October 27, 2021

Steve Hardwick
Virginia Department of Environmental Quality
Richmond, Virginia
MVP@deq.virginia.gov

Submitted via email

Re: Comments on Draft VWP Permit/401 Water Quality Certification for Mountain Valley Pipeline Activities Covered by Corps of Engineers CWA Section 404 Permit

Dear Mr. Hardwick:

We submit these comments on behalf of Wild Virginia and the National Parks Conservation Association.[1] In addition to this letter and Appendices, Wild Virginia has previously submitted a number of documents to the record for this permitting action.[2] We include and incorporate by-reference each of those documents as part of this submittal.

Through its application, Mountain Valley Pipeline, LLC (Mountain Valley) seeks a Virginia Water Protection (VWP) Permit which would also serve as the water quality certification (certification) under Clean Water Act (CWA) section 401, a prerequisite to issuance of a CWA section 404 permit by the U.S. Army Corps of Engineers (Corps).

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[1] The contacts for this submittal are:
David Sligh, Conservation Director, Wild Virginia, 108 5th St SE, Charlottesville, VA 22902, david@wildvirginia.org, 434-964-7455.
Pamela Goddard, Mid-Atlantic Region Senior Program Director, National Parks Conservation Association, 777 6th Street NW, Suite 700, Washington DC, 20001-3723, pgoddard@npca.org, 202-454-3365.

[2] The referenced materials were submitted to DEQ via email and the documents are labelled as follows: Wild Va. MVP VWP_401 10.16.21 Appalmad comments to Corps.pdf; Wild Va. MVP VWP_401 10.16.21 EPA letter to Corps.pdf; Wild Va. MVP VWP_401 10.16.21 Greenstar.pdf; Wild Va. MVP VWP_401 10.16.21 Levesque and Dube.pdf; Wild Va. MVP VWP_401 10.16.21 V-SCI.pdf; Wild Va. MVP VWP_401 10.16.21 Dodds Mill Cr..pdf; Wild Va. MVP VWP_401 10.16.21 HDD paper.pdf.

We respectfully urge the Virginia State Water Control Board (Board) to deny the VWP permit and certification for construction and discharges of fill affecting state waters for the Mountain Valley Pipeline (MVP) project. The proposal before the Board does not support a conclusion that the project can meet the requirements of Virginia law or of the Clean Water Act.

One aspect of these comments which we especially ask the Board to review:

Wild Virginia has made a comprehensive review of hundreds reports of DEQ staff inspections on MVP and thousands of reports by contract inspectors hired by DEQ. These reports reveal shocking patterns of non-compliance and harm to dozens of individual waterbodies, sometimes quite severe. We assert that this picture has not previously been available to the Board but must bear heavily on the decision on the VWP permit and 401 certification. This information is pertinent to and discussed in the sections of these comments outlined below.

The following issues are presented in this letter and supported by attachments. These factors should compel denial by the Board:

I. The Virginia Department of Environmental Quality (DEQ) has not acquired sufficient information from Mountain Valley to fully describe and explain potential impacts of the project and DEQ's draft VWP permit and fact sheet do not contain data and analyses to support the recommendation that the Board approve the permit. Among the types of information still needed are:

   A. Baseline descriptions of conditions in each waterbody that would be affected.

   B. An analysis of combined or cumulative impacts from individual MVP activities within stream systems and watersheds, at aerial scales that are scientifically meaningful.

II. MVP's record strongly indicates that if permitted to proceed under the VWP permit, these activities would cause violations of Virginia's water quality standards (WQS) and other regulations adopted by the Board. Abundant evidence demonstrates that Mountain Valley has so far been unwilling and/or unable to comply with water protection requirements and these facts should be given substantial weight in the Board's decision.

I. Lack of Necessary Information

The public and the U.S. Environmental Protection Agency (EPA) have described a range of necessary information that has not been compiled or presented in MVP's application or in DEQ's records. The Fact Sheet DEQ prepared, which purports to support its recommendation that the Board approve MVP's proposal, presents no analysis regarding specifically how WQS will be met nor does it cite to evidence in the record. Further, in requests by Wild Virginia under the Freedom of Information Act (FOIA), which specifically asked for these types of analyses, the agency was unable to supply them.

A. Baseline Descriptions

All provisions of Virginia's WQS regulations apply to state waters, including the antidegradation policy. 9 VAC 25-260-30.A. We note that DEQ fails to even include the term "antidegradation" in its Fact Sheet and certainly provides no basis to conclude the policy will be met, even if Mountain Valley fully complies with the permit.

Wherever surface waters exceed the minimum levels of quality defined by either narrative or numeric water quality criteria (often referred to as "Tier 2' waters), the regulations require that the existing higher level of quality be maintained. 9 VAC 25-260-30.A.2. The sole exception to this prohibition on degrading of quality is when it is affirmatively shown that "allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. . . ." Id.[3]

Waters that have not been designated as "impaired" (Tier 1 waters) or named as "exceptional state waters" (Tier 3) are assumed to be of high quality, and hundreds of the streams MVP proposes to impact meet this criterion. Water monitoring data confirms that many of these waters are indeed of high quality.

Logically, before DEQ or the Board can assess whether and to what extent a proposed activity will lower water quality, it must know the current conditions and determine how those conditions may change with the addition of pollutants or changes to the environment under the VWP permit. Those current conditions may be termed "baseline conditions."

In a letter to the Corps commenting on Mountain Valley's application for a CWA section 404 permit, EPA noted that a similar finding of baseline conditions is also required to meet the Corps' legal responsibilities.[4] EPA states

[3] We note that many commenters in favor of Board approval assert that the project will have beneficial economic impact but do not correlate any of these asserted benefits with the standard of review required under Virginia regulations and the CWA. Further, the Board may not accept broad claims as a basis for the required finding. Rather, the finding can only be valid "after full satisfaction of the intergovernmental coordination and public participation provisions of the Commonwealth's continuing planning process." 9 VAC § 25-260-30(A)(2).

[4] Letter from Jeffrey Lapp, Wetlands Branch, EPA to Michael Hatten, USCOE, *Re: LRH-2015-00592-GBR, LRP-2015-798, NAO-2015-0898; Mountain Valley Pipeline, LLC; Mountain Valley*

that "[t]he data provided in the application is insufficient to determine accurate baseline conditions of the aquatic resources" and "recommends that baseline data include biological, physical, and chemical parameters . . . . for all impacts to aquatic resources in"[5] Virginia and West Virginia.

Information about current conditions of potentially affected waterbodies may be acquired in two ways. Where necessary, MVP has an obligation to perform studies to make these assessments and no such studies or results exist in the record for this action.

However, there are other existing sources of evidence that the Board must consider. As stated above, Wild Virginia has reviewed a vast body of information describing inspections of MVP sites conducted by or on behalf of Virginia government. These include more than 700 inspection reports prepared by DEQ staff and more than 4,700 reports on "action items" reported by contract inspectors from a private firm, McDonough Bolyard Peck (MBP).

Each of the 700+ DEQ inspections generally addressed a number of sites on the MVP route within designated portions termed "spreads." Many of the DEQ reports that listed problems MVP needed to address included multiple problems - in extreme cases a dozen or more.

Each of the individual "action items" described by MBP personnel describe a problem that required some action or response from Mountain Valley. These items ranged from minor deficiencies in pollution control devices to very serious violations and damage to state waters.

One important finding from the inspection reports directly related to an understanding of baseline conditions is explained below:

- A set of DEQ inspection reports, each headed "VWP Field Inspection Checklist," describes incidents in which ten separate headwater streams were inundated by deposits of sediments that flowed from upland MVP work sites.[6] The extent of stream impacts ranged from about 200 linear feet to 3,600 linear feet. Astoundingly, the total length of streams impacted by these gross violations is estimated by DEQ at 10,969 linear feet - more than 2 miles!

Pipeline, Wetzel County, West Virginia to Pittsylvania County, Virginia, May 27, 2021, at 6-7. Submitted to DEQ in a previous email to MVP@deq.virginia.gov.

[5] Id.

[6] Full reports contained in a document submitted separately and titled "Wild Va. FOIA Assessments at VWP Inspection Sites on MVP 9.29.21," pages 3-41. Also included in Appendix A.

Most importantly for our discussion in this section, the Board cannot make valid conclusions as to the existing baseline conditions in these streams, in regard to physical, chemical, and biological characteristics. Through a FOIA request, Wild Virginia asked DEQ for, among other information,

- Any chemical, physical, or biological measurements or observations at each of the sites from the time of the pollution events until September 29, 2021.
- Any analyses of data associated with chemical, physical, or biological features at any of these sites.
- Any description or discussion of "baseline" conditions in the streams and how those findings might affect predictions about possible future impacts from MVP.[7]

DEQ's response included not one word of analysis and no data from chemical or biological monitoring. In fact, no document provided even depicted or alluded to the level of pollution that MVP had contributed to these streams or any lasting impacts.

- Dozens of additional instances of violations and deposition of sediments into waterbodies are reported in both DEQ and MBP reports. Even worse, some streams were assaulted on multiple occasions. For example, an unnamed tributary to the Blackwater River, designated crossing S-G17, was found to have been polluted on three different occasions, on December 21, 2018 and again on December 29th, then a third time on January 9, 2019. Unfortunately, the kinds of scene shown in the photo below have occurred in many other streams on the MVP route.

  As is the case in many other instances where inspectors found streams or wetlands polluted by MVP, they would later note that the problems had been "remediated." Apparently, this indicates that MVP personnel had gone into the waterbodies and dug in the streambeds to remove some portion of the mud deposits. In no instance does DEQ explain the rationale for this "remediation" or provide any assessment as to the conditions left behind after these further destructive actions in the stream habitats.

[7] See FOIA request letter in Appendix A.

In addition to deposition of sediments from the upland pipeline work directly into waterbodies, in hundreds of additional cases large amounts of sediments were swept outside the areas supposedly protected by sediment trapping devices. In every one of these cases, waterbodies downslope could and often did receive sediment discharges later, when rains occurred before the deposits were removed from the land. And sometimes that removal waited weeks or even months.

The MBP inspectors' logs cite at least one hundred and ninety-seven instances of sediment deposited off the right of way, but a look at the detailed descriptions in the tables reveal that the number is much greater.

These occurences of significant pollution can be particularly serious in the small headwater streams that are found along much of the MVP route. When stream bottoms composed of pebbles, gravel, or cobble are deluged with sediment, vital habitat is degraded and sometimes eliminated. Given that these habitats are home to species of fish, mussels, and sensitive insects that depend not only on clear water but also on clean substrates and the refuge provided within interstitial spaces, these events are serious problems. That DEQ has not been able to provide any information about possible lasting effects in the streams thus affected, means the Board cannot know what baseline conditions exist.

In addition to these pollution reports from state inspectors, there are some analyses of water quality data from other experts that should be considered by the Board. One example is a short report in Appendix B to this letter, entitled "Analysis of USGS turbidity monitoring on Blackwater River and Bottom Creek." Doctoral students with expertise in hydrology, ecology, and environmental restoration reviewed data collected the U.S. Geological Survey, in cooperation with DEQ, at fixed sites along the MVP.

The data for the Blackwater River were collected both upstream and downstream from areas where pipeline work has been conducted. While both sites had considerable spikes in turbidity through time, the two sites showed similar results before construction began. After construction though, the downstream station had turbidity values 35% greater than the upstream station.

The report notes that a previous analysis of similar data for the Roanoke River near Lafayette, Virginia showed significant increases in pollution downstream of the pipeline as well. These types of analyses should be required of MVP on a much wider scale to represent the range of stream types at risk, given that the MVP runs through three physiographic regions in Virginia - the Ridge and Valley, Blue Ridge, and Piedmont - which can have widely different conditions and species compositions.

Again, the problems in waters already caused by MVP, as documented through the state's own inspection reports and the limited analyses done by outside experts shows that "baseline" conditions today cannot be known without a major effort to assess each waterbody. That MVP has not done so, means that the Board is obligated to deny approval at this time, unless and until the data is provided.

B. Combined Impacts from Multiple Activities

Another important deficiency in Mountain Valley's applications to the Corps and to DEQ is the absence of a scientifically valid assessment of predictable

combined impacts from multiple waterbody crossings and other MVP discharges within particular watersheds.

There are numerous cases along the MVP's path where large concentrations of waterbody crossings would occur on one stream or at numerous locations in a relatively small watershed. These combinations of impacts could, in aggregate, cause very serious negative changes in the individual streams but also in the stream systems themselves.

We provide a separate document in Appendix C to this letter which analyzes these types of combined or cumulative effects MVP may cause within watersheds of various sizes.[8] While that paper discusses these issues in relation to the Corps' 404 permit review, the basic facts and technical analysis applies for this permit review as well.

