A REPORT BY WILD VIRGINIA

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MOUNTAIN VALLEY PIPELINE POLLUTION IN VIRGINIA WATERSHEDS



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www.wildvirginia.org

PREPARED BY

DAVID SLIGH
CONSERVATION DIRECTOR, WILD VIRGINIA

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.

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[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 primarily 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

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[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]

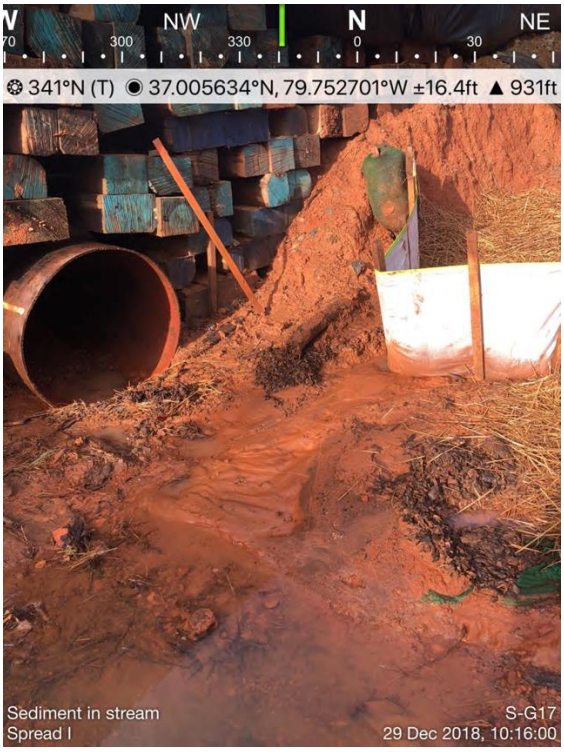

Figure 4 - Sediment deposited in UT Blackwater River, December 29, 2018, Action Log ID 1562, Source: MBP

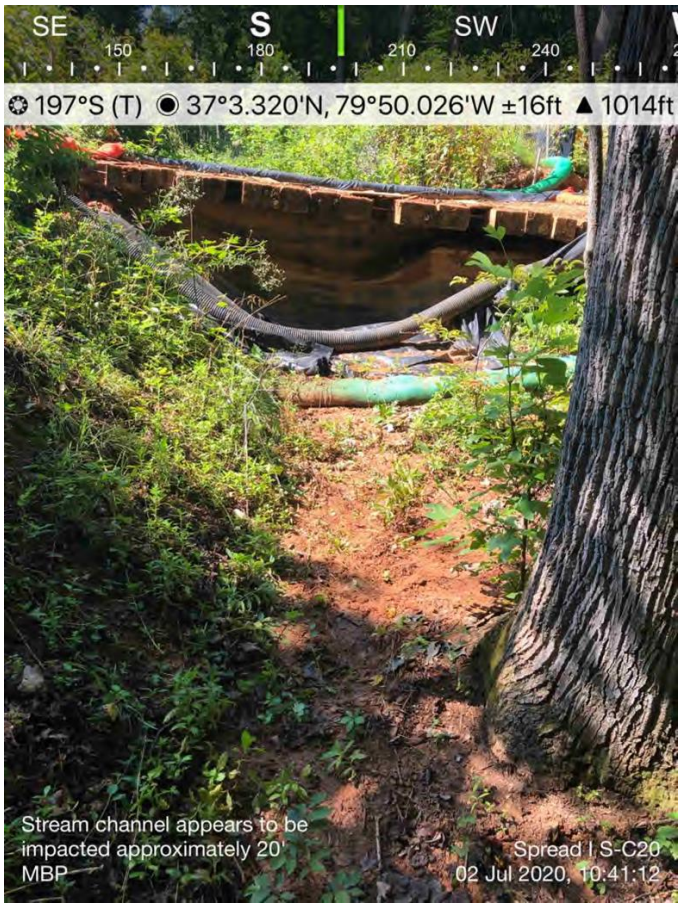

Figure 5 - Sediment deposited in UT to Maggodee Creek, July 2, 2020, Action Log ID 4313, Source: MBP. [report states deposits 2.5 inches deep, 3 ft. wide, covering approx. 20 linear feet of bed; deposits in place five days before removal.

