A REPORT BY WILD VIRGINIA

FEBRUARY 2023

MOUNTAIN VALLEY PIPELINE POLLUTION IN VIRGINIA WATERSHEDS

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Introduction

The Mountain Valley Pipeline (MVP) has caused hundreds of environmental problems all along the project's path through West Virginia and Virginia. Pollution caused by pipeline-related activities has damaged dozens of streams and wetlands and has encroached on and harmed properties and property owners many times.

Proposals for further construction and additional discharges of dredge or fill materials, even if we discount the previous impacts, would take a heavy toll on some stream systems and waterbodies due to great concentrations of activities in certain watersheds. To date, those combined or cumulative effects have not been analyzed in a scientifically-meaningful way. When both past and prospective impacts are considered together, as they must be if responsible agencies are to make valid assessments of the project in their current regulatory reviews, it is obvious that the costs would be far too high to meet the mandates of applicable environmental laws.

To ignore the kind of evidence presented in this report, as Mountain Valley Pipeline, LLC (Mountain Valley) and state and federal agencies have so far done is irresponsible. For officials to make decisions without acknowledging and assessing these findings in their own independent reviews would be arbitrary and capricious and a betrayal of scientific principles that should guide their actions.

One purpose of this Wild Virginia report is to describe how pipeline impacts and proposed impacts are often concentrated within individual watersheds and streams in Virginia. A second major aim of this effort is to provide a more complete compilation of evidence of harms in a unified way, and on an ecological scale, than has been done in the past.[1]

Wild Virginia has previously reported on a huge overall number and variety of events where pipeline-related activities led to the release of sediment or other materials off of the MVP right of way (ROW) or resulted in other off-site impacts.[2] Those reports, in 2021 and 2022, were based on state inspection records available to Wild Virginia through public sources and through Freedom of Information Act (FOIA) requests made to the Virginia Department of Environmental Quality (DEQ). We are able to supplement those findings here with new information from DEQ but also by incorporating more information collected by the public.

Though much of the public's information was submitted to DEQ and federal agencies in the past, it has been largely ignored or dismissed by officials. This was improper and must be remedied in the current regulatory reviews. The public's submissions are important and valid evidence. Much of it consists of photographs and video recordings, most with time and location stamps, and those images have often been accompanied by written testimony by those who could verify their authenticity. In at least one case, this evidence was presented in

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[1] While this report relies on evidence of impacts to Virginia waters, there is abundant evidence as to the same kinds of damages in West Virginia. See Appendix A to this report, *Mountain Valley Pipeline, Water Quality-Related Violations and Damage to Waterbodies, Summary of Findings from West Virginia DEP Inspection Reports*.

[2] See Wild Virginia, *Documenting the Damage: An Analysis of Virginia State Inspection Reports for MVP*, December 13, 2021 [hereinafter Wild Virginia, 2021]; Wild Virginia, *MVP's Record of Pollution Incidents is Predictive of Future Water Quality Threats*, July 28, 2022 [hereinafter Wild Virginia, 2022].

the form of a sworn affadavit.[3] The fact that the public's evidence is consistent with the evidence collected by the state inspectors must lend it even greater weight.

In this report we designate a number of specific types of events related to the pipeline, collectively, as "pollution incidents." These pollution incidents have either directly damaged Virginia waterbodies or off-site properties, or created unacceptable and imminent threats to state waters.

Proposals to resume construction on the MVP would allow Mountain Valley Pipeline, LLC (Mountain Valley) to create 452 new discharges of sediment and associated pollutants throughout the same Virginia stream systems that have already been negatively affected by the project. The supposedly-limited impacts caused by each of these new, separate discharges would also be concentrated to a great degree in some small stream systems and single streams. So, even if some individual new discharges would be relatively minor, the combined effects of all new discharges could be greatly multiplied on an ecological scale.

Importantly, there is no rational basis to doubt that more construction by Mountain Valley would result in just as many or more pollution problems than have already been observed. The pollution controls implemented so far have failed miserably and frequently, and so-called "enhanced" measures have not stopped the damage.

If Mountain Valley had the capacity and will to properly control pollution from its sites, these pollution incidents would not still have been occuring more than three years after Mountain Valley first began stripping forests and fields of vegetation and altering the landscape. [4] And if construction had not stopped at that time, in the fall of 2021, MVP pollution would have continued to plague our waters and our communities up to today.

Allowing construction to rush forward again would certainly lead to great harm. To quote the title of a previous Wild Virginia report, "MVP's Record of Pollution Incidents is Predictive of Future Water Quality Threats."

One glaring fault in all of the regulatory reviews and permitting processes that have addressed the MVP is the failure to look at combined or cumulative impacts from the project in a scientifically- and logically-valid way. Assessments of such combined or cumulative impacts on the environment are required by multiple statutes and regulations under which the MVP has been and is now being reviewed. There are a number of different definitions of the term "cumulative impacts" and the required scope and nature of analyses that are to consider net effects of actions varies from one statute and regulatory scheme to another.[5] This report addresses these issues in two ways:

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[3] See e.g. Appendix C to this report, Affadavit of Betty B. Werner.

[4] As shown in *Wild Virginia, 2022* at pdf page 97, Mountain Valley had cleared the great majority of the pipeline right of way in Virginia by May 11, 2018 and was cutting trenches by early June; the most recent pollution incidents found in this review in Virginia occurred in October, 2021.

[5] These include requirements to assess cumulative or combined impacts under the Clean Water Act, the National Environmental Policy Act (NEPA), and other statutes and implementing regulations. A discussion of these various requirements is beyond the scope of this report.

First, we describe serious flaws in the approach Mountain Valley has used to conduct a cumulative impacts analysis in materials submitted to the U.S. Army Corps of Engineers (Corps) in 2022.[6] Those analyses are apparently designed to address observations that previous cumulative impact reviews were deficient to meet Clean Water Act (CWA) requirements, as described below, but the new assessments still fall far short of the mark. The specific examples presented below, which show concentrations of proposed discharges in six individual watersheds, forcefully illustrate the flaws in all agency reviews to this date.

Second, we present the evidence of many past and ongoing water quality assaults from the MVP, alongside the details about proposed new discharges in Virginia watersheds. This wider view is pertinent to regulatory decisions before multiple agencies, including the Corps, the U.S. Fish and Wildlife Service (FWS), and the U.S. Forest Service (USFS). Again, an examination of example watersheds is useful, though it must be understood that these problems are found much more widely, in both Virginia and West Virginia.

This combined view, integrating both past and possible future pollution sources, is the only logical way to understand the MVP's likely impacts on our waters or to make sound decisions that will prevent future damages. Without question, the impacts from these proposed new discharges would add to the effects of MVP's previous failures to control sediment discharges but no party, neither MVP nor any federal or state agency, has yet confronted that reality or analyzed the likely outcomes in a scientifically-meaningful way.

Mountain Valley's Cumulative Impacts Review in the CWA 404 Application

Conservation groups have called for proper cumulative impacts reviews by all responsible agencies since the intial Environmental Impact Statement (EIS) was being prepared by the Federal Energy Regulatory Commission (FERC) - to no avail. The supposed analyses of combined impacts in aquatic systems that FERC deemed acceptable in its 2017 Final EIS, and which other agencies endorsed when they adopted that EIS as cooperating agencies, was done for areas represented by 10-digit Hydrologic Unit Codes (HUC-10s).[7] As late as December, 2022 the USFS contended that HUC-10s are "still [] appropriate for the cumulative effects analysis because they are the scale at which indirect and cumulative effects are reasonably expected to occur for the resources analyzed."[8] As discussed below, these aerial units are often not appropriate for assessing potential cumulative impacts, because of their size and the arbitrary nature of the areas included.

Echoing some of the concerns repeatedly raised by the public, the U.S. Environmental Protection Agency (EPA) also expressed that the cumulative impacts assessments previously conducted for the MVP were insufficient, in a letter dated May 27, 2021and submitted in

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[6] Two documents submitted to the Corps that address cumulative water impacts include: *Appendix Q, Revised Cumulative Impact Assessment Report - Hydrology, Mountain Valley Pipeline*, January 2022 (Revised May 2022) [hereinafter *Appendix Q*]; *Supplemental Cumulative Impact Assessment Report for the Clean Water Act Section 404 and Rivers and Harbors Act Section 10 Permit Applications, Mountain Valley Pipeline*, July 22, 2022 [hereinafter *Supplemental Cumulative Impacts Report*].

[7] Federal Energy Regulatory Commission, *Mountain Valley Pipeline and Equitrans Expansion Project, Final Environmental Impact Statement*, FERC/FEIS-0272F, June 2017, at 4-577 [hereinafter FERC FEIS, 2017].

[8] U.S. Forest Service, *Mountain Valley Pipeline and Equitrans Expansion Project, Draft Supplemental Environmental Impact Statement*, R-8-MB 166, December 2022 [hereinafter DSEIS], at 83..

response to a public notice by the Corps to address Mountain Valley's proposed discharges.[9] In that letter, EPA stated that there was a need for "a conclusive evaluation of cumulative effects at a watershed scale."[10] This criterion, of a conclusive evaluation at a watershed scale, has still not been met and the Corps must not issue a permit for the MVP without it.

As discussed in Appendix Q, the Corps requested that Mountain Valley supplement its application for a CWA section 404 permit by submitting "an assessment of cumulative effects (40 CFR § 230.11(g)) to the aquatic environment associated with the completed and proposed discharge of dredged and/or fill material into WOTUS for each 12-digit Hydrological Unit Code (HUC)."[11]

The supposed cumulative impacts reviews Mountain Valley submitted are merely a rote accounting of numeric estimates of temporary and permanent pollution impacts in streams and wetlands, in units of linear feet of streams and acres of waterbody. The reports fail to explain or analyze a variety of factors without which a cumulative impacts review in an aquatic system is meaningless, including but not limited to: location and proximity of impacts within a stream system, size of streams affected, downstream effects, synergistic[12] as well as additive impacts, and sensitivity of native aquatic biota to the pollution threats and alteration of habitats.

Again, though Mountain Valley submitted the material as described by the Corps, using 12-digit HUC areas for its analysis, this approach cannot meet the need for a "conclusive evaluation . . . at a watershed scale," as EPA deemed necessary.

Overall Findings on MVP Pollution Incidents

As referenced above, this report is the third in a series prepared by Wild Virginia to describe and assess water impacts documented by inspectors working for the Virginia Department of Environmental Quality (DEQ) or its contractor.[13] In this report we have extended our previous

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[9] Letter from Jeffrey D. Lapp, U.S. EPA to Michael Hatten, U.S. Army Corps of Engineers, *Re: LRH-2015-00592-GBR, LRP-2015-798, NAO-2015-0898; Mountain Valley Pipeline, LLC; Mountain Valley Pipeline, Wetzel County, West Virginia to Pittsylvania County, Virginia*, May 27, 2021 [hereinafter EPA Letter].

[10] Id. at page 8 of enclosure with EPA letter. We note that EPA mentioned the HUC-12 scale as a basis for analysis but did not address the fact that these defined areas are often not watersheds or that the HUC sizes and other characteristics are often inappropriate for this purpose and, thus, cannot provide the kind of conclusive evalution on a watershed scale EPA deemed necessary.

[11] Appendix Q at 1.

[12] Many studies of aquatic systems have found significant synergistic effects ("ecological surprises") from multiple stressors, often exceeding the magnitude of merely additive effects. See e.g. Paine, R.T., M.J. Tegner, E.A. Johnson, *Compounded perturbations yield ecological surprises*, Ecosystems, 1, 535-545, 1998; Christensen, M.R., M.D. Graham, R.D. Vinebrooke, D.L. Findlay, M.J. Paterson, M.A. Turner, *Multiple anthropogenic stressors cause ecological surprises in boreal lakes*, Global Change Biology, 12, 2316-2322, 2006; Lindenmayer, D.B., G.E. Likens, C.J. Krebs, R.J. Hobbs, *Improved probability of detection of ecological "surprises,"*, Proceedings of the National Academy of Sciences of the United States of America, 107, 21957-21962, 2010; Dehedin, A., C. Maazouzi, S. Puijalon, P. Marmonier, C. Piscart, *The combined effects of water level reduction and an increase in ammonia concenration on organic matter processing by key freshwater shredders in alluvial wetlands*, Global Change Biology, 19, 763-774, 2013.

[13] The contractor providing these services is McDonough, Bolyard, and Peck and is referred to throughout this report as MBP.

reviews, looking at a total of 980 DEQ inspection reports[14] and 5,352 "action item" descriptions (and in many cases associated photographs and additonal documents).[15] Some of the materials were newly obtained since *Wild Virginia, 2022* was published, through additional records requests.

We also provide in this report evidence gathered by citizens that extend and amplify findings of the state inspectors. In some cases, these photographs and, especially, videos accesible through links included here, show the MVP pollution incidents more graphically and shockingly than do the descriptions and photos compiled by DEQ and MBP personnel.

Most of the state inspection reports cited are not included in materials submitted by Mountain Valley to the various agencies nor are they included in analyses prepared by those agencies. In particular, the Draft Supplemental EIS (DSEIS) issued by the USFS in December, 2022 fails to discuss thousands of Virginia state inspection reports reviewed in this analysis.

Pertinent to the intent of this review, to highlight actual impacts to waterbodies or discharges off MVP work sites that pose definite threats to water quality, are the following observations from the previous Wild Virginia reports of what are termed herein "pollution incidents."

These pollution incidents have sometimes been designated by DEQ as violations of regulatory requirements. In some other cases, DEQ has not cited specific events as violations but they clearly present impacts or threats to water quality and are, therefore, pertinent to any analysis of existing conditions in Virginia waters affected by the MVP and of any prediction of future impacts that pipeline activities would cause. Also, as explained below, categories described in this report as pollution incidents were cited as a violations by the state in its enforcement lawsuit against Mountain Valley.

Important findings from *Wild Virginia, 2022* that relate to waterbody impacts and threats include the following:[16]

- in at least 113 instances, MVP activities have caused measurable sediment deposits in streams and wetlands in Virginia;
- in at least 684 instances, MVP activities have caused measurable sediment deposits on land off the project right of way (ROW) and beyond the control of sediment treatment or reduction measures;
- the timing of MVP pollution incidents corresponds closely with the periods when active construction was occurring and those incidents have occurred throughout the

[14] All DEQ inspection reports are accessible on the agency's website through links found at the Topics of Interest, Mountain Valley Pipeline page, under Inspections.
[15] The "Action Item Log" prepared by MBP includes 5,352 "Action Item Issues," each identified by a unique ID number. Wild Virginia also acquired other notes and reports, along with a collection of folders matched to the action item ID numbers and containing tens of thousands of photographs. The locations of all pollution incidents described in this report or represented in the computation of numbers of incidents in particular watersheds or HUC units were found using station numbers (keyed to project plans) included in the Action Item Log or DEQ reports and map coordinates (latitude and longitude) taken from reports and photographs.
[16] See Wild Virginia, 2022 at 1.

period from May, 2018 through at least October, 2021, whenever clearing, trenching, and backfilling of trenches was underway;
- many pollution incidents have occurred outside periods of unusually high rainfall, refuting assertions that historically wet periods are an overriding cause of MVP's violations and pollution problems; and
- supposed "enhanced" pollution control measures[17] have not stopped the pollution and waterbody damages.

Findings of this new report, not included in the 2021 or 2022 reports, include:

→ in at least 687 instances pollution control structures have been be undermined, overtopped, overwhelmed, or otherwise bypassed by water carrying sediment off-site, resulting in discharges that are poorly treated or untreated;
→ individual watersheds, including some very small headwater drainages, have suffered numerous deposits of sediment in streams and wetlands, off-site sediment deposits on land, and discharges of poorly treated or untreated sediment-laden water;
→ at least 1,135 pollution incidents caused by MVP have impacted waterbodies in the upper Roanoke River watershed (Subbasin), the area in Virginia which the MVP affects most heavily.

As mentioned above, the kinds of information presented in this and the past Wild Virginia reports is pertinent to all of the various regulatory reviews now underway. In fact, decisions based on those reviews cannot be valid without incorporating these findings and the underlying agency data that is analyzed herein. We note that much of this information was acquired by Wild Virginia through Freedom of Information Act (FOIA) requests and, to our knowledge, has not been acquired or reviewed by the reponsible agencies. Those agencies will fail in their duties if they do not obtain and review the full record before issuing final decisions.

Cumulative Water Quality Impacts Analysis

As stated above, in past cumulative impact analyses, Mountain Valley compiled figures of predicted temporary and permanent stream impacts for areas designated by 10-digit HUCs.[18] In size, the HUC-10 units along the MVP route range from the smallest at 42,604 acres (Laurel Creek, 0505000702) to the largest at 233,528 acres (Meadow River, 0505000506). In many cases, the pipeline path touches just a small section of these HUC-10 areas and, in almost all cases, any overall impacts will be highly diluted by the large size of the unit. In relation to real impacts on ecosystems, these assessments are often meaningless.

[17] The DSEIS discusses "enhanced measures" (e.g. at page 26), in relation to modeling analyses. Two of the measures listed in the DSEIS that are addessed in this report are: "Waterbar end treatments upgraded from single compost filter sock (CFS) to triple stack CFS and increased length of CFS for better filtration of runoff." and "Upgrade of standard silt fence to Priority 1 belted silt retention fence." The USFS must review the record which shows that some of these measures have failed repeatedly in preparing its final SEIS. It is also important to recoginze that, even when such measures are added on a piecemeal basis when a particular failure happens, there is no evidence that such measures have been or are planned on a systematic basis wherever called for. For example, though compost filter socks have failed hundreds of times, especially on steeper slopes, we are unaware of any effort to replace them on a large scale - just to respond when particular locations fail.

[18] FERC FEIS, 2017 at 4-577.

In its more recent applications and reports now under review by the Corps, Mountain Valley included information about possible project and non-project impacts in areas represented by 12-digit HUCs (HUC-12s) through which the pipeline's path crosses. In some cases, these units are much more appropriate than the HUC-10 units used before and this approach may be a marginal improvement on the previous analyses. By comparison, the sizes of the HUC-12 units in Virginia, range from a low of 15,320 acres (Bradshaw Creek-North Fork Roanoke River, 030101010203) to a high of 40,523 acres (Sawmill Hollow-Roanoke River, 030101010301).[19] However, in most cases these units still cannot fulfill EPA's call for "a conclusive evaluation of cumulative effects at a watershed scale."

Below, we discuss the reasons the latest cumulative impact reviews are insufficient. Then, in succeeding sections, we present information about a sampling of specific Virginia watersheds affected by the MVP, to illustrate deficiencies in the assessments of combined or cumulative impacts to stream systems and Mountain Valley's failure to accurately charaterize affected aquatic environments.

Aerial Extent and Nature of Areas Addressed

Ecologically-valid assessements of potential combined or cumulative effects on stream systems may and sometimes should be made at multiple drainage area scales. A sound basis for the use of only those areas designated as HUC-12s, as Mountain Valley has done in its latest attempt, has not been explained in any analysis Wild Virginia has viewed, and in many cases this approach is completely inappropriate. Regulatory decisions made on this basis will be abitrary and capricious and not supported by rational or technically-sound bases.

A fundamental problem with the use of only HUC-12 areas to assess cumulative effects in watersheds is that in numerous cases these areas are not watersheds at all.[20] As the U.S. Geological Survey (USGS) explains, a watershed is "an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel."[21] Many of the areas represented by 12-digit HUCs do not meet this definition.

Of twenty-one HUC-12 areas in Virginia that Mountain Valley has assessed in its cumulative impacts analysis, eleven are not watersheds[22] and, therefore, cannot be the basis for the kind of evaluation that is necessary and which EPA found missing in supporting material it reviewed in 2021. For example, one of these areas is the Little Stony Creek-New River HUC-

[19] All figures as the size of HUC-12 units used herein are taken from Appendix Q.

[20] We note that throughout Appendix Q, the term "HUC-12 watershed" is used, betraying a misunderstanding of the basic technical framework for the analysis. See Omernik, James M., Glenn E. Griffith, Robert M. Hughes, James B. Glover, and Marc H. Weber, *How Misapplication of the Hydrologic Unit Framework Diminishes the Meaning of Watersheds*, Environ Manage. 2017 Jul;60(1):1-11.

[21] USGS web page, "Watersheds and Drainage Basins." [a review of the literature confirms that this definition or very similar ones are essentially universal among scientists, water managers, etc.]

[22] These inlude: Little Stony Creek-New River, Lower Sinking Creek, Wilson Creek-North Fork Ronaoke River, Bradshaw Creek, Sawmill Hollow-Roanoke River, Brake Branch-South Fork Roanoke River, Madcap Creek-Blackwater River, Standiford Creek-Smith Mountain Lake, Owens Creek-Pigg River, Tomahawk Creek-Pigg River, Shockoe Creek-Banister River.

12 which, as explained below, actually includes three separate watersheds and stream systems, each of which drains to the New River. Some other HUC units used in these analyses fail to qualify as watersheds because they receive flows from upstream HUCs, such as the Wilson Creek-North Fork Roanoke River HUC-12 and the Lower Sinking Creek HUC-12.

Even where the HUC-12 units are watersheds, they may be inappropriate for a meaningful cumulative impacts analysis. Where there is a heavy concentration of impacts in just one smaller drainage within the HUC-12 area, it is irresponsible to ignore the possible cumulative effects in that smaller watershed. The Green Creek watershed is such an example - where all forseeable impacts from the MVP for the entire South Fork Blackwater River HUC-12 will fall within a small headwater section of Green Creek. In that segment, Green Creek is a first order stream that drains an area that is less than one-tenth the size of the HUC unit. Mountain Valley proposes nine new stream discharges and five new wetland discharges in this small, sensitive stream system that is home to native trout. Such serious localized conditions and the threats posed by the MVP to them are hidden in the analysis using the large HUC-12 area.

As stated above, it may be useful to look at cumulative impacts on stream systems at multiple levels. In some cases it could also be appropriate to include more than one HUC-12 unit. The combination of the Lower Sinking Creek and Upper Sinking Creek areas, both of which are heavily affected by the MVP, make up a unified stream system where a combination of project and non-project activities will certainly build upon each other. An examination at this larger scale cannot negate the need to look at smaller functional watershed units but may be a useful additional analysis, especially since we know that downstream distribution of sediment, well beyond the narrowly focused reviews MVP has conducted, is a certain result of discharges from the pipeline work areas.

On an even larger scale still, the Upper Roanoke River Subbasin, which is represented by a HUC-8 unit, designated 03010101, is very large and water quality impacts from the pipeline must be considered in the context of a multitude of activities, over a watershed with a wide diversity of land uses and other features. Still, Mountain Valley proposes 244 new discharges within this watershed. The potential impacts from these new discharges will increase the net impact to the drainage and the degree to which that combined impact is predictable should be addressed. This is particularly true when we consider that the Roanoke River is impounded by dams at three locations dowstream from many of the MVP discharges and that the reservoirs formed by those dams capture and concentrate sediment inputs from upstream. The smaller Niagara dam may be especially vulnerable to increased sedimentation.

And, within the upper Roanoke watershed, Virginia inspectors have already documented ninety-six incidents when sediments were deposited in waterbodies, 473 incidents of sediment deposited off-site by MVP, and 566 incidents when pollution control structures or devices were undermined, overtopped, overwhelmed, or otherwise bypassed - a total of 1,135 pollution incidents in the upper Roanoke. Even for such a large drainage this combination of past and proposed new impacts must be considered as a whole.

Factors Considered in Cumulative Reviews of Stream Systems

In addition to concerns about the size and nature of each area addressed in the cumulative impacts assessment, there are serious deficiencies in the methods Mountain Valley has used to estimate impacts. To understand the true nature and extent of combined or cumulative impacts in a stream system, one must do more than the kind of simplistic accounting exercise Mountain Valley has produced, where it only lists supposed linear feet of stream and acres of aquatic environments to be affected and adds the numbers together for arbitrarily-chosen areas.

Questions that should be addressed to honestly understand and avoid unacceptable combined impacts in a unified aquatic system of any size may include,[23] but are not limited to:

- In what part of the drainage will the impacts be caused? For example, will the combined project and non-project effects be exerted primarly on 1st order streams and intermittent or ephemeral streams, on larger streams, or in both types?
- What is the nature of the individual waterbodies? For example, does it matter if the number of linear feet of stream affected includes an area with bedrock substrate, or with a gravel and cobble bottom; how does that areal impact compare to the same length of stream impacted in a flat, sandy-bottomed section? Is the stream closely connected to groundwater in karst terrain?
- Would the impacts occur in waters where native aquatic species are relatively pollution-sensitive or pollution-tolerant? Will the impacts occur in spawning areas, pool and riffle habitats, or at other especially sensitive times or locations?
- How many individual stream segments or wetland areas will be affected within close proximity to one another?
- How will a number of upstream impacts be combined in their effects on downstream environments? Will sediments or other pollutants released, even in small amounts or for short periods at individual sites, accumulate and persist to cause negative effects?
- Specifically, how have the chemical, physical, and biological characteristics of the watershed streams been affected by past pipeline impacts in ways that have changed from the true baseline conditions? Have those impacts persisted, how long might they continue to be evident, and how will new impacts interact with them?
- In addition to additive effects, what type of synergistic or antagonistic effects from multiple stressors may be predicted?

[23] A number of these factors are explained in: Bureau of Land Management, *Guidelines for Assessing and Documenting Cumulative Impacts*, April 1994. Among the "Cumulative Impact Assessment Principles" listed in the BLM document: "Seemingly insignificant actions can *add up or synergistically interact* to cause important negative influences on the environment." at 3 (emphasis added); and "There needs to be an understanding of how components of a given ecosystem interrelate and where these systems are most susceptible to impacts. Potential actions can then be measured against these known vulnerable points." at 3-4 (implicating concerns about the way streams are interrelated within a single stream system, the fact that some streams are more sensitive ("susceptible to impacts") than others, etc.). Clearly the analyses so far done by Mountain Valley fail to live up to the Principles outlined by the BLM.

As noted above, later in this report we present information about specific watersheds that new MVP discharges would affect and contrast those watersheds, in size and in the nature of resources and likely impacts, with the HUC-12 areas in which they lie.

The following watersheds are included in these detailed examinations:
- Kimballton Branch - within the Stony Creek HUC-12
- Doe Creek - within the Little Stony Creek-New River HUC-12
- Flatwoods Branch - within the Wilson Creek-North Fork Roanoke River HUC-12
- Green Creek - within the South Fork Blackwater River HUC-12
- Little Creek - within the Madcap Creek-Blackwater River HUC-12
- headwaters of Cherrystone Creek - within the Cherrystone Creek HUC-12

The Nature of Past MVP Water Quality Impacts

The MVP has repeatedly caused negative water quality impacts and the threat of impacts due to releases of sediment from its work areas, access roads, and other sites. These releases are, theoretically, to be limited in volume, hydraulic force, and pollutant concentrations through a combination of measures to prevent soil erosion, concentrated water flows on and off the ROW, and sediment realeases off-site. Mountain Valley contends and agencies have endorsed the claim that these controls will adequately protect water quality. These assertion have been proven untrue on a grand scale and there is no credible argument that renewed construction on the project will produce better results.

Below, we describe types of problems that we term "pollution incidents" throughout this report. These events may or may not have been designated as violations of applicable permit requirements by the state, by FERC, or by any other authority but they are, nonetheless, pollution incidents, because they result in excessive amounts of sediment flowing off of MVP's ROW and affecting downslope or downstream resources.

For each of these types of pollution incidents, numerous illustrations from the MVP's path in Virginia are depicted and described. The specific information about example watersheds, in later sections, shows the degree to which impacts are concentrated in certain watersheds, and further illustrates why the arbitrary use of HUC-12 areas is insufficient to make valid assessments of combined or cumulative effects.

Measurable Sediment Deposits in Waterbodies Caused by MVP

Deposits of sediment in a stream or wetland may negatively affect the aquatic system in a number of ways, both in relation to the maintenance of aquatic organisms and communities and in relation to human uses. Agencies are required to protect both types of uses under Virginia's water quality standards (WQS).[24]

[24] See 9 VAC 25-260-10.A, "All state waters, including wetlands, are designated for the following uses: recreational uses, e.g., swimming and boating; the propagation and growth of a balanced, indigenous population of aquatic life, including game fish, which might reasonably be expected to inhabit them; wildlife; and the production of edible and marketable natural resources, e.g., fish and shellfish;" and 9 VAC 25-260-20.A., "State waters, including wetlands, shall be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designated uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life." (emphasis added).

State inspection reports describe at least one hundred and thirteen (113) instances when this type of impact was observed.[25] We note that descriptions in the MBP Action Item Log sometimes report that sediment was deposited off the ROW but do not explicitly state that a waterbody was impacted. In some of those cases, Wild Virginia was able to determine that deposits were indeed found in streams by examining MBP photographs and additional reports. Given the ambiguities in some reports, it is likely that the total of these pollution incidents is greater than 113.

The DEQ and MBP reports distinguish between those occurrences when sediment deposits were observed on the stream bottom or in a wetland and those where sediment-laden water was observed in a waterbody but measurable deposits were not observed in the portion of the stream directly available to inspectors. In part, that distinction may be related to DEQ's interpretation of its regulations regarding discharges that are forbidden under its Virginia Water Protection (VWP) Permit Program.[26] Whatever the reason for the distinction, both types of pollution can and often do "interfere . . .with designated uses" of state waters and should be prevented whenever the WQS apply. Certainly, water that carries sediment off MVP sites will result in sediment deposition, those deposits may simply occur farther downstream.

In an enforcement suit the state brought against Mountain Valley, the state alleged that Mountain Valley violated provisions of Virginia law that "prohibit the dredging, filling, or discharging of any pollutant into to, or adjacent to wetlands or other surface waters without a Virginia Water Protection permit issued by the Board."[27] The complaint described instances when the state said Mountain Valley's activities resulted in sediment deposits in waterbodies for which Mountain Valley "did not possess a permit to discharge the fill into surface waters."[28]

The discharges of fill into waterbodies cited in the enforcement complaint are described in DEQ VWP Inspection Reports,[29] where inspectors made observations about the depth of deposits, the linear feet of streams or the area of a wetland covered in sediment, and whether the deposits would substantially disrupt aquatic organism movement.

The incidents cited in the court complaint include the nine instances shown in the table below, when measurable sediment deposits were observed in waterbodies by inspectors working on behalf of the state. Through a review of all available DEQ and MBP reports, Wild Virginia

[25] See Appendix B to this report for a list of these incidents, identified by the date the incident was first noted by the inspector and either an Action Item Log ID number or DEQ inspection type or construction "Spread." Segments of the pipeline in Virginia are designated as Spreads G, H, or I., as described in *Wild Virginia, 2022* at 2.
[26] The program is authorized under Code of Virginia § 62.1-44.15:20. and administered through regulations at 9 VAC Chapter 210.
[27] *David K. Paylor and State Water Control Board v. Mountain Valley Pipeline, LLC, Complaint in the Circuit Court of Henrico County*, Case no. Case No. CL18006874-00., at 3 [hereinafter *Paylor v. Mountain Valley*].
[28] Id. at paragraphs 44, 47, 48, 51, 52, 54, and 58.
[29] The DEQ "VWP Inspection" reports included as Appendix D to this report.

has identified a total of 113 instances,[30] including those nine covered in the lawsuit, when sediments have been deposited in measurable amounts in waterbodies. Clearly, these incidents qualify as "pollution incidents" and constitute damages to the aquatic environments affected, as well as interferences with designated uses under the WQS.

Date	Stream Impacted	Sediment Deposition in Waterbody
May, 2018	Unnamed tributary (UT) to Blackwater River	approx. 1,100 linear ft. of deposits, depth from 1 to 11 inches
May, 2018	UT to Blackwater River	approx. 1,690 linear ft. of deposits, depth from 1 to 10 inches
June, 2018	UT to Flatwoods Branch	approx. 3,600 linear ft. of deposits, depth from 1 to 7 inches
June, 2018	Two UTs to North Fork Roanoke River	total approx. 2,200 linear ft. of deposits, depth from 1 to 5 inches
June, 2018	UT to Flatwoods Branch	approx. 209 linear ft. of deposits, depth < 0.5 to 3 inches
Aug., 2018	UT to Sinking Creek	approx. 600 linear ft. of deposits, depth from < 0.5 to 3 inches
Sept., 2018	Kimballton Branch	approx. 630 linear ft. of deposits, depth from < 0.5 to 9 inches
Sept., 2018	wetland adj. to UT Mill Creek	approx. 350 sq. ft. of deposits, depth from < 0.5 to 6 inches
Oct., 2018	UT to Blackwater River	linear ft. not known, impacts private property owner denied access, depth from < 0.5 to 2 inches where observable

As discussed above, the threshold that determines whether impacts on state waters in Virginia are damaging is whether the WQS regulations have been violated. It seems unquestionable that the conditions described violate those conditions.

The instances when these deposits were caused by Mountain Valley have ranged in time between May, 2018 and September 22, 2021.[31] Throughout that 3-year timeframe, this type of pollution incident occurred in nearly every period when Mountain Valley was clearing land, trenching, or backfilling trenches with soil.[32] Likewise, these incidents occurred in nearly

[30] These instances are listed by date and either Action Item Log ID number or DEQ inspection type and date in Appendix A to this report.

[31] This information is taken from: a document prepared by MBP inspectors and labeled "Action Item Log through 7-14-2022," which is accessible at *Wild Virginia, 2022*, Appendix B, and associated computer folders, including photographs and text documents, each labeled to correspond with an ID number for each of 5,364 descriptions in a column headed "Action_Item_Issue;" a collection of inspection reports made by DEQ personnel and accessible on the DEQ's website at https://www.deq.virginia.gov/get-involved/topics-of-interest/mountain-valley-pipeline, under links at the section titled "Inspection Reports." In this report, MBP inspection reports are referenced by Action Item IDs and DEQ inspection reports are referenced by the name of the tab under which they are accessible on the website (Complaint, Spread G, Spread H, or Spread I) and the date of the report.

[32] See *Wild Virginia, 2022*, narative at pdf pages 6-7 and tables at 11-13 and 15-17 depicting times when Mountain Valley was clearing land, trenching, or backfilling trenches and corresponding periods when sediment deposition in waterbodies and off the MVP ROW were observed by state inspectors.

every area affected by the MVP, including in eighteen of the twenty-one HUC-12 areas touched by the pipeline route.

The last significant construction activities on MVP, according to Mountain Valley's reports to FERC, as referenced in *Wild Virginia,* 2022, occurred in October, 2021. One of the most damaging pollution events happened in August of 2021 in the Doe Creek watershed, as shown below.

Below are just a couple additional examples of these impacts, presented here as representations of special circumstances that are of concern on a wider basis. Many others are described in later sections for individual watersheds.

August 16, 2018 - Sediment deposited in unnamed tributary to Sinking Creek over a karst feature.[33] This is one of six instances, in watersheds in both New River and Roanoke River basins, where records explcitly state that sediment was deposited in a waterbody or on land in a way that could affect karst environments. These areas are especially vulnerable to the transport of pollutants through groundwater and into wells and springs, sometimes many miles away from the initial impact sites.

August 2021
Sediment deposited in an unnamed tributary to Mill Creek. The deposits extended over an area of the stream approximately 175 feet in length. This is a coldwater stream that is habitat for sensitive native trout and orangefin madtom. The landowner whose property was affected refused access for Mountain Valley to remove the sediment. Inspectors noted that three months after the incident, the sediment was no longer visible. Presumably it had been transported downstream.[34] As discussed further below in the section related to deposits on land outside the MVP ROW, delays in removing off-site sediment have sometimes lasted many months and sometimes the pollution was never removed from waterbodies or adjacent properties.

Note that construction was almost completely halted between October, 2019 and April, 2021, and sediment deposits in waterbodies from MVP were also stopped in that period. Then, during the summer and early fall of 2021, when construction re-started for a short period, some particularly serious pollution impacts were inflicted on streams and landowners, as illustrated in the Doe Creek watershed section later in this report.

In many cases, state inspection records describe efforts to remove sediment from waterbodies after these pollution incidents occurred, sometimes terming such efforts "remediation."[35] However, no information reviewed indicates that the risks and benefits of physical removal of sediments from the affected waterbodies was assessed before it was allowed. It is certain that digging or otherwise working in sensitive waterbodies to remove sediment has disrupted habitats. In the most extreme case discovered in the records, Mountain Valley personnel were

[33] MBP Action Item Log ID 580.
[34] MBP Action Item Log ID 5035.
[35] See for example Action Item Log ID numbers 1562, 1571, 1662, 3452, 3683, etc.

allowed to use pressure washers and vacuum devices to remove its pollution from a stream. This case is described below in the section related to the Doe Creek watershed.

Further, Wild Virginia has been able to find no evidence in state records that long-term or lingering biological impacts or habitat alterations due to sediment deposition in streams, or removal of those sediments, was ever assessed by DEQ or any other party. For some of the most extreme cases, those mentioned above and cited in the enforcement lawsuit, Wild Virginia asked DEQ, for such information in a Freedom of Information Act (FOIA) request. The infomation requested included, in part:

> Any chemical, physical, or biological measurements or observations at each of the sites [where the VWP inspections were conducted] . . . 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. . . . Any description or discussion of chemical, physical, or biological impacts actually caused by removal of sediments from the streams.[36]

DEQ did not provide any evidence in response to the FOIA to show that these streams, which were impacted by heavy deposits of sediment for hundreds or thousands of feet, were ever examined to assess the resulting state of those waterbodies.

Figures 1 - 9 below show a sampling of the waterbodies impacted by MVP's sediment discharges and deposits in waterbodies. Other examples are shown in watershed-specific sections later in the report.

[Note: abbreviation used in photo captions - UT means "unnamed tributary"]

[36] Letter from David Sligh, Wild Virginia to Diana Adams, DEQ, *Re: Wild Virginia FOIA Request, Assessments at VWP Inspection Sites on MVP*, September 29, 2021.

Figure 1 - Sediment deposits in UT to Blackwater River, August 1, 2018, DEQ Inspection, Spread I, Source: DEQ [report says "sediment appears to have been removed from stream" on Aug. 15, 2018]

Figure 2 - Sediment deposited in UT to Sinking Creek, August 29, 2018, DEQ VWP inspection, Source: DEQ [notes that sediment shown approx., 300 ft. downstream from ROW]

Figure 3 - Sediment deposited in wetland W-G2, adjacent to Little Cherrystone Cr., February 12, 2019, Action Log ID 1888, Source: MBP [deadline for removal of sediment extended "due to wet ROW conditions," removed after 10 days]

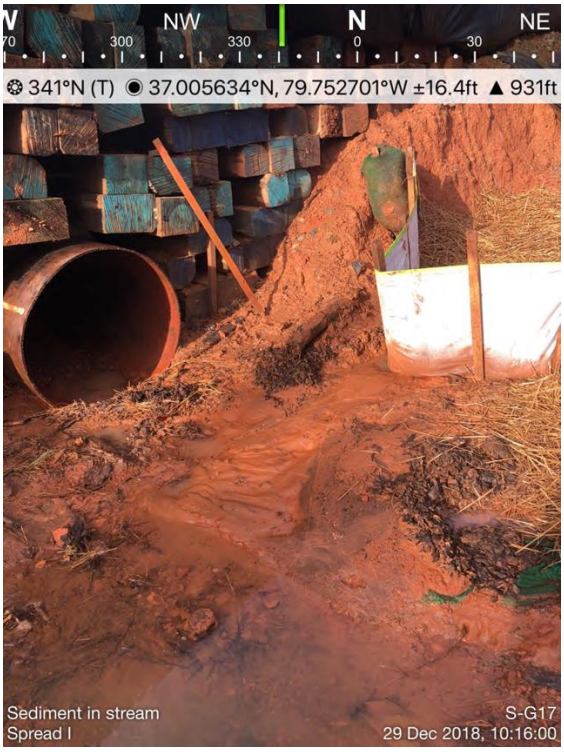

Figure 4 - Sediment deposited in UT Blackwater River, December 29, 2018, Action Log ID 1562, Source: MBP

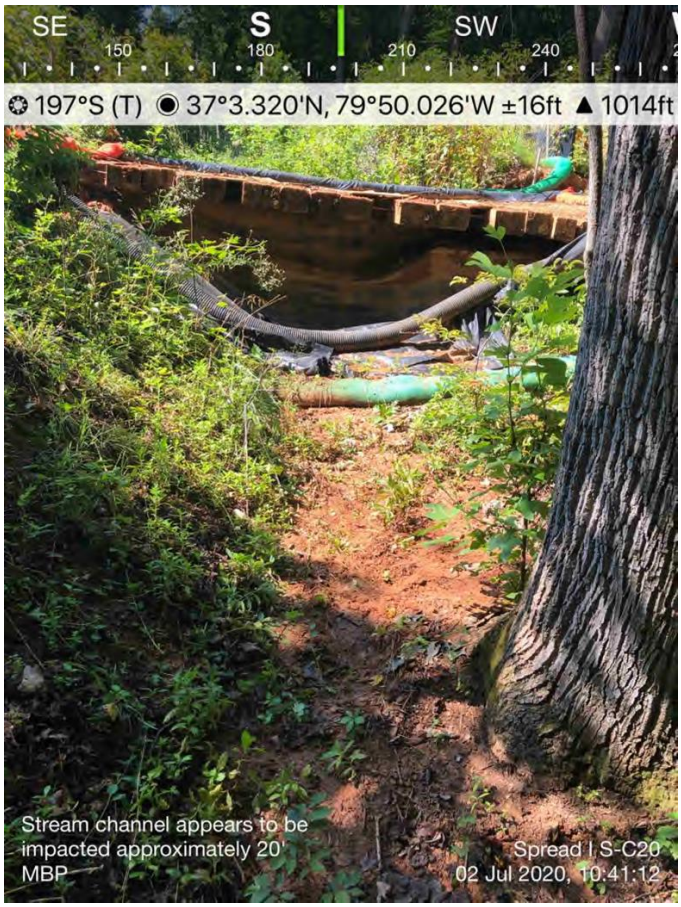

Figure 5 - Sediment deposited in UT to Maggodee Creek, July 2, 2020, Action Log ID 4313, Source: MBP. [report states deposits 2.5 inches deep, 3 ft. wide, covering approx. 20 linear feet of bed; deposits in place five days before removal.

