

To:State Water Control BoardFrom:Walton C. Shepherd, NRDC, 2105 M Street, Richmond, VA 23223 804.401.9236Date:June 15, 2018Re:Comments on the Board's Pending Certification of NWP12 for the ACP and MVP
(Water Crossing IDs located on pp. 25-26 of enclosed technical report)

INTRODUCTION AND SUMMARY OF TECHNICAL COMMENTS

Virginia's Water Control Board ("Board") has not yet exercised its vested state water authority to certify, certify with conditions, or deny, project-specific Nationwide Permit 12 coverage for watercrossings by the Atlantic Coast or Mountain Valley pipeline. Moreover, the full exercise of the Board's lawful review authority *is not complete* until the Board affirmatively certifies Nationwide Permit 12 (NWP12), either through a general Virginia Water Protection permit, site specific individual permits, or a combination of both.

That is because the Board's authority to certify – or veto – federal water permits is enshrined in federal¹ and state law.² State regulations explicitly provide that the Board may issue either a general or an individual Virginia Water Protection (VWP) permit,³ in this case to certify the Army Corps of Engineers' (ACE) general NWP12, as ACE specifically applied it to the ACP and MVP. The same state regulations limit the circumstances under which a general permit may be used.⁴ Where "concerns for water quality and the aquatic environment so indicate," individual permits are appropriate.⁵

¹ 33 U.S.C. § 1341(a)(1); *see also Constitution Pipeline v. NYSDEC*, 868 F.3d 87, 101 (2nd Cir 2017) (referring to § 401 as "a statutory scheme whereby a single state agency effectively vetoes an energy pipeline that has secured approval from a host of other federal and state agencies.")

 ² VA Code § <u>62-1.44.15.20; 9 VAC 25-210-10</u>; see also VADEQ, Wetlands and Streams Protection, available at <u>http://www.deq.virginia.gov/Programs/Water/WetlandsStreams/Regulations.aspx</u>.
 ³ 9 VAC 25-210-10.

⁴ Id.

⁵ <u>9 VAC 25-210-130(B)</u>.

Indeed, individual permits for each crossing (or at least a subset of the crossings) of these large, significantly impactful projects has been explicitly (and correctly) contemplated by the Board, as well as repeatedly endorsed by Governor Northam⁶ and many other⁷ impacted stakeholders.

As the Board fully assesses the unprecedented and unquantified impacts of these first-of-theirkind projects to cross the Commonwealth, the Board will find that it should <u>not</u> certify NWP12 for either project using a general VWP: the enclosed technical comments below show that protection of Virginia water quality standards and Virginia's aquatic environment at the many hundreds of watercrossings is far from established, either by ACP, MVP, ACE, or the Department of Environmental Quality's (DEQ) own review process to date.

Relying on the enclosed information, the Board should instead require individual VWP permits for the watercrossings listed on pages 1, 25, and 26 of the enclosed report, and all others the Board deems to be of concern, rather than a wholesale reliance on an insufficient "blanket" general certification of every watercrossing.

The Board Must Act to Preserve the State's Right to Control of Its Own Waters

Just as important, to ensure regulatory certainty for all stakeholders, including for the project applicants, the Board should exercise its vested individual permit authority soon. The latest date by which the Board may act is September 9, 2018 for the ACP and December 22, 2018 for the MVP.⁸ By not performing its duties as soon as possible in advance of those dates, the Board will waive to federal authorities one of its most crucial statutorily-granted state right to protect Virginia waters: the duty to proactively certify, certify with conditions, or deny certification of NWP12 for these projects, be it through a general VWP, site-specific individual VWPs, or, at the Board's discretion, a combination of both. By otherwise sitting on its hands, the Board would abdicate its authority over state resources and its responsibility to citizens of the Commonwealth to federal agencies in D.C.

⁶ See, e.g., Environment Virginia speech, Lexington, VA, April 4, 2018 ("I am committed to a thorough, site-specific review of the proposed pipeline routes and any potential impacts to wetlands, streams, and rivers."), available at https://www.naturalresources.virginia.gov/.

⁷ This includes the 1,078 comments to the Board, submitted on May 29, 2018, from NRDC members in Virginia highlighting the crossings of concern across the particularly impacted and vulnerable Bottom Creek and Calfpasture River.

⁸ These dates mark the statutory one-year period after the dates on which ACE deemed applicants' Joint Applications to be complete. *See* 33 U.S.C. § 1341(a); *AES Sparrows Point LNG, LLC v. Wilson*, 589 F.3d 721 (4th Cir 2009).

The Insufficiency of NWP12 to Uphold Virginia's Water Laws

The enclosed technical analysis provides ample evidence that the Board should act, as the record demonstrates that NWP12 is insufficient to ensure water protections at specific crossings. Specifically, there are four fundamental deficiencies in the NWP12 application and the subsequent blanket approval by ACE, which collectively make assurance of water quality standards across hundreds of crossings impossible to confirm.

First, NWP12 fails to consider the unique and varying site conditions at specific stream crossings or to provide site-specific calculations and plan documentation to assure that construction methods at specific sites will prevent adverse impacts from the discharge of pollution and pollutant-laden waters into waterbodies.⁹ In essence, applicants overwhelmingly used—and ACE approved—a "cookie-cutter" design approach to dig, trench, or blast through broad categories of waterbodies that have overly broad similarities with each other, rather than individual designs tailored to vulnerable, high value, or unique water resources' site specific characteristics, such as receiving stream designation, soil type, or bedrock conditions.

Second, while the applicants' approved NWP12 permit application documents contain extensive arrays of site-specific data, that wholesale information is not then utilized in any meaningful way: the engineering drawings and plans for specific water crossings fail to consider that wealth of data, provide site-specific guidance necessary to prevent adverse water quality impacts at and downstream of crossings, or use that data to assess site specific conditions and to inform design decisions.¹⁰ Applicants present broad language, general details, and voluminous data tables throughout the NWP12 permit application documents, but there is a fundamental void where there should be the site-specific information needed to fully address watercrossing impacts at specific sites. As the enclosed analysis also explains, neither applicant submitted adequate plans to control turbidity; to reconstruct and stabilize banks; to protect trout species; or to control erosion and sediment, particularly where there are steep slopes.¹¹

⁹ See enclosed report, "Threats to Virginia Water Quality: Stream Crossings of MVP and ACP," June 15, 2018, at 6-7.

¹⁰ See id. at p. 22.

¹¹ See id. at pp. 13-19.

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Third, in addition to this blanket "shortcut" approach to both ACP and MVP's NWP12, significant errors in a core component of ACP's permit documentation raise basic questions about the integrity of ACE's NWP12 review process.¹² Specifically, a number of crossing ID numbers in ACP's permit documents fail to correspond with the crossing ID numbers in ACP's Detailed Alignment Sheets. This fatal flaw not only makes it difficult to assure correct correlation of data across certain tables in the permit application. More importantly, these foundational errors and lack of correlation cast doubt on whether ACE or DEQ could have actually and knowingly analyzed every individual crossing correctly, and ensured that the designs for a labelled crossing were in fact for the actual physical crossing. Only individual VWPs for those misidentified crossings can assure water quality at those sites.

Fourth, the actual watercrossing construction methods, a primary determinant of waterbottom and water quality impact, still remain unknown at a significant number of crossings.¹³ This absence of fundamental information makes it impossible to assure the maintenance of Virginia's water quality standards. For example, ACP crossing plans list a menu of possible crossing methods, with a general note that the actual crossing method will be chosen later from that broader list, based on conditions at some unknown future time of construction.

Similarly, MVP's application often simply proposes the broad category of "open cut dry ditch" as its plan to cut through state waterbodies, but MVP fails to specify which method will in fact be utilized at those watercrossings. Just as importantly, the plans for both pipelines fail to provide design and analysis at each individual crossing to ensure that scour or damaging bank erosion and associated water quality impacts will be avoided.¹⁴ In summary, many watercrossing construction methods and crossing designs remain entirely unknown, apparently even to the applicants themselves.

In sum, the blanket NWP12's sweeping holes in the plans for what will actually occur on the ground and directly across Virginia waters and waterbottoms make that federal permit an

¹² See id. at p. 22-27.

¹³ See id. at p. 7.

¹⁴ See id. at p. 12.

inadequate, unreliable substitute for the Board's own assurance that state water quality violations and harms to the aquatic environment will not occur.

THE BOARD HAS <u>NOT</u> CERTIFIED THE NWP12 FOR THE ACP OR MVP, AND SHOULD BASE ITS STILL-PENDING CERTIFICATION USING THE TECHNICAL INFORMATION ENCLOSED HERE

The DEQ and others have made several erroneous claims¹⁵ or have implied¹⁶ that the Board has already certified the ACP and MVP's NWP12.

While such claims are demonstrably erroneous, they nonetheless represent inter-agency misinformation that puts the Board's unfettered ability to exercise its full statutory oversight of Virginia waters at significant risk.

The Board must therefore fully apprehend its lawfully-vested options on <u>how</u> it can utilize the comments it receives on specific watercrossings. Only then can the Board clearly contemplate its unexercised NWP12 certification options, without undue confusion about other separate and distinct regulatory actions that have occurred to date.

