recent being 2016). These traces demonstrate the dominant karst water flow paths toward Mill Creek Cave and Spring. Mountain Valley has taken all these studies into consideration when designing the proposed alignment to avoid sensitive karst features and minimize potential impact to the karst hydrologic system. Additional dye tracing is not needed because the existing trace results, and the KST's knowledge of the geological setting, already combine to provide a reasonably well defined delineation of the contributing watershed.

Comment 6: …what, if any, testing has been done to protect the macroinvertebrates that live in our waterways.

As many of us know and have been taught by DEP, macroinvertebrates can be destroyed through sediment. When the creek beds and the hillsides let loose soil, rock it covers up the places where the macroinvertebrates live, and without macroinvertebrates, there will be very few frogs, birds, turtles, and without that part of our environment, what good are the people?

In looking at all this, when access roads and pipelines are drilled on these steep terrains, especially in weather like we have tonight, slippage is going to occur, and with slippage, as probably most of you have seen, comes rocks coming down. rocks coming down. If you go on Route 20 between Hinton and Athens, it's pretty darn scary. Big rocks, little rocks come down…So how are the people going to be protected?

When environmental degradation occurs, what is DEP's plan of action going to be?

Response 6: Mountain Valley has reduced crossing widths in streams and wetlands to 75-feet during construction. Increased E&S BMPs will be utilized around sensitive resources such as streams and wetlands. Reroutes and shifts around forested wetlands and scrub shrub wetlands have also been incorporated into the proposed alignment to reduce potential impacts. In addition, potential impacts to sensitive resources will be reduced by adhering to seasonal restrictions (for restricted streams) and planning construction during low-flow conditions. During construction, the existing stream substrate is separated and stockpiled. After the pipe is installed the pipe trench is backfilled and the stream material is the last material restored. This technique returns the native stream material to the stream channel, restoring the substrate and macroinvertebrate habitat.

Mountain Valley has addressed slope stability for the project via the Landslide Mitigation Plan (LMP). The LMP presents typical details to be employed during construction to minimize the risk of earth movement and specifies the use of these mitigation measures at predetermined locations along the pipeline. The mitigation measures are generally

consistent with those recommended in INGAA's Mitigation of Land Movement in Steep and Rugged Terrain for Pipeline Projects, which presents best management practices for landslide mitigation in the Appalachian region.

During construction, geotechnical inspectors will be deployed to identify additional areas, not already specifically addressed in the LMP, where the landslide mitigation typical details should be implemented. The geotechnical inspectors, in conjunction with Mountain Valley engineers, will develop additional mitigation measures to address slope stability as necessary based on subsurface conditions revealed during construction.

Comment 7: Ultimately all water that drains, it goes to the ocean. When it follows there, it follows a meandering path, and if we are cutting across and taking out the meandering displacement and just piling extra sedimentations in there, there are organisms such as our mussels, our freshwater species will be suffocated, and then we won't have our conveyor belt of crayfish. We have two endangered right now due to coalfields, like pollution and stuff.

But if we decrease like the trees that are around our streams, then we are decreasing the energy input that we put in them. So, therefore, like our crayfish won't use leaves and our mussels can't filter out the different things and they become suffocated and then die, and we lose our ecological food chain therefore.

If you remove the trees, they will have more sunlight to grow. Ultimately you have like increased things like that, and then so I have a concern about how much we know about the geological record in our streams, because in history there's been geological like black outs of phytoplankton, and then who's to say that those weren't toxic species have been dormant, and then so --who's to say that they weren't toxic species, and then we erode them and go back into our stream sediments, and then we become poisoned by those toxic species.

So, that's what I have to say about that, and then ultimately like we don't consider groundwater as well, and Peters Mountain underneath, they have a fault line. So who's to say if we don't mess that up, what if we reverse the direction of the northward flow if the transverse fault were to go through like if a fracking event were to happen, and then ultimately water goes from higher elevation to lower elevation.

Response 7: Mountain Valley has reduced crossing widths in streams and wetlands to 75-feet during construction. Increased E&S BMPs will be utilized around sensitive resources such as streams and wetlands. Reroutes and shifts around forested wetlands and scrub shrub wetlands have also been incorporated into the proposed alignment to reduce potential impacts. In addition, potential impacts to sensitive resources will be reduced by adhering to seasonal restrictions (for restricted streams) and planning construction during low-flow conditions. During construction, the existing stream substrate is separated and stockpiled. After the pipe is installed the pipe trench is backfilled and the stream material is

the last material restored. This technique returns the native stream material to the stream channel, restoring the substrate and macroinvertebrate habitat.

Comment 8: I am going to address the MVP's application for a permit to cross the 20 Greenbrier River, a West Virginia Tier 3 stream with protection under the Natural Rivers Preservation Act. The materials presented in the current application for exemption from the restrictions posed by the Preservation Act do not justify installing the pipeline. There are four major areas of problems that I am going to address.

The aquatic resource report supporting the application is invalid as an assessment of the crossing. The report is dated January 2017, but claims that the supporting data were gathered on April 14th and 15th in 2015 from a 300-foot study corridor centered on the pipeline crossing. However, the 2015 data sheet, which is included in the appendix to the report, locates the study about 1,550 feet downstream in a section of the river that is very different from the pool where the crossing site is located.

The stream data sheet describes the area as forest, and as long as you are standing on the edge of Route 312 with your back to the mountain, the forest is behind you, but across the river there's about 35 acres of agricultural land. So the observations were not real keen. They do observe that the riverbanks in the area are ten feet high, but then they say the water depth is only 15 inches. They close the report by noting Greenbrier River is currently flooded above bank full. How they estimated a 15-inch depth, I'm not quite sure. I did check the USGS data for April 15th. It confirms the river was running at a 23,300 cubic feet per second, which is usually a discharge for a gauge height of about 11-and-a-half feet.

Despite the fact that they were facing about 15 feet of water, they managed, they claim, to study the inorganic substrates at the crossing site. They came up with the interesting data, but they did indicate that bedrock only represents about 15 percent. That's a powerful piece of information. It would have been a much higher percentage had they been at the crossing site and there hadn't been a flood. The data in that report is irrelevant to the crossing site, and was probably just made up.

The crossing site plan is inappropriate to the actual site conditions. The crossing plan is based on information in the Vertical Scour and Lateral Channel Erosion Analysis, which is included as an appendix. That document states the depth to bedrock at the crossing site is 6.6 feet, and they say that MVP intends to buy the pipeline at that depth because bedrock stops scour, and therefore it's safe to put pipeline at that depth. This leads to some interesting problems. The bank is ten feet high at the site. It might provide six feet of soil in depth to bedrock, but the streambed of the river at the foot of the 10-foot bank is bedrock all the way across. That's an observation that's confirmed by a geologist who studied the area, and also by the SSURGO database. It's bedrock. An interesting problem.

MVP's plan to bury the pipe at 6.6 feet is not going to work. It will come out of the bank at the level of the river, not at the level of the riverbed. My calculations show that the bottom of the trench is going to have to be approximately 25-and-a-half feet below the level of the surface of the valley at the bank level in order to achieve the things that MVP has to supply. The basic depth of the river at the deepest part of the river at that crossing is seven feet. They are permitted by federal regulations to provide another four feet over the pipe to ensure that it's a safe and navigable waterway.

They've got an engineering plan but it isn't based on the right data. It's a nice plan. The drawings are very elegant. Third, the installation is going to require an armor layer, but that's going to interfere very likely with recreational boating.

The scour study says scour in the river at flood stage can draw the bottom up and churn it away for a depth of about 10.4 feet. This suggests that when you expose the pipeline and fill it in with all that crushed rock, you are going to have to cover that destroyed area with something or it will wash away.

The scour plan says the particles used for that will be big enough not to wash away in a flood.

All right, average flow estimated by MVP now is 100,000 cubic feet a second. That's what they are going to say they've got to plan for. You are going to have to have rocks about the size of a pickup truck. This is a stream that is being preserved as a free-flowing stream. You plant pickup size rocks across the bed of the river just below a very shallow river, ain't nobody going anywhere. It violates the very essence of the preservation act.

Finally, the application doesn't ever make mention any details about any of the predictable negative impacts of construction. The application indicates that all impacts will be limited to the period of construction. This is not possible. Long-term, permanent impacts from the project include the construction of bedrock in the crossing area is about 40,000 square feet of
area. It angles downstream from the northwest bank.

This crossing geometry is almost guaranteed to direct stream flow against the southeast bank, which is already heavily damaged by erosion. It is more than likely to create an increase in sedimentation throughout the area below the crossing.

Crossing construction will also require the destruction of 98 feet of mature trees on the north bank. The roots of those trees are the only thing that has been holding that bank in place through the multiple floods of the last 40 years.

There are severe permanent and long-term impacts from construction that are not analyzed in their application and need to be fully explored with empirical data that says the amount of sediment generated is likely to be this. They can do that. They've got proposed mitigations. Well, at least they could hold off 85 percent of that sediment.

Response 8: In regards to concerns on downstream measurements, the estimated depth of 15-inches was a typographical error and should have stated a depth of 15-feet at the time of the survey, which was conducted when the Greenbrier River was flooded above bankfull between April 14, 2015 and April 15, 2015. Please note that the environmental information was collected from the south bank of the stream only due to access restrictions at the time along the north bank. The point of the "observation" on the south bank is approximately 150--feet downriver from the crossing and the entire area was surveyed from approximately 500-feet upriver to over 2000-feet downriver from the crossing.

Depth during normal flow was obtained during a mussel survey that was conducted by Mountain Valley consultants in September 2015. This mussel survey was conducted at the crossing location and identified an average water depth of approximately 2.9 feet with a maximum depth of 11.8 feet at the river bend. This mussel survey with depth information has been submitted to WVDNR. Based on multiple site visits, Mountain Valley is confident that it has a detailed understanding of the crossing and potential issues associated with the Greenbrier River.