Figure 6 - Sediment deposited in UT to Roanoke River, July 23, 2019, Action Log ID 3301, Source: MBP [failure to recover sediment without landowner agreement, after 72 days sediment had washed away]

Figure 7 - Sediment deposited in UT to Mill Creek and on adjacent property, August 16, 2021, Action Log ID 5035, deadline to clean up extended while seeking landowner permission [report states impacts extend approx. 75 linear feet upstream and 100 linear feet downstream; landowner denied permission to access impacted areas; approx. 3 months later, inspector reported sediment deposits no longer visible.

Figure 8 - Sediment deposited in UT to Blackwater River, May 31, 2018, DEQ VWP inspection rpt. [sediment in streambed approx. 1,690 linear feet of stream impacted with deposits up to 5 inches deep; impacted area approx. 685 feet from ROW]

Figure 9 - Sediment deposited in UT to Blackwater River, May 31, 2018, DEQ VWP inspection report, Source: DEQ [sediment covered approx. 1,110 linear feet of streambed, up to 7 inches deep]

Sediment Deposited Outside MVP Pollution Controls

In at least 684 instances, MVP activities have caused measurable sediment deposits on land off the project ROW and beyond the control of sediment treatment or reduction measures.[37] DEQ or MBP inspectors may or may not have traced these off-site deposits to waterbodies, but they present a threat of sediment discharge at any time while they remain in these areas, because storm runoff can move the materials downslope and downstream.

In its lawsuit against Mountain Valley, the state cited these types of pollution incidents on numerous occasions. For example paragraphs 41, 57 allege the release of sediment off the ROW onto adjacent private property and paragraph 62 alleges forty-two such incidents.[38] Off-site releases of sediment "adjacent to wetlands or other surfaces waters" without coverage by a VWP Permit violate Va. Code § 62.1-44.15:20 and the regulations at 9 VAC 25-21-50.

Virginia law also recognizes that such situations are pollution incidents and likely sources of water pollution problems. The Code of Virginia states that if "sediment has been deposited in significant amounts in areas where those deposits are not contained by best management practices," they may pose "an imminent" threat of adverse impacts to water quality and may be the basis for a stop-work instruction. Va. Code § 62.1-44.15:37.1.A.

These deposits are a harm to landowners whose property is adjacent to the MVP ROW and whose property interests may be encroached upon by these pollution releases. These parties often face a choice whether to have farm fields or other areas further disturbed by personnel attempting to remove the sediments or by the continued presence of the pollution, sometimes indefinitely.

An important observation from the state inspection records is that in many instances the off-site sediment deposits, both on land and in waterbodies, stay in place for extended periods, sometimes until they are carried away downstream by subsequent storm runoff events. In at least 117 instances, state records indicate that the usual deadlines for correcting problems, including for retrieving off-site sediment or other materials, were waived or extended because there was a delay in getting landowner permisstion to do so. In some cases permission was never granted and inspectors noted that the sediment was no longer present - clearly, in many of these cases the sediment was eventually carried away in runoff.

The following photographs show a number of these instances of off-site sediment deposits at various locations along the MVP in Virginia and, the discussions below for individual watersheds provide descriptions and photographs of more of this type of pollution incident.

[37] See Appendix A to this report for a list of these instances, identified by date of occurrence and either Action Item Log ID number or DEQ inspection type or Spread.
[38] See *Paylor v. Mountain Valley*.

Figure 10 - Sediment deposits off ROW onto a farm field, near UT to Harpen Creek, June 28, 2019, DEQ Inspec. Rpt. Spread I, Source: DEQ

Figure 11 - Sediment deposited off ROW, June 3, 2019, Action Item ID 2844, near Dry Run, Source: MBP

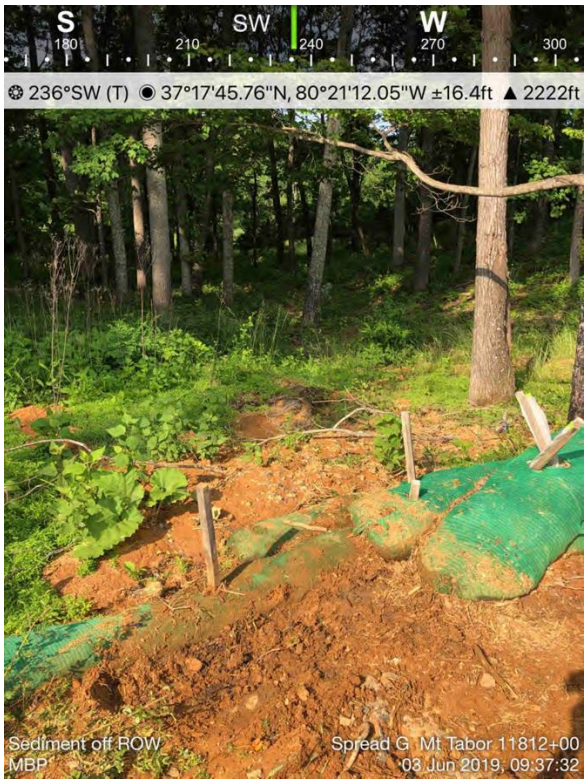

Figure 12 - Sediment off ROW near UT to Little Creek, September 9, 2018, Source: citizen observer, accessible at Virginia Pipeline Violations Facebook page

Untreated or Poorly Treated Discharges from MVP Sites

In at least 687, instances pollution control structures at MVP sites have been undermined, overtopped, overwhelmed, or otherwise bypassed by water carrying sediment off-site, resulting in discharges that are poorly treated or untreated. These pollution incidents result in sediment-laden water flowing across land and into streams and wetlands, where it can cause a variety of harms.

In its enforcement lawsuit against Mountain Valley, the state cited instances where pollution control features were "overwhelmed" or were not adequately installed or maintained and led to "sediment-laden" water discharging from MVP sites.[39] In some cases, inspection reports indicate that sediment deposition off-site and/or in waterbodies occurred. In many other cases, measurable deposits were not mentioned but these releases off-site are definitely pollution incidents that have affected hundreds of waterbodies all through the pipeline's path across Virginia.

Descriptions of pollution incidents in DEQ and MBP inspection reports are not always consistent but some terms describing the failures or problems with pollution control measures do appear repeatedly. Word searches in the inspection records show:

408 instances when controls were "undermined"
279 instances when controls were "overtopped," "overrwhelmed," or "overrun"

The records also reveal that measures that have been designated as "enhanced" pollution controls have failed or been ineffective in many cases. So-called "super silt fence," where fabric material is physically backed by what resembles chain-link fencing, was mentioned in relation to pollution incidents in 41 instances. Triple-stack compost filter socks, were mentioned in relation to pollution incidents 34 times.

One other "enhancement" that has been cited to support claims that past MVP pollution won't be repeated if construction re-starts, is the addition of yet more inspectors and site checks. However, it is clear that the thousands of inspections by DEQ and MBP in Virginia, by the West Virginia Department of Environmental Protection (DEP), the Federal Energy Regulatory Commission (FERC), and others have not stopped the pollution. The record shows that the damages to waterbodies and property only slows or stops when Mountain Valley is forced to stop construction.

As explained above, sometimes Mountain Valley has been granted waivers or extensions of deadlines by Virginia officials, so that corrections that are supposed to happen within 24 or 72 hours take longer, sometimes much longer. In addition to delays when off-site sediment could not be removed due to a lack of landowner permission to work outside the ROW, another common cause for waivers is cited repeartedly in Virginia inspection reports. In 192 instances, inspectors listed the fact that the ROW was "wet" or "saturated" as a reason why pollution control measures need not be installed, repaired, or replaced within the usual required time. Instead of a day or three to install or repair some pollution control feature, Mountain Valley would be allowed to delay for additional days and sometimes for much

[39] See Paylor v. Mountain Valley

longer. Such delays are not without considerable risk and often obvious further harm to the environment.

Seemingly routine conditions for which DEQ and MBP inspectors note only that maintenance is required are, in many cases, the cause of off-site pollution discharges and when the maintenance is delayed, additional pollution incidents may well occur. For these delays to be allowed for a condition that can hardly be unexpected, that the ground would be wet or saturated after storms, is a major flaw in the plans and methods that are supposed to protect our waters and adjacent landowners. It is predictable that this kind of problem will continue indefinitely if MVP work continues, given that rainstorms and wet ROWs will continue.

One example of such a problem area relates to sumps. These are features found in thousands of locations along the pipeline route. They are small pits placed at the boundary of a work area to slow off-site water flows and collect settled materials before the water passes through a filtering device, such as silt fencing or compost filter socks, or a combination of the two (sometimes call end treatments). These sumps are to be cleaned of sediment deposits *before* they exceed half their volume, to maintain capacity to continue removing sediment from stormwater flows and to slow and reduce the force of the runoff flows.

But in more than one hundred instances the MBP inspectors created "action items" where they had found that sumps were full, and in many of those cases this condition had already led to pollution incidents: for example - where sumps were full and the end treatments had been "overrun" (action item ID 480), "overtopped" (action item IDs 858 and 2757), "overwhelmed" (action item IDs 904 and 1833), "undermined" (action itemIDs 1590 and 2903), or where measurable sediment deposits were found off the ROW (action item IDs 896, 2060, 2498, and 3624).

And yet, corrections have routinely taken much longer than expected or normally required. Sometime inspectors explicitly noted that waivers of the usual deadlines were granted; sometimes it is not so stated but substantial delays occurred nonetheless. A partial list of delayed sump corrections, designated by Action Item Log ID numbers:

- 1890, sump full on 2/15/19, delay allowed for wet ROW, finally corrected 7 days later
- 1922, sump full on 2/19/19, delay allowed for wet ROW, finally corrected 34 days later
- 2044, sump full on 2/28/19, delay allowed for wet ROW, finally corrected 14 days later
- 2052, sump full on 3/1/19, delay allowed for wet ROW, finally corrected 25 days later
- 2060, sump full on 3/4/19, delay allowed for wet ROW, finally corrected 7 days later
- 2129, sump full on 3/7/19, delay allowed for wet ROW, finally corrected 7 days later
- 2548, sump full on 4/19/19, dealy allowed for wet ROW, finally corrected 7 days later
- 3624, sump full on 10/23/19, delay allowed for wet ROW, finally corrected 14 days later
- 3952, sump full on 2/12/20, delay allowed for wet ROW, finally corrected 6 days later
- 4852, sump full on 6/12/21, delay allowed for wet ROW, finally corrected 4 days later
- 5187, sump full on 9/23/21, delay allowed for wet ROW, finally corrected 10 days later

A variety of problems at a work site, including lack of adequate ground cover over bare dirt, inadequate or missing water bars or sump capacity, etc. can lead to huge amounts of muddy water leaving these sites. Wild Virginia has viewed thousands of photographs included with DEQ and MBP inspection reports but rarely seen the extreme nature of these discharges depicted. We have been provided no videos by the state. Visits to these sites by Wild Virginia personnel have revealed much more graphic views of pollution from the MVP sites than gained in looking at state records. To provide that fuller picture, we have supplemented the photos from state reports with those from citizen monitors.

The images on the following pages are screenshots from three videos recorded by a local volunteer observer along a section of the MVP pipeline right of way in Franklin County, Virginia. The videos are especially vivid illustrations of the way MVP control practices and structures have failed to properly control pollution from pipeline sites in hundreds of instances.

The three sites shown in these images all lie within less than a thousand feet of each other, along a stretch of the MVP ROW in Franklin County. As shown in the annotated satellite image in Figure 22, the pipeline site and the three discharges shown lie up a relatively steep slope from the Blackwater River. Measurements show that the distance of water flow from the pipeline ROW to the stream would be between 300 and 500 feet in this area.

The timing of these three incidents refutes frequent claims by Mountain Valley and by agency officials that MVP pollution problems happened primarily during the first year of construction and were largely due to one period of especially heavy storms. These videos, dated respectively September 27, 2018, August 22, 2019, and November 11, 2020, show that sediment-laden waters have poured off of MVP sites frequently and repeatedly and that even after three or more years, Mountain Valley has not taken measures adequate to stop these polluted discharges.

Figures 13 - 15 -

September 27, 2018

Sediment-laden water overflowing compost filter socks and leaving the MVP ROW, several hundred feet upslope of the Blackwater River.

Taken from a video accessible at Virginia Pipeline Violations Facebook page

Figures 16 - 18 - August 22, 2019
Sediment-laden water flowing over, around, and through super silt fence and leaving the MVP ROW, several hundred feet upslope of the Blackwater River.
Taken from a video accessible at Virginia Pipeline Violations Facebook page

Figures 19 - 21 - November 11, 2020, Sediment-laden water overwhelming an end treatment and leaving the MVP ROW, several hundred feet upslope of the Blackwater River. Taken from a video accessible at Virginia Pipeline Violations Facebook page

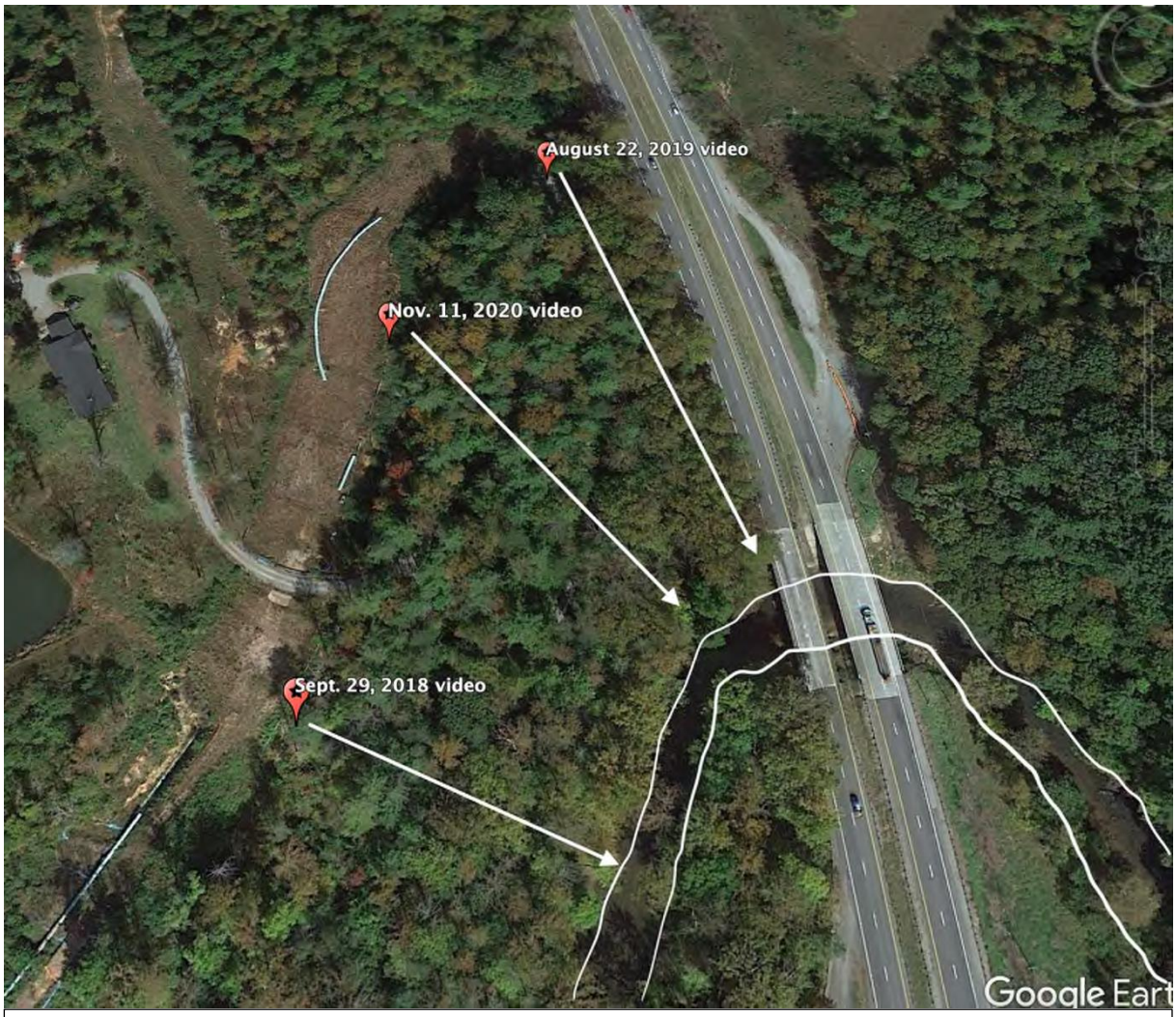

Figure 22 - Satellite image annotated to show locations at which videos depicted on previous pages were filmed and their relation to the Blackwater River. White arrows show approximate flows paths of water flowing off the MVP ROW.

A couple of additional examples of MVP pollution controls failing are shown below.

Figure 23 - Sediment-laden water undermining compost filters socks and discharging to a UT of Bradshaw Creek, July 23, 2019, DEQ Complaint inspection report, Source: DEQ [Bradshaw Creek is within the range of the Endangered Roanoke Logperch]

Figure 24 - Compost filter sock undermined near Sinking Creek, September 22, 2021, Action Log ID 5196, Source: MBP

Selected Virginia Watersheds
Concentrations of Proposed Discharges and Past Impacts

The following discussions describe six watersheds in Virginia, the new stream and wetland discharges Mountain Valley proposes in each, and the record of pollution incidents. These examples demonstrate why HUC-12 areas are not appropriate for understanding combined or cumulative impacts in these aquatic systems. And they show the devastating impacts MVP has already had in these unified and valuable stream systems.

Doe Creek watershed

In the supplemental materials submitted to the Corps to discuss cumulative impacts, Mountain Valley provides standard figures for project and non-project impacts within the Little Stony Creek-New River HUC 12 (050500020304),[40] an area of greater than 45 square miles (mi^2).[41] As shown in the annotated satellite image below, this HUC-12 area actually contains three watersheds draining to significant tributaries that flow into the New River. In addition, there is a section of the HUC 12 outside these three watersheds of approximately 10 mi^2 in size.[42]

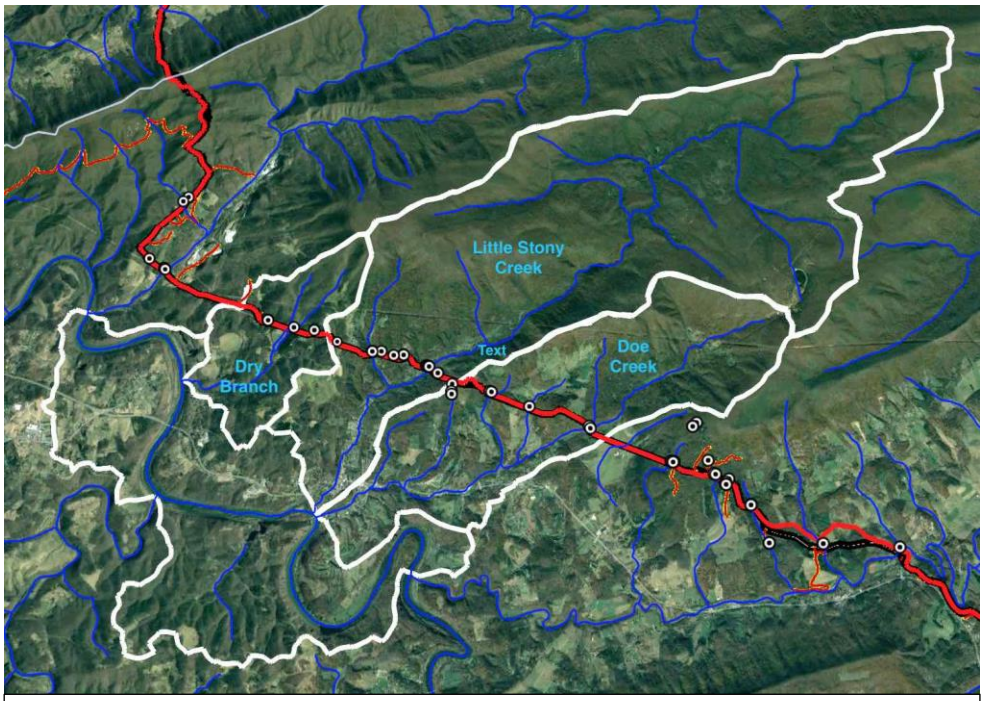

Figure 25 - Annotated satellite image showing Little Stony Creek HUC-12 area and separate watersheds within that area.

The three watersheds within this HUC-12 area, include Little Stony Creek, Doe Creek, and Dry Branch. Each of these three stream systems to the north of the New River will be impacted by the MVP. Those areas outside these watersheds will not be affected by the MVP

[40] *Supplemental Cumulative Impact Assessment Report for the Clean Water Act Section 404 and Rivers and Harbors Act Section 10 Permit Applications*, July 22, 2022, at 60-64.
[41] Drainage area statistics in this report are taken from EPA's Natural Hydrography Database Plus (NHDPlus) or from Mountain Valley's application materials, unless other sources are cited. In some cases, the figures vary slightly from one source to another.
[42] Images of watershed areas are created using satellite photography from Google Earth Plus.

and are not directly connected to the three named streams. Thus, these areas should be excluded from the analysis.

As discussed above, a rationale that the USFS offered to justify its choice of HUC units (in its case HUC-10s) was that those areas are at "the scale at which indirect and cumulative effects are reasonably expected to occur for the resources analyzed."[43] This conclusory statement by the USFS is not supported by any analysis and there is no rational basis to expect that cumulative effects in one watershed within this HUC-12 area will have significant impacts or relationships to those in any of the others or to include all in one cumulative effects analysis.

Each of the three streams mentioned is important in its own right and each is a significant contributor of flows and materials to the New River. The characteristics described below for Doe Creek demonstrate why it is necessary to look at impacts in each of these distinct stream systems and why simplistic and questionable estimates of permanent and temporary waterbody impacts across a larger HUC area are improper.

Mountain Valley proposes intensive new impacts to each of the three watersheds in the HUC-12, and waterbodies in each of these drainages have already been assaulted by discharges of pollutants from MVP-related activities. The problems with Mountain Valley's approach to cumulative impacts assessments overall are clearly demonstrated for the Doe Creek watershed.

The Doe Creek drainage measures 8.5 mi^2, or around 19% of the Little Stony Creek HUC-12 unit. A 2.15 mile segment of the pipeline path crosses Doe Creek watershed midway between the Creek's mouth and the upper reaches of the stream to the northeast. The MVP right of way and the six new stream discharges that Mountain Valley proposes in the Doe Creek watershed affect not only the mainstem of the Creek but also impact four significant unnamed tributaries as well. Doe Creek is a first order stream at and upstream of the pipeline crossing and becomes a second order stream where one of the tributaries, which the MVP also crosses, joins it just downstream. Of the four tributaries the MVP proposed to discharge to, two are ephemeral, one is intermittent, and one is a first order perennial stream.

Mountain Valley claims that a total of 590 linear feet of streams will be temporarily impacted by these six discharges and that no permanent impacts will occur. We have found no analysis of the potential impacts on this stream system from the collection of proposed discharges that accounts for the fact that they will affect all of these arteries feeding the downstream segments or how the combination of sediments released will affect the lower reaches of Doe Creek or the portion of the New River into which it discharges, and no recognition that the segment of the New River is part of the historic range of the endangered Candy Darter. In fact, if a combined impacts review on a scale larger than the individual watersheds is to be conducted, one that looks at the combined imputs from all the tributaries to this section of the River should be considered.

Pollution discharges from MVP activities have already affected Doe Creek and its tributaries on numerous occasions and no party has described these in context of the watershed or

[43] DSEIS at 83.

explained how they affect current conditions in these streams and how these inputs have or will contribute to combined or cumulative impacts to the stream system. State inspectors have reported four separate instances when visible and measurable sediment deposits resulting from MVP activities were observed in watershed streams.

In the worst of these cases, Doe Creek was coated with sediment for a distance of more than 3,500 linear feet.[44] According to the MBP report, this impact was first observed on August 18, 2021 and the "Item Corrected Date" was fifteen days later, on September 2, 2021. The report describes the supposed "correction" for the deposition of sediments over a stretch at least two thirds of a mile long as follows:

> Streambed was cleaned of sediment with pressure washers and vac trucks to the extent allowed by landowners, approximately 3500 LF.[45]

Aside from those instances where Virginia inspectors documented sediment deposition directly in streams in this watershed, there were eleven other instances when sediment was deposited on the land outside of the pollution control structures and thus were available to be carried to the streams during subsequent storms.[46]

One landowner's home was surrounded by MVP's mud and debris, requiring a brigade of workers to remove it with shovels and buckets, as shown in Figure 28. Off-site sediment deposits was not removed until nearly nine days had passed, providing ample opportunity for those sediments to be entrained by storm runoff and carried to waterbodies.

Finally, as in many other sites along the MVP route, the erosion and sediment control measures Mountain Valley has used, and intends to continue using, have simply failed to perform the functions promised in the plans. Virginia inspectors have documented at least eleven instances when the silt fences, compost filter socks, and other devices and structures that are supposed to prevent unacceptable waterbody impacts were "undermined," "overtopped," or "overwhelmed."[47]

Given that the majority of these failues occurred in the summer of 2021, more than three years after MVP construction began, it is clear that Mountain Valley has not solved problems that led to pollution incidents at the start of the project. In one of these instances, inspectors found a "triple stack cfs overtopped,"[48] showing that one of the so-called "enhanced" pollution control features had also been ineffective.

> Photographs below show some of the great damage Mountain Valley has caused in the Doe Creek watershed, to the environment and to the people who live there.

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[44] See MBP Action Item Log, ID number 5068. Other incidents of sediment deposition in streams in this watershed are shown on the Action Item Log as ID numbers 5065 and 5123 and on a DEQ Field Inspection Report for Spread G, dated August 23, 2021.
[45] Action Item Log ID 5068.
[46] These included incidents under the following ID numbers of the Action Item Log ID numbers 532, 672, 4971, 5061, 5062, 5064, 5067, 5077, 5081, 5124, and 5125.
[47] See Action Item Log ID numbers 530, 2029, 2567, 2570, 4912, 5071, 5072, 5073, 5066, 5063, 5075.
[48] Action ID Log number 4912.

Figure 26 - Sediment deposited in Doe Creek, August 18, 2021, Action Log ID 5068, Source: MBP

Figure 27 - Sediment deposited off MVP ROW near Doe Creek, August 18, 2021, Action Log ID 5068, Source: MBP

Figure 28 - Workers using a pressure washer and pump truck in an attempt to remove sediment deposited in Doe Creek from MVP worksites. August 20, 2021. Action Log ID 5068. Source: MBP

[Inspectors first identified this pollution incident on August 18, 2021 and the MBP report lists the "item corrected date" as September 2, 2021, fifteen days after the stream impact occurred.]

Figure 29 - Workers removing sediment from a landowner's property after the pollution "overwhelmed perimeter controls" at MVP sites. Action Log ID 5067. Source: MBP

Figure 30 - Sediment overflowing compost filter socks, deposited off MVP ROW near UT to Doe Creek, August 19, 2021, Action Log ID 5081, Source: MBP

Figure 31 - Sediment deposited in UT to Doe Creek, August 18, 2021, Action Log ID 5065, Source: MBP

Kimballton Branch watershed

This small watershed lies within the Stony Creek HUC-12 unit. The entire HUC covers an area of 31,289 acres[49] but the Kimballton Branch drainage is just 1,117 acres in size,[50] approximately 3.6 percent of the area for which Mountain Valley has purportedly assessed cumulative impacts. Yet, as shown in the annotated aerial photo below, a large percentage of the pipeline's path through the Stony Creek drainage will disturb land and discharge to waterbodies via two proposed crossings that fall within the Kimballton Branch watershed.

Much of the land surface in both the Stony Creek HUC-12 and Kimballton Branch is within the boundaries of the Jefferson National Forest. Kimballton Branch discharges to Stony Creek in the section designated as critical habitat for the endangered Candy darter by the U.S. Fish and Wildlife Service.[51]

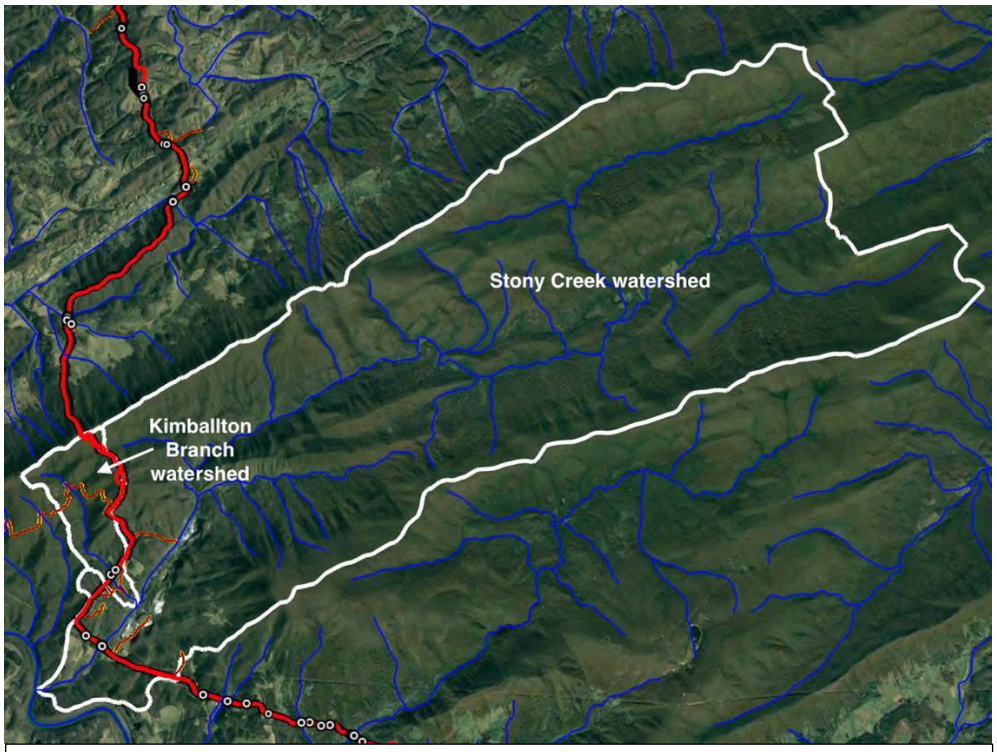


Figure 32 - Stony Creek HUC-12 (050500020305) and Kimballton Branch watershed. Created with Google Earth Plus with data from National Hydrography Dataset. Red line depicts MVP pipeline ROW; proposed new discharges shown by circles.

[49] Appendix Q, Revised Cumulative Impact Assessment Report - Hydrology, Mountain Valley Pipeline, revised May 2022 (Appendix Q), at 64.

[50] Nation Hydrography Dataset Kimballton Branch Watershed Report.

[51] Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Candy Darter, 86 FR 17956, 17964 (April 7, 2021) (codified at 50 C.F.R. § 17.95(e)) (designated segement 2b, "approximately 31.1 skm (19.3 smi) of Stony Creek from the confluence with White Rock Branch, downstream to the confluence with the New River.").

Mountain Valley proposes two new discharges within this watershed, one to Kimballton Branch, a first order stream and habitat for native trout, and one to an ephemeral unnamed tributary to Kimballton Branch.

Clearly, Mountain Valley's bare listing of supposed linear feet of impacts in the Stony Creek HUC-12 or in the Kimballton Branch watershed provides no understanding of possible true impacts on either of these streams or on the stream system as a whole. The permit application filed with the Corps of Engineers claims there will be a combined 176 linear feet of temporary impacts from the two discharges in the Kimballton Branch watershed, both pipeline ROW crossings.[52] Mountain Valley claims no permanent stream impacts will be caused by MVP.

And by placing those impacts within the context of the entire Stony Creek drainage, when they will be confined to such a small portion of the system, Mountain Valley clearly obscures the true magnitude and importance of any cumulative impacts. Though the Stony Creek HUC does in fact represent a watershed, unlike many of the HUC-12 units assessed, viewing impacts on this scale and ignoring more localized combined effects in a functional way is negligent for agencies responsible for protecting these resources.

Serious pollution events, which must be considered in any true assessment of current conditions or possible impacts, have already been caused by MVP activities in the Kimballton Branch watershed. These include the following:

Date Observed	Inspection Report	Description
August 20, 2018	MBP Action Item Log, Issue ID 604	Inspectors report "sediment off ROW" and "caused by swale runoff" at access road AR GI 234. Reported that deadline for correction was extended and on 10/3/18 that adjacent landowner refused permission to retrieve the sediment.
September 5, 2018	VWP Inspection Report	Approx. 630 linear feet of Kimballton Br. stream channel impacted by sedi-mentation. Deposits up to 9 inches depth. Aquatic life movement substantially disrupted.
November 28, 2018	Field Inspecrtion Report, Spread G	Designated stream S-Q14 shows signs of sediment and possibly road gravel in the stream, access road AR GI 234.
December 20, 2018	Field Inspection Report, Spread G	Designated stream S-Q14 shows signs sediment and possibly road gravel in the stream, access road source.

[52] Mountain Valley Pipeline Individual Permit Application Feburary, 2021, at pdf page 86 (Table 2).

As shown by the DEQ and MBP inspections, the areas where stream bottoms were covered in sediments have already greatly exceeded the predicted impact areas that Mountain Valley included in its application to the Corps. And these impacts, from measurable sediment deposits in streams, have been supplemented by sediment-laden water discharged from MVP work areas and ROW, as demonstrated by incidents that occurred in August, 2018.

There is also no basis to assume that long-term and even permanent impacts have not already occurred in Kimballton Branch or downstream in Stony Creek. The impact on biota in these streams from repeated inputs from the MVP activities, spread over a four-month period in one year (2018), must be considered first and any new impacts that would be caused by discharges now proposed must be included in any assessments.

We also refer to the questions outlined above in this report that must be considered when overall impacts to a watershed are analyzed. Kimballton Branch is a first order perennial stream in the segment where crossing S-Q13 is proposed and the discharge at crossing S-Q12 would enter an ephemeral stream. Both streams are coldwater fisheries and habitat for native trout species. It has long been documented in the scientific literature that these types of headwater streams have an outsized impact on the larger watersheds in which they lie and these values are not accounted for in analyses that seem to assume all streams are the same.[53]

The following photographs vividly show the kinds of damage MVP has already inflicted on Kimballton Branch streams.

[53] 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.

Figure 33 - Sediment deposited in Kimballton Branch, August 18, 2018, Action Log ID 604, Source: MBP

Figure 34 - Sediment deposited in Kimballton Branch, September 5, 2018, VWP inspection report, Spread G, Source: DEQ [Approx. 630 linear feet of Kimballton Branch stream channel impacted by sedimentation. Deposits up to 9 inches depth. Report indicates that aquatic life movement substantially disrupted.]

Flatwoods Branch

The watershed of Flatwoods Branch lies within the Wilson Creek-North Fork Roanoke River HUC-12 (030101010202), which is 25,895 acres in size. The Flatwoods drainage comprises just about 11% of the HUC, measureing 2,787 acres. As shown in Figure 35, all of MVP's proposed crossings and the ROW within this HUC area fall within the Flatwoods Branch watershed. Thus, the rational scale on which to base a cumulative impacts analsis is the one drainage that will be so heavily impacted.

Flatwoods Branch and one unnamed tributary are first order perennial streams in the areas where the MVP ROW impacts them and where new discharges are proposed. Numerous intermittent and ephemeral streams would be affected and in many instances already have been. In all, Mountain Valley proposes to create 10 new discharges to streams and 5 to wetlands (13 ROW crossings and 2 timber mat crossings) in this watershed.

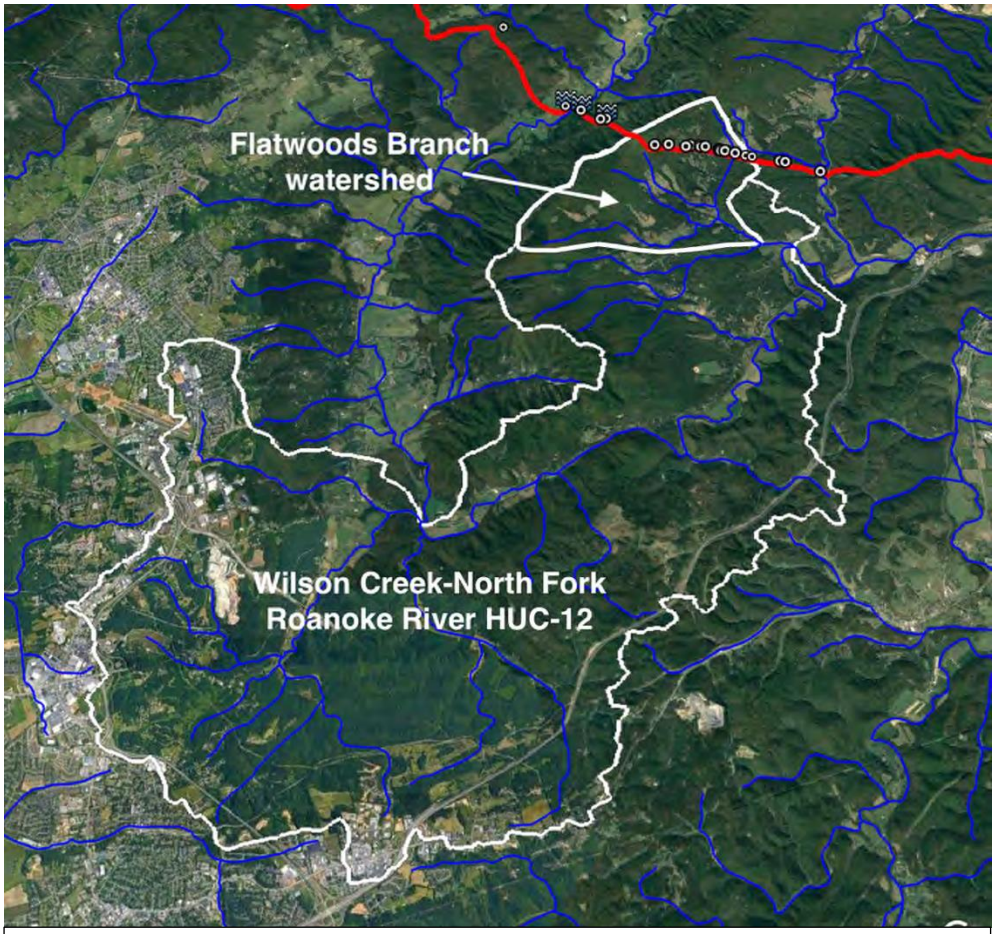


Figure 35 - Wilson Creek-North Fork Roanoke River HUC-12 and Flatwoods Branch watershed, showing all MVP impacts proposed for the smaller drainage.