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

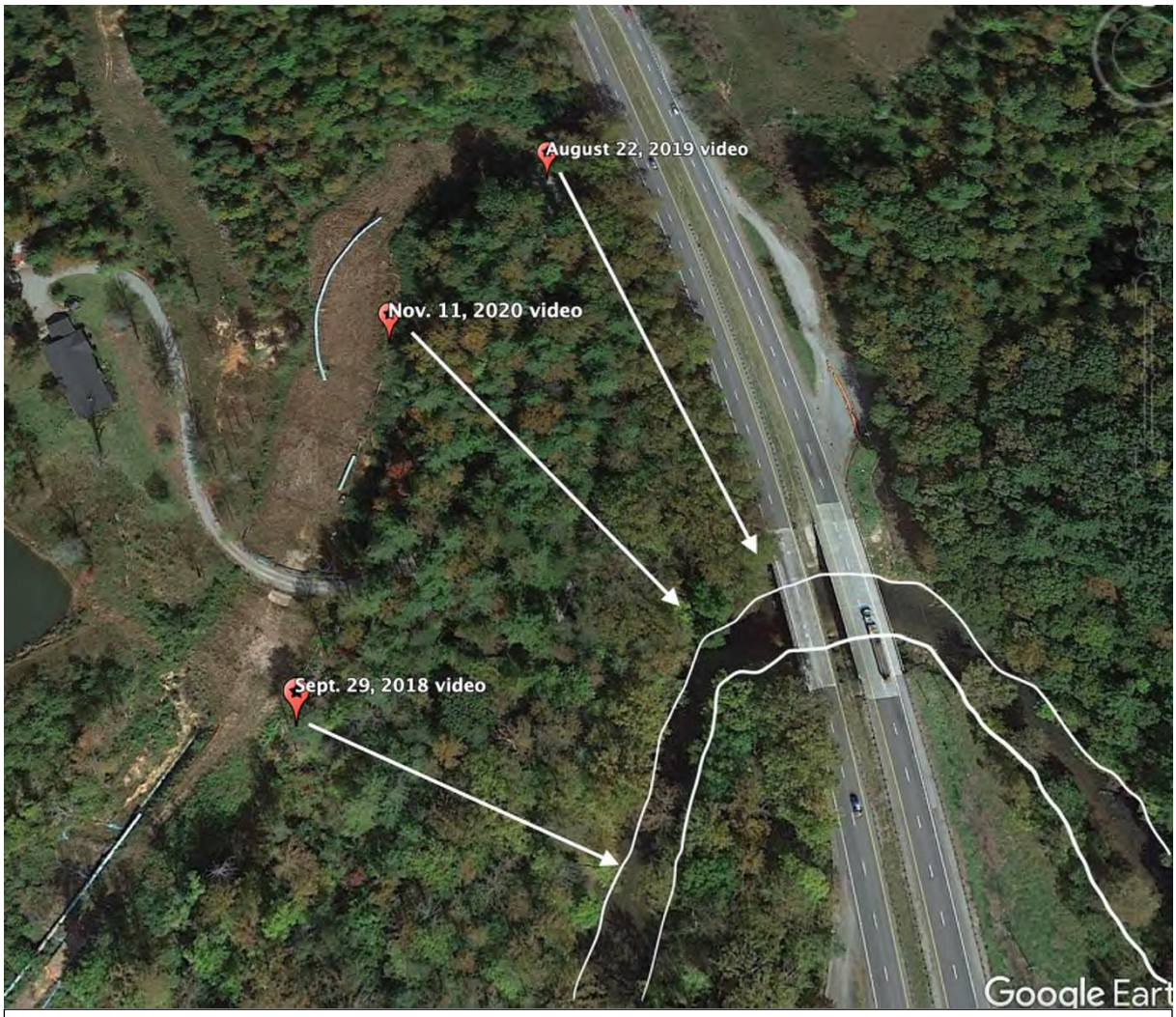

Figure 22 - Satellite image annotated to show locations at which videos depicted on previous pages were filmed and their relation to the Blackwater River. White arrows show approximate flows paths of water flowing off the MVP ROW.

