# MVP Southgate Project

Docket No. CP19-XX-000

# Resource Report 1 – General Project Description

November 2018

# MVP Southgate Project
# Resource Report 1 – General Project Description

| Resource Report 1 – Filing Requirements | |
|---|---|
| **Information** | **Location in Resource Report** |
| **Minimum Filing Requirements** | |
| 1. Provide a detailed description and location map of the Project facilities (§ 380.12(c)(1)).<br>• Include all pipeline and aboveground facilities.<br>• Include support areas for construction or operation.<br>• Summarize the total acreage of land affected by construction and operation of the project. | Section 1.2<br>Figure 1.2-1<br>Section 1.3<br><br>Resource Report 8 |
| 2. Describe any non-jurisdictional facilities that would be built in association with the Project. (§ 380.12(c)(2)).<br>• Include auxiliary facilities (See § 2.55(a)).<br>• Describe the relationship to the jurisdictional facilities.<br>• Include ownership, land requirements, gas consumption, megawatt size, construction status, and an update of the latest status of Federal, state, and local permits/approvals.<br>• Include the length and diameter of any interconnecting pipeline.<br>• Apply the four-factor test to each facility (see § 380.12(c)(2)(ii)). | Section 1.9 |
| 3. Provide current, original United States Geological Survey (USGS) 7.5-minute series topographic maps with mileposts showing the Project facilities (§ 380.12(c)(3)).<br>• Maps of equivalent details are acceptable if legible (check with staff).<br>• Show locations of all linear project elements, and label them.<br>• Show locations of all significant aboveground facilities, and label them. | Appendix 1-A (full sized USGS quadrangles maps)<br>Appendix 1-B (USGS map excerpts) |
| 4. Provide aerial images or photographs or alignment sheets based on these sources with mileposts showing the Project facilities. (§ 380.12(c)(3)).<br>• No more than one-year old.<br>• Scale no smaller than 1:6,000. | Appendix 1-A (alignment sheets) |
| 5. Provide plot/site plans of compressor stations showing the location of the nearest noise-sensitive areas (NSA) within one mile (§ 380.12(c)(3,4)).<br>• Scale no smaller than 1:3,600.<br>• Show reference to topographic maps and aerial alignments provided above. | Appendix 1-C2 (plot plans) (CUI//CEII) |
| 6. Describe construction and restoration methods (§ 380.12(c)(6)). | Section 1.4 |
| 7. Identify the permits required for construction across surface waters (§ 380.12(c)(9)).<br>• Include the status of all permits.<br>• For construction in the Federal offshore area, be sure to include consultation with the MMS. File with the MMS for rights-of-way grants at the same time or before you file with FERC. | Section 1.7<br>Table 1.7-1 |
| 8. Provide the names and addresses of all affected landowners as required and certify that all affected landowners will be notified.<br>• Affected landowners are defined in § 157.6(d)(2).<br>• Provide an electronic copy directly to the environmental staff. | Appendix 1-M (landowner line list) (CUI//PRIV) |

| Resource Report 1 – Filing Requirements | |
|---|---|
| **Information** | **Location in Resource Report** |
| **Additional Information Often Missing and Resulting in Data Requests** | |
| 9. Describe all authorizations required to complete the proposed action and the status of applications for such authorizations. | Section 1.7<br>Table 1.7-1 |
| 10. Provide plot/site plans of all other aboveground facilities that are not completely within the right-of-way. | Appendix 1-C2<br>(plot plans)<br>(CUI//CEII) |
| 11. Provide detailed typical construction right-of-way cross-section diagrams showing information such as widths and relative locations of existing rights-of-way, new permanent rights-of-way, and temporary construction rights-of-way. | Appendix 1-C1<br>(typical drawings) |
| 12. Summarize the total acreage of land affected by construction and operation of the Project. | Section 1.3 |
| 13. If Resource Report 5 - Socioeconomics is not provided, provide the start and end dates of construction, the number of pipeline spreads that would be used, and the workforce per spread. | Resource Report 5 |
| 14. Send two (2) additional copies of topographic maps and aerial images/photographs directly to the environmental staff of the Office of Energy Projects (OEP). | Appendix 1-A<br>(alignment sheets) |

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# RESOURCE REPORT 1
# GENERAL PROJECT DESCRIPTION

## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| API | American Petroleum Institute |
| ATWS | additional temporary construction workspace |
| BMPs | best management practices |
| Certificate | Certificate of Public Convenience and Necessity |
| CFR | Code of Federal Regulations |
| EI | Environmental Inspector |
| E&SCP | Erosion and Sediment Control Plan |
| East Tennessee | East Tennessee Natural Gas, LLC |
| FERC or Commission | Federal Energy Regulatory Commission |
| hp | horsepower |
| MLV | mainline valve |
| MMcf/d | million cubic feet per day |
| Mountain Valley | Mountain Valley Pipeline, LLC |
| MP | milepost |
| NGA | Natural Gas Act |
| NGO | non-governmental organization |
| Plan | FERC Upland Erosion Control, Revegetation, and Maintenance Plan |
| Procedures | FERC Wetland and Waterbody Construction and Mitigation Procedures |
| Project or Southgate Project | MVP Southgate Project |
| psig | pounds per square inch gauge |
| PSNC Energy | PSNC Energy, a wholly owned subsidiary of SCANA Corporation |
| Transco | Transcontinental Gas Pipe Line Company, LLC |
| U.S. | United States |
| USACE | U.S. Army Corps of Engineers |
| USGS | U.S Geological Society |

# RESOURCE REPORT 1
# GENERAL PROJECT DESCRIPTION

## 1.1 INTRODUCTION

Mountain Valley Pipeline, LLC ("Mountain Valley") is seeking a Certificate of Public Convenience and Necessity ("Certificate") from the Federal Energy Regulatory Commission ("FERC" or "Commission") pursuant to Section 7(c) of the Natural Gas Act to construct and operate the MVP Southgate Project ("Southgate Project" or "Project"). The Southgate Project will provide timely, cost-effective access to new natural gas supplies to meet the growing needs of natural gas users in the southeastern United States ("U.S."), including for the Project's anchor shipper, PSNC Energy, a wholly-owned subsidiary of SCANA Corporation ("PSNC Energy"), a local distribution company serving customers in North Carolina. The Southgate Project is expected be in service by late 2020. The Southgate Project is a separate project from the 303-mile Mountain Valley Pipeline that is currently under construction.

The Southgate Project includes an approximate 0.4-mile-long 24-inch-diameter pipeline (H-605), 73 miles of 24- and 16-inch-diameter natural gas pipeline (H-650), a new 28,915 nominal horsepower ("hp") compressor station (Lambert Compressor Station), meter stations and other ancillary facilities (e.g. contractor yards and access roads) required for the safe and reliable operation of the pipeline. The Southgate Project facilities will be located in Pittsylvania County, Virginia and Rockingham and Alamance counties, in North Carolina.

The FERC will conduct a full review of the Project under its regulations in compliance with the Natural Gas Act ("NGA") and the National Environmental Policy Act. On May 3, 2018, the Project requested approval from the FERC to initiate the Pre-filing review process for the Project, and the FERC issued its approval of the request on May 15, 2018, under Docket No. PF18-4-000.

### 1.1.1 Environmental Resource Report Organization

The FERC's National Environmental Policy Act review process requires Mountain Valley to submit an Environmental Report consisting of 12 individual resource reports for natural gas pipeline projects. Each resource report addresses particular aspects of the environment in the Project area and evaluates the potential effects of the construction and operation of the Project on those aspects. Resource Report 1 is prepared and organized according to the FERC Guidance Manual for Environmental Report Preparation (February 2017). This report consists of a complete summary of the Project facilities in Section 1.2, land requirements in Section 1.3, construction and restoration methods for the pipeline and aboveground facilities in Section 1.4, and the construction schedule and workforce and operation and maintenance of Project facilities in Section 1.5. The Project currently has no plans for further expansion or abandonment as outlined in Section 1.6. This report also provides information on permits and approvals, including major consultations in Section 1.6, potential impacts on affected landowners in Section 1.7, non-jurisdictional facilities in Section in Section 1.9, and cumulative impacts in section 1.10. Appendix 1-N provides a response matrix for FERC Comments on Draft Resource Reports 1 through 12 received during the pre-filing process.

### 1.1.2 Purpose and Need

The purpose of the Project is to: (1) meet the growing needs of natural gas users in the southeastern U.S.; (2) add a new natural gas transmission pipeline to provide competition and enhance the reliability and

resiliency of the existing pipeline infrastructure in North Carolina and southern Virginia; and (3) provide North Carolina and southern Virginia with direct pipeline access to the Marcellus and Utica gas regions in West Virginia, Ohio and southwestern Pennsylvania. The Project will enhance the diversity of gas supply and create additional pipeline capacity in the region.

In 2017, PSNC Energy, solicited interest from existing and proposed interstate pipeline providers for additional natural gas transportation capacity. PSNC Energy is a local distribution company primarily engaged in the purchase, transportation, distribution, and sale of natural gas to more than 563,000 customers in North Carolina. PSNC Energy solicited interest because it requires additional pipeline capacity to meet forecasted incremental demand on its distribution system. Over the past four years, PSNC Energy has experienced a 15 percent increase in peak daily throughput on its system. This trend will carry forward into the future, as PSNC Energy expects its design day requirements to increase an additional 11 percent over the next five years. This past, present, and future demand growth on PSNC Energy's system reflects, at least in part, the substantial population increase in North Carolina. North Carolina's population is expected to increase by nearly 2 million people between 2020 and 2035.[1]

After consideration of other existing and proposed interstate pipeline providers, PSNC Energy committed to 300 million cubic feet per day ("MMcf/d") of firm transportation service to be made available by the Project. Mountain Valley and PSNC Energy entered into binding long-term agreements in December 2017 that made PSNC Energy an anchor shipper for the Project.[2] In choosing the Southgate Project to provide its needed incremental pipeline capacity, PSNC Energy cited numerous reasons, including transportation cost, supply cost, supply diversity, reliability/resiliency, and operational efficiencies:

- PSNC Energy found the Southgate Project provides the best-cost transportation alternative available to satisfy PSNC Energy's long-term interstate capacity needs.
- The Southgate Project will provide PSNC Energy with a third direct interstate pipeline connection, which will improve reliability and add resiliency to the interstate pipeline services PSNC Energy receives.[3] The addition of a third interstate pipeline diversifies risk by giving PSNC Energy multiple options on geographically-diverse interstate pipelines. In the event of outages or constraints on one of the pipelines serving the region, PSNC Energy would have access to the other pipelines to continue serving its customers.
- The Southgate Project will provide PSNC Energy additional direct access to low-cost natural gas produced in the prolific Marcellus and Utica shale regions.[4]

[1] See North Carolina Office of State Budget and Management population projections, available at: https://files.nc.gov/ncosbm/demog/countytotals_populationoverview.html

[2] Mountain Valley and PSNC Energy entered into binding agreements for the Southgate Project more than three years after Mountain Valley entered the pre-filing process, and more than two months after the Commission issued its certificate, for the 303-mile Mountain Valley Pipeline Project. While the Mountain Valley Pipeline Project is targeted to commence service during 2019, Mountain Valley expects the Southgate Project to commence service in late 2020.

[3] In 2013, the North Carolina Utilities Commission recognized the need for competitive interstate pipeline capacity alternatives in Docket No. G-100, Sub 91, *Investigation Regarding Competitive Alternatives for Additional Natural Gas Service Agreements*. The Project will satisfy this need for a new competitive interstate pipeline consistent with the expressed goal of the North Carolina Utilities Commission.

[4] Mountain Valley and PSNC Energy also executed binding long-term agreements whereby PSNC Energy became a shipper on the Mountain Valley Pipeline Project.

- PSNC Energy will have more competitive and diverse options for natural gas supply. PSNC Energy will gain optionality in selecting best-cost supply sources and will be able to take advantage of price differentials across more gas supply regions.

- The Southgate Project will provide a direct connection between PSNC Energy's distribution system and the East Tennessee Natural Gas, LLC ("East Tennessee") pipeline system. PSNC Energy currently sources gas from Saltville Storage and transports these volumes on the East Tennessee and Transcontinental Gas Pipeline Company, LLC ("Transco") systems before delivery to PSNC Energy's distribution system. The Project provides a primary receipt and delivery forward haul transportation path that offers improved reliability as compared to the secondary-firm backhaul deliveries PSNC Energy currently receives from Transco.

- The Southgate Project will provide PSNC Energy flexibility with deliveries from the intrastate Cardinal Pipeline, which should avoid the need for PSNC Energy to acquire additional Cardinal capacity.

- The Southgate Project allows PSNC Energy to avoid incremental capital investment for system upgrades. The other pipeline alternatives considered by PSNC Energy would have required additional system upgrades.

- Mountain Valley and PSNC Energy have agreed to a minimum delivery pressure that is higher than Transco's existing obligation. This should improve PSNC Energy's ability to conduct system planning and enhance the operation of its system.

In addition to executing agreements that made PSNC Energy an anchor shipper for the Project, Mountain Valley conducted an Open Season between April 11, 2018 and May 11, 2018 to determine interest from additional shippers. Negotiations continue with interested shippers for the remaining capacity of the Southgate Project.

The Southgate Project is not designed to provide natural gas to any liquefied natural gas export terminal and has no intention of seeking authorization under Section 3 of the Natural Gas Act to export natural gas. The Project terminates at an inland location more than 185 miles from the nearest coastal Virginia port, 155 miles from the nearest coastal North Carolina port, and even farther from the nearest liquefied natural gas export terminal. Accordingly, the Southgate Project does not have the physical ability to export natural gas. As currently designed, gas transported on the Southgate system will be delivered into existing facilities in Eden and Graham, North Carolina. The Project's anchor shipper, PSNC Energy, has committed to 300 MMcf/d of firm transportation service and will use the gas it transports to serve its fast growing residential, commercial and industrial markets in North Carolina.

## 1.2 LOCATION AND DESCRIPTION OF FACILITIES

The Project includes construction of the underground pipeline and aboveground facilities located in Virginia and North Carolina. These facilities will be designed, constructed, tested, operated, and maintained in accordance with the requirements of 49 Code of Federal Regulations ("CFR"), Part 192, Transportation of Natural Gas and Other Gas by Pipeline; Minimum Safety Standards; 18 CFR § 380.15, Site and Maintenance Requirements; and other applicable federal and state regulations.

### 1.2.1 Pipeline Facilities

The H-605 pipeline is a new, 24-inch diameter, approximately 0.4-mile-long pipeline that will interconnect with and receive gas from the Mountain Valley Pipeline at MP 0.0 and tie-in to the Lambert Compressor Station at MP 0.4, approximately 3.0 miles east of the Town of Chatham in Pittsylvania County, Virginia site. The H-650 pipeline is a new, 24- and 16-inch-diameter, approximately 73-mile-long pipeline that will extend from the compressor station site. New interconnecting facilities will also be located at the new Lambert Compressor Station. Construction of these facilities on a parcel owned by Mountain Valley. Figure 1.2-1 provides an overview of the Project facilities.

From the Lambert Compressor Station, the 24-inch-diameter portion of the pipeline will traverse Pittsylvania County, Virginia in a southwest direction for approximately 26.1 miles. The pipeline will then continue southwest into Rockingham County, North Carolina for approximately 4.3 miles to a delivery interconnect (T-15 Dan River Interconnect) located at approximate MP 30.4.