In regards to the comments concerning the crossing, the scour depth for the Greenbrier River is 12.5 feet. However, scour is limited due to bedrock depth as explained in Section 5.1 of the Vertical Scour and Lateral Channel Erosion Analyses. Therefore, Mountain Valley plans to install the pipeline into bedrock at an estimated depth of 6.6 feet. Mountain Valley will maintain the depth of cover to be below the calculated scour depth or into bedrock in accordance with the scour analysis. Once the pipeline is out of the Historical Migration Zone as stated in Section 5.2 of the scour analysis, Mountain Valley will use fittings (weld elbows) to bring the pipe to a minimum of 3 feet of cover.

The proposed Greenbrier River crossing will have temporary impacts during construction that will temporarily restrict using approximately half of the river width at the crossing site. The installation process will include installing approximately one half of the crossing, completing required stream restoration in that area and then switching to the other side of the project to install the system and complete the project accordingly. In addition to the E&S BMPs that will be onsite during construction, a site specific spill response plan will be developed and an Aid to Navigation (ATON) will be prepared to provide public information on construction, instream activities, and any potential user restrictions during construction at the Greenbrier River. Long term, permanent impacts are not anticipated with this project. The river bed will be restored and changes in flow are not anticipated. The adjacent banks will be immediately graded, seeded, and mulched. Inspection will occur in this area and the entire area in accordance with the approved WVDEP issued permit.

Please also see Section B. Response 129.

Comment 9: First, data in the 401 application of December 2016 did not match the data reported to FERC in February 2017. A good example of that, which Dave Witt has already referred to, the 401 application list 631 stream crossings, with 343being for the right of way. Now, the data given to FERC in February list 858 crossings, which is an increase of 227, and now only 275 are for the right of way. Who knows which ones are right, but that needs to be straightened out.

The second point. Data in the 401 application concerning crossing lengths are incomplete and again inconsistent. Crossing lengths are included in Table 5.2 that are absent from Table 8.2. Now, the information is needed to work out the crossing geometry that Thomas Bouldin was just talking about with regard to the Greenbrier River, but you've got to have that for every single crossing of every single creek, and you need that kind of information and not just for the geometry but for the area of streambed disruption, and for the extent of bank-side damage.

MVP's treatment of crossing lengths has been inconsistent throughout this whole FERC and application process. Now of special concern is that listing, as they often do, only the number of streams crossed obscures the fact that they cross many of these streams over and over again. If we don't have the crossing lengths, important data is missing to calculate all sorts of potential impacts. Just for one quick example, Lick Creek over in Summers County, which is a tributary to the New River, and as we were hearing earlier, that's going to take it straight on down to the Gulf of Mexico. The 401 application says that MVP will cross Lick Creek 13 times for a total linear impact of 747 feet. That's what they are telling the DEP.

I think they must have decided that was dangerous. The material they submitted to FERC in 2017 only five crossings are identified for Lick Creek with only one being given a crossing length of 15 15 feet.

Now, omitting all discussion of crossing lengths from discussion has allowed MVP to reduce the appearance of impacts. For example, between February 2016 and February 2017, the estimated total crossing length reported to FERC for intermediate and major water bodies, again much less all the little trout streams and the rest of it, the estimated crossing length declined by two-thirds from 11,562 feet to 3,829-and-a-half feet. Now, all of the relevant crossings have changed very little.

A third point. The 401 application --again, you've heard this before. The 401 application lacks empirical data on many significant impacts. Stating that temporary linear impacts will total 38,431 feet on Table 5.1 tells us nothing at all about what these impacts might include; how severe they might be estimated to be; how long they will endure.

To be of any use at all to any kind of reasonable engineering or scientific decision making, the application needs specifics on such issues as increased long-term turbidity, sedimentation from changes in bank and bed structures, reduced mature bank side vegetation, increased spawn temperatures from cutting down all the trees around the creek, destruction of spawning and nursery habitats, increased runoff from the right of way and construction easement clearance.

Moreover, such issues should be reported on a site-to-site basis, and, and this is maybe more important, on a cumulative watershed basis. This brings us to my fourth and final point with regard to watershed impacts. The 401 application lacks any substantial mapping of local watersheds from which to estimate cumulative impacts.

Indian Creek has --I mean, given how small it is in the big scheme of things, has a rather large watershed. It's all going to have impact from pipelines running along on tops of ridges and stuff washing down on both sides. Multiple crossings within a single watershed, including crossings of first order streams, seats and the femoral streams that feed intermittent and perennial flows, can result in impacts that will accumulate as you work down the watershed, and that these have to be mapped and then analyzed with some kind of real analytically useful information.

Response 9: Please see Section A. Response 4.

Comment 10: Deficiencies. The 401 application lacks discussion of any permanent and/or long-term impacts, and also lacks any empirical examination of mitigation designs or mitigation effectiveness in comparable applications.

The 401 discussion of trout streams is incomplete and inconsistent. The text states that there are 63 crossings of trout stream waters, but the appendix identifies only 24. These 24 crossings affect nine separate stream watersheds. However, earlier MVP submissions to FERC identified eight watersheds so affected, only one of these appears in the 401 application, although MVP's February 2017 submission to FERC identified 103 crossings still taking place in these eight stream watersheds. It kind of takes your breath away.

Furthermore, the discussion lacks any information on stream impacts. Runoff, turbidity, increased stream temperatures, how our trout and our bass will air; how our recreational industry, can wecall it, will fair.

The discussion of crossing designs in the 401 application give inadequate consideration to the issues of bedrock. MVP has identified --had defined shallow bedrock as anything under seven feet, which prevents attention to the many areas where bedrock is either at the surface of the streambed or often as shallow as seven inches. This results in confusing standards in the discussion of depth of cover for the pipeline. This is a safety issue for the pipeline itself, as well as our streams, as well as those of us who live close by.

These confusing standards in relation to depth of cover for the pipeline, mitigation in cases of shallow bedrock and such issues as the use of armor layers to prevent scour damage. An example is in the discussion of the Greenbrier crossing where surrounding soils are fairly deep. But contrary to what MVP has maintained, bedrock is at the surface at this crossing.

The 401 application contains inadequate discussions of the extent of potential blasting and the various impacts resulting from blasting and other excavation techniques on subsurface water movement, and the implications for our private water resources, and on the Big Bend Public Service District in Talcott.

Missing from the application is an accounting of private wells and springs. Along the proposed MVP route in Summers County, with the exception of the approximately 700 households served by the Big Bend PSD property owners depend on private wells and springs for our homes and for our farming and for our small business operations. Potential impacts to these resources must be identified.

Finally, the route for the proposed MVP has not been finalized or approved by FERC. The 401 permit application is for the route MVP wanted to see happen in December 2016. Not until FERC has released the environmental impact statement will we know what route changes FERC may recommend.

In addition, MVP is currently responding as we speak to post-draft environmental impact statement request for supplemental data from FERC. The 401 application demonstrates that it is premature for MVP to submit an application. Neither DEP nor FERC have to date been provided reliable, adequate data that would enable either agency to responsibly assess the environment impacts of the project on our water resources.

Response 10: Please see Section A. Response 4.

Impacts to high quality streams are reduced to the fullest extent practical and minimized by using instream diversions during construction, performing constructing activities during low flows, avoiding the streams during seasonal restrictions, and using more stringent E&S BMPs around the resources. The streams will be restored to preconstruction conditions by using approved construction techniques.

Where possible, the applicant has reduced crossing widths in streams and wetlands to 75-feet during construction. Increased E&S BMPS will be utilized around sensitive resources such as streams and wetlands. Reroutes and shifts around forested wetlands and scrub shrub wetlands have also been incorporated into the proposed alignment to reduce impacts. In addition, impacts to sensitive resources will be reduced by adhering to seasonal restrictions (for restricted streams) and planning construction during low-flow conditions. During construction, the existing stream substrate is separated and stockpiled. After the pipe is installed the pipe trench is backfilled and the stream material is the last material restored. This technique returns the native stream material and associated benthic organisms to the stream.

Comment 11: There's no springs in the pipeline corridor. That was in April of 2015. I showed them the springs. An alternate work area, they go across Ellison's Ridge Road there. There's

actually two streams there they will impact. One is called Clayton Run. The other one I have named the Shanklin Farm. They come right beside the road. There's an alternate work area. There's another branch of the Clayton Run that they are going to be right beside. So they are going to impact three springs, three streams, and a spring in the middle of the corridor. Five springs really close, really close. One major spring.

As Howdy said there's no springs in Monroe County. In July of that year another crew comes through. We find another spring in the middle of the corridor. They are the ones found that one.

There's no way you could put a pipeline right down through there and not impact that artisan spring on top of Ellison's Ridge.

There's a historic spring on the top of Peters Mountain.

Response 11: On accessible properties, Mountain Valley has delineated wetlands in accordance with the USACE Wetland Delineation Manual (1987 Manual; Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (USACE Regional Supplement; Environmental Laboratory, 2012) U.S. Fish and Wildlife Service's (USFWS) Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al., 1979), A Hydrogeomorphic (HGM) Classification for Wetlands (Brinson, 1993), and USACE Waters Type (USACE,2007). Streams identified in the field were classified by Flow Regime, USACE Water Type (USACE, 2007),Cowardin Classification (Cowardin et al., 1979), and WV DEP Water Quality Standard Antidegradation Policy tier classification.

Aquatic resources will be protected during construction using state approved BMPs including but not limited to compost filter socks, silt fence, belted silt fence, and water bars. MVP has submitted appropriate state and federal permit applications. MVP is committed to implementing these permits, the associated permit conditions, and mitigation and restoration plans to reduce or eliminate potential impacts to environmental features including stream and wetlands.