This report points out that, to date, neither MVP nor any agency has looked at combined impacts of multiple waterbody crossings at a scale that will provide any credible basis for considering whether WQS can be met. The Federal Energy Regulatory Commission (FERC) accepted MVP's cumulative impacts analysis for aquatic habitats on watersheds greater that 700 square miles in size. Virginia DEQ and other agencies have deferred to that deeply flawed approach and ignored these concerns. By contrast, the referenced analysis shows the importance of examining smaller stream systems and considering the impacts of extremely concentrated activities within those.

One example of such a watershed is that for Bottom Creek. Within this drainage basin of just 28 square miles, MVP proposes to make 26 new stream discharges and 42 new wetland impacts under the VWP. These activities would affect every branch of the uppermost headwaters to Bottom Creek. This case is especially important, given that the Creek is deemed an "Exceptional State Water" by the Board and is home to an abundance of aquatic life. With 19 fish species, including the Orangefin Madtom which is indigenous to a very small range in Virginia and North Carolina and native Brook trout, both very sensitive to pollution and habitat alterations, the combined impacts of all of MVP's proposed crossings could be devastating, yet no one has so far adequately addressed this concern. The Board must insist that this deficiency be remedied before additional MVP work is authorized.

II. Water Quality Impairments Predicted

Based on our knowledge of the waterbodies involved and the nature of documented impacts from pipeline construction through streams, there is no doubt that discharges of pollution and habitat changes in affected waters will

[8] Technical Analysis MVP Cumulative Impacts 5.28.21.pdf. was also submitted to DEQ as part of the public comment record.

negatively impact state waters. Questions that cannot be answered with the information in this current record deal with the precise level of those impacts, whether they will result in interference with designated uses, violate water quality criteria, or violate the antidegradation policy in each of the waterbodies to be affected. However, the evidence that is available indicates that violation of these provisions is highly likely to occur.

A substantial body of scientific literature, much of which is already in the record from other sources and Wild Virginia's previous submittals, indicates that pipeline construction will likely have significant negative effects on biota in these streams and that those effects may last for at least two years in some environments. These predictions are supported by the EPA comment letter to the Corps referenced above.

Another body of evidence available to the Board that further strengthens the likelihood that MVP stream crossing activities will lead to water quality degradation is Mountain Valley's record of violating water protection rules. As discussed above, Mountain Valley's record shows that it has been unable and/or unwilling to implement measures that will prevent water quality damages. There is no credible basis in the record for assuming this pattern will change now. In fact, Mountain Valley wishes to rush ahead with hundreds of water crossings in just a few months in 2022, to meet its self-imposed deadline for placing the pipeline in service next summer, and such a hurried approach spells likely disaster to out waters.

The Board is well aware that the MVP project has been subject to serious enforcement actions by the State of Virginia and by the West Virginia Department of Environmental Protection. As described above, this record is pertinent to a characterization of the current or "baseline" condition in each waterbody which precedes new discharges and impacts that will result from these crossings.

However, Mountain Valley's record of violations must be considered by the Board in another light. This perspective too justifies the Board in denying the VWP/certification.

A record of violations must be considered a possible predictor of future behavior by a permittee and, unless, there are conditions that would ensure a change, should result in rejection of the proposal. It is important to note that such a record of violations is specifically listed in the draft VWP permit as a basis for withdrawal of the permit once issued. As paragraph II.D.7. of the draft permit states,

> After notice and opportunity for a formal hearing pursuant to § 62.1-44.15:02 of the Code of Virginia, a VWP permit can be terminated for cause. Reasons for termination for cause are as

> follows: a. Noncompliance by the permittee with any condition of the VWP permit. . . .

Draft VWP Individual Permit Number 21-0416

Surely, the Board should not take the chance that the past scope and magnitude of violations by MVP might continue. Issuance of the VWP would constitute just such a risk.

Returning again to the inspection reports referenced above, just a sampling of the findings should be sufficient to show that breaking the rules has been a systemic problem for this project.

- Of just 33 waterbody crossing that MBP inspectors reported to have been completed, in nine instances MVP failed to give DEQ the required notice and completed the crossings without the state's knowledge. In some cases, the reports seem to indicate that DEQ did not discover that these crossings had been completed for months after the fact. Clearly, any assurance of protection that could be provided by the presence of inspectors at such crucial times was negated. And yet, it does not appear that DEQ has cited MVP for violations due to these actions.
- In many cases both crews of inspectors cited MVP for the failure to install required pollution control measures in accordance with plans and in some cases important features were simply not built at all. Unlike instances where measures were implemented and later needed maintenance or repairs, these failures to even use the required runoff and erosion controls are blatant violations. Of all DEQ field inspection reports, this type of violation occurred more than 8% of the time. And these reports have persisted throughout the life of the project, with reports all the way from June 2018 through June of 2021.
- In many cases, even when MVP had apparently installed the approved measures, those measure simply failed, demonstrating that the designs were inadequate from the start. In more than 400 instances, MBP inspectors reported that pollution controls were "overwhelmed," "undermined," or "overtopped." When these conditions occurred, either sediment or sediment-laden water that had not been treated left the sites and many time impacts waterbodies.

Combined, the massive deficiency in information in the record to support permit issuance, the damages already done, and the great risk that those problems will continue, or even accelerate, must lead to denial of the VWP permit and water quality certification.

We wish to thank the Board for considering these comments and additional documents and for their service to the Commonwealth.

Steve Hardwick, Virginia DEQ
October 27, 2021

Sincerely,

/s/ David Sligh
David Sligh
Conservation Director
Wild Virginia

/s/ Pamela Goddard
Pamela Goddard
Mid-Atlantic Region Senior Program Director
National Parks Conservation Association

Wild Va. FOIA Assessments at VWP Inspection Sites on MVP 9.29.21.pdf
Analysis of USGS turbidity monitoring on Blackwater River and Bottom Creek
Technical Analysis of the Sufficiency of Information to Assess Cumulative Impacts from MVP Waterbody Crossings

Appendix A

P.O. Box 1065
Charlottesville, VA 22902
(434) 971-1553
www.wildvirginia.org

September 29, 2021

Diana Adams
Freedom of Information Act Coordinator
Virginia Department of Environmental Quality
Diana.Adams@deq.virginia.gov

Sent Via Email

Re: Wild Virginia FOIA Request, Assessments at VWP Inspection Sites on MVP

Dear Ms. Adams:

In accordance with the Virginia Freedom of Information Act (FOIA), Code of Virginia § 2.2-3700 *et seq*., I request that you provide any "public records" as defined by law, meeting the description below.

Description of records requested
All records of monitoring or analysis of data related to sites identified and depicted in each of the eight documents entitled "VWP Field Inspection Checklist" (reports) included below. The records requested in relation to each stream described in those documents should be from the dates of each inspection, respectively, throught the date of this letter.

Specific records requested include:

- Any chemical, physical, or biological measurements or observations at the each of the sites described in the reports during the periods specified above. If no such records are found, please state so.

- Any records that include or describe analyses of data associated with chemical, physical, or biological features at any of these sites or in these streams at sites upstream or downstream of the sites described in the reports. These would include correspondence, discussions, or analyses comparing conditions before, during, and/or after the events and condition depicted in these reports. If no such records are found, please state so.

- Any discussion or analysis as to whether the conditions at any of the sites addressed in the reports are or have been in conformance with the Virginia water quality standards regulations. If no such records are found, please state so.

- Any description or discussion of "baseline" conditions versus affected conditions; and any discussion of these conditions as they relate to predictions of future impacts from activities in these watersheds, including those from Mountain Valley Pipeline. If no such records are found, please state so.

- Any description or discussion related to reviews of requests or plans to work in the streams to remove the sediment deposits described in the reports, including possible chemical, physical, or biological impacts those activities might cause. If no such records are found, please state so.

- Any description or discussion of chemical, physical, or biological impacts actually caused by removal of sediments from the streams. If no such records are found, please state so.

- Any description or discussion of observed or potential combined impacts on chemical, physical, or biological conditions in the streams described in the reports or in the stream systems in which they lie due to pipeline activities at these and other locations in the respective watersheds within areas designated by 12-digit Hydrologic Unit Codes. If no such records are found, please state so.

If any of these records are or can be made available through the Department's web site, please let me know the location. I would prefer to access them in that manner. Thank you for your help. Please contact me by email at david@wildvirginia.org or by phone at 434-964-7455, if I can provide clarifications or further information regarding this request.

Sincerely,
/s/ David Sligh
David Sligh
Conservation Director

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

VWP FIELD INSPECTION CHECKLIST

Short Form

Project Name	Mountain Valley Pipeline Spread H, Franklin County	**VWP Permit #**	N/A	**Inspection Date**	5/31/2018
Inspector Name	Nathan Hughes; Jesse Roberts	**Phone # & Email Address**	(804) 698-4026; Nathan.Hughes@deq.virginia.gov (540) 562-6785; Jesse.Roberts@deq.virginia.gov		
Address or lat/long (if no permit no.)	Cahas Mountain Road; near Mile Post 255.5	**Others Present During Inspection**	N/A		
Project Phase	Land Clearing; Grading	**Reason for Inspection**	Complaint		

PERMIT / REGULATORY REQUIREEMNT	Yes/ No/ NA	Location, Description and Other Notes
Unauthorized impacts to surface waters, including wetlands, or upland preservation areas **have occurred**.* *(This includes sedimentation impacts due to inadequate or failed erosion controls.)*	Yes	Approximately 2,800 linear feet (comprising 2 separate streams) have been impacted by sedimentation: ~1,110 linear feet of stream located south of project's Limits of Disturbance (LOD); ~1,690 linear feet of stream impacts located north of project's LOD
Non-impacted wetlands, streams and preservations areas within 50 feet of construction are clearly marked to prevent unpermitted impacts.	N/A	Impacted streams are located greater than 50 feet from project's LOD
Temporary impacts are being restored to original contours, stabilized, and allowed to re-establish with wetland vegetation within 30 days of completing purposeful work in the area.	N/A	
Construction activities are **not** substantially disrupting aquatic life movement.	No	Sedimentation observed within stream channels' viable habitat
E&S controls are present, properly maintained, and functioning.	Yes	At the time of inspection, E&S measures had been repaired and were functioning properly
In-stream work is being performed in the dry with the appropriate use of cofferdams, sheetpiling, etc., to minimize stream bottom disturbance and turbidity.	N/A	
Pipes and/or culverts for road crossings are countersunk to provide for the re-establishment of low flow fish passage and/or a natural stream bottom.	N/A	
Time-of-year restrictions are being adhered to.	N/A	
Water quality monitoring is being conducted during permanent stream relocations.	N/A	
Streams and wetlands are free from any sheen or discoloration that may indicate a spill of oil, lubricants, concrete or other pollutants. **	Yes	

Heavy equipment is placed on mats or geotextile fabric when working in authorized temporary wetland impact areas.	N/A	
Exposed slopes/stream banks are stabilized immediately upon completion of work in each impact area.	N/A	

Inspection Summary		
Compensation Completed	Reporting	On-Site Monthly Inspections Completed
☐ Yes ☐ No ☒ N/A	Preconstruction Notice Received: ☐ Yes ☐ No ☒ N/A Construction Status Updates Received: ☐ Yes ☐ No ☒ N/A	☐ Yes ☐ No ☒ N/A

Notes

General Notes:
On May 31, 2018, DEQ staff conducted an inspection to document sedimentation within two separate stream channels located on property adjacent to the Mountain Valley Pipeline (MVP) Right-of-Way (ROW). The property is situated west of Cahas Mountain Road (Route 742) in Franklin County, Virginia. Stream 1 is located approximately 260 feet south of Mountain Valley Pipeline (MVP) "Limits of Disturbance" (LOD); Stream 2 is located approximately 420 feet north of Mountain Valley Pipeline LOD.

Construction Activities at time of Inspection:
MVP ROW clearing completed; ROW grading in progress.

Inspection Results:
On May 31, 2018, DEQ staff observed and documented sedimentation in two separate stream channels located west of Cahas Mountain Road.

Stream 1 (located approximately 260-feet south of MVP LOD);
Approximately 1,110 linear feet of stream channel contained sediment ranging from 1-inch to a maximum depth of 11-inches was observed. Sediment within the stream's thalweg was generally 1-3 inches in depth; sediment bars and pool deposition was generally 3-7 inches in depth.

Stream 2 (located approximately 420-feet north of MVP LOD);
Approximately 1,690 linear feet of stream channel contained sediment ranging from 1-inch to a maximum depth of 10-inches was observed. Sediment within the stream's thalweg was generally 1.5 to 5-inches in depth; sediment bars and pool deposition was generally 3 to 6 inches in depth.