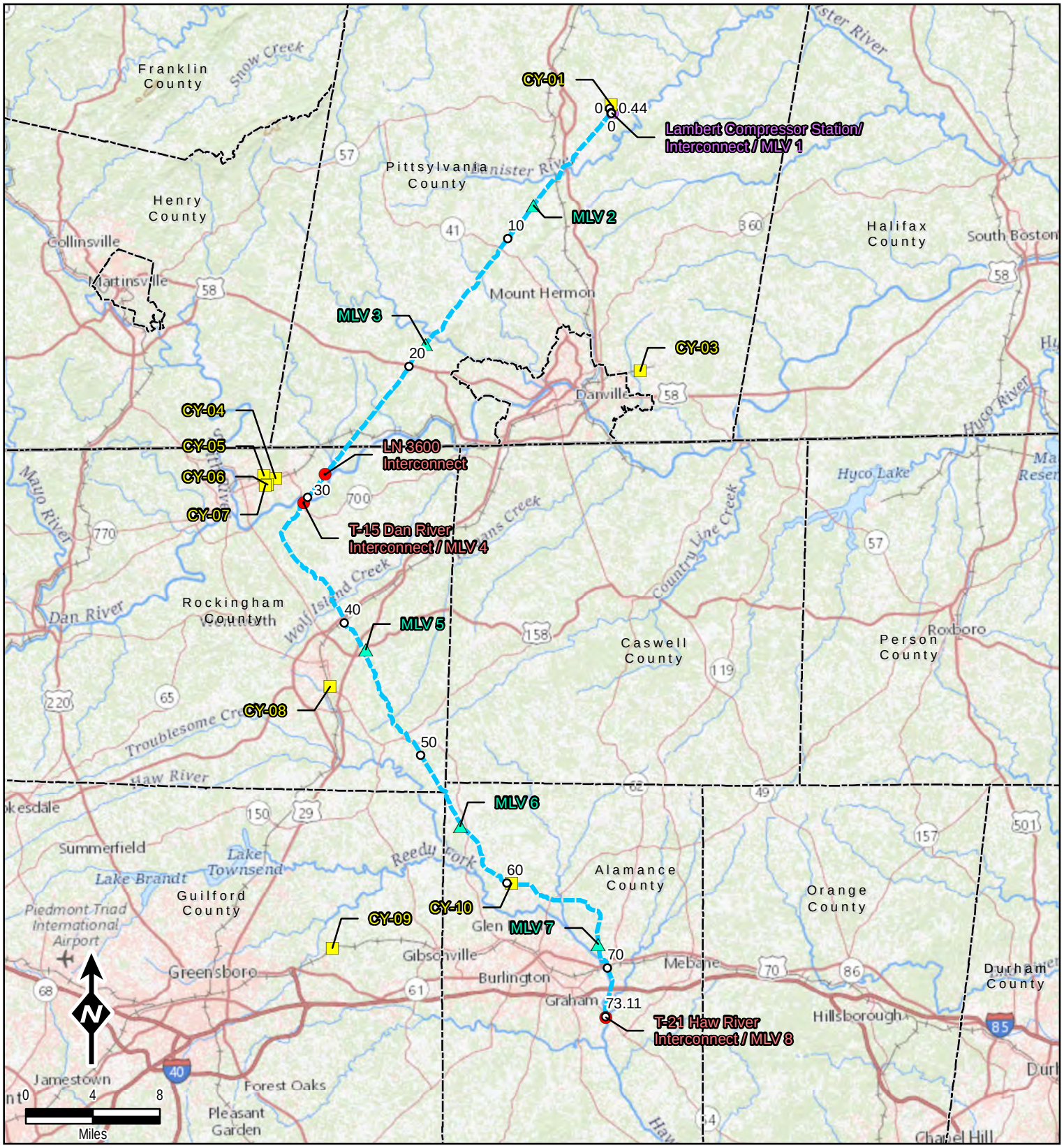
From the T-15 Dan River Interconnect, the pipeline will be a 16-inch-diameter pipeline and continue southwest for approximately 2.4 miles. East of Eden, North Carolina, the pipeline will turn to the southeast near MP 32.8, and continue southeast for approximately 20 miles, into Alamance County at (MP 52.6), east of Wentworth and Reidsville. From the Alamance County line, the pipeline will continue southeasterly to MP 66.3, where it will turn south and continue for about 6.8 miles to its delivery terminus (T-21 Haw River Interconnect) located at MP 73.1 approximately 2.5 miles southeast of the Graham, North Carolina.

The pipeline will receive natural gas from the Mountain Valley Pipeline system (MP 0.0) and receive gas from an interconnect with the East Tennessee pipeline (MP 28.2).

Two downstream delivery points with the PSNC Energy system are near MP 30 and MP 73. Additional delivery points may be added as the Project continues its commercial discussions; however, it is not expected that the pipeline route will materially change from that route described herein. The H-650 pipeline will be designed for a Maximum Allowable Operating Pressure of 1,440 pounds per square inch gauge ("psig") and will be constructed in compliance with 49 CFR Part 192.

Table 1.2-1 identifies the counties crossed by the pipeline route by milepost. Appendix 1-A contains alignment sheets and full size U.S Geological Society ("USGS") quadrangle maps for the Project and Appendix 1-B contains USGS 7.5-minute topographic quadrangle map excerpts. Appendix 1-C1 contains applicable Typical Right-of-way configurations and Construction Detail Drawings.

The pipeline will be constructed of high strength carbon steel pipe manufactured in accordance with the American Petroleum Institute's ("API") specification API 5L PSL2, Specification for Line Pipe. The Project will protect the pipe from corrosion by a fusion-bonded epoxy coating and an impressed current cathodic protection system during operation. Weld joints and other piping that are not factory coated will be field coated per applicable standards.





**Legend**

- Proposed Pipeline Route
- Compressor Station
- Contractor Yard
- Meter Station
- Valve Site
- State Boundary
- County Boundary

**Data Sources:** ESRI, USGS, TRC, EQT

1 inch = 8 miles
When Printed 8.5x11

Mountain Valley PIPELINE LLC

**Figure 1.2-1**

Project Overview

TRC
Results you can rely on

600 Willowbrook Ln
West Chester, PA 19382
October 2018

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| Table 1.2-1<br>MVP Southgate Project Pipeline Facilities | | | |
|---|---|---|---|
| **Approximate Milepost** | **Pipeline / Diameter** | **County, State** | **Approximate Length (miles)** |
| 0.0 – 0.4 | H-605 Pipeline / 24-inch | Pittsylvania, VA | 0.4 |
| 0.0 – 26.1 | H-650 Pipeline/ 24-inch | Pittsylvania, VA | 26.1 |
| 26.1 – 30.4 | H-650 Pipeline / 24-inch | Rockingham, NC | 4.3 |
| 30.4 – 52.6 | H-650 Pipeline / 16-inch | Rockingham, NC | 22.2 |
| 52.6 – 73.1 | H-650 Pipeline / 16-inch | Alamance, NC | 20.5 |
| **Total (H-605 and H-650 pipelines)** | | | **73.5** |

## 1.2.2 Aboveground Facilities

Table 1.2-2 provides a summary of the aboveground facilities that include one compressor station, four meter (interconnect) stations, and pig launchers and receivers.

| Table 1.2-2<br>MVP Southgate Project Aboveground Facilities | | | | | |
|---|---|---|---|---|---|
| **Compressor Station** | | | | | |
| **Facility** | **Approximate Milepost a/** | **County, State** | **Nominal HP** | **Suction PSIG** | **Discharge PSIG** |
| Lambert Compressor Station | 0.0 | Pittsylvania, VA | 28,915 | 780 | 900 |
| **Pig Launchers/Receivers** | | | | | |
| **Launcher/Receiver** | **Approximate Milepost a/** | **Associated Facility** | | | |
| Pig Launcher | 0.0 | Lambert Compressor Station | | | |
| Pig Receiver | 30.4 | T-15 Dan River Interconnect | | | |
| Pig Launcher | 30.4 | T-15 Dan River Interconnect | | | |
| Pig Receiver | 73.1 | T-21 Haw River Interconnect | | | |
| Meter Stations | | Approximate Milepost a/ | | | |
| Lambert Interconnect | | 0.0 | | | |
| LN 3600 Interconnect | | 28.2 | | | |
| T-15 Dan River Interconnect | | 30.4 | | | |
| T-21 Haw River Interconnect | | 73.1 | | | |
| a/ Mileposts are on the H-650 pipeline.<br>Southgate Project Mainline Valve Locations are shown on Table 1.2-3. | | | | | |

#### 1.2.2.1 Compressor Station

The Southgate Project will require one new compressor station to move gas from the beginning of the pipeline in Pittsylvania County, Virginia, to the downstream delivery points along the pipeline. The Project's typical plot plans for above ground facilities, including the compressor station, are included in Appendix 1-C2.

The Southgate Project will install a 28,915 nominal hp compressor station. The Project anticipates the supply pressure at the Lambert Interconnect to be approximately 780 psig while the delivery pressure at the T-21 Haw River Interconnect (MP 73.1) is expected to be approximately 650 psig. The gas flow will drop in pressure due to frictional losses and elevation changes as it travels southward within the pipeline. To compensate for these losses, as well as to meet the pressure requirements at the PSNC Energy delivery interconnects, the pressure will be boosted by the Lambert Compressor Station. Natural gas fired turbine engines will power the compressors for the Project. The natural gas to power the compressors will be provided by the Project's shippers.

##### Lambert Compressor Station

The Southgate Project will construct the Lambert Compressor Station in Pittsylvania County, Virginia on a parcel of land owned by Mountain Valley. The Lambert Compressor Station will pull gas from the Mountain Valley Pipeline system via the H-605 pipeline for delivery to downstream interconnects on the H-650 pipeline. The Project anticipates that the Lambert Compressor Station will contain two gas-driven turbines which combined will provide 28,915 nominal hp of compression. The station is expected to include a compressor building, electrical control building, office, and air compressor building. A chain linked security fence will surround the perimeter of the station site upon completion of construction. Equipment at the compressor station includes, but is not limited to, gas filter/separators, gas coolers, inlet air filters, exhaust silencers, tanks, blowdown silencers, heaters, and auxiliary generators. The Project has designed the Lambert Compressor Station to raise the pressure of the pipeline. The Project does not expect that this compressor station will require dehydration; however, typical filtration and separation equipment to protect the operating equipment will be installed. The Project's typical plot plan for the Lambert Compressor Station is included in Appendix 1-C2.

#### 1.2.2.2 Pig Launchers and Receivers

The Southgate Project has incorporated launching and receiving facilities to accommodate in-line inspection tools (smart pigs) for periodic internal inspections of the pipeline during operations (see Table 1.2-2 above). A pig launcher is located at the origination point inside the Lambert Compressor Station fence line, in Pittsylvania County, Virginia. The corresponding pig receiver will be located at the T-15 Dan River Interconnect at MP 30.4 in Rockingham County, North Carolina, and a second pig launcher will also be located at this site. A second pig receiver will be located at the terminus of the pipeline at approximate MP 73.1 at the T-21 Haw River Interconnect near Graham, North Carolina. The locations of these facilities are included on the alignment sheets located in Appendix 1-A. The impacts associated with construction and operation of the pig launcher and receiver facilities will be minimal, as they are located within the limits of disturbance associated with the aboveground facilities described in this Resource Report.

### 1.2.2.3 Mainline Valves and Meter Stations

#### Mainline Valves

The Project will install MLVs at intermediate locations as necessary to meet operational needs and the design and installation requirements described in 49 CFR 192.179(a) – Transmission Line Valves that require minimum distances to the nearest valve based on pipeline location class. Table 1.2-3 identifies the location of MLVs along the pipeline route.

MLVs will be located within the permanent right-of-way of the pipeline or within the limits of other aboveground facilities. With the exception of those located at launcher/receiver locations, MLVs will be buried with aboveground extensions and equipped with valve actuators to allow for local or remote operation. Each MLV will be contained within a fenced, gated, and locked area. The operator, EQM Midstream Partners, LP, will monitor the pipeline operating conditions 24 hours a day, 7 days a week by personnel in control centers using a Supervisory Control and Data Acquisition computer system.

**Table 1.2-3**

**MVP Southgate Project Mainline Valve Locations a/**

| Name | County, State | Approximate Milepost Location |
|---|---|---|
| MLV 1 / Lambert Compressor Station & Interconnect | Pittsylvania, VA | 0.0 |
| MLV 2 | Pittsylvania, VA | 7.4 |
| MLV 3 | Pittsylvania, VA | 18.3 |
| MLV 4 / T-15 Dan River Interconnect | Rockingham, NC | 30.4 |
| MLV 5 | Rockingham, NC | 42.2 |
| MLV 6 | Alamance, NC | 55.1 |
| MLV 7 | Alamance, NC | 68.2 |
| MLV 8 / T-21 Haw River Interconnect | Alamance, NC | 73.1 |

a/ Mainline Valves ("MLV's") will be 30 feet by 30 feet in area and will be wholly contained within the permanent right-of-way. Mainline valves at the Lambert Compressor Station / Interconnect, the T-15 Dan River Interconnect, and T-21 Haw River Interconnect will be located within the fence line of those facilities.

#### Meter Stations

The Project will install meter (interconnect) stations consisting of, but not limited to, custody-transfer flow meter, pressure/flow regulator, over pressure protection, isolation valves, and associated instrumentation and controls at the proposed gas receipt and delivery points to measure the flow of natural gas between the Project and the interconnect (see Table 1.2-2). Each interconnect will consist of one or more meter runs located inside a fenced and gated site and will contain flow or pressure control. The metering sites will be located as close as practicable to the actual intersection of the Project and the receipt / delivery facilities to keep the length of the interconnecting piping to a minimum. The locations of these facilities are shown on the alignment sheets and maps located in Appendix 1-A and Appendix 1-B, respectively.

The meter stations will include upstream and downstream piping to connect to the third party pipelines.

#### 1.2.2.4 Telecommunications

The Southgate Project will provide primary and backup telecommunications services for the compressor station, meter stations, and MLV sites. The local service provider will provide primary telecommunications service and back-up is expected to be Very Small Aperture Terminal service. In addition, the Lambert Compressor Station site will have a communication tower approximately 80 feet in height installed inside the station fence line.

#### 1.2.2.5 Electric Utility Service

The Southgate Project will commercially purchase electric power for the compressor station from the local distribution company as back-up electric power while a series of natural gas generators will serve as primary power for the station. If purchased, electric powerlines for the Lambert Compressor Station will be constructed and maintained within an approximate 50-foot-wide right-of-way. Electric power for the Lambert Compressor Station will require an approximate 0.3-mile-long powerline that will affect approximately 1.7 acres of open land and 0.1 acre of forested land. If electric service is not available at the compressor station, a backup generator will serve as an available secondary power source.

Electric services from the local distribution company will also supply the meter stations, MLVs, and cathodic protection sites. In the event sites do not have convenient access to electrical services, solar power may be utilized.

## 1.3 LAND REQUIREMENTS

A summary of Project land requirements is included in Table 1.3-1. Additional information on land uses affected by the Project is included in Resource Report 8.

**Table 1.3-1**

**Land Requirements for the MVP Southgate Project Pipeline/Associated Workspace**

| Facility | Land Required for Construction (acres) | Land Required for Operation (acres) |
|---|---|---|
| H-605 Pipeline a/ | 5.1 | 2.6 |
| H-650 Pipeline a/ | 843.1 | 421.6 |
| Additional Temporary Workspace | 260.3 | 0.0 |
| Cathodic Protection b/ | 4.0 | 4.0 |
| Contractor Yards | 181.3 | 0.0 |
| Access Roads c/ | 123.1 | 9.7 |
| Total d/ | 1,416.9 | 437.9 |

a/ Acreage based on 100-foot construction right-of-way and 50-foot permanent right-of-way.
b/ Acreage includes alternative groundbed locations, which have been identified in the event that the primary locations are deemed unsuitable. Final groundbed locations will be determined prior to the commencement of construction
c/ Acreage based on a 25-foot road width for temporary and permanent access roads. Includes access roads for aboveground facilities.
d/ Sums may not equal the total of addends due to rounding. Addends consist of six-decimal digits.

### 1.3.1 Pipeline

The pipeline will generally require a 100-foot-wide construction right-of-way consisting of a 50-foot permanent right-of-way and 50 feet of temporary workspace. The temporary workspace is necessary for worker safety, the safe travel of construction vehicles and equipment, stockpiling soil, and installation of erosion and sediment controls. The Interstate Natural Gas Association of America recommends the use of a 95-foot baseline width and increasing or decreasing this baseline width for special conditions (Gulf Interstate Engineering 1999).

The Project has reduced the construction right-of-way width at wetland and waterbody crossings to 75 feet along the construction right-of-way. The Project will implement the FERC Plan and Procedures and its Project-specific Erosion and Sediment Control Plan ("E&SCP") that comply with state-specific regulations to minimize impacts during construction. Mountain Valley is preparing a Project-specific E&SCP that will comply with Virginia and North Carolina erosion control regulations. Additional information on wetland and waterbody construction impacts is located in Resource Report 2, Sections 2.3.6 and 2.4.4, respectively.

A list of the ATWS areas required for the Project including milepost location, dimensions, current land use, and justification is included in Appendix 1-D.

The pipeline is collocated with existing infrastructure for approximately 54 percent (40 miles) of the alignment. Where collocation with existing utility rights-of-way is proposed, the Project has designed the workspace such that the permanent right-of-way for the pipeline is located immediately adjacent to or partially within the existing right-of-way of the pipeline or electric transmission utility wherever feasible. The Southgate Project is proposing to use up to 25 feet of temporary workspace within the adjacent utility rights-of-way where possible; however final design and use workspace within these areas is dependent on successful negotiation with the easement owner(s). Locations where segments of the Project are collocated or parallel to existing utility corridors and other rights-of-way are shown in Appendix 1-E1. Appendix 1-E2 provides information on where the alignment deviates from existing corridors.

### 1.3.2 Aboveground Facilities

Land requirements for compressor station, pig launcher and receiver sites, and meter stations are included in Table 1.3-2. MLV sites will be entirely contained within the pipeline right-of-way and will therefore not require any additional land disturbance. In addition, pig launcher/receivers will be located inside the fenced areas for the meter and compressor station and will therefore not require any additional land disturbance.

**Table 1.3-2**

**Land Requirements for the MVP Southgate Project Aboveground Facilities**

| Facility Name | Approximate MP | Land Required for Construction (acres) | Land Required for Operation (acres) |
|---|---|---|---|
| **Compressor Station** | | | |
| Lambert Compressor Station | 0.0 | 18.6 | 3.8 |
| **Meter Stations** | | | |
| Lambert Interconnect a/ | 0.0 | 0.0 | 0.0 |
| LN 3600 Interconnect | 28.2 | 3.5 | 0.7 |
| T-15 Dan River Interconnect | 30.4 | 5.2 | 0.8 |
| T-21 Haw River Interconnect | 73.1 | 3.6 | 0.7 |
| Pig Launcher/Receiver b/ | | | |
| **Mainline Valves** | | | |
| MLVs 2, 3, 5, 6, 7 | Various c/ | 0.1 | 0.1 |
| Total d/ | --- | 30.9 | 6.1 |

Note: MPs are on the H-650 pipeline. Impact calculations do not include associated access roads.

a/ The Lambert Interconnect will be within the Lambert Compressor Station site; therefore, acreage calculations for the Lambert Interconnect are included with the Lambert Compressor Station.

b/ Pig launchers will be within aboveground facility sites (i.e., the Lambert Compressor Station, T-15 Dan River Interconnect, and T-21 Haw River Interconnect), therefore, acreages calculations for the pig launchers and receivers are included with those facilities.

c/ See Table 1.2-3 for milepost locations of mainline valves ("MLV").

d/ Sums may not equal the total of addends due to rounding. Addends consist of six-decimal digits.