More than 1.6 miles of the pipelines path runs through the Flatwoods Branch watershed, descending nearly 1,000 feet in elevation, from the ridge of Paris Mountain to the Flatwoods crossings.

The MVP has caused dozens of pollution events in this watershed, beginning in June, 2018 and continuing to at least October of 2021. Inspectors from DEQ and MBP have documented the following incidents:

- 7 times MVP caused measurable sediment deposits in waterbodies
- 17 additional times when measurable sediment deposits were found outside pollution controls
- 16 times when compost filter socks, silt fences, etc. failed to properly treat runoff

The observations of some of the sediment deposits in waterbodies include:

June 26-27, 2018
Inspectors found 3,600 linear feet of stream channel in UT Flatwoods Branch "impacted by sedimentation" to depths up to 7 inches. Notations indicate that sedimentation affected the "stream's viable habitat," and that aquatic life movement would be substantially disrupted. See Figures 36 and 37. (from VWP inspection report)

June 27, 2018
Inspectors found 209 linear feet of stream channel in UT Flatwoods Branch "impacted by sedimentation" to depths up to 3 inches. Notations indicate that sedimentation affected the "stream's viable habitat," and that aquatic life movement would be substantially disrupted. (from VWP inspection report)

August 1, 2018
Sediment in UT Flatwoods Branch. As of August 15, 2018 "sediment appears to have been removed from stream." (Action Item Log ID 491). This is the same stream impacted on June 26-27, 2018.

July 17, 2019
Sediment in UT Flatwoods Branch. Sediment "retrieved" seven days later, after a delay in getting landowner agreement to access the area. (Action Item Log ID 3248). This is the same stream as was impacted in June and August of 2018. See Figure 38.

As noted above, inspectors have document pollution incidents in which measurable sediment deposits were observed off the ROW on 17 occasions. These have been identified in June, July, August, October, November, and December of 2018; January and July of 2019; and October of 2021.

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

Figure 36- Sediment deposits in UT Flatwoods Branch, June 27, 2018, VWP Inspection Report, Source: DEQ [original photo caption retained]

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

Figure 37- Sediment deposits in UT Flatwoods Branch, June 27, 2018, VWP Inspection Report, Source: DEQ [original photo caption retained]

Figure 38 - Sediment deposited in UT Flatwoods Branch, July 19, 2019, Action Item Log ID 3248, Source: MBP [This is an example of what inspectors often term "remediation" through physial removal of sediments from the stream, using shovels and buckets.]

Little Creek

Mountain Valley's analysis of cumulative impacts from MVP and other dredge and fill discharges addresses the Madcap Creek-Blackwater River HUC-12 (030101010503), an area of 37,059 acres. Like a number of HUC areas along the MVP route, this HUC-12 is not a watershed and is, therefore not suitable for this analysis.

As noted above in this report, useful cumulative effects assessments may be possible at multiple watershed scales, where combined impacts may reach a threshold of importance based on the nature of the impacts and the characteristics of the waterbodies to be affected.

While the Madcap Creek-Blackwater HUC is not an appropriate area for this purpose, it may be argued that a useful analysis of combined impacts can be made for the the Little Creek watershed. As shown in the image below, the concentration of pipeline features, both ROW acreage and proposed new discharges, is highly concentrated in this drainage. All sediment discharges from the MVP and other sources in the watershed may affect the downstream portions of Little Creek, to its mouth at the Blackwater River, and there are likely signficant biological linkages in this system of headwaters and larger stream segments.

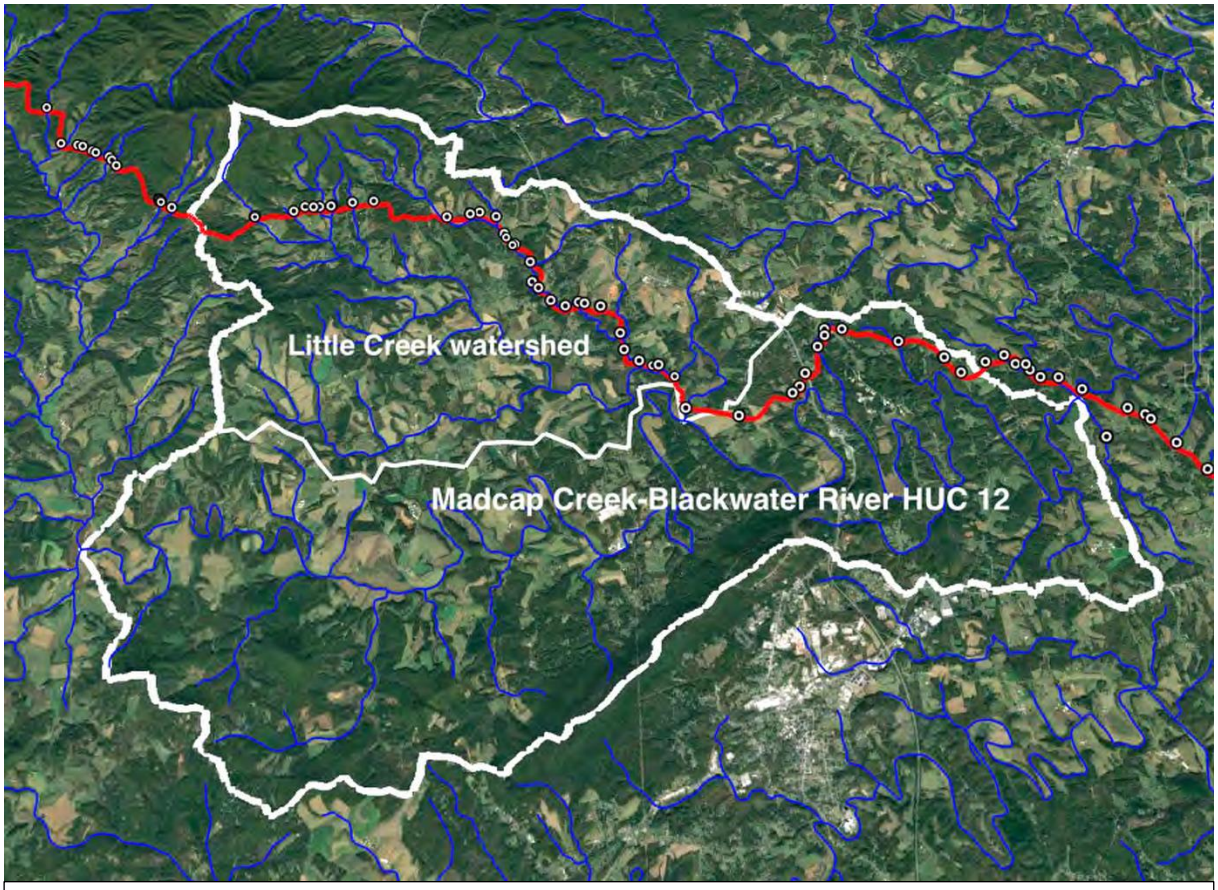


Figure 39 - Annotated satellite image showing Madcap Creek HUD-12 and the Little Creek watershed that form part of the HUD area.

Within the Little Creek watershed, Mountain Valley proposes 51 new discharges (43 to streams and 8 to wetlands). These would affect Little Creek, it's largest tributary Teels Creek, and numerous other unnamed tributaries to these two streams. This is an extraordinary number of new pollution sources concentrated in one drainage.

Teels Creek alone, a second order stream, would have seven new discharges along a segment nearly four stream miles long. These would be accompanied by twelve new discharges to a collection of tributaries to Teels Creek, including ephemeral streams, intermittent streams, and first order perennial streams. Ongoing sediment inputs from damaged streambanks, as explained below, will also contribute to future impacts.

An astounding number and variety of pollution incidents have already been documented in this watershed, both by state inspectors and citizen monitors. These include seven instances when measurable sediment deposits were documented by state inspectors in streams and wetlands. These occurred throughout the period from June, 2018 to August, 2019. There have also been fifty instances when sediment deposits were found on lands outside the ROW and outside the pollution control structures. For at least thirteen of these instances, cleanup or retrieval of the sediments were delayed by site conditions or landowner resistence to having Mountain Valley further encroach on and disturb their properties. In some cases those deposited materials were never retrieved. Figures 40 - 42 show offsite sediment deposits from MVP.

In seventy-five instances sediment barriers on MVP sites were overtopped, undermined, or otherwise shown to be ineffective at controlling offsite pollution discharges. During the period between June of 2018 and November of 2021, these pollution incidents happened in at least 24 separate months.

A particularly compelling narrative of the assaults Mountain Valley has made on waters and landowners in this watershed is presented in the affadavit from Betty Werner, included as Appendix C to this report. She describes serious impacts on a wetland on her former property[54] and on both Little Creek and Teels Creek, which converge there. Her photographs show numerous views of sediment-laden water leaving the MVP site and flowing into the streams, including those flowing from a large body of standing water that was present on her land for months,[55] thus gradually feeding sediment to the stream over time.[56]

One serious problem that has occurred multiple times in this watershed is damage to and serious erosion from stream banks related to MVP bridges and other activities. Importantly, many of these impacts occurred directly at the locations where Mountain Valley now proposes to make crossings with the pipeline, not in so-called upland areas.

Figures 42 and 43 are just two examples of this pollution source. This damage to actual stream banks and channels can and surely has contributed much greater loads of sediment to affected streams than the periodic discharges from worksites, because they will slough away

[54] See Affadavit of Betty B. Werner, at paragraph 15.
[55] As observed by Wild Virginia personnel on several occasions.
[56] Id. See e.g. pdf pages 10, 13, 17, 21, and 28.

in every significant high flow event as long as they are unstable. And, attempts at stalization are often unsuccessful, both in the short term and the long term.

Again, these impacts are graphically depicted at the Werner property, where she descibes and provides photographs of sections of collapsing stream banks[57] Around the bridge over Little Creek, where a pipeline crossing is proposed, the photographs show water from the MVP sites eroding the stream bank and contributing sediment directly to the stream.[58]

We conclude this review of the wide range of pollution incidents caused by MVP in the Little Creek watershed by citing two excellent and comprehensive reports by Mountain Valley Watch, included as Appendices E and F to this report.[59] That document chronicles severe damages that were caused to streams and landowner properties in 2018. Among the case studies and evidence presented in Mountain Valley Watch's December 2018 report, are photos from the Bernard property in Franklin County.[60]

Photographs in that section, a compilation of which is included here as Figure 44, show the collapse of a stream bank on Teels Creek and successive damage and attempts at correction by Mountain Valley through a course of several months. It is unquestionable that tons of sediment from that stream bank were deposited to the stream during those months, demonstrating the long-lasting and serious impacts of the physical changes to habitats that MVP activities have caused.

[57] Id. see e.g. paragraphs 16-18 and pdf pages 9, 11, and 16.
[58] Id. see e.g. at pdf page 17.
[59] Mountain Valley Watch, *Comments to State Water Control Board, August 10, 2018 [*hereinafter *MVW August 2018]*; Mountain Valley Water, *December Report, 2018*.
[60] *MVW Aug*ust *2018* at 14-16.

Figure 39 - Sediment deposits off ROW, at UT to Teels Creek, September 23, 2018, Source: citizen monitor

Figure 40 - Sediment deposits off ROW, at UT to Teels Creek, September 23, 2018, Source: citizen monitor

Figure 41 - Sediment deposits off ROW, at UT to Teels Creek, September 23, 2018, Source: citizen monitor.

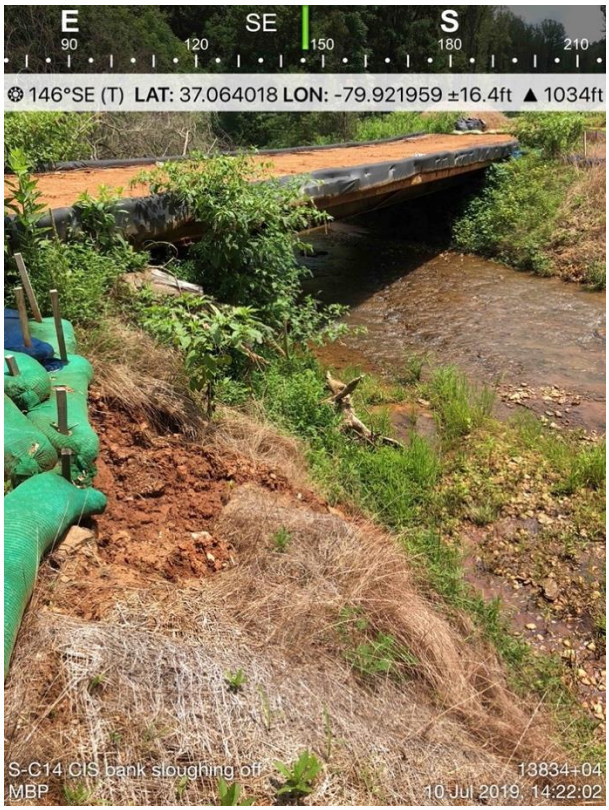


Figure 42 - Stream bank eroded at MVP site, Teels Creek, July 10, 2019, Action Log ID 3187, Source: MBP

Figure 43 - Stream bank eroded at MVP site, UT Teels Creek, July 10, 2019, Action Log ID 2313, Source: MBP

Figure 44 - A series of views of a collapsing stream bank on Teels Creek and Mountain Valley's attempts to repair the damage over several months in 2018. Source: Mountain Valley Watch Report, Appendix F to this report.

Green Creek watershed

This small watershed lies within the South Fork Blackwater River HUC-12 (030101010502), which is 18,019 acres in size.[61] This headwater drainage of Green Creek covers 1,280 acres, 7% of the total HUC area.[62] In this section, Green Cr. and other tributaries are 1st order perennial or intermittent streams. By contrast, the South Fork Blackwater is a third order stream where it flows into the Blackwater River. Also, while the Green Creek watershed is estimated to be about 95% forested, the South Fork Blackwater watershed is just over 70% forested, with more than 20% in farmland.

The entirety of the pipeline ROW within the HUC-12 unit passes across this watershed for a distance of about 1.23 miles and there are fourteen new discharges proposed - 9 to streams and 5 to wetlands.[63] As shown on Figure 45, all of the pipeline's impacts would occur in just the very headwater section of the watershed. This concentration of impacts in just one small drainage makes it imperative that any cumulative impacts analysis focus on this area.

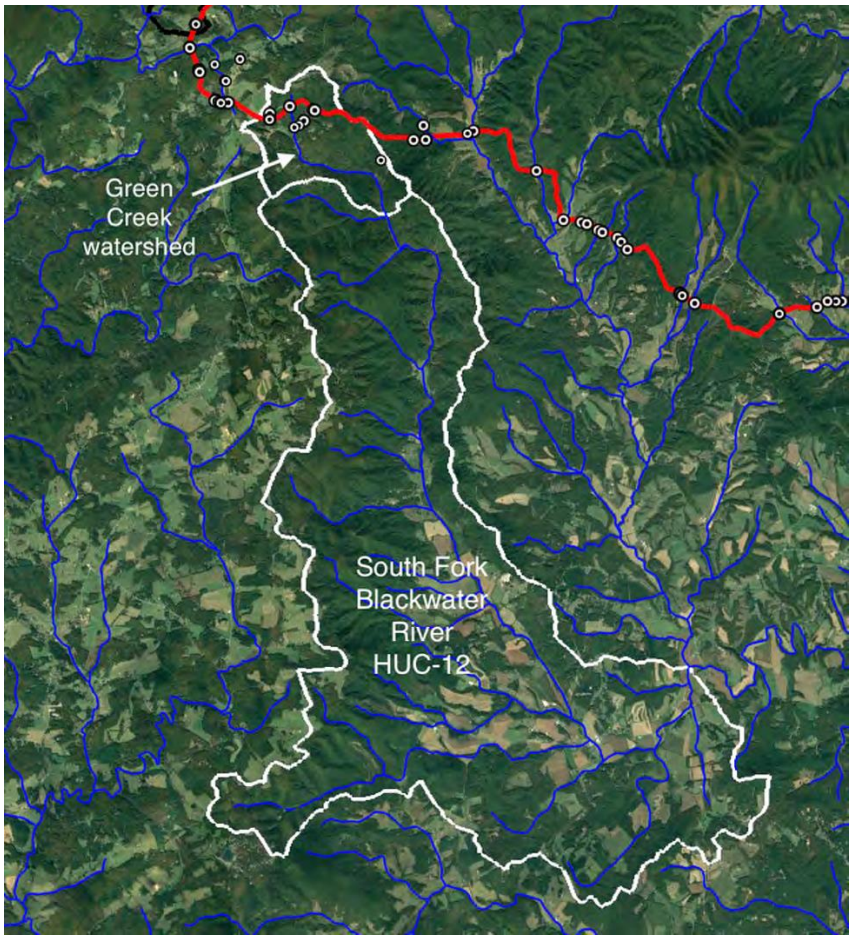


Figure 45 - Annotated satellite image of South Fork Blackwater River HUC-12 and Green Creek watershed, with MVP ROW and discharge only in the headwaters.

[61] Appendix Q, Revised Cumulative Imapact Assessment Report - Hydrology, Mountain Valley Pipeline, January 2022 (Revised May 2022), at 82.
[62] U.S. EPA, Watershed Report, Green Creek.
[63] Appendix Q at 78-79.

Pollution incidents that have been caused by MVP activities in this watershed include two incidents when sediment deposits were made in streams (Action Item Log IDs 1053 and 3306), occuring in October, 2018 and July, 2019. Additional off-site sediment deposits were documented six times, mostly concentrated in the fall of 2018 but followed by one incident in April, 2019. Finally, pollution control structures failed to properly treat discharges from the work sites in at least four instances, in July and September of 2018 and March and August of 2019. Figure 46 shows one pollution incident, when heavily sediment-laden water overtopped a compost filter sock in an area that drains to the native trout waters of Green Creek.

Figure 46 - Sediment-laden water overtopping perimeter control, July 25, 2018, Action Log ID 458, Source: MBP [an additional compost filter sock was added 10 days after this situation was observed]

Upper Cherrystone Creek watershed

The Cherrystone Creek HUC-12 unit is a watershed measuring 29,138 acres in size.[64] The upper Cherrystone watershed examined here covers an area of 8,720 acres or about 30% of the HUC-12 area. Of 48 new discharges proposed in the HUC area (34 to streams and 14 to wetlands),[65] 28 (21 stream and 7 wetland) are within this headwater drainage. An analysis of the combined new discharges in the Cherrystone HUC unit may be useful, since the mainstem Creek is affected in two sections.

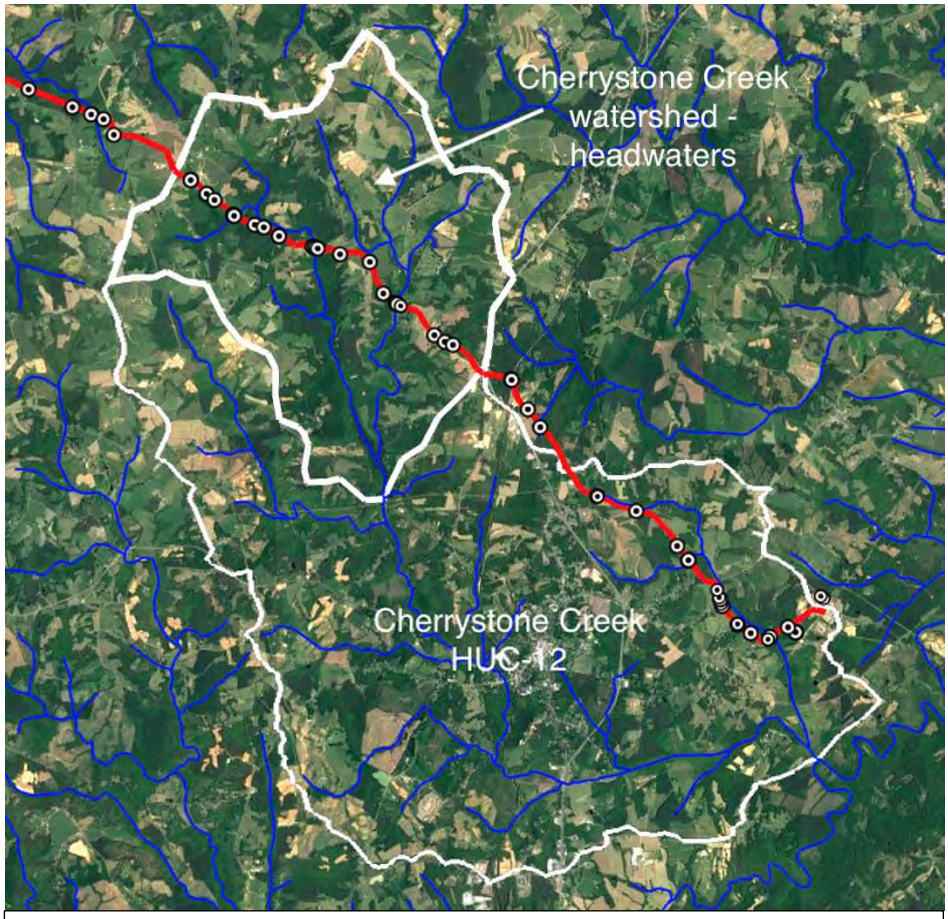


Figure 47 - Annotated satellite image of Cherrystone Creek HUC-12 and upper Cherrystone Creek watershed.

However, an analysis of combined effects in the upper watershed is vital for a number of reasons. Nearly four and a half miles of the pipeline's ROW crosses the upper watershed and both the Creek itself and nearly every other significant tributary, including the largest, Pole Bridge Branch, is crossed by the pipeline ROW.

Maybe the most important feature that sets this watershed apart is that all of these proposed impacts lie just upstream of the Cherrystone Reservoir. On both Cherrystone Creek and Pole

[64] Appendix Q at 88.
[65] Id. at 86-87.

Bridge Branch, the MVP ROW is less than two stream miles upstream of the impounded portions of those streams. Thus, all of the sediment discharged from upstream activities will affect the reservoir and it is important that these combined impacts be assessed.

A number of pollution incidents have already been documented in the upper Cherrystone watershed, including those shown in Figures 48 and 49 below, from February and April of 2019. One particularly significant event is labeled Action Item Log ID 1547 and is described in the inspection reports as follows:

"Sediment off ROW and in drainage channel conveying runoff into stream" on December 28, 2018. According to the report, after a delay in acquiring landowner permission to access affected areas, "sediment was retrieved and straw placed" by February 18, 2019, 52 days after the incident was discovered. According to coordinates shown on MBP photographs, the location of the release appears to be about 250 feet upgradient from a UT of Pole Bridge Branch and about 1,000 feet from Pole Bridge Branch, which provides habitat for the sensitive Orangefin Madtom, a fish that is designated "under review" by the FWS for listing under the Endangered Species Act.[66]

Figure 48 - Sediment deposited in UT to Cherrystone Creek, Action Item ID 2646, Source: MBP

[66] U.S. Fish and Wildlife Service, ECOS Environmental Conservation Online System webpage for Orangefin Madtom.

Figure 49 - Sediment deposited off ROW onto streambank at UT to Pole Bridge Branch, February 18, 2019, Action Log ID 1901, Source: MBP [deadline to remove extended "due to wet ROW," not removed until 6 days after deposited]

Conclusion

The information about areas in Virginia where MVP activities, including proposed new discharges, would have the most concentrated impacts shows that new and adequate cumulative or combined impact analyses must be conducted before any of the federal agencies now reviewing the project can make valid decisions. Any decision based on Mountain Valley's current assessments, which are deeply flawed in their focus and simplistic in nature, would be arbitrary and capricious.

The enormous record of the MVP's impacts on the waters and land in its path through Virginia shows many hundreds of pollution incidents and it is irrational to believe continued construction would not result in similar damages. If Mountain Valley and the various regulators supposedly monitoring the project and reacting to problems were able to prevent pollution incidents, surely they would have done so before. The cost of this unwise project has already been great, for our resources and our communities. We must not add to that burden with new discharges and additional destruction.

Appendix A

Mountain Valley Pipeline
Water Quality-Related Violations and Damage to Waterbodies
Summary of Findings from West Virginia DEP Inspection Reports

The following tables describe pollution events and violations documented by inspectors for the West Virginia Department of Environmental Protection (DEP). Overwhelmingly, these findings demonstrate the failure of Mountain Valley Pipeline's erosion and sediment controls to mitigate damage to local waterbodies as a result of pipeline construction. Specifically, Mountain Valley's construction activities have violated state water quality standards as well as stormwater construction permit requirements. The data shows that such violations have occurred repeatedly over the years from 2018 to 2022, and likely continue to this day.

Table 1 (pages 2 - 3) shows water impacts that were not cited as violations of water quality standard but were similar in nature to other incidents that WVDEP categorized previously as violations of water quality standards detailed in Table 2. As such, these impacts can be categorized as de facto violations of West Virginia's water quality standards.

Table 2 (pages 4 - 6) shows impacts the DEP designated violations of water quality standards.

Table 3 (pages 7 - 21) shows incidents DEP cited as violations of stormwater construction permit requirements.

Table 1. MVP Impacts to Waters of the U.S. in 2020-2022

Date	Document Type	Impact Description
Feb 10, 2020	Emergency Response	Representative stated that significant rain event caused slope failure above wetland W-K12. At the time of inspection wetland W-K12 was being impacted with sediment laden water (SLW). The SLW was flowing through wetland W-K12 and entering stream S-K23.[1]
Feb 12, 2020	Emergency Investigation	An earthen slip occurred on ROW above an UT of Stout Run. A road slip left sediment and stone into the stream channel.[2]
Apr 30, 2020	Complaint Investigation	SLW was present downslope in Wetland W-C13 both within the MVP LOD and outside the MVP LOD. It appeared the SLW was entering Painters Run.[3]
Aug 6, 2020	Emergency Response	Sediment impacted Stream S-KP12[4]
Nov 23, 2020	Emergency Response	Approximately 1 cup of sediment bubbled up into stream during core drilling on stream bank.[5]
Mar 25, 2021	Self-Reported Incident RE#: 32-13206	A localized rain event in the project area created a significant volume of water to flow onto an access road which caused sediment to enter two small order streams.[6]

[1] 2020, February 10. West Virginia Department of Environmental Protection. Emergency Response. Spill Hotline Reference Number 13-99368 (A)

[2] 2020, February 12. West Virginia Department of Environmental Protection. Emergency Investigation.

[3] 2020, April 30. West Virginia Department of Environmental Protection. Complaint Investigation.

[4] 2020, August 6. West Virginia Department of Environmental Protection. Emergency Response. Spill Hotline Ref. No. 41-5906 (A)

[5] 2020, November 23. West Virginia Department of Environmental Protection. Emergency Response. Spill Hotline Ref. No. 45-11242 (A)

[6] 2021, March 25. Mountain Valley Pipeline. Self-Reported Incident RE#: 32-13206

Jun 13, 2021	Emergency Response	At stream crossing S-W13b flood waters scoured the bank downstream of three culverts. The scoured bank was about 2 foot high by 4 foot wide.[7]
Aug 22, 2021	Spill Report Hotline	Representative of MVP stated a significant rain event occurred over weekend while crews were working on steep slopes. Due to water bars being removed for equipment to travel downslope controls were overwhelmed with sediment and sediment laden water leading to impacts downslope in Lick Creek.[8]
April 11, 2022	Self-Reported Incident RE #: 13-25775	Due to significant rainfalls, several flash flooding events occurred in the project area. As a result, an ECD failure occurred allowing a small amount of sediment to reach a delineated wetland near Springdale.[9]
May 9, 2022	Emergency Response	Sediment slip 1.3 cubic yards.[10]
May 9, 2022	Emergency Response	Sandbags washed out from the crossing.[11]
May 11, 2022	Emergency Investigation	The company had received approximately 4.2-inches of rain fell over a 36-hour period which led to the impact in UNT of Indian Creek.[12]

[7] 2021, June 13. West Virginia Department of Environmental Protection. Emergency Response.

[8] 2021, August 22. West Virginia Department of Environmental Protection. Spill Hotline Ref. No. 45-17420 and 45-17425

[9] 2022, April 11. Mountain Valley Pipeline. Self-Reported Incident RE #: 13-25775

[10] 2022, May 9. West Virginia Department of Environmental Protection. Emergency Response. HSEM Reference: 21-26330(A)

[11] 2022, May 9. West Virginia Department of Environmental Protection. Emergency Response HSEM Reference: 21-26311 (A)

[12] 2022, May 11. West Virginia Department of Environmental Protection. Inspection of Emergency Spill Hotline HSEM Reference: 21-26364 (A)

Table 2. Violations of Water Quality Standards Cited by WVDEP Inspectors

Date	Violation Number	Violated the following WV Legislative Rules (Requirements Governing Water Quality Standards)[13, 14]:
May 9, 2018	W18-52-001-CP	Title 47, Series 2, Section 3.2.b.-Section 3.2.b. - Permittee has caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of the stream.
June 6, 2018	W18-09-076-TJC	Title 47, Series 2, Section 3.2.a.- caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in UNT Meathouse Fork (39° 11.891' X 80° 33.209'). Title 47, Series 2, Section 3.2.b.-Caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of UNT Dry Fork (39° 11.384' X 80° 33.554')
July 17, 2018	W18-52-003-CP	Title 47, Series 2, Section 3.2.b.-Section 3.2.b. - Permittee has caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of UNT of Birch River (S-F34).
July 18, 2018	W-18-52-004-CP	Title 47, Series 2, Section 3.2.b.-Section 3.2.b. - Permittee has caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom and banks of UNT of Harmony Creek
July 27, 2018	W18-17-077-TJC	Title 47, Series 2, Section 3.2.b.-Caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of Grass Run (S-A11a).
Aug 1, 2018	W18-17-082-TJC	Title 47, Series 2, Section 3.2.a.- caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in Right Fork of Big Elk Creek (39° 26.6589' X 80° 28.9724'), Goose Run (39° 26.17952' X 80° 28.5256') and UNT Goose Run (39° 26.100' X 80° 28.4922'). Title 47, Series 2, Section 3.2.b.-Caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of in UNT Goose Run (39° 26.100' X 80° 28.4922'), Seal

[13] 2019, April 19. West Virginia Department of Environmental Protection. Consent Order Issued Under the Water Pollution Control Act. Order Number 8951

[14] 2020, December 17. West Virginia Department of Environmental Protection. Consent Order Issued Under the Water Pollution Control Act. Order Number 9925

		Run (39° 20.4891’ X 80° 30.7324’) and Grass Run (39° 20.1127’ X 80° 31.3233’).
Aug 2, 2018	W18-52-005-CP	Title 47, Series 2, Section 3.2.a.- Responsible party has caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in Stony Creek and Slate Run.
Aug 10, 2018	W18-09-083-TJC	Title 47, Series 2, Section 3.2.a.- caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in UNT Meathouse Fork (39° 11.891’ X 80° 33.209’). Title 47, Series 2, Section 3.2.b.-Caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of UNT Meathouse Fork (39° 11.891’ X 80° 33.209’), UNT Dry Fork (39° 11.377’ X 80° 33.566’), UNT Kincheloe Creek (39° 10.006’ X 80° 34.736’), Wetland UNT Kincheloe Creek (WJ-40) (39° 10.060’ X 80° 34.626’), Wetland UNT Smoke Camp Run (W-I26) (39° 08.208’ X 80° 34.610’), Wetland UNT Left Fork of Freemans Creek (W-B47) (39° 04.744’ X 80° 34.904), UNT Laurel Run (39° 01.133’ X 80° 35.813’) and Laurel Run (39° 01.043’ X 80° 35.867’).
Aug 13, 2018	W18-10-001-JHH	Title 47, Series 2, Section 3.2.b.-Caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of wetland WQR-1 and stream A-104 (both are UTs of Buffalo Creek of the Meadow River).
Sept 20, 2018	W18-52-009-CP	Title 47, Series 2, Section 3.2.a.- Responsible party has caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in UNT of Painters Run along access road 231.01 off Painters Run Road near station 10270
Sept 25, 2018	W18-52-011-CP	Title 47, Series 2, Section 3.2.a.- Responsible party has caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in UNT of Little Kanawha River.
Sept 25, 2018	W18-52-010-CP	Title 47, Series 2, Section 3.2.a.- Responsible party has caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in UNT of Knawls Creek.
Sept 26, 2018	W18-32-001-JTL	Title 47, Series 2, Section 3.2.a.- Responsible party has caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in Stream S-H58 and TTWV-S-E58 that flow into Hans Creek.
Sept 27, 2018	W18-32-002-JTL	Title 47, Series 2, Section 3.2.a.- Responsible party has caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in Stream S-A60, Stream S-Z4, Stream S-Z5, Wetland W-22 and Indian Creek.
Oct 2, 2018	W18-32-003-JTL	Title 47, Series 2, Section 3.2.a.- Responsible party has caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in pond (P-D1) and stream (S-D29) at station #9687.
Nov 27, 2018	W18-52-014-CP	Title 47, Series 2, Section 3.2.a.- Responsible party has caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in Knawl’s Creek.

Feb 6, 2019	W19-32-002-JTL	Title 47, Series 2, Section 3.2.a.- Responsible party has caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in an UNT of Brammer Branch
Apr 22, 2019	W19-45-008-JTL	Title 47, Series 2, Section 3.2.b.- Permittee has caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of stream S-T35(A) a tributary of Lick Creek.
July 9, 2019	W19-45-021-JTL	Title 47, Series 2, Section 3.2.b. - Caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of the stream.: Permittee has caused conditions not allowable in waters of the State by allowing sediment deposits in Stream S-T35A an UNT of Lick Creek at station No. 8634+00 MVP ROW.
July 18, 2019	W19-51-024-JTL	Title 47, Series 2, Section 3.2.a.- Responsible party has caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in a conveyance/ephemeral stream that becomes Fall Run a tributary of the Holly River.
Aug 7, 2019	W19-45-026-JTL	Section 3.2.b. - Permittee has caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of Stream S-K16 and UNT of Hungard Creek near station No. 8929+00.
Aug 14, 2019	W19-04-073-TJC	Title 47, Series 2, Section 3.2.b.-Caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of Keith Run (38° 47.179’ X 80° 31.816’) in two locations.
Sept 11, 2019	W19-17-030-JTL	Section 3.2.a-Responsible party has caused conditions not allowable in waters of the State by allowing distinctly visible settleable solids in Stream S-B75 (Goose Run) a tributary of Big Elk Creek.
Nov 7, 2019	W19-04-032-JTL	Section 3.2.b-Permittee has caused conditions not allowable in waters of the State by allowing sediment deposits on the bottom of a stream: Permittee has caused conditions not allowable in waters of the State by allowing sediment deposits in Stream S-L49 (Elliott Run) a tributary of Little Kanawha River at station No. 3946+00 and by allowing erosion controls pellets in Elliott Run (Stream S-L49) and Stream S-H117.

Table 3. Violations of MVP's Stormwater Construction Permit Cited by WVDEP Inspectors

Date	Violation Number	Violated the following terms and conditions of WV/NPDES General Water Pollution Control Permit No. WV0116815, Registration No. WVR310667[1, 2]:
Apr 3, 2018	W18-52-021-RDD	Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through silt sock located at the Bradshaw Compressor Station. Section G.4.e.2. - Permittee has failed to properly implement controls: lack of drop inlet protection at the Mobley Compressor Station.
May 9, 2018	W18-52-001-CP	Section G.4.e.2. - Permittee has failed to implement appropriate controls which allowed a failure of controls at station 9492+92.85 allowed sediment laden water to leave site without going through an appropriate device. Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device.
May 9, 2018	W18-52-002-CP	Section G.4.c. - Permittee has failed to modify your SWPPP when the SWPPP proves to be ineffective in achieving the general objectives of controlling pollutants in storm water discharges- additional controls were not added to areas where installed controls failed. Section G.4.e.2. - Permittee has failed to implement controls: water bars/slope breakers were improperly installed- did not have outlets, outlet was directed down denuded slope, slope of water bar was inappropriate, and inadequate number of bars were installed. Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device from control failure at stations 6812+58 (sheet 6.38) and 6854+00 (sheet 6.39).
June 6, 2018	W18-09-076-TJC	Section G.4.e.2.- failed to properly implement controls: improperly installed water bars were noted in areas scattered throughout the inspected area. An improperly installed BMP at the terminus of a water bar located adjacent to the Dry Fork access (MVP-DO-049) caused sediment laden water to bypass the device

		Section D.1.- failed to operate and maintain all erosion control devices. An improperly operated temporary right of way diversion and outlet was noted at 1851+00. This deficiency caused sediment laden water to leave the site and CNA was noted as a result. Section G.4.e.2.A.ii.j: Failed to prevent sediment-laden water from leaving the site without going through an appropriate device. Offsite sediment deposits and sediment laden water was noted in areas scattered throughout the inspected area.
June 6, 2018	W18-17-065-TJC	Section B- failed to comply with the General Permit and approved Storm Water Pollution Prevention Plan (SWPPP). Perimeter controls and treatment at water bar outlets are not in place as detailed by the SWPPP from 513+64 to 556+00. There are no BMPs in place to prevent sediment laden water from leaving the site in this area in violation of the issued permit.
July 17, 2018	W18-52-003-CP	Section G.4.e.2. - Permittee has failed to properly implement controls: installed controls failed allowing sediment laden water to leave site and flow into UNT of Birch River (S-F34). Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device- control failure near station 5518+00 (GPS coordinates: 38˚25.4570'N, 80˚34.2329'W deposited sediments into UNT of Birch River (S-F34).
July 18, 2018	W-18-52-004-CP	Section G.4.e.2. - Permittee has failed to implement controls appropriate for the project: inadequate controls at terminus of water bars. Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device at several locations along UNT of Harmony Creek (Photos 6-8)
July 27, 2018	W18-17-077-TJC	Section G.4.e.2.A.ii.j: Failed to prevent sediment-laden water from leaving the site without going through an appropriate device. Offsite sediment deposits were noted in Grass Run. Section G.4.e.2.- failed to properly implement controls: improperly constructed water bars were noted throughout the inspected area.
Aug 1, 2018	W18-17-082-TJC	Section G.4.e.2.- failed to properly implement controls: improperly installed water bars were noted throughout the inspected area. Water bars did not shed stormwater off of the project area in small quantities as designed. Sheet flow BMPs (Super Silt Fence) were noted in concentrated flow areas throughout the inspected area. Section D.1.- failed to operate and maintain all erosion control devices. Improperly operated and maintained BMPs were noted in areas scattered throughout the inspected area.

		G.4.e.2.A.ii.f.-Failed to protect fill slopes. Concentrated flow was being directed over unstable fill slopes in areas scattered throughout the inspected area. Section G.4.e.2.A.ii.j: Failed to prevent sediment-laden water from leaving the site without going through an appropriate device. Offsite sediment deposits and CNA were noted in areas scattered throughout the inspected area.
Aug 2, 2018	W18-52-005-CP	Section G.4.e.2. - Permittee has failed to properly implement controls: controls at Wayside/Talcott (station 9466+16) and Slate Run (station 9624+00) are insufficient to prevent the release of sediment laden water into adjacent streams of Stony Creek and Slate Run. Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device at Wayside/Talcott (station 9416+16) and Slate Run (station 9624+00)
Aug 10, 2018	W18-09-083-TJC	Section G.4.e.2.- Failed to properly implement controls: improperly installed water bars were noted throughout the inspected area. Water bars installed at steep angles were observed during the inspection. Water bars that discharged stormwater into unstable diversions as well as water bars that terminated prior to the edge of the LOD and did not discharge stormwater off site in small quantities as designed were observed. Section D.1.- Failed to operate and maintain all erosion control devices. BMPs that were not properly operated and maintained that caused offsite sediment deposits were noted in areas scattered throughout the inspected area. G.4.e.2.A.ii.f.-Failed to protect fill slopes. Concentrated flow that was being directed over fill slopes and/or unstable diversions that caused fill slope erosion were noted in areas scattered throughout the inspected area. Section G.4.e.2.A.ii.j: Failed to prevent sediment-laden water from leaving the site without going through an appropriate device. Offsite sediment deposits and CNA were noted in areas scattered throughout the inspected area.
Aug 13, 2018	W18-10-001-JHH	Section G.4.e.2.- Failed to implement controls appropriate for the project: perimeter controls are being used for concentrated flow in multiple locations on the project, silt fence being installed on the southern portion of the pad area was not joined or trenched in properly. Section D.1.- Failed to operate and maintain erosion control devices: perimeter controls in multiple locations on the project have not been maintained. Section G.4.c: Failed to modify your SWPPP when it proves to be ineffective in achieving the general objectives of controlling pollutants in storm water discharges: alterations /modifications to the SWPPP have not occurred in areas where failed controls have repeatedly led to off-site sediment loss.