Recommended Corrective Actions

Close-up of number on survey stake

Sediment located on north side of SF

Sediment within channel at debris dam ~420-feet from MVP LOD
Depth 3 to 8-inches (average), Maximum depth of 11-inches; Sediment deposit 12-feet wide

Sediment in channel near treeline ~1,000-feet from MVP LOD
Channel 3-feet wide; Sediment depth 6.5-inches

Sediment within channel ~685-feet from MVP LOD
Channel 3 to 5-feet wide; Sediment depth 3-inches in thalweg, 3 to 6-inches on sediment bars

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

VWP FIELD INSPECTION CHECKLIST

Short Form

Project Name	Mountain Valley Pipeline Spread H, Montgomery County	**VWP Permit #**	N/A	**Inspection Date**	6/26/2018
Inspector Name	Nathan Hughes; Matt Grant	**Phone # & Email Address**	(804) 698-4026; Nathan.Hughes@deq.virginia.gov (804) 418-9874; Matthew.Grant@deq.virginia.gov		
Address or lat/long (if no permit no.)	Bacchus Road; 37°15'30.5"N, 80°17'46.8"W Stream Crossing SMM-15	**Others Present During Inspection**	N/A		
Project Phase	Land Clearing; Grading	**Reason for Inspection**	Complaint		

PERMIT / REGULATORY REQUIREEMNT	Yes/ No/ NA	Location, Description and Other Notes
Unauthorized impacts to surface waters, including wetlands, or upland preservation areas **have occurred**.* *(This includes sedimentation impacts due to inadequate or failed erosion controls.)*	Yes	Approximately 3,600 linear feet of stream channel have been impacted by sedimentation
Non-impacted wetlands, streams and preservations areas within 50 feet of construction are clearly marked to prevent unpermitted impacts.	N/A	Impacted streams are located greater than 50 feet from project's LOD
Temporary impacts are being restored to original contours, stabilized, and allowed to re-establish with wetland vegetation within 30 days of completing purposeful work in the area.	N/A	
Construction activities are **not** substantially disrupting aquatic life movement.	No	Sedimentation observed within stream channels' viable habitat
E&S controls are present, properly maintained, and functioning.	Yes	At the time of inspection, E&S measures had been repaired and were functioning properly
In-stream work is being performed in the dry with the appropriate use of cofferdams, sheetpiling, etc., to minimize stream bottom disturbance and turbidity.	N/A	
Pipes and/or culverts for road crossings are countersunk to provide for the re-establishment of low flow fish passage and/or a natural stream bottom.	N/A	
Time-of-year restrictions are being adhered to.	N/A	
Water quality monitoring is being conducted during permanent stream relocations.	N/A	
Streams and wetlands are free from any sheen or discoloration that may indicate a spill of oil, lubricants, concrete or other pollutants. **	Yes	

Heavy equipment is placed on mats or geotextile fabric when working in authorized temporary wetland impact areas.	N/A	
Exposed slopes/stream banks are stabilized immediately upon completion of work in each impact area.	N/A	

Inspection Summary		
Compensation Completed	Reporting	On-Site Monthly Inspections Completed
☐ Yes ☐ No ☒ N/A	Preconstruction Notice Received: ☐ Yes ☐ No ☒ N/A Construction Status Updates Received: ☐ Yes ☐ No ☒ N/A	☐ Yes ☐ No ☒ N/A

Notes

General Notes:
On June 27,18, DEQ staff conducted an inspection to document sedimentation within an unnamed tributary of Flatwoods Branch located on property adjacent to the Mountain Valley Pipeline (MVP) Right-of-Way (ROW). The impacted stream channel is situated north of Bacchus Road in Montgomery County, Virginia.

Construction Activities at time of Inspection:
MVP ROW clearing completed; ROW grading in progress.

Inspection Results:
On June 27, 2018, DEQ staff observed and documented sedimentation within an unnamed tributary to Flatwoods Branch, identified as Stream Crossing SMM-15, located north of Bacchus Road.

Stream 39 and 40
Approximately 3,600 linear feet of stream channel contained sediment ranging from 1-inch to a maximum depth of 7-inches was observed. Sediment within the stream's thalweg was generally <1-3 inches in depth; sediment bars and pool deposition was generally 1.5-7 inches in depth.

Recommended Corrective Actions

1. Repair erosion and sediment controls in areas where needed;
2. Stabilize all slopes above and below perimeter controls;
3. Remove sediment from impacted stream channels using hand removal methods (buckets and shovels) and stabilize with appropriate seed mix where applicable.

Photo 1: Sedimentation within "SMM-15" ~160' downstream of LOD; Depth = 3"
Orientation: Downstream

Photo 2: Sediment in stream ~685' from LOD; Depth = 3"
Orientation: Upstream

Photo 3: Sediment in stream at debris dam ~1,690' downstream of LOD; Depth = 2-7"
Orientation: Upstream

Photo 4: Sediment in stream ~3,485' from LOD near access road; Depth = 2"
Orientation: Downstream

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

VWP FIELD INSPECTION CHECKLIST

Short Form

Project Name	Mountain Valley Pipeline Spread H, Montgomery County	**VWP Permit #**	N/A	**Inspection Date**	6/26/2018
Inspector Name	Nathan Hughes; Matt Grant	**Phone # & Email Address**	(804) 698-4026; Nathan.Hughes@deq.virginia.gov (804) 418-9874; Matthew.Grant@deq.virginia.gov		
Address or lat/long (if no permit no.)	Catawba Road; 37°15'53.6"N, 80°18'30.8"W Stream Crossing #39 and #40	**Others Present During Inspection**	N/A		
Project Phase	Land Clearing; Grading	**Reason for Inspection**	Complaint		

PERMIT / REGULATORY REQUIREEMNT	Yes/ No/ NA	Location, Description and Other Notes
Unauthorized impacts to surface waters, including wetlands, or upland preservation areas **have occurred**.* *(This includes sedimentation impacts due to inadequate or failed erosion controls.)*	Yes	Approximately 2,200 linear feet (comprising 2 separate streams) have been impacted by sedimentation
Non-impacted wetlands, streams and preservations areas within 50 feet of construction are clearly marked to prevent unpermitted impacts.	N/A	Impacted streams are located greater than 50 feet from project's LOD
Temporary impacts are being restored to original contours, stabilized, and allowed to re-establish with wetland vegetation within 30 days of completing purposeful work in the area.	N/A	
Construction activities are **not** substantially disrupting aquatic life movement.	No	Sedimentation observed within stream channels' viable habitat
E&S controls are present, properly maintained, and functioning.	Yes	At the time of inspection, E&S measures had been repaired and were functioning properly
In-stream work is being performed in the dry with the appropriate use of cofferdams, sheetpiling, etc., to minimize stream bottom disturbance and turbidity.	N/A	
Pipes and/or culverts for road crossings are countersunk to provide for the re-establishment of low flow fish passage and/or a natural stream bottom.	N/A	
Time-of-year restrictions are being adhered to.	N/A	
Water quality monitoring is being conducted during permanent stream relocations.	N/A	
Streams and wetlands are free from any sheen or discoloration that may indicate a spill of oil, lubricants, concrete or other pollutants. **	Yes	

Heavy equipment is placed on mats or geotextile fabric when working in authorized temporary wetland impact areas.	N/A	
Exposed slopes/stream banks are stabilized immediately upon completion of work in each impact area.	N/A	

Inspection Summary		
Compensation Completed	Reporting	On-Site Monthly Inspections Completed
☐ Yes ☐ No ☒ N/A	Preconstruction Notice Received: ☐ Yes ☐ No ☒ N/A Construction Status Updates Received: ☐ Yes ☐ No ☒ N/A	☐ Yes ☐ No ☒ N/A

Notes

General Notes:
On June 26,18, DEQ staff conducted an inspection to document sedimentation within two separate unnamed tributaries to North Fork Roanoke River located on property adjacent to the Mountain Valley Pipeline (MVP) Right-of-Way (ROW). The impacted stream channels are situated south of Catawba Road (Route 785) in Montgomery County, Virginia.

Construction Activities at time of Inspection:
MVP ROW clearing completed; ROW grading in progress.

Inspection Results:
On June 26, 2018, DEQ staff observed and documented sedimentation in 2 separate stream channels, identified as Stream Crossing 39 and 40, located south of Catawba Road.

Stream 39 and 40
Approximately 2,200 linear feet of stream channel contained sediment ranging from 1-inch to a maximum depth of 5-inches was observed. Sediment within the stream's thalweg was generally <1-3 inches in depth; sediment bars and pool deposition was generally 1.5-5 inches in depth.

Recommended Corrective Actions

1. Repair erosion and sediment controls in areas where needed;
2. Stabilize all slopes above and below perimeter controls;
3. Remove sediment from impacted stream channels using hand removal methods (buckets and shovels) and stabilize with appropriate seed mix where applicable.

Photo 1: Sedimentation within "Stream 39" ~25' downstream of LOD
Orientation: Downstream

Photo 2: 4.5" of sediment at debris dam ~210' from Photo 1
Orientation: Downstream

Photo 3: Sediment in stream at confluence with "Stream 40" ~265' downstream of Photo 1
Orientation: Downstream

Photo 4: Sediment in stream ~1,325' from Photo 1
Orientation: Upstream

VWP FIELD INSPECTION CHECKLIST

Short Form

Project Name	Mountain Valley Pipeline Spread H, Montgomery County	**VWP Permit #**	N/A	**Inspection Date**	6/27/2018
Inspector Name	Nathan Hughes; Matt Grant	**Phone # & Email Address**	(804) 698-4026; Nathan.Hughes@deq.virginia.gov (804) 418-9874; Matthew.Grant@deq.virginia.gov		
Address or lat/long (if no permit no.)	Half Acre Rock Road; Stream Crossing MN-513	**Others Present During Inspection**	N/A		
Project Phase	Land Clearing; Grading	**Reason for Inspection**	Construction		

PERMIT / REGULATORY REQUIREEMNT	**Yes/ No/ NA**	**Location, Description and Other Notes**
Unauthorized impacts to surface waters, including wetlands, or upland preservation areas **have occurred**.* *(This includes sedimentation impacts due to inadequate or failed erosion controls.)*	Yes	Approximately 209 linear feet has been impacted by sedimentation
Non-impacted wetlands, streams and preservations areas within 50 feet of construction are clearly marked to prevent unpermitted impacts.	N/A	Impacted stream is located greater than within and downstream of LOD
Temporary impacts are being restored to original contours, stabilized, and allowed to re-establish with wetland vegetation within 30 days of completing purposeful work in the area.	N/A	
Construction activities are **not** substantially disrupting aquatic life movement.	No	Sedimentation observed within stream channels' viable habitat
E&S controls are present, properly maintained, and functioning.	Yes	At the time of inspection, E&S measures had been repaired and were functioning properly
In-stream work is being performed in the dry with the appropriate use of cofferdams, sheetpiling, etc., to minimize stream bottom disturbance and turbidity.	N/A	
Pipes and/or culverts for road crossings are countersunk to provide for the re-establishment of low flow fish passage and/or a natural stream bottom.	N/A	
Time-of-year restrictions are being adhered to.	N/A	
Water quality monitoring is being conducted during permanent stream relocations.	N/A	
Streams and wetlands are free from any sheen or discoloration that may indicate a spill of oil, lubricants, concrete or other pollutants. **	Yes	

Heavy equipment is placed on mats or geotextile fabric when working in authorized temporary wetland impact areas.	N/A	
Exposed slopes/stream banks are stabilized immediately upon completion of work in each impact area.	N/A	

Inspection Summary		
Compensation Completed	Reporting	On-Site Monthly Inspections Completed
☐ Yes ☐ No ☒ N/A	Preconstruction Notice Received: ☐ Yes ☐ No ☒ N/A Construction Status Updates Received: ☐ Yes ☐ No ☒ N/A	☐ Yes ☐ No ☒ N/A

Notes

General Notes:
On June 27, 2018, DEQ staff conducting field inspections documented sedimentation within an unnamed tributary to Flatwoods Branch located on property adjacent to the Mountain Valley Pipeline (MVP) Right-of-Way (ROW).

Construction Activities at time of Inspection:
MVP ROW clearing completed; ROW grading in progress.

Stream MN-513
Approximately 209 linear feet of stream channel contained sediment ranging from <0.5-inch to a maximum depth of 3-inches was observed. Sediment within the stream's thalweg was generally <1-inch in depth; sediment bars and pool deposition was generally 1-3 inches in depth.

Recommended Corrective Actions

1. Repair erosion and sediment controls in areas where needed;
2. Stabilize all slopes above and below perimeter controls;
3. Remove sediment from impacted stream channel using hand removal methods (buckets and shovels) and stabilize with appropriate seed mix where applicable.