Simply put, NWP12 certification by state authorities of the ACP or MVP has <u>not</u> occurred. The mistaken claims by DEQ, DEQ attorneys, and others, which imply the Board has already certified project specific NWP12s, are perhaps confusing those still-pending MWP12 certifications with either:

1). the Board's 401 certification of *upland* impacts on water quality, or

2). the DEQ Director's *general* certification¹⁷ of NWP12 over a year ago, before either pipeline applications were complete, and well before the watercrossing impact

¹⁵ See, e.g. DEQ's Response Brief at 65, *Appalachian Voices et al. vs. State Water Control Board et al.*, No. 18-1077 (4th Cir. May 18, 2018) ("Once [ACP] obtained coverage under a "'nationwide permit promulgated by the Corps and certified by the board in accordance with' 9 VAC 25-210-130, the *company was deemed covered* under the Virginia Water Protection Program Permit Regulation" (emphasis added)) and Marine Resources Commission Memorandum at 5 (March 12, 2018 ("The *DEQ waived the requirement for an individual Virginia Water Quality Permit*, for this component of the project, since they had previously provided 401 Certification for the Nationwide 12 permit" (emphasis added)).

¹⁶ See, e.g., VADEQ, "Nationwide Permit 12 - Activities in Wetlands and Streams for both MVP and ACP," available at <u>http://www.deq.virginia.gov/PipelineUpdates.aspx</u> (referring to "the Commonwealth's § 401 water quality *certification of NWP* 12 for specific stream crossings of both the MVP and ACP projects." (emphasis added)).

¹⁷ VADEQ, Section 401 Certification of the 2017 Nationwide Permits (April 7, 2017) available at <u>http://www.deq.virginia.gov/Portals/0/DEQ/Water/WetlandsStreams/Final%20401%20Certification%202017%20NWP%20with</u> <u>%20typos%20corrected.pdf?ver=2017-05-01-135819-313</u>.

information in the project applications (and received in this comment period) was available to either the Board or DEQ.

First, the Board's separate upland 401 certifications of December 2017 only applied to *upland*, non-watercrossing related activities and those upland activities' collective impact on water quality. Indeed, the upland certifications themselves explicitly reference the Board's as-yet-unexercised authority for "additional certification" and further review of non-upland activities.¹⁸

DEQ staff does include passing references to the NWP12 in the upland certifications and associated narratives, but those upland certifications do not perforce constitute an ACP or MVP-specific NWP12 certification. First, because there is little crossing-specific information in the upland 401 certification record, and second, because the December 401 upland certifications preceded the Army Corps' *own* NWP12 certifications for each project.

Just as important, the projects' E&S plans required by both 401 upland certifications do not address the significant construction impacts at, in, and across watercrossings themselves, such as from blasting, trenching, and bank disturbance.

Second, the DEQ Director's April 2017 *general* certification of the NWP12 (along with 53 other general permits) did not certify any specific project, nor does that letter prospectively or retroactively constitute the Board's ACP or MVP-specific certification.

Additionally, that April 2017 general certification specifically reserves the Board's still-vested right to require individual VWPs,¹⁹ based on then-unaddressed or unknown site-specific and project-specific impacts. That reservation is to be expected for large, unprecedented projects like the ACP and MVP. In fact, that reservation of authority quotes the very same regulatory language that outlines the Board's still-unexercised authority to require individual permits for

¹⁸ The Board's December 7, 2017 MVP upland certification clearly states that "[t]his Certification applies solely to upland activities authorized by FERC and shall not waive or otherwise impair or affect the authority of the Board to require additional certification under state or federal law." On December 12, 2017, the Board issued an upland certification for ACP including the same language.

¹⁹ DEQ's April 2017 reservation states "The Commonwealth reserves its right to require an individual application for a permit or a certificate or otherwise take action on any specific project that could otherwise be covered under any of the NWPs when it determines on a case-by-case basis that concerns for water quality and the aquatic environment so indicate."

watercrossings, that is, when "concerns for water quality and the aquatic environment so indicate."²⁰

Lastly, the Army Corps *itself* has publicly acknowledged the Board's still-pending certification of ACE's NWP12 as specifically applied to the ACP and MVP, confirming 1). that "[the Board] could tell us that, on further analysis, there's some problems here and this doesn't meet the general water quality standards," and that 2). Virginia is "still within its rights to perform its own certifications for the crossings."²¹

Based on the enclosed analysis and the fact that the Board has not yet certified NWP12 for either project, as publicly declared by the Army Corps, the Board must now proceed with sitespecific individual VWP permits for watercrossings where "concern for water quality and aquatic environment so indicate."

THE REQUIRED PROCESS FOR THE BOARD TO EXERCISE ITS WATERCROSSING AUTHORITY, RELYING ON TECHNICAL COMMENTS ON NWP12'S INADEQUACY

Because neither the Board (nor the DEQ acting on its behalf) has yet certified NWP12 for either project, the Board must now act to require individual permits of the watercrossings identified below,²² and for any other crossings for which the Board has unaddressed concerns. If the Board does not act, it is proactively ceding its state oversight and authority to a blanket, federal permit that the enclosed analysis shows is demonstrably inadequate to protect the Board's own jurisdictional resources.

To exercise that vested, still-unexercised state control over water resources in the Commonwealth, there are several steps the Board must now take:

First, it is urgent, in order to provide regulatory certainty, that the Board confirm at its next meeting the fact that the Board indeed has not yet certified *or* waived watercrossing

²⁰ <u>9 VAC 25-210-130(B)</u>.

²¹ See Richmond Times-Dispatch, "Pipeline Opponents: 'Northam is going to have to answer for what this looks like,'" May 5, 2018, available at www.richmond.com/news/virginia/pipeline-opponents-northam-is-going-to-have-to-answer-for/article_dd3d0c7a-11c1-5a40-bcb8-95454bff3c5e.html.

²² See enclosed report, "Threats to Virginia Water Quality: Stream Crossings of MVP and ACP," June 15, 2018, at 1, 25, & 26.

certification for either project, and clearly communicate that current status to FERC, ACE, and applicants.

Second, the Board must simultaneously initiate the individual permit process, by requiring that the applicants provide clearer and more complete site-specific crossing plans and information²³ for the below listed crossings and any other crossings of concern, to correct the extant NWP12 deficiencies identified in this comment period.

Third, having received that more complete and accurate information from applicants on their crossing construction and mitigation plans, DEQ staff will then be able to draft individual permits that are sufficiently-informed to include the necessary design and mitigation measures that fully uphold Virginia's water quality standards, designated uses, and other regulatory requirements.

Fourth, just as is the case for a general permit, a 30-day comment period is then required before individual permits may be granted.²⁴

Therefore, only after 1). the Board confirms it has not yet certified either project; 2). additional information from applicants has been requested and received; 3). DEQ staff drafts individual permits, and 4). public comment on individual permits is taken, may the Board then properly grant, or grant with conditions, individual VWPs for those crossings.

Just as important, if the Board determines that water quality standards cannot be assured under any individual permit, then the Board must deny that individual permit.

For any watercrossings which the Board deems do not require individual permits, the Board may separately apply a collective general permit (also subject to a required 30-day comment period).²⁵

²³ <u>9 VAC 25-210-55</u>.\

²⁴ <u>9 VAC 25-210-130(I)</u>.

²⁵ Id.

In the event the Board is unable to properly exercise its authority over state waters by September 9 for the ACP, or by December 22 for the MVP, the Board should promptly deny without prejudice NWP12 certifications for both projects, to avoid waiver of the Board's state authority. Denial of certification in that narrow instance is the Board's only option to ensure that it can subsequently receive a complete application, without the fundamental flaws addressed in the enclosed report, and thus issue properly-informed individual permits, as well as preserve and rightly exercise its lawful authority over Virginia's own waterways.

Lastly, if the Board determines that the DEQ has somehow separately already certified the Army Corps' general NWP12 for either or both projects, the Board must exercise its authority to <u>revoke</u> that coverage,²⁶ due to the significant "new information" concerning both projects has since come available.²⁷ That new information includes, but is not limited to, that contained in the enclosed analysis and from other technical comments the Board has received; the ACP's noncompliance with NWP12 due to the 4th Circuit's recent vacatur of the ACP's incidental take statement; and the number of MVP-caused landslides and other significant and unforeseen erosion problems and pollution releases that have already occurred.

CONCLUSION AND THE BOARD'S NEXT STEPS

To conclude, because neither the Board or DEQ have certified ACP or MVP watercrossings, the Board must review the attached technical comments and others that provide clear evidence that ACE's NWP12 is not sufficient to protect the Board's jurisdictional water resources.

Based on the comments received about the projects, the Board must now:

1). Not certify NWP12 using only a general VWP permit for either project;

2). *Require* individual VWPs for the watercrossings listed on page 1, 25, and 26 in the enclosed technical report, and for any other watercrossings the Board deems to be of concern;

²⁶ <u>9 VAC 25-210-130(E)</u>.

²⁷ See <u>9 VAC 210-180(B)(1)</u>.

3). *Clarify*, to provide regulatory certainty, that neither the Board nor DEQ has certified NWP12 for the ACP or MVP as required by law, nor has it waived the Board's authority to do so, and formally transmit that pending certification status to FERC, ACE, and applicants;

4). *Seek*, if necessary, a formal legal opinion to confirm the Board has not yet certified NWP12, and if NWP12 has been certified, clarify by whom, and how such a significant regulatory decision was made without Board knowledge or consultation.

5). *Avoid* waiving its authority to require individual watercrossing permits by exercising its statutory authority before X in the case of the MVP and Y in the case of the ACP; and

6). *Follow* all applicable regulations, including required public comment periods, for granting, granting with conditions, or denying any general or individual VWP permit for watercrossings, to ensure the Board's full protection of Virginia resources under our laws.

Thank you for taking the appropriate statutory actions to fulfill the Board's authorities under the law to protect Virginia waters and uphold the water quality standards the Commonwealth has enshrined in law.