## Cathodic Protection

The Project will install four rectifiers for cathodic protection (see Table 1.3-3). Groundbeds (approximate dimensions of 50 feet wide by 500 feet long) will be located perpendicular to the permanent easement. Deep wells, if used, may be contained within the 50-foot permanent right-of-way or adjoining (if required, an area 25 feet by 25 feet of additional permanent right-of-way). Once site inspections are completed, any impacts associated with ground beds will be quantified.

**Table 1.3-3**

**MVP Southgate Project Potential Rectifier and Groundbed Locations**

| Nearest Milepost | State | County | Cathodic Protection Section | Cathodic Protection Groundbed Type |
|---|---|---|---|---|
| 10.8 | VA | Pittsylvania | 1 | Conventional (Anodes & Cable) |
| 21.1 | VA | Pittsylvania | 2 | Conventional (Anodes & Cable) |
| 41.8 | NC | Rockingham | 3 | Conventional (Anodes & Cable) |
| 68.2 | NC | Alamance | 4 | Conventional (Anodes & Cable) |
| 7.2 | VA | Pittsylvania | 1 | Alternative Site 1 a/ |
| 44.9 | NC | Rockingham | 3 | Alternative Site 3 a/ |
| 60.2 | NC | Alamance | 4 | Alternative Site 4.1 a/ |

**Table 1.3-3**

**MVP Southgate Project Potential Rectifier and Groundbed Locations**

| Nearest Milepost | State | County | Cathodic Protection Section | Cathodic Protection Groundbed Type |
|---|---|---|---|---|
| 64.8 | NC | Alamance | 4 | Alternative Site 4.2 a/ |

a/ Testing for suitability of groundbed locations is ongoing. Alternative groundbed locations have been identified in the event that the primary locations are deemed unsuitable. Final groundbed locations will be determined prior to the commencement of construction.

### 1.3.3 Access Roads

The Project will leverage the use of existing roads; however, new access roads may be required in locations that do not parallel existing linear infrastructure. Lengths of new and existing roads to provide access to the pipeline right-of-way during construction and operation of the Project facilities are provided in Appendix 1-F. This list includes private roads, drives, lanes, and other roads that will be utilized during construction and operation. Other roads may include existing access roads installed for agricultural, well or construction access, or may be farm roads, all-terrain vehicle paths/trails, etc.

Maintenance or upgrading may be required on some of the existing roads prior to use by construction equipment. A number of the existing dirt or gravel access roads will be graded and maintained to prevent rutting. Others may require widening or placement of additional stabilization means including but not limited to gravel or crushed stone on the existing surface to ensure safe travel conditions. Additional information for access roads is provided in Section 8.2.1.4 of Resource Report 8. The Project continues to conduct surveys to identify suitable access roads for use during the Project.

### 1.3.4 Additional Temporary Workspace

ATWS areas will be required for construction activities requiring space outside the standard 100-foot construction right-of-way. Construction activities that may require ATWS include but are not limited to:

- Areas requiring extra depth of cover over the pipeline;
- Timber storage areas;
- Areas with unstable soil;
- Installation of erosion and sediment controls and other stormwater management facilities;
- Road and railroad crossings;
- Winch hills;
- Wetland and waterbody crossings;
- Conventional bores;
- Horizontal Direction Drills;
- Foreign pipeline crossings and interconnects;

- Foreign utility crossings;
- Areas requiring full-width topsoil segregation;
- Specific request of the landowner;
- Areas with steep side slopes, rock, or other difficult terrain;
- Pipeline access and truck turnarounds;
- Fabrication and staging areas; and
- Hydrostatic test water withdrawal and discharge locations.

The Project will determine the extent of ATWS on a site-specific basis. The ATWS areas will be restricted to the minimum size necessary to safely construct the pipeline with respect to the existing conditions anticipated at the time of construction. The Project will use the ATWS during construction for the purpose of material storage, storage of excess spoil at crossings, parking, vehicle turning radius, or other worker safety issues. In the case of wetlands and waterbodies, the ATWS will be located in accordance with the setback requirements contained in the FERC *Wetland and Waterbody Construction and Mitigation Procedures* ("Procedures) (2013) and in consultation with other federal and state agencies. If field conditions do not allow for 50-foot setback from wetlands and/or waterbodies, the Project will request alternative measures to the FERC Procedures. Additional information regarding alternative measures to the FERC Procedures V.A.2.a and VI.B.1 are provided in Resource Report 2 in Appendix 2-F.

ATWS and ancillary sites required for the Project on the alignment sheets and maps are provided in Appendix 1-A. A table that lists all ATWS by milepost, landowner (private, state, federal), area (square feet), current land use, and purpose of the ATWS (road crossing, etc.) are shown in Appendix 1-D.

### 1.3.5 Contractor Yards

The Southgate Project has identified potential contractor staging yards for temporary use during construction. These yards were selected to avoid streams, wetlands, and other sensitive habitats where possible. The Project will use pipe storage yards to stockpile pipe and fabricate facilities, as necessary. The Project will use contractor yards during construction to stage construction operations, store materials, park equipment, and set up temporary construction offices. The contractor yards were selected due to their proximity to existing roads, railways, rail yards, and are primarily open industrial/commercial land uses. Depending upon the condition of these yards and their current use, some surface grading, drainage improvements, placement of surface materials (e.g., crushed rock), and internal roadways may be required. Table 1.3-4 details land requirements, MP, land ownership, current land use, total size of the contractor yards, and the amount of forest that will be cleared for each contractor yard where forest is part of the existing land use. All contractor yards are under negotiation and will be utilized as landowner permission is obtained. Contractor yard locations are shown on the USGS 7.5-minute topographic quadrangle map excerpts in Appendix 1-B.

**Table 1.3-4**

**Contractor Yards along the MVP Southgate Project Pipeline**

| Name | Type | Approx. MP | County | State | Municipality | Parcel | Land Use a/ | Acres |
|---|---|---|---|---|---|---|---|---|
| CY-01 | Contractor Yard / Laydown Yard | 0.0 on H-605 | Pittsylvania | VA | Chatham | VA-PI-001.000 | FW, OL, CI | 39.3 (Forest to be cleared 31.7) |
| CY-03 | Contractor Yard / Laydown Yard | 13 miles East of 20.5 | Pittsylvania | VA | Danville | VA-PI-142.100.CY VA-PI-142.200.CY | FW, OL, CI | 26.0 (Forest to be cleared 4.2) |
| CY-04 | Contractor Yard / Laydown Yard | 2.8 miles West of 28.5 | Rockingham | NC | Eden | NC-RO-014.600.CY | OL | 3.8 |
| CY-05 | Contractor Yard / Laydown Yard | 3.7 miles West of 28.3 | Rockingham | NC | Eden | NC-RO-001.100.CY NC-RO-001.200.CY NC-RO-001.300.CY NC-RO-001.400.CY NC-RO-001.500.CY | CI, OL, WL | 49.9 |
| CY-06 | Contractor Yard / Laydown Yard | 3 miles West of 28.9 | Rockingham | NC | Eden | NC-RO-014.100.CY NC-RO-014.200.CY | OL, WL | 15.9 |
| CY-07 | Contractor Yard / Laydown Yard | 3.2 miles West of 28.9 | Rockingham | NC | Eden | NC-RO-002.200.CY | OL, FW, CI | 8.8 (Forest to be cleared 1.0) |
| CY-08 | Contractor Yard / Laydown Yard | 2.9 miles West of 44.6 | Rockingham | NC | Reidsville | NC-RO-136.100.CY NC-RO-136.300.CY | OL, CI | 14.6 |
| CY-09 | Contractor Yard / Laydown Yard | 15.8 miles West of 68.2 | Guilford | NC | McLeansville | NC-GU-001.200.CY NC-GU-001.300.CY | OL, FW, RD | 14.5 (Forest to be cleared 4.7) |
| CY-10 | Contractor Yard / Laydown Yard | 60.2 | Alamance | NC | Altamahaw-Ossipee | NC-AL-069.000 | OL | 8.5 |
| | | | | | | | **Total** | **181.3** |

a/ CI = Commercial / Industrial; FW = Upland Forest / Woodland; OL = Upland Open Land; RD = Residential; WL = Wetland

## 1.4 CONSTRUCTION PROCEDURES

The Project will adopt the FERC *Upland Erosion Control, Revegetation, and Maintenance Plan* ("Plan") and Procedures (2013) to minimize impacts on the environment. The Project will also develop its own Project-specific E&SCP that will outline best management practices ("BMPs") to minimize impacts. The Project will train construction personnel in the environmental restrictions and/or requirements applicable to their particular job duties. The Project will provide construction management personnel and environmental inspectors ("EIs") with the appropriate environmental information/materials specific to the Project. The Project will handle any hazardous materials stored or encountered during construction in accordance with the Project-specific Spill, Prevention, Control, and Countermeasures Plan and

Unanticipated Discovery of Contamination Plan (Appendix 1-G). All waste would be disposed of at an approved, off-site facility.

The Project does not expect that construction activities will occur in frozen ground conditions; however construction could occur during times of occasional snowfall in Virginia and North Carolina. Section 1.4.1.2 below outlines procedures for construction activities during the inclement winter season in the Mid-Atlantic region and measures to secure the right-of-way and protect it from erosion or other damages during the winter months. The Project anticipates that it will employ the following procedures to construct the Project; however, deviations are possible based on actual field conditions or to comply with regulatory or landowner requirements.

### 1.4.1 Pipeline

Construction of the Project will follow industry-accepted practices and procedures, as further described below. Generally, construction of the pipeline will follow a set of sequential operations as shown in Figure 1.4-1. In this typical pipeline construction scenario, the construction spread proceeds along the pipeline right-of-way in one continuous operation. The Project will coordinate the entire process in such a manner as to minimize the total time a tract of land is disturbed and therefore exposed to erosion and temporarily precluded from normal use. To minimize the impacts of construction disturbance, The Project will utilize the FERC Plan and Procedures. Terrain and soil conditions, as well as inclement weather, can affect the timing and consistency of the operation. Appendix 1-C1 includes typical construction details depicting various construction scenarios. The following sections provide detailed descriptions of each proposed construction method.

#### 1.4.1.1 Standard Construction and Restoration Techniques

##### Typical Upland Pipeline Construction Procedures

The Project will conduct construction activities in accordance with applicable federal and state regulations and guidelines, as well as the specific requirements of applicable permits. In addition to adopting the FERC Plan and Procedures, the Project will develop a Project-specific E&SCP based on field conditions and applicable state requirements and employed in conjunction with the FERC Plan and Procedures. The Project has identified several locations or activities where alternative measures to the FERC Plan and Procedures will be required during construction. These proposed alternative measures are listed in Appendix 2-F of Resource Report 2 and described according to the specific performance standard. Additionally, the Project provides justification as to why the proposed alternative measure is necessary.

Prior to initializing construction-related activities, the Project will secure right-of-way easements, or other required authorizations, from landowners whose properties will be crossed by the pipeline alignment. The Project will return disturbed areas to original contours, and property boundary markers that are removed will be replaced with a civil survey boundary. The Project will stabilize disturbed areas as outlined in the FERC Plan and Procedures and the Project's site-specific plans; however, plant seed mix components may vary based on site conditions, seed availability, landowner requests, and coordination with federal and state agencies.

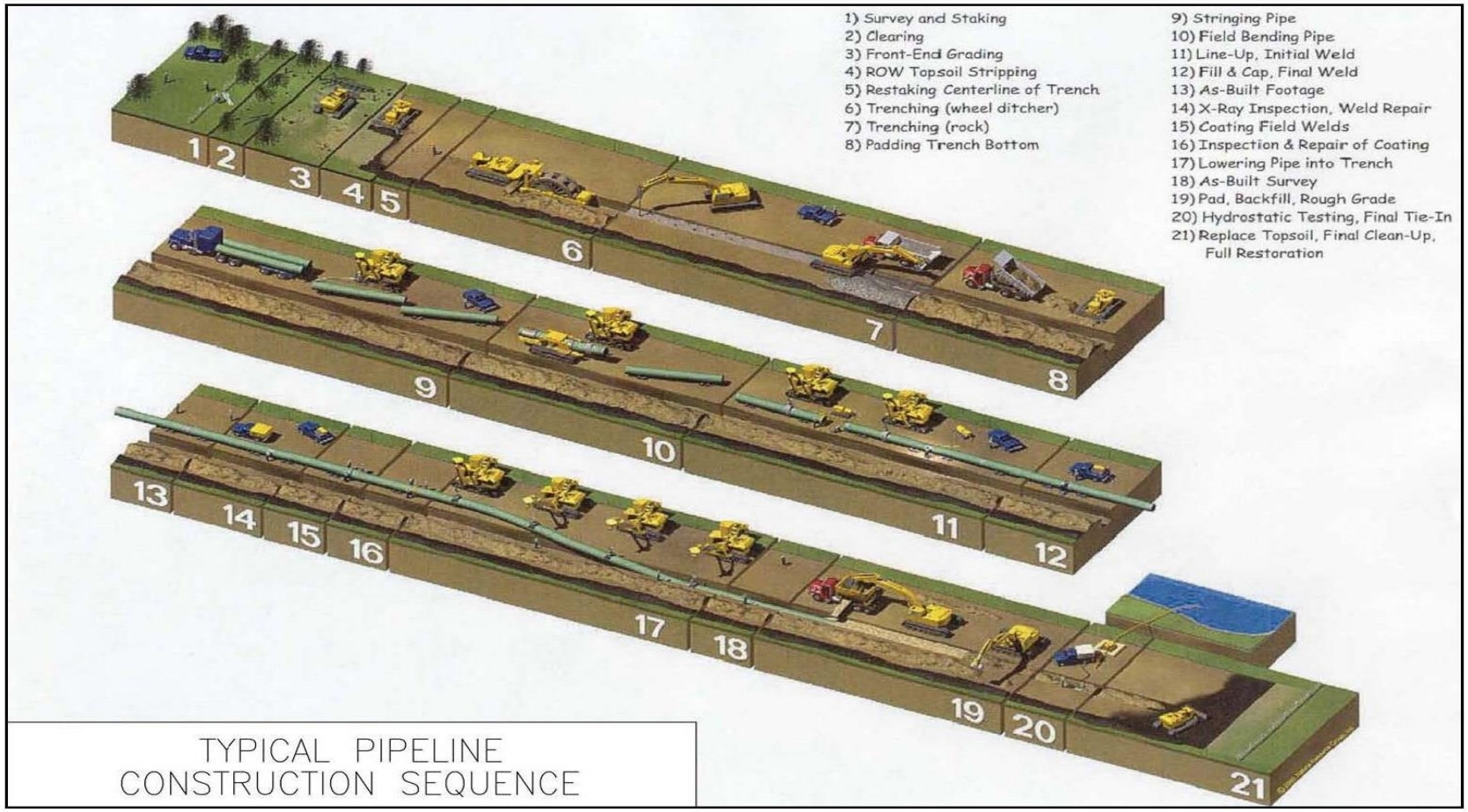



**Figure 1.4-1. Typical Pipeline Construction Sequence**

Those portions of the Project located primarily in upland terrain will be crossed via conventional overland construction techniques for large-diameter pipelines. In the typical pipeline construction scenario, the construction contractor will construct the pipeline along the construction right-of-way using sequential pipeline construction techniques, including survey, staking and fence crossing; clearing and grading; trenching; pipe stringing, bending and welding; lowering-in and backfilling; hydrostatic testing; clean-up and restoration; and commissioning.

The Southgate Project is proposing to use two construction spreads to construct the pipeline but this may be adjusted at the time of construction based on contractor preference and availability. Table 1.4-1 provides the beginning and ending MP, length and construction year for each spread. The Project will construct the majority of the pipeline using conventional open-cut methods, which typically include the steps described in the following paragraphs. The details of each construction spread will be determined prior to construction. Specialized construction techniques for crossing sensitive resources such as wetlands and waterbodies are also provided in the following sections.

**Table 1.4-1**

**Construction Spreads for the MVP Southgate Project**

| Spread | Facility | Begin MP | Ending MP | Spread Length (Miles) | Construction Year | Peak Workforce |
|---|---|---|---|---|---|---|
| 1 | H-605 Pipeline | 0 | 0.4 | 0.4 | 2020 | 325 |
| 1 | H-650 Pipeline | 0 | 30.4 | 30.4 | 2020 | |
| 2 | H-650 Pipeline | 30.4 | 73.1 | 42.6 | 2020 | 325 |

(a) Surveying

The initial step in preparing the right-of-way for construction will be the civil survey. A civil survey crew will stake the outside limits of the construction right-of-way, the centerline location of the pipeline, highway and railroad crossings, access roads, and any temporary ATWS, such as laydown areas or at stream crossings. The Project will contact the Virginia and North Carolina 811 "One Call" systems, and all known underground utilities (e.g., cables, conduits, and pipelines) will be located and flagged. The Project will notify affected landowners a minimum of 24 hours prior to surveying and staking of the route, following applicable state/federal guidelines.