Photo 1: Sedimentation and woody debris within Stream MN-513 at bridge crossing
Orientation: Downstream

Photo 2: Sedimentation and woody debris downstream of bridge crossing
Orientation: Downstream

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VWP FIELD INSPECTION CHECKLIST

Short Form

Project Name	Mountain Valley Pipeline Spread G, Giles County	**VWP Permit #**	N/A	**Inspection Date**	8/29/2018
Inspector Name	Nathan Hughes; Matt Grant	**Phone # & Email Address**	(804) 698-4026; Nathan.Hughes@deq.virginia.gov (804) 418-9874; Matthew.Grant@deq.virginia.gov		
Address or lat/long (if no permit no.)	Stream Crossing NN-12	**Others Present During Inspection**	N/A		
Project Phase	Land Clearing; Grading	**Reason for Inspection**	Construction		

PERMIT / REGULATORY REQUIREEMNT	Yes/ No/ NA	Location, Description and Other Notes
Unauthorized impacts to surface waters, including wetlands, or upland preservation areas **have occurred**.* *(This includes sedimentation impacts due to inadequate or failed erosion controls.)*	Yes	Approximately 600 linear feet of stream channel has been impacted by sedimentation
Non-impacted wetlands, streams and preservations areas within 50 feet of construction are clearly marked to prevent unpermitted impacts.	Yes	
Temporary impacts are being restored to original contours, stabilized, and allowed to re-establish with wetland vegetation within 30 days of completing purposeful work in the area.	N/A	
Construction activities are **not** substantially disrupting aquatic life movement.	No	Sedimentation observed within stream channels' viable habitat
E&S controls are present, properly maintained, and functioning.	Yes	At the time of inspection, E&S measures had been repaired and were functioning properly
In-stream work is being performed in the dry with the appropriate use of cofferdams, sheetpiling, etc., to minimize stream bottom disturbance and turbidity.	N/A	
Pipes and/or culverts for road crossings are countersunk to provide for the re-establishment of low flow fish passage and/or a natural stream bottom.	N/A	
Time-of-year restrictions are being adhered to.	N/A	
Water quality monitoring is being conducted during permanent stream relocations.	N/A	
Streams and wetlands are free from any sheen or discoloration that may indicate a spill of oil, lubricants, concrete or other pollutants. **	Yes	

Heavy equipment is placed on mats or geotextile fabric when working in authorized temporary wetland impact areas.	N/A	
Exposed slopes/stream banks are stabilized immediately upon completion of work in each impact area.	N/A	

Inspection Summary		
Compensation Completed	Reporting	On-Site Monthly Inspections Completed
☐ Yes ☐ No ☒ N/A	Preconstruction Notice Received: ☐ Yes ☐ No ☒ N/A Construction Status Updates Received: ☐ Yes ☐ No ☒ N/A	☐ Yes ☐ No ☒ N/A

Notes

General Notes:
On August 29, 2018, DEQ staff conducting field inspections documented sedimentation within Stream NN-12 located on property adjacent to the Mountain Valley Pipeline (MVP) Right-of-Way (ROW).

Construction Activities at time of Inspection:
MVP ROW clearing completed; ROW grading in progress.

Stream NN-12
Approximately 600 linear feet of stream channel contained sediment ranging from <0.5-inch to a maximum depth of 3-inches was observed. Sediment within the stream's thalweg was generally <1-inch in depth; sediment bars and pool deposition was generally 1-3 inches in depth. Cleanup activity ESC repair were underway at time of field inspection.

Recommended Corrective Actions

1. Repair erosion and sediment controls in areas where needed;
2. Stabilize all slopes above and below perimeter controls;
3. Remove sediment from impacted stream channel using hand removal methods (buckets and shovels) and stabilize with appropriate seed mix where applicable.

Photo 1: Seed/straw area within forested stream buffer downslope of ESC failure
Orientation: N/A

Photo 2: Sedimentation and seed/straw in small pool downslope of ESC failure
Orientation: Downstream

Photo 3: Sediment in stream approximately 300' downstream of ROW; Depth = 1-3"
Orientation: Downstream

Photo 4: Sediment along bank of stream approximately 500' downstream of ROW; Depth = 2"
Orientation: Upstream

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

VWP FIELD INSPECTION CHECKLIST

Short Form

Project Name	Mountain Valley Pipeline Spread G, Giles County	**VWP Permit #**	N/A	**Inspection Date**	9/5/2018
Inspector Name	Nathan Hughes; Matt Grant	**Phone # & Email Address**	(804) 698-4026; Nathan.Hughes@deq.virginia.gov (804) 418-9874; Matthew.Grant@deq.virginia.gov		
Address or lat/long (if no permit no.)	Stream Crossing Q-14	**Others Present During Inspection**	N/A		
Project Phase	Land Clearing; Grading	**Reason for Inspection**	Construction		

PERMIT / REGULATORY REQUIREEMNT	Yes/ No/ NA	Location, Description and Other Notes
Unauthorized impacts to surface waters, including wetlands, or upland preservation areas **have occurred**.* *(This includes sedimentation impacts due to inadequate or failed erosion controls.)*	Yes	Approximately 630 linear feet of stream channel has been impacted by sedimentation
Non-impacted wetlands, streams and preservations areas within 50 feet of construction are clearly marked to prevent unpermitted impacts.	Yes	
Temporary impacts are being restored to original contours, stabilized, and allowed to re-establish with wetland vegetation within 30 days of completing purposeful work in the area.	N/A	
Construction activities are **not** substantially disrupting aquatic life movement.	No	Sedimentation observed within stream channel's viable habitat
E&S controls are present, properly maintained, and functioning.	Yes	At the time of inspection, E&S measures were being repaired
In-stream work is being performed in the dry with the appropriate use of cofferdams, sheetpiling, etc., to minimize stream bottom disturbance and turbidity.	N/A	
Pipes and/or culverts for road crossings are countersunk to provide for the re-establishment of low flow fish passage and/or a natural stream bottom.	N/A	
Time-of-year restrictions are being adhered to.	N/A	
Water quality monitoring is being conducted during permanent stream relocations.	N/A	
Streams and wetlands are free from any sheen or discoloration that may indicate a spill of oil, lubricants, concrete or other pollutants. **	Yes	

Heavy equipment is placed on mats or geotextile fabric when working in authorized temporary wetland impact areas.	N/A	
Exposed slopes/stream banks are stabilized immediately upon completion of work in each impact area.	N/A	

Inspection Summary		
Compensation Completed	Reporting	On-Site Monthly Inspections Completed
☐ Yes ☐ No ☒ N/A	Preconstruction Notice Received: ☐ Yes ☐ No ☒ N/A Construction Status Updates Received: ☐ Yes ☐ No ☒ N/A	☐ Yes ☐ No ☒ N/A

Notes

General Notes:
On September 5, 2018, DEQ staff conducting field inspections documented sedimentation within Stream Q-14 located on property adjacent to the Mountain Valley Pipeline (MVP) Access Road (#G/I 234).

Construction Activities at time of Inspection:
Access Road maintenance, Stormwater measures and Erosion & Sedimentation Controls

Stream Q-14
Approximately 630 linear feet of stream channel contained sediment ranging from <0.5-inch to a maximum depth of 9-inches was observed. No flow was present in the 10-12'wide channel at time of inspection. Sediment within the stream's thalweg was generally 3-inches in depth; sediment bars and pool deposition was generally >6-inches in depth. Landowner permission was not granted for Kimballton Branch downstream of Rogers Road culverts.

Recommended Corrective Actions

1. Repair erosion and sediment controls in areas where needed;
2. Stabilize all slopes above and below perimeter controls;
3. Remove sediment from impacted stream channel using hand removal methods (buckets and shovels) and stabilize with appropriate seed mix where applicable.

Photo 1: View from Access Road G/I 234 toward Kimballton Branch downslope of ESC failure
Orientation: N/A

Photo 2: Access Road construction/maintenance near Photo 1
Orientation: Upslope

Photo 3: Sediment in stream approximately 50' downslope of Access Road G/I 234 Depth = 3"
Orientation: Downstream

Photo 4: Sediment at debris dam approximately 400' downstream of Photo 1; Depth = 4"
Orientation: Downstream

Photo 5: Sedimentation in channel 100' upstream of Rogers Road culverts; Depth = 8"
Orientation: Upstream

Photo 6: Sedimentation in channel downstream of Rogers Road culverts; no landowner permission
Orientation: Downstream

VWP FIELD INSPECTION CHECKLIST

Short Form

Project Name	Mountain Valley Pipeline Spread H, Roanoke County	**VWP Permit #**	N/A	**Inspection Date**	9/20/2018
Inspector Name	Nathan Hughes; Matt Grant	**Phone # & Email Address**	(804) 921-1970; Nathan.Hughes@deq.virginia.gov (804) 418-9874; Matthew.Grant@deq.virginia.gov		
Address or lat/long (if no permit no.)	Wetland Crossing IJ-10 Access Road 288	**Others Present During Inspection**	N/A		
Project Phase	Access Road	**Reason for Inspection**	Construction		

PERMIT / REGULATORY REQUIREEMNT	Yes/ No/ NA	Location, Description and Other Notes
Unauthorized impacts to surface waters, including wetlands, or upland preservation areas **have occurred**.* *(This includes sedimentation impacts due to inadequate or failed erosion controls.)*	Yes	Approximately 350 square feet of wetlands were impacted by gravel
Non-impacted wetlands, streams and preservations areas within 50 feet of construction are clearly marked to prevent unpermitted impacts.	Yes	
Temporary impacts are being restored to original contours, stabilized, and allowed to re-establish with wetland vegetation within 30 days of completing purposeful work in the area.	N/A	
Construction activities are **not** substantially disrupting aquatic life movement.	N/A	
E&S controls are present, properly maintained, and functioning.	Yes	At the time of inspection, E&S measures had been repaired and were functioning properly
In-stream work is being performed in the dry with the appropriate use of cofferdams, sheetpiling, etc., to minimize stream bottom disturbance and turbidity.	N/A	
Pipes and/or culverts for road crossings are countersunk to provide for the re-establishment of low flow fish passage and/or a natural stream bottom.	N/A	
Time-of-year restrictions are being adhered to.	N/A	
Water quality monitoring is being conducted during permanent stream relocations.	N/A	
Streams and wetlands are free from any sheen or discoloration that may indicate a spill of oil, lubricants, concrete or other pollutants. **	Yes	
Heavy equipment is placed on mats or geotextile fabric when working in authorized temporary wetland impact areas.	N/A	
Exposed slopes/stream banks are stabilized immediately upon completion of work in each impact area.	N/A	

Inspection Summary		
Compensation Completed	Reporting	On-Site Monthly Inspections Completed
☐ Yes ☐ No ☒ N/A	Preconstruction Notice Received: ☐ Yes ☐ No ☒ N/A Construction Status Updates Received: ☐ Yes ☐ No ☒ N/A	☐ Yes ☐ No ☒ N/A

General Notes:
On September 20, 2018, DEQ staff conducted a field inspection for Wetland IJ-10 located on MVP Access Road 288.

Construction Activities at time of Inspection:
Access Road 288 being maintained; ESCs replaced and functioning properly

Stream NN-12
Approximately 350 square feet of wetlands contained gravel ranging from <0.5-inch to a maximum depth of 6-inches was observed.

Recommended Corrective Actions

1. Repair erosion and sediment controls in areas where needed;
2. Stabilize all slopes above and below perimeter controls;
3. Remove gravel from impacted wetland using hand removal methods (i.e. buckets and shovels) and stabilize with appropriate seed mix where applicable.

Photo 1: Access Road 288 **Orientation:** Facing Bent Mountain Road

Photo 2: Gravel from Access Road 288 in Wetland IJ-10 due to ESC failure
Orientation: N/A

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

VWP FIELD INSPECTION CHECKLIST

Short Form

Project Name	Mountain Valley Pipeline Spread I, Franklin County	**VWP Permit #**	N/A	**Inspection Date**	10/16/2018
Inspector Name	Nathan Hughes; Matt Grant	**Phone # & Email Address**	(804) 921-1970; Nathan.Hughes@deq.virginia.gov (804) 418-9874; Matthew.Grant@deq.virginia.gov		
Address or lat/long (if no permit no.)	Stream Crossing E-48 (BonBrook #2)	**Others Present During Inspection**	N/A		
Project Phase	Grading; Trenching	**Reason for Inspection**	Construction		

PERMIT / REGULATORY REQUIREEMNT	Yes/ No/ NA	Location, Description and Other Notes
Unauthorized impacts to surface waters, including wetlands, or upland preservation areas **have occurred**.* *(This includes sedimentation impacts due to inadequate or failed erosion controls.)*	Yes	Linear footage of stream channel impact unknown due to lack of adjacent landowner permission.
Non-impacted wetlands, streams and preservations areas within 50 feet of construction are clearly marked to prevent unpermitted impacts.	Yes	
Temporary impacts are being restored to original contours, stabilized, and allowed to re-establish with wetland vegetation within 30 days of completing purposeful work in the area.	N/A	
Construction activities are **not** substantially disrupting aquatic life movement.	No	Sedimentation observed within stream channel's viable habitat
E&S controls are present, properly maintained, and functioning.	Yes	At the time of inspection, E&S measures were being repaired
In-stream work is being performed in the dry with the appropriate use of cofferdams, sheetpiling, etc., to minimize stream bottom disturbance and turbidity.	N/A	
Pipes and/or culverts for road crossings are countersunk to provide for the re-establishment of low flow fish passage and/or a natural stream bottom.	N/A	
Time-of-year restrictions are being adhered to.	N/A	
Water quality monitoring is being conducted during permanent stream relocations.	N/A	
Streams and wetlands are free from any sheen or discoloration that may indicate a spill of oil, lubricants, concrete or other pollutants. **	Yes	

Heavy equipment is placed on mats or geotextile fabric when working in authorized temporary wetland impact areas.	N/A	
Exposed slopes/stream banks are stabilized immediately upon completion of work in each impact area.	N/A	

Inspection Summary		
Compensation Completed	Reporting	On-Site Monthly Inspections Completed
☐ Yes ☐ No ☒ N/A	Preconstruction Notice Received: ☐ Yes ☐ No ☒ N/A Construction Status Updates Received: ☐ Yes ☐ No ☒ N/A	☐ Yes ☐ No ☒ N/A

Notes

General Notes:
On October 16, 2018, DEQ staff conducting field inspections documented sedimentation in Stream E-48 located on property adjacent to and within the Mountain Valley Pipeline (MVP) right-of-way (RoW).