THREATS TO VIRGINIA WATER QUALITY: STREAM CROSSINGS OF MOUNTAIN VALLEY PIPELINE AND ATLANTIC COAST PIPELINE June 15, 2018



Prepared by: Michele Adams, PE, LEED AP



June 15, 2018

Amy Mall Natural Resources Defense Council 1152 15th Street NW Suite 300 Washington, DC 20005

Re: Atlantic Coast Pipeline and Mountain Valley Pipeline

Dear Ms. Mall,

This report is in regard to analysis of available documentation of the Mountain Valley Pipeline (MVP) and the Atlantic Coast Pipeline (ACP). The report details significant categories of threats to water quality associated with the designed crossing designs and plans.

These comments are directly in response to:

- The sufficiency of the Corps NWP 12 permit's general and regional conditions, as they relate to specific, wetland or stream crossing(s)
- The sufficiency of the Corps NWP 12 permit authorization for each project, as related to specific, wetland or stream crossing(s)
- The sufficiency of the Commonwealth's § 401 water quality certification of NWP 12, as related to specific, wetland or stream crossing(s)
- Available documentation to the MVP and ACP

This analysis revealed many reasons to conclude that NWP 12 is insufficient to ensure that Virginia water quality standards will be met. In other words, based on the lack of information on the current plans and drawings, these crossings are at high risk of violating Virginia water quality standards. While our detailed analysis was limited to the crossings in Tables 2 and 3, many other crossings in Virginia are likely at similar risk, such as those of the Calfpasture River, which will be crossed 71 times, and Bottom Creek, which will be crossed 36 times. There is no consideration of cumulative watershed impacts in the permit documents.

Sincerely yours,

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Michele C. Adams, PE, LEED AP President, Meliora Design



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Civil, Water Resources, and Structural Engineering

1. OVERVIEW

This report highlights anticipated adverse impacts to waterways and water quality in Virginia due to the construction of the Atlantic Coast Pipeline (ACP) and Mountain Valley Pipeline (MVP) **that would be permitted under the Army Corps of Engineers Nationwide Permit 12 (NWP 12)**¹, and its general and regional conditions and permit authorizations, as well as the Commonwealth of Virginia's § 401 general water quality certification of NWP 12 of April 2017. This report focuses on specific water crossing concerns and example sites, including an assessment of water crossing construction methods, erosion and sedimentation controls, and post-construction conditions.

The requirements of NWP 12 and Virginia's general § 401 water quality certification of NWP 12 are broad in nature and, without site-specific information and documentation of construction requirements for each waterway crossing, are not science-based and are not adequately protective to ensure that Virginia water quality standards will be met. The ACP and MVP permit documents currently address the permit requirements in a broad narrative format with only general guidelines and simple details, but with little site-specific information for actual stream crossings. This leaves ACP and MVP to self-regulate the construction of water crossings, with decisions regarding construction methods and site protection and restoration to be made at the crossing at the time of construction.

Some of the necessary site-specific information to make informed decisions at the time of construction is available, but is distributed at multiple unrelated locations throughout the permit documents, making it difficult for a reviewer or contractor to readily have a full understanding of site-specific conditions at each crossing. For example, for ACP there is general narrative information regarding stream crossings provided in the Stormwater Pollution Prevention Plan (SWPPP), different information regarding site-specific stream crossings in Appendix P of the SWPPP "Table Listing Waterbodies Crossed and the Crossing Methods,"² additional different information regarding soil characteristics in Appendix M,³ and information regarding streambank slope stabilization methods in general narrative

¹ http://www.nao.usace.army.mil/Portals/31/docs/regulatory/NationwidePermits/Nationwide_Permit_12.pdf

² https://atlanticcoastpipeline.com/filings/46/appendix-p-va-waterbodies-crossed_09202017.pdf

³ https://atlanticcoastpipeline.com/filings/43/appendix-m-soils_06082017.pdf



format in the Appendix R "Restoration and Rehabilitation Plan."⁴ Information for MVP is also distributed through multiple documents. There is no place where all of this information is synthesized in a meaningful way that would provide detail on specific water crossings. As submitted, a reviewer or contractor cannot easily understand site conditions at a specific stream crossing, with which to make an accurate decision on how best to construct the crossing at that time in a way that best ensures protection of water quality standards.

Other necessary information, such as stream flow rates needed to meet General Condition 9 of the NWP 12, is not available and has not been developed for either pipeline. For example, there is no information on calculated flow rates for each stream crossing. Without those calculations, the Virginia Department of Environmental Quality (DEQ) cannot be certain that water quality will be maintained, either during or after construction.

For most proposed stream crossings, the specific decisions regarding the appropriate crossing drycrossing method, construction details, construction methods, and restoration practices are left to the discretion of ACP and MVP and their contractors at the time of construction, with little or no sitespecific input or oversight from DEQ or other agencies. This is of concern because of the high number of stream crossings and the widely varying site conditions, including for example, trout waters or highquality habitats vulnerable to lasting damage. Site conditions such as very steep slopes, shallow bedrock, or erosive soils create challenging construction conditions and increase the likelihood that water quality will be impacted during and after construction, both from crossing conditions and from immediate upslope right-of-way and workspace areas that can discharge into the water below. Under current permit conditions, there is no way to be certain that the decisions made in the field will meet permit requirements and maintain water quality.

The largest land use disturbance for both pipelines is forested land, meaning that forested stream crossings are common and protective riparian forested buffers will be removed, creating significant risk to water quality. Yet there is not clear direction or requirements in the permit documents regarding

⁴ https://atlanticcoastpipeline.com/filings/48/appendix-r-full-restoration-and-rehabilitation-plan-rev-6.pdf



suitable riparian buffer restoration for varying site conditions at water crossings. Restoration decisions have been left to contractors or regulators during construction.

It cannot be assured from the available plans that construction will meet the conditions of NWP 12 and the 401 water quality certification of NWP 12 without additional agency review. This current process allows the ACP and MVP to be self-regulating during construction and does not prioritize maintaining Virginia water quality standards. These findings are based on our review of the permit documents and the regulatory requirements as discussed below.

2. OVERVIEW OF NWP 12 REQUIREMENTS FOR STREAM CROSSINGS

Nationwide Permit 12⁵ includes only a few general requirements for pipeline stream crossings, and properly achieving these requirements is dependent on engineering designs and calculations specific to each unique crossing. Those site-specific engineering designs and calculations have not been provided for either ACP or MVP. These NWP 12 general requirements that **have not been** met due to a lack of site-specific designs or calculations are summarized below and include:

- Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate. (page 1)
- For utility line activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. (page 2)

⁵ Located at: http://www.nao.usace.army.mil/Portals/31/docs/regulatory/NationwidePermits/Nationwide_Permit_12.pdf

- **Regional Condition 6:** There are Conditions for Designated Trout Waters, including notification requirements and time of year restrictions on work. (page 3)
- **Regional Condition 7:** Conditions Regarding Invasive Species: Plant species listed by the most current Virginia Department of Conservation and Recreation's Invasive Alien Plant List shall not be used for re-vegetation for activities authorized by any NWP. (page 3)
- General Condition 9 Management of Water Flows. To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. (page 9)
- General Condition 23(e): Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. (page 11)
- MVP Special Condition 8; ACP Special Condition 10: Additionally, the Corps has imposed a construction limit of disturbance within Waters of the US to 75 linear feet, carried out 50 feet on either side of the Waters of the US and a nominal inspection requirement with a description of the status of vegetative growth in the stream.

Some of these requirements are straightforward, for example MVP Special Condition 8 regarding limits of disturbance. Other requirements, such as General Condition 9, cannot be met without site-specific information and calculation of flows for each stream crossing, which has not been provided.

General Condition 23(e), regarding riparian restoration, requires site-specific information, design documentation by a riparian restoration expert, and a maintenance program to assure that riparian



areas have been properly restored and establishment has been successful (and the intended vegetation is successful and has not been replaced by invasive species). These also were not found in our review of the permit documents.

In the NWP 12 approval for the ACP, Special Condition 1 specifies that the Army Corps of Engineers' verification that the construction of the pipeline will meet the criteria of the NWP is contingent upon the submitted information of the proposed activities. Since the submitted information of the proposed activities is incomplete, the permit does not meet Special Condition 1, making the NWP 12 fundamentally inadequate.

Without the necessary calculations, documentation, and implementation, the permit documents do not meet the general requirements of NWP 12.

3. OVERVIEW OF DEQ 401 WATER QUALITY CERTIFICATION REQUIREMENTS FOR UPLAND AREAS

DEQ issued 401 Water Quality Certifications⁶ for upland areas outside of the Army Corps and NWP jurisdictional areas for both ACP and MVP, with essentially the same blanket requirements in each certification that apply uniformly to all upland project activities which may result in a discharge to surface waters. These requirements are nominal and relate to riparian buffer requirements (removal limited to within 50 feet of surface waters to the extent practicable), the Limit of Disturbance in the waterbody (75 feet), and prohibition of fuel and equipment storage within 100 feet of the waterbody. Beyond these requirements, the 401 Certifications note that the projects must comply with the Stormwater Management Act and the Erosion and Sediment Control Law. Both stormwater management and erosion and sediment control (ESC) are important requirements for protecting water quality at stream crossings, but permit documents lack the site-specific detailed calculations and documentation for construction, as explained further below.

⁶ Commonwealth of Virginia 401 Water Quality Certification No. 17-001, Issued to Mountain Valley Pipeline, LLC, December 8, 2017; Commonwealth of Virginia 401 Water Quality Certification No. 17-002, Issued to Atlantic Coast Pipeline, LLC, December 20, 2017.