(b) Clearing and Grading, and Fencing

After the right-of-way has been surveyed and property rights have been secured (for the permanent and temporary construction right-of-way, and any existing right-of-way if necessary), the Project will clear the right-of-way of obstructions (i.e., trees and stumps, brush, logs, and large rocks) according to the FERC Plan, the Project-specific E&SCP and applicable regulatory approvals

The Project will clear the right-of-way to the width required for construction, but not more than specified on the pipeline alignment sheets and approved by FERC. These right-of-way widths indicate the maximum width necessary for construction, operation, and maintenance of the pipeline. At no time will the Project

or its contractor clear or alter any areas outside of the boundaries of FERC-approved workspace areas. Should additional areas be required, the Project will request approval from the landowner and the FERC.

Merchantable timber will be stacked outside of the work area alongside the edge of the right-of-way or ATWS. Merchantable timber will be cut into lengths and stacked along the edge of the right-of-way or ATWS in areas that have previously been agreed upon by the landowner. If the landowner does not wish to use timber products or any other tree material, it will be windrowed to a maximum height of four feet with wildlife breaks/openings every 200 feet. In accordance with Section III.D of the FERC Plan, the Project will plan for safe and accessible conditions at all roadway crossings and access points during construction and restoration.

The Project will dispose of brush and slash through burning, windrowing or chipping. Burning will be conducted on a case-by-case basis and in compliance with permit conditions, subject to local ordinances. The Project will implement its Fire Prevention and Suppression Plan (Appendix 1-H), which will be developed based on its experience in the region.

The Project may windrow, burn, or haul off cleared vegetation depending on the terrain and landowner request. Windrow breaks/openings will allow for landowner passage, per pre-coordination and approval. If removed, the Project will haul trees/brush off to an approved location for disposal. If left permanently, the brush/slash windrow can provide habitat for wildlife and will not have any impacts on achieving adequate vegetative cover post-construction. If brush and slash is chipped, it will be either spread across the right-of-way in accordance with the FERC Plan and Procedures or blown off right-of-way per landowner pre-coordination and approval. Burning is the preferable method for disposing of brush and slash because it minimizes the number of trucks that would be required to remove chips from the right-of-way and reduces safety hazards of trucks entering the right-of-way. The Project will dispose of, split, grind, or burn stumps to the satisfaction of the property owner and/or company representative in accordance with applicable law.

If fences (barbed wire, chain link, or other) are encountered along the construction right-of-way, then a fence crew will install temporary gates or gaps. The contractor's fence crew will install new posts to brace the areas on either side of the proposed cut to ensure that no damage occurs to other portions of the fence or wall. The Project will install temporary gates or gaps, if necessary, to contain livestock or to prohibit or otherwise control public access across the right-of-way. These temporary fences and/or gates will remain closed at all times except as required for construction purposes.

(c) Trenching

The Project will excavate the pipeline trench with a track-mounted backhoe or similar equipment and only use explosives when necessary in areas where rock substrates are at depths that interfere with conventional excavation or rock-trenching methods. Information on blasting, including a General Blasting Plan, is included in Resource Report 6, Appendix 6-D. On actively cultivated agricultural tracts, at wetland crossings, and in residential areas, subsoil will be segregated and stockpiled separately from topsoil per the FERC Plan. Locations where topsoil segregation may be implemented is provided in Resource Report 7.

The Project will stockpile excavated soils along the right-of-way on the side of the trench (the "spoil" side) away from the construction traffic and pipe assembly area (the "working" side). Where the pipeline route is collocated adjacent to an existing infrastructure, the spoil will generally be placed on the same side of the trench as the existing infrastructure.

(d) Stringing

New steel pipe for the pipeline will be procured and protected with an epoxy coating applied at the factory or at a coating yard (the beveled ends will be left uncoated for welding) and shipped to strategically located materials storage areas, contractor yards, or "pipe yards." Contractor yard locations are shown on the USGS 7.5-minute topographic quadrangle map excerpts in Appendix 1-B. The Project will transport the individual joints to the right-of-way by truck and place along the excavated trench in a single, continuous line that is easily accessible to the construction personnel on the working side of the trench (typically opposite the spoil side). This will allow the subsequent lineup and welding operations to proceed efficiently.

(e) Pipe Bending

The Project will deliver the pipe to the Project workspace in straight joints typically 40 to 60 feet in length. The use of controlled internal diameter fittings, in addition to the bending of pipe, will be required to allow the pipeline to follow natural grade changes and directional changes of the right-of-way. Prior to welding, track-mounted hydraulic bending machines will bend selected joints in the field.

(f) Pipe Assembly and Welding

Following stringing and bending, the Project will place the joints of pipe on temporary supports adjacent to the trench. The ends will be aligned and welded together using multiple passes for a full penetration weld. Only qualified welders can perform the welding. Automated welding techniques may be used in flatter areas if the terrain is suitable. The Project will employ qualified welders and implement welding procedures in accordance with applicable American Society for Mechanical Engineers, API, and 49 CFR Part 192 Standards including the latest edition of API Standard 1104.

(g) Non-Destructive Examination and Weld Repair

To ensure that the assembled pipe will meet or exceed the design strength requirements, the completed welds will be visually inspected and tested for integrity using non-destructive examination methods such as radiography (X-ray), or ultrasound, in accordance with API 1104. Welds displaying unacceptable slag inclusions, void spaces, or other defects will be repaired or replaced.

(h) Coating Field Welds, Inspection, and Repair

Following welding, the Project will sandblast the previously uncoated ends of the pipe at the joints and cover them in epoxy. The coating on the completed pipe section will be inspected, and damaged areas will be repaired prior to lowering in accordance with applicable industry standards.

(i) Pipe Lowering

The completed section of pipe will be lifted off temporary supports and lowered into the trench by side-boom tractors or equivalent equipment. Prior to lowering the pipe, the Project will inspect the trench to ensure that it is free of rocks and other debris that could damage the pipe or the coating. In rocky areas, if the bottom is not smooth, a layer of soil or sand may be placed on the bottom of the trench to protect the pipe using a padding machine or excavator with a "shaker bucket," which separates rocks from satisfactory padding materials. Concrete-coated pipe or aggregate filled sacks (pipe weights) will be used if necessary for negative buoyancy in areas prone to flooding or with a high groundwater table.

(j) Padding and Backfilling

After the pipe is lowered into the trench, the Project will backfill the trench. Previously excavated materials will be pushed back into the trench using equipment or backhoes. Where the previously excavated material contains large rocks or other materials that could damage the pipe or coating, clean fill will be used as backfill to protect the pipe. Due to concerns about the acidity of fly ash and its potential impacts on cathodic protection, fly ash will not be used as backfill material. However, limestone dust or sand, which is typically non-acidic and will often aid in the cathodic protection of the pipeline, may be used as backfill material. The remaining fill in the trench will be the aggregate of the excavation material removed at the time of the excavation. If additional fill is required, it will be either flowable fill or clean fill. After the subsoil is placed in the trench, segregated topsoil will be placed in the trench above the subsoil. Following backfilling in agricultural land, and open land, a small crown may be left to account for any future soil settling that might occur. In wetlands, a crown will not be left to ensure restoration of ground and surface water hydrology to pre-existing conditions. Excess soil will be distributed evenly on the right-of-way in accordance with landowner and agency requirements, only in upland areas and only to meet the pre-construction surface elevations.

(k) Hydrostatic Pressure Testing and Final Tie-In

Following backfilling of the trench, the Project will hydrostatically test the pipeline to ensure that it is capable of safely operating at the design pressure. Test water is anticipated to be drawn from two municipal sources. If necessary, additional potential sources for hydrostatic test water may include groundwater supply wells, and/or approved surface waters (see Resource Report 2, Section 2.3.3). Test segments of the pipeline will be capped with test manifolds and filled with water and pressurized to a minimum of 1.1 to 1.5 times (based on location class) the maximum designed operating pressure in accordance with the U.S. Department of Transportation requirements identified in 49 CFR Part 192 prior to being placed in service. Loss of pressure that cannot be attributed to other factors, such as temperature changes, will be investigated. Leaks detected will be repaired, and the segment will be retested. In addition, the Project will comply with General Permit No. VAG83 (Petroleum Contaminated Sites, Groundwater Remediation and Hydrostatic Tests General Permit in Virginia and General Permit NCG010000 to discharge stormwater under the National Pollutant Discharge Elimination System for Construction Activities in North Carolina.

Upon completion of the hydrostatic test, the water may be pumped to the next segment for testing, or the water may be discharged. The Project will discharge the test water through an energy-dissipating device in compliance with applicable regulatory approvals. Topography and the availability of test water will influence the length of each test segment. Information on the Project's hydrostatic test water withdrawal and discharge locations is provided in Resource Report 2. Test water will contact only new pipe. If chlorinated water is used for testing, a de-chlorinating agent or method may be required prior to discharge. Once a segment of pipe has been successfully tested and dried, the Project will remove the test manifold and the pipe will be connected to the remainder of the pipeline. The Project will implement Section VII of the FERC Procedures regarding hydrostatic testing, as well as any specifications in applicable regulatory approvals and clearances.

(l) Cleanup and Restoration

The Project will conduct post-construction restoration activities in accordance with the measures specified in the FERC Plan and Procedures as applicable. After a segment of pipe is installed, backfilled, and successfully tested, the Project will final-grade the right-of-way, temporary ATWS, and other disturbed

areas, and construction debris will be disposed of properly. The Project will grade the surface of the right-of-way disturbed by construction activities to match original contours and to be compatible with surrounding drainage patterns, except at those locations where permanent changes in drainage will be required to prevent erosion, scour, and possible exposure of the pipeline. The Project will return segregated topsoil to its original horizons in agricultural areas and install temporary and permanent erosion and sediment control measures where necessary, including silt fencing, diversion trenches, and vegetation. The Project will also restore, to original or better condition, all private and public property impacted by the Project such as fences, gates, driveways, and roads that have been disturbed by the pipeline construction. More information on restoration activities is provided in Section 1.4.3.

### Typical Wetland Pipeline Construction

The pipeline will cross wetlands in accordance with state and federal permits and the FERC Procedures. Pending site conditions, the Project may request alternative measures to these Procedures, and these would require approval by FERC prior to construction in these areas.

The Project will segregate the topsoil in wetlands where hydrologic conditions permit this practice. Segregated topsoil will be placed in the trench following subsoil backfilling. In forested wetlands, trees will be cut to grade, but stumps will only be removed within 15 feet of the edge of the pipe trench, or where safety concerns dictate otherwise. The Project will conduct restoration and monitoring of wetland crossings in accordance with the FERC Procedures to ensure successful wetland revegetation. In accordance with the FERC Procedures, fuel will not be stored within 100 feet of wetlands or other water bodies.

Hydrological conditions along the construction corridor in areas proposed for open ditch construction will likely dictate the use of either open ditch lay or open ditch push/pull lay methods. Selection of the most appropriate method will depend on site-specific weather conditions, inundation, soil saturation, and soil stability at the time of construction. The conventional open ditch lay method will be the most frequently used technique for installation of the pipeline in wetlands. The Project will use the push/pull method in inundated or saturated wetland areas where groundwater conditions preclude conventional construction. Selection of the push/pull method will be decided during construction by the construction supervisor and/or the Project representative depending on the conditions at the time of construction.

(a) Unsaturated Wetland Crossings

When crossing unsaturated wetlands (wetlands without standing water or saturated soils), construction will be similar to the typical upland construction described in Typical Upland Pipeline Construction Procedures above, with some exceptions, including that only one traffic lane will be provided for construction equipment. The Project will use low ground pressure equipment if normal construction equipment causes rutting or mixing of wetland topsoil and subsoil, or install temporary equipment mats to allow passage of equipment with minimal disturbance of the surface and vegetation. Topsoil over the pipe trench will be segregated from subsoils. The Project will install and maintain erosion control measures to minimize sedimentation within the wetland. Trench plugs will be installed at the entry and exit points of wetlands and waterbodies to prevent the modification of subsurface hydrology.

(b) Saturated Wetland Crossings

For the purposes of this report, saturated wetlands include wetlands with standing water, but not those wetlands that are constantly or regularly completely submerged. Topsoil segregation will not be practical in saturated wetlands. Otherwise, construction will be similar as described for unsaturated wetlands to

provide for anticipated widths of the pipeline trench and trench spoil areas. The Project will use equipment or timber mats to facilitate equipment movement through and work within the wetland. Equipment not associated with the pipeline construction within the wetland will be allowed to pass through the wetland when there is no other reasonable access, as provided in the FERC Procedures. The Project will use the push/pull lay method in inundated or saturated wetland areas where groundwater conditions preclude conventional construction. Upon completion of construction, the right-of-way will be restored and revegetated.

### Typical Waterbody Crossings

The Southgate Project will conduct construction across waterbodies in accordance with the FERC Procedures. The normal trenching operation will skip the waterbody crossing, stopping on each side near the top of the bank. The Project will install the waterbody section of the pipeline by one of the methods described below. In general, pipe will be bent and fabricated as the work progresses along the right-of-way so that the excavation of the waterbody crossing is completed prior to pipe installation by the tie-in crew. Locations and methods for waterbody crossings is provided in Appendix 2-A of Resource Report 2.

Construction methods at each waterbody will vary based upon the characteristics of the waterbody encountered and applicable regulatory approvals. Waterbody crossing methods will be conducted in accordance with both the FERC Procedures and federal and state permitting requirements. The Project will conduct crossings of minor perennial and intermittent streams in accordance with the FERC Procedures. Dry-ditch waterbody crossing methods include dam and pump, flume, and trenchless crossing methods such as conventional bore and horizontal directional drill ("HDD"). Appendix 2-A of Resource Report 2 includes a table with milepost crossing locations, crossing width measured at the time of the environmental survey, significance for fisheries or other aquatic resources as reported by each state, and proposed crossing method. The crossing method is subject to change depending upon the actual conditions encountered at the time of construction. Crossing methods are described below.

(a) Conventional Crossing

The Project will cross waterbodies with no discernable flow at the time of construction using the conventional crossing methods, unless otherwise required. The pipeline will be installed to a minimum of three feet of cover from the waterbody bottom to the top of the pipeline, except in consolidated rock, where a minimum of two feet of cover will be required. Trench spoil will be placed on the bank above the high water mark for use as backfill. A prefabricated segment of pipeline will be laid horizontally across the waterbody bed past the high banks on each side of the waterbody before raising in elevation to the normal trench level. If necessary, the pipeline may be weighted with concrete weights, and/or aggregate filled sacks to obtain sufficient negative buoyancy.

Compaction percentage of backfill will be equal to or above that of the adjacent undisturbed areas. Trench plugs consisting of sandbags or foam may also be used to keep backfill from sloughing in toward the center of the waterbody. The Project will restore waterbody banks to their original grades and remove and dispose of excavated material not required for backfill at an upland site.

The Project will follow the FERC Procedures to limit water quality and aquatic resource impacts during and following construction. The Project will schedule construction activities so that the pipeline trench is excavated immediately prior to pipe laying activities.

(b) Dam and Pump Crossing Method

The dam and pump method involves installation of temporary dams upstream and downstream of the proposed waterbody crossing. The temporary dams will typically be constructed using materials such as sandbags and plastic sheeting. Following dam installation, appropriately sized pumps will be used to dewater and transport the stream flow around the construction work area and trench. Pumps will be placed within secondary containment. Intake screens will be installed at the pump inlets to prevent entrainment of aquatic life, and energy dissipating devices will be installed at the pump discharge point to minimize erosion and streambed scour. Trench excavation and pipeline installation will then commence through the dewatered portion of the waterbody channel. Following completion of pipeline installation, backfill of the trench, and restoration of stream banks, the temporary dams will be removed, and flow through the construction work area will be restored. This method is generally only appropriate for those waterbody crossings where pumps can adequately transfer the stream flow volume around the work area and there are no concerns about the passage of sensitive species.

(c) Flume Crossing Method

The flume crossing method will consist of temporarily directing the flow of water through one or more flume pipes placed over the area to be excavated. This method will allow excavation of the pipe trench across the waterbody completely underneath the flume pipes without disruption of water flow in the stream. Stream flow will be diverted through the flumes by constructing two bulkheads and using sand bags or plastic dams to direct the stream flow through the flume pipes. The Project will remove bulkheads and flume pipes following completion of pipeline installation, backfill of the trench, and restoration of stream banks. This crossing method generally minimizes the duration of downstream turbidity by allowing excavation of the pipeline trench under relatively dry conditions.

(d) Conventional Bore Crossing Method

Some waterbodies crossed by the Project are directly associated with or adjacent to roads or railroads. Where these roads or railroads are to be crossed using a horizontal or conventional boring machine, the waterbody will typically be included within the length of the bore. Some elevated or channelized waterbodies, such as irrigation ditches, may also be successfully bored, depending upon the groundwater level in the area. To complete a horizontal or conventional bore, two pits will be excavated, one on each side of the feature to be bored. A boring machine will be lowered into one pit, and a horizontal hole will be bored to a diameter equal to the diameter of the pipe (or casing, if required) at the depth of the pipeline installation. The pipeline section and/or casing will then be pushed through the bore to the opposite pit. If additional pipeline sections are required to span the length of the bore, they will be welded to the first section of the pipeline in the bore pit before being pushed through the bore. Currently, the Project is proposing three conventional bore crossings: Cascade Creek, Wolf Island Creek, and Deep Creek.

(e) Horizontal Directional Drilling

Horizontal directional drilling is a method that allows for trenchless construction across an area by pre-drilling a hole below the depth of a conventional pipeline lay and then pulling the pipeline through the pre-drilled borehole. Currently, the Project is proposing a HDD at the Dan River and Stony Creek Reservoir crossings.