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]

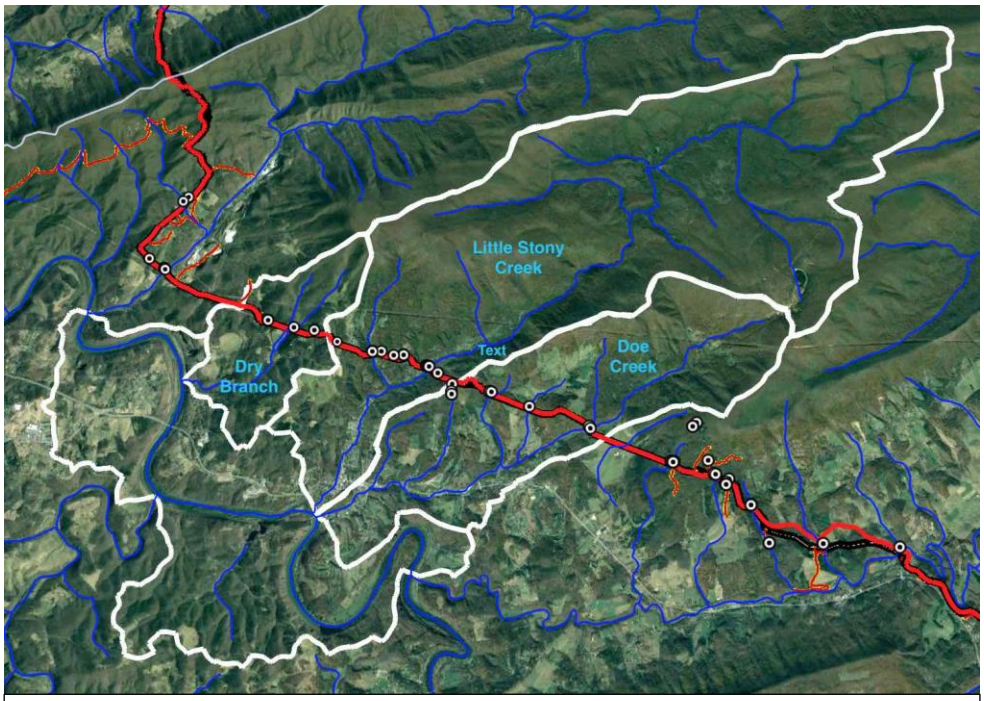

Figure 25 - Annotated satellite image showing Little Stony Creek HUC-12 area and separate watersheds within that area.

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]