On non-accessible properties a desktop evaluation was conducted to determine the likely presence of aquatic resources. Mountain Valley used available Geographic Information Systems (GIS) data to interpret site conditions and evaluate the likely presence and approximate locations of wetlands and waterbodies. The data used included:

- **US Department of Agriculture (USDA) National Agriculture Imagery Program (NAIP) color infrared (CIR) imagery at 1-meter resolution**
- **USFWS National Wetland Inventory (NWI) mapping (USFWS, 2009)**
- **Natural Resource Conservation Service (NRCS) Soil Survey mapping (NRCS, 2014)**
- **Light Detection and Ranging (LiDAR) survey data showing 2-foot topographic contours**

- **USGS 7.5-Minute Topographic Maps (USGS, 2009)**
- **Google Earth aerial imagery (current and historic aerial imagery)**
- **National Hydrography Dataset (NHD) mapping (USGS, 2015)**

Once access is granted, all appropriate investigations will be conducted to identify aquatic resources.

Comment 12: Both Indian Creek and Rich Creek are tier-3 streams. Over the past two years we have sent West Virginia DEP and FERC information about specific deficiencies in MVP's application related to water resources in Monroe County.

Our county has karst, steep slopes, weak soils, shallow bedrock, you name it. Nearly all of the landowners along the pipeline and their neighbors rely on private wells and springs for their drinking and agricultural needs.

MVP, again as you've heard, goes through the zone of critical concern for the Red Sulphur PSD in a region that has known karst features. Our repeated requests have been of both FERC and state agencies that, one, in-depth on- site independent hydrogeological studies of critical watershed areas should be required before issuing any decisions, especially in regions of karst and other complex geological features, and where construction of this nature and this scale will jeopardize public and private drinking water sources. Two, that the Army Corps of Engineers and the DEP should review the 404,
401 and stormwater permits not now, not until after FERC has issued a certificate of need and established a final route.

Three, that individual permits that include site-specific plans based on actual site visits are needed not a general permit based on desktop reviews and applicant supplied data. For example, based on the stormwater permit application, the narrative description is highly misleading, and in some cases flat-out false. Under the existing site conditions in adjacent areas, it describes the area as "agriculture, pasture hay, open-spaced grassland and forested land." Who would guess from that description that 78 percent of the route is through forests as reported in the DEIS?

Also, under critical areas as Howdy has mentioned, they cite oh, we've observed that in Summers County it will cross areas with the potential to contain karst features, but there's no mention of significant karst features in Monroe County, often called, I don't know, king of karst or whatever. Not included under critical areas as well as any reference to shale or bedrock, a recently revised table from MVP to FERC now puts it that 92 percent of the route in West Virginia will traverse shallow bedrock. What special measures will be used when blasting is required? What special measures will be protect the waters from the type of erosion and sedimentation that will occur?

The tables are also inaccurate or out of date. There's a soil map unit table that also makes it appear like the route is traveling through pastures and hay land with deep seven-foot well drained soils all the way.

In Summers and Monroe County most of the column titled ground cover is empty or says hay land. If it were filled in accurately, the forest cover that will be lost and the subsequent increase in soil erosion from current conditions would be more obvious.

Construction site plans are misleading. The tetratec construction plans do not include any mention of karst in the construction site maps from Monroe County, despite the fact that the contractor Howdy alluded to, Draper Aden, submitted fairly detailed, yet still desktop review analyses of karst features, complex karst features, at the base of Peters Mountain.

The plans also seriously misrepresent the amount of new construction that will be involved with access roads. Many, if not most, of these access roads where an existing road exists, may require expanding what is now perhaps an eight-to 12-foot trail or road, sometimes dirt, sometimes gravel, but the wording on these construction site plans, which are supposed to represent what is on the ground and what are the erosion protection controls to be put in place, usually a silt fence. But the site plan reads standardly in all of these, existing 25-foot temporary access road will be graded and maintained for typical section detail.

It implies unless somebody has come and looked that all of these access roads already exist as 20-foot wide semi-highways. The amount of serious excavation, soil displacement and new compaction that's going to occur with the access roads so far seems to have all of those details be hidden from the sight of the permit reviewers.

The access roads also I noticed don't have the same kind of representation of when there's a 30-percent slope, these construction sites for the right of way have a certain coloration and a certain legend, and you see okay, that's a 30-percent slope. For the access roads, there's nothing like that.

The reviewers are going to have to trust their assessment of the topographic lines. All of this is basically to say that the facts on the ground are different and much worse than the desktop data suggests. This is why we call for site visits. This is why a general permit for a 200-mile construction project will not protect the waters of West Virginia.

Response 12: Best Management Practices established in the Erosion and Sediment Control Plan, and the Karst Mitigation Plan are designed to prevent uncontrolled releases to surface waters and karst features in order to protect the underlying aquifer. Mountain Valley made several major, and hundreds of minor route adjustments to avoid karst features and sensitive water resources that were identified in the Karst Hazards Assessment. Additionally, Mountain Valley will deploy on-site inspectors during all phases of construction to monitor karst resources and ensure that prescribed measures are in-place to prevent uncontrolled surface water releases, prevent impacts to karst features, and therefore protect groundwater. These measures, in concert with exclusion buffers, will minimize potential impacts to surface water in karst terrain.

Note that Mountain Valley has met with the Red Sulphur PSD on several occasions, and is currently working on a detailed contingency plan with a third- party consultant to ensure no interruption to their water service will occur as a result of pipeline construction activities.

Aquatic resources will be protected during construction using state approved BMPs including but not limited to compost filter socks, silt fence, belted silt fence, and water bars. Mountain Valley has submitted appropriate state and federal permit applications. Mountain Valley is committed to implementing these permits, the associated permit conditions, and mitigation and restoration plans to help reduce impacts to environmental features including stream and wetlands. All permanently impacted streams and wetlands will be mitigated through existing mitigation banks or through WVDEP's In Lieu fee program. This mitigation approach is consistent with state and federal permitting requirements.

The stream crossing details provided in the 401 application show several different crossing methods– including portadams, cofferdams, dam and pump, flume and pipe, and temporary culverted crossings. The type of crossing will be determined during construction to provide the least amount of environmental impact to the resources.

An updated General Blasting Plan has been provided to FERC in a response to information request in February 2017. The Plan outlines the procedures and safety measures that the contractor will adhere to while implementing blasting activities

The soils information was downloaded from the Natural Resources Conservation Service, Gridded Soil Survey Geographic (gSSURGO) by State, Tabular and vector digital dataset. Available online at: https://gdg.sc.egov.usda.gov/. The data was accessed March 29, 2016.

Mountain Valley plans to use existing access roads where possible. Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to some roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs– widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent potential uncontrolled release of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways will be controlled with drainage channels, broad based dips, and waterbars. Additional BMPs would be installed as necessary to prevent potential uncontrolled release of sediments.

See also Section A. Responses.

Comment 13: The following deficiencies in the site registration application submitted by MVP include

(1) Deforestation in the proposed work corridor, access roads, pipe yards, and additional work areas will result in canopy loss, thereby causing increased stormwater discharge, reduced groundwater recharge and increased downstream stream bank erosion. Restoring the areas to meadows will not result in lower stormwater discharge amounts characteristic of forested land.

(2) Soil compaction if the proposed work corridor will create impervious areas resulting in increased stormwater discharge, reduced groundwater recharge and loss of soil functions, especially in headwater areas of first order high gradient streams, even if topsoil is placed over the compacted soil.

(3) Access road widths, stated 22 to be 25 feet in the SRA, are inconsistent with the 23 road widths, stated to be 40 feet as provided in the draft environmental impact statement submitted by MVP to the FERC. The impervious areas created by access roads will be greater in size if he widths are 40 feet rather than 25 feet.

(4) Section G.4 of DEP's General Water Pollution Control Permit specifies that a groundwater protection plan will be provided and that the groundwater means the water occurring in the zone of saturation beneath the seasonal high water table or any perched water zones. It is further specified in Section G.4.e.2.C.iii of DEP's General Water Pollution Control Permit that the applicant shall prepare a GPP that will satisfy the requirements of the groundwater protection rule, 47 C.S.R. 58§4.11. Although MVP is not required to provide the groundwater protection plan as part of its permit application, we request that a copy be made available.

(5) Seeps and springs associated with a perched groundwater table are specified to be dewatered for the proposed construction areas. Seeps and springs provide water necessary to maintain headwater areas in watersheds of first order high gradient streams.

(6) Baseline water quality analysis and sampling has not been conducted to evaluate the open-cut dry crossing of the Greenbrier River, which is a Tier-3 river and is a West Virginia Natural Stream, NRI listed.

(7) MVP has refused the requests made by US Environmental Protection Agency and FERC to conduct quantitative modeling for turbidity and sedimentation for the Elk, Gauley and Greenbrier River crossings, including an analysis of the duration, extent and magnitude of turbidity levels and an assessment of the potential impacts on resident biota.

(8) MVP has not provided an analysis of sediment released during construction activities, such as that provided by the Universal Soil Loss Equation or the Revised Universal Soil Loss Equation

developed by the U.S. Department of Agriculture Natural Resources Conservation Service to evaluate the increase in sediment to streams and rivers resulting from the increased stormwater discharge.

(9) Drainage areas are not delineated on the construction plan sheets.

(10) Drainage direction arrows are not shown on the construction plan sheets except along silt facing locations.

(11) It is stated in Section G.4.e.2.B of DEP's general water pollution control permit that the permittee shall submit all watershed mapping necessary to explain the technical basis for the stormwater management plan. However, watersheds are not delineated on any MVP maps.

(12) Drainage basin areas used in the scour analyses are inconsistent with functional watershed sizes for streams proposed for crossings.

(13) It is stated in Section G.4.e.2.B of DEP's general water pollution control permit that the permittee shall submit all calculations necessary to explain the technical basis for the stormwater management plan. However, MVP has not provided engineering calculations for sizing best management practices.

(14) Scour analyses do not provide post-construction estimates of sediment released by scour to downstream areas.

(15) MVP has not demonstrated by evidence of calculations and evaluations that the proposed BMPs are adequate to prevent significant sediment quantities to be released by receiving streams and rivers.