4. INADEQUACY OF NWP 12 AND UPLAND 401 CERTIFICATION TO PROTECT WATER QUALITY AT STREAM CROSSINGS

The general language of NWP 12 and the DEQ upland area Water Quality Certifications could be adequate to protect water quality at stream crossings, especially when combined with stormwater and erosion and sediment control requirements, *if* the permit materials and plans included site-specific plans, calculations, and documentation for each stream crossing. However, they do not.

Detailed plans and calculations do not exist in the record for most stream crossings (with the exception of a few major crossings for each pipeline). Instead, a comprehensive review shows that only very general details and narrative are provided throughout the permit application documents for the ACP and MVP pipelines, including the site-specific plans submitted for both pipelines as available on the DEQ website.⁷

A list of the specific documents reviewed for this analysis is included at the end of this report, and includes Plan Sheets, details, and narrative including items such as Erosion and Sediment Control and Stormwater Pollution Prevention Plan reports, Site Restoration and Rehabilitation Plans, and "Best in Class for Steep Slope Decision Tool and Workflow Process."

5. INADEQUACY OF PERMIT APPLICATION MATERIALS TO ENSURE NWP 12 WILL PROTECT WQS

A comprehensive review of permit application documents, engineering drawings, and other relevant materials indicates that the documents provide no assurance that state water quality standards can or will be protected at stream crossings. Specifically, the submitted documents:

1. Fail to consider the unique and varying site conditions at each stream crossing; and

⁷(http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/ErosionandSedimentControl/NaturalGasPipeline ErosionandSedimentControlandPostConstructionStormwaterManagement.aspx). Additional plans for each pipeline can be found at:

ACP: <u>https://atlanticcoastpipeline.com/permitting-process/deq-filings.aspx</u>

MVP: https://www.mountainvalleypipeline.info/current-news

2. Fail to provide site-specific calculations and plan documentation to assure that construction methods and conditions will prevent adverse impacts from the discharge of sediment into waterbodies, both as a result of stream crossings and the alteration of the right-of-way that drain into waterbodies at the stream crossings.

The following sections describe how the permit application materials fail to ensure that, under NWP 12 and permit requirements, water quality standards will be adequately protected.

6. INADEQUATE AND INCONSISTENT INFORMATION ON STREAM CROSSING METHODS

Pipeline construction at water crossings can utilize one of several crossing methods. Some methods will lead to more impacts than others at any particular site, depending on the site conditions. The unique conditions at each site must be individually analyzed to fully understand the impacts of each method at the site, to then determine the method with the least potential impact at that individual site. The stream crossing impacts of ACP and MVP are impossible to assess because the construction methods often remain unknown until construction and do not correspond to site-specific conditions. This is not a widely accepted industry practice. In addition, there is no evidence that the crossing methods were selected to minimize impacts, and there are different standards for ACP and MVP that are not based on science. This approach does not assure protection of water quality standards, but was permitted for both ACP and MVP under NWP 12.

The stream crossing methods for both pipelines, with the exception of a few horizontal directional drilling (HDD) crossings, are primarily "dry-ditch" methods—even though it is well documented that HDD can prevent or minimize impacts to water quality standards in many crossing conditions.⁸ The planned dry-ditch methods fall into three categories for MVP (as described in the various MVP SWPPPs), or two categories for ACP (as described in their September 2017 ACP SWPPP)—even though these may not be the most protective methods. These categories are:

⁸ New York State Department of Environmental Conservation, Letter to National Fuel Gas Supply Corporation and Empire Pipeiine, Inc., April 7, 2017, available at:

https://www.dec.ny.gov/docs/permits_ej_operations_pdf/northaccesspipe42017.pdf

Table 1: Extent of Projects and Number of Stream Crossings			
	Atlantic Coast Pipeline	Mountain Valley Pipeline	
Length (miles)	600	300	
Diameter (inches)	42, 36	42	
States that will contain pipeline	WV, VA, NC	WV, VA	
Number of Stream Crossings	889	383	
Number of Wetland Crossings	259	142	
Permanent Impact	9		
Wetlands (acres)	80.76	4.32	
Streams (linear feet)	2,077	478	
Temporary Impact			
Wetlands (acres)	216.65	4.87	
Streams (linear feet)	111,835	28,677	
Open Water (acres)	0.81	N/A	
Additional Information	(1) 20-inch and (2) 16-inch laterals will extend into three separate counties in VA	The pipeline will be located in the northwestern region of WV and the southern region of VA	

Both ACP and MVP will require many hundreds of stream crossings, as shown in Table 1.

- 1. Flume crossings, where flow is diverted around or over the work area of the stream crossing using a pipe.
- 2. Dam and pump dry crossings, where water is dammed and pumped around the work area, potentially with a cofferdam but also by other means, such as rock and plastic sheets. MVP divides dam and pump dry crossings into two categories, with descriptions for a cofferdam method and descriptions for dam and pump.

Both MVP and ACP submitted waterbody crossing tables that fail to specify what type of crossing will be used at each site, and provide only ambiguous crossing construction methods.⁹ For example, ACP lists multiple crossing methods, with a general note that the crossing method for any site will be chosen from the list based on conditions at the time of crossing. MVP often lists the catch-all phrase OCDD (open cut dry ditch) without specifying the exact method intended (Flume, dam and pump, or cofferdam).

⁹ https://atlanticcoastpipeline.com/filings/46/appendix-p-va-waterbodies-crossed_09202017.pdf



The impacts of different crossing methods on water quality will vary greatly by crossing method and site conditions, and both sets of information are essential to fully assess the potential impacts. Given the lack of both specific individual crossing conditions and crossing method details in permit documents, it is impossible to fully assess the impacts of the crossing method for ACP or MVP, or whether a different method would reduce impacts. For example, less steep slope disturbance may result if MVP uses a flume method in an area of steep slopes. But MVP will use either a dam and pump or cofferdam method for streams over 10 feet. By using this simplified decision-making approach, not informed by site-specific conditions or reviewed and approved by DEQ, there is no process to assess and thus minimize the water quality impacts of construction, and ensure that water quality standards can be maintained.

It is not possible to determine from permit documents how decisions about crossing method will be made, when they will be made, or who will make them. For ACP, as indicated in their SWPPP, Dominion Energy Transmission, Inc. (DETI) requested a review on a case-by-case basis with the DEQ to use the flume crossing method for streams greater than 10 feet in lieu of dam and pump approach. We were not able to find any documentation regarding whether **DEQ has specifically considered and approved this request.** It is also unclear how ACP case-by-case requests for the flume method will be made, what the review process by DEQ will involve, if decisions will be made at the construction site or prior to construction, and who will make the decisions. The permits do not set out a process. There is no mention of a limit on stream width for the flume method.

While ACP has proposed using the flume method on at least some crossings wider than 10 feet, ACP also stated that "Flumes are generally not recommended for use on a waterbody with a broad unconfined channel, unstable banks, a permeable substrate, excessive stream flow, or where the installation and construction of the flume crossing will adversely affect the bed or banks of the stream."

This statement implies that dam and pump methods on these channels will result in short and longterm water quality impacts by affecting the bed or banks. In contrast, however, MVP is permitted under NWP 12 to use a dam and pump approach for all streams wider than 10 feet. There is no analysis



of individual stream crossings to provide a scientific basis for either of these claims, much less to explain the difference between the two.

Another area of inadequate information for each site-specific stream crossing is the lack of calculated flow conditions. Calculation of flow rates is essential to without site-specific information, flow rates cannot be determined to assure that if either a flume method or a dam and pump method is adequate to prevent failure and protect water quality at a specific location. Omission of flow rate calculation This is contrary to the requirements of NWP 12, which states that *"Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows."* It is unclear whether expected high flows were calculated for ACP or MVP, or if they are to be calculated. In addition, there is no evidence of a defined decision-making process for either ACP or MVP to develop flow calculations to assure that structures are adequately sized to prevent failure.

For example, the ACP SWPPP (pg. 74) states that *"Intermittent and perennial streams will be crossed using properly designed and constructed structures installed at right angles to the access road"* although no further guidance or process for design calculations, including flow calculations, is provided. In another example, the MVP SWPPP does not contain any language regarding the flow calculations for stream crossing structures.

This permitting discrepancy raises two questions:

- If flumes are preferred for channels with these conditions, it is unclear why DEQ is allowing MVP to use dam and pump methods on all channels greater than 10 feet in width. This statement implies that dam and pump methods on these channels will result in short and longterm water quality impacts by affecting the bed or banks. These statements and decisions would benefit from review and opinions by DEQ to assure that water quality is maintained.
- 2. It is unclear how the determination is made to use a specific crossing method based on site conditions, since the plans for both ACP and MVP fail to provide site-specific information on the plan, or a decision process to be followed.



In summary, to protect water quality at stream crossings, DEQ must provide guidance on the stream crossing methods most protective of water quality for different site-specific conditions. Without such direction, NWP 12 and its conditions are insufficient to protect water quality standards at water crossings. To correct this fundamental deficiency, DEQ should require that ACP and MVP provide:

- Detailed flow calculations for each site to assure that dry crossing methods are adequately sized. Calculation of flow rates is essential to determine if a selected crossing is adequate to protect water quality standards at a specific crossing, as detailed below.
- Detailed site-specific information on the plans for each crossing to assure that the selected crossing method is appropriate for site conditions.
- A defined process for selecting stream crossing methods based on site-specific conditions, with review and approval by DEQ for each crossing once crossing methods are identified.