Construction Activities at time of Inspection:
Stormwater measures and Erosion & Sediment Controls

Stream E-48
Sediment ranging from <0.5-inch to a maximum depth of 2-inches was observed. Sediment was also observed within forested buffer. Flow was present in the 1-3'wide channel at time of inspection. Sediment within the stream's thalweg was generally <1-inch in depth; sediment bars and pool deposition was generally 1 to 2-inches in depth. Landowner permission was not granted for adjacent property downstream.

Clean-up activities and seed/straw present at time of inspection, however more remediation needed

Recommended Corrective Actions

1. Repair erosion and sediment controls in areas where needed;
2. Stabilize all slopes above and below perimeter controls;
3. Remove sediment from impacted stream channel using hand removal methods (buckets and shovels) and stabilize with appropriate seed mix where applicable.

Photo 1: Overview of Stream Crossing E-48 **Orientation:** ENE

Photo 2: View downstream from bridge in Photo 1 **Orientation:** Downstream

Photo 3: Sediment in stream and on banks at edge of RoW; Depth = 0.5-2”
Orientation: Downstream

Photo 4: Overview of stream crossing and sediment within forested buffer
Orientation: SE

Appendix B

Analysis of USGS turbidity monitoring on Blackwater River and Bottom Creek

About this analysis: This independent review was conducted by the Virginia Scientist-Community Interface (V-SCI). V-SCI is a graduate student organization dedicated to reviewing and synthesizing science related to environmental issues. V-SCI analysts on this project include PhD students with formal training and expertise in hydrology and ecology, and environmental restoration. We are happy to discuss our findings in more detail if we can be of greater service

Analyzed and prepared by Benjamin Bowes and Samuel Bickley

We analyzed continuously monitored turbidity data from 4 (2 on the Blackwater River, and 2 on Bottom Creek) United States Geological Survey (USGS) gages. These gages are part of a program monitoring high-priority stream crossings by natural gas pipelines in West Virginia and Virginia. At each site, the USGS installed a gage upstream and downstream of potential pipeline crossings. To date, no crossing has been completed anywhere a USGS monitoring gage has been installed.

For analysis of Blackwater River, we used 15-minute turbidity data from Blackwater River above Maple Branch Road near Redwood, VA (upstream of potential crossing, station number 0205696042) and Blackwater below Maple Branch Road near Redwood, VA (downstream of potential crossing, station number 0205696095). For analysis of Bottom Creek, we used 15-minute turbidity data from BottomCreek above tributary near Bent Mountain Road (upstream of potential crossing, station number 0205373035) and BottomCreek along Route 612 near Bent Mountain, VA (downstream of potential crossing, station number 0205373075).

The period of record for this analysis was from 2017-10-27 through 2021-10-17 (Figs. 2 and 3).To analyze the effects of upland construction in the watersheds surrounding the USGS monitors, we determined dates of construction based on on-the-ground information provided by local residents who had documented when various construction activities took place along the pipeline route (Table 1,2). We used a simple linear model to determine differences in turbidity between upstream and downstream gages before, during, and after periods of construction. The response variable was turbidity (FNU units) and fixed effects were site (upstream or downstream) and period (before, during, after).

Results

Blackwater River - Turbidity at Blackwater River was variable and was subject to frequent spikes in turbidity at both the upstream and downstream gages (Fig. 1). There was no difference in turbidity before construction, but there was a statistically significant difference in mean turbidity during construction ($p < 0.0001$), with turbidity at the downstream gage being 35% (16.14 FNUs) greater than at the upstream gage (Fig. 2). After construction, there was a statistically significant difference between upstream and downstream gages ($p = 0.004$), but turbidity at the downstream gage was only 5.5% (1.53 FNUs) greater than at the upstream gage.

Bottom Creek - There were multiple periods of construction at Bottom Creek, but turbidity remained low at both the upstream and downstream gages (Fig. 3). Before construction,

upstream turbidity was greater than downstream turbidity (p = 0.003), but there was only a 0.15 FNU difference in mean turbidities (Fig. 4). During construction, downstream turbidity was greater (p < 0.0001), but there was only a 0.1 FNU difference in mean turbidity. There was no difference after the first period of construction (p = 0.32), nor during the second period of construction (p = 0.72). After the second period of construction, downstream turbidity was greater than upstream turbidity (p = 0.004), though the difference was only 0.15 FNUs.

Conclusion

Analysis of mean turbidity during the period of construction at Blackwater River indicates that turbidity significantly increased during construction at the downstream USGS gages compared to the upstream gage. While there was a significant difference in turbidity values after construction, the absolute difference between upstream and downstream values is minimal and the significant effect is likely due to the large number of observations within each time period (15-minute data between 2019-01-01 and 2021-10-17).

While statistical analysis of mean turbidity during periods of construction at Bottom Creek indicated significant differences in turbidity between upstream and downstream gages during construction, these differences were minimal and likely not biologically significant, and similar to the after construction period at Blackwater River were likely due to the large number of observations available due to 15-minute data.

In comments filed with FERC, V-SCI has previously documented an increase in turbidity during construction at Roanoke River near Lafayette, VA. While the placement of the USGS gages may be explicitly placed to measure the effects of pipeline stream crossings, we have demonstrated that they are also capable of measuring effects of other MVP construction activities in the watershed. Because of the paired nature of the USGS gages, we are able to assess differences between upstream and downstream turbidity values during periods of construction regardless of precipitation events that would affect both gages simultaneously. Determining when construction took place within each watershed is important to properly analyze data from the USGS gage network established along the MVP route and we urge greater transparency surrounding this information and suggest that state agencies further analyze the monitoring data available to them.

Table 1 Mean turbidity at Blackwater River before, during, and after construction.

Period	Dates	Blackwater River upstream	Blackwater River downstream
Before	2017-11-08 through 2018-1-31	2.24	2.8
During	2018-02-01 through 2018-12-31	37.67	53.81
After	2018-12-31 through 2021-10-17	26.71	28.23

Table 2. Mean turbidity at Bottom Creek during before, during, and after periods of construction.

Period	Dates	Blackwater River upstream	Blackwater River downstream
Before	2017-11-08 through 2018-1-31	0.28	0.13
During	2018-02-01 through 2018-12-31	1.3	1.43
After	2019-01-01 through 2021-04-30	0.73	0.77
During2	2021-05-01 through 2021-07-31	1.01	1.21
After2	2021-08-01 through 2021-10-17	1.62	1.47

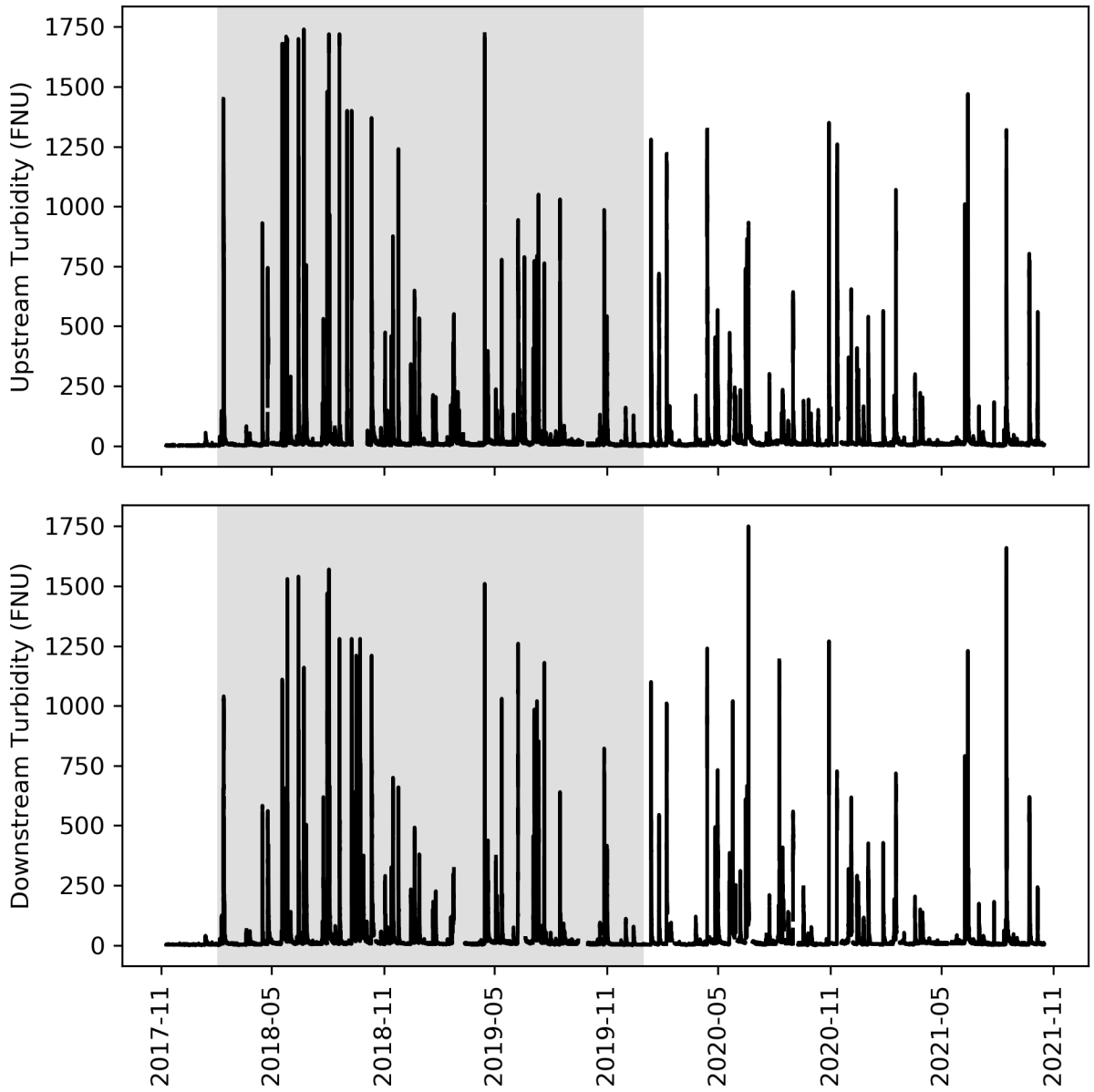

Figure 1. Time series of 15-minute turbidity at Blackwater River turbidity. Grey shading indicates periods of construction.

