

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

Prepared by David Sligh  
May 28, 2021

## Summary Statement

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

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

Conclusions in this report:

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

## MVP's CWA Section 404 Permit Application

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

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

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

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

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

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

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

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

---

<sup>1</sup> Seaber, Paul R., F. Paul Kapinos, and George L. Knapp, *Hydrologic Unit Maps*, U.S. Geological Survey Water-Supply Paper 2294, 1987.

<sup>2</sup> United State Geological Survey, *Watershed Boundary Dataset*, [https://water.usgs.gov/GIS/wbd\\_huc8.pdf](https://water.usgs.gov/GIS/wbd_huc8.pdf).

<sup>3</sup> The author has personally visited a number of these sites and observed changes in the streams and riparian areas over the course of several years.

<sup>4</sup> Id.

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

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

#### Previous Corps Review

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

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

#### FERC Review

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

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

---

<sup>5</sup> Citing: FERC, Mountain Valley Project and Equitrans Expansion Project Final Environmental Impact Statement, at 5-16 (June 2017).

Protection Agency has expressed similar concerns, both in relation to FERC's action in 2017 and, most recently, in April 2021.<sup>6</sup>

#### Previous Virginia DEQ Review

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

#### **Specific Watershed Areas Affected by MVP**

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

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

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

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

---

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

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

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

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

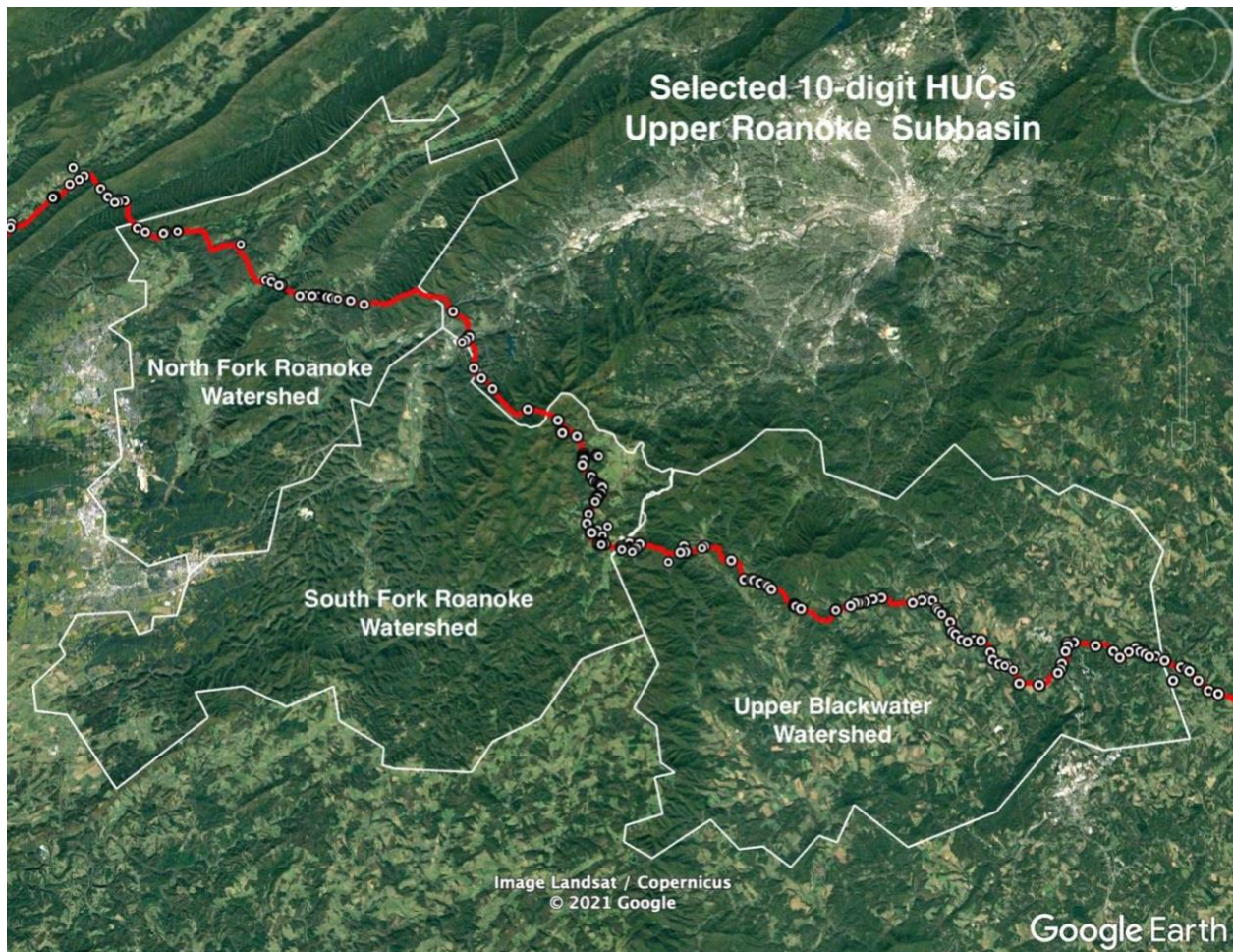


Figure 1

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

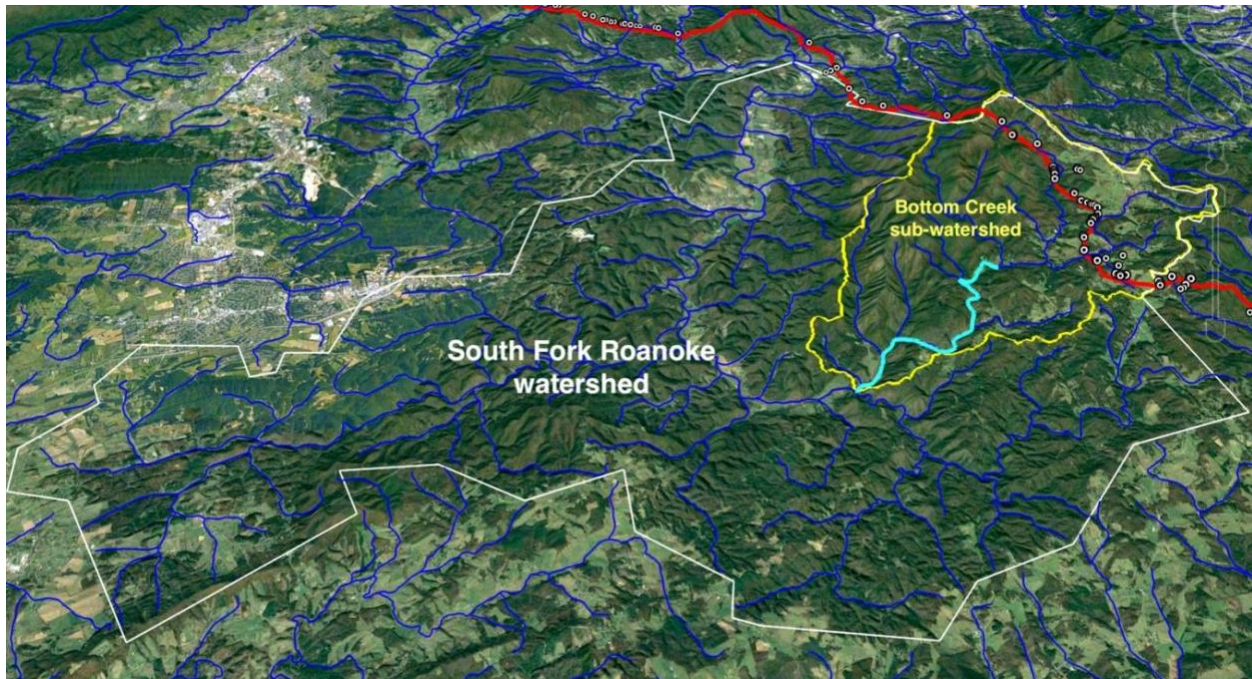


Figure 2

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

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

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

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

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

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

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

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

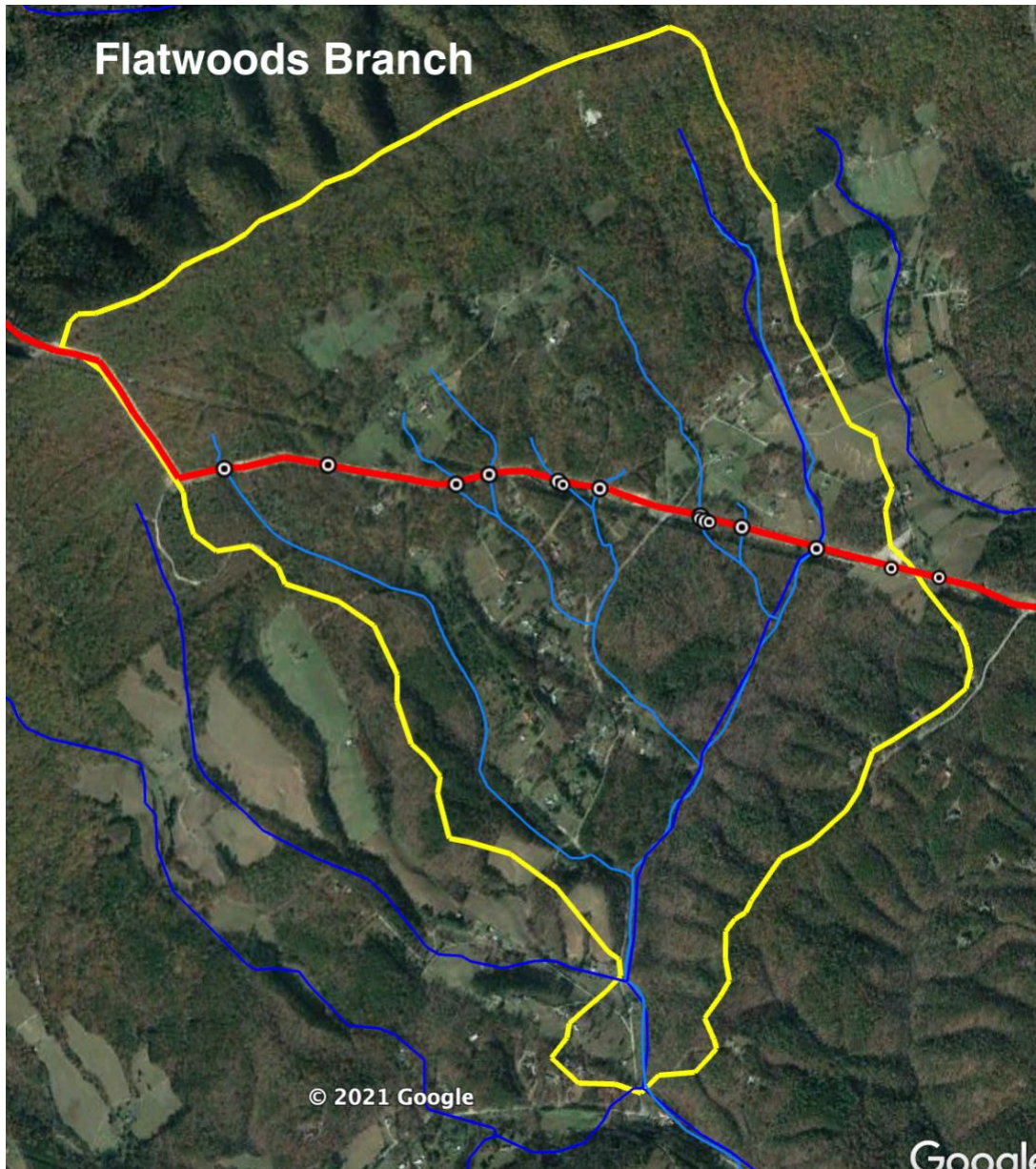


Figure 3

### Conclusion

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



## David Sligh - Qualifications

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

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

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

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

### Selected Professional Positions

Conservation Director, Wild Virginia, Charlottesville, VA

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

Environmental Consultant, Self-employed, Charlottesville, VA

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

Special Research Faculty, Virginia Tech,

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

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

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

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

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

Environmental Specialist, Virginia State Water Control Board

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

#### Other Activities and Positions

Technical Advisory Committee to Tennessee Clean Water Network, 2000-2002

Steering Committee Member, Southeastern Imperiled Fish Network, 2003

Speaker at numerous conferences on water quality issues, including:

Chesapeake Watershed Forum, Shepherdstown, WV, 2011, 2012.

Waterkeeper Alliance Conferences, 2009, 2013, 2014, 2015, 2016.

When the Water Runs Dry, New Orleans, LA, 2003 (speaker and session leader). The Future of Flows, Morgantown, WV, 2002.

National River Rally - River Network, 2001, 2002, 2013, 2014.

Georgia River Network Conferences, Milledgeville, GA, 2002 & 2003.

Alabama Rivers Alliance, Annual Conferences 2000, 2001