The HDD method has been in use since the 1970s as a means to install pipelines across rivers and at shore approaches to eliminate pipeline exposure from erosion and scour and eliminate impacts to water quality

from construction activities within the waterbody. Pipelines up to 60 inches in diameter have been successfully installed using this method. The length of pipeline that can be installed by HDD depends upon topography, soil conditions, geology, and pipe diameters and is limited by available technology and equipment sizes.

Typically for HDD crossings, electric-grid guide wires will be hand-laid across the land surface along the pipeline right-of-way to help guide the drill bit along the predetermined HDD route. In thickly vegetated riparian areas, a swath approximately two to three feet wide may be hand-cleared across the land surface for the placement of guide wires to monitor the track of the drill alignment, resulting in minimal ground and vegetation disturbance. This may occur over the pipe or temporary access may be utilized if it does less harm to the vegetation. Following guide wire installation, a directional drilling rig will be set up and a small-diameter pilot hole will be drilled along a prescribed profile.

The Project will consider the use of municipal water for its proposed HDDs but this is generally not a favorable option as the municipal sources (hydrants) are not located within close proximity of the HDD locations. If necessary, additional sources of water for HDDs may include groundwater supply wells, and/or approved surface waters. The use of municipal water to support a HDD would require an increase in heavy load vehicles on local roads as well as a greater extent of ATWS to store tank batteries and water trucks. In an effort to reduce the increase in heavy load vehicles in the Project area and minimize workspace and land impacts associated with the HDDs, the Project determined that the most feasible HDD water sources are from either a locally drilled water well and/or approved surface waters (see Resource Report 2, Section 2.3.4). Typical HDD installation plans are shown in Appendix 1-C1. HDD Site-specific Plans are provided in Appendix 1-C3. Results of geotechnical investigations will be will be provided in a supplemental filing expected to be filed in early 2019.

Electromagnetic sensors located on the tip of the drill bit will follow an electromagnetic field created by the guide wires along the prescribed path. Where guide wires cannot be used, bit tip positioning sensors will be used to guide the drill bit. In either case, once the pilot hole is completed, it will be enlarged, using reaming tools to provide access for the pipe. The reaming tools will be attached to the drill string at the exit point of the pilot hole and then rotated and drawn back to the drilling rig, thus progressively enlarging the pilot hole with each pass. During this process, drilling fluid consisting of bentonite clay and water will be continuously pumped into the hole to remove cuttings and maintain the integrity of the hole. Additional additives that are approved by agencies may be needed dependent upon viscosity readings. These additives will be determined by a mud engineer on site. Once the hole has been sufficiently enlarged, a prefabricated segment of pipe will be attached behind the reaming tool on the exit side of the crossing and pulled back through the drill hole to the drill rig, completing the crossing. The Project will dispose of all HDD cuttings and fluids at approved disposal facilities in Virginia (First Piedmont Corporation) and North Carolina (Ecoflo, HOH, and Zebra Environmental and Industrial).

The primary advantage of the HDD method is that there is minimal planned disturbance of the surface between the entry and exit points of the HDD (limited to the temporary deployment of telemetry cable and water pipe), provided there is reasonable access to the entry and exit points for the drilling rig and fluids handling equipment. However, because it is necessary to prefabricate a section of pipe aboveground that is equal to the length of the HDD, and because existing surface features such as roads and railroads could restrict the length of the prefabricated section to less than that of the HDD, the HDD method may not be appropriate for every site condition encountered. Typical HDD installation plans are shown in Appendix 1-C1. HDD Site-specific Plans are provided in Appendix 1-C3.

Where the HDD and the adjacent right-of-way are in or near parallel alignment, the pull section will be pre-fabricated within the construction right-of-way to the greatest extent practical; minimal ATWS will be required for this pull section. However, if the adjacent right-of-way is not aligned with the HDD, it will not be possible to bend the pull section into the borehole, and an ATWS (sometimes referred to as a "false right-of-way") may be required to accommodate the pullback section.

Although the HDD method is a proven technology for pipe installation, the potential exists for a HDD installation to fail for a number of reasons, including encountering soil conditions not conducive to boring, caving of the borehole, loss of the drill string in the borehole, loss of circulation, and pullback refusal. Many of these potential failures can be avoided or mitigated by making appropriate adjustments to the operation of the HDD equipment. If needed, the borehole can usually be moved to another, adjacent location.

### Typical Road and Railroad Crossings

Road crossings will be maintained continuously using provisions such as steel plates or alternate access to minimize inconvenience to the public. Construction of the pipeline across hard surface roads will typically be installed through the roadbed by conventional bore as previously described for waterbody crossings. At points of access to the right-of-way from hard-surfaced roads, a stone pad will be installed as a construction entrance to control mud and dirt tracking onto the highway. Most of the smaller, unpaved roads and driveways will be crossed by open trenching and then restored to pre-construction conditions. If an open-cut road requires extensive construction time, provisions will be made for temporary detours or other measures to allow safe traffic flow during construction. The pipeline will be buried to a depth of at least three feet below the road surface and will be designed to withstand anticipated external loadings. Road and railroad crossing locations are provided in Table 8.2.5 of Resource Report 8. Typical details of road and railroad crossings are provided in Appendix 1-C1.

### Typical Foreign Pipeline Crossings

The Project will cross several transmission and distribution pipelines and flow lines in accordance with 49 CFR 192. The Project will cross under most existing foreign pipelines due to the size of the pipeline and soil cover and separation requirements. The larger spoil volumes from increased excavation depths at these pipeline crossings and the preference not to place spoil or construction equipment over existing pipelines will require ATWS at most crossings. The locations of known foreign pipelines and other identified underground utilities in relation to the pipeline are listed in Appendix 1-I. While the pipelines are generally discernible in the field, some companies may not participate in the 811 notification system leaving the line operators unidentifiable. Experience shows that additional foreign lines or flow lines will likely be identified during the pre-construction surveys.

Precautions including the following will be taken to ensure that the existing pipelines are positively identified, safe working conditions are present and that the foreign pipelines are protected against damage during construction:

- One Call will be contacted to locate all known pipelines and utilities (Virginia and North Carolina 811);
- The existing pipelines will be precisely located prior to excavation using a hand-held magnetometer and/or by probing, as appropriate for actual conditions encountered;

- Right-of-way edges will be scanned prior to grading with Passive Inductive Locating equipment to ensure that no unknown foreign pipelines cross into the work area;
- The operators of the existing pipelines will be given adequate notice (48 hours) of the crossing and the opportunity to be present during work around their pipelines;
- No mechanized excavation will be allowed within three feet of existing pipelines; the excavations will be completed by hand;
- Construction equipment and spoil piles will be kept off the existing pipeline centerline, to the extent practicable. Should foreign lines require equipment crossing, the crossings will be made over timber mats or equivalent to displace the weight of the equipment;
- The existing pipelines will be temporarily and adequately supported for the length of the span exposed by the crossing excavation. Supports will not be removed until the soil under the piping has been compacted and can adequately support the pipeline;
- The existing pipelines will be inspected before and after installation of the Project to ensure there is no damage to the existing pipelines or their coatings that could compromise their integrity;
- The minimum separation distance between the pipelines specified by the U.S. Department of Transportation and the facility owner will be maintained; and
- Safety requirements of the foreign pipeline crossing operator will be followed.

The Project may require monitoring of excavation activities whenever a contractor is excavating over or near a foreign pipeline. A working combustible gas indicator (when crossing hydro-carbon lines) will be utilized at the work site, and appropriate safety and rescue equipment will be available based on Occupational Safety and Health Administration standards for working in excavations or confined spaces. In the event accidental damage occurs to a foreign pipeline during construction, the area will be inspected, the owner of the pipe notified, and the pipe repaired.

### Typical Construction in Residential Areas

Site-specific plans for residential structures within 25 feet of construction work areas are included in Appendix 8-C of Resource Report 8. Section 8.2.3.7 of Resource Report 8 describes the measures that the Project will implement for residences located within 50 feet of the construction work space.

The Project will use additional measures such as high visibility safety fence or jersey barriers to prevent overnight access to the trench. Following completion of major construction activities, the Project will restore the property in accordance with its Project-specific E&SCP. Property restoration will be in accordance with any agreements between the Project and the landowner. Additional details regarding residential construction, including proposed mitigation measures to be used in residential areas are provided in Resource Report 8.

### Typical Construction in Commercial and Industrial Areas

Construction in high-density commercial and industrial areas will be accomplished by implementing specialized construction methods such as the drag-section or stove-pipe methods or conventional bore. These specialized methods reduce the amount of workspace needed for construction, the duration of

construction activity in the immediate vicinity of commercial and industrial areas and the time the trench is left open. The pipeline trench will be excavated as the pipeline section is fabricated, inspected, and prepared for installation.

#### Typical Topsoil Segregation

The Project will conserve topsoil in actively cultivated and rotated cropland, improved pastureland, and non-saturated wetlands. In residential yards, the Project will either conserve topsoil or provide topsoil as an alternative to topsoil segregation and conservation. The topsoil and subsoil will be temporarily stockpiled in separate windrows on the construction right-of-way. Rock will not be used as upper backfill in rotated or permanent cropland. Additional information regarding topsoil segregation is provided in Resource Report 7.

### 1.4.1.2 Special Construction Procedures

#### Blasting

Where un-rippable subsurface rock is encountered, blasting for ditch excavation will be necessary. At this time, the extent of blasting associated with construction of the Project is unknown. If required, the Project is committed to taking measures to prevent damage to underground structures (e.g., cables, conduits, and pipelines) or to springs, water wells, or other water sources and will minimize the amount of blasting required to the extent practicable. Blasting will be conducted by highly trained contractors. Blasting mats or padding will be used as necessary to prevent the scattering of loose rock. All blasting will be conducted during daylight hours and will not begin until occupants of nearby buildings, stores, residences, places of business, and farms have been notified. Where competent sandstone bedrock occurs in the stream bed, blasting may be used to reduce bedrock so that the trench can be excavated. Blasting will be conducted in accordance with the General Blasting Plan (see Resource Report 6, Appendix 6-D) that is under development in consultation with applicable federal and state regulatory agencies. Pre- and post- blasting structural surveys will be conducted of occupied structures, water supply wells and water supply springs that will be specified in the Blasting Plan. Additional information on geologic resources and blasting, and depth to bedrock, is included in Resource Report 6 and Resource Report 7.

#### Steep Terrain

The Project will employ special construction techniques where the slopes typically exceed 30 to 35 percent. In rugged terrain with vertical slopes, temporary sediment barriers, such as silt sock and reinforced silt fences will be installed during clearing to prevent movement of sediment off the right-of-way. In addition, temporary slope breakers may be installed during grading in accordance with the FERC Plan and the Project-specific E&SCP to reduce water runoff or divert water to vegetated areas. Construction activities on rugged terrain will be similar to the typical construction described in Section 1.4.1.1.

The Project will use specialized construction methods to ensure the safety of equipment operators, construction personnel, and equipment. On steep slopes, various measures may be taken to properly control erosion and sedimentation on the right-of-way.

#### Karst Area

The Project conducted a desktop review of peer-reviewed, publicly-available geologic mapping, and determined that there is negligible potential for karst features and related karst hazards to be present within 0.25-mile of the Project alignment. While karst hazards are not anticipated, if karst features are observed

during construction the Southgate Project will employ a karst specialist to conduct a field investigation to inspect and characterize the karst features and potential for subsurface connectivity. The karst specialist will coordinate with the Project qualified geologist to conduct the field inspection and will notify the applicable agencies regarding the karst feature. If the karst feature is determined to have subsurface connectivity and present a potential hazard to pipeline construction and operation, or be a potential conduit to local groundwater resources, appropriate mitigation measures will be identified by the karst specialist, and will be discussed with the applicable agencies prior to implementation. Information on potential karst areas is provided in Section 6.5.1 and Appendix 6-E of Resource Report 6.

#### Trench Dewatering

In uplands, the Project will remove water from the excavated trench prior to lowering the pipe into place. The water will be pumped from the trench to a location down gradient of the trench. The trench will be dewatered in a manner that does not cause erosion and does not result in heavily silt-laden water flowing into any waterbody or wetland. In accordance with the FERC Plan and Project-specific E&SCP, the Project will discharge storm water to an energy dissipation/filtration dewatering device, such as a filter bag or hay bale structure. The dewatering structure will be removed as soon as possible after completion of the dewatering activities. Trench plugs will be used where necessary to separate the upland trench from adjacent wetlands or waterbodies to maintain the existing subsurface hydrology conditions.

#### Winter Construction

The Project's current construction schedule includes clearing of vegetation and grading within the first quarter of 2020. The Project Winter Construction Plan (Appendix 1-J) identifies BMPs for construction activities in frozen and snow-covered ground conditions.

### 1.4.2 Aboveground Facilities Construction

Typical construction activities associated with the installation of the aboveground facilities are summarized below.

#### General

Construction activities and storage of construction materials and equipment will be confined within the designated workspace areas associated with the aboveground facilities. Debris and waste generated from construction will be disposed of as appropriate. Disturbed surface areas will be restored in a timely manner. The facilities will be constructed in accordance with the Project construction standards and specifications as more generally described in the paragraphs that follow.

#### Foundations

Excavation will be performed to accommodate the new reinforced concrete foundations for the compressors, meter stations, launcher and receiver facilities, filtration equipment, coolers, and buildings. Subsurface friction piles may be required to support the foundations, depending upon the bearing capacity of the existing soils and the equipment loads. Forms will be set, rebar installed, and the concrete poured and cured in accordance with applicable industry standards. Concrete batches for equipment buildings will be tested to verify compliance with minimum strength requirements. Backfill will be compacted in place, and excess soil will be used elsewhere or distributed around the site to improve grade.

### Equipment

The compression, piping and other equipment will be shipped to the sites by truck. The equipment will be offloaded using cranes and/or front-end loaders. The equipment will then be positioned on the foundations, leveled, grouted where necessary, and secured with anchor bolts, as required. Non-screwed piping associated with the aboveground facilities will be welded, except where connected to flanged components. Welders and welding procedures will be qualified in accordance with API standards. Welds in gas piping systems will be examined using radiography, ultrasound, or other approved non-destructive examination methods to ensure compliance with code requirements. Aboveground piping surfaces will be cleaned and painted in accordance with the Project construction specifications. Paint inspection and cleanup will be conducted in accordance with regulatory requirements and best engineering practices.

### Testing

Components in high-pressure natural gas service will be tested prior to placing in service. Pressure testing will follow all applicable federal and state requirements. Before being placed in service, controls and safety equipment and systems including emergency shutdown, relief valves, gas and fire detection, and engine over speed and vibration protection will be calibrated and tested.

## 1.4.3 Restoration

Following construction of the Project, the areas disturbed by construction will be restored to their original grades, condition, and use, to the greatest extent practicable. The Project will complete restoration in accordance with the FERC Plan and Procedures, the Project-specific E&SCP and applicable regulatory approvals and landowner agreements. Restoration will be considered successful if the disturbed surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless requested otherwise by the landowner), revegetation is successful, proper drainage has been restored, and the appropriate federal and state agencies approve. The Project will reseed areas disturbed by construction in accordance with proposed seed mixes developed for the Project.

### 1.4.3.1 Pipeline

Upon completion of the pipeline installation, the surface of the right-of-way disturbed during construction activities will be graded to match original contours and to be compatible with surrounding drainage patterns, except at those locations where permanent changes in drainage will be required to prevent erosion, scour, and possible exposure of the pipeline. Segregated topsoil will be replaced, and soils that have been compacted by construction equipment traffic will be decompacted. Permanent erosion control measures will be installed at this time. Temporary erosion control measures may be left in place, where appropriate, until sufficient vegetative cover is re-established to prevent significant erosion or sedimentation.

### Uplands

In most upland locations, excluding actively cultivated cropland, herbaceous vegetative cover will be re-established by spreading a grass seed and hydro/straw-mulch mixture over the disturbed surface. The type of seed will be selected to match the mix required by applicable regulatory agencies, or as otherwise requested by the landowner. Depending upon the time of year, a temporary seed mix may be broadcast or drilled until a more permanent cover can be established. Steep slopes (e.g., stream banks) may require additional stabilization using erosion control fabric, revetments, or sod. Vegetation success in these areas will be monitored, and reseeding, fertilizing, hydroseed, or other supplemental revegetation measures may

be implemented until the density and cover of non-nuisance vegetation is similar in density and cover to adjacent undisturbed lands.

Actively cultivated cropland may be left unseeded at the request of the landowner. Pasture will be reseeded with a similar species or mixture. Pasture revegetation will be considered successful when density and cover are similar to adjacent undisturbed portions of the same pasture. Residential and commercial lawns will be reseeded or sodded, depending upon the original grass variety and landowner agreements. Forested areas within temporary workspace areas will be allowed to revegetate naturally to a forested condition.

In uplands, routine vegetation mowing or clearing over the full width of the permanent right-of-way in uplands will not be done more frequently than once every 3 years. However, to facilitate periodic corrosion/leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state.

#### Waterbodies

Cleanup and restoration activities commence as soon as practicable following completion of the waterbody crossing. Completed stream crossings using the flume or dam and pump methods will be stabilized before returning flow to the channel. Areas disturbed will be restored to pre-construction or better conditions. Original streambed and bank contours will be re-established for surface water and groundwater flow, and mulch, jute thatching, or bonded fiber blankets will be installed on the stream banks, which are preferential to plastic erosion control blankets because they reduce wildlife entrapment and are biodegradable. Where the flume technique is used, stream banks will be stabilized before removing the flume pipes and returning flow to the waterbody channel.