(16) It is stated by DEP in Section G.4.e.2.A.ii.b of the general water pollution control permit that for drainage areas of greater than five acres a sediment basis providing 3,600 cubic feet per drainage acre shall be installed. Half of the volume of the basin shall be in a permanent pool and half shall be dry storage. Sediment basins must be able to dewater the dry storage volume in 48 to 72 hours. A sediment basis must be able to pass through the spillways a 25-year 24-hour storm event and still maintain at least one foot of freeboard. However, sediment basins and traps are not included as a part of the MVP best management practices.

(17) MVP's landslide mitigation plan addresses mitigation measures associated with unstable soils overlying bedrock where the bedrock is known to be associated with landslides. It is further stated by MVP that additional mitigation measures, such as buttressing, are not anticipated. MVP describes buttressing as an earth, rock or riprap fill buttress in front of an unstable slope that will increase the weight of the material at the toe of the slope, thereby increasing the slope stability factor of safety. This method is used on unstable slopes in highway construction. The description fails to specific that the buttress must be keyed in to solid material at the base.

(18) The MVP landslide mitigation plan does not address the bedrock orientation or the orientation of fracture sets where landslides are probable. The orientation of the bedrock and of the fracture sets must be obtained in order to determine if stabilization is even possible.

We don't know exactly how many stream crossings there's going to be because like you've heard, there's a lot of discrepancies in that figure.

The pipeline construction has been shown to be very impactful to the waters of our state. Our mountains are steep and our soil is highly erodible and there's no way these pipelines can be built safely with the standard best management practices and avoid impacts to waters of the state.

This project unnecessarily jeopardizes drinking water sources. The pipeline would cross five source water protection areas, and they have not submitted a turbidity analysis to show that construction would not put unnecessary hardships on these small water treatment facilities.

To filer the additional sediment introduced from construction would increase equipment costs and operating expenses for these small utilities.

This pipeline project does nothing to avoid excessive impacts to trout streams. As we heard earlier we don't know earlier, we don't know how many trout streams are going to be impacted because they have conflicting information in their permits.

The sediment lay in water has been known to impact trout habitat by smothering their spawning beds and clogging fish gills. In their draft environmental impact statement, MVP had stated that they would comply with construction windows to avoid crossing trout streams during the spawning season, and yet, in the DEP permits, MVP has stated that they would request a waiver from DNR to avoid the construction window restrictions. So they are going to try to cross all of our trout streams during the spawning.

Now, this discrepancy needs to be resolved immediately before these permits can be issued. The Mountain Valley Pipeline proposes to cross the Greenbrier River at Pence Springs. This stretch of the Greenbrier is protected under the Natural Stream Preservation Act. State code requires that DEP must preserve the river's natural character and protect it for future use and enjoyment for the citizens of West Virginia.

Their application for this permit does not address how they would preserve the natural character with the restoration, nor explain how our use or enjoyment will be impacted while they are blasting a trench through the riverbed.

My final point for this evening is that the final route for this pipeline has
not been determined, and MVP has yet to survey seven miles of the proposed route.

Issuing these permits without adequate information to determine how drinking water, aquatic life and recreational use of the Greenbrier will be impacted by this proposed project and violates state and federal laws.

MVP must provide more detailed information on how they plan to mitigate the destruction of trout habitat; how they will avoid contaminating the drinking water supply for thousands of individuals; and how they will protect and preserve the natural character of the Greenbrier River.

Response 13:

1. See Section A. Responses

2. Mountain Valley intends to disc areas disturbed during construction activities to facilitate revegetation of the ROW. This will include discing subsoil prior to returning topsoil to the ROW. Topsoil will be disced prior to seed and mulch application. Severely compacted areas may require additional decompaction activities to be employed on an as needed basis using a plow or other deep tillage implement. Alternatively, in agricultural areas, arrangements can be made with the landowner to plant and plow under a "green manure" crop, such as alfalfa, to decrease soil bulk density and improve soil structure. If subsequent construction and cleanup activities result in further compaction, additional tilling may be required.

3. Mountain Valley plans to use existing access roads where possible. Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to some roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs– widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways will be controlled with drainage channels, broad based dips, and waterbars. Additional BMPs would be installed as necessary to prevent potential uncontrolled release of sediments.

4. In accordance with Section G.4 of WVDEP's Water Pollution Control Permit the GPP is not required to be submitted to the Division of Water and Waste Management for reviews. It is to be developed and maintained on site. However, due to comments received the WVDEP has required the applicant to submit the GPP to this office for review.

5. The Project entails land clearing, surface construction, and excavation approximately 10 feet below ground to install the pipeline. The nature of this construction project is such that there is minimal risk of encountering an aquifer along the vast majority of the alignment.

Where groundwater is encountered in the shallow subsurface (e.g., perched aquifers, flood plains near rivers and streams), the backfilled excavation will convey water to allow it to resume its natural flow path and will not disrupt the major hydrologic balance. Mountain Valley has identified the assessment, avoidance, mitigation, and monitoring that will be applied to this Project to protect hydrologic resources. Through planning and execution of construction practices to prevent potential impacts to surface water and groundwater, Mountain Valley is conducting the most effective protection measures.

6. Mountain Valley has submitted the appropriate state and federal permits to construct the Greenbrier River crossing. The information contained within those applications contains aquatic resource information of the Greenbrier River and the surrounding resources.

7. Mountain Valley will be crossing the Greenbrier River using a dry-ditch open cut method. A turbidity and sedimentation analysis is not warranted.

8. Our construction techniques are consistent with state and federal requirements. Mountain Valley has submitted appropriate state and federal permit applications. MVP is committed to implementing these permits, the associated permit conditions, and mitigation and restoration plans to reduce or eliminate potential impacts to environmental features including stream and wetlands. Increased E&S BMPS will be utilized around sensitive resources such as streams and wetlands. The BMPs have been approved by the WVDEP and are used to reduce impacts to water quality. Long term impacts to water quality are not anticipated with this project due to the proposed temporary disturbances and restoration practices provided in the state and federal applications.

9. Drainage swales are illustrated on the plans in the form of the 2-foot contours and contour labeling which provides the elevation above mean sea level.

10. Drainage patterns are illustrated on the plans in the form of the 2-foot contours and contour labeling which provides the elevation above mean sea level.

11. Mountain Valley has provided WVDEP the required information in accordance with G.4.e.2.B that includes a description of measures that will be included in both the E&S plans and the SWPPP. These measures will be installed during construction to control pollutants in stormwater discharges after the project is completed.

Mountain Valley has also provided WVDEP with the information necessary to explain the technical basis for the stormwater management plan. Spacing requirements for the BMPs are provided on the E&S Detail Sheets.

Design procedures will be in accordance with professional accepted engineering and hydrologic methodologies.

12. These design discharges were estimated via the peak-flow regional regression equations developed by the United States Geological Survey (USGS) (Wiley & Atkins, 2010; Austin, Krstolic, & Wiegand, 2011). The equations require two input parameters: drainage area and location of the drainage area. Drainage areas located in West Virginia were estimated via the online tool offered by the West Virginia Department of Environmental Protection Technical Applications and GIS Unit (7Q10 Flow Estimates, n.d.). Drainage areas located in Virginia were estimated via the online tool offered by the USGS (StreamStats, n.d.). The waterbody crossings are located within two West Virginia regions (Central Mountains and Western Plateaus) (Wiley & Atkins, 2010) and three Virginia regions (Piedmont, Blue Ridge, and Valley and Ridge) (Austin, Krstolic, & Wiegand, 2011).

13. In accordance with G.4.e.2.B the project has been designed using professionally accepted engineering and hydrologic methodologies. The information necessary to explain the technical basis for the stormwater management plan has been provided to the WVDEP. Spacing requirements for the BMPs are provided on the E&S Detail Sheets.

14. The scour report estimates scour depths and potential mitigation measures. Post construction information cannot be created until after construction.

15. In accordance with G.4.e.2.B the project has been designed using industry- standard and professionally accepted engineering and hydrologic methodologies. Permanent stormwater management structures that will impound water are not required for this project.

16. In accordance with G.4.e.2.A.ii.e, Sediment basins are not typically used for pipelines or linear project in general. Linear projects use other regulatory- acceptable BMPs. The linear aspect of the disturbance for these projects would make it difficult and generally ineffective to place a sediment basin in a location that would catch the drainage throughout the project sites since they traverse the terrain in a linear fashion.

17. Mountain Valley acknowledges that a slope buttress must be founded on stable material.

18. During construction, geotechnical inspectors will be deployed to identify additional areas, not already specifically addressed in the LMP, where the landslide mitigation typical details should be implemented. The geotechnical inspectors, in conjunction with Mountain Valley engineers, will develop additional mitigation measures to address slope stability as necessary based on subsurface conditions revealed during construction.

Jeopardizing drinking water sources: The commenter is referred to Mountain Valley's Water Supply Identification and Testing Plan, updated in February 2017. Under the direction of this Plan, Mountain Valley is identifying public and private water resources (springs, wells, intakes) and will complete pre-construction water quality and quantity testing, evaluate the general nature of the water supply and surrounding environs for

potential risks from construction, and as reasonable and appropriate will establish contingency planning measures specific to the water resource to ensure that no interruptions occur to the water supply. Also, Mountain Valley prepared a Karst Mitigation Plan, and has karst-specific criteria in its Erosion and Sediment Control Plan that are designed to protect karst and related water resources during construction and reclamation.

Note that Mountain Valley has met with the Red Sulphur PSD on several occasions, and is currently working on a detailed contingency plan with a third- party consultant to ensure no interruption to their water service as a result of pipeline construction activities. The proposed pipeline alignment is approximately five (5) miles away from the Red Sulphur PSD's primary water source (Coburn Spring). The proposed alignment is 1,500 feet from a private spring (Rich Creek Spring) that is the headwaters for the PSD's secondary water source, which is an intake on Rich Creek more than seven (7) river-miles downstream of the spring. In essence, there is minimal risk to the PSD's water sources from pipeline construction. And, as noted above, Mountain Valley is working directly with the PSD to address their concerns and establish a contingency plan to ensure not impact to public water service.