		Section B- failed to comply with the General Permit and approved Storm Water Pollution Prevention Plan (SWPPP): The roadside diversion with checks and several cross drains were not in place on site as prescribed in the SWPPP. This lack of stormwater control in the lower portion of the site was causing unnecessary erosion, lack of treatment and standing water in the fuel storage area. Section G.4.e.2.A.ii.j: Failed to prevent sediment-laden water from leaving the site without going through an appropriate device: this was evident at six different locations along the project LOD perimeter.
Aug 15, 2018	W18-52-006-CP	Section D.1. - Permittee has failed to properly operate and maintain all systems of treatment and controls- Water bar terminus needed maintenance near Bingham Road station 7450+00 (Photo 5), timber mat bridge fabric was torn station 7465+00 (Photos 9& 10), CFS needs maintenance near Bingham Road (Photo 12) and station 7232+00 (Photos 13 & 14) Section G.4.c. - Permittee has failed to modify your SWPPP when the SWPPP proves to be ineffective - water bar terminus at station 7084+00 has failed allowing release of sediment laden water to leave site; controls added to have proved inadequate to control flow. Inadequate number of water bars are installed on slope between 7084+00 to 7093+50 leading to continued failure of installed water bars. Section G.4.e.2. - Permittee has failed to properly implement controls: inadequate controls were installed near ROW entrance of Bingham Road station 7450+00 (Photo 11), water bars were improperly sloped near Bingham Road station 7450+00 (Photos 1-4), water bars lacked outlet near Bingham Road station 7450+00 (Photos 6-8), inadequate controls installed at base of fill slope at 7158+00 (Photos 17 & 18), inadequate number of water bars were installed between stations 7084+00 to 7093+50 (photos 21 & 22), inadequate controls were installed at water bar terminus at station 7084+00 (photos 23-30) and ditch checks were not installed in road side ditch below failed control at 7084+00. Section G.4.e.2.A.i.b. - Permittee has failed to provide interim stabilization on areas where construction activities have temporarily ceased for more than 21 days, specifically on waste piles near Bingham Road station 7465+37 (Photos 19 & 20), Bamboo Road station 7158+00 (Photos 15 & 16) and all other areas where applicable. Section G.4.e.2.A.ii.f. - Permittee has failed to protect fill slopes at station 7158+00 (Photos 15 & 16). Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device- sediment laden water from failed water bar

		terminus is conveyed through road side ditch into culverts to leave perimeter at GPS location 38˚5.84131'N, 80˚43.1339'W (photos 28-30).
Sept 11, 2018	W18-52-008-CP	Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device at Station 900 where concentrated flow has over topped installed perimeter controls.
Sept 20, 2018	W18-52-009-CP	Section D.1. - Permittee has failed to properly operate and maintain all systems of treatment and controls- Silt fence along access road 231.01 off Painters Run Road near station 10270 needs replaced. Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device- controls failed along access road 231.01 off Painters Run Road near station 10270.
Sept 25, 2018	W18-52-011-CP	Section G.4.e.2. - Permittee has failed to properly implement controls: inadequate perimeter controls installed at base of fill slope at station 550, which allowed sediment laden water to release into UNT of Little Kanawha River (photos 1-3). Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device into UNT of Little Kanawha River (photos 1-3).
Sept 25, 2018	W18-52-010-CP	Section G.4.e.2. - Permittee has failed to properly implement controls: inadequate controls at sumps near station 3625+00 and perimeter controls near station 3634+00 which allowed sediment laden water to leave site (photo 1-6). Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device in UNT of Knawls Creek.
Sept 26, 2018	W18-32-001-JTL	Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device. Off-site sediment deposits in multiple locations were observed from station numbers 9915+00 through 9897+00. Section D.1-Permitte has failed to properly operate and maintain all facilities and systems: Evidence was observed that waterbar outlets where not being maintained to limit impacts off the ROW.
Sept 27, 2018	W18-32-002-JTL	Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device: At station #9630+00 SLW was entering Stream S-A60. SLW was observed leaving portions of ROW and entering Indian Creek at the CR 23/9, SLW was observed leaving portions of ROW near Station numbers 9417+75, 9779+00 and 9778+00. Impacted areas include Stream SA60, Stream S-Z4, Stream S-Z5, Wetland W-22 and Indian Creek.

		Section G.4.e.2.D.i. - Permittee has failed to inspect and clean all adjacent public and private roads of debris originating from the construction site along CR 23/9 Ellison ridge road. Section D.1-Permitte has failed to properly operate and maintain all facilities and systems: Multiple waterbar outlets were being overwhelmed at the time of inspection.
Oct 2, 2018	W18-32-003-JTL	Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device near station #9687. Off site sediment deposits were also observed at station numbers 9717+52 and 9724+51. Section G.4.e.2.A.ii.f. - Permittee has failed to protect fill slopes and stabilize channels at station #9687. Section D.1-Permitte has failed to properly operate and maintain all facilities and systems: Evidence was observed that BMP's were not being maintained to limit impacts off the ROW.
Oct 3, 2018	W18-52-012-CP	Section D.1. - Permittee has failed to properly operate and maintain all systems of treatment and controls unacceptable amount of sediment was left in sumps after maintenance was performed at Painters Run Road station 10270.
Oct 10, 2018	W18-52-013-CP	Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device at AR 210 and Painter's Run Road station 10270. Section G.4.e.2.D.i. - Permittee has failed to inspect and clean all adjacent public and private roads of debris originating from the construction site at AR 210 and Painter's Run Road station 10270.
Oct 25, 2018	W18-52-033-RDD	Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device at Station 489 and 493. Section D.1. - Permittee has failed to properly operate and maintain all systems of treatment and controls stabilized diversion ditch near Mainion Run, perimeter controls near Sams run crossing, and waterbars and associated sumps near Sams Run.
Nov 27, 2018	W18-52-014-CP	Section G.4.e.2. - Permittee has failed to properly implement controls sufficient to prevent release of sediment laden water into Knawl's Creek. Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device entering Knawl's Creek.
Nov 30, 2018	W18-17-113-TJC	Section G.4.e.1.E.: Permittee has failed to provide an adequate stone access entrance/exit to reduce the tracking of sediment onto the public or private roads. Access Roads WV-HA – 31.1 off CR 50/4, WV-HA-29.04 off CR 50/5 and WV-HA-29.5 off CR 50/5 lacked a stable construction entrance and track out was noted on the adjacent public roadways as a result. Section G.4.e.2.D.i.: Permittee has failed to inspect and clean all adjacent public and private roads of debris originating from the

		construction site. The responsible party was making an attempt to clean track out debris from CR 50/5 at the time of inspection, however a film of sediment that originated from the site covered the road.
Feb 6, 2019	W19-32-002-JTL	Section G.4.e.2.A.ii.j - Permittee has failed to prevent sediment-laden water from leaving the site without going through an appropriate device at the MVP contractor yard in Beaver, WV. Sediment laden water was entering an UNT of Brammer Branch. Section D.1-Permitte has failed to properly operate and maintain all facilities and systems: Evidence was observed that BMP's were not being maintained in and along a drainage ditch that flowed through the yard and terminated upslope of the UNT of Brammer Branch causing Conditions Not Allowable. Section G.4. - Permittee has failed to comply with the General Permit and approved Storm Water Pollution Prevention Plan (SWPPP). Erosion control devices near station number 8816+00 are not in place as detailed by the SWPPP.
Feb 11, 2019	W19-34-003-JTL	Section G.4.e.2-Permittee failed to implement controls appropriate for the project. Evidence that enhanced erosion was occurring in the waterbar and slopes near station 6017+50 and at station 5960+50 erosion occurring on the slope and SLW being concentrated in wetland W-IJ-55 with the potential to migrate off site. Section D.1-Permitte has failed to properly operate and maintain all facilities and systems: Evidence was observed at station 5960+50 that BMP's were not being maintained causing Sediment Laden Water to be present in Wetland W-IJ-55. Section G.4.e.2.A.ii.e.-Permittee has failed to protect fill slopes by diverting runoff away from the slope to a stable channel. At Station 5960+50 above Wetland W-IJ-55 erosion was occurring on the slope and no diversion was in place to convey runoff to a stable channel.
Apr 22, 2019	W19-45-008-JTL	Section D.1.-Permittee failed to properly operate and maintain all systems of treatment: Controls implemented on slope above stream S-T35(A) had sediment build up in waterbars due to erosion occurring on slope. Section G.4.c-Permittee failed to modify the SWPPP by taking measures to ensure compliance with the permit: Waterbars were implemented incorrectly between stations 8438+00 through 8628+00. Section G.4.e.2.A.ii.j - Permittee failed to prevent sediment-laden water from leaving the site without going through an appropriate device at station #8633+71. Evidence of Sediment laden water and sediment deposits were observed to have impacted Stream S-T35(A) a tributary of Lick Creek. Section G.4.e.2.A.ii.f. - Permittee failed to protect fill slopes between station #8638+00 and #8628+00: Erosion on slope due to improper Waterbar implementation.

		Section G.4.e.2. - Permittee failed to properly implement controls appropriate for the project: Waterbars were installed to terminate on the ROW at station #8633+71 causing erosion to occur on the ROW and sediment to impact Stream S-T35(A).
May 13, 2019	W19-45-010-JTL	Section G.4. - Permittee has failed to comply with the General Permit and approved Storm Water Pollution Prevention Plan (SWPPP). Waterbar outlet controls near station #8399+10 were not in place at the time of installation as detailed by the SWPPP.
May 24, 2019	W19-45-015-JTL	Section G.4.c.- Permittee has failed to modify the Storm Water Pollution Prevention Plan (SWPPP): Perimeter controls were not in place at the base of a soil pile allowing sediment deposits past the LOD at station 8387+96.
May 29, 2019	W19-04-013-JTL	Section D.1-Permitte has failed to properly operate and maintain all facilities and systems: Evidence was observed at station 4031+00 and 4027+00 that controls were not being maintained causing Sediment to be transported past the LOD. Section G.4.e.2-Permittee has failed to implement controls appropriate for the project: Evidence that enhanced erosion was occurring on ROW, in Waterbars and slopes near station 4031+00 and 4027+00 was observed. Section G.4.e.2.A.ii.e.-Permittee has failed to protect fill slopes by diverting runoff away from the slope to a stable channel: At Stations 4030+00 and 4027+00 waterbars were terminating onto the fill slope causing controls to be overwhelmed along the perimeter and sediment to be transported past the LOD. Section G.4.e.2.A.ii.j.-Permittee has failed to prevent sediment laden water from leaving the site without going through an appropriate device: Sediment deposits from SLW leaving the site was observed at station No.'s 4030+00 and 4027+00.
May 30, 2019	W19-34-014-JTL	Section D.1-Permittee has failed to properly operate and maintain all facilities and systems: Evidence was observed at stations 6474+16, 6478+48, 6508+30, 6510+10 and 6514+60 that controls were not being maintained causing Sediment to be deposited past the LOD. Section G.4-Permittee has failed to follow approved SWPPP: At station 6945+00 ROW diversion had not been installed per SWPPP. Station No. 6497+50 Perimeter controls not installed per SWPPP. Section G.4.e.2.A.i.d. - Permittee has failed to stabilize clean water diversions prior to becoming functional: Above stream S-EE1 and at station 6485+10 clean water diversions had not been stabilized prior to becoming functional. Section G.4.e.2-Permittee failed to implement controls appropriate for the project: Controls had not been enhanced and/or implemented at stations 6508+30, 6510+40 and 6514+60 to eliminate sediment from being deposited past the LOD. Section G.4.e.2.A.ii.j-Permittee has allowed sediment laden to leave the site without going through and appropriate device: At

		station No.'s 6508+30, 6510+40 and 6514+60 evidence that SLW had left the site was observed.
June 5, 2019	W19-51-015-JTL	Section D.1-Perimittee has failed to at all times properly operate and maintain all systems of treatment and control: Construction entrance at Rt 82 crossing was not maintained to prevent sediment laden water and sediment to be deposited past the permitted LOD. Section G.4.e.2.A.ii.j_Permittee has failed to prevent sediment laden water from leaving the site without going through an appropriate device: At the Route 82 crossing sediment deposits and sediment laden water were observed past the LOD. Sediment deposits were observed in the roadside ditch that paralleled Route 28 as well as downslope past a culvert outlet approximately 500 feet past the LOD.
June 12, 2019	W19-32-17-JTL	Section G.4.e.2.A.ii.j-Permitee has allowed sediment laden to leave the site without going through and appropriate device: At station No. 9780+00 evidence that SLW had left the site was observed due to a significant amount of sediment deposits and scouring being present past controls and LOD. At the Dargo silt fence downslope of station No. 9780+00 sediment deposits was observed past controls and the LOD.
June 19, 2019	W19-51-018-JTL	Section G.4.e.2.A.ii.j-Permittee has allowed sediment laden to leave the site without going through and appropriate device: At station No. 6587+00 evidence was observed that sediment laden water had left the site due to sediment deposits being present past controls and the LOD above Stream S-L38.
July 9, 2019	W19-45-021-JTL	Section G.4.e.2.A.ii.j- allowed sediment laden to leave the site without going through and appropriate device: At station No. 8634+00 evidence that SLW had left the site was observed due to impacts to Stream S-T35A and impacts off site past controls and LOD.
July 18, 2019	W19-51-024-JTL	Section D.1. - Permittee has failed to properly operate and maintain all systems of treatment and controls: Along AR-MVP-WB-119 multiple controls had not been maintained allowing sediment to be deposited past the LOD. At station No. 4559+96 sediment deposits were observed in a ditch that was located along AR-WB-119. At station No.'s 4559+96 and 4539+00 controls had not been maintained leading to controls becoming overwhelmed with sediment and sediment laden water being observed past the LOD. Section G.4.e.2.A.ii.j-Permittee has allowed sediment laden to leave the site without going through and appropriate device: At station No. 4559+96 and at several locations along AR-MVP-WB-119; evidence was observed that sediment laden water had left the site due to sediment deposits being present past controls and the LOD downslope of AR-MVP-WB-119. At and near station No. 4539+00 SLW was observed leaving the ROW; flowing past

		controls and entering the roadside ditch that flows downslope towards the ROW crossing with AR-MVP-WB-119 and was conveying downslope through a culvert inlet/outlet approximately 400 feet past the LOD towards Fall Run a tributary of the Holly River.
Aug 1, 2019	W19-04-025-JTL	Section D.1. - Permittee has failed to properly operate and maintain all systems of treatment and controls: At Access Roads BR-095, BR-097 and BR-099 controls had not been maintained and at station No.'s 3831+00 through 3829+00 controls had not been implemented correctly and or were not being maintained causing erosion and sediment to be deposited past the LOD. Section G.4.e.2.A.ii.f. - Permittee has failed to protect fill slopes: At station No.'s 3831+00 through 3829+00 fill slope erosion was occurring between waterbars causing controls to be overwhelmed and sediment deposits to be present in the ditch that parallel's US 19/HWY 4 and past the LOD at station No. 3831+00. Section G.4.e.2. - Permittee has failed to implement controls appropriate for the project: At station No. 3831+00 through 3829+00 waterbars were terminating onto the ROW causing erosion to occur on the slope that led to control failures above US19/Hwy4. Section G.4.e.2.A.ii.j.-Permittee has failed to prevent sediment laden water from leaving the site without going through an appropriate device: Sediment deposits were observed past the LOD at station No. 3831+00 and in a roadside ditch that parallels US 19/HWY 4 at station No. 3829+00. At Access Road MVP-BR-097 sediment deposits were present past the LOD. In the Roadside ditch near station No. 3897+75 downslope of MVP-BR- 099 sediment deposits were observed above Stream S-K34/35. Sediment deposits were observed past the LOD due to a Waterbar failure South of BR-099 on MVP ROW. Sediment deposits were present past LOD at BR- 097.
Aug 7, 2019	W19-45-026-JTL	Section D.1. - Permittee has failed to properly operate and maintain all systems of treatment and controls: At Station No.'s 8951+00 through 8956+00 erosion was present in waterbars. Several Waterbar outlets had no controls present casing erosion to occur below the termini. Sumps that were present below the Waterbar termini were overwhelmed with sediment and were not functioning as designed. Erosion present on slopes near station No. 8946+00 causing controls to be overwhelmed with sediment and not functioning as designed. Section G.4.e.2.A.ii.f. - Permittee has failed to protect fill slopes: At station No.'s 8951+00 through 8956+00 waterbars were terminating onto a steep slope causing erosion and sediment deposits to overwhelm controls leading to sediment deposits to be present past the LOD. At station No. 8946+00 erosion was present in multiple locations on the fill slope overwhelming perimeter controls.

		Section G.4.e.2.A.ii.j.-Permittee has failed to prevent sediment laden water from leaving the site without going through an appropriate device: Sediment deposits were observed past the LOD at station No. 8956+00.
Aug 14, 2019	W19-04-073-TJC	Section D.1.- Mountain Valley Pipeline LLC. failed to operate and maintain all erosion control devices. A culvert on access road MVP-BR-092.01 was plugged and in need of maintenance. This allowed concentrated flow stormwater to flow from the top of the slope to the base of the slope which caused offsite sediment deposits. A water bar terminus BMP in inspected area 3 (adjacent to 3760+00) was inundated with sediment and in need of maintenance. Section G.4.e.2.A.ii.j.- Mountain Valley Pipeline LLC. failed to prevent sediment-laden water from leaving the site without going through an appropriate device. This deficiency was a result of poorly maintained BMPs which allowed sediment laden water to bypass treatment. Section B- Mountain Valley Pipeline LLC. failed to comply with the General Permit and approved Storm Water Pollution Prevention Plan (SWPPP). The approved SWPPP indicates the need for ditch checks in the upslope ditch of all access roads as well as rock outlet protection and a sediment control device placed at the outlets of the installed culverts. The access road lacked the proposed ditch checks, rock outlet protection and an installed sediment control device at the outlet of the installed culverts.
Aug 14, 2019	W19-21-074-TJC	Section G.4.e.2.- Mountain Valley Pipeline LLC. failed to properly implement controls. Water bars that were improperly installed were noted in areas scattered throughout the inspected area. Water bars that were installed at steep angles (> 12%) were noted. Water bars that were installed at varying angles were noted. Water bars that did not extend across the entire disturbed right of way and terminated prior to the installed perimeter silt fence were noted. Water bars that discharged stormwater over unprotected fill slopes were noted. Six improperly installed water bars on the project area adjacent to 2768+00 were discharging into a stabilized diversion. The installed diversion carried the stormwater to the base of the hill where it was being treated with two pieces of perimeter silt fence. The amount of stormwater being directed at the installed perimeter controls overwhelmed the BMPs and caused a significant amount of offsite sediment deposits adjacent to Cove Run. Improperly installed timber mat equipment bridges were noted at the Clover Run, Oil Creek and Cove Run (S-K-45) crossings. The installed perimeter controls were not properly merged with the installed timber mat equipment bridges which caused areas where sediment laden water could bypass treatment. An improperly installed straw bale dewatering structure was noted in the Cove Run watershed adjacent to

		2770+00. The dewatering structure had a layer of impermeable plastic inside of the geotextile fabric which caused the structure to not function as designed. Section D.1.- Mountain Valley Pipeline LLC. failed to operate and maintain all erosion control devices. Perimeter controls that were in need of maintenance were noted in areas scattered throughout the inspected area. This deficiency caused sediment laden water to bypass treatment and led to offsite sediment laden water adjacent to 2919+50. The offsite sediment laden water adjacent to 2919+50 occurred due to a dewatering operation at the time of inspection. Section G.4.e.2.A.ii.j. - Mountain Valley Pipeline LLC. failed to prevent sediment-laden water from leaving the site without going through an appropriate device. Sediment laden water bypassed treatment due to improperly installed BMPs and poorly maintained BMPs.
Aug 26, 2019	W19-09-028-JTL	Section D.1. - Permittee has failed to properly operate and maintain all systems of treatment and controls: At station No.'s 1833+50 and 1730+00 controls were not being maintained leading to perimeter controls being overwhelmed with sediment causing them not to function as designed. Section G.4.e.2.A.ii.j.-Permittee has failed to prevent sediment laden water from leaving the site without going through an appropriate device: Evidence that Sediment Laden water left the site was observed due to sediment deposits being observed past the LOD due to control failures at Station No.'s 1833+00 and 1730+00.
Sept 9, 2019	W19-21-029-JTL	Section D.1. - Permittee has failed to properly operate and maintain all systems of treatment and controls: At the Route 21/Indian Fork crossing (Station No. 3089+00) controls had not been maintained or enhanced allowing sediment laden water to leave the ROW and enter a roadside ditch that conveys to Indian Fork (S-H159). Section G.4.e.2.A.ii.j.-Permittee has failed to prevent sediment laden water from leaving the site without going through an appropriate device: Evidence that Sediment Laden water left the site was observed due to sediment deposits being observed past the LOD in the roadside ditch that parallels CR21 and coveys to Indian Fork (S-H159)/(Station No. 3089+00).
Sept 11, 2019	W19-17-030-JTL	Section D.1. - Permittee has failed to properly operate and maintain all systems of treatment and controls: At station No. 645+35 the dewatering structure used for the Stream S-B75 bore was not being maintained and operated properly causing the structure to not function as designed causing conditions not allowable in Stream S-B75 (Goose Run).

		Section G.4.e.2.A.ii.j.-Permittee has failed to prevent sediment laden water from leaving the site without going through an appropriate device: Sediment Laden water was observed leaving a dewatering structure used for the boring under Stream S-B75 (Goose Run). Section G.4.e.2.A.i.b. - Permittee has failed to provide interim stabilization on areas where construction activities have temporarily ceased for more than 21 days: At station No. 645+00 slopes had not been reseeded or re-stabilized after winter stabilization measures were no longer adequate.
Nov 7, 2019	W19-04-032-JTL	Section F.1.- Permittee failed to immediately notify WVDEP of impacts to a water of the state (Elliott Run/Stream S-L49) pursuant to 47CSR11-2 (Special Rules) of the West Virginia Legislative Rues promulgated pursuant to Chapter 22, Article 11. Section G.4.e.2. - Permittee has failed to implement controls appropriate for the project: A Waterbar above the slip that occurred and impacted Elliott Run at station No. 3946+00 was terminating onto the ROW and had no outlet controls present.
Dec 12, 2019	W19-45-034-JTL	Section D.1. - Permittee has failed to properly operate and maintain all systems of treatment and controls: At station No. 8433+50 run on from a seep and improper tracking of the slope caused downslope controls to be overwhelmed with SLW/Sediment deposits leading to SLW to be observed past the LOD and controls.
Aug 11, 2020	W20-34-003-JTL	Section D.1. - Permittee failed to properly operate and maintain all systems of treatment and controls: From station No.'s 6482+90 (Rt.39 crossing) to No. 6485+50 reseeding had not occurred after temporary seed mixes either didn't germinate and or dyed off having less than 70 percent coverage at the time of inspection. Controls in waterbars and fill slopes had been overwhelmed with sediment leading to sediment deposits being observed past the LOD near station No. 6485+50. Erosion was occurring on fill slopes between Station No.'s 6482+90 through 6485+50. Waterbars were terminating onto fill slopes causing enhanced erosion to occur. G.4.c. - Permittee failed to modify the SWPPP proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with construction activities. At stations No. 6482+90 through 6485+50 waterbars were terminating onto fill slopes lacking either slope drains and/or waterbar sumps at the outlets. G.4.e.2.A.i.c. – Permittee failed to reseed where the seed has failed to germinate adequately (uniform perennial vegetative cover with a density of 70%) within 30 days after seeding and mulching from Station No.'s 6482+90 through 6485+50 at the Route 39 crossing and fill slopes South of the crossing at Station No. 6485+50.

		G.4.e.2.A.ii.f. Permittee failed to protect fill slopes by measures used to divert runoff away from fill slopes to conveyance measures such as pipe slope drains or stable channels. At station No. 6482+90 fill slopes had rill and gully erosion present leading to controls being overwhelmed and sediment deposits present pas the LOD. G.4.e.2.A.ii.j. – Permittee allowed Sediment laden Water to leave the site without going through an appropriate best management practice. At station No. 6485+50 sediment deposits were observed past the LOD.
Aug 17, 2020	W20-34-004-JTL	Section D.1. - Permittee failed to properly operate and maintain all systems of treatment and controls: At Station No. 6613+00 a Waterbar was terminating onto the fill slope causing significant erosion downslope of the outlet leading to controls needing maintained and or enhanced. G.4.c.- Permittee failed to follow and or modify the SWPPP when it proved to be ineffective. At Station No. 6613+00 A Waterbar was terminating onto the slope causing significant erosion. Run-on was also leading to erosion at the side cut casing sediment to be deposited into the downslope Waterbar leading to concentrated flow in downslope waterbars. G.4.e.2.A.i.c. – Permittee failed to reseed where the seed has failed to germinate adequately (uniform perennial vegetative cover with a density of 70%) within 30 days after seeding and mulching at Station No. 6613+00. G.4.e.2.A.ii.f. Permittee failed to protect fill slopes by measures used to divert runoff away from fill slopes to conveyance measures such as pipe slope drains or stable channels. At station No. 6613+00 fill slopes had erosion present due to a Waterbar terminating onto the slope. Significant erosion was present leading to sediment being deposited into waterbars and sumps at the Waterbar outlets above Stream S-L35. Run on was causing erosion leading to sediment being deposited into waterbars downslope of the side cut.
Sept 9, 2020	W20-52-065-RDD	Section G.4.e.2.A.ii.j - MOUNTAIN VALLEY PIPELINE, LLC has failed to prevent sediment-laden water from leaving the site without going through an appropriate device. Sediment laden water was leaving the site near Stout Run Road through silt sock. Section D.1. - MOUNTAIN VALLEY PIPELINE, LLC has failed to properly operate and maintain all systems of treatment and controls- Sediment laden water was leaving the site near Stout Run Road through silt sock.
Sept 16, 2020	W20-34-005-JTL	Section D.1.- Permittee failed to properly operate and maintain all systems of treatment and controls: At Station No. 6657+00 through 6450+76 and at Stations 6707+00 through 6698+00 Erosion was occurring between and within the waterbars on slopes conveying run off onto fill slopes causing erosion downslope of the Waterbar outlets. Controls were either not

		being implemented to reduce sheet flow rates and/or if present not being maintained. G.4.e.2.A.i.c. – Permittee failed to reseed where the seed has failed to germinate adequately (uniform perennial vegetative cover with a density of 70%) within 30 days after seeding and mulching at Station No.'s 6657+00 through 6450+76 and at Stations 6707+00 through 6698+00. Reseeding had not occurred in these areas leading to slopes becoming destabilized causing erosion to occur. G.4.e.2.A.ii.f. Permittee failed to protect fill slopes by measures used to divert runoff away from fill slopes to conveyance measures such as pipe slope drains or stable channels. At station No.'s 6657+00 through 6450+76 and at Stations 6707+00 through 6698+00 fill slopes had erosion present due to lack of stabilization measures being implemented within the LOD.

Appendix B to
MVP Pollution in Virginia Watersheds

	Depositon in waterbody	Action log ID or DEQ inspection report type	Date	Inacident Description	Spread
x		17	5/29/18	Silt fence breached by sediment that over topped fence and released outside of ROW limits.	G
	x	VWP	5/31/18	sediment deposited in stream	H
	x	VWP	5/31/18	sediment deposited in stream	H
x		34	6/5/18	24 CYs of rock were [pushed off ROW	H
x		66	6/11/18	Sediment bypassed LOD	G
x		93	6/12/18	Multiple RCE's tracking mud onto roads	H
x		105	6/14/18	Sump filled with sediment and sediment left ROW	H
x		115	6/15/18	Sediment went under SSF	H
	x	VWP	6/18/18	sediment deposited in stream	H
x		142	6/18/18	clean dirt up that exited ROW	H
x		143	6/18/18	clean dirt up that exited ROW	G
x	x	195	6/22/18	Sediment deposit off of timber matting	H
x		192	6/22/18	RCE clogged with mud. Trackout on road	H
x	x	217	6/23/18	Sediment in S-G40	H
x	x	218	6/23/18	Sediment in W-PP8. Sediment overtopped ECD	H
x		206	6/23/18	silt over flowing SS+D15	H
x		209	6/23/18	Discharge from torn filter fabric	H
x		216	6/23/18	SSF topped with sediment	H
			6/23/18	Sediment in S-G39	
x		222	6/23/18	Evidence of sediment release	H
x		237	6/25/18	Sediment outside ROW	H
x		230	6/25/18	Water bar failure resulted in sediment outside ROW	H
x		258	6/26/18	Sediment leaving the ROW	
x		260	6/26/18	Sediment leaving the ROW	I

x		261	6/26/18	Sediment Leaving the ROW	
x		262	6/26/18	Sediment leaving the ROW	
x		263	6/26/18	Sediment leaving the ROW	
x		264	6/26/18	Sediment leaving the ROW	
x		275	6/26/18	J hooks overrun with sediment	H
x	x	297	6/27/18	Stream impact at S-MM13	H
		251	6/30/18	Sediment leaving ROW Cleanup and Maintenance needed	I
x		251	6/30/18	Sediment leaving ROW Cleanup and Maintenance needed	
	x	3164	7/9/18	Timber mat bridge dislodged from stream bank	I
x	x	3172	7/9/18	Stream impact	I
x		3167	7/9/18	Sump/CFS end treatment needs maintenance	I
x		3168	7/9/18	Sediment off ROW	I
x		3170	7/9/18	Sediment off ROW	I
x		3171	7/9/18	Sediment in buffer area/stream impact	I
x		Field	7/14/18	Sed. off ROW	I
x	x	Field	7/19/18	Sed. to Tributary NF Blackwater R.	H
x		Field	7/19/18	Sed. off ROW	H
x		437	7/23/18	Sediment off ROW	H
x	x	441	7/25/18	Stream S-G40 Impacted by Sediment	H
x		445	7/25/18	Sumps filled with sediment and sediment off ROW	I
x		449	7/25/18	Sumps filled with sediment and sediment off ROW and in stream	I
x		450	7/25/18	Sump filled with sediment and sediment left ROW	I
x	x	466	7/27/18	Stream Impacted by Sediment.	G
x		467	7/27/18	Sediment Off ROW	I
x	x	491	8/1/18	Sediment in Stream	H
x	x	Field	8/1/18	Sediment in stream	I
x		489	8/1/18	Sediment off ROW	I
x		Field	8/1/18	Sediment off ROW	I
x		Field	8/1/18	Sediment off ROW	I
x		493	8/3/18	Waterbar end treatments were overtopped	I
x		494	8/3/18	Sediment left the ROW	I
x	x	501	8/4/18	SSF is at capacity, small amount of sediment in stream	H
x		496	8/4/18	sediment off ROW	G

x		499	8/4/18	SSF needs mainenance, sediment off ROW	H
x		504	8/6/18	Waterbar ET was overtopped	I
x		505	8/6/18	Silt off ROW	I
x		506	8/6/18	Multiple Waterbar End Treatments were overtopped	I
x		507	8/6/18	Sediment left the ROW	I
x		508	8/6/18	Silt off ROW	I
x		511	8/6/18	CFS blew out, sediment off ROW	H
x	x	524	8/9/18	Sediment in streambed	H
x		516	8/9/18	waddle over topped with sediment	G
x		526	8/9/18	Sediment off ROW	H
x	x	531	8/10/18	stream is being impacted from sediment runoff	G
x		532	8/10/18	Sediment runoff of ROW	G
x		536	8/10/18	Compost Filter Sock overtopped with sediment ,eroded	G
x		537	8/10/18	ET overtopped & sediment left ROW	I
x		538	8/10/18	Sediment left the row	I
x		549	8/13/18	Sediment off ROW	G
x		553	8/13/18	Waterbar end treatment was overtopped and sediment left the ROW	I
x		555	8/13/18	Sediment left the ROW	I
x		556	8/13/18	offsite sediment	G
x		559	8/14/18	SSF at 50% capacity, sediment discharged	G
x	x	575	8/15/18	sediment in stream bed	G
x		565	8/15/18	End treatment overtopped, Sediment off ROW	I
x		569	8/15/18	Sump needs maintenance. Sediment off ROW.	I
x		570	8/15/18	P1 Silt Fence needs maintenance. Sediment off ROW.	I
x		572	8/15/18	Sediment overtopping end treatment. Sump needs maintenance. Sediment off ROW.	
x		577	8/15/18	Sediment off ROW	G
x	x	580	8/16/18	sediment in stream bed above Karst feature	G
x		589	8/17/18	Sediment off ROW	G
x		596	8/17/18	Sediment off ROW	G

x	x	599	8/18/18	sediment released into stream above Karst feature	G
x		603	8/20/18	sediment off ROW	G
x		604	8/20/18	Sediment off ROW	G
x		614	8/21/18	CFS almost overtopped, Sediment Leaving ROW	H
x	x	626	8/22/18	Road falling into stream, sediment in stream	G
x		624	8/22/18	Sediment off ROW	G
x		672	8/27/18	Sediment off of ROW	G
x		689	8/28/18	sediment off ROW at stream crossing	G
x	x	Field	8/29/18	Sed. in Trib. To Sinking Cr.	G
x		691	8/29/18	End treatment overwhelmed. Sediment off RoW.	I
x		692	8/29/18	Sediment left the ROW	I
x		708	8/31/18	Sediment built up on CFS (overrun)	H
x		739	8/31/18	sediment off ROW	G
x		726	9/1/18	sediment off ROW	G
x		742	9/3/18	Sediment left the ROW	I
x		744	9/3/18	Sediment left the ROW	I
x		746	9/3/18	Sediment left the ROW	I
x		750	9/3/18	Sediment left the ROW	I
x		756	9/3/18	Sediment left the ROW	I
x		758	9/3/18	Sediment left the ROW	I
x		766	9/4/18	sediment off ROW above Karst feature	G
x		779	9/4/18	Sediment off ROW	I
x		784	9/4/18	Sediment off ROW	I
x		771	9/4/18	CFS overtopped	G
x	x	Field	9/5/18	Sed. to Trib. To Stony Cr.	G
x		775	9/5/18	CFS has been overtopped. Sediment off RoW.	I
x		776	9/5/18	Minor sediment off RoW.	I
x		786	9/5/18	RCE stone in Winding Way Drive.	G
x		798	9/5/18	Sediment has left the ROW	G
x		799	9/6/18	Sediment thrown off ROW when cleaning out CFS	G
	x	807	9/7/18	CFS saturated and keeping stream from flowing freely.	I
x		844	9/10/18	Sediment off ROW	I
x		847	9/10/18	Sediment off ROW	I

x		834	9/11/18	Sediment left the ROW	I
x		842	9/11/18	End treatment full and overran with sediment	G
x		851	9/12/18	Sediment off ROW, all ECDs require maintenance	I
x		852	9/12/18	Sediment off ROW underneath CFS	I
x		853	9/12/18	Retaining wall has failed. SSF overtopped and sediment off RoW.	I
x		854	9/12/18	854 Sediment off ROW	I
x		856	9/13/18	Sediment off ROW, end treatment overtopped	I
x		874	9/13/18	Sediment off ROW	G
x		855	9/14/18	Sump full of sediment. End treatment overtopped. Sediment off RoW.	I
x		883	9/15/18	Sediment off ROW, CFS full of sediment	I
x		876	9/17/18	Mud on private driveway	I
x		877	9/17/18	Sediment left the ROW	I
x		886	9/17/18	Sediment left the ROW	I
x		889	9/17/18	Sediment left the ROW	I
x		891	9/17/18	Sediment left the ROW	I
x	x	SWPPP	9/18/18	Sed. to Trib. To Blackwater R.	H
x		896	9/18/18	Sediment off RoW. Sump full.	I
x		901	9/18/18	Sediment off RoW	I
x		903	9/18/18	Sediment off RoW	I
x		904	9/18/18	Sump full. End treatment overwhelmed. Sediment off RoW.	I
x		915	9/18/18	Sediment left the ROW	I
x		918	9/18/18	Sediment left the ROW	I
x		920	9/18/18	Sediment left the ROW	I
x		927	9/19/18	sediment off ROW	G
x	x	VWP	9/20/18	Sed. in wetland W-IJ10	H
x		936	9/20/18	Sediment off ROW	H
x		937	9/20/18	Sediment of ROW/Perimeter Controls failed	H
x		938	9/20/18	Sediment off ROW	H
x		939	9/20/18	CFS/gravel washed outside LOD	H
x		941	9/20/18	Sediment off ROW, Sumps overtopped	I
x		946	9/20/18	Sediment left the ROW	I
x		948	9/20/18	Sediment left the ROW	I

x		1207	9/20/18	Sediment off RoW. ECDs need maintenance	I
x		858	9/24/18	Sumps full of sediment. End treatment overtopped. Sediment off RoW.	I
x		872	9/24/18	Sediment left the ROW	I
x		951	9/24/18	Sediment has discharge into Aquatic Buffer Area	I
x		960	9/25/18	Sediment left the ROW	I
x		962	9/26/18	Crossing of private road is clogged with mud and requires maintenance	H
x		Field	9/26/18	Sed. off ROW	I
x		Field	9/26/18	Sed. off ROW	I
x	x	972	9/29/18	sediment in Buffer Area and stream. mat bridge full of sediment.	I
x		984	10/3/18	Sediment off ROW	H
x		997	10/5/18	Sediment off ROW	G
x		998	10/5/18	Debris on access road	G
x	x	1012	10/6/18	Sediment deposists in streambed	G
x		1006	10/6/18	Sediment off ROW	G
x		1029	10/9/18	CFS overtopped with sediment/debris	H
x		1037	10/11/18	Sediment laden water from ROW crossing Mt Tabor Road at MLV 26. Impacting stream.	G
x	x	1041	10/12/18	Stream impacted with sediment	I
x	x	1053	10/12/18	Sediment impacted stream	H
x	x	1059	10/12/18	Stream S-KL36 impacted with sediment	I
x		1047	10/12/18	SSF overtopped/sediment overtopped CFS	H
x		1050	10/12/18	road base material washed off ROW/CFS overrun	H
x		1051	10/12/18	road base material washed off ROW/CFS overrun/impacted stream	H
x		1054	10/12/18	road base material washed from driveway onto Wades Gap Rd	H
x		1057	10/12/18	Multiple ECD failutes, sediment off ROW	I
x		1060	10/12/18	Sediment off ROW	H
x		1066	10/12/18	Sediment off ROW	H

x		1067	10/12/18	sediment traveled onto gravel road	H
x		1078	10/12/18	sediment off ROW	
x		1079	10/12/18	sediment off ROW	
x		1083	10/12/18	CFS overtopped/sediment filled	
x		1086	10/12/18	sediment off ROW	
x		1088	10/12/18	sediment off ROW	
x		1089	10/12/18	sediment off ROW	
x		1090	10/12/18	Sediment off ROW, CFS J hook full of sediment	
x		1093	10/12/18	sediment off ROW above Karst Feature	
x		1113	10/12/18	sediment off ROW	G
x		1115	10/12/18	sediment off ROW	G
x		1122	10/13/18	sediment off ROW	G
x		1123	10/13/18	Sediment off ROW	H
x		1130	10/13/18	culvert under access road discharge gravel/sediment off ROW	G
x		1139	10/13/18	Sediment off ROW	I
x	x	1157	10/15/18	Stream S-E48 impacted with sediment	I
x		1145	10/15/18	Road base material washed off ROW	H
x		1159	10/15/18	End treatment overtopped, sediment off ROW	I
x	x	VWP	10/16/18	Sed. to Trib. To Blackwater R.	I
x		1170	10/16/18	Sediment off ROW.	I
x		1172	10/16/18	Sediment off ROW.	I
x		1174	10/16/18	Silt fence overtopped, sediment off ROW.	I
x		1187	10/17/18	Sediment left the ROW	I
x		2826	10/17/18	Sediment off ROW	I
x		1196	10/18/18	Sediment desposited into stream	H
x		1197	10/18/18	Sediment overtopped CFS/Sediment off ROW	H
x		1199	10/18/18	Sediment off of ROW	H
x		1216	10/23/18	CFS is overtopped with rock and sediment	H
x		Field	10/23/18	Sed. off ROW	I
x		Field	10/23/18	Sed. off ROW	I
x		Field	10/24/18	Sed. off ROW	G
x		1253	10/27/18	Sediment off ROW, CFS full of sediment.	I