Seeding of disturbed stream approaches will be completed in accordance with the FERC Procedures after final grading, weather and soil conditions permitting. Other Federal and State permit seeding requirements will be considered where applicable. Where necessary, slope breakers will be installed adjacent to stream banks to minimize the potential for erosion. Sediment barriers, such as silt fence and/or straw bales will be maintained across the right-of-way until permanent vegetation is established. Temporary equipment bridges will be removed following construction.

#### Wetlands

Original surface hydrology will be re-established in wetlands by backfilling the pipe trench and grading the surface with equipment operating from timber mats or equivalent or using low-ground-pressure tracked vehicles working in the spoil pile depending upon degree of soil saturation and the bearing capacity. Segregated topsoil will be replaced in unsaturated wetlands. Unsaturated wetlands will be allowed to revegetate naturally, as the seed bank will be maintained within the topsoil layer. Wetland revegetation will be considered successful when the cover of herbaceous and/or woody species is at least 80 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. Revegetation efforts will continue until wetland revegetation is successful based on the FERC Procedures and other applicable regulatory approvals. Restoration and mitigation for impacts to forested wetlands is included in Section 2.4.4 of Resource Report 2.

### 1.4.3.2 Aboveground Facilities

Aboveground facilities will be fenced. The areas inside the fence at the aboveground facilities will be permanently converted to industrial use. Most areas in and around the buildings, meters, and associated

piping and equipment will be covered with an approved stabilization method (typically crushed rock or equivalent) to minimize the amount of maintenance required. Roads and parking areas may be crushed rock, concrete, or asphalt. Other ground surfaces will be seeded with a grass that is compatible with the climate and can be easily maintained. Temporary workspace areas outside the fence will be restored as described above for the pipeline right-of-way.

#### 1.4.3.3 Access Roads

Previously existing access roads that were modified and used during construction will be returned to original or better condition upon completion of the pipeline facilities installation. Temporary access roads constructed specifically for the Project installation will be removed, the surface graded to original contours, and the land restored to its original use. Temporary erosion control measures will be removed upon final stabilization and approval from applicable regulatory agencies and installation of permanent erosion control measures, if necessary.

#### 1.4.3.4 Contractor Yards

Upon completion of construction, all temporary facilities (e.g., trailers, sheds, latrines, pipe racks, fencing, and gates) will be removed from the contractor yards. Unless otherwise requested by the landowner, each site will be graded to original contours and the land restored to its original use, to the greatest extent possible. The site will be revegetated, permanent erosion control measures will be installed, and temporary erosion control measures will be removed.

### 1.4.4 Quality Assurance Measures

To ensure that construction of the facilities will comply with measures identified in the FERC Certificate and applicable regulatory permits and clearances, the Project will include implementation details in its construction drawings and specifications. Copies of permit requirements, known conditions and related drawings will be added to the Construction Bid Package.

#### 1.4.4.1 Environmental Training and Inspection

Consistent with the FERC Plan and Procedures and the Project's Project-specific E&SCP, environmental training will be given to the Project personnel and to contractor personnel whose activities may impact the environment during pipeline and aboveground facility construction. The level of training will be commensurate with the type of duties of the personnel. All construction personnel from the Chief Inspector, EI, craft inspectors, and contractor job superintendent to clearing crews, welders, equipment operators, and laborers will be given the appropriate level of environmental training. The training will be given prior to the start of construction and throughout the construction process, as needed. The training program will cover job-specific permit conditions, contaminated sediment and groundwater management, health and safety, company policies, cultural resource procedures, threatened and endangered species restrictions, the Spill Prevention Control and Countermeasures Plan and Unanticipated Discovery of Contamination Plan (Appendix 1-G), National Pollutant Discharge Elimination System, Stormwater Pollution Prevention Plan, and any other pertinent information related to the Project. In addition to the EIs, all other construction personnel will play an important role in maintaining strict compliance with all permit conditions to protect the environment during construction.

To ensure quality assurance and compliance with mitigation measures, a Chief Inspector will represent the Project assisted by another Inspector, one or more craft inspectors, and Non-Destructive Evaluation

technicians. In addition, there will be at least one Lead EI who will report to the Chief Inspector, who in turn reports to the Construction Manager. The EI's duties are consistent with those contained in Section II.B (Responsibilities of the Environmental Inspector) of the FERC Plan; the EI will be:

- Responsible for monitoring and documenting compliance with all mitigation measures required by the FERC's Order and any other grants, permits, certificates, or other authorizing documents;
- Responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract or any other authorizing document;
- Empowered to order correction of acts that violate the environmental conditions of the FERC's Order, or any other authorizing document (e.g., U.S. Army Corps of Engineers ["USACE"] Section 404 permit), including stop work authority;
- A full-time position separate from all other activity inspectors; and
- Responsible for maintaining status reports and training records.

Copies of the Construction Drawing Package will be distributed to inspectors and to contractors' supervisory personnel. If a contractor's performance is unsatisfactory, the terms of the contract will allow for work stoppage and will require the contractor to begin remedial work.

The Project's engineering and construction departments are responsible for designing and constructing certificated facilities in compliance with regulatory and contractual requirements and agreements. If technical or management assistance is required, the responsible Construction Manager and/or Chief Inspector will request assistance from the appropriate company department. The operations department will be responsible for long-term Project maintenance and regulatory compliance once the Project is in-service.

### 1.4.5 Construction Schedule and Workforce

The order in which each facility will be constructed may vary, depending upon numerous factors, including the receipt of necessary authorizations, the capabilities of each contractor, available workforce, and optimized logistics. The Project anticipates clearing to start in the first quarter of 2020 contingent upon receipt of necessary approvals, and pipeline construction will begin in early 2020 to achieve a target in-service date of December 2020.

A preliminary Construction Duration Schedule is provided in Table 1.4-2. The Project expects the construction workforce for 2020 to include approximately 900 qualified personnel.

**Table 1.4-2**

**Construction Schedule for Major Components of the MVP Southgate Project a/**

| Component | Commence Activity | Complete Activity |
|---|---|---|
| Clearing | Q1 2020 | Q1 2020 |
| Pipeline Construction | Q1 2020 | Q4 2020 |
| Compressor Station | Q1 2020 | Q4 2020 |
| Restoration b/ | Q2 2020 | Q4 2022 |
| Hydrostatic Testing | Q4 2020 | December 2020 |

a/ Anticipated full in-service date of December 2020.
b/ Accounts for two full growing seasons as part of the restoration effort.

## 1.5 OPERATION AND MAINTENANCE

Following construction of the Project facilities, certain areas along the pipeline alignment (and at aboveground facilities) will have an associated permanent right-of-way or operational area. For pipeline facilities, the Project will maintain a typical permanent right-of-way of 50 feet in width. MLVs will be contained within the permanent right-of-way. Land requirements for the permanent right-of-way for pipeline facilities is included in Resource Report 8. Permanent access roads used for construction will also support ongoing pipeline operations. Land requirements for permanent access roads are listed in Appendix 1-F.

The Project will operate and maintain the Project and aboveground facilities in compliance with Federal regulations provided at 49 CFR Part 192, FERC regulations at 18 CFR § 380.15, and maintenance provisions of the FERC Plan and Procedures and its Project-specific E&SCP. The permanent easement will predominantly be maintained with mechanized clearing. Herbicide treatment will only be used to control for invasive species, as necessary.

### 1.5.1 Pipeline

Following construction of the Project facilities, certain areas along the pipeline alignment (and at aboveground facilities) will have an associated permanent right-of-way or operational area. For pipeline facilities, the Project will maintain a typical permanent right-of-way of 50 feet in width. MLVs will be contained within the permanent right-of-way. Land requirements for permanent right-of-way for pipeline facilities is included in Resource Report 8. Permanent access roads used for construction will also support ongoing pipeline operations. Land requirements for permanent access roads is listed in Appendix 1-F.

Operational activity on the pipeline will be limited primarily to vegetation management within the permanent easement and inspection, repair, and cleaning of the pipeline. Periodic aerial and ground inspections by the Project will identify:

- soil erosion that may expose the pipe;
- dead vegetation that may indicate a leak in the line;
- conditions of the vegetation cover and erosion control measures;

- unauthorized encroachment on the right-of-way, such as buildings and other substantial structures; and
- other conditions that could present a safety hazard or require preventive maintenance or repairs.

A schedule for the maximum intervals between inspections/patrols by class area is provided in Table 1.5-1. The pipeline's cathodic protection system will also be monitored and inspected in accordance with 49 CFR Part 192 requirements to ensure proper and adequate corrosion protection. The pipeline will be designed for internal inspection technology. In addition, periodic class change studies will also occur to identify areas of development.

**Table 1.5-1**

**Inspection Schedule for Major Components of the MVP Southgate Project a/**

| Pipe Class | Inspection/Patrol Interval |
|---|---|
| **Highway and Railroad Crossings** | |
| Class 1 and 2 | 7.5 months but at least twice per year |
| Class 3 | 4.5 months but at least four per year |
| **All Other Locations** | |
| Class 1 and 2 | 15 months but at least once per year |
| Class 3 | 7.5 months but at least twice per year |
| a/ Intervals comply with 49 CFR § 192.705. Regulations include intervals for Class 3 pipe | |

Vegetation on the permanent right-of-way will be maintained by mowing, cutting, and trimming. In uplands, routine vegetation mowing or clearing over the full width of the permanent right-of-way in uplands will occur no more than once every three years. However, to facilitate periodic corrosion/leak surveys, the Project may clear a corridor not exceeding 10 feet in width centered on the pipeline at a frequency necessary to maintain the 10-foot corridor in an herbaceous state.

In wetlands, routine vegetation mowing or clearing over the full width of the permanent right-of-way will not occur. However, to facilitate periodic corrosion/leak surveys, the Project may clear a corridor centered on the pipeline up to 10 feet in width at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees within 15 feet of the pipeline may be selectively cut and removed from the permanent right-of-way to ensure that root systems do not affect the exterior coating of the pipeline.

### 1.5.2 Aboveground Facilities

#### 1.5.2.1 Compressor Station

Compressor station personnel will perform operation and maintenance of all equipment. Personnel will perform routine checks of the facilities including calibration of equipment and instrumentation, inspection of critical components, and scheduled and routine maintenance of equipment. Safety equipment, such as pressure relief devices and fire and gas detection systems will be tested for proper operation. Corrective actions will be taken if problems are identified.

The compressor station will be equipped with combustible gas and fire detection alarm systems, as well as an emergency shutdown system. Automatic emergency shutdown of the compressors, evacuation or

venting of gas from the station piping, and isolation of the station from the main pipeline will occur following an incident. The compressor station will also be equipped with relief valves or pressure protection devices to protect the station piping from overpressure if station or unit control systems fail. The stations will be unmanned with start/stop control capabilities controlled by the Operator's Gas Control headquarters. A telemetry system will notify personnel locally and at the gas control headquarters of the activation of safety systems and alarms as appropriate. The Project will dispatch maintenance personnel as necessary to investigate and take proper corrective actions.

#### 1.5.2.2 Meter Stations

Measurement technicians, will operate and maintain the new equipment. Site personnel will perform routine checks of the facilities, including calibration of equipment and instrumentation, inspection of critical components, and scheduled and preventative maintenance of equipment. Safety equipment, such as pressure reducing devices, will be tested for proper operation, per 49 CFR Part 192 requirements and corrective actions will be taken if problems are identified.

The meter (interconnect) stations will be equipped with control valves or other over pressure-protection devices to protect the station's piping from overpressure conditions. A telemetry system will notify personnel locally and of the activation of safety systems and alarms, which may in-turn instruct maintenance personnel to investigate and take proper corrective action.

## 1.6 FUTURE PLANS AND ABANDONMENT

The Project currently has no plans for either future expansion or abandonment of the facilities. Should the Project propose any future expansion or abandonment of Project facilities, the Project will seek the appropriate authorizations from FERC and other federal and state agencies as applicable.

## 1.7 PERMITS AND APPROVALS

Applicable federal, state, and local permits and approvals, responsible agencies, and the anticipated schedule for filing applications or documentation for these permits and approvals for the Project are summarized in Table 1.7-1. Appendix 1-K contains agency correspondence to date.

**Table 1.7-1**

**Anticipated Permits and Consultations for the MVP Southgate Project**

| Agency | Permit/ Approval/ Consultation a/ | Anticipated Submittal/Initiation Date | Anticipated Permit Receipt/ Completion Date |
|---|---|---|---|
| **Federal** | | | |
| Federal Energy Regulatory Commission | Natural Gas Act, Section 7; Certificate for construction and operation of interstate natural gas pipeline. | November 2018 | December 2019 |
| U.S. Army Corps of Engineers<br>Norfolk District<br>Wilmington District | Section 404 Permit for impacts on waters of the U.S., including wetlands | November 2018 | December 2019 |

**Table 1.7-1**

**Anticipated Permits and Consultations for the MVP Southgate Project**

| Agency | Permit/ Approval/ Consultation a/ | Anticipated Submittal/Initiation Date | Anticipated Permit Receipt/ Completion Date |
|---|---|---|---|
| U.S. Fish and Wildlife Service<br>Virginia<br>North Carolina | Consultation under Section 7 of ESA for potential impacts on federally protected species<br><br>Consultation regarding impacts on migratory birds and eagles | May 2018 | September 2019 |
| **Virginia** | | | |
| Virginia Department of Historic Resources, Division of Review and Compliance ("SHPO") | Consultation and clearance regarding potential impacts on pre-historic and historic resources eligible for listing on the National Register of Historic Places | May 2018 | December 2019 |
| Virginia Marine Resources Commission | Permit for encroachment to state-owned subaqueous lands | November 2018 | December 2019 |
| Virginia Department of Environmental Quality ("VDEQ"), Water Division | Section 401 Water Quality Certification and Water Protection Permit for impacts to non-404 regulated wetlands or waters | November 2018 | December 2019 (Automatic under Nationwide Permit 12) |
| VDEQ, Water Division | Virginia Pollution Discharge Elimination System (VPDES) permit for discharge of construction stormwater | March 2019 | December 2019 |
| VDEQ, Water Division | General Permit No. VAG83 (Petroleum Contaminated Sites, Groundwater Remediation and Hydrostatic Tests GP | Covered under General Permit Conditions | |
| VDEQ, Air Division | VADEQ Article 6 Minor New Source Air Quality Permit | November 2018 | July 2019 |
| Virginia Department of Conservation and Recreation, Division of Natural Heritage | Consultation for state threatened and endangered species | May 2018 | March 2019 |
| Virginia Department of Game and Inland Fisheries | Consultation for state protected wildlife species | May 2018 | September 2019 |
| Virginia Department of Transportation | Road bonds and crossing permits | [To Be Determined] Prior to Construction | To Be Determined] Prior to Construction |

**Table 1.7-1**

**Anticipated Permits and Consultations for the MVP Southgate Project**

| Agency | Permit/ Approval/ Consultation a/ | Anticipated Submittal/Initiation Date | Anticipated Permit Receipt/ Completion Date |
|---|---|---|---|
| **North Carolina** | | | |
| North Carolina Department of Environmental Quality ("NCDEQ"), Division of Water Resources | 401 Water Quality Certification, Isolated/non-404 wetlands and water permit, and Buffer authorization | November 2018 | September 2019 |
| NCDEQ, Division of Energy, Mineral and Land Resources | General Permit NCG010000 to discharge stormwater under the NPDES for Construction Activities | March 2019 | August 2019 |
| NCDEQ, Natural Heritage Program | Consultation for state threatened and endangered species | May 2018 | March 2019 |
| North Carolina Wildlife Resources Commission | Consultation for state threatened and endangered species | May 2018 | September 2019 |
| North Carolina Department of Cultural Resources ("SHPO") | Consultation and clearance regarding potential impacts on pre-historic and historic resources eligible for listing on the National Register of Historic Places | May 2018 | December 2019 |
| North Carolina Department of Transportation | Road bonds and crossing permits | [TBD] Prior to Construction | [TBD] Prior to Construction |

a/ Consultations will occur continuously throughout the development of the Project.

## 1.8 AFFECTED STAKEHOLDERS

The Project has developed and implemented a comprehensive Public, Stakeholder, and Agency Participation Plan that outlines a commitment to engage actively with stakeholders currently and throughout the life of the Project and identifies the following activities to be conducted by the Project to ensure successful ongoing communication with all stakeholders (Appendix 1-L). These engagement activities include:

- continuing to identify and hold meetings with local associations, affected public groups, and other non-governmental organizations ("NGOs") concerning the Project;
- continuing to meet with state and local government representatives to seek input, and provide updates;

- continuing to meet frequently with state and federal agencies for guidance during the permitting process and respond rapidly to any requests for information;
- providing Project information and updates via periodic newsletters sent via hardcopy and made available electronically on the Project website listed below;
- periodically updating the publicly available website providing pertinent information about the Project (www.mvpsouthgate.com); and
- establishing additional channels of communication including the Project Information Line (833-MV-SOUTH) and mail@mvpsouthgate.com.

A copy of this Participation Plan was filed with FERC on May 3, 2018 as part of the Project's Pre-Filing request letter.