7. INADEQUATE FLOW AND SCOUR ANALYSES AND PIPE DEPTH

Site-specific information is needed to calculate flow rates, which should be provided in the NWP 12. Calculation of flow rates is essential to determine if a selected crossing method is adequate to prevent failure of the crossing in a way that will allow violation of water quality standards at a specific location. Omission of flow rate calculation is contrary to the requirements of NWP 12, which states that *"Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows."*

It is unclear whether expected high flows were calculated for ACP or MVP, or if they are to be calculated, even though this should be required to meet the conditions of NWP 12. In addition, there is no evidence of a defined decision-making process for either ACP or MVP to develop flow calculations to assure that structures are adequately sized to prevent failure. For example, the ACP SWPPP (pg. 74) states that *"Intermittent and perennial streams will be crossed using properly designed and constructed structures installed at right angles to the access road"* although no further guidance or process for



design calculations, including flow calculations, is provided. In another example, the MVP SWPPPs do not contain any language regarding the flow calculations for stream crossing structures.

Scouring is a type of erosion that can lead to dangerous exposure of pipe, depending on the level of flow in a water body. In their SWPPP, ACP indicates in their permit documents that a minimum of 5 feet of cover will be provided over the top of pipe in waterbodies to prevent scour. In their respective SWPPPs, MVP indicates that a minimum of 4 feet of cover will be required, except for consolidated rock areas where 2 feet will be maintained. MVP also provides narrative on what to do if scour is a concern, but MVP does not calculate site-specific flow conditions and provide a scour depth analysis at each crossing. Therefore it is not possible to determine if scour is a concern at any individual crossing for either ACP or MVP.

A scour depth analysis is necessary for each crossing to determine the appropriate depth that the pipe should be buried to avoid scouring that can expose the pipe in the stream bed.

Without this site-specific analysis, DEQ cannot determine if each pipe crossing is placed at a depth that will prevent incision at high flows. DEQ should require site-specific flow calculations for each crossing, and require that the pipe be placed lower than the depth of the calculated maximum vertical potential at each stream crossing. Without site-specific flow calculations, DEQ cannot determine if the bedding material is appropriate to the stream conditions and flows and will remain stable, and the permit approval is inadequate under General Condition 9 of NWP 12.

8. STREAMBANK AND SUBSTRATE RESTORATION

It is well established industry practice that site-specific designs tailored to site conditions are crucial to ensure successful streambank and substrate restoration. In addition to trench depth and substrate concerns, site-specific flow calculations are necessary to determine if restored stream banks are stable, and to inform the site-specific construction requirements for each crossing to prevent scour of streambanks and the discharge of sediment. This is especially important in areas of steep slopes and highly erodible soils, where erosion of streambanks during and after construction will contribute to sediment discharges to the stream.



Site-specific flow calculations are not provided for either pipeline, and DEQ therefore cannot determine if restoration of streambanks will be stable or will erode and generate sediment in any individual site. In addition, DEQ permit conditions do not require that the trench substrate be comparable to the width, depth, slope, and materials native stream materials up and downstream of the crossing, and that pre-construction morphology be recreated to maintain pools and riffles. This is especially important in trout waters.

However, with site-specific flow calculations, DEQ would be able to assess streambank restoration plans and determine if simple grading and seeding methods are sufficient, whether the grading slope of stream embankments will be stable, and whether engineered streambank restoration methods (i.e. coir logs and planting) are required. Without site-specific information on conditions and site-specific calculations, DEQ has no way to determine if the disturbed streambanks will be restored to a stable and non-erosive condition. Without such information, NWP 12 and its conditions are not sufficient to protect Virginia water quality standards.

9. SITE-SPECIFIC CONDITIONS THAT SHOULD BE CONSIDERED AT EACH STREAM CROSSING

Both the ACP and MVP will cross streams at locations where conditions may include trout waters, steep slopes, shallow bedrock, erosive soils, soils that are difficult to reestablish with vegetation, potentially high stream and stormwater flows, and other constraints. These conditions, alone or in combination, increase the difficulty of construction and the likelihood that increased sediment discharges could occur during and after construction. The site-specific conditions at stream crossings, if not properly addressed during design and construction, will affect water quality, both as a result of the construction at the crossings themselves and as a result of disturbance along the right-of-way and work areas that drain to the waterbody. Site-specific conditions can particularly affect water quality during construction if blasting is required, and in the long term, for example, if disturbed soils at the crossing site are difficult to re-establish with vegetation to prevent erosion.



Therefore, it is critical that site-specific conditions at water crossings inform the design and construction of each water crossing to protect water quality. However, site-specific information on the construction plans for each crossing is not a permit requirement and has not been provided.

DEQ identified more than 20 site-specific conditions that should be considered when preparing a plan and be evaluated as potentially critical areas that may be particularly sensitive to water quality impacts, as shown in Appendix J -DEQ List of Potential Critical Areas.. The State identified state waters, including wetlands, as environmentally sensitive areas.¹⁰ These site-specific conditions have not been provided in permit documents. They include (but are not limited to): steep slopes, highly erodible soils, trout waters, soils with less than 5 feet of depth to bedrock. Issues with failure to provide site-specific information for each of these items are detailed below.

A. Steep slopes:

Steep slopes increase the difficulty of working along the stream crossing areas, and increase the velocity of stormwater runoff draining to the stream crossing area, which can increase the potential for erosion and the discharge of sediment at the stream crossing. This sediment can be from upslope right-of-way areas (for which site-specific runoff calculations have not been provided), and from erosion at the crossing work area. The steeper the slope, the higher the velocity of runoff and the more likely erosion will occur since soil erosion is directly affected by the velocity of stormwater runoff, and as noted by DEQ, the risk of erosion increases as the length of the steep slope increases. DEQ notes that the erosion hazard becomes critical if the length of steep slope is above a certain value for areas of different slopes. This includes areas where more than 75 feet of slope is greater than 15%. ACP specifically cited the difficulty of working on steep slopes as a reason to use flume crossings at sites greater than 10 feet in width.

¹⁰ Appendix J, etc



Appendix J - DEQ List of Potential Critical Areas

DEQ developed the following list of potential critical areas, derived from VESCH and other sources, to aid plan preparers in identifying potential critical areas on a project. These areas should be considered when preparing a plan and identifying critical areas. Extra attention should be directed to these areas if they have potentially serious problems or are sensitive to sediment impacts.

A. Steep Slopes:

i. Ranges of slope gradient erodibility:

1.0-7% \rightarrow Low erosion hazard

2. 7-15% \rightarrow Moderate erosion hazard

 $3. \ge 15\% \rightarrow$ High erosion hazard

ii. Erosion hazard becomes greater as the slopes length increases. Erosion hazard will become critical if the slope exceeds:

1.0-7%	🗌 300 feet
2. 7-15%	🗌 150 feet
3. >15%	□ 75 feet

B. Areas with high erodibility, high reactivity of soils, etc.

i. 0.23 and lower \rightarrow low erodibility

ii. 0.23 to 0.36 \rightarrow moderate erodibility

iii. $\geq 0.36 \rightarrow$ high erodibility

iv. Soil pH

C. Areas that flow to environmentally sensitive areas (e.g. State waters including wetlands)

D. Areas that require Virginia Wetland Protection permits

E. Areas containing threatened or endangered species or their habitat, etc.

F. Sink holes, wet weather/underground springs, karst areas, etc.

G. Sensitive agricultural soils

H. Other Potential Critical areas –

i. Fragipans

ii. Lacustrine soils

iii. Dense basal tills

iv. Soils with seasonally high water table

v. Soils with less than 5 feet of depth to bedrock

vi. Subsurface drainage areas

vii. Open ditches

viii. Diversions

ix. Diversion terraces

x. Buried utility lines (for farmstead consumptive use)

xi. Water sources (developed springs, wells, etc...)

xii. Grassed waterways

xiii. Water impoundment structures (dams and ponds)

xiv. Unnamed water flows

In addition to potential erosion, steep slopes often have difficulty in the re-establishment of vegetation, which further increases the likelihood of erosion at the crossing and impacts the reestablishment of a riparian buffer, especially post-construction. Appendix M for the ACP identifies segments of the pipelines where slopes are greater than 9% as having revegetation concerns. (MVP fails to address this issue.) Yet there is no evidence in ACP's permit documents that this identified condition was taken into account in designing the construction requirements or revegetation practices at individual stream crossings where there are steep slopes.

Because steep slopes can impact the crossing conditions and long-term establishment of vegetation, DEQ should include steep slopes as a site-specific factor to be evaluated when determining stream crossing and restoration methods, and the specific requirements for providing this analysis should be included as a permit condition to maintain water quality. DEQ should also require that steep slopes be taken into consideration for revegetation, and specific revegetation plans and techniques be included for reestablishment of vegetation on steep slopes adjacent to water body crossings.

B. Highly Erodible Soils:

Soils that have a high erodibility factor will erode at lower runoff amounts and velocities than other soils, and are especially susceptible to causing increased discharge of sediments. Soil erodibility should be considered when selecting both crossing methods and erosion and sediment control measures, especially at water crossings in proximity to sensitive waters. The amount of time that highly erodible soils are bare and exposed increases the likelihood of erosion and the likelihood of water quality impacts. The site-specific documentation of the presence of highly erodible soils should be a required permit condition by DEQ, with site-specific requirements to protect water quality.