x		1254	10/27/18	CFS end treatment undermined, sediment off ROW.	I
		1255	10/27/18	CWD plunge pool full of sediment.	I
x		1256	10/27/18	Sediment off ROW, rock flume damaged from erosion, end treatment overtopped.	I
x		1257	10/27/18	Sediment off ROW, slope failure into CWD plunge pool, sediment overtopped outlet.	I
?		1258	10/27/18	Sediment off ROW, end treatment overtopped. Retrieve sediment off ROW,	I
x		1264	10/29/18	Sediment off ROW	I
x		1309	11/5/18	Sediment overtopped CFS	H
x		1320	11/5/18	end treatment was overtopped and sediment is off ROW	H
x		1330	11/7/18	Stone in RCE full of sediment, washing and tracking into roadway	I
x	x	1327	11/8/18	Sediment in Wetland. Sediment overtopping CFS	I
x		1332	11/8/18	Sediment off RoW.	I
x		1333	11/8/18	Sump and end treatment need maintenance. Sediment off ROW	I
x		1349	11/9/18	Sediment off RoW. No perimeter controls adjacent to stockpile.	I
x		1350	11/9/18	Sediment off ROW, end treatment overtopped.	I
x		1365	11/10/18	End treatment needs maintenance. Sediment off RoW.	I
x	x	1377	11/14/18	Sediment observed in CH-J.	
x		1367	11/14/18	Gap in CFS perimeter control. CFS undermined. Sediment off RoW.	I
x		1370	11/14/18	Sediment and rock being tracked into public roadway.	I
x		1381	11/16/18	Sediment leaving the ROW	I
x	x	1392	11/19/18	Sediment off ROW	
x	x	1395	11/19/18	Sediment in stream bed of S-H23	I

x		1403	11/20/18	Sediment off RoW	I
x		1419	11/24/18	Mud on the road and CIS RCE needs Maintenance	I
x		1421	11/24/18	Mud covering road and road falling into open trench	I
x		1426	11/27/18	Sediment off ROW	I
x		1427	11/27/18	Sediment overtopping CFS	I
x		1428	11/27/18	Sediment off ROW	I
x		1431	11/27/18	Sediment overtopping CFS	I
x		1432	11/27/18	Sediment overtopping CFS	I
x		1435	11/27/18	Sediment off ROW	I
x		Field	11/27/18	Sed. off ROW	G
x	x	Field	11/28/18	Sed. to Trib. Stony Cr.	G
x	x	Field	11/29/18	Sed. to wetland	I
x		1449	11/29/18	Sediment off ROW, slope eroded into CFS and overtopped.	I
x	x	1459	11/30/18	Stream has been impacted with sediment.	I
x		1465	12/4/18	Access Road MVP-PI-328 needs maintenance. Sediment tracking on road.	I
x	x	1478	12/7/18	Sediment off ROW, appears that it may have traveled to stream	I
x		1479	12/8/18	1479 tracking on roadway	G
x		1482	12/13/18	1482 RCEs clogged with mud; trackout observed	I
x		1492	12/17/18	Tracking in the access road and highway and RCE not to spec filled with sediment	I
x	x	1497	12/18/18	Stream impacted by sediment	I
x	x	1499	12/18/18	Slopes are not stabilized, stream impacted by sed.	I
x		1495	12/19/18	Sediment off ROW	I
x		1513	12/19/18	CFS is overtopped with sediment	I
x	x	Field	12/20/18	Sed. to Trib. To Stony Cr.	G
x	x	1516	12/21/18	CFS was located in the stream at S-G17	I
x		1520	12/22/18	CFS has got full of sediment and left the LOD	H
x		1533	12/27/18	Sediment off ROW	I
x		1550	12/27/18	Sediment off ROW	I

x		1556	12/27/18	Sediment off ROW	I
x		1542	12/28/18	Dirt over side of timber mat bridge over S-B9	I
x		1547	12/28/18	Sediment off ROW and in drainage channel coveying runoff into stream	I
x	x	1562	12/29/18	Stream is impacted with sediment	I
x	x	1570	12/29/18	Sediment off ROW	I
x	x	1571	12/29/18	Sediment in stream/wetland	I
x		1564	12/29/18	Sediment left the ROW	I
x		1567	12/29/18	Sediment off ROW	I
x		1568	12/29/18	Sediment off ROW	I
x	x	1577	12/30/18	Sediment off ROW in Stream	I
x		1574	12/30/18	P1 defeated, sediment off ROW, mass slope erosion	I
x		1576	12/30/18	Perimeter CFS overrun with sediment	I
x		1578	12/30/18	Sediment off ROW	I
x		1582	12/30/18	CFS end treatment undermined	I
x		1583	12/30/18	CFS end treatment overrun/undermined	I
x		1584	12/30/18	Hole in SSF and sediment off ROW	I
x		1587	1/2/19	CFS undermined and Sediment off the ROW	I
x		1588	1/2/19	Sediment over J Hook, Sediment off ROW	I
x		1589	1/2/19	Sediment over CFS, Sediment off ROW	I
x		1591	1/2/19	Sediment over CFS	I
x		1597	1/2/19	Sediment overtopped CFS/left ROW	H
x	x	1617	1/3/19	CFS overtopped with sediment	I
x		1601	1/3/19	Sediment spilling around J-hook	I
x		1603	1/3/19	Sediment left the ROW	I
x		1612	1/3/19	CFS Overrun	I
x		1614	1/3/19	Sediment off ROW (Due to overrun end treatment)	I
x		1615	1/3/19	Unfiltered water bypassing end treatment/perimeter controls	I
x		1616	1/3/19	Sediment off ROW (bypassing upslope sump/perimeter controls)	I
x		1618	1/3/19	CFS undermind at end treatment	I
x		1619	1/3/19	CFS undermined at end treatment	I
x		1620	1/3/19	ediment off ROW (from undermined sump)	I

x		1621	1/3/19	Sediment off ROW(from undermined sump)	I
x		1622	1/3/19	End treatments overwhelmed leading to sediment off ROW	I
x		1623	1/3/19	Sediment off ROW	I
x		1633	1/7/19	Sediment left the ROW	I
x	x	1662	1/9/19	Sediment observed on stream banks/bed	I
x		1644	1/9/19	Sediment off RoW. Nearly impacting S-H32	I
x		1645	1/9/19	SSF undermined. Sediment off RoW.	I
x		1646	1/9/19	Sump and end treatment are full of sediment. Sediment off RoW.	I
x		1698	1/9/19	Sediment over CFS	I
x		1714	1/23/19	Sediment leaving ROW due to Perimeter CFS full of sediment	I
x		1715	1/23/19	CFS full of sediment, sediment leaving ROW	I
x		1719	1/23/19	Sump needs to be enlarged. Sediment off RoW	I
x		1730	1/25/19	Spoil material overtopping perimeter CFS	I
x		1731	1/25/19	Sediment bypassing CFS end treatment resulting in sediment off ROW	I
x		1753	1/29/19	Sediment left the ROW	I
x		1756	1/30/19	CFS full of sediment, sediment leaving ROW	I
x		1775	2/2/19	CFS allowing sediment over it	I
x		1779	2/2/19	CFS over half the height with sediment/ sediment outside of CFS	
x		1780	2/4/19	dirt from topsoil pile outside of LOD overtopped silt fence	G
x		1797	2/4/19	Sediment left the ROW I	
x		1798	2/4/19	CFS is in stream I	
x	x	1829	2/6/19	S-D1-EPH impacted with sediment. Stream banks severely eroded. I	
x		1844	2/7/19	RCE has mud accumulation; trackout noted.	I
x		1833	2/10/19	Sump full of sediment. End treatment overwhelmed. Sediment off ROW. I	

x		1857	2/12/19	Significant sediment on access road. Sediment tracking onto adjacent roads.	I
x		1858	2/12/19	Sediment in roadside ditch from curlexed bank	I
x		1863	2/13/19	CFS allowing sediment over it	I
x	x	1888	2/14/19	Sediment deposition in wetland W-G2	I
x		1901	2/18/19	Spoil material on stream bank	I
x		1916	2/19/19	CFS is overtoppped with rock	I
x		1918	2/19/19	Sediment bypassing perimeter controls/gap in controls	I
x		1927	2/21/19	Spoil material overtopping CFS	I
x		1935	2/21/19	SSF full of sediment. Sediment off RoW.	
x	x	1963	2/25/19	Sediment in wetland W-D3	I
x		1962	2/25/19	Sediment from trench bypassing ECDs and deposited into buffer area	I
x		1968	2/26/19	Sediment off ROW	I
x		1972	2/26/19	Sediment off ROW	I
x		1973	2/26/19	Sediment overtopping CFS. Sediment off RoW.	I
x		1975	2/26/19	Sediment overtopping CFS perimeter control. Sediment off	I
x	x	Field	2/27/19	Sed. to wetland W-IJ10	H
x		2003	2/27/19	Sediment off ROW.	I
x		2005	2/27/19	Sediment off ROW	I
x		2014	2/27/19	sediment off ROW	G
x		2017	2/28/19	CFS overtopped with sediment	I
x		2055	3/4/19	Sediment left the ROW	I
x		2056	3/4/19	Sediment left the ROW	I
x		2057	3/4/19	Sediment left the ROW	I
x		2060	3/4/19	Sump full/Sediment left ROW	I
x		2063	3/4/19	CFS was undermined/Sediment left the ROW	I
x		2070	3/4/19	Sediment left the ROW	I
x		2073	3/4/19	CFS is full of sediment/sediment left the ROW	I
x		2078	3/4/19	CFS undermined, sediment off ROW	I
x	x	2093	3/5/19	Stream impacted and bank eroded GAS S-D1-EPH	I
x		2134	3/7/19	sediment off ROW	I

x		2138	3/7/19	ECDs need maint (overtopped, torn)	I
x		2190	3/12/19	CFS overtopped with spoil material	I
x		2211	3/13/19	CFS overtopped	I
x		2213	3/13/19	CFS overtopped	I
x	x	Field	3/14/19	Sed. to S-CD8	I
x		Field	3/14/19	Sed. off ROW	I
x		2224	3/15/19	SSF, CFS require maintenance, sediment off ROW	I
x		2283	3/20/19	SSF undermined/sediment off ROW	I
x		2306	3/22/19	Repair CFS, remove sediment, stabilize banks	
x	x	Field	3/27/19	Sed. to Cherrystone Cr.	I
x		2366	3/27/19	Sediment off ROW	I
x		2384	3/29/19	CFS undermined leading to SOR	I
x		2385	3/29/19	Sediment off ROW	I
x		2429	4/2/19	CFS full and sediment off ROW	I
x		2434	4/2/19	Sediment off ROW - Straw was applied but sediment was not retrieved	I
	x	2441	4/4/19	Bank eroded; stream impacted	I
	x	2452	4/8/19	Stream bank eroded	I
x	x	2461	4/9/19	Sediment impacting S-A40	I
x		2459	4/9/19	Sediment off ROW	I
	x	2470	4/10/19	Bank eroded	I
x	x	2496	4/15/19	Sediment outside LOD and in stream	I
x	x	2496	4/15/19	Sed. to weltand W-EF51	I
x		2498	4/15/19	Sediment off ROW, Sump full of sediment	
x		2499	4/15/19	Sediment off ROW	I
x		2500	4/15/19	Sediment off ROW	I
x	x	Field	4/16/19	Sed. to S-EF46	i
x		2505	4/16/19	Sediment off ROW 2505 2511	I
x		2506	4/16/19	P1 undermined and sediment off ROW	I
x		2510	4/16/19	P1 undermined and sediment off ROW	
x		2515	4/16/19	Contractor discovered the sediment off ROW	
x	x	Field	4/18/19	Sed. to W-IJ3	I
x		2550	4/19/19	Spoil material overtopping CFS	I
x		2552	4/20/19	CFS check dam overtopped with sediment	I

x		2554	4/20/19	P1 SF needs maintenance; sediment off ROW	I
x		2578	4/22/19	CFS overtopped	I
x	x	2621	4/24/19	Stream banks eroding around timber matting S-C1	I
x		2601	4/24/19	CFS undermined, over half full, sediment off ROW	I
x		2603	4/24/19	Super silt fence undermined at end treatment, sediment off ROW	I
x		2617	4/24/19	ECDs needs maintenance (CFS overtopped; P1 SF half full)	I
x		2618	4/24/19	Sediment off ROW	I
x	x	2646	4/27/19	Sediment in stream	I
x	x	2649	4/27/19	Sediment in stream	I
x		2641	4/27/19	Sediment off ROW	I
x		2642	4/27/19	CFS overtopped	I
x		2645	4/27/19	CFS overtopped/undermined	I
x		2650	4/27/19	Sediment bypassing CFS	I
x		2655	4/27/19	tracking on Riddle Road	I
x		2661	4/27/19	sediment off ROW at timber mat bridge	I
x		2662	4/27/19	sediment off ROW	I
x		2663	4/27/19	CFS overtopped, sediment off ROW	I
x		2671	4/27/19	1 CFS filled with sediment/ undermined/ sediment off ROW	I
x		2672	4/27/19	P1 full of sediment. Sediment off ROW	I
x		2690	4/30/19	CFS full/overtopped.	I
x		2692	4/30/19	Sediment off ROW	I
x		2707	4/30/19	Sediment off ROW	I
x		2725	5/2/19	Sediment off ROW	I
x		2757	5/8/19	Sump full/ CFS end treatment overtopped.	I
x		2758	5/8/19	sediment off ROW	I
x		2765	5/9/19	Sediment off ROW	I
x		2768	5/9/19	Sediment off ROW	I
x		2772	5/9/19	Sediment off ROW	I
x	x	2781	5/13/19	Sediment in S-E5 stream	I
x	x	2786	5/13/19	Stream bank sloughed off into stream channel (S-A41)	I
x		2780	5/13/19	Sediment off ROW	I
x		2805	5/17/19	Sediment off RoW	I

x		2807	5/17/19	Sediment off RoW	I
x		Field	5/17/19	Sed. off ROW	I
x		2814	5/22/19	Gravel from access road falling onto stream banks	I
x		2839	5/31/19	CFS needs Maintenance, sediment off ROW	I
x		2843	6/1/19	RCE clogged with sediment/tracking on roadway	I
x		2844	6/3/19	Sediment off ROW	G
x		2848	6/3/19	Sediment off ROW above Karst feature	G
x		2853	6/3/19	Sediment off ROW	G
x		2859	6/3/19	sediment off ROW	G
x		2862	6/3/19	CFS overtopped	G
x		2863	6/3/19	CFS overtopped	G
x		2864	6/3/19	CFS overtopped	G
x		2865	6/3/19	CFS overtopped	G
x		2867	6/3/19	P1 overtopped/knocked down	G
x		2868	6/3/19	CFS overtopped	G
x		2869	6/3/19	sediment off ROW	G
x		2872	6/3/19	CFS overtopped	G
x		2873	6/3/19	CFS overtopped	G
x		2876	6/3/19	CFS overtopped, sediment off ROW	G
x		2889	6/5/19	CFS undermined/overtopped	I
x		2890	6/5/19	Sediment off ROW	I
x		2898	6/7/19	P1 undermined, sediment off ROW	G
x	x	2906	6/10/19	Sediment/Gravel off ROW and in stream	
x		2912	6/10/19	Sediment off ROW	
x	x	Field	6/11/19	Sed to W-IJ10	H
x	x	Field	6/11/19	Sed. to W-Q10	H
x		2931	6/11/19	Sediment off ROW	
x	x	Field	6/12/19	Sed. to S-F11	i
x	x	Field	6/12/19	Sed. to wetland near Cherrystone Cr.	I
x		2953	6/12/19	Sediment bypassing end treatment. Sediment off RoW	
x		2957	6/12/19	Sediment off ROW	
x		2961	6/12/19	Sediment off ROW	I
x		2969	6/12/19	CFS overtopped	I
x		2972	6/12/19	Sediment off ROW	I
x		2975	6/12/19	Sediment from timber mat bridge displaced off RoW	I

x		2992	6/18/19	sediment off ROW	G
x		2997	6/18/19	Wattle off ROW	I
x		2998	6/18/19	CFS off ROW	I
x	x	3014	6/19/19	Sediment under bridge on streambank	I
x		3006	6/19/19	Sediment off RoW	I
x		3011	6/19/19	Sediment off RoW	I
x		3012	6/19/19	Sediment off ROW	I
x		3020	6/19/19	Tracking onto Timber Ridge road	I
x		3022	6/19/19	Sediment off ROW	I
x		3024	6/19/19	Sediment off ROW	I
x		3031	6/20/19	CFS overtopped with sediment	I
x		3032	6/20/19	sediment off RoW	I
x		3038	6/20/19	Sediment off ROW	I
x		3039	6/20/19	Sediment off ROW	I
x		3043	6/20/19	Sediment offf RoW	I
x		3050	6/20/19	Sediment off ROW	I
x		3052	6/20/19	CFS overtopped	I
x		3053	6/20/19	Sediment off ROW	I
x		3055	6/20/19	CFS overtopped/ full of sediment	I
x		3056	6/20/19	Sediment off ROW	I
x		3057	6/20/19	Sediment off ROW	I
x		3062	6/20/19	CFS overtopped	I
x		3074	6/25/19	Sediment off ROW	I
x		3076	6/25/19	Sediment off ROW	I
x		3078	6/25/19	Sediment off ROW	I
x		3083	6/26/19	CFS overtopped	I
x		3089	6/28/19	CFS overtopped	I
x		3099	6/28/19	CFS overtopped	I
x		3101	6/28/19	CFS overtopped	I
x		3102	6/28/19	Sediment off ROW	I
x		3113	7/2/19	Material pushing through gap between SSF and Timber mat bridge	H
x	x	3122	7/5/19	Sediment in stream	I
x		3121	7/5/19	Sediment off ROW	I
x		3124	7/5/19	Sediment off ROW	I
x		3143	7/8/19	Sediment off ROW	G
	x	3187	7/10/19	Stream bank sloughing off	I

x	x	Field	7/10/19	Sed. to S-YZ4	I
x		3186	7/10/19	CFS overtopped/undermined	I
x		3202	7/11/19	Sump/CFS needs maintenance (accumulated sediment over half the height and CFS bypassed)	I
x		3203	7/11/19	Sediment off ROW	I
x	x	3218	7/12/19	Sediment in S-YZ5 stream	I
x		3208	7/12/19	Sediment off ROW	I
x		3210	7/12/19	Sediment off ROW	I
x		3215	7/12/19	Sediment off ROW	I
x		3220	7/12/19	Sedimnet off ROW G retrieve sediment	
x		3237	7/16/19	Sediment off ROW	G
x	x	3248	7/17/19	Sediment off ROW	H
x	x	3249	7/17/19	Sediment overtopped SSF	H
x		3247	7/17/19	Gravel washed outside LOD from flash flood	H
x		3250	7/18/19	sediment off ROW	G
x		3251	7/18/19	Sediment off ROW	G
x		3263	7/18/19	Sediment Off ROW	I
x		3266	7/19/19	Sediment off RoW	G
x	x	3281	7/20/19	Sediment off ROW	H
x		3294	7/22/19	Sediment off ROW	
x	x	3301	7/23/19	Sediment impacted stream	
x		3298	7/23/19	sediment off ROW	
x		3302	7/23/19	CFS overtopped	
x	x	3306	7/24/19	Sediment off ROW and in stream	
x	x	Field	7/24/19	Sed. to W-EF-PHO	H
x		3311	7/24/19	ECDs need maintenance (accumulated sediment and undermined)	
x		3313	7/24/19	Sediment off ROW	
x		3330	7/25/19	sediment off ROW	
x	x	3357	7/31/19	S-EF19 impacted with sediment	H
x	x	3358	7/31/19	S-IJ50 impacted by sediment	H
x		3340	7/31/19	Sediment off ROW	
x		3372	8/7/19	Sediment off RoW	H
x		3378	8/7/19	Sumps not built to spec/sediment off ROW	H
x		3385	8/8/19	Sediment off ROW	I
x		3405	8/16/19	Sediment off ROW	I

x		3407	8/16/19	Sediment off ROW	I
x		3419	8/19/19	Sediment off ROW	I
x		3423	8/20/19	Sediment off RoW	I
x	x	3452	8/21/19	Stream impacted with sediment	I
x		3448	8/21/19	Sediment off ROW	I
x		3451	8/21/19	Sediment off ROW	I
x	x	Field	8/22/19	Sed. to S-D20	I
x		3464	8/22/19	Sediment off ROW	I
x		3484	8/27/19	Sediment off ROW	I
x		3490	8/27/19	Sediment off ROW	I
x		3518	9/6/19	Sediment in buffer zone of S-G9(GAS)	I
x		3577	9/25/19	Endtreatment over topped and sediment off RoW	H
x	x	Field	9/26/19	Sed. to S-EF19	H
x	x	Field	9/26/19	Sed to W-EF5PO	H
x		3614	10/16/19	Sediment in road crossing	I
x		3623	10/23/19	Compost Filter Sock - needs maintenance - sediment off ROW undermined and minimal sediment appeared to be off the 3623 right of way)	I
x		3640	10/25/19	3640 minimal sediment appeared to be off the right of way	I
x		3643	10/28/19	3643 minimal sediment appeared to be off the right of way	I
x		3645	10/28/19	3645 minimal sediment appeared to be off the right of way	I
x		3648	10/28/19	3648 minimal sediment appeared to be off the right of way	I
x		3659	10/28/19	3659 Sediment off ROW	I
x		3663	10/28/19	3663 Sediment off ROW	I
x	x	3683	10/29/19	3683 Sediment off ROW Impacted W-A5 (from overtopped P1)	I
x		3668	10/29/19	3668 Sediment off ROW	I
x		3669	10/29/19	3669 CFS et bypassed /undermined	I
x		Field	10/29/19	Sed. of ROW	I
x		3670	10/29/19	3670 Sediment off ROW at two locations (two sump discharges)	I
x		3674	10/29/19	3674 CFS end treatment bypassed	I

x		3675	10/29/19	3675 Sediment off ROW	I
x		3685	10/29/19	3685 Perimeter P1 SF overtopped	I
x		3690	10/30/19	3690 Sediment off ROW. Upslope waterbar failure at 14923+50.	I
x		3693	10/30/19	3693 Sediment off ROW. Controls over topped	I
x		3695	10/30/19	3695 Sediment off ROW due to undermined CFS.	I
x		3698	10/30/19	Sediment off RoW	I
x		3700	10/30/19	Sediment off ROW. Upslope control failure and incorrect installation of waterbar at 14896+00.	I
x		3803	12/16/19	sediment off right of way I	I
x		3833	12/27/19	Trackout noted	I
x		3963	2/12/20	Triple stack CFS end treatment undermined / Sediment off ROW	I
x		4050	2/28/20	Sediment off ROW (Caused by CFS being undermined)	I
x		4135	4/14/20	Sediment off ROW caused by undermined CFS end treatment	I
x		4137	4/14/20	Sediment off ROW caused by undermined CFS end treatment	I
x		4139	4/14/20	Sediment off ROW caused by overtopped CFS	I
x		4149	4/17/20	Sediment traveled outside LOD	H
x		4168	4/22/20	Sediment off ROW caused by end treatment overtopping	I
x		4182	4/27/20	Sediment off ROW caused by overtopped CFS end treatment	I
x	x	Field	5/4/20	Sed. to Foul Ground Cr.	I
x		4207	5/4/20	Sediment off ROW caused by CFS end treatment being bypassed	I
x		4254	5/26/20	Sediment off ROW	I

x	x	4313	7/2/20	Stream channel impacted from sediment that was in geotextile liner that detached from timber mat bridge	I
x		4315	7/7/20	Gravel overtopped CFS	G
x		4355	8/17/20	Sediment off ROW.	I
x	x	4458	11/12/20	Sediment entering stream from bridge	H
x	x	4462	11/12/20	Sediment entering stream S-GH11 from sump	H
x		4465	11/12/20	Sediment off ROW	H
	x	4492	11/13/20	Stream S-EF48 impacted with sediment from stormwater bypass of ECDs.	I
x	x	Field	8/23/21	Sed. to S-Y2	G

This table was originally presented as Appendix B to "Documenting the Damage." The instances listed above have been supplemented by additional records acquired from the state since that report was released.

Additional incidents of sediment deposits in waterbodies not listed above include those with the following

Action Item Log ID	Date reported
5068	8/18/21
5074	8/18/21
5065	8/18/21
5184	9/22/21
5035	8/16/21
5031	8/16/21
5093	8/20/21
5102	8/20/21
5109	8/20/21

Appendix C

AFFIDAVIT OF BETTY B. WERNER

I, Betty B. Werner, declare and state as follows:

1. I am of legal age and competent to give this declaration. All information is based on my personal knowledge unless otherwise indicated.
2. I live at 513 Parkview Drive, Rocky Mount, Virginia 24151.
3. I am the co-owner of a farm consisting of approximately 58.6 acres known as Four Corners Farm in Franklin County.
4. I have been monitoring the construction activity for the Mountain Valley Pipeline, and documenting violations of the terms of the 401 Certification and impacts to Teels Creek and Little Creek and the unnamed tributaries to these streams.
5. Teels Creek flows into Little Creek on Four Corners Farm. The Mountain Valley Pipeline will cross Teels Creek for the 7th (seventh) time on Four Corners Farm just upstream of the convergence with Little Creek. After crossing what was our farm pasture and a significant wetland, the Mountain Valley Pipeline also crosses Little Creek on our Farm.
6. I have been monitoring the pipeline route from mile-marker 261.4 to mile-marker 262.8 regularly and frequently. The 262.8 marker is the point at which the pipeline is proposed to cross Little Creek.
7. The photographs attested to here show stream scour conditions and impacts to Four Corners Farm that were not considered or analyzed by any reviewing

agency despite concerns raised by the public during the various regulatory processes, including the 401 Certification process.

8. The photographs in this declaration also show the continuing failure of the erosion and sediment control measures to prevent soil from leaving the right of way and enter stream channels.
9. Teels Creek is crossed 7 times by the Mountain Valley Pipeline in rolling terrain in the foothills of the Blue Ridge Mountains. The last of the 7 crossings, before Teels Creek flows into Little Creek, is on Four Corners Farm. I do not know how many tributaries to Teels Creek also are crossed.
10. The stream flow in Teels Creek has increased dramatically since the pipeline construction started in 2018.
11. My family and I watch our farmland wash away with each rain event due to the high volume and flow rate in the creeks.
12. On November 15, 2018, I discovered that water was gushing out of the bank of Little Creek. See Exhibits A, B, and C. It was the sound of the water that got my attention.
13. The pipeline corridor runs roughly parallel to the course of Little Creek through our pasture. The area of the pasture that is adjacent to the gushing water is a large wetland that has not been trenched. The wetland is fed by a flowing spring.

14. The pipe is strung on the ground upslope from the wetland but the trenching has not been dug for this section of the pipe. The only part of the ground that has been prepared by removing the vegetation and bulldozing is upslope from the pipe on top of the ground. There is quite a bit more earthmoving to be done to bury that section of pipe. I fear impacts when the additional earthmoving is done.

15. Before pipeline construction started, the wetland captured and retained the spring water flow. The wetland has been damaged so that it no longer serves the function of retaining the spring water flow. In addition, the site clearing has caused a ponding effect and some of the water that pools on the pipeline corridor flows from the site in the direction of the water flow toward the gusher in the creek bank. The photographs in Exhibits D-H show the condition.

16. Before construction started, the fencing in Exhibit C was at least six feet from the bank of Little Creek. The creek is scouring our land away like no other time in our ownership of the property.

17. By February 23, 2019, the gusher, which had a pipe effect through the stream bank, had eroded the bank to a full ditch condition with the sides of the bank collapsing around the ditch.

18. Comparisons between Exhibit C to Exhibit H and then to Exhibits OO through RR show that the fence posts that were at least six feet from the creek bank prior to construction are suspended only by the fence wires by June 18, 2019.

The creek bank has eroded several feet beyond where the posts had been buried in the soil. At least nine feet of the land has eroded downstream in six months. If the pipeline is constructed here, it will be only a matter of time before the pipeline itself will be at risk.

19. About a tenth of a mile downstream of the drainage ditch that started as the gusher, there is a temporary bridge across Little Creek at the location where the pipeline is proposed to cross the creek. MVP has been unable to control the runoff from the site at the bridge crossing.

20. Sediment-laden water flows toward the upstream side of the bridge, then flows under the bridge and comes out on the downstream side of the bridge.

21. MVP contractors have tried to control the runoff but it seems impossible to stop it from reaching Little Creek. Exhibits I-M show the conditions in February 2019 in captioned photographs. Exhibits LL to NN show this area in June 2019.

22. There also is a bridge over Teels Creek where the pipeline is proposed to cross. I have been measuring the distance between the boundary of the work space and the creek bank since the boundary for the workspace was staked. The distance between the boundary of the workspace and the creek bank has decreased variably between three and six feet across the stretch of the bank that aligns with the workspace, meaning that between three and six feet of the bank of Teels Creek has eroded.

23. On February 26, 2019, MVP contractors carpeted the corridor on our property with erosion control pellets that were recklessly dropped by helicopter.

24. Upon information and belief, the erosion control pellets are made of genetically modified corn and other waste cellulose materials that contain carcinogenic glyphosate residues.

25. Upon information and belief, the erosion control pellets are coated with a glue-like chemical compound called acrylamide. Acrylamide is documented to have toxic and carcinogenic effects.

26. MVP apparently has resorted to this attempted control method even though the use of toxic and carcinogenic compounds was not analyzed in the environmental documents.

27. The use of toxic and carcinogenic compounds to control runoff was not disclosed the public or to the State Water Control Board in either the FERC EIS or in the 401 Certification process.

28. Our farm had been continually operated without the use of chemicals, herbicides and pesticides for over 20 years and we had been pursuing organic certification status.

29. We had no notice that our farm would be polluted by the air with toxic and carcinogenic compounds. When we complained to MVP lawyers, the lawyers told us that they were tired of hearing from Four Corners Farm.

30. The photographs in Exhibits U through W show the pellets dropped on our farm.

31. Late in March the helicopters returned to dump grass seed on the pipeline corridor, making no effort to spread it evenly. See Exhibits X & Y.

32. Exhibits Z, and AA through II show the futility of MVP's efforts at growing grass on the corridor.

33. MVP came onto the corridor on June 4, 2019 and graded over a part of the corridor, hand seeding and placing straw over the area.

34. MVP has put our small family farming operation out of business. Our primary pasture is destroyed. Our land is washing away with every rainfall -- not only because of the failure to control erosion on our land, but also due to the increase in stormwater flow from the innumerable crossings of the denuded watershed which was never addressed in the regulatory process despite citizen warnings.

35. Every harmful consequence that we predicted has actually occurred, and the lack of regulatory oversight is worse than we ever imagined.

June 19, 2019

COMMONWEALTH OF VIRGINIA:

CITY/COUNTY OF Franklin, to-wit:

I, Betty B. Werner, being first duly sworn, make oath and say that the foregoing statements are true and correct to the best of my knowledge, information, and belief, and that I took the photographs exhibited to this affidavit.

Betty B. Werner

Betty B. Werner

SWORN AND SUBSCRIBED before me, a Notary Public for the state of Virginia this 19th day of June, 2019.

Tina McConnell

Notary Public

My commission expires: 01-31-2022

Tina Mcconnell
Notary Public
Commonwealth of Virginia
Reg # 7535952
My Commission Expires 01-31-2022

EXHIBIT A – Water gushing out of bank of Little Creek on Four Corners Farm, November 24, 2018. The gusher was discovered on November 15, 2018.

EXHIBIT B – Sediment-laden stormwater that was flowing out the gusher on the creek bank when the gusher was discovered on November 15, 2018. The black matting against the tree washed off the corridor and is a point of reference in these photos.

EXHIBIT C – Water gushing out of bank of Little Creek. Note the location of the cattle fence on the creek bank. Black matting against the tree and pipe on ground in background.

EXHIBIT D – Water flow from corridor toward Little Creek. The water that had been gushing from a hole is now eroding the creek bank.

Exhibit E – Same location as in Exhibit D, two days later, after 2.5 inches of rain. The drainage into the creek is collapsing. The fence wire is visible on the left.

EXHIBIT F – A close-up view of the gusher eroding the creek bank on February 23, 2019. Notice the fence wire.

EXHIBIT G – The gusher had eroded to a full ditch that discharges sediment-laden runoff to Little Creek.

EXHIBIT H – Comparing this photograph to the photograph in Exhibit C, the fence will soon fall into the creek. It took only three months to lose the land between the fence and the creek bank. Exhibits XX – XX show the fence posts dangling by the wires on June 18, 2019

EXHIBIT I – The upstream side of the bridge over Little Creek. Muddy water flows under the bridge and out the downstream side of the bridge before entering the creek, seen in Exhibit J.

EXHIBIT J – The downstream side of the bridge over Little Creek. Muddy water flowing from the upstream side of the bridge, and under the bridge and into Little Creek with the creek almost full.

EXHIBIT K – The downstream side of the bridge over Little Creek which is the same location as Exhibit J above. The creek bottom which used to be rocky is covered in sediment. Sediment is piled on the banks. The erosion control sock had been recently installed when this photo was taken on February 1, 2019.

EXHIBIT L – The downstream side of the bridge across Little Creek on February 23, 2019. This is the same location as in Exhibits J and K.

EXHIBIT M – The upstream side of the bridge over Little Creek on February 23, 2019. This is the same location as Exhibit I.

EXHIBIT N – Sediment-laden runoff has flowed from the construction corridor. MVP contractors have covered the sediment with straw. The photograph in Exhibit O shows what is typically found under the straw carpets.

EXHIBIT O – MVP contractors cover sediment flows with straw.

EXHIBIT P – Sediment-laden runoff has flowed from the construction corridor.

EXHIBIT Q – Sediment-laden runoff has flowed from the construction corridor.

EXHIBIT R – Sediment-laden runoff has flowed from the construction corridor.

EXHIBIT S – Sediment-laden runoff has flowed from the construction corridor.

EXHIBIT T – Sediment-laden runoff flowing from the construction corridor.

EXHIBIT U – Erosion control pellets.

EXHIBIT V- Erosion control pellets dropped on the construction corridor where the stormwater has been ponding.

EXHIBIT W – Erosion control pellets.

Exhibit X – Seed “spread” on ROW

Exhibit Y – Seed sitting on ROW

Exhibit Z – Seeded area of ROW

Exhibit AA – Seeded area of ROW

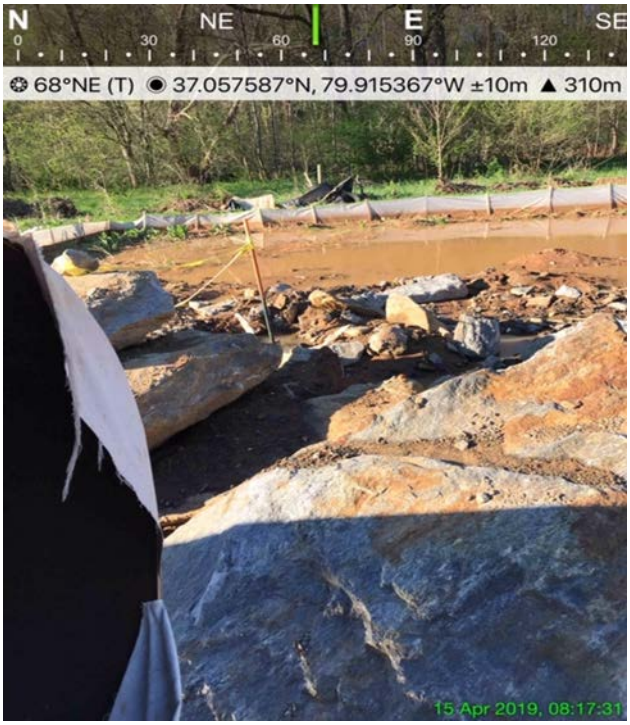


Exhibit BB – Seeded area of ROW

Exhibit CC – Sprouting grass on ROW?

Exhibit DD – Sprouted Grass on ROW?

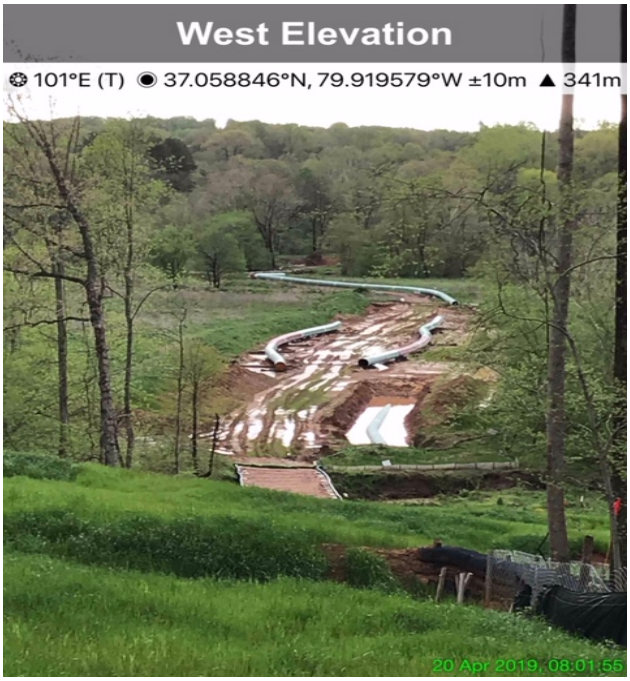
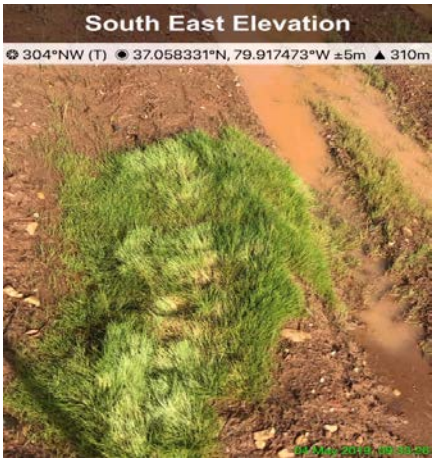


Exhibit EE – FCF ROW with sprouted grass?



Exhibits FF & GG – Sprouted grass on ROW

Exhibit HH- Sprouted grass and erosion along ROW

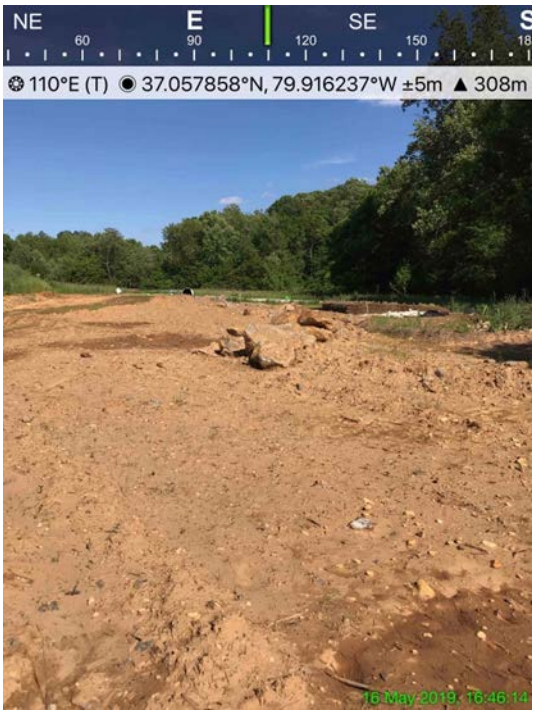


Exhibit II – FCF ROW with sprouted grass?

Exhibits JJ & KK -- MVP attempting to smooth over and re-seed by hand, also put down straw.

Exhibit LL – Sediment from ROW continuing to flow into Little Creek

Exhibits MM & NN - Erosion and sediment in creek next to MVP bridge over Little Creek

Exhibit OO – By June 18, 2019, the creek bank has eroded away from a fencepost that was at least six feet from the creek bank before construction started.