### 1.8.1 Public Participation

The Project is committed to the early identification and resolution of stakeholder issues and concerns related to the Project. The Project believes that successful resolution of issues is best achieved by involving the appropriate stakeholders at the earliest possible stage of a project and prior to filing its application with FERC. As such, the Project has conducted and will continue to conduct extensive outreach to inform stakeholders about the Project and provide available updates. Early in the stakeholder outreach process, the Project established a Project website (www.mvpsouthgate.com) that provides information about the Project, updates on regulatory proceedings, copies of regulatory filings, and contact information for the public to use to raise questions and concerns.

Efforts to identify stakeholders was focused on federal, state, and local elected officials; federal, state, and local regulatory agencies; Native American tribes; landowners; economic development agencies/chambers of commerce; local law enforcement agencies; local media outlets; NGOs; and the community at large. Pursuant to 18 CFR §157.21, the Project is submitting a comprehensive stakeholder list in Appendix 1-M [*Note: Appendix 1-M to be provided 30 days from filing*]. The Project has continued to develop and maintain a contact management system to track contact with these stakeholders in a manner that assists in the identification and resolution of emerging issues and concerns.

The Project sent letters to permitting agencies and agencies that require consultation in April 2018 notifying them of its plan to use the FERC pre-filing process and invite them to participate in the pre-file process. Copies of the submitted pre-filing notices are provided in Appendix 1-K. The Project also contacted stakeholders in May 2018, including landowners, to inform them of the pre-filing process timeline and invite them to attend the community Open Houses. Additionally, letters explaining the Project have been sent to a list of environmental NGOs and other NGOs to assure an appropriate, accurate, and complete baseline of information is provided. Copies of the letters are provided in Appendix 1-K. Ongoing efforts to make additional contact with the environmental NGOs and other NGOs will continue.

In June 2018, the Project planned and conducted three community Open Houses in locations along the route:

- Alamance County, North Carolina on June 25, 2018 at the Palladium Event Center, 1272 Plaza Drive, Burlington, NC 27215;

- Rockingham County, North Carolina on June 26, 2018 at the Reidsville Event Center, 223 S Scales Street, Reidsville, NC 27320; and
- Pittsylvania County, Virginia on June 28, 2018 at Olde Dominion Agriculture Complex, 19783 US 29, Chatham, VA, 24531.

Approximately 300 stakeholders attended these Open Houses. Comments were focused on purpose and need for the project; stream crossings and construction techniques. Route selection was a topic of discussion at each open house. The Project's Project team met with each landowner or interested stakeholder to explain the route and take suggestions and comments.

As part of its commitment to keeping stakeholders informed, the Southgate Project committed to periodically creating and distributing material, via traditional mail and electronic technologies. The Project will provide various project updates including periodic newsletters and other communications from the project team that inform stakeholders about current events. The first Project Newsletter was distributed in August 2018.

Additionally, the Project will continue to work with local news media to facilitate accurate and informed reporting on the project, and work with local government and non-governmental organizations to provide project updates and answers to questions as they arise in the community.

The Project has and will continue to provide copies of the filing materials, including resource reports, to participating federal agencies, county offices, and public libraries along the pipeline route and to certain state offices so the public will have the opportunity to view the materials and to provide comments. Copies will be provided to the following libraries in the Project area:

- Eden Public Library – Eden, North Carolina;
- May Memorial Library – Burlington, North Carolina;
- Reidsville Library - Reidsville, North Carolina; and
- Pittsylvania County Public Library - Chatham, Virginia.

#### 1.8.1.1 FERC Scoping Sessions

The Project supported and attended FERC-sponsored scoping sessions in August 2018. Three meetings were held:

- Rockingham County, North Carolina on August 20, 2018 at Reidsville Event Center, 223 S. Scales Street, Reidsville, North Carolina 27320
- Pittsylvania County, Virginia on August 21, 2018 at Olde Dominion Agricultural Complex, 19783 US-29, Chatham, Virginia 24531
- Alamance County, on August 23, 2018 at Vailtree Event and Conference Center, 1567 Bakatsias Lane, Haw River, North Carolina 27258

FERC provided information on the regulatory process and provided stakeholders an opportunity to ask questions and provide comments. Upon completion of the scoping process, the Project provided responses to comments received during the scoping period as a stand-alone submittal that was filed with the FERC on September 24, 2018.

### 1.8.2 Landowner Notification

The names and addresses of landowners whose property will be crossed by the Project are provided in Appendix 1-M [*Note: Appendix 1-M to be provided 30 days from filing*]. This list of landowners will be continually updated and maintained throughout the Project. These landowners were contacted beginning in April 2018 to request access for civil and environmental surveys for the pipeline route, access roads, staging areas and aboveground facility sites.

Throughout the course of the Project, landowners and stakeholders will be kept informed about Project permitting developments, construction, and restoration through various means, such as Project notification letters and newsletters. In April 2018, in accordance with Section 157.6(d) of the Commission's regulations (18 CFR § 157.6(d)), the Project provided the required notification of the Project to the directly affected and abutting properties affected by the construction work areas. The landowner notification letters also provided information regarding procedures to follow in the event that the landowner has any concerns or problems during construction. In accordance with Section 157.6(d) of the Commission's regulations (18 CFR § 157.6(d)), the Project will provide the required notification of the Project to the directly affected and abutting properties affected by the construction work areas. The Project will implement a Landowner Complaint Resolution Process which outlines these procedures. The Project has provided this plan in Appendix 1-L.

### 1.8.3 Agency Outreach

In addition to public outreach efforts with landowners and governmental officials, the Project has been conducting an extensive planning and consultation process with federal and state regulatory agencies, resource agencies, and Native American Tribes. The consultation process has involved meetings, letter requests for resource information, and telephone discussions and emails. Project agency correspondence to date are provided in Appendix 1-K.

## 1.9 NON-JURISDICTIONAL FACILITIES

Non-jurisdictional facilities are those facilities related to the Project that are constructed, owned, and operated by others that are not subject to FERC jurisdiction. When making this determination, FERC requires applicants to address four factors to determine whether FERC environmental review is needed for Project-related non-jurisdictional facilities. These factors are:

(i) whether or not the regulated activity comprises "merely a link" in a corridor type project (e.g., a transportation or utility transmission project);

(ii) whether there are aspects of the non-jurisdictional facility in the immediate vicinity of the regulated activity, which uniquely determine the location and configuration of the regulated activity;

(iii) the extent to which the entire project will be within the Commission's jurisdiction; and

(iv) the extent of cumulative Federal control and responsibility.

As discussed in Section 1.2.2.5, electric powerlines will be required for the Lambert Compressor Station. Electric services from the local distribution company will also supply the interconnects (meter stations), MLVs, and cathodic protection sites. In addition, PSNC Energy intends to make minor improvements to their existing Dan River and Haw River delivery points that are not part of this application. Table 1.9-1

below provides information for proposed non-jurisdictional facilities and Table 1.9-2 provides electric utilities information for the Lambert Compressor Stations, interconnects, MLVs, and groundbeds. Figure 1.9-1 shows the electric powerlines that will be required for the compressor stations and interconnects. The non-jurisdictional facilities associated with the Project would include installation of electric distribution lines from existing nearby power poles to the Lambert Compressor Stations, interconnects, MLVs, and groundbeds. These extensions would range from approximately 50 feet to 1,684 feet in length. Impacts associated with these non-jurisdictional facilities are expected to be minimal due to the limited footprint of the facilities and potential mitigation measures required by applicable regulatory agencies. These facilities have not dictated the location of the Project nor are these facilities subject to Commission jurisdiction. Additionally, there is no appreciable Federal control and responsibility. Therefore, the Commission does not need to include these non-jurisdictional facilities within its environmental review.

**Table 1.9-1**

**Electric Service Facilities to Support the MVP Southgate Project**

| **Company/Owner** | **Public Service Company of North Carolina; dba PSNC Energy** | **Various** |
|---|---|---|
| Type of Facility | Interconnect Facilities | Electrical Service |
| Dimensions | Minor improvements to existing facilities within fence line | Lambert Compressor Station will require an approximate 0.3-mile-long power line. Electric powerlines will be constructed and maintained within an approximate 50-foot-wide right-of-way for ground beds, mainline valves, and interconnects. See Table 1.9-2 below. |
| Federal Permits/Status | Not Applicable | Not Applicable |
| Local and State Permits/Status | Not Applicable | Not Applicable |
| Required Environmental Reviews | NC DENR Erosion and Sedimentation Control Permit | Not Applicable |

**Table 1.9-2**

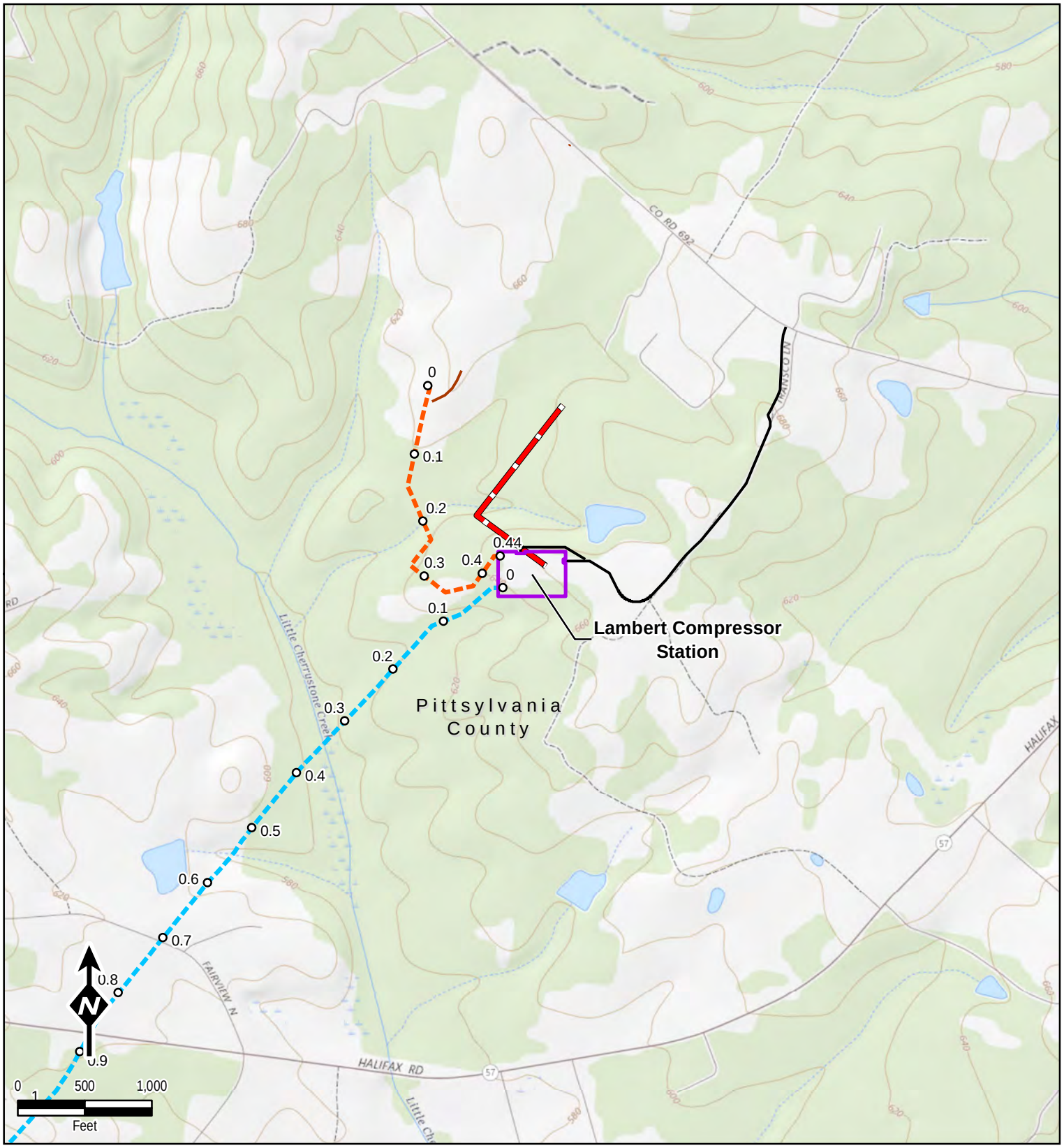
**Electric Service Feeds to the MVP Southgate Project Facilities**

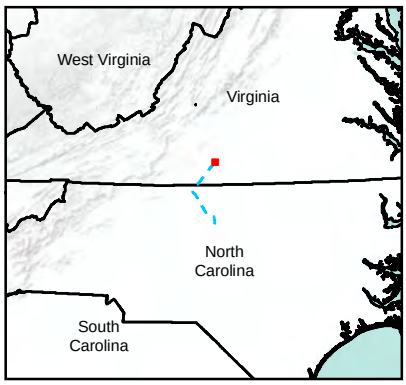
| **Facility Name** | **Approx. MP** | **Approx. Distance from Road or Existing Powerlines (Feet)** | **Latitude** | **Longitude** | **Power Supplier** | **Required Power Service** |
|---|---|---|---|---|---|---|
| **Compressor Station** | | | | | | |
| Lambert Compressor Station | 0 | 1,684 | 36°49'48.98"N | 79°20'26.37"W | Mecklenburg Electric | 480VAC, 3 Phase |
| **Meter Stations** | | | | | | |
| LN 3600 Interconnect | 28.2 | 612 | 36°31'9.19"N | 79°40'15.23"W | N/A | 120/240, Single Phase, 3 wire - 200amp |

**Table 1.9-2**

**Electric Service Feeds to the MVP Southgate Project Facilities**

| Facility Name | Approx. MP | Approx. Distance from Road or Existing Powerlines (Feet) | Latitude | Longitude | Power Supplier | Required Power Service |
|---|---|---|---|---|---|---|
| T-15 Dan River Interconnect | 30.4 | 183 | 36°29'35.87"N | 79°40'49.19"W | N/A | 120/240, Single Phase, 3 wire - 200amp |
| T-21 Haw River Interconnect | 73.1 | 471 | 36° 2'44.04"N | 79°21'48.23"W | N/A | 120/240, Single Phase, 3 wire - 200amp |
| **Main Line Valves** | | | | | | |
| MLV - 2 | 7.4 | 48 | 36°44'53.39"N | 79°25'41.02"W | N/A | 120/240, Single Phase, 3 wire - 100amp |
| MLV - 3 | 18.3 | 107 | 36°37'47.51"N | 79°32'47.15"W | N/A | 120/240, Single Phase, 3 wire - 100amp |
| MLV - 5 | 42.2 | 169 | 36°21'57.52"N | 79°36'56.81"W | N/A | 120/240, Single Phase, 3 wire - 100amp |
| MLV - 6 | 55.1 | 312 | 36°12'44.04"N | 79°30'57.31"W | N/A | 120/240, Single Phase, 3 wire - 100amp |
| MLV - 7 | 68.2 | 474 | 36° 6'26.81"N | 79°22'24.47"W | N/A | 120/240, Single Phase, 3 wire - 100amp |
| **Ground Bed** | | | | | | |
| Ground Bed - 1 | 10.8 | 162 | 36°42'41.49"N | 79°27'54.19"W | N/A | 120/240, Single Phase, 3 wire - 100amp |
| Ground Bed - 2 | 21.1 | 107 | 36°35'52.22"N | 79°34'32.81"W | N/A | 120/240, Single Phase, 3 wire - 100amp |
| Ground Bed - 3 | 44.9 | 256 | 36°19'54.27"N | 79°36'3.79"W | N/A | 120/240, Single Phase, 3 wire - 100amp |
| Ground Bed - 4 | 60.2 | 495 | 36° 6'26.81"N | 79°22'24.47"W | N/A | 120/240, Single Phase, 3 wire - 100amp |




**Legend**

- H-605 Pipeline
- H-650 Pipeline
- Permanent Access Road
- Temporary Access Road
- Electric Utility Connection
- Compressor Station
- Meter Station
- County Boundary
- State Boundary