Potential impacts to high quality streams (such as trout streams) are minimized or eliminated by using instream diversions during construction, preforming constructing activities during low flows, avoiding the streams during seasonal restrictions, and using more stringent E&S BMPs around the resources. The streams will be restored to preconstruction conditions by using approved construction techniques. All stream banks are immediately stabilized and restored as soon as the pipeline is installed and the temporary crossing is removed.

Mountain Valley has submitted the Natural Streams Preservation Act application to the WVDEP. An Aid to Navigation (ATON) will be prepared to provide public information on construction, instream activities, and any potential user restrictions during construction at the Greenbrier River.

Mountain Valley continues to work with property owners to gain access and evaluate properties. In areas where access hasn't been granted, Mountain Valley has used recently acquired aerial imagery, infrared photography, topographic mapping, and NWI mapping to identify potential resources and factor disturbance into the permit applications. Once access is granted to the remaining areas, the area will be field verified for environmental resources.

Comment 14: Regarding the stormwater permit:

Number (1) The MVP route is still even at this very moment being changed. Seven miles of this pipeline are not even surveyed at all.

Number (2) MVP's application does not meet the requirements for the Stormwater General Permit. It lacks specific information about each of the numerous streams that will receive runoff. Private wells and springs have not been properly identified. Individual identification and plans must be required for each crossing, not a general blanket plan. There appears to be no mention by MVP in their application about karst topography and how it can affect or divert runoff.

Number (3) Engineering calculations for sizing the best management practices were not given by MVP. There is no evidence provided that shows that erosion and sediment controls on the pipeline and its compressor stations were sized to the standards of the WVDEP erosion and sediment control manual. Sizes and spacing information is just not delineated. For example, a quarter-mile from my home, they are planning to put in a thing called a manual shutoff valve, and that's a place where the pipeline actually comes up out of the ground, protrudes from the ground, unprotected by soil, and it's to be located on a small flat area surrounded by extremely steep, highly erodible slopes. So no specific information is given about that for example.

Number (4) Documentation on the limit of disturbance from access roads is missing. Some access road info does not concur with the info in the DEIS. County roads which may need widening to be used as access roads are not identified. WVDEP must require more information about proposed contours, cut and fill slopes, road dimensions and roadside drainage features.

Number (5) The slip mitigation plan is not included with the erosion and sediment control plan. The attachment slip mitigation plan is missing from the application. This alone is a shockingly irresponsible oversight, or is it, on the part of MVP since 80 percent of the proposed route is on highly erodible land.

Number (6) WVDEP must require sedimentation and turbidity analysis for the Greenbrier River crossing to determine that the cofferdam crossing method will not irreparably harm he river. A real danger to the public exists because toxic chemicals, such as DDT, are locked safely in the deep sil of the river bottom. Churning them up by MVP's crossing excavation poses a serious threat to the many people who use this river for recreation.

Number (7) WVDEP must request specifics about whether MVP will use natural stream restoration techniques and how exactly they would restore the river bank. MVP's cut and paste language is inadequate. How will they deal with the loss of trees holding the bank? How will they preserve natural character?

Number (8) Impacts on recreational boating, fishing and swimming must be explained. West Virginia citizens need to know how their use and enjoyment of the beautiful Greenbrier could be permanently and negatively affected.

Number (9) A view shed analysis is missing. It must be required by WVDEP to comply with the Natural Streams Preservation Act by determining construction impacts on the river's natural character.

Regarding the 401 Water Quality Certification. MVP's incomplete application lacks critical information needed to determine if their project will meet West Virginia's water quality standards. The DEP must require the following info: final route survey, including all water resources.

Watershed scale impacts analysis regarding that, the DEP must require MVP to provide info on a number of stream crossings for each watershed. Site-specific waterbody crossings and restoration plans, there are 617 crossings, and I just heard tonight, no wait a minute. Erase that. Make it 800-something. So we don't know. There's a whole bunch of crossings. They should be individually considered.

Minimize trout impacts. The DEP must require MVP to adhere to construction windows and avoid unnecessary impacts to the trout. MVP wants to build when the trout are spawning, which as Autumn, smothers their habitat and clogs their gills, and the DNR requires construction to avoid spawning time for a good reason.

Lastly, sediment and turbidity analysis. MVP would cross five source water protection areas as we've heard, including Talcott water system. The DEP must require sediment and turbidity analyses so that West Virginia's water quality standards for turbidity will not be violated.

Response 14: 1. Mountain Valley continues to work with property owners to gain access and evaluate properties. In areas where access hasn't been granted, Mountain Valley has used recently acquired aerial imagery, infrared photography, topographic mapping, and NWI mapping to identify potential resources and factor disturbance into the permit applications. Once access is granted to the remaining areas, the area will be field verified for environmental resources.

2. Detailed information on the delineated streams and wetlands are included in the 401 application. The Erosion and Sediment Control Plan identifies all streams and wetlands that will be crossed by the project and shows the appropriate protective measures that will be employed. Best Management Practices established in the Erosion and Sediment Control Plan, and the Karst Mitigation Plan are designed to prevent uncontrolled releases to surface waters and karst features in order to protect the underlying aquifer. Mountain Valley made several major, and hundreds of minor route adjustments to avoid karst features and sensitive water resources that were identified in the Karst Hazards Assessment. Additionally, Mountain Valley will deploy on-site inspectors during all phases of construction to monitor karst resources and ensure that prescribed measures are in-place to prevent uncontrolled surface water releases, prevent impacts to karst features, and therefore protect groundwater. These measures, in concert with exclusion buffers, will minimize or eliminate potential impacts to surface water in karst terrain.

3. In accordance with G.4.e.2.B the project has been designed using industry- standard and professionally accepted engineering and hydrologic methodologies. Permanent stormwater management structures that will impound water are not required for this project.

4. Mountain Valley plans to use existing access roads where possible. Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project. Therefore, upgrades to some roads are required. The E&S plan identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs– widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway will be controlled using the existing drainage infrastructure. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways will be controlled with drainage channels, broad based dips, and waterbars. Additional BMPs would be installed as necessary to prevent any off-site movement of sediments.

5. The Landslide Slip Mitigation plan was included with the E&S plan that was submitted in December of 2016.

6. Mountain Valley will be crossing the Greenbrier River using a dry-ditch open cut method. A turbidity and sedimentation analysis is not warranted.

7. Mountain Valley will restore stream channels disturbed during construction to preconstruction contours and conditions as required by the state and federal permits. Mountain Valley conducted field visits with WVDEP regulatory staff over several days during the summer/fall of 2016 to review site conditions at recently constructed EQT pipeline projects in WV. Mountain Valley has had several office reviews with the WVDEP to discuss and identify enhanced stream restoration practices. Mountain Valley will continue to work with the WVDEP and other agencies during permit review to incorporate their proposed stream and wetland monitoring and enhanced restoration practices.

8. An Aid to Navigation (ATON) will be prepared to provide public information on construction, instream activities, and any potential user restrictions during construction at the Greenbrier River.

9. A viewshed analysis is not a requirement of the Natural Streams Preservation Act nor the 401 application.

Mountain Valley has not been granted access to this property. Resources in this area were identified through a desktop survey which included using aerial photography, National Wetland Inventory (NWI) mapping, topographic maps and infrared mapping. Once access is obtained the area will be investigated for sensitive resources.

Watershed Study: The updated 401 identifies the watersheds within the project area. Cumulative impacts for multiple crossings on a single resource have also been included in the updated information. Each stream and wetland crossing has been minimized to the fullest extent and each will be completed according to state and federal guidelines. All permanent impacts will be mitigated as required by the WVDEP and USACE.

Potential impacts to high quality streams (such as trout streams) are reduced or eliminated by using instream diversions during construction, preforming constructing activities during low flows, avoiding the streams during seasonal restrictions, and using more stringent E&S BMPs around the resources. The streams will be restored to preconstruction conditions by using approved construction techniques. All stream banks are immediately stabilized and restored as soon as the pipeline is installed and the temporary crossing is removed.

Mountain Valley met with the Big Bend PSD on August 25, 2015, and again on March 17, 2016, to discuss the Mountain Valley Pipeline Project, and address the PSD's concerns. The March 17, 2016 meeting also included Mr. Troy Wills, District Engineer for the West Virginia Department of Health and Human Resources who assists the PSD. Through these direct outreach meetings, Mountain Valley has established communication with the PSD, understands their concerns regarding pipeline construction in the vicinity of the PSD's surface water intake on the Greenbrier River, and provided the PSD with Mountain Valley's commitment to establish detailed communications during construction in order to ensure no interruption to their water service during construction. Mountain Valley also committed to assisting the PSD with updating their Source Water Assessment and Protection Program (SWAPP), which is required by the West Virginia Department of Health and Human Resources Mountain Valley will be contacting the Big Bend PSD mid-2017 to update the Project understanding, and prepare for pre-construction sampling, given the anticipated construction schedule in the vicinity of the PSD of early-to-mid 2018.

Comment 15: The WVDEP lacks sufficient information to conclude that the Mountain Valley Pipeline LLC's mitigation measures will be successful in preventing violations of state water quality standards. We know this because the FERC is allowing Mountain Valley to submit critical information after issuing its final certificate. This critical information includes, but is not limited to, one, site specific plans detailing the materials and methods for permanent culverts and permanent fill in water bodies and wetlands. Two, results of quantitative modelling for turbidity and sedimentation associated with wet open-cut crossings of the Elk River, Gauley River and Greenbrier River. Three, mitigation plans for potential impacts on public surface water supplies and in-takes within three miles of a pipeline crossing, and finally, the locations of all drinking water wells, springs, swallets and other drinking water resources within 150 feet of the proposed pipeline in aboveground facilities.

Response 15: Mountain Valley's construction techniques are consistent with state and federal requirements. Mountain Valley has submitted all appropriate state and federal permit applications. Mountain Valley is committed to implementing these permits and the associated permit conditions which will reduce or eliminate potential impacts to all environmental resources. Mountain Valley will continue to work with the state and federal agencies to identify and protect sensitive resources in the project area.