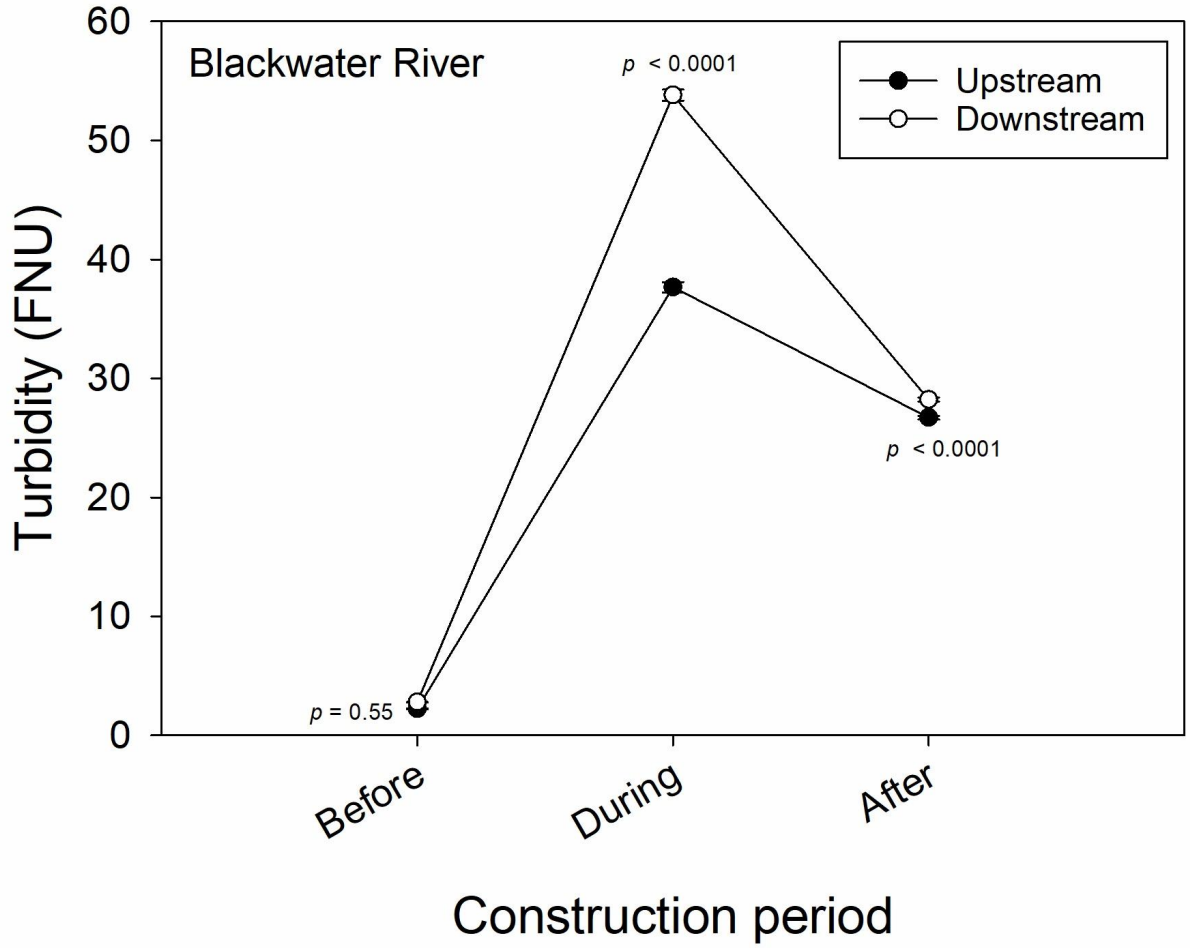

Figure 2. Difference between upstream and downstream turbidity before, during, and after construction at Blackwater River.

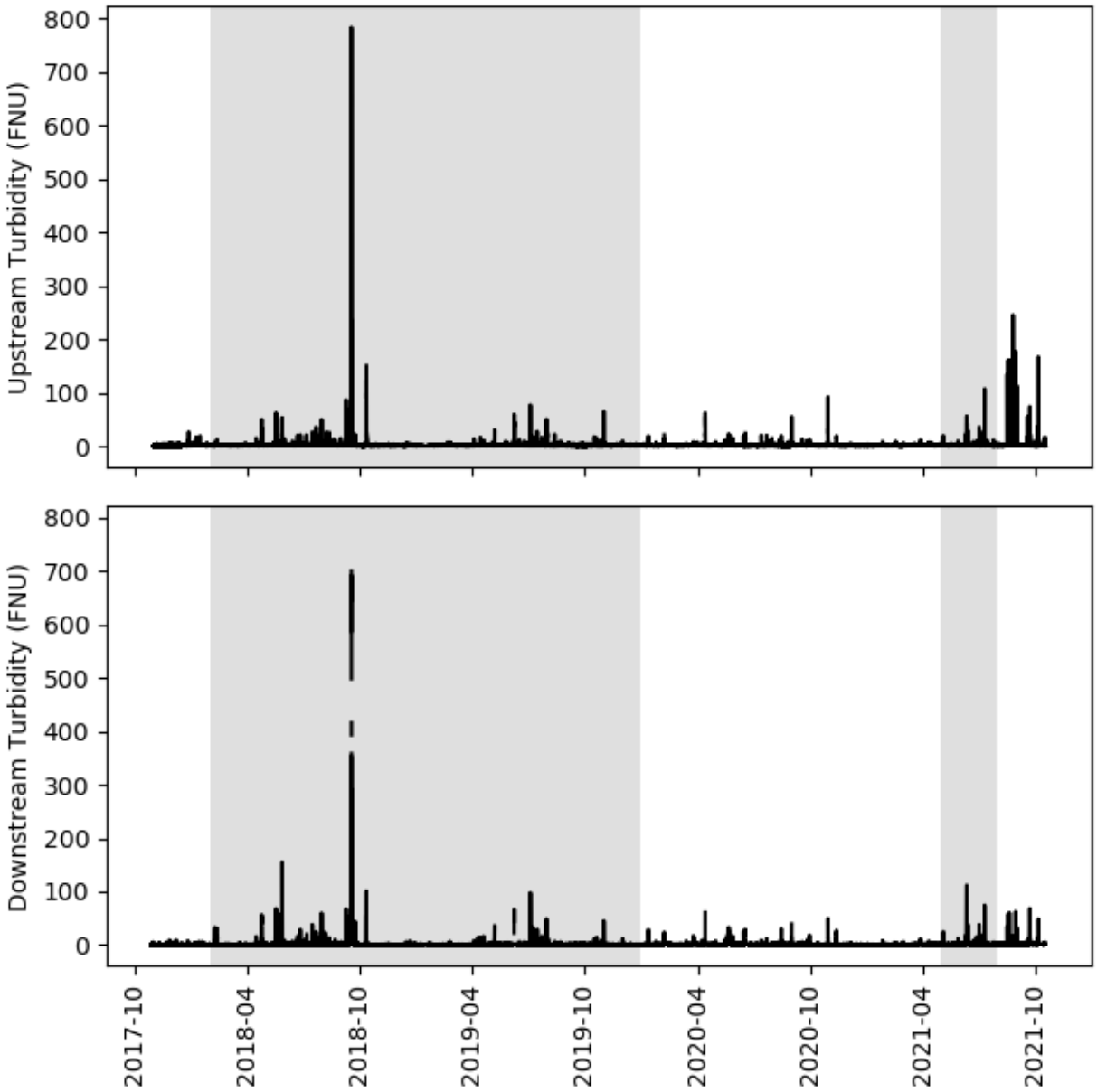

Figure 3. Time series of 15-minute turbidity at Bottom Creek turbidity. Grey shading indicates periods of construction.

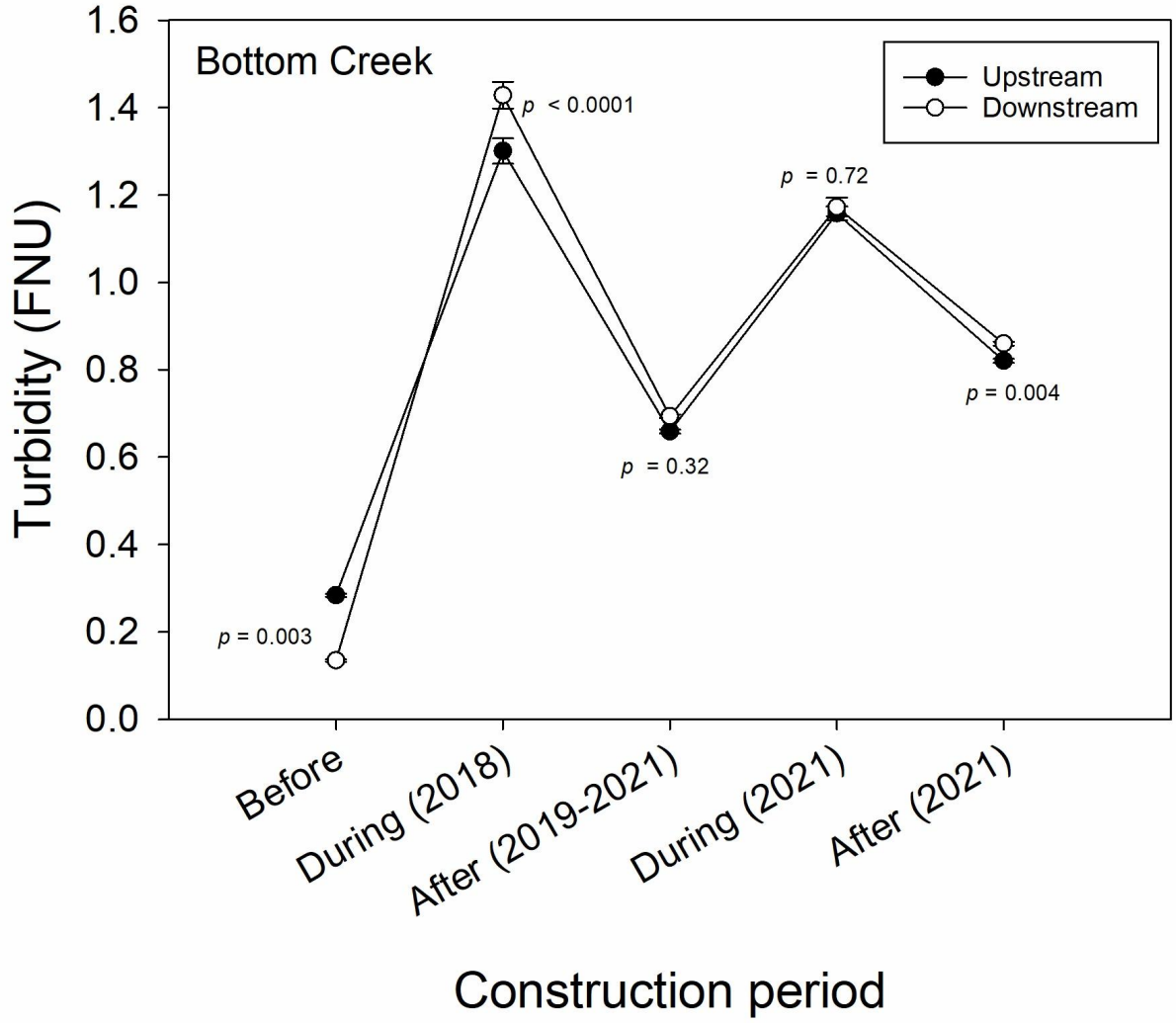

Figure 4. Difference between upstream and downstream turbidity before, during, and after periods of construction at Bottom Creek.

Appendix C

Technical Analysis of the Sufficiency of Information to Assess Cumulative Impacts from MVP Waterbody Crossings

Prepared by David Sligh
May 28, 2021

Summary Statement

The author bases the conclusions offered in this report on thorough reviews of the Clean Water Act (CWA) section 404 application submitted for the Mountain Valley Pipeline (MVP) project; documents prepared for National Environmental Policy Act (NEPA) reviews for MVP; and documents related to decisions by the U.S. Fish and Wildlife Service, U.S. Forest Service, and Federal Energy Regulatory Commission (FERC).

In addition, the author has visited MVP construction areas on numerous occasions and has examined and sampled many of the streams that have been or may be affected by project activities, both during MVP construction and at other times throughout the last four decades. The review and findings are informed by extensive experience as an expert in water quality assessments, pollution impacts, and application of state and federal regulations, as explained on page 9.

Conclusions in this report:

- The 404 application does not contain sufficient information to make technically-valid analyses of cumulative impacts.
- Prior discussions by regulatory agencies of cumulative impacts from MVP have been grossly deficient.
- Evidence from specific streams and stream systems show that pollution from the proposed waterbody crossings *will* contribute to serious, long-term impairments of water quality and aquatic system viability.
- Under applicable regulatory standards, the United State Army Corps of Engineers (Corps) cannot issue approvals for MVP water crossings because available information is not sufficient to make credible predictions in most areas and impairments will result from and be worsened by these activities.

MVP's CWA Section 404 Permit Application

The document entitled *Mountain Valley Pipeline Project, Individual Permit Application*, dated February 2021, includes no useful discussion of potential cumulative impacts on aquatic resources on any scale. On page 33, in a section entitled "jurisdiction impacts" the text refers to tables with listings of discharge sites and states that these tables "identify the location and size of anticipated individual and cumulative wetland and stream impacts."

The tables referenced include individual stream discharge points and for each of these points the table lists a HUC 8 number. HUC 8 is a shorthand designation for a drainage area designated by an 8-digit Hydrologic Unit Code. I find no compilation of the numbers or types of discharges proposed for each of the HUC 8 areas, no discussion of

the sizes of those drainages, or any other analysis that would provide useful information about cumulative impacts that are significant in any of these defined areas, in regard to physical, chemical, or biological features.

It is important to note that in the hydrologic unit code system, HUC 8 drainages are expected to be larger than 700 square miles in extent.[1] As one example of a HUC 8 crossed by the MVP route, the Upper Roanoke HUC (03010101) covers 2,219 square miles.[2] To understand potential cumulative impacts within a drainage of this size would require a large body of information that is not included in the *Individual Permit Application*.

Another document included with the Individual Permit Application is *Attachment B: Virginia Department of Environmental Quality 401 Water Quality Certification Information and Virginia Water Protection Permit Application* (hereafter "Attachment B"). In this document, MVP discusses what it asserts are valid cumulative impacts assessments that were made in earlier reviews by the Corps and other regulatory agencies.