Exhibit PP – By June 18, 2019, the creek bank has eroded several feet beyond a fencepost that was at least six feet from the creek bank before construction started.

Exhibit PP – By June 18, 2019, the creek bank has eroded several feet beyond a fencepost that was at least six feet from the creek bank before construction started.


E
SE
S
60
90
120
150
180
129°SE (T)
37°3.444'N, 79°54.897'W ±10m
308m
18 Jun 2019, 20:01:33

Exhibit QQ –

Exhibit RR – By June 18, 2019, the creek bank has eroded away from a fencepost that was at least six feet from the creek bank before construction started.

Appendix D

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

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

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

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

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

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 E

Mountain Valley Watch

Comments to State Water Control Board

August 10, 2018

The following report was created by Mountain Valley Watch, a collaboration of public, private, and non-profit interests, and documents repeated failures of Mountain Valley Pipeline, LLC (Mountain Valley) and its contractors to protect water quality while constructing the Mountain Valley Pipeline (MVP). This information is relevant to the Board's consideration of the sufficiency of NWP 12 because it (1) documents harm to streams directly caused by crossings authorized by NWP 12 despite that permit's conditions and (2) documents harm to streams from sedimentation from upland areas. The information contained in this report further demonstrates that the Board must exercise its authority to require individual review of all waters crossed by the Mountain Valley Pipeline to determine if additional safeguards are necessary to protect Virginia water quality.

The incidents documented in this report establish that the plans and BMPs currently in use are inadequate to protect Virginia's streams from the threats posed by construction of the pipeline. The Board and DEQ should take swift action to neutralize these threats. Many of these problems stem directly from the Department of Environmental Quality's approval of a variance allowing Mountain Valley to maintain 5,000 feet of open trench. This length of open trench requires a minimum of 15 acres of disturbed area remain exposed to rainfall events while the trench is open. Long open trench lengths increases the amount of right of way subject to erosion.

Introduction:

Virginians, particularly in the southwestern part of the state, have the good fortune of benefitting from its natural environment, aquatic diversity and the most pristine mountain water in the world.

"Regional fish diversity in the Southeast is the highest in North America north of Mexico (Warren et al. 1997), and an estimated 91% of all the freshwater mussel species that occur in the United States are found in the Southeast (Neves et al. 1997) (Neary and Michael. 2009)" (VDF, 2011: 7-9). The Department of Environmental Quality (DEQ) is statutorily responsible for maintaining that quality.

Failure of DEQ's Nationwide Permit 12 Decision and Certification of the MVP

This work builds on letter (attached) by Dr. Jacob Hileman to the Virginia State Water Control Board (WCB), dated May 30, 2018, detailing objections to DEQ's determination of the validity of the U.S. Army Corps of Engineers' Nationwide Permit 12 as applied to

Mountain Valley Pipeline. It details violations of permit conditions and failure to employ Best Management Practices (BMP) during early pre-construction and construction activities.

The first part of this report builds on Hileman's work, reporting an ever increasing number of violations to date. Persistent failures (often repeated and in the same locations) raise the question of whether they are solely due to the ineptitude and lack of professionalism of the contractor, Precision Pipeline (which has a record to this effect), or if there is a deeper cause: the limits of BMPs in the mountainous and karst terrain selected for the pipeline route. For that we turn to the academic literature on the efficacy of BMPs and the conditions that affect it. DEQ appears not to appreciate the limits of BMPs and the fact that the construction of a large gas pipeline here poses an eminent, profound threat to Virginia waters. Finally we critique the myopic focus of the 30-day public comment period to pipeline *crossing* of surface water bodies while ignoring the potentially even greater threat posed by construction along ridges for upland tributaries.

Executive Summary

The data demonstrates that:

- Precision Pipeline frequently failed to employ Best Management Practices and properly install required erosion control devices and maintain them. The direct result is the serious impairment of Virginia waters.
- The extent and repetition of these failures (often in the same location), consistent with research in referenced journals, indicates the limitations of BMPs in mountainous terrain. BMPs are not infallible, nor are they intended to be so; they are designed to *minimize* adverse impacts. Rain events, well within the standard of "normal," on steep slopes of upland watersheds overwhelm BMPs. This is documented in scientific reports in refereed journals.
- The processes by which DEQ decided the Nationwide Permit 12 and conducted the 30 day public comment period were fundamentally flawed, contributing to an unsubstantiated opinion that MVP construction would not significantly impair Virginia waters. This report demonstrates significant sediment loading into streams.
- It is imperative that DEQ and the SWCB revisit their decisions to approve the Section 401 Certification and Nationwide 12 permit for the Mountain Valley Pipeline.
- There is a reasonable likelihood, based in on the facts on the ground, that continued construction will continue to significantly adversely impact Virginia water for years to come.

Storm Water Runoff Impacts

Our analysis begins with vulnerability of Virginia waters to pipeline construction during normal rain events in upland watersheds. An understanding of the impacts of stormwater runoff on erosion and sedimentation is key to understanding the threat to Virginia waters from building a large diameter gas pipeline through the karst laden Ridge-and-Valley Appalachian Region.

The top three contributors (in terms of frequency and magnitude of impact) to runoff resulting from precipitation (called "nonpoint source pollution") in rural and forested areas are: road construction, lumbering (including skidding), and site preparation (VDF, 2011: 1).

Construction of a 42-inch pipeline is of an order of magnitude greater because it typically combines all three activities, is far more disruptive and the limits of disturbance (LOD) is much greater than any forest road.

Best Management Practices[1] are designed to *minimize* runoff and they typically do well. However, BMPs are intended to be both practical and affordable, not infallible. Engineering limitations are inherent in technology based standards, subject to the laws of physics.

This has direct policy implications. The proper installation and maintenance of BMPs alone do not provide a basis for concluding there is not a reasonable threat to state waters from large pipeline projects. The efficacy of BMPs is conditional, dependent on slope, soil type, the area affected and intensity of activity. (VDF: 2011: 2). One of the most important factors, apparently not fully considered by DEQ, is the effect of normal rains on the upland ephemeral area of mountain watersheds and its implications for downstream impacts.

Watersheds

Essential to understanding the challenge to BMPs in the Valley and Ridge Province is the nature of *watersheds* in mountainous regions. Watersheds are the first substantive topic of Virginia's *Forestry Best Management Practices for Water Quality Technical Manual, 2011* (VDF, 2011) - for a reason.

"A watershed is a land area where precipitation collects and funnels to an outlet – usually a stream. Figure 1, from 2011 Forestry Best Management Practices for Water Quality, shows perennial streams, intermittent streams and wetland areas illustrated over a watershed.

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[1] Definitions of BMP:
Dictionary of Forestry (Helms 1998): "a practice or usually a combination of practices that are determined by a state or a designated planning agency to be the most effective and practicable means (including technological, economical, and institutional considerations) of controlling point and nonpoint source pollutants at levels compatible with environmental quality goals."
Businessdictionary.com: Methods or techniques found to be the most effective and practical means in achieving an objective (such as preventing or minimizing pollution) while making the optimum use of the firm's resources.

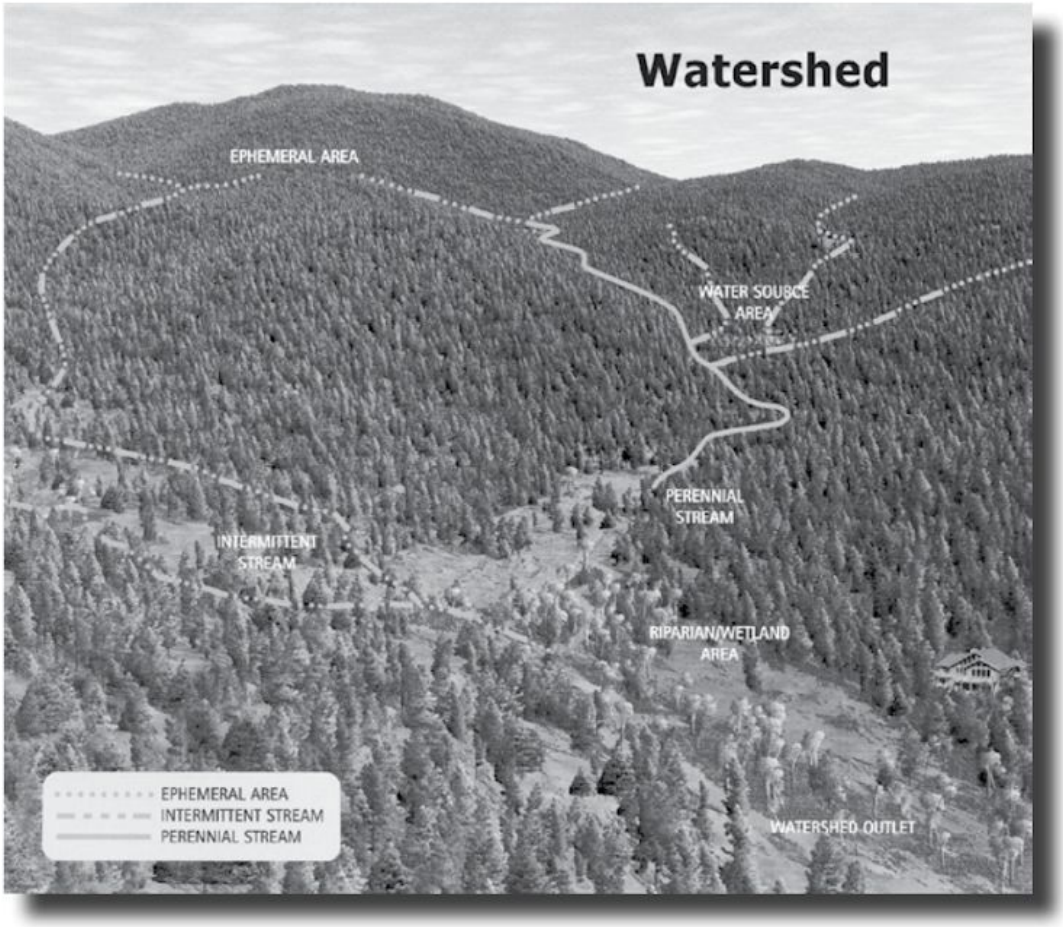


Figure 1: Watershed graphic from Forestry Best Management Practices for Water Quality (VDF, 2011)

A comparison widely used is that of the roof on your home. Rain falls on the roof and moves by gravity toward the gutters, collecting debris and materials as it flows. The water eventually reaches the downspouts where it concentrates, picking up speed and additional debris. Different land uses affect watersheds differently. The effect of storms is dependent on slope, soil type and overall land use. For example, precipitation moves more slowly through a forested watershed than through an urban watershed because organic forest soils absorb the rainfall's energy more efficiently than rooftops and pavement in urban settings. Land-disturbing activities, such as road construction, timber skidding and site preparation [e.g. clear cutting that destroy forest canopy and grubbing], can greatly affect the movement of water and associated debris, including sediment, to a stream. One must be careful when conducting silvicultural operations so soil movement is minimized. Of particular importance are the *intermittent* streams [emphasis added] that, despite not having water in them most of the year, can contribute to downstream water quality. The use of heavy equipment during timber harvesting can lead to altered and compacted soil causing downstream water quality problems if forest operators do not properly use BMPs." (VDF, 2011: 7-9)

An understanding of watersheds should raise serious questions about (1) the Virginia DEQ/WCB certification of NWP 12 based on its determination "that there is a reasonable assurance that the activities permitted under the Corps' NWP program…will be conducted in a manner which will not violate applicable water quality standards" and (2) its limiting the public comment period to "specific, wetland or stream crossing(s)." A focus on traversing specific *water* bodies is myopic. An equal or greater danger to water quality lies above, on highland ridges, where much of the pipeline Limits of Disturbance (LOD) has been located, where there are steep slopes and proximate, often dry gullies that fill during storm events or following multi-day rain events which saturate mountain soils. Impacted intermittent streams may not be directly touched by the LOD. When storm water is channeled from the LOD, without hardening the work site to slow down and dispersed flow to proximate upland tributaries, there is a documented indirect threat to the quality of the downstream river continuum.

Part I: Mountain Valley Watch

Mountain Valley Watch (MVW) is a collaboration of public, private, and non-profit interests working to monitor construction of the Mountain Valley Pipeline (MVP) for compliance with the applicable Erosion & Sediment Control (ESC) and Stormwater Management (SWM) regulations. MVW was established to provide support to the limited resources of the regulatory agencies having oversight of this extensive project and also to promote public interest in citizen science. MVW volunteers receive regular training by ESC/SWM professionals in order to provide this valuable public service.

Monitoring began with tree-cutting and will continue until reclamation is achieved. Details and supporting photo documentation of alleged violations and concerns are submitted to MVW by our volunteers. Formal reports are then submitted by MVW to the Virginia Department of Environmental Quality (DEQ) via an online pollution reporting form and emails to DEQ staff. Recorded footage from drone and piloted aircraft supplements ground monitoring efforts during construction. Transparency builds trust; therefore all documentation is publicly accessible.

The patterns we have observed and documented in the field include non-compliance with the approved plan, improperly installed BMPs, consistently overwhelmed BMPs, lack of BMP maintenance, and the consequential impacts to properties and waterways.
This report gives an overall summary of the most significant volunteer observations and alleged violations reported to DEQ for evaluation and follow-up during construction from May 2018 to August 7, 2018. Some of the major problems reported include:

- Water bars/right-of-way diversions constructed across temporary and permanent right of way (ROW) are creating discharge points of concentrated runoff. Concentrated runoff is not returned to sheet flow, as required by the regulations, and is flowing down the slopes creating gullies and into existing gullies with high sediment concentrations.
- BMPs installed perpendicular to the contour are creating gullies along the perimeter of construction ROW.
- No evidence of stable conveyance channels or level spreaders to convey runoff downslope in a non-erosive manner.

- Drainage areas flowing to BMPs exceed performance limits and capacities of BMPs to effectively remove sediment.
- Lack of proper BMP maintenance and repairs.

These problems and others have been reported repeatedly for multiple areas, even after sites were "released" for work from the voluntary work stoppage MVP undertook with DEQ.

This strikes at the core of the argument that this project can not be constructed through steep, mountainous, rocky terrain without causing severe water quality damages to downstream properties and communities. As source water communities along the eastern continental divide, it is critical that we consider the financial and environmental impacts to downstream communities.

Compounding Geohazards

Through Virginia, the MVP will traverse some of the steepest terrain in the state. As shown in the Final EIS, 46% of the MVP project slopes are high erosion hazards and 22% are moderate erosion hazards. (D'Ardenne, D. 2018) Table 1 lists the ROW distance of slopes in Virginia. Soils on the highest ridges are mostly stony, gravely or sandy. Lower limestone ridges, where MVP is most active, are clayey, erodible, plastic and slip-prone. Both surface provides an unstable building environment for disruptive activities, in particular heavy machinery, and increase the likelihood of erosion and stormwater runoff. This issue was illustrated very recently with the explosion of the Leach Xpress Pipeline in Moundsville, WV, which was reportedly caused by a landslide. Add karst topography with shrink/swell clay soils, and the local environment becomes much more complex. There are a number of threats, including landslides, which are of considerable concern. Diversion bars cause water to form new flow paths off the ROW. Additionally, the ROW is now an exposed surface so the concentration of water increases greatly with no canopy to protect the ground from raindrop impact.

Max Slope (%)	**Distance (miles)**
30-39.9	8.07
40-49.9	6.55
50-59.9	3.48
60-69.9	1.34
70.79.9	2.02
80-89.9	0.17
Total Distance	**21.63**
Total ROW Area of slopes > 30% in VA*	**327.73 acres**

Does not factor additional work areas or access roads, this is only area of slopes >30% and within 125' construction ROW

Table 1: Steep slopes in Virginia and total ROW acreage of steep slopes.

The map in figure 2 gives an overview of the construction corridor over Peters Mountain. It is apparent that not all stream or flow channels are taken into account. The blue stars show MVP identified stream crossings, however a number of flow channels (marked green) were not identified as “streams”. Omitting these surface and underground water channels gives an incomplete analysis of upland water channel flow and their significant contribution to the flow of water coming off the ridges into karst terrain. Observations show that the 125 foot wide construction corridor with water diversion bars produces erosion gullies in the center and along the perimeter of the construction corridor. These erosion gullies typically flow to the lowest point at the toe of a steep slope where the BMP fails due to lack of capacity to control the flow of runoff and sediment. The diversion bars are designed in the construction details to include a small stone outlet structure with gravel filter and silt fence. Small retention areas constructed in clay rich soils as outlet structures along the entire Virginia route are not draining. The structures fill up after the first rain event and overflow with each successive rain event.

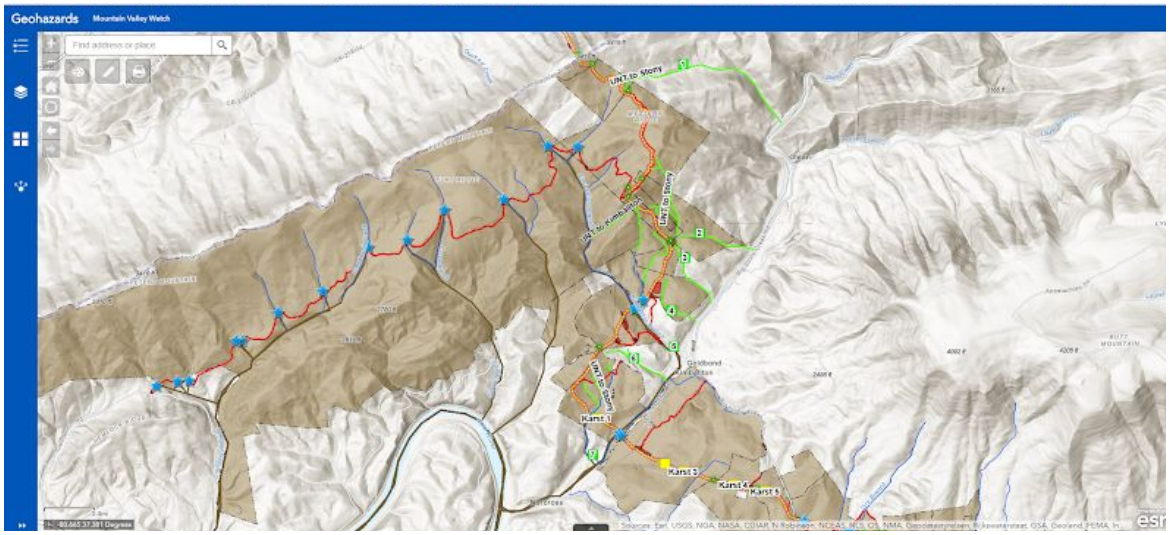


Figure 2: Additional stream and flow channels, not identified in MVP filings, contribute significantly to volume of flow of water draining from ridges. Click image for access to interactive map.

Volunteer Observations and Submissions

As of August 7, 2018, Mountain Valley watch has received 277 volunteer submissions from which we have referred 58 reported violations to DEQ. A snapshot of the data dashboard, figure 3, displays each volunteer observation and map location. The dashboard includes two different forms created in the reporting application Survey123, a visual assessment on the left and an erosion control survey on the right. You can explore the points by clicking on them to view additional information. The aforementioned figures show the survey form section layouts. The visual assessment survey is based on Trout Unlimited’s monitoring

program; the erosion control survey is based on the Virginia Sierra Club's construction monitoring checklist.

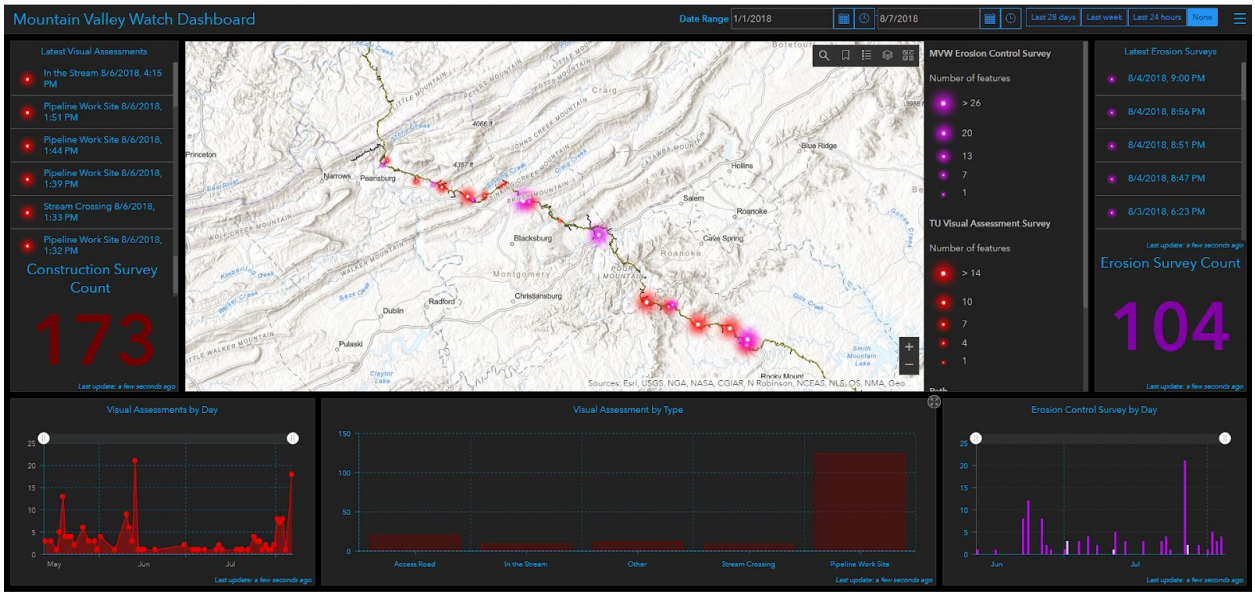


Figure 3: Data dashboard displaying volunteer submissions.

Case Studies

Below are 10 case studies, built around collages of photo evidence, of the worst, most persistent ESC/SWM failures.

Case Study 1: Hodges Property - Craig County Virginia

Observations from landowner Steven Hodges,
Professor of Managed Ecosystems & Soil Science
GPS Location 37.32464 -80.43124 from Google Earth
Complete Report

Rain fell on Aug 1 (0.22"), Aug 2 (0.16")and Aug 3 (1.51"), Aug 4 (1.24") , and Aug 05 (0.01") at this site, for a total of 3.14" , with significant rains ending essentially before 6 am on Thursday, Aug 04. In no case did these daily events come close to exceeding even 1-year and 10-year 24-hour design storm events (2.14" and 3.82") for the NOAA Newport reporting station (NOAA PDS-based point precipitation frequency estimate are found at: (https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_printpage.html?st=va&sta=44-6046&data=depth&units=english&series=pds) The total for the 5-day storm event lies slightly above the 1-year, 4-day (2.87"), estimate, well below the 1-year, 7-day (3.35"), and far, far below the 10-year, 4-day design storm of 5.00". The constructed BMPs should have no problem in preventing sediment losses during this 4 to 5-day event.

I informed MVP crew members that I am an environmental soil scientist familiar with erosion predictions and control structures. This segment of the pipeline has several

sensitive areas: an aquatic resource buffer, a stream crossing, karst landscapes including numerous sinkholes, and the centerline passes through a sinkhole with an open throat and active signs of subsidence. The soils are clayey, slip-prone, and occur under highly sloping conditions. The MVP contracted engineer who marked the center-line route declared this site as “unconstructable”?

MVP crews have spent an incredible amount of time, energy, structural design and implementation on this site. I was informed that some of these structures were required by DEQ. This should be THE show-piece for DEQ-mandated and MVP-implemented effectiveness in erosion and sediment control.

How is MVP performing and how well is DEQ protecting sensitive karst and surface water resources at this site?

On 03 Aug, BMPs began failing. Except those labeled otherwise, the following photos were taken on 05 Aug after 12:50 p.m. after MVP erosion-emergency crews had “cleaned-up and departed for the day. At this point MVP clearly had more than 24 hours to respond to the major storm events earlier in the week.

A. Pipeline centerline and working/parking area at southern terminus of MVP work site.Sediments were actively flowing from upslope pipeline areas. BMPS in place included oversized slope breaks with deeply dug sediment traps at the ends. Silt fencing and mulch-filled socks were in place to retain any sediment escaping from the primary control structures. (Figure 4)

Silt fence in photo failed and has been “reconstructed”, but still actively failing. Standing in approximate centerline , looking eastward toward highly sloping double bench system, and away from SGT.

Looking westward toward SGT. Failed mulch socks and silt fencing. Note thick gravel layer placed to fill and hide pooling mud between silt fence and SGT, is not effective in slowing sediment loss. Besides BMP failure, sediments are clearly entering 1) an Aquatic Resource Buffer, 2) a State Road, 3) a

Stream coming from springs above the site is clear. Sediment above escaped the construction zone. Note position of cement water trough here and photo at left.

Figure 4: Work site pictures described previously in section A.

B. Sediment flow continues moving northward down SGT toward Sinking Creek 2300 feet away (map length). Sediment load actually increases as dried mud layers below gravel are wetted and detach. Again, these photos are taken after MVP crews left the site on Friday afternoon, over 30 “working” hours after the last significant rainfall ended early Thursday

morning. (Figures 5-8)

Ineffective silt fence and mulch socks allowing sediment to move into SGT.

Ineffective gravel placement – now protecting stream crossing to left, but sediment is being channeled to the right side of the road channeled into a recently dug ditch to move it offsite. No BMPs in place here to reduce sediment load within the ditch

Recently installed ditch for moving sediment off worksite. Unfortunately, ditch is (purposefully) connected to a culvert intended to drain water from grassed bank (with no erosion). Now sediment entering culvert moves directly, with no BMPs in place, into the stream. Culvert is at the far end of this photo

C. Another significant failure across the road. This one is pouring sediment off the LOD, into the stream and into SR 642 – SGT.

Figure 5: Work site pictures described previously in section B.

D. The ditch and culvert are still not stopping sediment flow down SGT. This photo at 7:12 am 05 Aug, over 24 hr after last significant rain on Thur, and before MVP Crews begin "cleanup". Why the strange diversion? This is where MVP traffic destroyed the stream bank.

This is 05 Aug at 13:15 hr Friday. After crew departure, a gravel truck arrives and delivers a last load of gravel to the worksite. Note that the road is still receiving copious amounts of sediment and they enter the stream at the damaged streambank.

This is 05 Aug at 15:08 hr. Sediment is still still entering stream at damaged bank.

Where does it go from here?

E. These photos taken 05 Aug shortly after 15:00 hr

Where does it go from here? Sediment laden water crosses under SGT just beyond mailbox in the distance, then back under SGT through a culvert

Figure 6: Work site pictures described previously in section B.

Figure 7: Work site pictures described previously in section B.

Figure 8: Work site pictures described previously in section B.

Case Study 2: Flora Property, Cahas Mountain Road - Franklin County Virginia

The first major impact to this location was on May 18, 2018 when a mudslide occurred on a 23% slope causing major impact to Little Creek. Approximately one foot of mud covered Cahas Mountain Road. Precision Pipeline, the MVP contractor constructing the pipeline, attempted to repair and mitigate the damage by shoveling the mud upstream to the roadside ditch, which then flowed to an existing culvert under Cahas Mountain Road and into Little Creek. During successive rain events, additional mud impacted Little Creek. See figures 9-12 for graphics explaining the mudslide event and flow path. Violations reported at this location show a series of repeated BMP failures and inadequate construction entrance on Cahas Mountain Road.

Cahas Mountain slopes are 23%, significantly less than what will be experienced in the North and South Fork Roanoke River watersheds which are in excess of 82.4% above crossing S-C21 (MP 230.7) Bradshaw Creek; 67% and 88.8% slopes in the Sawmill Hollow-Roanoke River watershed impacting S-NN16 (MP 235.4) Roanoke River; as well as 71.1% slopes in Brake Branch-South Fork Roanoke River that will directly impact the sections of the Roanoke River that serve the largest populations. Traditional erosion control practices are not effective on construction sites exceeding greater than 15% slopes with slope lengths of 75 feet or greater. MVP project site erosion controls were and will continue to be overwhelmed. (D'Ardenne, D. 2018)

Figure 9: Cahas Mountain Road mudslide site showing location of sediment entry to Little Creek through an existing culvert beneath road.

Figure 10: Potential violation reported - May 13, 2018

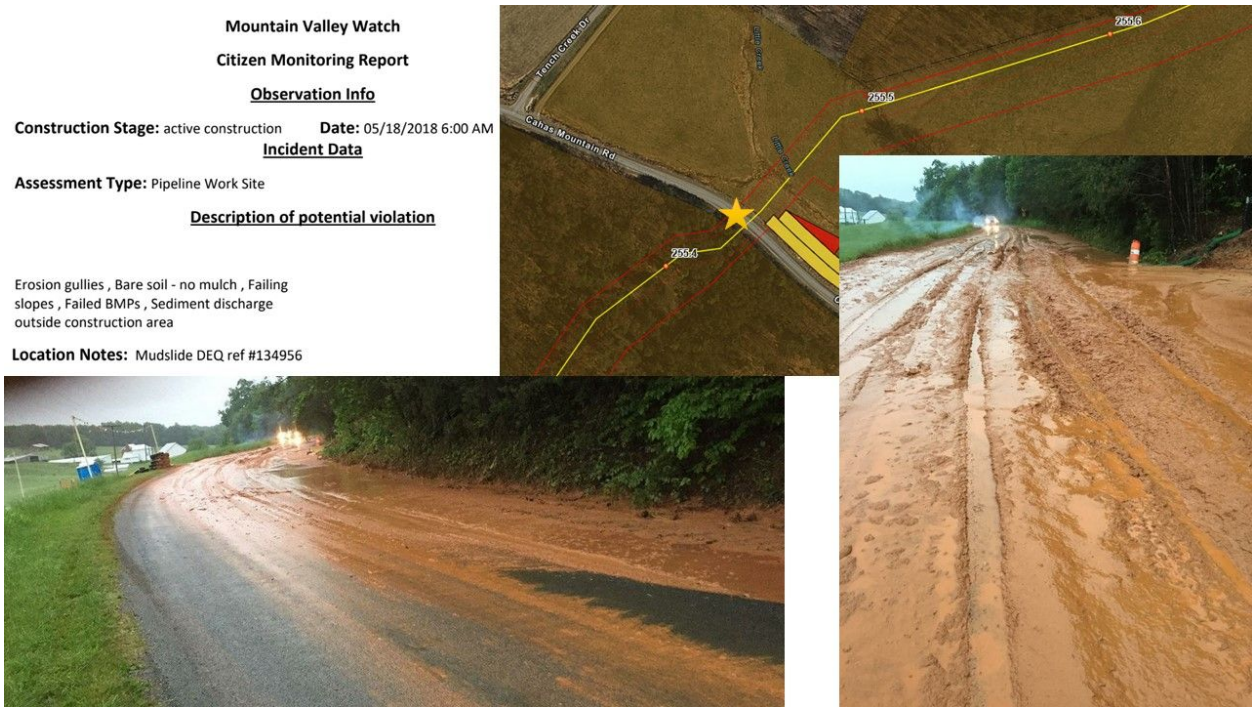


Figure 11: Potential violation reported - May 18, 2018

Mountain Valley Watch

Citizen Monitoring Report

Observation Info

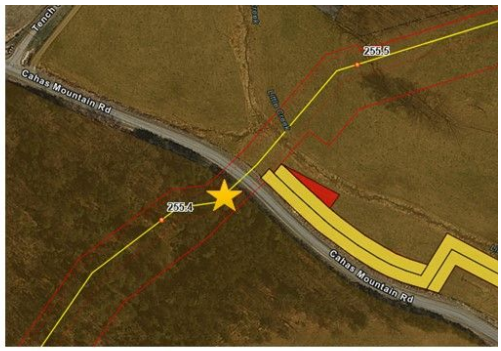
Construction Stage: active construction **Date:** 06/13/2018 8:00 PM

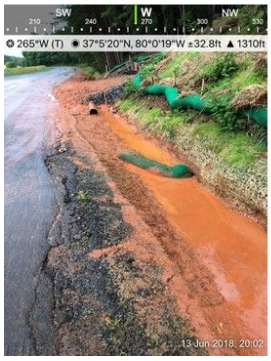
Incident Data

Assessment Type: Access Road

Description of potential violation

Lack of gravel , Mud or sediment on main road





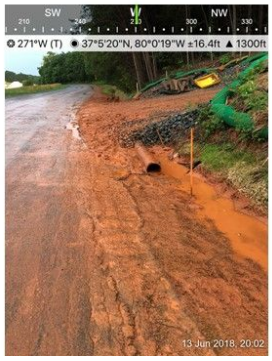


Figure 12: Potential violation reported - June 13, 2018

Case Study 3: Bernard Property, Grassy Hill Road - Franklin County Virginia

The recurrent failures at this location adversely impact the floodplain adjacent to the Bernard residence, including Teels Creek. USACE NWP12, General Condition 12 mandates, “Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction.” Figures 13-15 below show a time series of repeated failures of the stream bank on Teels Creek. The silt fence was installed too close to the creek. When it rained, runoff from the large contributing drainage area accumulated at the low point of the construction corridor adjacent to the creek. The weight of water being held back by the silt fence created a piping effect, undermining the silt fence. The resultant gully became larger with every rain event and repair attempt. Sediment flowed freely into Teels Creek on several occasions.

Mountain Valley Watch

Citizen Monitoring Report

Observation Info

Construction Stage: active construction **Date:** 5/19/2018 12:30 PM

Incident Data

Assessment Type: Pipeline Work Site

Description of potential violation

Construction Site Conditions

- **evidence of sediment leaving the construction site**
- **evidence of flooding at the site**
- **evidence of erosion at the site**

Silt Fence Conditions

- **fence is damaged, collapsed, un-entrenched or otherwise ineffective**
- **sediment has not been removed per maintenance requirements**
- **silt fence not properly located and installed**

Figure 13: Potential violations reported - May 19 - 21, 2018

Figure 14: Potential violations reported - May 26 - 27, 2018

Figure 15: Potential violations reported - June 10, 2018 and August 3, 2018

Case Study 4: Frith Property, Wildwood Road - Franklin County Virginia

Temporary right-of-way diversions (RWD) were not properly installed. Per Std & Spec 3.11 of the Virginia Erosion and Sediment Control Handbook, 3rd edition, minimum allowable height of RWD is 18", 6' minimum width, shall be constructed of compacted soil, must have a stabilized outlet and immediately stabilized per Minimum Standard (MS) 5.

RWDs in this section have been breached repeatedly due to improper installation on steep slopes and recent rains. RWDs do not meet the minimum size requirements, are not properly compacted, are not stabilized nor do they have a stabilized outlet.

Holes were excavated by the contractor at the discharge point of each RWD to trap runoff which are not properly sized for the contributing drainage area; do not provide a stabilized outlet; discharge directly to silt fence which is installed perpendicular to the contour, resulting in gully erosion. Per MS-19, 'concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel.' The trenches in this section have filled with sediment causing the RWDs to breach, consequently overtaking ESC measures downgrade and impacting downstream properties and waterways.

See figures 16 and 17 for potential violations reported on May 18, 2018 and May 28, 2018.

Mountain Valley Watch

Citizen Monitoring Report

Observation Info

Construction Stage: active construction **Date:** 05/18/2018 7:46 PM

Incident Data

Assessment Type: Pipeline Work Site

Description of potential violation

Bare soil - no mulch , Failed BMPs , Sediment discharge outside construction area

Location Notes: 580 Wildwood Rd, Boones Mill, VA

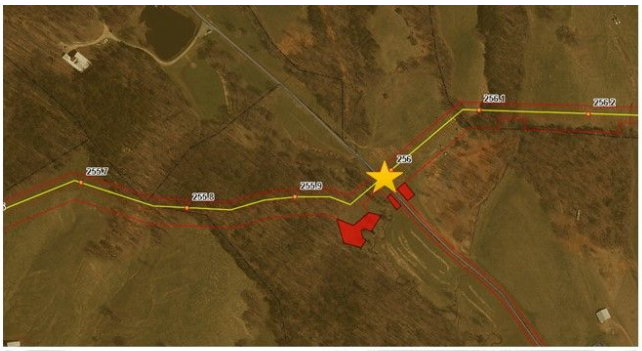


Figure 16: Potential violations reported May 18, 2018

Mountain Valley Watch

Citizen Monitoring Report

Observation Info

Construction Stage: active construction **Date:** 05/28/2018 7:46 PM

Incident Data

Assessment Type: Pipeline Work Site

Description of potential violation

Bare soil - no mulch , Failed BMPs , Sediment discharge outside construction area

Location Notes: 580 Wildwood Rd, Boones Mill, VA

Figure 17: Potential violations reported May 28, 2018

Case Study 5: Dillons Mill & Adney Gap - Franklin County Virginia

Temporary right-of-way diversions (RWD) were not properly installed. Per Std & Spec 3.11 of the Virginia Erosion Control Handbook. Violation reported - June 10, 2018

Figure 18: Violations reported - June 10, 2018

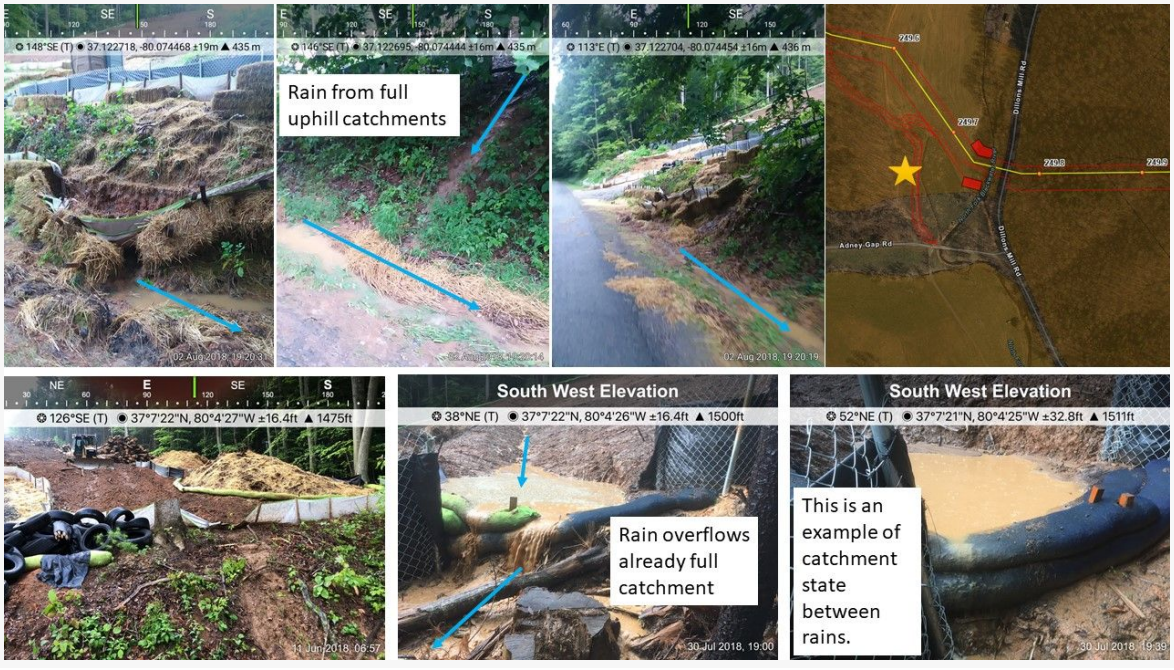


Figure 19: Violations reported - June 10, 2018 and August 3, 2018

Case Study 6: Blue Ridge Parkway - Roanoke County Virginia

The perched aquifer has been breached at the Blue Ridge Parkway crossing. During both rain events and dry periods, the pipe beneath Route 221 and the Blue Ridge Parkway has been submerged in groundwater that continues to pool in the trench. This perched aquifer is the groundwater for the Bent Mountain community, and feeds residents' wells — their only source of drinking water. Pamela Dodds, an expert hydrogeologist, prepared a report on the perched aquifer of Bent Mountain in which she stated that "deforestation, soil compaction, and dewatering [during pipeline construction] will permanently deplete groundwater flow, especially groundwater flow through perched aquifers in the Mill Creek watershed to seeps and springs that provide water to wetlands, headwater areas, stream baseflow, and residential wells, and will permanently reduce the groundwater hydraulic gradient." (Dodds, P.C. 2017) See figures 20 and 21 for location of the Blue Ridge Parkway crossing, pictures of groundwater in the trench, and an aerial photo showing sedimentation of source water point for Mill Creek.