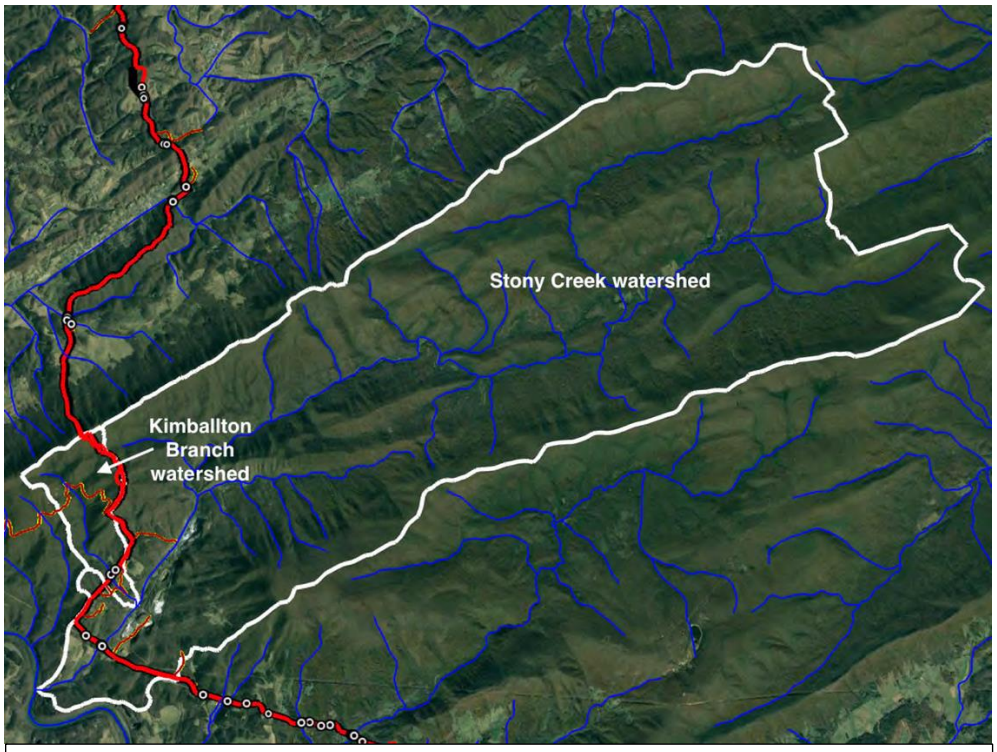

Figure 32 - Stony Creek HUC-12 (050500020305) and Kimballton Branch watershed. Created with Google Earth Plus with data from National Hydrography Dataset. Red line depicts MVP pipeline ROW; proposed new discharges shown by circles.

[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.