Those previous discussions of cumulative impacts are discussed below. All were technically-inadequate. But first, several points should be made about the value of those previous reviews in relation to this permitting action. Even if those analyses had been sound, they are no longer valid bases for a decision by the Corps for the following reasons.

First, there have been significant changes to the project itself since earlier agency reviews were completed. MVP has been granted numerous variances and plan amendments so that in some areas waterbodies that were to be crossed have been eliminated and others added. These include places where there have been alterations to the route or alignment and other features.

Second, the "baseline" conditions that existed when these previous reviews were done have been drastically changed in numerous places by the upland construction activities on MVP. For example, as illustrated by discussion later in this report, hundreds or thousands of feet of some streams have had beds and banks blanketed with thick sediment deposits. In other places physical changes, including eroding and collapsing stream banks, have resulted from MVP actions.[3] There are sites where floodplain and riparian areas where inundated by impoundments of muddy water along the pipeline right of way, sometimes for months at a time, and those accumulations of sediment-laden water regularly flowed into the adjacent streams.[4]

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[1] Seaber, Paul R., F. Paul Kapinos, and George L. Knapp, *Hydrologic Unit Maps*, U.S. Geological Survey Water-Supply Paper 2294, 1987.
[2] United State Geological Survey, *Watershed Boundary Dataset*, https://water.usgs.gov/GIS/wbd_huc8.pdf.
[3] The author has personally visited a number of these sites and observed changes in the streams and riparian areas over the course of several years.
[4] Id.

Third, MVP has now proposed to perform boring operations at 182 waterbodies where it previously planned to do open-cut crossings. While these so-called "trenchless" crossings may eliminate some impacts to the waterbodies, these activities will carry additional or different impacts that must be and are now being assessed in a separate process by FERC. Increased volumes of water, of potentially different quality, will likely be pumped out of bore pits and enter the waterbodies. These discharges will sometimes be of great volume and last for long periods. They may contain various mixtures of runoff water, groundwater, and surface water.

Finally, there are many non-pipeline related changes to waterbodies and watersheds that make previous assessments invalid. Roads have been built, adjacent sites logged and developed for buildings and businesses, and any number of other changes will have been made and these contribute to a new and undocumented baseline that must be the basis from which a new assessment begins.

Previous Corps Review

On pages 18 and 19 of Attachment B, MVP asserts that cumulative impacts analyses conducted by the Corps have value for this permit review. First, it notes that the Corps discussed cumulative impacts from the multitudes of projects to be covered under Nationwide Permit Number 12 (NWP 12). It is simply incredible that any professional would submit that a supposed cumulative impacts analysis done for the entire country has any relevance in the context of this individual permit review.

MVP then asserts that "the Corps Norfolk District Conducted a Cumulative Impact Review for the NWP 12 Verification Issued to MVP." However, MVP offers no reference to any such review. The author has searched all accessible records and has been able to identify no such review. MVP simply re-states the wording from the Federal Register stating that such a review is to be done and concludes that MVP must have fulfilled these mandates, despite having no evidence to support the assumption.

FERC Review

MVP states that FERC conducted a cumulative impacts review but, again does not include any of the analysis or reasoning that supposedly supported a finding by FERC that "the cumulative impacts of the Project on surface waters, after consideration of avoidance, minimization, and mitigation measures, 'would not be significant.'"[5] However, MVP relies entirely on this conclusory statement with no discussion of the information assessed or methods of analysis used.

In fact, FERC's analysis was deeply flawed, focusing exclusively on large HUC 8 drainage units, failing to define baseline conditions, or account for other non-pipeline impacts that were proximate in time and space and therefore relevant to the findings. Independent experts submitted detailed analyses refuting the value of the FERC analyses, particularly use of an improperly large aerial scale. The Environmental

[5] Citing: FERC, Mountain Valley Project and Equitrans Expansion Project Final Environmental Impact Statement, at 5-16 (June 2017).

Protection Agency has expressed similar concerns, both in relation to FERC's action in 2017 and, most recently, in April 2021.[6]

Previous Virginia DEQ Review

On page 7 of Attachment B, MVP asserts that the Virginia Department of Environmental Quality (DEQ) conducted a cumulative effects analysis, incorporating both "upland" construction impacts and waterbody crossings. In fact, DEQ relied on Corps conditions that had yet to be defined for coverage of the project under NWP 12 and which were not defined for some months after Virginia acted on its CWA section 401 decision. Further, DEQ refused to assess possible combined effects in small, heavily affected watersheds, even separately for upland work areas or waterbody crossings.

Specific Watershed Areas Affected by MVP

It is incumbent on the Corps to ensure that thorough and technically-valid cumulative impacts analyses are conducted to look at potential combined effects on all appropriate aerial and temporal scales. As discussed above, FERC's practice of looking only at large HUC 8 drainages is insufficient. While a concentration of localized impacts may well have larger and even cascading effects that pass down through a large sub-basin or a whole river system, no review can stop at that level.

Looking at portions of the MVP route, we can assess potential cumulative impacts on relatively large geographic scales looking, for example, at the Upper Roanoke River sub-basin (the HUC 8 drainage referenced above). Measurable cumulative impacts affecting a drainage of this size may be unexpected from a single project but MVP's path through this drainage will affect dozens of waters and could well cause significant and long-term problems in the larger system. There are 306 discharge sites proposed in the Upper Roanoke HUC 8 area (03010101), which covers 2,219 square miles. Further, many of the streams affected are headwater streams, whose outsize effects on entire river systems are well-documented.[7]

Using the next smaller HUC area, 10-digit HUC drainages, we can see in Figure 1 below that several of the watersheds within the Upper Roanoke Subbasin will be crossed by large sections of the MVP route and dozens of discharges are proposed under the 404 application for each of these areas.

The waterbody impacts in the North Fork Roanoke watershed include 23 streams and 9 wetlands, with 19 open-cut pipeline crossings and an assortment of roads and other features that will result in fill discharges. Of the 23 streams, headwaters predominate,

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[6] Letter from Stepan Nevshehirlian, EPA to Kimberly Bose, RE: FERC, Docket No. CP21–057–000; Mountain Valley Pipeline, LLC; Notice of Scoping Period and Requesting Comments on Environmental Issues for the Proposed Amendment to the Certificate of Public Convenience and Necessity for the Mountain Valley Pipeline Project, April 15, 2021.

[7] See e.g.: Meyer, Judy L., David L. Strayer, J. Bruce Wallace, Sue L. Eggert, Gene S. Helfman, and Norman E. Leonard, *The Contribution of Headwater Streams to Biodiversity in River Networks*, Journal of the American Water Resources Association, Vol. 43, No. 1, February 2007, pp. 86 - 103.

with 8 intermittent and 9 are ephemeral. At least three of the perennial streams are first order.

Impacted waters in both the South Fork Roanoke and Upper Blackwater areas are also predominately small headwaters. One obvious difference between the South Fork Roanoke watershed and the other two watersheds can be seen in Figure 2. In the South Fork, the pipeline cuts across just one part of the drainage area, whereas the path goes across the center of the other two watersheds.

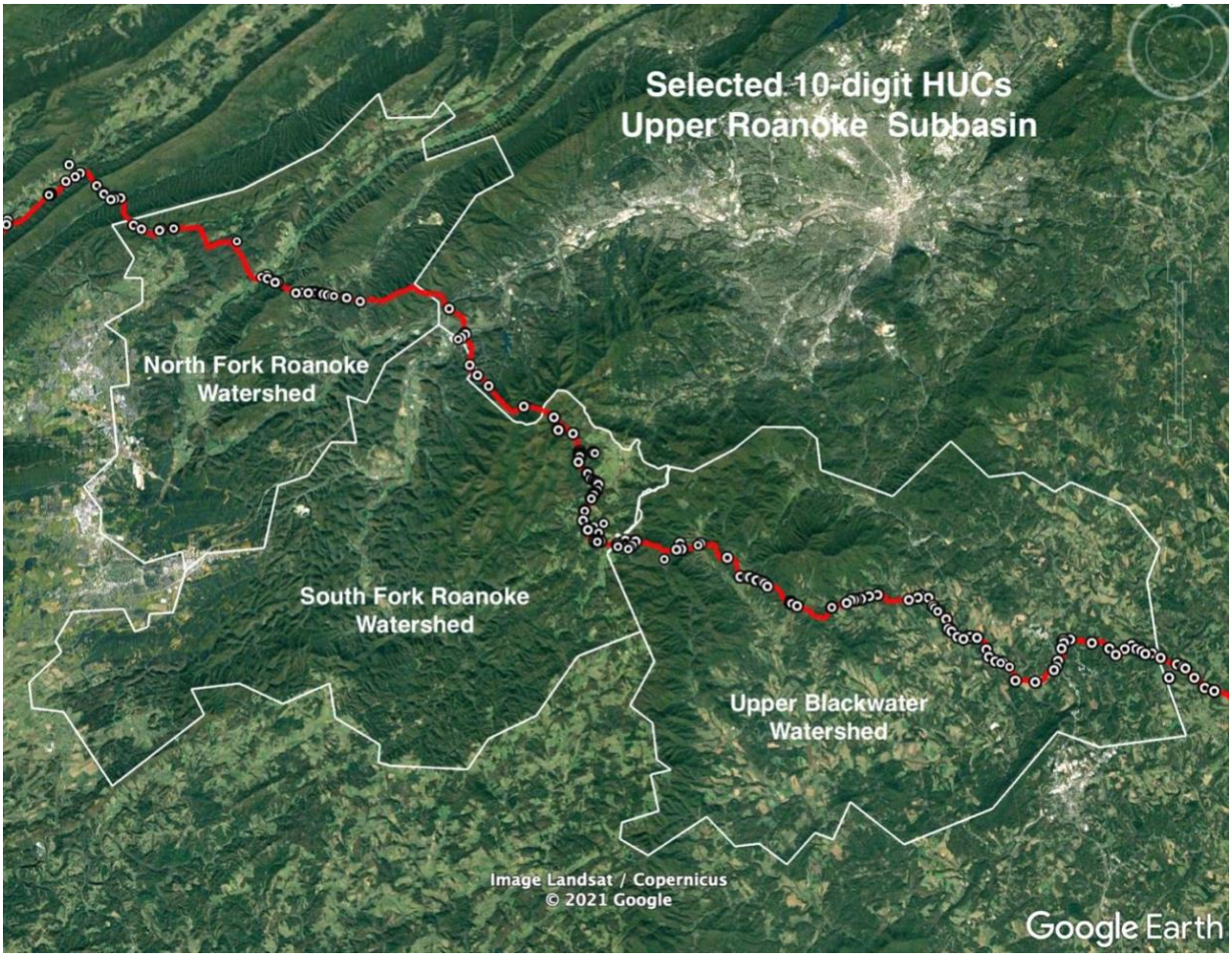

Figure 1

Taking yet another step to a smaller watershed scale, on which a cumulative impacts analysis will be vital, is the Bottom Creek drainage within the South Fork Roanoke HUC 10. Figure 2 shows the Bottom Creek 12-digit HUC area (030101010102) within the larger watershed.

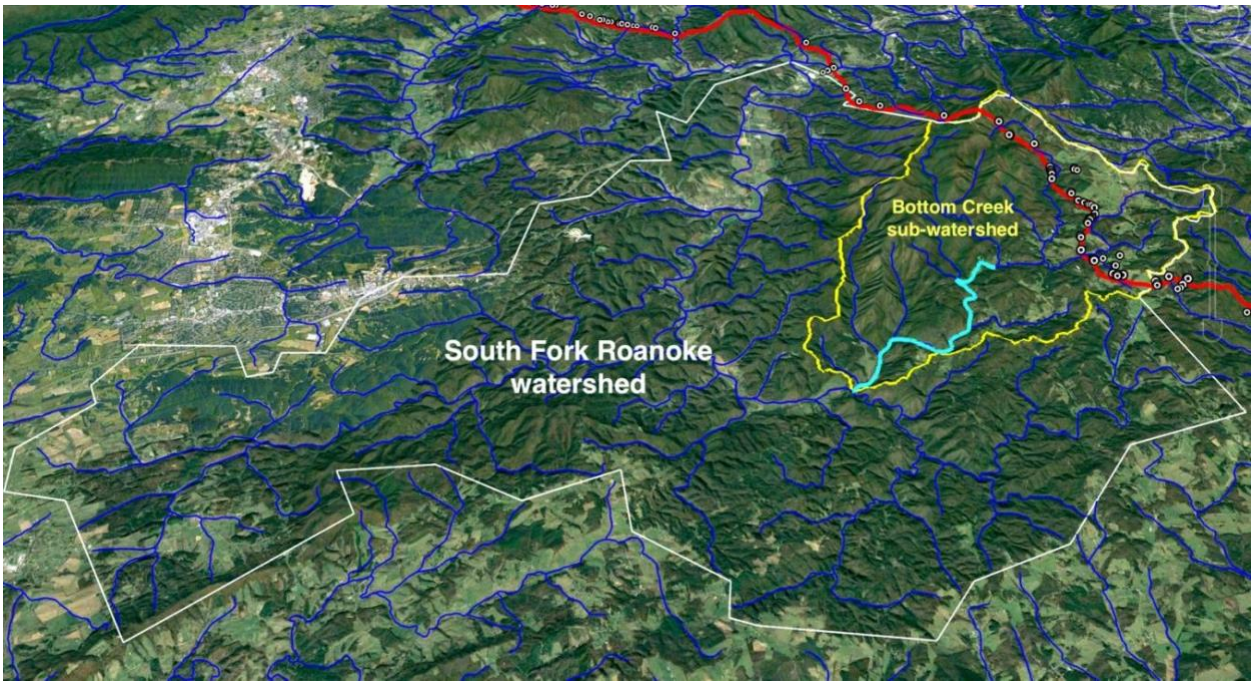

Figure 2

The Bottom Creek HUC 12 area presents one of the most drastic and serious concentrations of pipeline impacts of any we have reviewed. In a drainage of just over 28 square miles in size, MVP proposes 26 stream discharges and 42 wetland impacts. Of these, 23 are open-cut crossings of the pipeline. The streams impacted include 13 intermittent, 12 first-order perennials, and 1 second-order perennial. The assault of discharges and habitat disruption in this watershed impacts the uppermost extremities of Bottom Creek itself and its largest tributary, Mill Creek, and downstream or system-wide impacts within the watershed seem unavoidable.