Figure 20: Images from Rt. 221 and Blue RIdge Parkway crossings in Roanoke County in July 2018

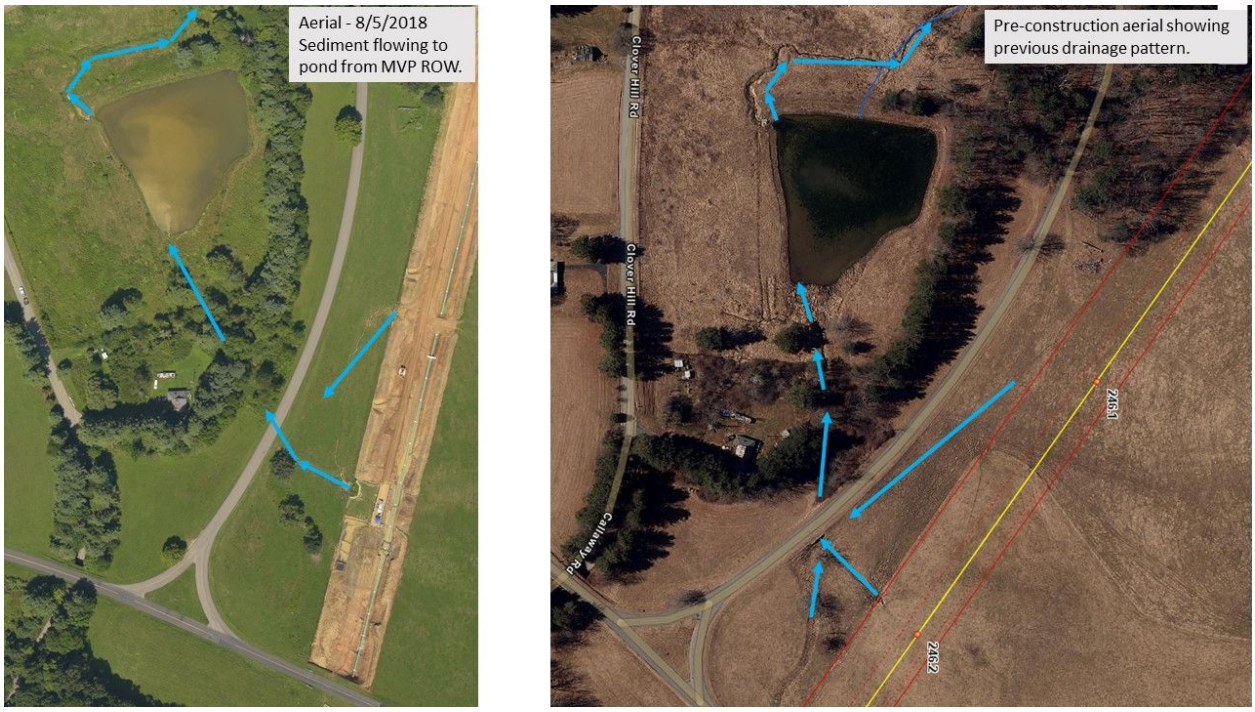


Figure 21: Aerial image from 8/5/2018 (left) and a pre-construction aerial (right) show drainage and sediment impacts from MVP construction ROW to neighboring pond.

Case Study 7: Parsons-Sink property, Catawba - Montgomery County Virginia

Sedimentation impacts to springs in Catawba have been recorded since construction began on the MVP. Previous dye traces by the Department of Conservation and Recreation have connected the area on Johnson Ridge as shown in figures 22 and 23. Springs in this area provide drinking water to three residences.

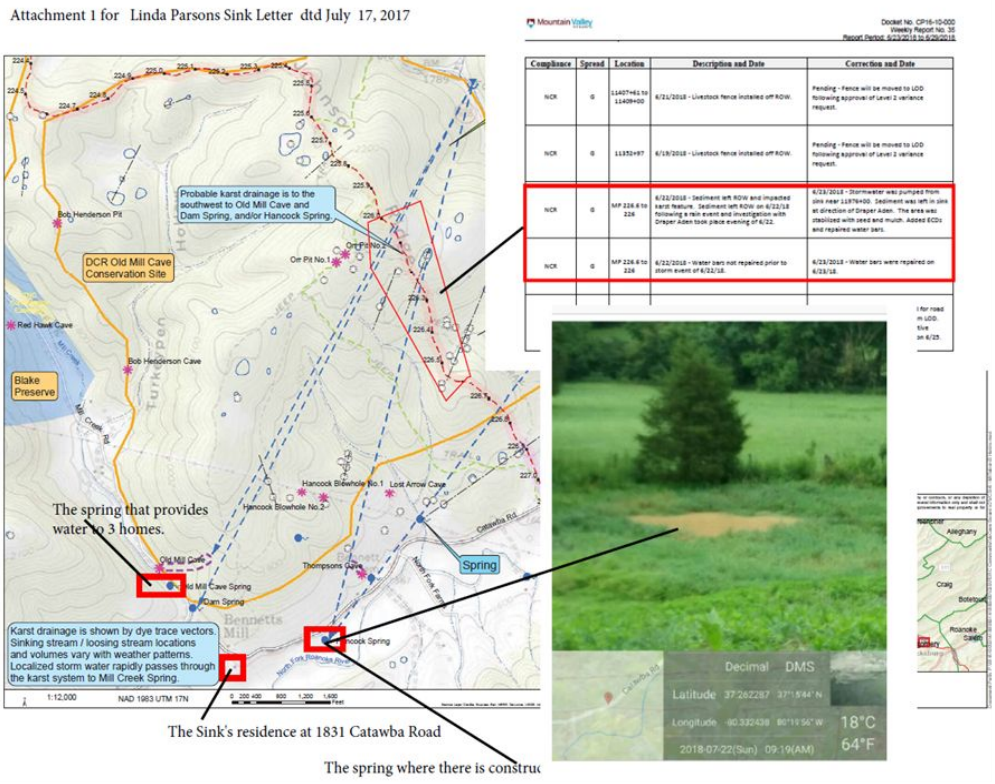


Figure 22: Dye trace by DCR shows connections from Dry Run to Sink property and springs. Figure from Sink letter dated July 17, 2017.

Compliance	Spread	Location	Description and Date	Correction and Date
NCR	G	11407+61 to 11409+00	6/21/2018 - Livestock fence installed off ROW.	Pending - Fence will be moved to LOD following approval of Level 2 variance request.
NCR	G	11352+97	6/19/2018 - Livestock fence installed off ROW.	Pending - Fence will be moved to LOD following approval of Level 2 variance request.
NCR	G	MP 226.6 to 226	6/22/2018 - Sediment left ROW and impacted karst feature. Sediment left ROW on 6/22/18 following a rain event and investigation with Draper Aden took place evening of 6/22.	6/23/2018 - Stormwater was pumped from sink near 11976+00. Sediment was left in sink at direction of Draper Aden. The area was stabilized with seed and mulch. Added ECDs and repaired water bars.
NCR	G	MP 226.6 to 226	6/22/2018 - Water bars not repaired prior to storm event of 6/22/18.	6/23/2018 - Water bars were repaired on 6/23/18.
PAR	G	11767+15 to 11767+44	6/22/2018 - Turbid stormwater and fine sediment traveled from ROW to roadside ditch depositing in RCE of MLV 26 with turbid water entering S-IJS2. Stormwater event occurred on 6/22/18.	6/22/2018 - Sediment was removed for road side ditch that could be reached from LOD. Stone was refreshed at RCE. Corrective action started 6/22 and completed on 6/25.

Figure 23: Zoomed view of highlighted table from figure 22. From sink letter dated July 17, 2017.

Photos in figure 24 show no erosion control devices installed on steep slopes after clearing of right of way. The North Fork Roanoke River crossing is below this slope. Downstream is habitat for endangered Logperch. Recent rain caused heavy sediment loading from construction in this location.

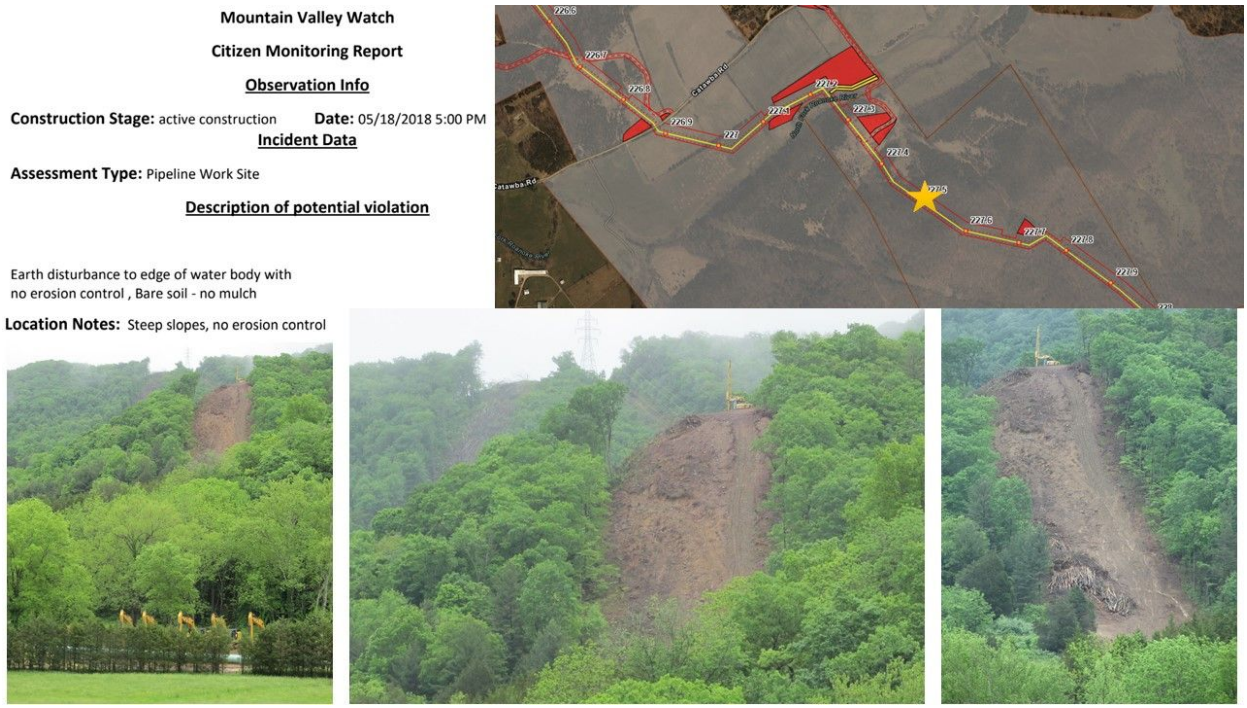


Figure 24: *Images from incident reported on Paris Mountain May 15, 2018*
No E&S controls; Logperch habitat impacted.

Case Study 8: Dyer, Jones, Powell, Slayton, & Triplett Properties

Brush Mountain - Montgomery County Virginia

Multiple failures along steep slopes that drain to the Slusser's Chapel Conservation area. Reported violations for SMN21 and map of SMN22 are shown below. Over the course of construction, there have been multiple major observed incidents on the Slayton, Powell, and Jones properties on Brush Mountain in the Slusser's Chapel Conservation area. The first set of violations shown below, reported to MVW June 22 and 23, 2018, included significant silt fence and compost filter sock failure that resulted in sedimentation leaving MVP's work site and entering streams SMN21 and SMN22.

Mountain Valley Watch

Citizen Monitoring Report

Observation Info

Construction Stage: active construction **Date:** 06/22/2018 9:30 PM

Incident Data

Assessment Type: Pipeline Work Site

Description of potential violation

Construction Site Conditions
- **evidence of sediment leaving the construction site**
- **evidence of flooding at the site**
- **evidence of structural damage at the site**
- **evidence of erosion at the site**
- **ROW diversions are not installed or functioning properly**

Silt Fence Conditions
- **fence is damaged, collapsed, un-entrenched or otherwise ineffective**
- **sediment has not been removed per maintenance requirements**
- **silt fence not properly located and installed**

Mulching Area Conditions
- **mulch not distributed uniformly on all disturbed areas**
- **mulch not applied at an adequate rate**

Location Info

Lat: 37.29698 Lon: -80.38653

Figure 25: Images from incident reported on June 22, 2018. SMN-21 impacted.

Mountain Valley Watch

Citizen Monitoring Report

Observation Info

Construction Stage: active construction **Date:** 06/22/2018 8:45 PM

Incident Data

Assessment Type: Pipeline Work Site

Description of potential violation

Construction Site Conditions
- **evidence of sediment leaving the construction site**
- **evidence of flooding at the site**
- **evidence of erosion at the site**

Silt Fence Conditions
- **fence is damaged, collapsed, un-entrenched or otherwise ineffective**
- **sediment has not been removed per maintenance requirements**
- **silt fence not properly located and installed**

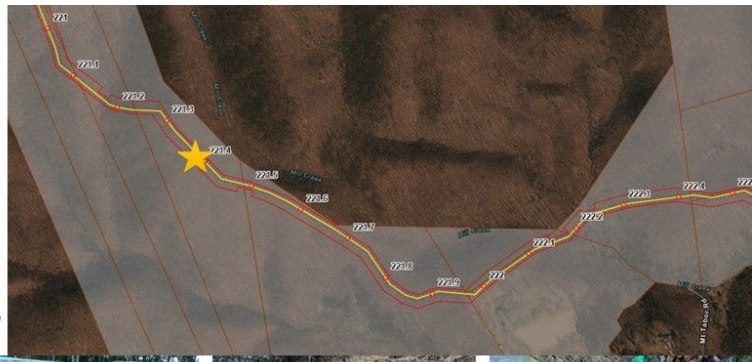


Figure 26: Images from incident reported on June 22, 2018. SMN-21 impacted.

Mountain Valley Watch

Citizen Monitoring Report

Observation Info

Construction Stage: active construction **Date:** 06/22/2018 8:45 PM

Incident Data

Assessment Type: Pipeline Work Site

Description of potential violation

Construction Site Conditions
- **evidence of sediment leaving the construction site**
- **evidence of flooding at the site**
- **evidence of erosion at the site**

Silt Fence Conditions
- **fence is damaged, collapsed, un-entrenched or otherwise ineffective**
- **sediment has not been removed per maintenance requirements**

Mulching Area Conditions
- **mulch not distributed uniformly on all disturbed areas**
- **mulch not applied at an adequate rate**

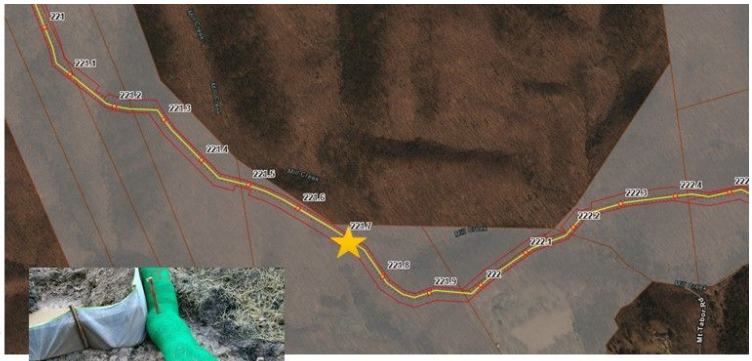


Figure 27: Photos from June 22, 2018 reported incidents on Slayton property

Figure 28: Photos from June 23, 2018 reported incident on Powell property

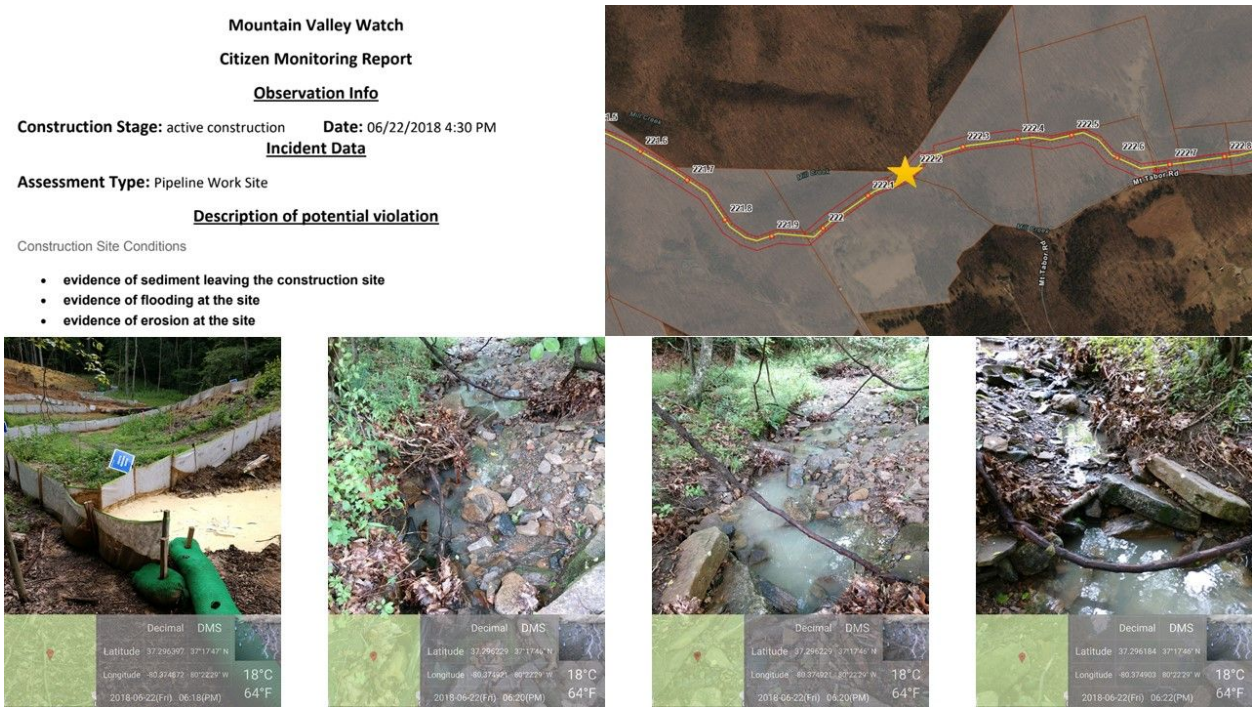


Figure 29: Photos from June 22, 2018 reported incident on Triplett property

Failures in the area continued to June 26, 2018 on the Dyer property, shown in three photos below where sediment is leaving MVP's construction right of way.

Despite DEQ's issuance of a Notice of Violation July 9, 2018 and MVP's subsequent voluntary stop work to repair ESC measures, the Slusser's Chapel Conservation area continued to see erosion and sediment control incidents, with additional ESC failures reported on the Dyer property July 17 and July 22, and on the Slayton property July 22, 2018. The images shown below are from those reports. One image from the reported incident on the Slayton property shows the stream bed clogged with mud as a result of repeated failures.

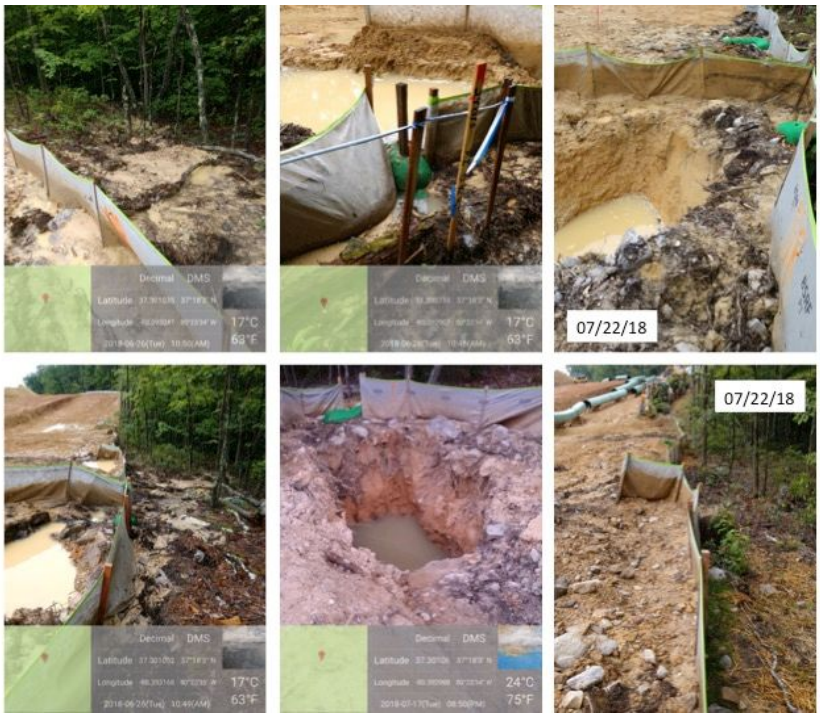


Figure 30: Photos from June 26, July 17, and July 22, 2018 reported incidents on Dyer property

Figure 31: Photos from July 22, 2018 reported incident on Slayton property

Case Study 9: Historic Newport - Giles County Virginia

This is the first major failure observed in Historic Newport Virginia. This is the pattern for future rain events and impacts to Sinking Creek. See images of potential violation below. The drainage area for stormwater runoff includes a portion of an access road and a large area from the MVP right of way. Overwhelmed outlet structures at the discharge point of diversion bars cause rain water to create new runoff gullies adjacent to the ROW. Runoff from the access road combines with ROW runoff and result in the sedimentation shown in figure 32. A snapshot of the USGS water quality gauge, figure 33, located 1.71 miles downstream in Sinking Creek indicates a large spike in sediment loading on August 2, 2018.

Figure 32: Photos from August 2, 2018 reported incident in Historic Newport.

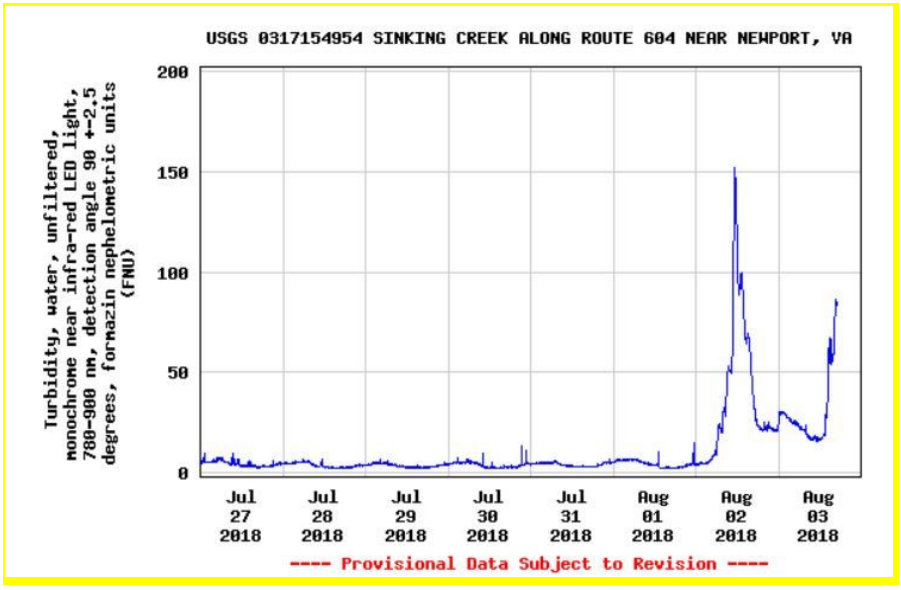


Figure 33: USGS water quality gauge located 1.71 miles downstream in Sinking Creek

Case Study 10: Gallagher Property - Giles County Virginia

Three major failures have occurred at the Gallagher property. Grading for an access road redirected runoff toward the house and chicken coop. Both the chicken coop and basement of the house were flooded. Figures 34-36 illustrate the resulting damage.

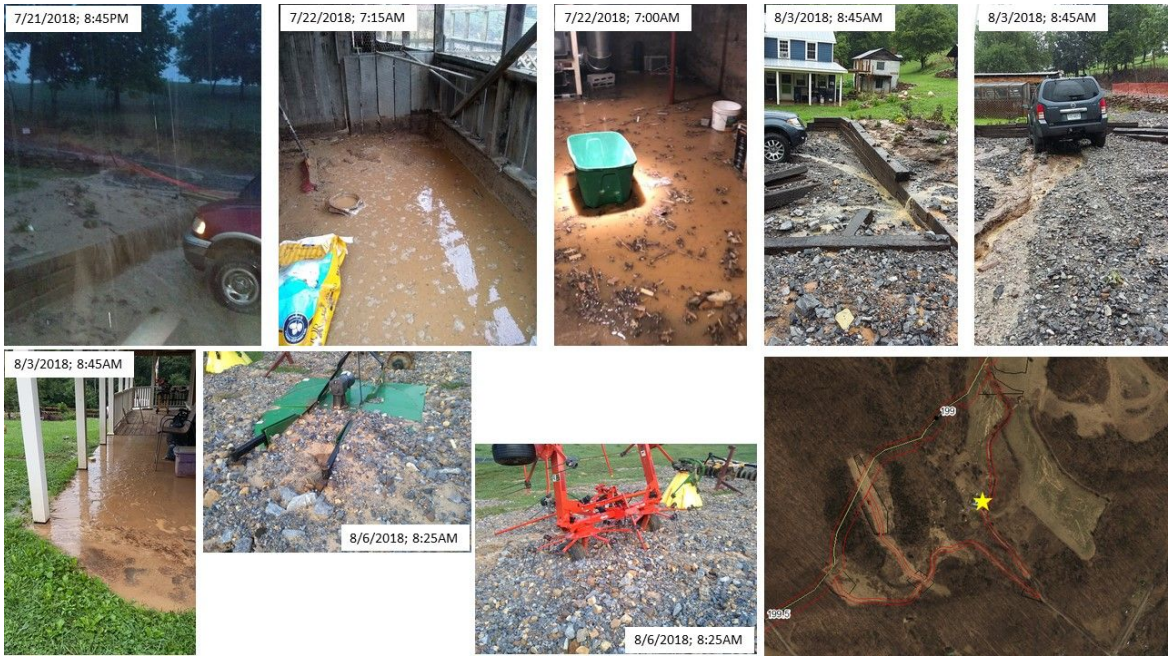


Figure 34: Location and time series of rain events on Gallagher property.

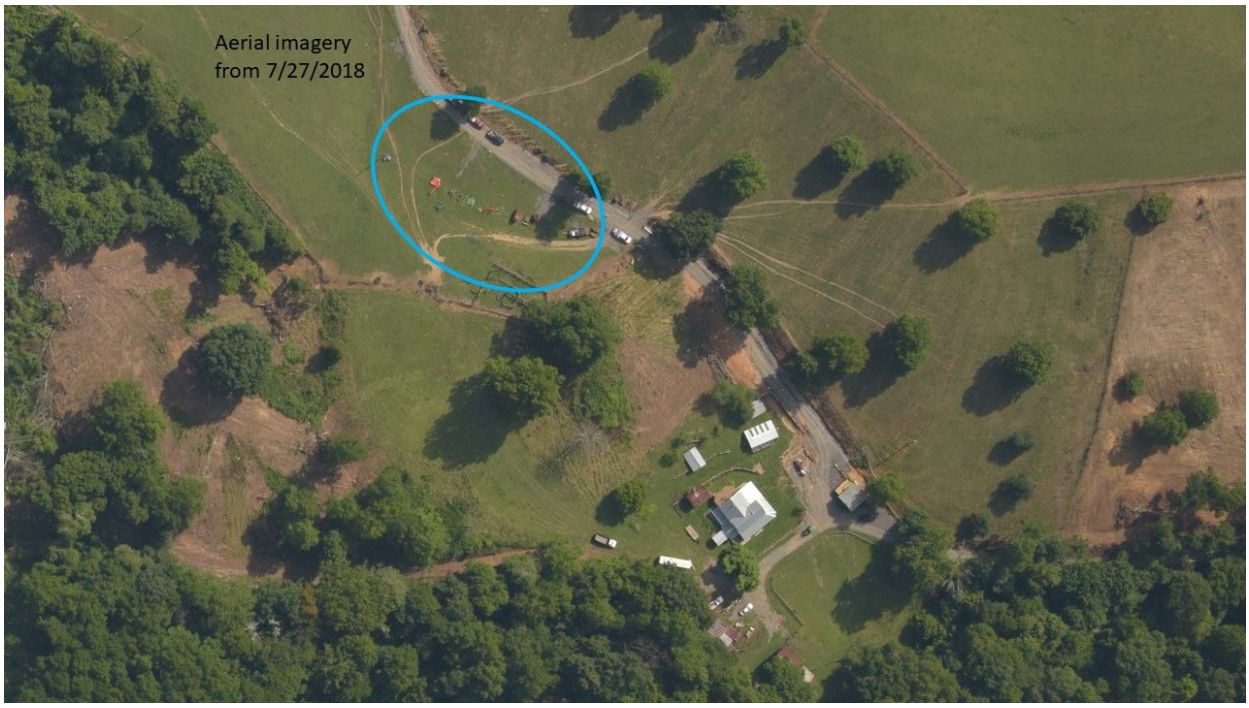


Figure 35: Aerial imagery from July 27, 2018

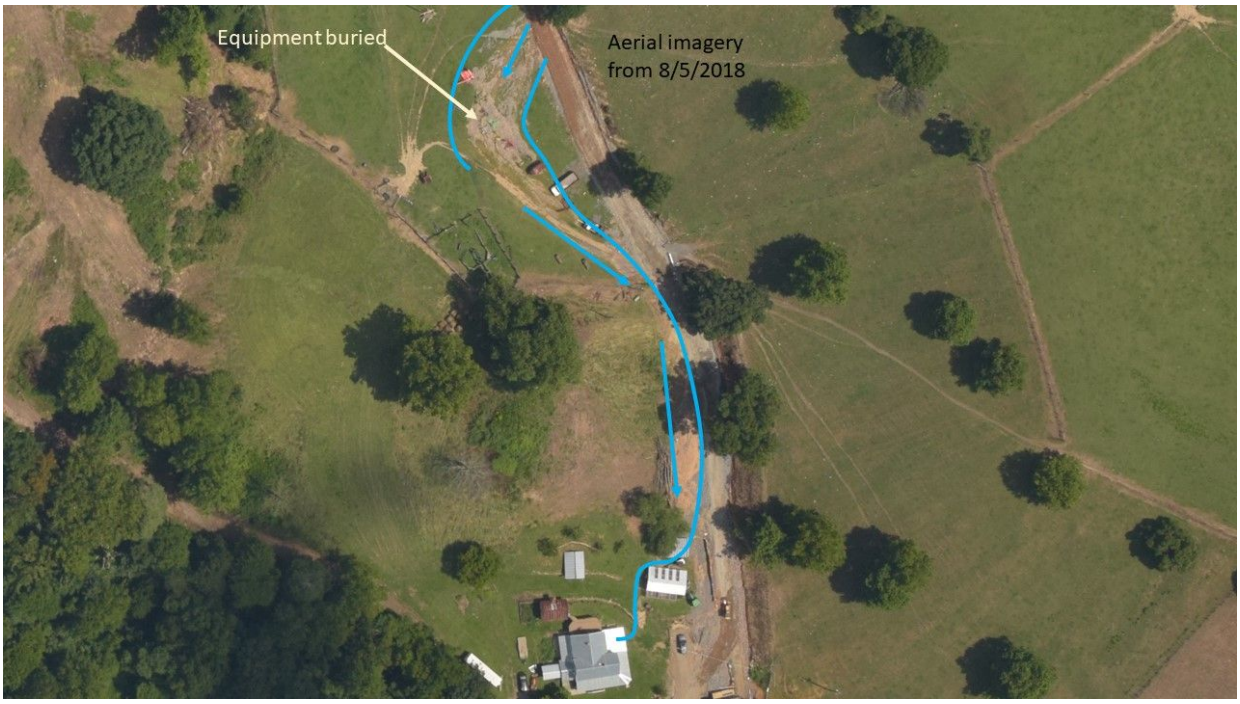


Figure 36: Aerial image from August 5, 2018 flight showing buried farm equipment and flow path at the Gallagher property.

Part II: Relative Effectiveness of BMP
Literature reviews of Peer Reviewed Publications

Evidence of the peril posed by construction of large gas pipelines, through the Valley-and-Ridge, Blue Ridge, and Piedmont physiographic provinces, is found in the extant literature - a multitude of studies on the efficacy of BMPs published in refereed academic journals. It address most aspects and types of BMPs though there is relatively little research providing quantitative indicators of the efficacy for specific E&S control devices. Much of this research is addressed in recent literature reviews (Cristan et al., 2016; Anderson and Lockaby, 2011; Edwards, and Williard, 2010; Aust and Blinn, 2004). Reports typically are organized by physiographic regions; for example: coastal plain, piedmont, and mountainous.

In general, BMPs have proven to be effective (when compared with prior practices) for reducing adverse effect, while being practical and cost effective, *if* they are properly installed and maintained (Aust et al., 2016). - conditions too often visibly unfilled by Precision Pipeline.

However, the efficacy of a properly deployed BMP depends on a number of conditions, in addition to region: the type of device (e.g., silt fences, composite socks, diversion bars, check dams, stream management zones), type of disturbance (e.g., timber harvesting, road construction, skid trails and pipelines), local conditions (e.g., stream and wetland crossing, steep slopes, poor soils) and weather (rainfall). Findings from research in any one instance do not necessarily apply to another.

We limit our review to published research on the efficacy of BMP for heavily land disturbing activities in the Valley-and-Ridge region. Two earlier submission to the DEQ and the WCB - "The Scientific Consensus on the Threats Posed by Large Gas Pipelines to Virginia Waters: Compound Geo-Hazards" (Shingles, 2017, FERC #20170808-5015) and "Analysis of Geo-Hazards at Specific Water Crossings in Giles County Virginia" (Shingles and Shelton, 2018), detail the perils to *subsurface* waters in this karst laden region and the significance of the SWCB failure to include karst in its guidelines for the 30 day public comment period last Spring. There is no need to repeat that information. Here the focus is on the challenges posed to BMPs by *mountainous terrain.* Given the innately practical nature of BMPs, the pertinent questions addressed are: (1) How effective are BMP when properly installed and maintained? and (2) What are their limitations in the mountainous Valley-and-Ridge Region"?

The effects of stormwater runoff on erosion and sedimentation is greatest in mountain region (Austin and Blinn, 2004) where, normally dry intermittent streams that drain upland watersheds during heavy rains and ground saturation produce flash floods that reach sufficient velocity with increasing gradient to scour and move large amounts of soil, litter and fine debris downstream, adversely impacting perennial trout streams and ultimately larger bodies of water and wetlands (see watershed map below). Steeper slopes increase velocity and greater downpour and saturation increases volume, producing ever greater force and the likelihood of overwhelming best practices. The adverse impacts can take a very long time to dissipate (measured in months and years). A 16 years study of disturbed

forest watersheds, due to tree harvesting and road construction in the Blue Ridge Mountains of North Carolina, which was coterminous with a period of intense rainfall, resulted in "significant increase in stream sediment" with long term adverse impacts (Austin and Blinn, 2004: 14).

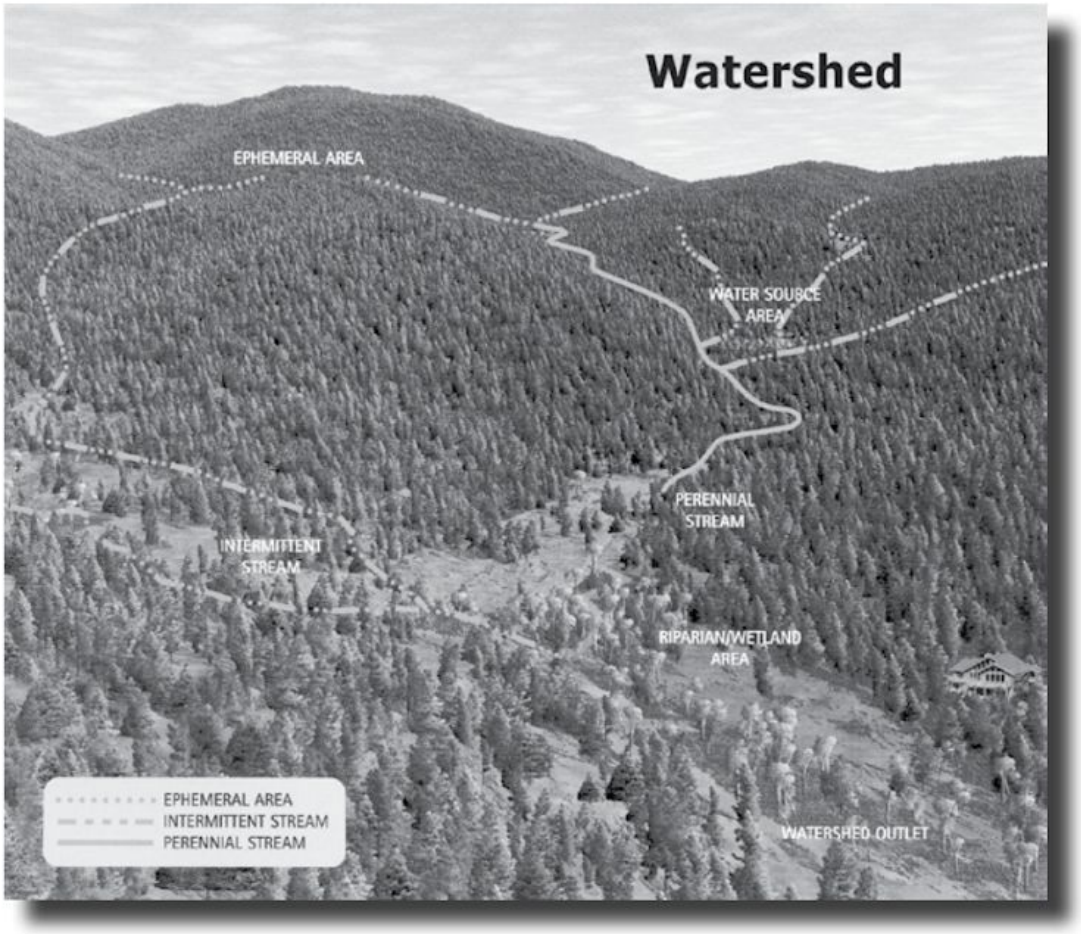


Figure 37: Watershed graphic from Forestry Best Management Practices for Water Quality (VDF, 2011)

The use of heavy mechanized equipment, of the type used in buried pipeline construction, on ridge tops and slopes with poor soils (e.g., high plasticity, poor drainage, shrink-swell potential and low bearing strength) creates widespread and severe soil disturbance, soil exacerbating erosion and sediment loading. (Anderson, 2011; Martin, C. W. and Hornbeck, J. W.: 1994; Hodges, 2016).

Stream order and spatial scale also effect BMP efficacy. "At the headwaters, ephemeral streams may be highly variable and much more responsive to surrounding conditions than larger watersheds." (Anderson, 2011: 173).

In mountain terrain all these factor often occur together. "Because of the *combination* of steep slopes, erodible soils, and wide expanse, the Piedmont region has been referred to as the most problematic physiographic area in the Southeast in terms of BMP effectiveness [emphasis added]" (Anderson, 2011: 173 citing Williams et al. 2000).

Aust and Blinn find from their review of research that, with properly installed and maintained BMPs, the quantities of sediment introduced into streams tend to be "relatively low" and "acceptable" for alternative land use. (Aust and Blinn, 2004). However, BMPs may significantly minimize runoff on steep gradients and *still* fail to sufficiently protect water resources. For example, in one such study, total suspension solids (TSS) flux were found to increase 30-fold during timber harvests on 45% slopes with no BMP, but also increased 14-fold on areas with BMP compared with a control (Arthur et al., 1998). The challenge to best practices applied on steep slopes increases with the level of disruptive activity, extent of poor soils and amount of precipitation.

Two other studies (Sawyers et al., 2012, and Wade et al., 2012) conducted in the Virginia Piedmont, found the use of water bars designed to curtail erosion and sedimentation on steep slopes with overland skid trails were only modestly effective when not coupled with other erosion and control devices, mulch, hardwood or pine slash (Sawyers et al., 2012; Wade et al., 2012).

A study of the efficacy of diverter berms to control runoff on steep slopes found they failed "to prevent extensive rill and gully erosion, leading the authors to conclude that the available empirical methods were so impractical that they could not be used "with safety" for storms with a 10-year return period (Morgan et al., 2003).