Both ACP and MVP provide soil characteristics by milepost and includes information on whether the soils are highly erodible (by water or wind), as well as whether the soils are

hydric, if there are revegetation concerns, if the soils are stony/rocky, and if there is shallow bedrock within 60 inches of the surface (including whether the bedrock is lithic and likely to require blasting for pipeline construction).

However, there is no evidence that this information was considered in the engineering design of individual water crossings for either pipeline. In Section 2.16 of the ACP SWPPP, different types of soils are discussed and the SWPPP states that *"Soils along the proposed pipeline routes and in other work areas were evaluated to identify prime farmland and major soil characteristics that could affect construction or increase the potential for construction-related soil impacts."* However, although soils were identified, no information is provided as to how soil information was considered during design of individual water crossings. Reference is made in the SWPP to the consideration of soil erosion characteristics as part of DETI's Best-in-Class program¹¹ for incremental controls in steep terrain, but this does not appear to influence the actual erosion and sediment control details at the crossings, or to inform the type of crossing.

Since highly erodible soils are more likely to contribute to sediment discharges at stream crossings, DEQ should require that site-specific soil information be provided for each stream crossing and included in the site-specific decisions regarding work area and crossing method. This is standard industry practice to ensure that highly erodible soils and their potential discharge at water crossings are minimized and water quality protected.

C. Trout Waters:

Many of the waterbodies crossed by the pipelines include trout stocked or trout reproducing streams, although this is not explicitly indicated in Appendix P for the ACP NWP 12 or Appendix F-1 for the MVP NWP 12, which list the waterbodies crossed. According to the Virginia Department of Game and Inland Fisheries (DGIF): "In Virginia, most trout habitat losses occur through increased stream temperature, siltation, and stream channel

¹¹ Appendix W found at https://atlanticcoastpipeline.com/permitting-process/deq-filings.aspx



alteration."¹² DGIF states that alteration of stream channels is of critical concern for wild trout habitat.

There is no evidence in the permit application materials that site-specific stream information related to sensitive areas, including trout waters, is used (either alone or with other site-specific factors, such as shallow bedrock) to inform design and construction decisions such as crossing type, or plans for individual water crossings. While there are seasonal work restrictions in trout streams as required by the permit for both projects, those can be waived, and are not a replacement for individual, site-specific crossing designs that take into account trout habitat and relevant stream channel or siltation concerns that need to be avoided to preserve water quality and habitat. Especially for trout waters, DEQ should require as a condition of the permit that both stream crossing methods and bed restoration requirements be site-specifically designed for each trout water, and that these designs be submitted to DEQ for review and approval.

D. Soils with less than 5 feet of depth to bedrock:

This condition is especially important to evaluate at stream crossings, since shallow bedrock may require blasting or additional construction disturbance to place the pipe. This further increases the likelihood of sediment discharge during construction, and also impacts the stream bed stability after construction. The ACP 12-page Blasting Plan, Appendix L, states that

"Based on an analysis of the Natural Resource Conservation Service's Soil Survey Geographic Database, approximately 26 percent (155.8 miles) of the proposed ACP and SHP pipeline routes will cross areas with bedrock at depths of less than 60 inches. More than half (81.7 miles) of this bedrock are considered paralithic (soft) and may not require blasting during construction. The remaining areas will cross soils with a lithic contact (hard bedrock) within 60 inches of the surface that may require blasting or other special construction techniques

¹² https://www.dgif.virginia.gov/fishing/trout/wild-trout-program/



during installation of the proposed pipelines." Neither the ACP or the MVP permit documents include guidance to protect water quality specific to blasting when crossing streams.

As a condition of the permit, DEQ should require that a site-specific plan be developed for each stream crossing.

10. IMPORTANCE OF SITE-SPECIFIC INFORMATION TO PROTECT WATER QUALITY AT STREAM CROSSINGS

Site-specific information at stream crossings is important because different site conditions require different design decisions and construction techniques to assure that water quality will be maintained. It is the design professional and engineer's responsibility to evaluate site-specific conditions at each stream crossing and to design and document each stream crossing in a manner that addresses those conditions to assure that NWP 12 and DEQ 401 requirements will be met, as well as all stormwater and erosion and sediment control requirements. The engineer's responsibility is to use site-specific information and perform the required analyses and calculations. Information required for an engineered design may include, for example, soil erodibility, flow and scour analyses, grading and restoration of slopes, and other information.

As an example, a stream crossing location with shallow bedrock that will likely require blasting, steep slopes on the areas draining to the stream, and highly erodible soils on the banks will require more construction measures and post-construction measures to assure that water quality is maintained, as compared to a site with mild slopes, non-erosive soils, and a channel bottom that is easily excavated. For this example, erosion and the discharge of sediment are likely to occur with smaller rainfalls. If erodible soils are located on steep or very steep slopes, the likelihood of erosion is even greater, and it will be more difficult to establish vegetation after construction. Knowing this, an engineer developing a site-specific stream crossing on a site with highly erodible soils and steep slopes should:

• Develop flow calculations as required by NWP 12 to determine if the post-construction streambanks will experience erosive flow velocities, and if so, document site-specific

streambank restoration measures to prevent this erosion and discharge of sediment, including bio-engineering techniques.

- For dry crossings, develop flow calculations to determine if the selected flume or pumps are adequate to convey and withstand "expected high flows" as required by General Condition 9 of NWP 12.
- Develop flow calculations to determine if the buried pipe depth is sufficient to prevent pipe exposure or removal of the bedding. A scour depth analysis should be conducted to assure that the substrate placed over the pipe will withstand expected high flows per NWP 12.
- Limit the extent of clearing and grubbing on streambanks to the minimum necessary for work at that location.
- Locate Additional Temporary Workspaces further from the stream to provide an additional buffer or relocate these work spaces away from steep slopes or erosive soils, which are more susceptible to sediment discharges.
- Select a stream crossing method that requires less disturbance on the side slopes, such as an HDD method, or reduce the need for creating spaces for pumps by using a flume method.
- Require additional temporary and permanent slope stabilization methods or flow diversions to
 assure that erosion will not occur on streambank slopes due to the "run on" of upslope right-ofway drainage. Standard, one-size fits all right-of-way flow diversion techniques that do not
 provide site-specific calculations for upslope drainage areas may not be adequate to prevent
 erosion on slopes with erosive soils. Neither ACP or MVP provide site-specific runoff
 calculations. Rather a "one size fits all" calculation approach is used for all right-of-way areas,
 and this approach assumes that the right-of-way will generate less runoff after construction
 than a pre-construction forested condition, which runs counter to basic engineering science.
- Divert additional upstream runoff away from the streambanks to prevent erosion.

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- Develop a vegetation restoration plan specific to the riparian soils and conditions of the site, including the specific vegetation, and potentially the use of plugs in lieu of seeding for successful vegetation establishment. Industry standard vegetation restoration usually includes an establishment period with inspections and defined metrics and requirements for successful vegetation establishment, including the removal of invasive non-native vegetation in the disturbed area.
- For trout waters, provide site-specific requirements for channel restoration to maintain the • slope, depth, and substrate material in the right-of-way, including the backfilled trench.

This is only one example of the conditions for a typical stream crossing condition for the ACP and MVP projects, since the proposed route traverses steep and rugged terrain and extensive forested areas. Without site-specific calculations and plans, there can be no expectation that the construction of the stream crossing will maintain water quality or meet the requirements of NWP 12, especially with regards to withstanding expected high flows per General Condition 9.

During construction, the contractor's responsibility is to execute the plans as documented by the engineer. The contractor is not qualified to make design decisions, especially related to expected high flow rates. In the case of ACP and MVP, the contractor does not have easy access to the site-specific information that is available, since this information is spread throughout the permit documents. As a result, there will be little or no consideration by the contractor of site-specific conditions at stream crossings, and it is not the contractor's responsibility to consider site-specific information.

The ACP and MVP permit documents have primarily addressed design decisions through the use of general narrative language. An example of language regarding Restoration from one of the MVP SWPPPs¹³ is provided below, with comments noting the inadequacy of the language:

Restoration:Restoration will begin immediately after final grade is established. Stream banks will be

¹³ Mountain Valley Pipeline SWPPP Spread 8 page 31



restored by vegetative stabilization (VESCH STD & SPEC 3.22) where site conditions warrant. There is no definition of "where site conditions warrant", either in the narrative or on the plans, and there are no site-specific flow calculations to assure that NWP General Condition 9 will be met for streambank restoration.

Vegetative stabilization generally includes planting a perennial conservation seed mix from VESCH STD & SPEC 3.32 Table 3.32-B. There is no justification to assume that this seed mix will be suitable for all conditions, regardless of soil type and slope, and no guidance for establishing vegetation on steep slopes and erosive soils, which are common and known to be difficult to establish with seed.

If grubbing has not been extensive, then native shrub and tree species are expected

to sprout and regenerate naturally. There is no definition of extensive grubbing, and no documentation or guidance on the plans that the contractor should reduce or limit grubbing. There is no reason for the contractor to limit workspace, and it is unlikely that the contractor will limit grubbing.

A sediment barrier will be maintained at the edge of the water until revegetation

is successful. There are no site-specific stormwater calculations, without which there can be no assurance that the sediment barrier is the correct size to control runoff. Especially on steep slopes and long segments of steep slopes, sediment barriers are often overtopped.

These limited examples are intended to demonstrate the necessity of considering site-specific information at each stream crossing, and developing site-specific stream crossing plans to provide the necessary information during construction.