To expand further on the importance of the closer review of smaller drainages, such as Bottom Creek, we note that a section of this stream been designated a Tier 3 water under the antidegradation provisions of the Clean Water Act and Virginia water quality standards regulations. Tier 3 waters are deemed "Outstanding National Resource Waters" under EPA regulations (Virginia calls them Exceptional State Waters). In Virginia, this designation is rare relative to many other states, with only thirty waters qualified for the entire state.

Bottom Creek and its tributaries have at least 19 fish species, including native brook trout, the Orangefin madtom and other listed above. The Nature Conservancy has established the Bottom Creek Gorge preserve, which encompasses parts of the Tier 3 segment. The stream is in the Blue Ridge ecoregion and falls steeply through the gorge, with a series of cascades. The streams in this watershed are of great value both for their biological richness and for recreational purposes.

As demonstrated by this series of nested watershed areas within on river basin, the scale of cumulative impacts assessments will often need to be done on various scales

and must be designed for the actual situations found. The Corps must do multiple layers of cumulative effect reviews where necessary and appropriate. The lack of this kind of appropriate detail and attention in MVP's application requires that it be rejected.

As discussed in an earlier section, degradation of water quality and habitats has been caused at many places along it path. Some resulted from waterbody crossings but most were the result of absent or failed erosion and sediment controls on upland construction sites. These past, and sometimes still existing impacts, form a baseline condition on which any additional effects from open-cut crossings will be overlaid. If there are already impairments and water quality standards violations due to past events, 404-regulated discharges may not contribute to those violations and impairments.

Some of the most severe damages MVP has caused are documented in a series of reports by the Virginia DEQ (included separately as an attachment to this report). These documents describe the results of DEQ VWP (Virginia Water Protection) field inspections, which include findings of hundreds or thousands of feet of streams blanketed in thick layers of sediment washed off pipeline rights of way. In every one of these cases the habitats were seriously impaired and DEQ notes that the sedimentation is "substantially disrupting" aquatic life movement.

Figure 3 below shows just one of the areas where an extreme pollution event occurred. Flatwoods Brach is one of the small headwater drainages to the North Fork Roanoke River. As is shown in the figure, more than a dozen discharges are proposed in this small watershed, which measures less than 1.4 square miles in area. The VWP for June 27, 2018 reports that more than 200 feet of the stream just downgradient of pipeline stream crossing MN-513 was covered in sediment ranging from one half to three inches deep. The affected stream here is just one of nine intermittent or first order streams feeding Flatwoods Branch, which is within the habitat range for the endangered Roanoke Logperch. This situation clearly shows the importance of assessing past impairment alongside proposed discharges from CWA section 404-regulated crossings and doing so on a proper scale.

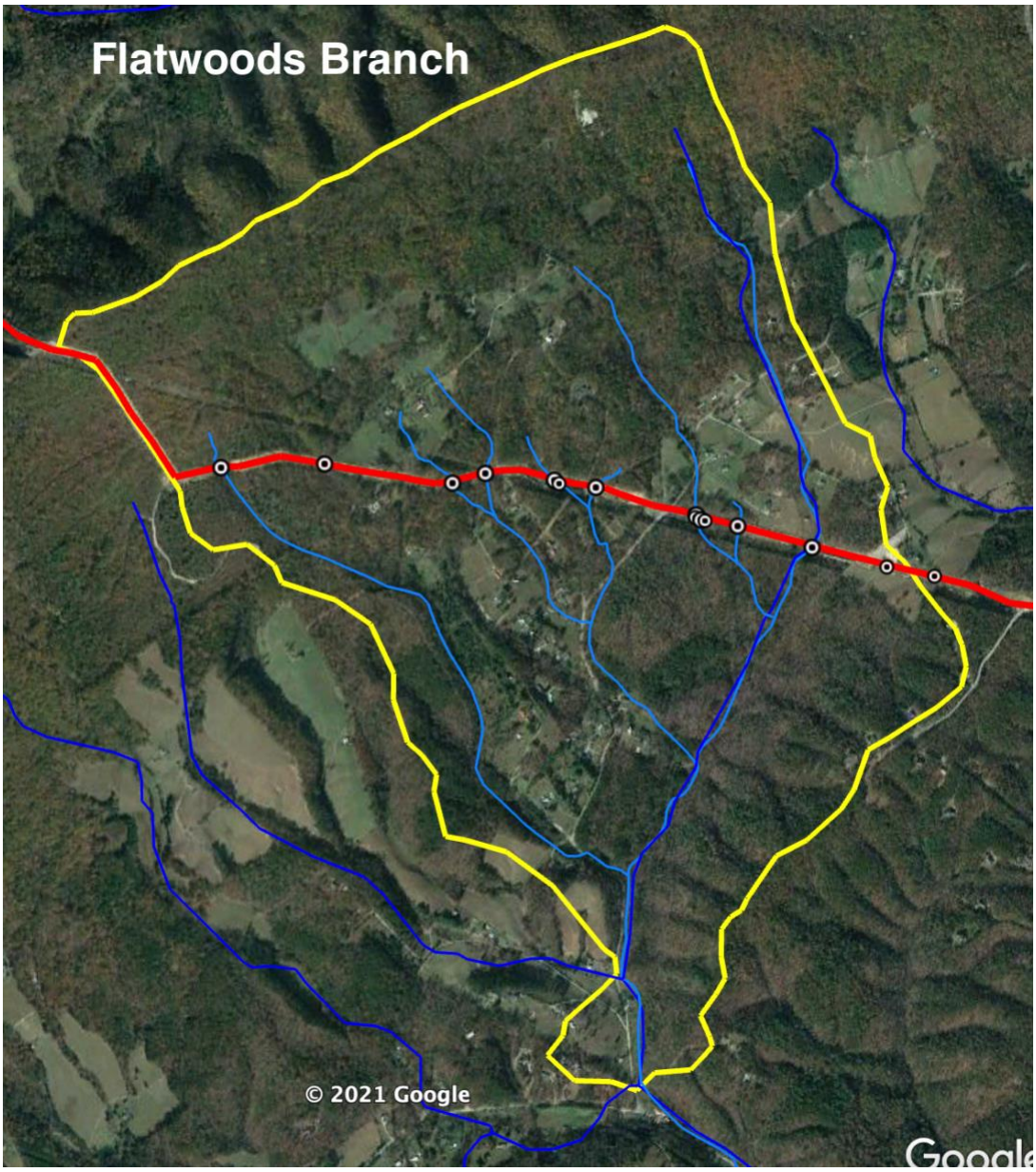

Figure 3

Conclusion

All of the above demonstrates that MVP has not submitted adequate information and that no party has yet undertaken the responsibility to do adequate cumulative impacts analyses. Further, impacts already created make future and worsened violations of water quality standards and impairments virtually certain. The Corps is, therefore, obligated to deny coverage under the CWA permit unless and until these studies are done.

David Sligh - Qualifications

David Sligh earned a Bachelor's degree in Environmental Science from the University of Virginia, with course work in ecology, hydrology, aquatic chemistry, and geology. He completed an independent study in cooperation with the Virginia State Water Control Board (Board) to assess chemical, physical, and biological impacts on the Roanoke River from changes in flow and discharges affecting the stream.

Sligh worked for the Virginia Department of Environmental Quality (DEQ) for more than a dozen years in a sixteen-county region that included all of the areas affected by the Mountain Valley Pipeline (MVP) in the state. He designed, conducted, and reviewed the findings of stream studies, including water and sediment monitoring, assessment of benthic macroinvertebrate community health, and physical and habitat characteristics. These studies were designed to ensure that water quality standards are upheld through permitting of discharges and development projects and to assess the impacts from pollution problems. He also served as a Senior Environmental Engineer overseeing environmental permitting in the west central region.

As a representative of the state agency, Sligh acted as an expert witness on water quality pollution, assessment of stream quality and impacts, and application of water quality standards. He provided testimony in both federal and state court proceedings and in formal administrative hearings.

On behalf of non-profit environmental organizations, Sligh has served on technical advisory committees in numerous regulatory actions conducted by FERC, the USFS, and other federal and state agencies. Also, in his role with these citizen groups he has served as an expert witness in litigation in Virginia and Georgia. As a private consultant, Sligh has conducted technical reviews of water quality permitting actions in South Carolina, Maryland, the District of Columbia, and Virginia and provided analyses in dozens of cases.

<u>Selected Professional Positions</u>

Conservation Director, Wild Virginia, Charlottesville, VA

Review a wide variety of project proposals affected National Forest lands for technical and legal adequacy. Participate in administrative and legal processes to affect governmental decisions.

Environmental Consultant, Self-employed, Charlottesville, VA

Have completed projects including NPDES permit reviews, technical reviews of agency studies and regulatory documents and provision of testimony for use in administrative and court proceedings, design of stream monitoring and pollution impact analyses. Clients include: Earthjustice, Gunpowder Riverkeeper, the Environmental Integrity Project, Miles-Wye Riverkeeper, and Shenandoah Riverkeeper.

Special Research Faculty, Virginia Tech,

Was assigned to the Virginia DEQ, to help develop and manage Annual Standards and Specifications program for compliance with Erosion & Sediment Control law and Stormwater Protection law, mandated by 2012 statutory changes. Analyzed regulatory submittals and technical plans for control of stormwater and pollution impacts from development activites. Developed guidance for document preparation and conformance with legal requirements.

Executive Director, Soque River Watershed Assoc., Clarkesville, GA

Managed all programs, including a comprehensive, 3-year watershed study funded by the U.S. EPA and the State of Georgia. Supervised and conducted stream water sampling, benthic macroinvertebrate sampling, flow measurements, physical habitat assessments, and analyses of data.

Adjunct Faculty Member, Univ. of Tennessee at Chattanooga Taught environmental science.

Senior Environmental Engineer, Virginia Dept. of Environmental Quality, Roanoke, Virginia, Supervised division of engineers in: preparation of NPDES and Virginia Pollution Abatement permits (for land application of sludge and animal waste); analysis of environmental data and compliance records and preparation of enforcement documents; representation of agency at public hearings, negotiations, and in legal proceedings. Oversaw inspections of facilities and land application operations, reviewed plans for special stream studies submitted by permit holders or applicants, completed stream models. Instructed environmental engineers under my supervision in technical, procedural, and legal matters associated with permitting processes.

Environmental Specialist, Virginia State Water Control Board

Coordinated all water quality research and monitoring activities in West Central region of state and designed new ambient monitoring system; prepared annual water quality reports on lakes program; conducted field surveys for benthic macro-invertebrates and water sampling; investigated pollution complaints and fish kills; prepared enforcement cases. Was the lead investigator in a landfill case, for which I testified in federal, state, and formal administrative court proceedings. Succeeded in closing the landfill, obtaining a judgement of $1.4 million for damages and penalties, and provided evidence for criminal prosecution of owners.

<u>Other Activities and Positions</u>

Technical Advisory Committee to Tennessee Clean Water Network, 2000-2002
Steering Committee Member, Southeastern Imperiled Fish Network, 2003
Speaker at numerous conferences on water quality issues, including:
Chesapeake Watershed Forum, Shepherdstown, WV, 2011, 2012.
Waterkeeper Alliance Conferences, 2009, 2013, 2014, 2015, 2016.
When the Water Runs Dry, New Orleans, LA, 2003 (speaker and session leader). The Future of Flows, Morgantown, WV, 2002.
National River Rally - River Network, 2001, 2002, 2013, 2014.
Georgia River Network Conferences, Milledgeville, GA, 2002 & 2003.
Alabama Rivers Alliance, Annual Conferences 2000, 2001