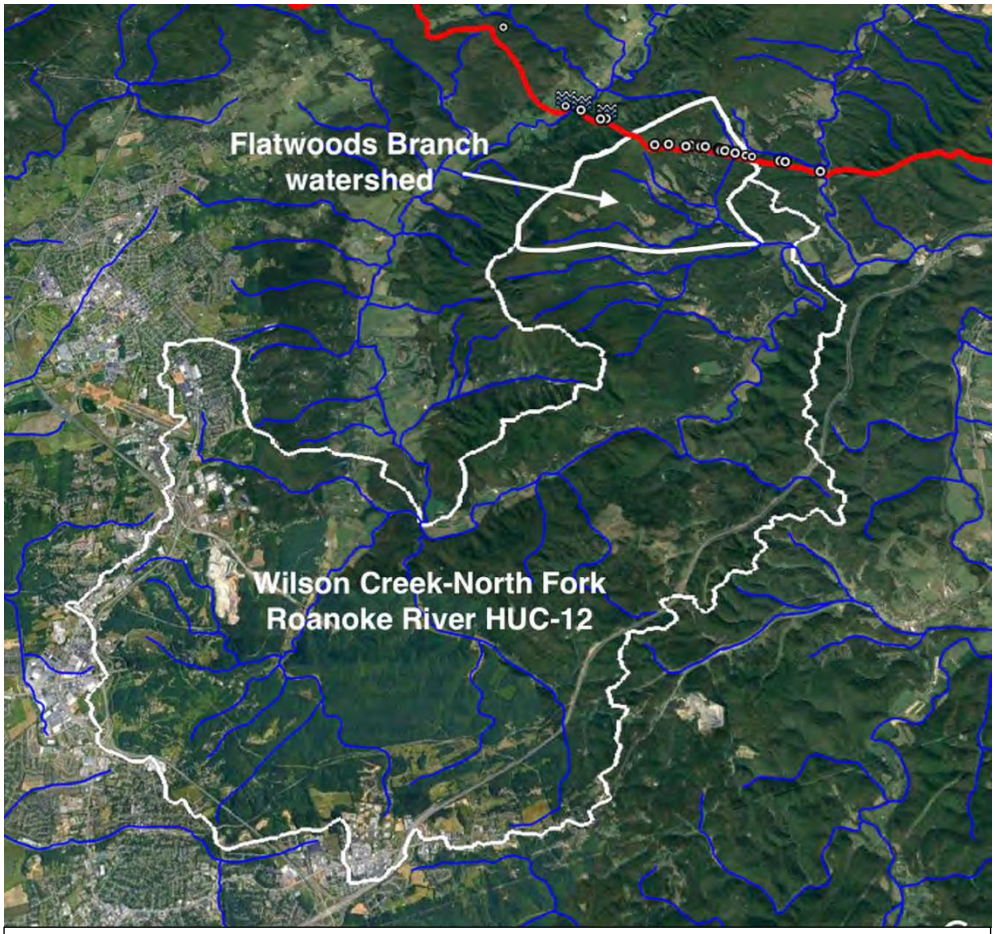

Figure 35 - Wilson Creek-North Fork Roanoke River HUC-12 and Flatwoods Branch watershed, showing all MVP impacts proposed for the smaller drainage.

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.

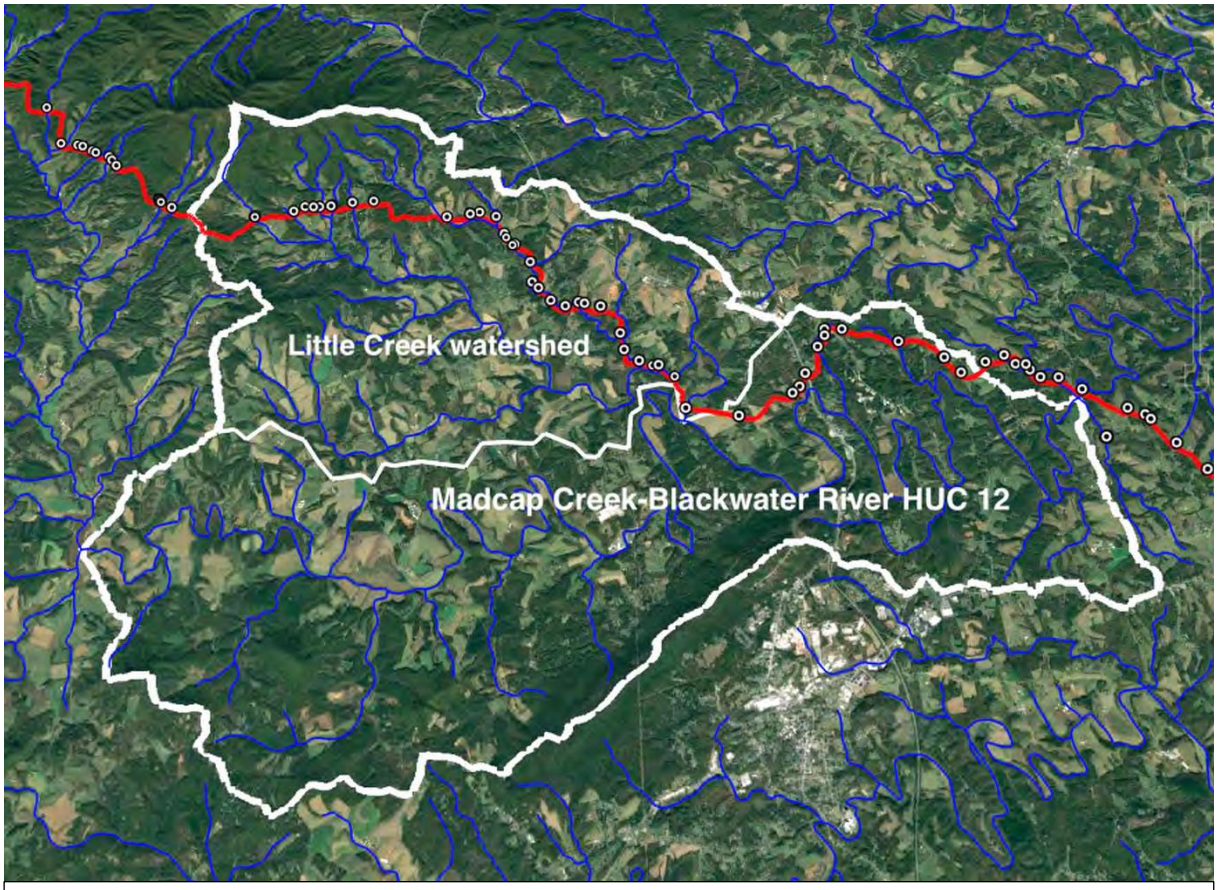

Figure 39 - Annotated satellite image showing Madcap Creek HUD-12 and the Little Creek watershed that form part of the HUD area.