11. LACK OF SITE-SPECIFIC STREAM CROSSING DATA FOR ACP AND MVP

In our review of ACP and MVP permit documents, we found multiple examples of crossing areas where sensitive site conditions exist but there is no indication that the design engineer considered these site-specific conditions in documenting stream crossings. There is also no information on the plan sheets to



indicate to the contractor that the conditions exist at a specific crossing. There no differences in the design documentation for a stream crossing with many site sensitive constraints as compared to a stream crossing with few constraints, and there is very little information provided on any stream crossing plan. The vast majority of stream crossing plans do not meet industry standards for engineered construction documents.

Using data provided in the ACP and MVP permit documents, we compiled site-specific information for several proposed stream crossings, as shown in Tables 2 (ACP) and 3 (MVP) below. We chose these sites to illustrate the numerous site-specific constraints that exist for many crossings.

For the ACP crossings in Table 2, we selected eleven crossings that Trout Unlimited¹⁴ has identified as supporting a reproducing trout population and being of the highest concern. The site-specific information in the tables is compiled from various permit application documents but is not available in this summarized format within the permit application. Every crossing has multiple site conditions that require individual designs and plans to ensure protection of water quality standards.

For the MVP crossings, we selected eight crossings that have multiple sensitive conditions, including several that are subject to the jurisdiction of the Virginia Marine Resources Commission (VMRC). More detailed plans are required for the VMRC review process, and these sites offer a comparison to the limited and vague information provided for non-VMRC crossings. However, the VMRC crossings are only a very small percentage of total crossings.

In each table, we noted the waterbody name and project crossing ID. We then noted the presence of site-specific conditions at each of these stream crossings based on permit documents. This includes site-specific conditions that DEQ listed as indication of potential critical areas that warrant consideration in Appendix J (Figure 1), as well as other information that was provided in the permit documents for site-specific conditions that can increase the potential for water quality impacts during and after construction. We compiled these tables because comparable summary tables with

¹⁴(http://trout.maps.arcgis.com/home/webmap/viewer.html?webmap=7b80f06b36b34701b4c351a9e167bd6f&extent=-80.2231,38.1083,-79.4143,38.4586)


information in one location are not in the permit documents, which makes finding this information difficult. Information noted on Tables 2 and 3 includes many sensitive conditions such as the presence of erodible soils, forested land use, steep slopes and shallow bedrock. Tables 2 and 3 are slightly different because the ACP and MVP permit documents provide slightly different information in different formats and locations within the permit documents.

As can be seen from Table 2 and 3, the stream crossings have numerous site-specific conditions that, according to DEQ Appendix J, "should be considered when preparing a plan." In selecting crossings, we found that most crossings have one or more of the conditions that warrant individual site-specific designs and plans listed in Tables 2 and 3, and many crossings have multiple conditions. We then reviewed the corresponding Detailed Alignment Sheets and details for both the ACP and MVP to determine if the engineering plans reflect consideration of any of these conditions. There is nothing in the permit materials to indicate that different design considerations or standards were used in response to the site-specific conditions, or to mitigate any potential water quality impacts. The same designs and standards were applied uniformly to many crossings regardless of unique site conditions that warrant individual designs and plans to ensure that water quality standards will be protected.

This analysis revealed many reasons to conclude that NWP 12 is insufficient to ensure that Virginia water quality standards will be met. In other words, based on the lack of information on the current plans and drawings, these crossings are at high risk of violating Virginia water quality standards.

Appendix A contains plan sheet information for several of the cross-sections in Tables 2 and 3 to illustrate the lack of information provided on the plans, particularly in comparison to the VMRC plans. Current plans for these crossings, and the conditions under NWP 12 and the Commonwealth's § 401 water quality certification of NWP 12, are insufficient to protect water quality in Virginia waters, and there are no supporting flow calculations to show that NWP12 Special Condition 9 will be met. Each of these crossings, and likely many more, are at risk of significant water contamination due to the current inadequate designs and plans.

Table 2:

Site-Specifi	c Informati	on o	on Sele Co	ect N	Wat	erbo Alon	odies I Ig the /	dent Atlaı	tified by T ntic Coast	rout Unlimit Pipeline	ted as Crossings of Highest
Waterbody Name	Crossing ID ¹	Erodible Soils ²	Conservation Land	Forest	Slopes over 15%	Slopes over 30%	Revegetation Concerns ²	Story/Rocky ²	Shallow to Bedrock ^{2,3}	Waterbody Regime ¹	VA Construction Method ¹
Peak Run	shif002	x		x		x	x	x	Lithic	Ephemeral	Dam and Pump; Flume; Perm AR- Stream Impact
UNT to Stony Run	shia401	x	x	x		x	x	x	N	Ephemeral	Dam and Pump; Flume
Stony Run	shia402	x	x	x	х		x	x	N	Perennial	Dam and Pump; Flume
Dowell's Draft	saua416 ⁴	x	x	x	x		x	×	Lithic	Perennial	Dam and Pump; Flume; Perm AR - Existing Culvert
Wetland	waua408f ⁵	x	x	x	x		x	x	Lithic	No Data	Open Cut -Wetland
East Branch Dowell's Draft	saua420 ⁶	x	x	x		x	x	x	Paralithic	Perennial	Perm AR - Stream Impact
UNT to Folly Mills Creek	saua444 ⁷	×		x	x		x	x	N	Ephemeral	Dam and Pump; Flume
UNT to Back Creek	saua434 ⁸	×	x	x	x		x	x	Lithic	Intermittent	Dam and Pump; Flume
UNT to Back Creek	saua066	x		x	x		x	x	N	Intermittent	Flume; Dam and Pump
UNT to South Fork Back Creek	saua401	x		x	x		x	x	N	Perennial	Flume; Dam and Pump
UNT to South Fork Back Creek	saua403	x		x	x		x	x	N	Intermittent	Dam and Pump; Flume; Perm AR- Stream Impact

¹See Appendix P: VA ACP Waterbodies Crossed from the ESC submission to VA DEQ.

² See Appendix M: Soil Characteristics by Milepost Segment for Each Soil Map Unit Along the Proposed Pipeline Routes from the ESC submission to VA DEQ.

³ "Paralithic" refers to "soft" bedrock that will not likely require blasting during construction, while "Lithic" refers to "hard" bedrock that will likely require blasting or other specialized techniques during construction.

⁴This crossing is shown on the plans as "SAUC002"

⁵ This crossing is shown on the plans as "WAUC001F"

⁶This crossing is shown on the plans as "SAUC004"

⁷ This crossing was not shown on the plans

This crossing is shown on the plans as "SAUC104"

Table 3:

Site-Specific Information on Select Stream Crossings Along the Mountain Valley Pipeline													
Waterbody Name ¹	Crossing ID	Erodible Soils ³	Conservation Land	Forest	Slopes over 15%	Slopes over 30%	Stony/Rocky ³	Thretened and Endangered Species Stream ¹	Trout Stream ¹	Shallow to Bedrock ¹	Waterbody Regime ¹	VA Construction Method ¹	VA Gassification ¹
UNT to Little Stony Creek	S-Z14	x		x					x	x	Intermittent	Open-Cut Dry Ditch; Temporary Fill	Aquatic Life
Sinking Creek	S-NN17 ²			x				x	x	x	Perennial	Open-Cut Dry Ditch; Temporary Fill	Aquatic Life
UNT to <mark>Craig</mark> Creek	S-HH18	x	x	x	x	x		x		x	Perennial	Open-Cut Dry Ditch; Temporary Fill	Aquatic Life
UNT to Bottom Creek	S-Y13	x		x		x				x	Intermittent	Open-Cut Dry Ditch; Temporary Fill	Aquatic Life
UNT to Bottom Creek	S-Y14	x		x		x		x	x	x	Perennial	Open-Cut Dry Ditch; Temporary Fill	Aquatic Life
Mill Creek	S-IJ43 ²			x				x	x		Perennial	Open-Cut Dry Ditch; Temporary Fill	Aquatic Life
Green Creek	s-H1			x			x	x	x	x	Perennial	Open-Cut Dry Ditch; Temporary Fill	Aquatic Life
North Fork Blackwater River	S-D8 ²	x		x			x	x	x	x	Perennial	Open-Cut Dry Ditch; Temporary Fill	Aquatic Life, Shellfish Production, Recreation, Wildlife

¹ See Appendix F-1: Waterbodies Crossed by the Projects - Mountain Valley Project from the Final Environmental Impact Statement for the MVP.

² Denotes a VMRC stream crossing. See the detail sheets from the ESC plans for site-specific drawings for these crossings.

³ See Appendix N-2: Soils and Soil Limitations Crossed by the Mountain Valley Project in Virginia in Acres from the Final Environmental Impact Statement for the MVP.

To complicate our review, we found that the Crossing ID numbers provided in the ACP permit documents do not always correspond to the crossing numbers in the Detailed Alignment Sheets for the ACP. We were forced to manually compare crossing information between the plans and tables to identify the new Crossing Numbers. This is indicated in Table 2, where (for example) the crossing of perennial stream Dowell's Draft is identified as crossing saua416 in the ACP appendices within the permit application documents but appears as sauc002 on the Detailed Alignment Sheets. This change or inconsistency in stream crossing labeling or locations appears to be a consistent problem throughout the pipeline; numerous other examples exist where crossing ID numbers provided in the



ACP permit documents do not correspond to the crossing numbers in the Detailed Alignment Sheets for the ACP. It does not appear that DEQ has required ACP to correct the nomenclature in the supporting documents to reflect the plans, or if DEQ is aware of the inconsistency. If crossing locations have been relocated or renamed, that should be clearly indicated in the permit documents. This inconsistent identification process makes it difficult for anyone reviewing the documents, including DEQ, to find the correct site-specific information or to review plans, and may mean that there are errors in the NWP12 approval.