The stream crossing details provided in the 401 application show several different crossing methods– including portadams, cofferdams, dam and pump, flume and pipe, and temporary culverted crossings. The type of crossing will be determined during construction to provide the least amount of environmental impact to the resources. Impacts to high quality streams are reduced and minimized by using instream diversions during construction, preforming constructing activities during low-flow conditions, avoiding the streams during seasonal restrictions, and using more stringent E&S BMPs around the resources. The streams will be restored to preconstruction conditions by using approved construction techniques. All stream banks are immediately stabilized and restored as soon as the pipeline is installed and the temporary crossing is removed.

The Elk River, Gauley River, and Greenbrier River will be crossed using open cut, dry-ditch methodology. Additional analysis was conducted on each permanent impact to the streams and wetlands by using WV's Stream and Wetland Valuation Metric which evaluates the physical and biological integrity of the stream. This information is then used to quantify permanent impacts for appropriate mitigation. This information has been included in the WVDEP 401 Water Quality Certification application.

All permanently impacted streams and wetlands will be mitigated through existing mitigation banks or through WVDEP's In Lieu Fee Program. This mitigation approach is consistent with state and federal permitting requirements.

The Water Resources Identification and Testing Plan summarizes protocols for identifying and assessing water resources in the vicinity of the proposed Mountain Valley Pipeline (MVP), owner contacts and information gathering, and conducting pre-construction baseline water quality testing. This effort includes Mountain Valley working with public water suppliers that are considered to be at-risk in order to ensure an uninterrupted potable water supply to their customer base.

Private water resources (wells and springs) were identified within 150 feet, and within 500 feet in karst terrain, of MVP work spaces that are associated with the proposed Filing Route. Public water supplies (wells, springs, surface water intakes) were identified at minimum within 3 miles of the MVP alignment.

Mountain Valley identified all public water supplies that have a surface water intake within three (3) miles downstream of a crossing (e.g., Big Bend PSD), which is a FERC criteria.

Mountain Valley also identified all public water supplies that are within a HUC-10 watershed traversed by the proposed alignment (a HUC-10 watershed is a USGS designation that can span tens-of-thousands of acres, which makes this assessment conservative in identifying public water supplies that may be many miles from the pipeline). Mountain Valley used this information to contact the public water suppliers, such as the Big Bend PSD and the Red Sulphur PSD (and many others) to address their concerns. Mountain Valley has met with both the Big Bend and Red Sulphur PSDs on many occasions to discuss the Project and address their concerns, and is currently working with both entities to establish contingency plans to ensure no impacts occur to their water sources, and no interruptions occur to their public water supply. Mountain Valley is committed to protecting public and private water resources, and has taken all reasonable steps to identify resources at risk and establishing replicate protective measures.

Comment 16: So the DEP's job is to ensure that those wetlands and streams are protected. And when the pipeline goes through, there have to be permits that are issued. And in order for those permits to be issued, the company has to ensure that their plan meets the criteria for the protection of those bodies of water.

And I've reviewed those in brief. Not in utter detail, but from what I could see when they talk about the Greenbrier River they say, oh, you know, the pipeline crossing the Greenbrier River is only going to effect it for the period of time in which we are constructing the pipeline going across.

So it' s just, they're just looking at that short, brief period of time. They' re not looking at the long-term, and certainly not looking at this large-scale construction project that' s going through. And also not really addressing this large project going through wetlands, which are very sensitive areas.

Response 16: Mountain Valley's construction techniques are consistent with state and federal requirements. Mountain Valley has submitted appropriate state and federal permit applications. Mountain Valley is committed to implementing these permits and the associated permit conditions, which will reduce or eliminate potential impacts to all environmental resources. Mountain Valley will continue to work with the state and federal agencies to identify and protect sensitive resources in the project area.

The proposed Greenbrier River crossing will have temporary impacts during construction that will temporarily restrict using approximately half of the river width at the crossing site. The installation process will include installing approximately one half of the crossing, completing required stream restoration in that area and then switching to the other side of the project to install the system and complete the project accordingly. In addition to the E&S BMPs that will be onsite during construction, a site specific spill response plan will be developed and an Aid to Navigation (ATON) will be prepared to provide public information on construction, instream activities, and any potential user restrictions during construction

at the Greenbrier River. Long term, permanent impacts are not anticipated with this project. The river bed will be restored and changes in flow are not anticipated. The adjacent banks will be immediately graded, seeded, and mulched. Inspection will occur in this area and the entire area in accordance with the approved WVDEP issued permit.

Comment 17: Now, what is the effect on the ground that is affected by the construction? This is how Mountain Valley Pipeline describes the construction of the pipeline along the ridges. And is their own words from their resource reports. Clearing, grubbing, equipment movement accelerates the erosion process. Compaction decreases infiltration, increases the potential for erosion. Construction equipment traveling over wet soils could disrupt soil structure, reduce pore space, increase runoff potential and cause running. Dr. Dodds who did our report describes these effects from construction as resulting in impervious ground cover. So what can we expect from the construction of pipeline along this r ight-of-way on the ridges where the trees have been removed and the natural soil has been replaced with impervious ground? When it rains, especially with heavy and persistent rains, more water will flow off the easement than when the ground was in its natural state. This increased water flow will find its way into existing gullies and create new gullies with its accompanying increased erosion. And that result will be an increase of water flowing into the streams compared to the amounts before the construction of the pipeline.

How is water quality affected? From the increased runoff from rains, there will be erosion of hillsides and of the stream banks. This increased runoff will increase sediments flowing into streams. Also, water runoff is lost downstream. This is water that does not perforate into the ground water.

Response 17: Mountain Valley's construction techniques are consistent with state and federal requirements. Mountain Valley has submitted appropriate state and federal permit applications. Mountain Valley is committed to implementing these permits and the associated permit conditions, which will reduce or eliminate potential impacts to all environmental resources. Mountain Valley will continue to work with the state and federal agencies to identify and protect sensitive resources in the project area.

During construction, the site will be protected using state approved BMPs including but not limited to compost filter socks, silt fence, belted silt fence, and water bars. The BMPs will be monitored and repaired/replaced when they are under performing or no longer functioning. Hillside erosion will be controlled using water bars, seeding/mulching, erosion control blanketing, hydroseeding and hydro-mulching. Water quality will be protected by incorporating the BMPs referenced above and through monitoring by the onsite Environmental Inspector.

The existing ground contours within the project area will be restored as practical to pre-construction conditions. The disturbed area will be seeded and mulched according to applicable state and federal requirements. After construction and before seeding and mulching, the limits of disturbance will be properly decompacted and graded to allow for

infiltration and avoid creating an impervious surface. Temporary BMPs will remain in place until the site is stabilized in accordance with state and federal permits.

Mountain Valley intends to disc areas disturbed during construction activities to facilitate revegetation of the ROW. This will include discing subsoil prior to returning topsoil to the ROW. Topsoil will be disced prior to seed and mulch application. Severely compacted areas may require additional decompaction activities to be employed on an as needed basis using a plow or other deep tillage implement.

SECTION D. Previous comments/response letter dated July 14, 2017 (UPDATED)

Comment 1:
"Engineering calculations for sizing Best Management Practices (BMPs) are not provided."

"Engineering calculations for sizing Best Management Practices (BMPs) are not provided, so there is no evidence within the application that the erosion and sediment controls on the MVP pipeline and associated compressor stations were sized appropriately and to the standards of the WVDEP Erosion and Sediment Control Manual."

Response 1: MVP provided WVDEP with the required information in accordance with G.4.e.2.B of the general permit, including a description of measures in both the Erosion and Sediment (E&S) Control Plans and the Stormwater Pollution Prevention Plan. In accordance with G.4.e.2.B the project has been designed using professionally accepted engineering and hydrologic methodologies. These measures are to be installed during construction to control pollutants in stormwater discharges after the project is completed.

MVP also provided information necessary to explain the technical basis for the stormwater management plan. Spacing requirements for the BMPs were provided on the E&S Detail Sheets.

Comment 2:
"Documentation on the limit of disturbance from access roads including proposed contours, cut and fill slopes, road dimensions, and roadside drainage features must be included in the permits"

"Access road widths stated in the SRA (Site Registration Application) are inconsistent with road widths provided in the Draft Environmental Impact Statement (DEIS) submitted by MVP to FERC"

"All of this means that there will be an extreme amount of 30-ton dump trucks and giant equipment running first on our WV State Road System and second across private property".

Response 2: The limits of disturbance (LOD) were shown on the E&S Control Plans. The Access Road Typical Section, Ditch Relief Culvert, and related E&S Details illustrate the standard design and associated drainage features.

The DEIS identified the easement width including area necessary for maintenance and the inclusion of erosion and control BMPs. MVP plans to use existing access roads where possible. The application for general permit coverage identified the width of the road surface and does not include the BMPs in the width. However, the BMPs are included in the LOD. Some existing access roads are not wide enough to support the vehicular traffic necessary to construct the project, therefore, upgrades are required. The E&S plan

identifies "Maintained" and "Graded and Maintained" access roads. A "Maintained" access road will only require crushed stone placement and appropriate smoothing if rutting or roadway degradation occurs– widening or significant grading is not anticipated. The sheet flow along the "Maintained" roadway is to be controlled using the existing drainage infrastructure. Additional BMPs shall be installed as necessary to prevent off-site movement of sediments. A "Graded and Maintained" roadway may require widening, grading, and/or crushed stone placement. The sheet flow along these roadways shall be controlled with drainage channels, broad based dips, and water-bars. Additional BMPs shall be installed as necessary to prevent potential uncontrolled release of sediments.

Travel on the state road system goes beyond the scope of the general permit and falls under the jurisdiction of the WV Department of Highways, however, E&S Controls are required at construction entrances to prevent tracking onto public roadway. Upgrading or construction of new access roads are subject to E&S Controls.

Comment 3:
"The Slip Mitigation Plan is not included with the E & S Control Plan. The Attachment 3 Slip Mitigation Plan is missing from the application"

"This area contains extremely steep land and yet the only information given by MVP is typical crossing plan. No two [sic] stream crossings are alike and certainly the slope and grade varies a great deal. Where is the provision for such diversity in these crossings?"