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.

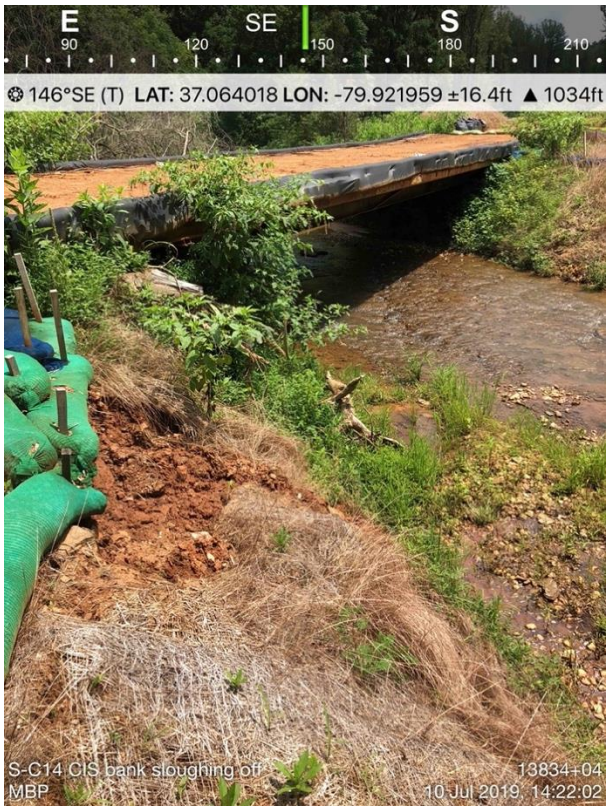

Figure 42 - Stream bank eroded at MVP site, Teels Creek, July 10, 2019, Action Log ID 3187, Source: MBP

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.