12. CONCLUSION AND RECOMMENDATIONS

It is clear from our engineering analysis that the Army Corps of Engineers Nationwide Permit 12 and its general and regional conditions and permit authorizations, as well as the Commonwealth of Virginia's § 401 general water quality certification of NWP 12 of April 2017, are together insufficient to protect water quality standards at pipeline crossings in Virginia. The lack of site-specific information for each waterway crossing and crossing method ultimately leaves regulators with gaping holes in designs and plans. ACP and MVP are left to self-regulate the construction of water crossings, with decisions regarding crossing methods and site protection and restoration to be made at the crossing at the time of construction, with nearly unlimited levels of discretion left to the pipeline owners and their contractors.

Some of the necessary site-specific information to make informed decisions at the time of construction is available, but is distributed at multiple unrelated locations throughout permit documents, making it difficult for a regulator or contractor to readily have a full understanding of site-specific conditions at each crossing. Other information necessary to ensure protection of water quality, such as stream flow rates or scour analysis, is not available and has not been developed for either pipeline. Collectively, this places Virginia waters at every single crossing of both pipelines at significant risk of water quality violations.



Recommendations

To ensure protection of Virginia water quality standards, the State Water Control Board should require individual, site-specific analysis and permitting for the water crossings listed in Tables 2 and 3 of the report, and any others at which the Board deems protection water quality standards and the aquatic environment cannot yet be assured. Such analysis has not been done, nor can it be done because the information required is not available.

The following minimum requirements must be taken before effective individual permits for water crossings can be considered:

- 1. Require detailed site-specific information for every water crossing, including but not limited to details on every one of the conditions listed in DEQ's List of Potential Critical Areas (Appendix J).
- 2. Require all site-specific information for each crossing to be compiled in one location.
- 3. Require restoration plans, including streambank, substrate, and riparian buffer restoration, that are designed for the varying site conditions at individual water crossings. This should include design documentation by a riparian restoration expert and a maintenance program.
- 4. Require a crossing method analysis for each crossing that provides details on the costs and benefits for crossing alternatives and the exact crossing method proposed to be used.
- 5. Ensure that the in the individual permitting process the same technical approach to selecting crossing methods and designing crossings is used for *both* the ACP and MVP, to ensure they are required to meet the same water quality and engineering standards.
- 6. Confirm before individual permits are issued that all crossing designs and decisions are based on the best available science and standard industry practices.
- 7. Require detailed flow calculations for each crossing to determine if a selected crossing is adequate to prevent crossing failure and protect water quality standards at a specific location.



- 8. Require scour analysis for individual crossings to determine the appropriate depth that the pipe should be buried to avoid scouring that can expose the pipe in the stream bed.
- 9. Prohibit uniform designs and standards that were developed for other sites from being used at unique crossing sites that warrant individual designs.
- 10. Remove discretion from operators and contractors to make significant construction decisions that could endanger water quality after individual permits are issued.



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Appendix A

Select Example Plan and Profile Information for Stream Crossings listed in Tables 2 (ACP) and 3 (MVP)

LEGEND



	PROPOSED PERMANENT EASEMENT
	PROPOSED GAS PIPELINE
	PROPOSED GAS PIPELINE (NO GROUND SURVEY)
SRF	BELTED SILT RETENTION FENCE (BSRF)
unumumumumumumu	COMPOST FILTER SOCK
	PERMANENT WATERBAR/SLOPE BREAKER TEMPORARY WATERBAR/SLOPE BREAKER
Ψ	TRENCH BREAKER/PLUG
\diamond	STREAM CROSSING
	USFWS STREAM CROSSING WITH ENHANCED CONTROLS
	SEEP
	SLOPE DIRECTION
(ACCORDANCE)	CONSTRUCTION ENTRANCE WITH DITCH CULVERT AS NEEDED
-	CULVERT/ WATERBAR
A1 (E) 30-58%	TYPICAL BIC SLOPE CATEGORY SLOPE INCLINATION

Figure A-1: Legend for ACP Drawings

STREAM

ACCESS ROAD



Figure A-2: ACP Detailed Alignment Sheet for stream crossings SHIA401 & SHIA402. This is not a detailed plan per standard engineering practice and very little site specific information is provided. Note that additional temporary work spaces are located on very steep slopes upstream of stream crossing shia401, increasing the liklihood of sediment discharges.



Figure A-3: Portion of profile that includes stream crossings SHIA401 & SHIA402 on the ACP



Figure A-4: ACP Detailed Alignment Sheet for stream crossings SAUA416 & SAUA420 and wetland crossing WAUA408f. This site has numerous conditions that warrant design consideration and construction practices to maintain water quality, including erodible soils, steep slopes, and shallow bedrock that will require blasting. It is also in proximity to an access road and there will be extensive disturbance. Both streams are perennial trout streams and there are no flow calculations to demonstrate that NWP12 Condition 9 will be met.



Figure A-5: ACP Detailed Alignment Sheet for stream crossings SAUA416 & SAUA420 and wetland crossing WAUA408f

LEGEND

	PROPOSED	LIMIT	OF	DISTURBANCE	
--	----------	-------	----	-------------	--

- STREAM
- PROPOSED PIPELINE
- sr sr PROPOSED SILT FENCE (SEE NOTE 5)

- ----- ORANGE CONSTRUCTION SAFETY FENCE
- -12-12-12-12-PROPOSED COMPOST FILTER SOCK (SEE DETAILS MVP-ES3, 3.1, 3.2)
- -18-18-18-18-PROPOSED COMPOST FILTER SOCK (SEE DETAILS MVP-ES3, 3.1, 3.2)
- -24-24-24-24-PROPOSED COMPOST FILTER SOCK (SEE DETAILS MVP-ES3, 3.1, 3.2)
 - CLEAN WATER DIVERSION PIPE
 - CLEAN WATER DIVERSION DIKE (SEE DETAIL MVP-ES50 AND MVP-ES51)
 - STREAM FLOW DIRECTION
- TIMBER MAT (SEE DETAIL MVP-ES37)
-



STEEP SLOPE AREAS (SEE NOTE 4)



PROPOSED ROCK CONSTRUCTION ENTRANCE

STEEP SLOPE EROSION CONTROL (SEE NOTE 2)

- PROPOSED TRENCH BREAKER (SEE DETAIL MVP-20)
- TEMPORARY ROW DIVERSION/WATER BAR (VADEQ STD & SPEC 3.11)
- PERMANENT SLOPE BREAKER/ROW DIVERSION/WATER BAR (SEE DETAILS MVP-17, ES38, AND SCHEDULE)

Figure A-6: Legend for MVP Drawings



Figure A-7: MVP Detailed Alignment Sheet for stream crossings S-HH18. This is a perennial stream immediately adjacent to slopes greater than 30% with erosive soils. Note that all details are typical (TYP) with no site specific consideration of conditions.



Figure A-8: MVP profile that includes stream crossing S-HH18



Figure A-9: MVP Detailed Alignment Sheet for stream crossing S-NN17 on the MVP. This is a perennial trout stream in forested condition, downslope of over 400 feet of right-of-way that is over 30% slope, increasing the likelihood of sediment discharge from undersized sediment controls. Compare this plan to the same crossing in Figure A-11.



Figure A-10: MVP profile that includes stream crossing S-NN17. Compare this profile to the same stream crossing in Figure A-12.



Figure A-11: VMRC Site-specific detail plan for MVP stream crossing S-NN17. This figure is in comparison to Figure A-9 for the same stream crossing to demonstrate the difference between VMRC plan documentation and standard documentation in the MVP permit documents. There only only a few VMRC crossings on the MVP.



Figure A-12: VMRC Site-specific profile for MVP stream crossing S-NN17. The standard profile for this same crossing can be seen in Figure A-10, which provides almost no site specific information.

Appendix B Stream Crossing Details and Compost Sock Detail for the ACP



Figure B-3: Cofferdam Crossing



Figure B-5: Flume Pipe Crossing



Figure B-4: Compost Filter Sock

Appendix C Stream Crossing Details for MVP





	2 BAG MINIMUM HEIGHT ABOVE NORMAL	SANDBAGS							
FIGURE 3.13 Jersey Barrier Cofferdam – End View									
SANDBAG TO HOLD IMPERVIOUS LINER IN PLACE IMPERVIOUS LINER EXTENDED TO STREAM BOTTOM AND SECURED WITH SANDBAGS SANDBAG NORMAL STREAM FLOW JERSEY BARRIER OPTIONAL SANDBAG PLATFORM PA DEP									
NOTES: AT NO TIME, SHOULD MORE THE 60% OF THE STREAM CHANNEL WIDTH BE DIVERTED DURING PIPELINE INSTALLATION. GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP-OF-BANK UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AND PIPE IS READY FOR INSTALLATION. TRENCH BREAKERS SHALL BE INSTALLED WITHIN THE TRENCH ON BOTH SIDES OF THE STREAM CHANNEL (MVP TYPICAL DETAIL MVP-20). WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY RECEIVING SURFACE WATER. HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM THE TOP OF STREAMBANK. ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED.									
DRAWN DATE		ENVIRONMENTAL DETAIL							
CHECKED DATE									
APP'D DATE		COFFERDAM STREAM							
SCALE N.T.S. SHEET 1 OF 1	Vallev	CROSSING METHOD							
JOB NO.	PIPELINE								
PROJECT ID:	DESIGN ENGINEERING	DRAWING NO. REV. MVP-ES13.2 P							







THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.



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