Devices for diverting storm water from LODs are successful in creating new flow paths of sediment delivery into the forest. If not done carefully, effectively reducing flow in the LOD may solve one problem at the expense of creating another by directing sediment into highland tributaries. Best Practices require that this be avoided by protecting the outlet point with gravel or thick vegetation to reduce velocity and dissipate flow and by locating the LOD far enough from natural water courses (tributaries and wetlands) for the storm water to spread out and infiltrate the forest floor (Trimble and Sartz, 1957). However, as reported above, with Mountain Valley Pipeline construction, MVW has identified numerous locations where mud nevertheless overran the breakers and created new erosion gullies impacting natural water sources.

Improper siting of diversion bars and insufficient outlet control structures are not the only practice by Mountain Valley that do not conform with best practices. Precision Pipeline regularly installs silt fence at the toe of cleared slopes just before stream crossings, a practice best *avoided* according to one study (Wear et al., 2013). Other research indicate the best practice is the creation of Stream Management Zones (Anderson and Lockaby, 2011).

Conclusion:

It is imperative that DEQ and the WCB reconsider the Nationwide Permit 12 and its certification that construction of the MVP does not pose an imminent, significant threat to Virginia Water. To the contrary, that premise is no longer (if it ever was) supportable by the facts. This report provides further evidence that the BMPs specified for use by Mountain Valley during construction are not adequate to protect Virginia's water quality from sediment loading.

Karst References:

Dodds, P.C. 2017. Hydrogeological Assessment of the Proposed Mountain Valley Pipeline Construction Impacts to Mill Creek, Bent Mountain Area, Roanoke, Virginia (FERC Accession No. 20170622-5028).

Dodds, P. C. 2017. Objections to the Draft Record Of Decision for the Mountain Valley Project Land and Resource Management Plan Amendment for the Jefferson National Forest, Monroe County, West Virginia And Giles And Montgomery Counties, Virginia (FERC Accession No. 20170731-5067). The full report with references is Accession No. 20170807-5080.

Kastning, E. An Expert Report on Geological Hazards in the Karst Regions of Virginia and West Virginia: Investigations and Analysis Concerning the Proposed Mountain Valley Gas Pipeline (FERC Accession No. 2016713-5029).

Groves, C. 2016. Karst Landscapes and Aquifers of the Central Appalachian Mountains and Implications for the Proposed Mountain Valley Pipeline (FERC Accession No. 20161223-5058).

Rubin, P. 2016. Expert Report of Paul A. Rubin on behalf of Giles and Roanoke Counties, Virginia (FERC Accession Nos. 20161222-5458 and 20161222-5459).

Shingles, R. (2017) Scientific Consensus on Geo-Hazards to Virginia Waters Posed by Large Gas Pipelines, posted to the FERC 20170808-5015(32327939).

Shingles, R. and Shelton, J. Ma 2018. Analysis of Geo-Hazards at Specific Water Crossings in Giles County Virginia (report to the WCB).

Mountainous Terrain Citations:

Anderson, C.J. and Lockaby, B G. 2011. The Effectiveness of Forestry Best Management Practices for Sediment Control in the Southeastern United States: A Literature Review. *Southern Journal of Applied Forestry*; Nov. 35, 4: 170-177.

Arthur, M.A., Colthrap, and Brown, D.L. 1998. Effects of best management practices on forest streamwater quality in eastern Kentucky. Am.Water&sour, 34:412-417.

Aust, W.M. and Blinn, C.R. 2004. Forestry best management practices for timber harvesting and site preparation in the eastern United States: An overview of water quality and productivity research during the past 20 years (1982-2002). *Water, Air, and Soil Pollution: Focus* 4: 5–36.

Cristan, R., Aust, W.M. Bolding, M.C., Barrett, S.M, Munsell, J.F., Schilling, E. 2016. Effectiveness of forestry best management practices in the United States: Literature review. *Forest Ecology and Management* 360: 133-151.

D'Ardenne, Dwayne D. (Stormwater Utility Manager, City of Roanoke, Roanoke, VA). Letter to: Department of Environmental Quality (Richmond, VA). 2018 June 14. Located here
Edwards, P.J. and Williard, K.W.J. 2010 Management Practices for Reducing Sediment and Nutrient Losses in the Eastern United States, *Journal of Forestry*: (July/Aug) 245-249.
Hodges, S., 2016. Letter and Soils Report to the Federal Energy Regulatory Commission, May FERC Accession # 20161222-5518.

Hornbeck, J. W.: 1994, "Logging in New England need not cause sedimentation of streams," *North. J. Appl. For*. 11 (1), 17–23.

Morgan, R.P.C; Mirtskhoulava, Ts.E; Nadirashvili, V.; Hann, M.J.; Gasca, A.H. 2003. "Spacing of Berms for Erosion Control along Pipeline Rights-of-way." *Biosystems Engineering* 85 (2), 249–259.

Neary, D.G and Michael, J.L 1996. Herbicides-protecting long-term sustainability and water quality in forest ecosystems. *NZJ For. Sci.* 26:241-264.

Trimble, G.R. and Sartz, R.S. 1957. How Far from a Stream Should a Logging Road Be Located? *Journal of Forestry*. May: 339-340).

Sawyers, B., Bolding, M., Aust, W., Lakel, W., 2012. Effectiveness and implementation costs of overland skid trail closure techniques in the Virginia Piedmont. *J. Soil Water Conserv.* 67 (4), 300–310.

Wade, C.R., Bolding, M.C., Aust, W.M., Lakel, W.A., 2012. Comparison of five erosion control techniques for bladed skid trails in Virginia. *South. J. Appl. For*. 36 (4), 191–197.

Wear, L.R., Aust, W.M., Bolding, M.C., Strahm, B.D., Dolloff, C.A. 2013. "Effectiveness of best management practices for sediment reduction at operational forest stream crossings." *Forest Ecology and Management* 289: 551–561.

Appendix F

Mountain Valley Watch

December Report
2018

Introduction

In our August report we compiled a number of case studies and examples from the most egregious violations. Since that report we have continued to compile citizen monitor surveys using Survey123. Additionally we have volunteers collecting aerial data through drones and piloted aircraft. An aerial image review process is now in place to process any flight data that is recorded. As volunteers get more comfortable with evaluating aerial images, we will submit these on a more regular basis.

Monthly Citizen Reports

Since our previous report to the Water Control Board, a total of 165 citizen submissions have been compiled in our database as of 12/5/2018. Volunteers have consistently documented overwhelmed erosion and sediment control devices throughout every county in Virginia. Figure 1 shows incidents reported in the Mountain Valley Watch Dashboard from 8/14/2018 - 12/5/2018.

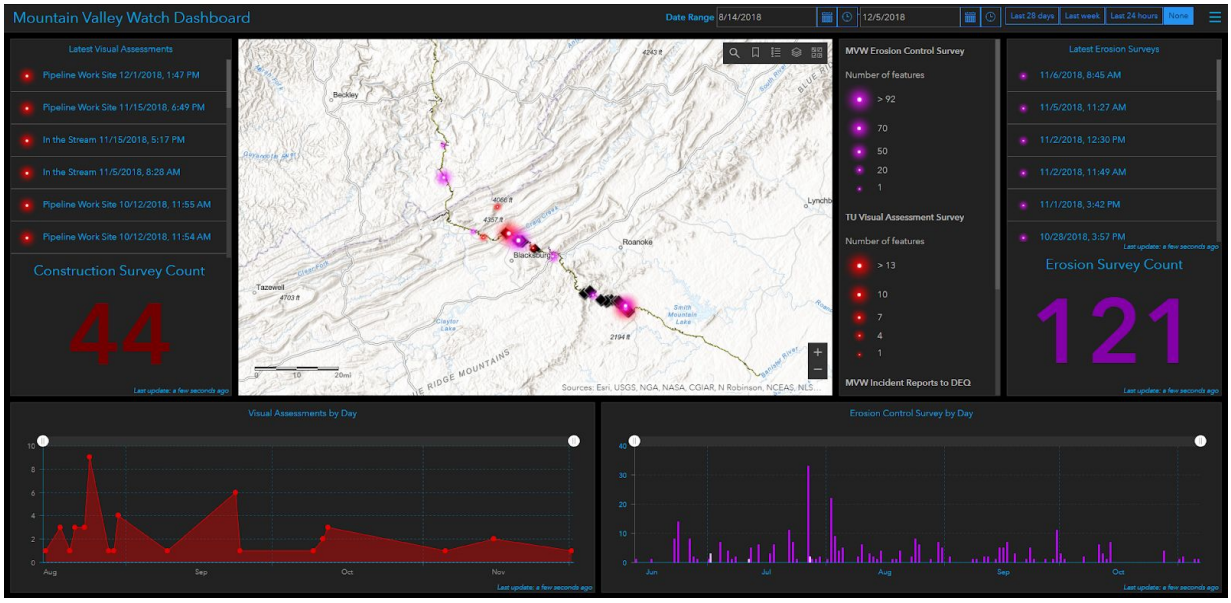


Figure 1: Data dashboard showing citizen survey submissions from 8/14 - 12/05/2018.

Highlighted Recurrences

A review of areas having recurrent issues shows locations continue to see erosion and sedimentation issues. Piloted flights on September 18th, October 12th, and November 11th reveal a number of incidents. The next sections will highlight specific locations along the route, sometimes with additional field support pictures to give a more complete overview of the potential incidents observed.

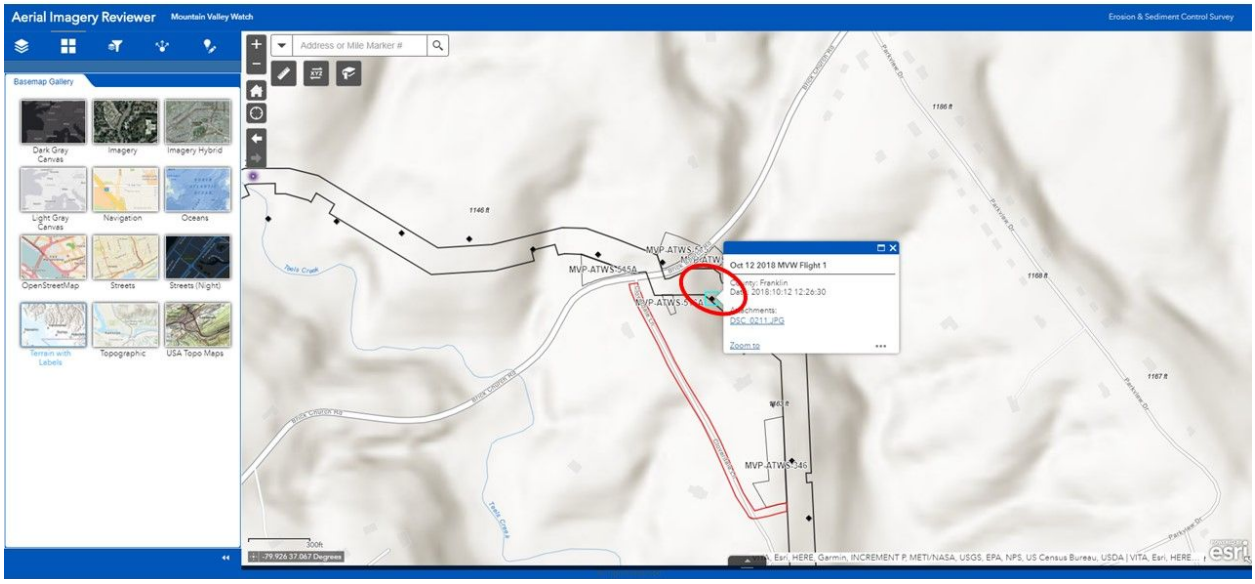


Figure 2: Brick Church Road crossing in Franklin County Virginia.

Figure 3: Image from 10/12/2018 shows E&S issues in area identified by red circle.

Figure 4: A closer view.

Figure 5: Ground support images. Pallets and plywood sheeting used as sediment barriers.

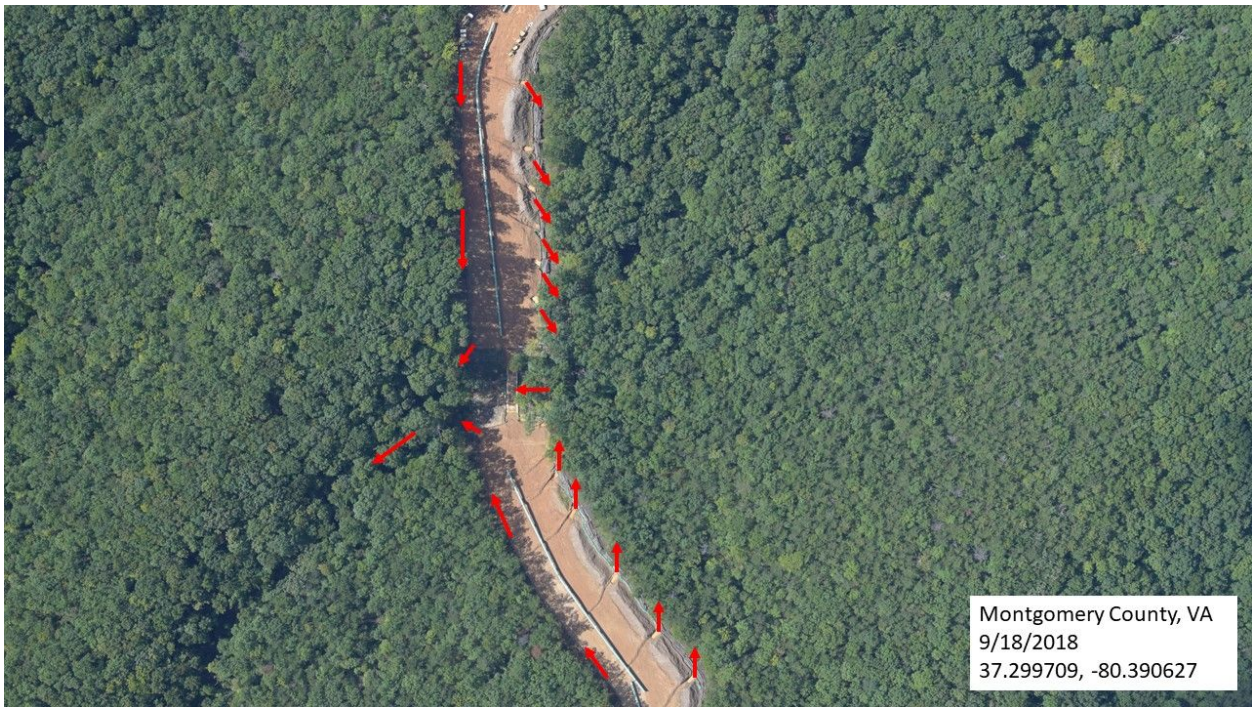


Figure 6: Brush Mountain in Montgomery County, Virginia; Flight date 9/18/2018; Flow lines indicated by red arrows.

Figure 7: Ground images showing issues along the MVP construction LOD

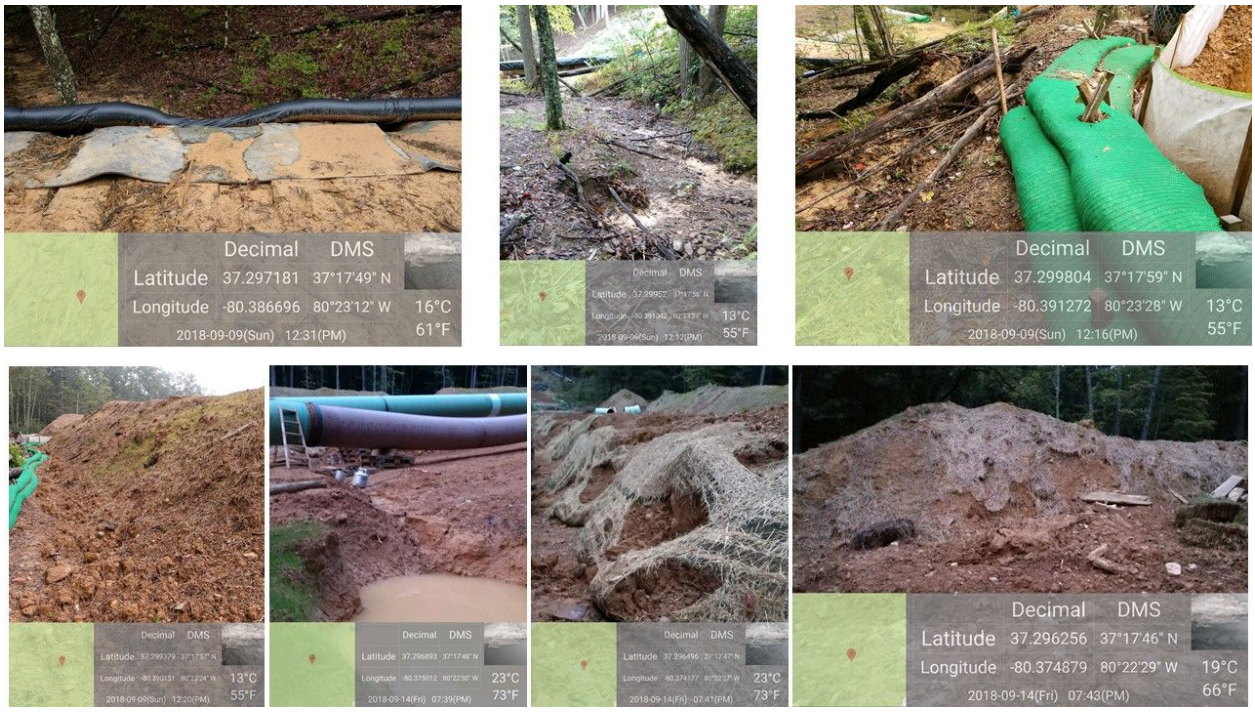


Figure 8: Additional ground images showing erosion & sedimentation as well as lack of stabilization on soil stockpiles.

Figure 9: Base of Paris Mountain in Catawba. Numbers 1 & 2 indicate locations of constant overflow. Closer views in figure 10 & 11.

Figure 10: Location 1 shows full catch basins and sediment laden stormwater flowing to the North Fork of the Roanoke River. Flows are constant during every rain event.

Figure 11: Location 2 is another location at this site where sediment laden stormwater continually flows into the North Fork of the Roanoke River during rain events.

October 12, 2018

A flight from 10/12/2018 reveals a number of issues.

Figures 12 - show water flow directions in relation to the Mountain Valley Pipeline construction LOD,

Figure 13 shows an aerial basemap prior to construction,

Figure 14 shows a shaded relief as a basemap, and

Figure 15 shows the imagery from the 10/12/2018 flight.

Locations all along the pipeline have clay rich soils. Full catchment basins at the edge of the LOD take much longer to drain in clay rich soils, so each successive rain event causes the basin to overflow and overwhelm adjacent E&S controls. The result is sediment laden ponds on adjacent landowners properties as seen by the tan color of the two ponds shown.

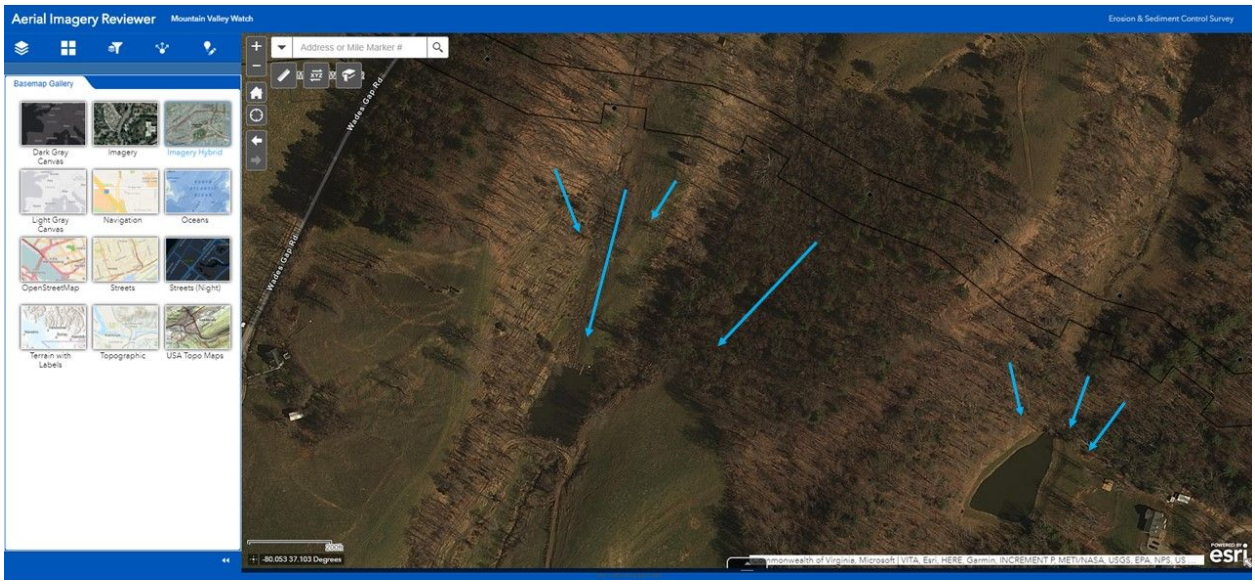


Figure 12: Runoff drainage flow patterns from MVP construction LOD, aerial image prior to construction.

Figure 13: Same location as figure 6, shaded relief map used as basemap showing drainage flow patterns.

Figure 14: Same location as figures 6 & 7. Sediment laden **ponds** and flow pattern arrows from MVP construction LOD indicate potential source.

Figure 15: Franklin County, Virginia image (10/12/2018) showing a large section of pipe washed from MVP construction ROW due to flooding.

November 11, 2018

Figures 16 thru 37 show sediment flow paths from the MVP construction ROW and wetland areas near streams. These identifications have been validated with site visits to the properties or adjacent properties. Figures 13 thru 24 show a sequence of images in Franklin county, east of Route 220, identifying flow paths to nearby streams.

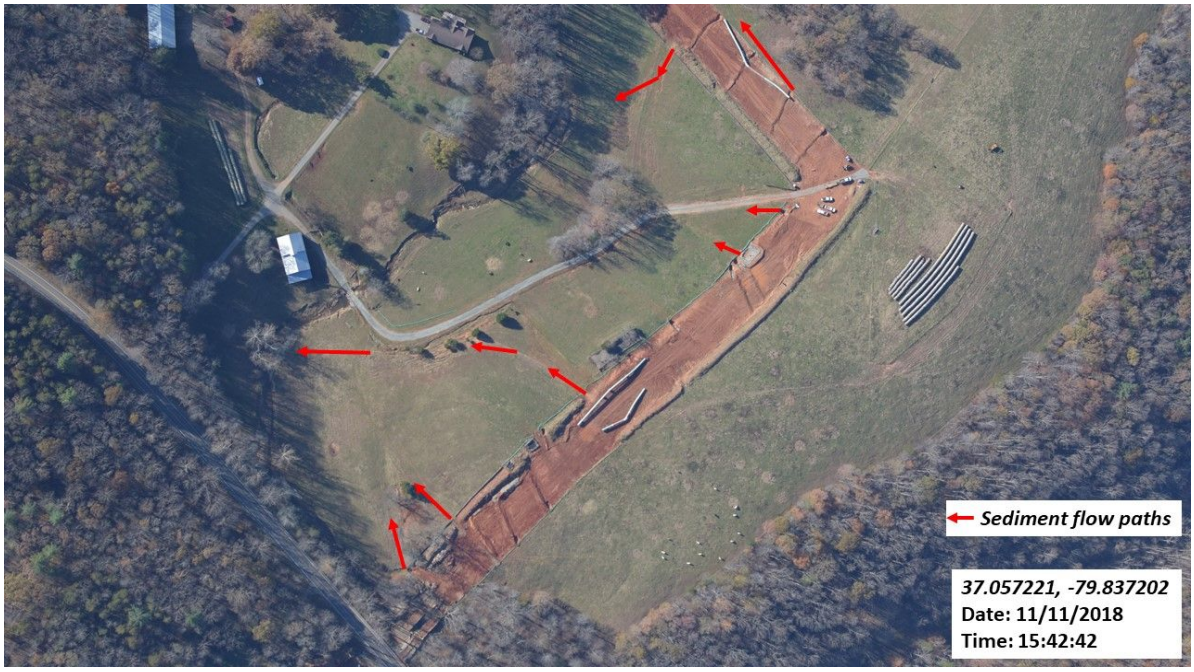


Figure 16: Flow paths where sediment leaves MVP construction ROW during rain events.

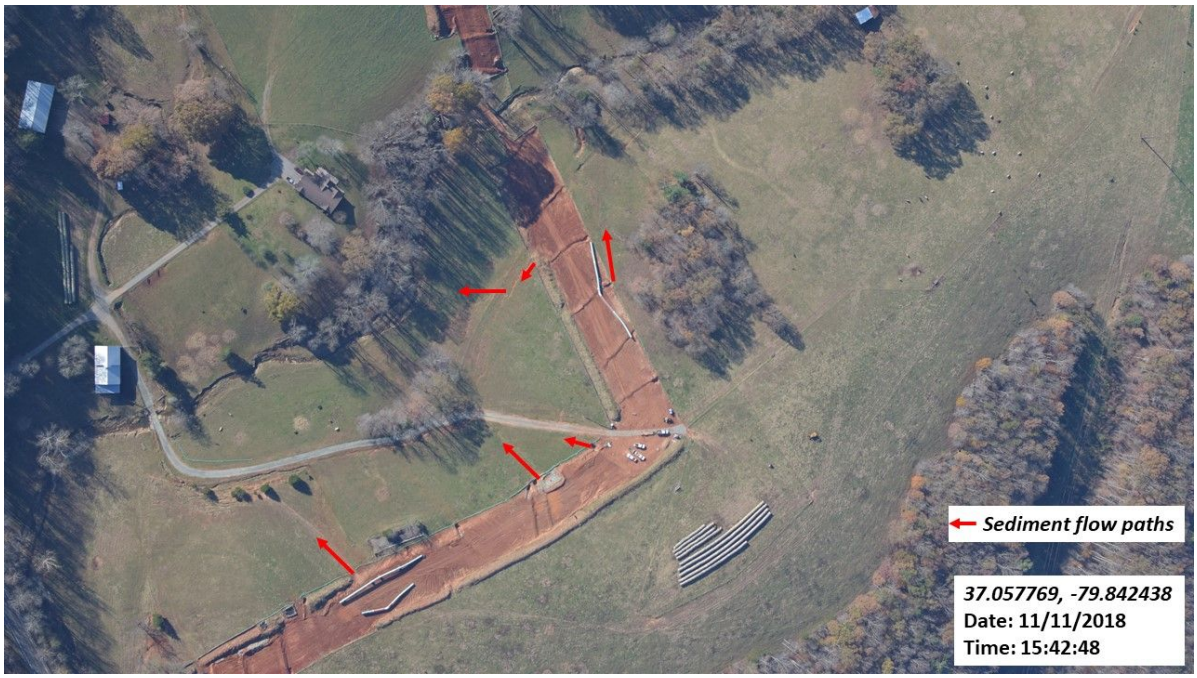


Figure 17: Flow paths where sediment leaves the MVP construction ROW during rain events.

Figure 18: Sediment flowing off pipeline corridor onto adjacent properties.

Figure 19: Sediment flowing into adjacent field.

Figure 20: Sediment flowing into adjacent field into drainage channel conveying sediment to stream.

Figure 21: Sediment flowing into field from right of way diversions.

Figure 22: Sediment flowing into adjacent fields and drainage channels flowing to stream. Sediment ponding in delineated wetlands.

Figure 23: Sediment flowing from waterbars off of pipeline corridor. Sediment ponding in delineated wetlands.

Figure 24: Iron Ridge Road shows discoloration from mud in roadway. Flow paths and wetland identified.

Figure 25: Sediment flowing off right of way into adjacent stream. Sediment deposits may be seen along stream.

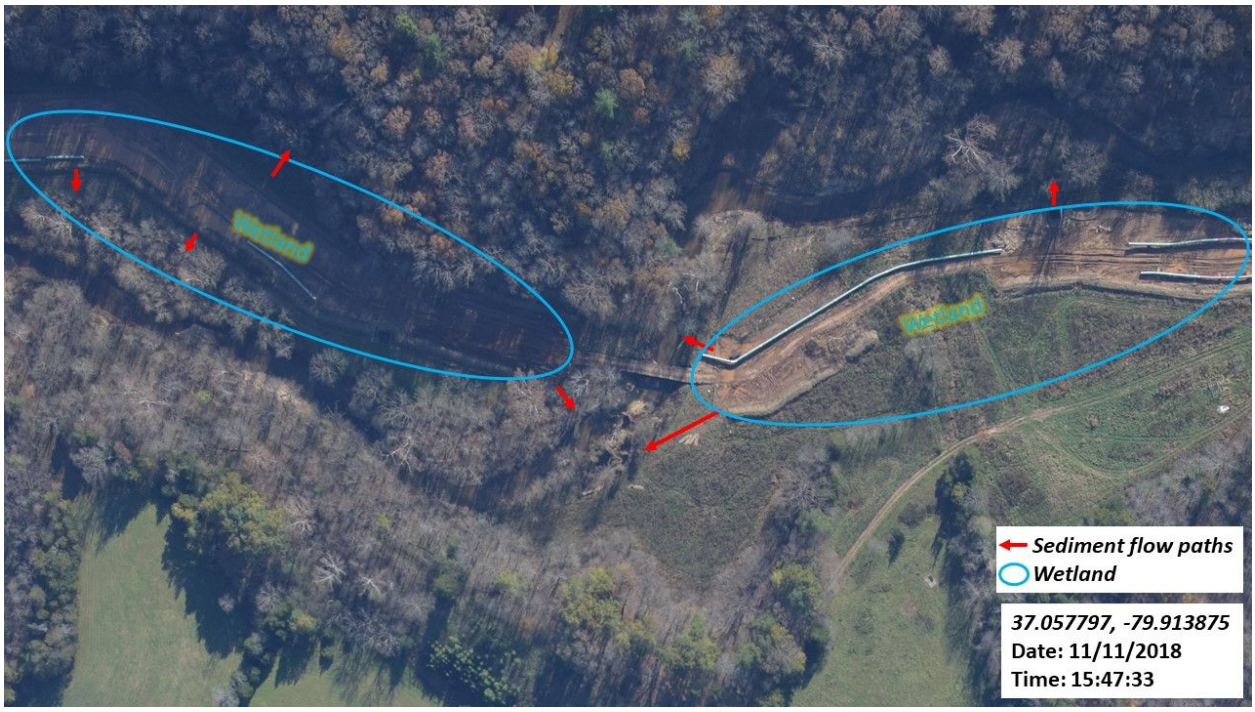


Figure 26: Sediment flowing off of right of way into stream and wetland areas.

Figure 27: Trenching in a wetland; area is shown in ground photos below from table 1 & 2.

Table 1: Four Corners Farm flooding and poor MVP construction site management.

This photo is from 10/28/2018 at ~3:57pm.

Table 2: Pictures of Four Corners Farm during a rain event showing sediment laden water piping through a cavity from LOD to creek.

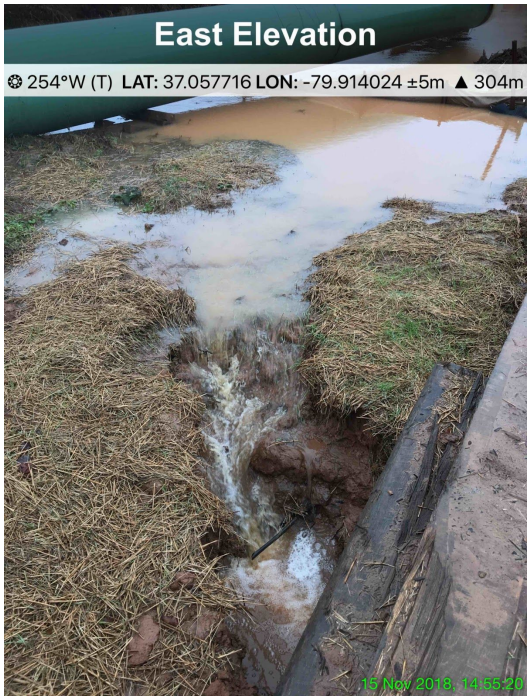


Table 3: Images from 11/15/2018, Four Corners Farm, Franklin County, Virginia.

Figure 28: Wetlands and stream show evidence of sediment contamination.

Figure 29: Sediment flowing into wetlands and adjacent stream.

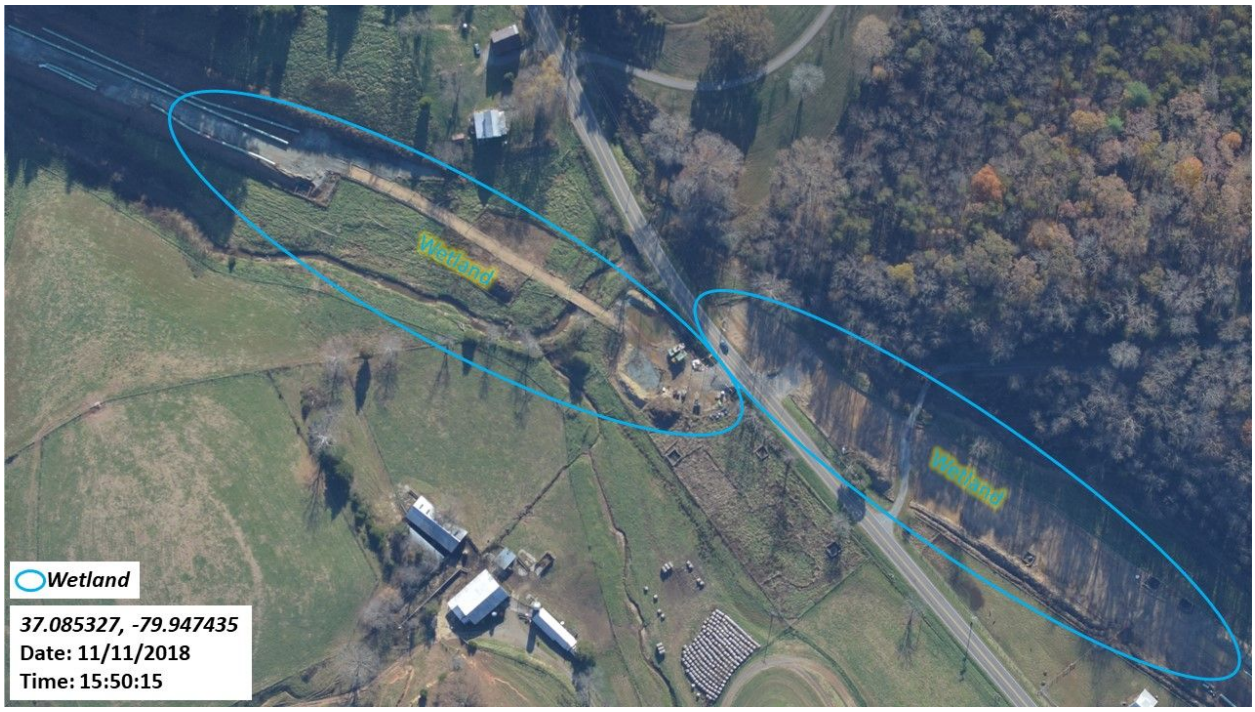


Figure 30: Wetlands area encroachment.

Figure 31: Wetlands area and floodplain encroachment. Stream channels inundated with sediment.

Figure 32: Wetlands area encroachment.

Figure 33: Wetlands area encroachment. Flooding occurred in these areas.

Figure 34: Wetlands area encroachment. Sediment flowing into stream adjacent to right of way.

Figure 35: Sediment flowing into stream channel from pipeline right of way. Stream channel is at bottom or slopes.

Figure 36: Wetlands area encroachment. Sediment flowing into North Fork Roanoke River.

Figure 37: Sediment flowing into stream channel from right of way.

Regulatory Reported Incidents

8/27/2018		Brick Church Rd.	Franklin	148034	Closed
8/29/2018	4:14 PM	Iron Ridge Rd.	Franklin	148353	Closed
8/30/2018	5:00 PM	Doe Creek Rd.	Giles	148555	Closed
8/30/2018	4:09 PM	Lat: 37.05823 Lon: -79.91867	Franklin	148556	Closed
9/2/2018	11:14	Mt. Tabor Rd.	Montgomery	151956	Closed
9/2/2018	10:56	Mt. Tabor Rd.	Montgomery	151973	Closed
9/8/2018	19:43	Mt. Tabor Rd.	Montgomery	152573	Closed
9/15/2018	9:00	Rt. 220; Lat: 37.05633 Lon: -79.88175	Franklin	152993	Closed
9/15/2018	10:00	Brick Church Rd; Lat: 37.06876 Lon: -79.92412	Franklin	152994	Closed
9/15/2018	13:43	Grassy Hill Rd; Lat: 37.0873 Lon: -79.9496	Franklin	152995	Closed
9/15/2018	14:05	Leaning Oak; Lat: 37.0893 Lon: -79.9617	Franklin	152996	Closed
10/9/2018	11:45 AM	37.05554, -79.91122	Franklin	157715	Closed
10/11/2018	12:20	37.30761, -80.46781	Giles	157716	Closed
10/11/2018	12:27	37.3057, -80.46716	Giles	157717	Closed
10/14/2018	12:42	Leaning Oak; 37.08905, -79.96171	Franklin	157718	Closed
10/14/2018	2:12	37.08584, -79.94896	Franklin	157719	Closed
10/14/2018	2:28	37.08461, -79.94711	Franklin	157720	Closed
10/14/2018	2:54	37.08361, -79.94668	Franklin	157721	Closed
11/2/2018	11:49 AM	37.23111, -80.19833	Montgomery	157816	Closed
10/28/2018	12:24 PM	37.08905, -79.96171	Franklin	157817	Closed
10/28/2018	12:39 PM	37.0882, -79.9502	Franklin	157818	Closed
10/28/2018	12:24 PM	Iron Ridge Rd; 37.05796, -79.91721	Franklin	157819	Open
11/1/2018	3:42 PM	Elliston; 37.2311, -80.1985	Montgomery	157820	Closed
11/2/2018	12:30 PM	37.066, -79.875	Franklin	157823	Open
11/5/2018	11:27 AM	37.231, -80.199	Montgomery	158096	Closed

Table 4: Incidents since previous report and their status.

Responses from agencies:

West Virginia Department of Environmental Protection has issued 19 Notices of Violations (NOVs) for the Mountain Valley Pipeline.
On July 9, 2018, the Virginia Department of Environmental Quality (DEQ) issued a Notice of Violation ("NOV") to MVP citing violations identified during the May and June complaint investigations and inspections. Virginia DEQ documented 40 incidents of erosion problem areas between 8/17/2018 and 10/25/2018 in the PREP incident reports database for the MVP. The majority of problems recorded were sediment runoff, overwhelmed E&SC, failure to maintain erosion control devices, and sediment leaving the pipeline right of way.

Conclusion

The purposes of the State Water Control Law are to:
(1) protect existing high quality state waters and restore all other state waters to such condition of quality that any such waters will permit all reasonable public uses and will support the propagation and growth of all aquatic life which might reasonably be expected to inhabit them;
(2) safeguard the clean waters of the Commonwealth from pollution;
(3) prevent any increase in pollution; and
(4) reduce existing pollution.

The Commonwealth has developed a regulatory framework designed to minimize the environmental impact associated with land disturbing activities that imposes strict requirements on entities in advance of engaging in any such activity and continuing until land disturbing activity is complete and permanent stabilization is achieved.

However, the release of sediment and sediment laden stormwater off of the MVP right of way onto adjacent private property and into surface waters of the Commonwealth has occurred numerous times as documented by MVW volunteers and DEQ inspectors. Numerous instances of inadequate stabilization in violation of Minimum Standard 1 and instances of inadequate stabilization in violation of Minimum Standard 2 were documented by MVW volunteers. The numerous observations over a long period of time constitute violations of MVP's Annual Standards and Specifications, MVP's Site Specific ESC and SWM Plans, the State Water Control Law, the Virginia Stormwater Management Act, the Erosion and Sediment Control Law, and Section 401 Water Quality Certification issued to MVP.

Therefore, the Section 401 Certificate should be revoked immediately until the MVP is in compliance with the State Water Control Laws, the Virginia Stormwater Management Act, the Virginia Erosion and Sediment Control Law, and the Board's regulations.