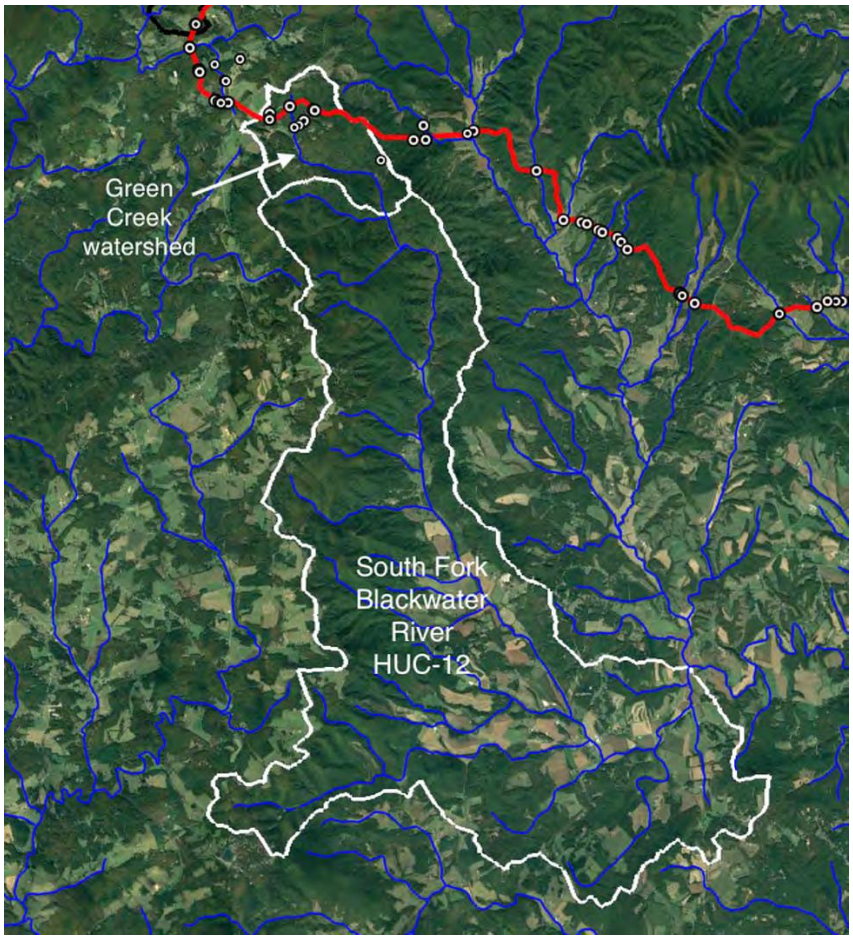

Figure 45 - Annotated satellite image of South Fork Blackwater River HUC-12 and Green Creek watershed, with MVP ROW and discharge only in the headwaters.

[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.

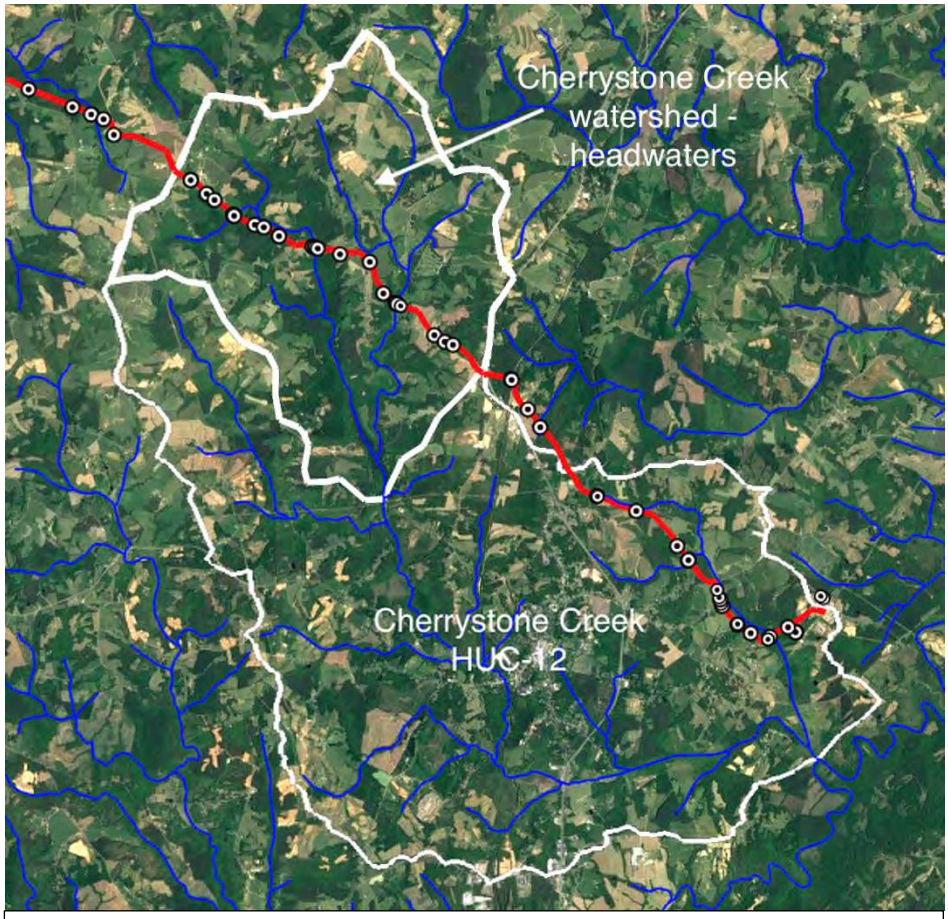

Figure 47 - Annotated satellite image of Cherrystone Creek HUC-12 and upper Cherrystone Creek watershed.

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.