"The pipeline will travel through a designated seismic zone and over terrain that is considered extremely unstable. As the pipeline will run over multiple fragile natural resources – including multiple freshwater resources and protected forest areas – and near several communities, this presents a completely unnecessary and avoidable safety risk to people and the environment."

"Pipeline construction on steep slopes present many possible failures to adequately maintain safe practices."

Response 3: Regarding slip mitigation, MVP has addressed slope stability for the project via the LMP, which included typical details to be employed during construction to minimize the risk of earth movement and specified the use of these mitigation measures at predetermined locations along the pipeline. The mitigation measures are generally consistent with those recommended in Interstate Natural Gas Association of America's (INGAA) Mitigation of Land Movement in Steep and Rugged Terrain for Pipeline Projects, which presents BMPs for landslide mitigation in the Appalachian region. The LMP was included in the E&S Control application.

During construction, geotechnical inspectors are to be deployed to identify additional areas not already specifically addressed in the Landslide Mitigation Plan (LMP), where the landslide mitigation controls should be implemented. The geotechnical inspectors, in

conjunction with MVP engineers, are to develop additional mitigation measures to address slope stability as necessary based on subsurface conditions revealed during construction.

Seismic hazards along Mountain Valley's Proposed Route were addressed in Resource Report 6 of MVP's October 2015 application to the Federal Energy Regulatory Commission. Ground shaking alone should not pose a serious threat to below-grade welded steel pipelines.

Mountain Valley's construction techniques and landslide mitigation techniques, as presented in the LMP, are industry-proven techniques to mitigate landslide risk both parallel and perpendicular to pipelines in rugged terrain. On steep slopes, Mountain Valley plans to install surface and subsurface drains, trench breakers, and other best management practices (BMPs) as prescribed in the LMP and as deemed necessary by Mountain Valley's geotechnical inspectors during construction. By installing pipeline to these BMPs and compacting the pipeline backfill, it is likely that native slopes having relatively low slope stability factors of safety will have an increased slope stability factor of safety in the immediate vicinity of the pipeline.

All appropriated documents to obtain registration were submitted.

Comment 4:
"Site specific restoration plans have not been provided."

"Soil compaction in the proposed work corridor will result in loss of soil functions, especially in headwater areas of first order high gradient streams, even if topsoil is placed over the compacted soil."

"Deforestation in the proposed work corridor, access roads, pipe yards, and additional work areas will result in canopy loss, thereby causing increased stormwater discharge, reduced groundwater recharge, and increased downstream stream bank erosion. Restoring the areas to meadows will not result in the lower stormwater discharge amounts characteristic of forested land."

How would accidental releases of gas products affect streams and stream biota? How would accidental releases by detected and then contained? How will accidental releases be mitigated for?

Response 4: Regarding site-specific restoration plans, the earth disturbance associated with the pipeline is temporary and the existing ground surface topography within the project area is to be restored as close as practicable to pre-construction conditions. After construction and before seeding and mulching, the limits of disturbance shall be properly de-compacted and graded to allow for infiltration and avoid creating an impervious surface. The disturbed area shall be seeded and mulched according to state and federal requirements. MVP intends to disc areas disturbed during construction activities to facilitate revegetation of the ROW. This will include discing subsoil prior to returning

topsoil to the ROW. Topsoil will be disced prior to seed and mulch application. Severely compacted areas may require additional decompaction activities to be employed on an as needed basis using a plow or other deep tillage implement. Alternatively, in agricultural areas, arrangements can be made with the landowner to plant and plow under a "green manure" crop, such as alfalfa, to decrease soil bulk density and improve soil structure. If subsequent construction and cleanup activities result in further compaction, additional tilling may be required.

Furthermore, the applicant is required by FERC to comply with Upland Erosion Control, Revegetation, and Maintenance Plan[1] which sets forth guidelines to be followed during planning, installing, restoring, and maintaining upland areas to avoid potential impacts on aquatic resources. The 404 Nationwide 12 Permit also requires MVP to stockpile substrate removed from stream crossings prior to impact and replace this material following completion of the crossing in a similar pattern, profile, and dimension as the channel prior to impact[2]. MVP is also required by this permit to stockpile the top 12 inches of soil in wetlands and replace this material upon final reclamation of the wetland[2].

The permanent erosion and sediment control BMPs are designed to control run off, prevent erosion, protect stream banks and sensitive resources, and help stabilize slopes.

Concerning releases of gas products, the comment goes beyond the scope of the general permit which is intended to control sediment and erosion during construction activities. Regardless, the pipeline control center for the project will be located at EQT's headquarters in Pittsburgh, Pennsylvania and is to be continuously staffed by qualified pipeline controllers. The controllers are to monitor all aspects of the pipeline including system pressures, temperatures, flows, and valve positions (open or closed). The pipeline is to be continuously monitored for leaks or other abnormal operational conditions. In the unlikely event that a shutdown is needed, the pipeline controllers will have the ability to isolate the affected pipeline segment. The pipeline's cathodic protection system shall also be monitored and inspected in accordance with 49 CFR Part 192 requirements to ensure proper and adequate corrosion protection. The pipeline will is to be designed for internal inspection technology. Appropriate responses to conditions observed during internal inspections will be taken as necessary.

Comment 5:
"All streams receiving stormwater runoff must be identified in the application."

"Each stream crossing must have clearly defined plans for the protection of each site, as no two are typical."

[1] Federal Energy Regulatory Commission. Upland Erosion Control, Revegetation, and Maintenance Plan. May 2013.
[2] NWP 12 West Virginia 401 Water Quality Certification Special Conditions "M" and "N"

"This area contains extremely steep land and yet the only information given by MVP is typical crossing plan. No two [sic] stream crossings are alike and certainly the slope and grade varies a great deal. Where is the provision for such diversity in these crossings?"

"The proposed Mountain Valley Pipeline threatens our state's water resources. The pipeline and associated projects would cross 1,021 waterbodies (617 in West Virginia), including major crossings of the Elk, Gauley, and Greenbrier rivers. The project would impact 39.3 acres of wetlands and would disturb 4,100 acres of soils prone to severe water erosion."

"How will installation methods of the pipeline contaminate stream beds? Will riprap and other BMPs impact stream geomorphology negatively?"

"Baseline water quality analysis and sampling has not been conducted to evaluate the open-cut dry crossing of the Greenbrier River, which is a Tier 3 river and is a WV Natural Stream, NRI Listed."

"MVP refuses the requests made by the Environmental Protection Agency (EPA) and the Federal Energy Regulatory Commission (FERC) to conduct quantitative modeling for turbidity and sedimentation for the Elk, Gauley, and Greenbrier River crossings, including analysis of the duration, extent, and magnitude of turbidity levels and an assessment of the potential impacts on resident biota."

Response 5: Regarding the identification of streams, the submitted E&S Control Plans show the location of each stream and wetland crossing. The appropriate controls are shown, such as compost filter sock, silt fence, supersilt fence, and reinforced belted silt fence which is to be used at each crossing. These features have been designed and included to reduce and control sediment from entering the resource.

Regarding stream-specific plans for crossings, although aquatic resources will be impacted to construct the pipeline Right of Way (ROW), as stated above, these impacts will be temporary. As required by the 404 Nationwide 12 Permit, MVP will replace soil, stream substrate, and wetland topsoil as well as revegetate the associated riparian buffer zone following construction. Additionally, MVP is required by FERC to comply with Wetland and Waterbody Construction and Mitigation Measures[3] which sets guidelines to be followed during planning, installation, restoration, and maintaining crossings associated with wetlands and waterbodies. According to these guidelines, MVP is required to minimize impacts to aquatic resources by avoiding or reducing the footprint of the project within an aquatic resource. If the impact cannot be avoided, MVP is required to follow construction guidelines designed to minimize long-term impact to the aquatic resource. Likewise, MVP is required to follow guidelines developed by FERC for restoration and maintenance of

[3] Federal Energy Regulatory Commission. Wetland and Waterbody Construction and Mitigation Procedures. May 2013.

impacted wetlands and waterbodies to restore aquatic habitat as quickly as possible after construction.

Regarding the number and type of stream crossings, the stream crossing details provided in the E&S Control Plans show several different crossing methods– including portadams, cofferdams, dam and pump, flume and pipe, and temporary culverted crossings. The type of crossing used will be determined during construction and should be selected based on site conditions at that time. Specifically, the Greenbrier River crossing has been permitted with a Natural Streams Preservation Act permit (NSPA Permit), which specifies the use of an open-cut dry ditch method using a portadam system, which will allow the river to flow continuously throughout construction. A downstream turbidity curtain will be used to prevent sediment from leaving the construction area. The portadam will create a dry workable area while minimizing stream impacts, and be installed in two stages to allow excavation of the trench and installation of the pipe. It will then be removed and the same process will begin on the other side of the river. The half width construction method will allow continual downstream flow of the river during construction. When the pipeline crossing is complete, the portadam and turbidity curtain will be removed. Special conditions in the Greenbrier NSPA Permit permit require that boat passage be maintained at all times during construction, as well as, in the case of severe weather which may induce flooding, all materials must be removed from the river until flooding subsides.

In addition, application describes controls to reduce impacts to the fullest extent practicable. MVP limited crossing widths in streams and wetlands to 75-feet during construction. Increased E&S BMPs are to be utilized around sensitive resources such as streams and wetlands. Route adjustments and alignment shifts around forested wetlands and scrub shrub wetlands have been incorporated into the proposed alignment to reduce impacts. In addition, reduced impacts to sensitive resources is planned by adhering to seasonal restrictions (for restricted streams) and implementing construction during low-flow conditions. During construction, the existing stream substrate is to be separated and stockpiled. After the pipe is installed the pipe trench is to be backfilled and the stream material is to be the last material restored. This technique should return the native stream material and associated benthic organisms to the stream. In fact, the 404 Nationwide 12 Permit also requires MVP to stockpile substrate removed from stream crossings prior to impact and replace this material following completion of the crossing in a similar pattern, profile, and dimension as the channel prior to impact[4]. MVP is also required by this permit to stockpile the top 12 inches of soil in wetlands and replace this material upon final reclamation of the wetland[2]. All disturbed stream banks are to be immediately stabilized and restored as soon as the pipeline is installed and the temporary crossing is removed. MVP has not proposed to use rip rap.
Impacts to trout streams will be reduced and minimized by the requirement of the 404 Nationwide 12 Permit Standard Condition 12, which states:

[4] NWP 12 West Virginia 401 Water Quality Certification Special Conditions "M" and "N"

> **"In stream work in designated warm water streams and their adjacent tributaries during the fish spawning season, April - June and trout waters and their adjacent tributaries during the trout water fish spawning season September 15 to March 31 requires a spawning season waiver from the West Virginia Division of Natural Resources (WV DNR) Coordination Unit, at (304) 637-0245. For information about specific stream designations contact West Virginia Department of Environmental Protection, Water Quality Standards Section at (304) 926-0495. In-stream work may occur during the respective spawning season in ephemeral waters without a waiver if all reasonable measures are taken to minimize turbidity and sedimentation downstream associated with the proposed project."**

Regarding Tier 3 streams, Mountain Valley Pipeline will not cross any "outstanding natural resource waters," or Tier 3 Streams in West Virginia. These streams are defined as follows:

> **"all streams and rivers within the boundaries of Wilderness Areas designated by The Wilderness Act (16 U.S.C. §1131 et seq.) within the State, all Federally designated rivers under the "Wild and Scenic Rivers Act", 16 U.S.C. §1271 et seq.; all streams and other bodies of water in state parks which are high quality waters or naturally reproducing trout streams; waters in national parks and forests which are high quality waters or naturally reproducing trout streams; waters designated under the "National Parks and Recreation Act of 1978", as amended; and pursuant to subsection 7.1 of 60CSR5, those waters whose unique character, ecological or recreational value, or pristine nature constitutes a valuable national or state resource[5]."**

The proposed Mountain Valley Pipeline does not cross any of these streams, neither as defined above nor by comparing to the list of streams meeting this definition, which is available on WVDEP website[6].

MVP submitted the appropriate state and federal permits to construct the Greenbrier River crossing. Mountain Valley will be crossing the Elk, Gauley, and Greenbrier Rivers using a dry-ditch open cut method. The information contained within those applications contains aquatic resource information of the Greenbrier River and the surrounding resources.

A turbidity and sedimentation analysis is not warranted nor required by the General WV Water Pollution Control Permit No. WV0116815 or from EPA's Stormwater Construction General Permit.

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[5] Requirements Governing Water Quality Standards, 47CSR2 Section 4.1.c
[6] http://www.dep.wv.gov/WWE/Programs/wqs/Documents/Tier%203%20Info/WVTier_3_Nov2013_web.xlt

Comment 6: "I believe the width of the right of way for the pipeline is grossly underestimated and the impacts and risk to receiving stream from impervious surface/bare compacted soils and runoff will contribute to mass landslides and further in-stream habitat and water quality degradation. Pipeline crossing construction is shown to compromise the integrity of the physical and chemical nature of fish habitat, but also to affect biological habitat (benthic invertebrates and invertebrate drift), and fish behavior and physiology. Indicators of effect include: water quality (total suspended solids TSS), physical habitat (substrate particle size, channel morphology), benthic invertebrate community structure and drift (abundance, species composition, diversity, standing crop), and fish behavior and physiology (hierarchy, feeding, respiration rate, loss of equilibrium, blood hematocrit and leukocrit levels, heart rate and stroke volume). For impacts in forested areas, trees and vegetation need to be removed for the well pad, access roads, and pipelines. This habitat destruction and forest fragmentation has the potential to seriously disrupt and endanger flora and fauna. Road and pipeline construction through sulfidic materials, produces acid rock drainage. This chemical reaction damages the environment by leaching sulfuric acid and heavy metals into the surrounding soil and water bodies."

"While habitat loss has a consistently negative effect on biodiversity, there is not enough research on habitat fragmentation to determine how it will affect biodiversity. Fragmentation has complex impacts on ecosystems, but generally cause changes to environmental variables such as wind patterns, sunlight fluxes, water regime, and nutrient levels. These factors then impact local plants and animals. One potential repercussion of forest fragmentation is a decline in migratory bird populations, which become more vulnerable without continuous forest cover. There is also concern that fragmented areas particularly susceptibility to invasive plants. Without more rigorous assessments, it is difficult to predict how this disturbance will affect ecosystems and if they will seriously threaten particular species or processes."

Response 6: Slope stability and anti-compaction concerns are addressed above. Though the portion of this comment concerning invasive species may exceed the scope of the general permit, MVP submitted an Invasive Species Control Plan to FERC, to detail how invasive species are to be monitored and controlled.

Comment 7:
"I see nothing in the sheet I was given by WV Rivers about the Permits that MVP is applying for about individual property owners water sources for their homes. Meaning springs and wells that currently supply water to homes.

The pipeline will be run through rock, limestone being the primary geology of WV and that means blasting and pneumatic jackhammering to open a channel deep enough to contain a 42" pipe. Either of these two techniques have the potential to disturb a water source within proximity of the pipeline.

Any well or spring within proximity of [sic] the pipeline should have a base line
[sic] analysis showing flow rate and water quality prior to pipeline construction."

Response 7: These concerns are addressed in MVP's Water Supply Identification and Testing Plan, updated in February 2017 (we will request that MVP, send you a copy). Under the direction of this Plan, MVP is identifying public and private water resources (springs, wells, intakes) and will complete pre-construction water quality and quantity testing, evaluate the general nature of the water supply and surrounding environs for potential risks from construction, and as reasonable and appropriate will establish contingency planning measures specific to the water resource to ensure that no interruptions occur to the water supply. Also, MVP prepared a Karst Mitigation Plan, and has karst-specific criteria in its E&S Control Plan that are designed to protect karst and related water resources during construction and reclamation.

Comment 8:
"The size of the trench they need to make means they will be pulling out chunks of limestone as big as wheelbarrows and 50 gal drums. Where is all of it going?"

Response 8: Excess rock, including blast rock may be used to backfill the trench to the top of the existing bedrock profile. The rock will be crushed and sifted as necessary to reduce the size.

Excess rock will be removed from at least the top layer (12 inches) of soil to the extent practicable in all rotated and permanent cropland, hayfields, pastures, residential areas, and other areas at the landowner's request. The size, density, and distribution of rock on the construction work area should be similar to adjacent areas not disturbed by construction. Diligent efforts by MVP should be made to remove stones greater than four (4) inches if the off ROW areas do not contain stones greater than (4) inches. The landowner may approve other rock size provisions in writing.

Comment 9:
"I am writing concerning the permitting WVR310667, oil and gas construction stormwater general permit. How can this possibly be granted if the final route has not been determined or at least made public?"

"The pipeline would pass within one-tenth of a mile of two public drinking water sources and near countless private drinking wells that have not been surveyed."

Response 9: MVP is continuing to work with property owners to gain access and evaluate properties. In areas where access hasn't been granted, MVP used recently acquired aerial imagery, infrared photography, topographic mapping, and National Wetlands Inventory mapping to identify potential resources and factor disturbance into the permit application. Once access is granted to the remaining areas, the area will be field verified for environmental resources and the appropriate state approved E&S Control BMP are to be installed in these areas.

MVP identified all public water supplies that have a surface water intake within three (3) miles downstream of a crossing (e.g., Big Bend PSD), which is a FERC criterion. Mountain Valley also identified all public water supplies that are within a HUC-10 watershed traversed by the proposed alignment (a HUC-10 watershed is a USGS designation that can span tens-of- thousands of acres, which makes this assessment conservative in identifying public water supplies that may be many miles from the pipeline). Mountain Valley used this information to contact the public water suppliers, such as the Big Bend PSD and the Red Sulphur PSD (and many others) to address their concerns.

Comment 10:
"Drainage areas are not defined on the construction plan sheets"

"Drainage direction arrows are not shown on the construction plan sheets, except along silt fencing locations"

Response 10: Drainage patterns are illustrated on the plans in the form of the 2- foot contours and contour labeling which provides the elevation above mean sea level.

Comment 11:
"Sediment basins/traps are not included as part of the MVP Best Management Practices (BMPs)."

Response 11: In accordance with G.4.e.2.A.ii.e, sediment basins are not typically used for pipelines or linear project in general. Linear projects use other regulatory-acceptable BMPs. The linear aspect of the disturbance for such projects would make it difficult and generally ineffective to place a sediment basin in a location that could catch the drainage throughout the project sites since they traverse the terrain in a linear fashion.

Comment 12:
"The Groundwater Protection Plan (GPP) is not provided."

Response 12: In accordance with Section G.4 of WVDEP's Water Pollution Control Permit the GPP is not required to be submitted to the Division of Water and Waste Management for reviews. It is to be developed and maintained on site. However, due to comments received the WVDEP has required the applicant to submit the GPP to this office for review.

Comment 13**:** In general, the comments in these letter(s) do not relate directly to the 401 application, the Natural Streams Preservation Act, or the Oil and Gas Stormwater Construction Permit. The following response addresses the Karst impacts identified in your letter(s):

Response 13: Best Management Practices established in the Erosion and Sediment Control Plan, and the Karst Mitigation Plan are designed to prevent uncontrolled releases

to surface waters and karst features in order to protect the underlying aquifer. Mountain Valley made several major, and hundreds of minor route adjustments to avoid karst features and sensitive water resources that were identified in the Karst Hazards Assessment. Additionally, Mountain Valley will deploy on-site inspectors during all phases of construction to monitor karst resources and ensure that prescribed measures are in-place to prevent uncontrolled surface water releases, prevent impacts to karst features, and therefore protect groundwater. These measures, in concert with exclusion buffers, will minimize potential impacts to surface water in karst terrain.