**Data Sources:** ESRI, USGS, TRC, EQT

1 inch = 1,000 feet
When Printed 8.5x11

Mountain Valley Pipeline, LLC

**Figure 1.9-1**

Electric Utilities For Compressor Stations and Interconnects

Sheet 1 of 4

TRC
600 Willowbrook Ln
West Chester, PA 19382

Date: October 2018

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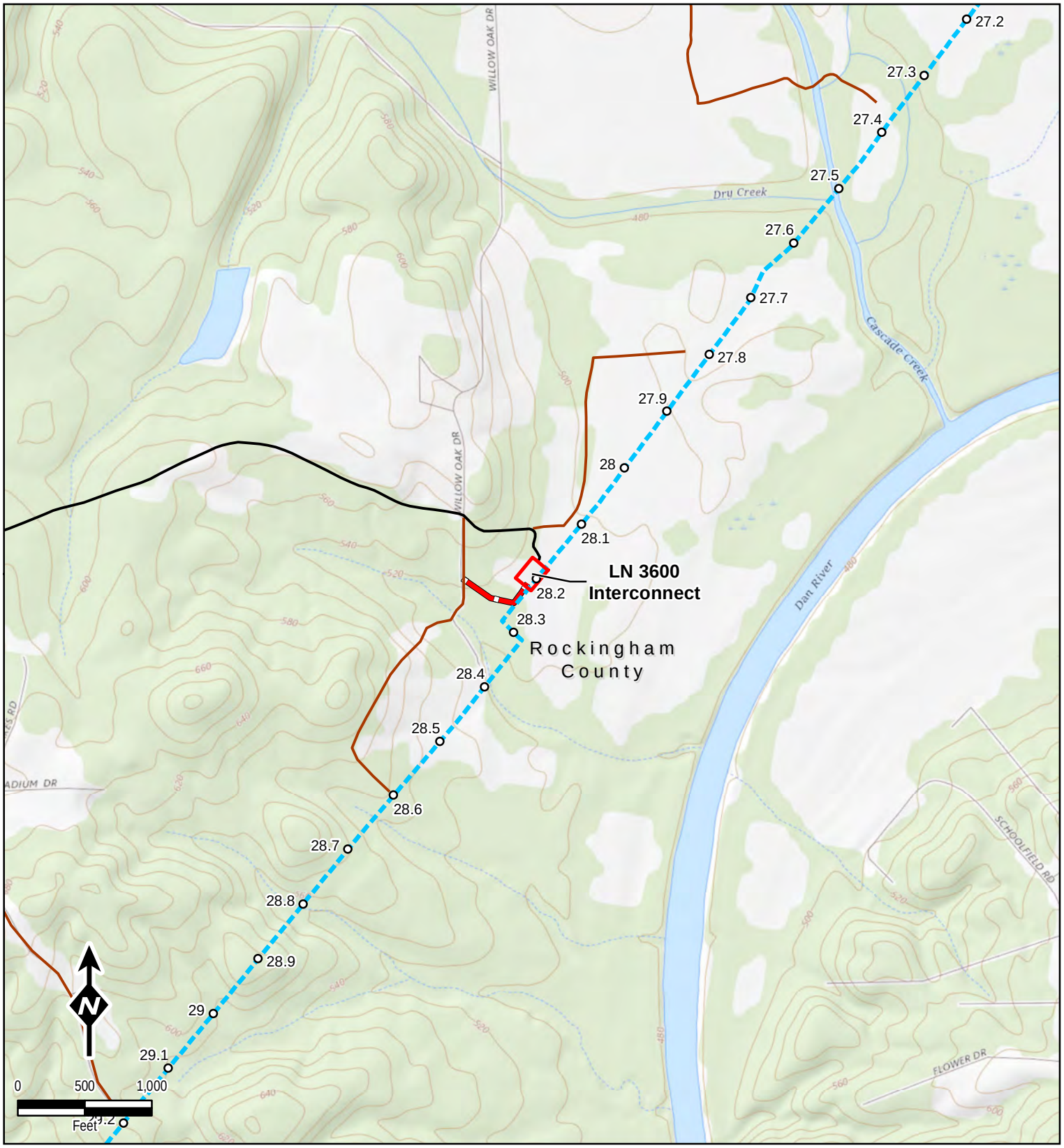


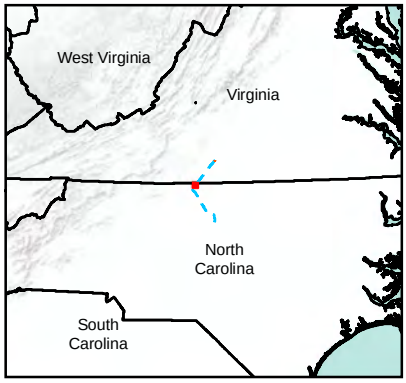


**Legend**

- H-650 Pipeline
- Permanent Access Road
- Temporary Access Road
- Electric Utility Connection
- Compressor Station
- Meter Station
- County Boundary
- State Boundary

**Data Sources:** ESRI, USGS, TRC, EQT

1 inch = 1,000 feet
When Printed 8.5x11

Mountain Valley Pipeline, LLC

**Figure 1.9-1**

Electric Utilities For Compressor Stations and Interconnects

Sheet 2 of 4

TRC
600 Willowbrook Ln
West Chester, PA 19382

Date: October 2018

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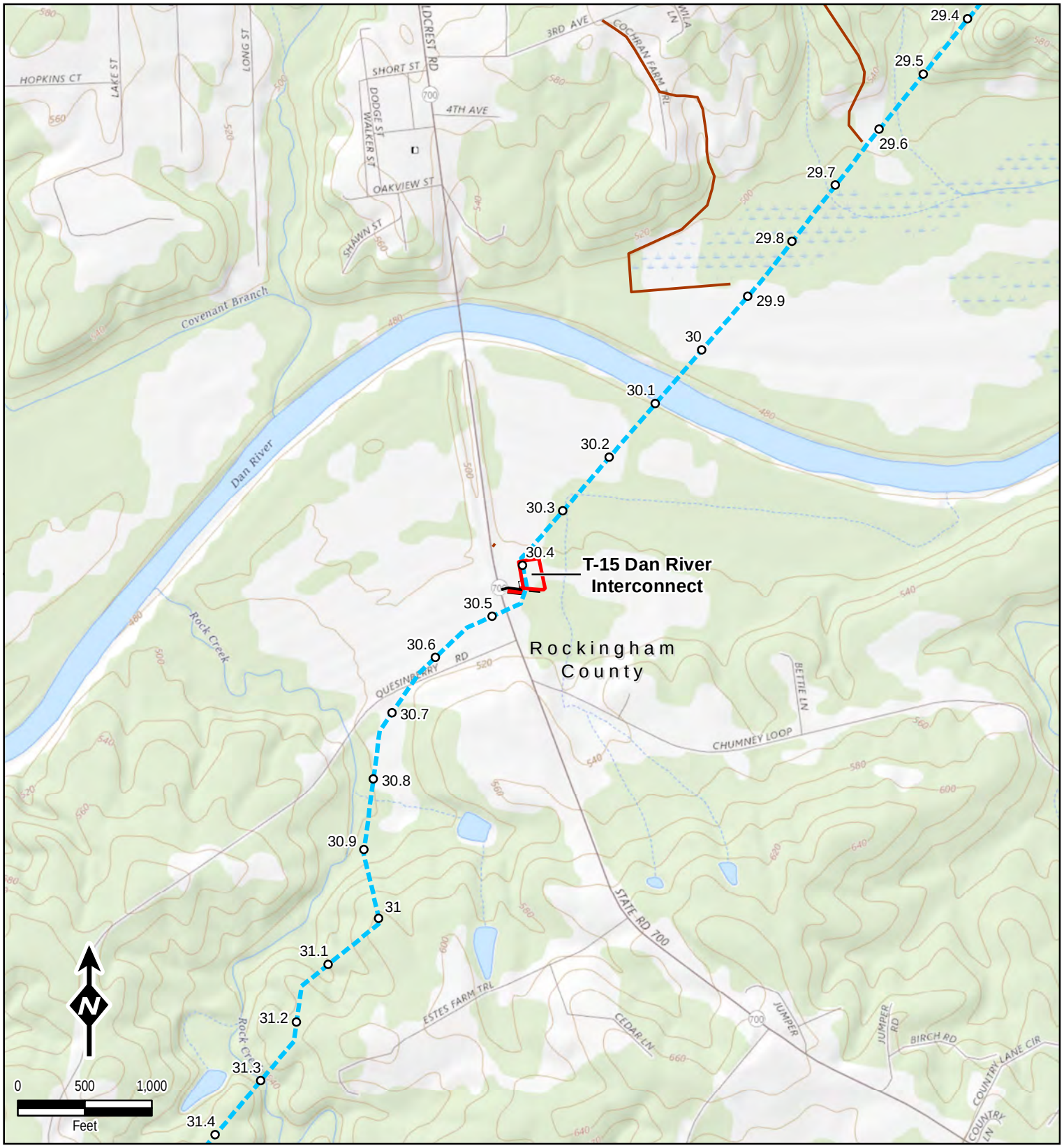



**Legend**

- H-650 Pipeline
- Permanent Access Road
- Temporary Access Road
- Electric Utility Connection
- Compressor Station
- Meter Station
- County Boundary
- State Boundary

**Data Sources:** ESRI, USGS, TRC, EQT

1 inch = 1,000 feet
When Printed 8.5x11

Mountain Valley Pipeline, LLC

**Figure 1.9-1**

Electric Utilities For Compressor Stations and Interconnects

Sheet 3 of 4

TRC
Results you can rely on

600 Willowbrook Ln
West Chester, PA 19382

Date: October 2018

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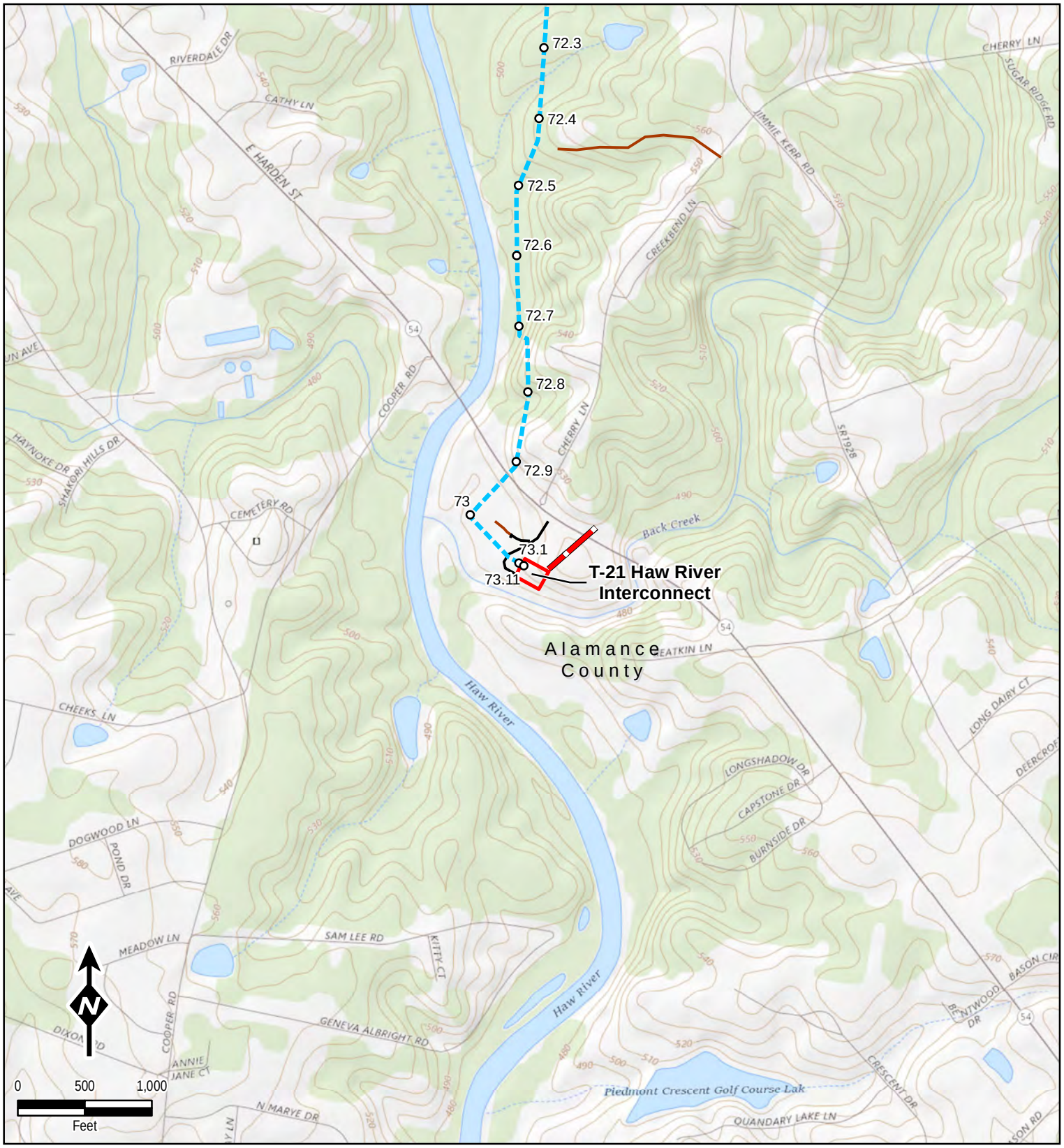


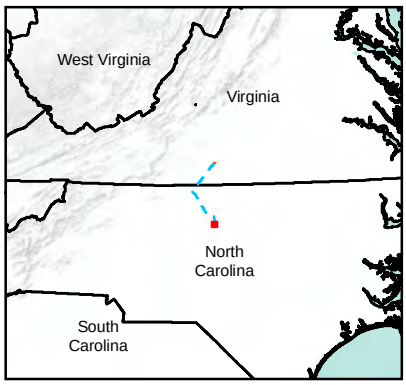


**Legend**

- H-650 Pipeline
- Permanent Access Road
- Temporary Access Road
- Electric Utility Connection
- Compressor Station
- Meter Station
- County Boundary
- State Boundary

**Data Sources:** ESRI, USGS, TRC, EQT

1 inch = 1,000 feet
When Printed 8.5x11

Mountain Valley PIPELINE LLC

**Figure 1.9-1**

Electric Utilities For Compressor Stations and Interconnects

Sheet 4 of 4

TRC
Results you can rely on

600 Willowbrook Ln
West Chester, PA 19382

Date: October 2018

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## 1.10 CUMULATIVE IMPACTS

The Council on Environmental Quality regulations that implement the National Environmental Policy Act define cumulative effects as "the impact on the environment which results from the incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions" (40 CFR § 1508.7). Cumulative effects include both direct and indirect, or induced, effects that would result from the Project, as well as the effects from other projects (past, present, and reasonably foreseeable future actions) not related to or caused by the Project. Cumulative impacts may result when the environmental effects associated with a Project are added to temporary (construction-related) or permanent (operations-related) impacts associated with other past, present, or reasonably foreseeable future projects. Although the individual impact of each separate project might not be significant, the additive or synergistic effects of multiple projects could be significant. The cumulative effects analysis evaluates the magnitude of cumulative effects on natural resources such as wetlands, water quality, floodplains, and threatened and endangered species, as well as cumulative effects on land use, socioeconomics, air quality, noise, and cultural resources. The Council on Environmental Quality regulations (40 CFR § 1508.8) also require that the cumulative effects analysis consider the indirect effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

The purpose of the cumulative impacts analysis is to identify and describe cumulative impacts that would potentially result from implementation of the Project. Inclusion of actions within the analysis is based on identifying commonalities of impacts from other actions to potential impacts that would result from the Project. To avoid unnecessary discussions of insignificant impacts and projects and to adequately address and accomplish the purposes of this analysis, the cumulative impacts analysis for the Project will be conducted using the following guidelines:

- A project must impact a resource category potentially affected by the Project. For the most part, these projects are located in the same general area that would be directly affected by construction of the Project. The effects of more distant projects are in most cases not assessed, because their impacts would tend to be localized and not contribute significantly to the impacts of the Project. Potential cumulative impacts on air quality and watersheds, however, were considered on a broader, more regional basis.

- The distance into the past and future which other projects could potentially cumulatively impact the area of the Project was based on whether the impacts are short-term, long-term, or permanent. Most of the impacts related to the other Projects would occur during the construction phase, and would be short-term impacts. Timing will be evaluated based on the submittal date of the Project's certificate application and the proposed in-service date. "Past" projects were identified as those where impacts from construction and/or operation of the completed project continue to affect resources. "Present" projects are those currently under construction. Projects will be determined to be "reasonably foreseeable" when information about the project is publicly available.

### 1.10.1 Region of Influence for Cumulative Impact Analysis

Projects meeting one or more of the criteria listed below are considered in this cumulative analysis. These criteria define the projects' regions of influence, which were used in this analysis to describe the general area for which the projects could potentially contribute to cumulative impacts. The region of influence

varies depending on the resource being discussed. Specifically, the cumulative impacts analysis for the Project includes:

- Minor projects, such as residential development, small commercial development, and small transportation projects within 0.25 mile of the Project area;
- Major projects, such as large commercial, industrial, transportation and energy development projects within a 10-mile corridor of the Project area (5 miles of the Project centerline). This includes natural gas well permitting and development projects;
- Major projects within watersheds crossed by the Project. Watershed boundaries are identified using the Hydrologic Unit Code (HUC) 10 watershed for surface water resources, and HUC 12 watershed for groundwater resources, wetlands, vegetation and wildlife; and
- Projects with the potential to result in longer-term impacts on air quality (for example natural gas pipeline compressor stations) located within air quality control regions crossed by the other Projects and organized by county, within 50 kilometers from the Project emissions source. If the other projects are near the county border, the adjoining county will also be reviewed.

Projects older than 5 years will not be evaluated unless they have ongoing air emissions. Table 1.10-1 outlines the geographic scope for the cumulative impact analysis.

**Table 1.10-1**

**Geographic Scope for Cumulative Impacts Analysis**

| Environmental Resource | Geographic Scope |
|---|---|
| Soils and Geology | Construction workspaces |
| Groundwater Resources, Wetlands, Vegetation, Wildlife | Hydrologic Unit Code (HUC) 12 Watershed |
| Surface Water Resources | HUC-10 watershed. For direct in-water work includes potential overlapping impacts from sedimentation, turbidity, and water quality |
| Cultural Resources | 0.5 mile from centerline |
| Land Use, Recreation, Visual Resources | 1.0 mile from the pipeline centerline and existing visual access points (e.g., road crossings) |
| Visual Resources | For aboveground facilities, distance that the tallest feature at the planned facility would be visible from neighboring communities; for pipelines, 0.25 mile and existing visual access points (e.g., road crossings) |
| Air Quality - construction | 0.25 mile from construction workspaces |
| Air Quality - operation | 50 kilometers from the Project emissions source. |
| Noise – construction | 0.25 mile (general construction) to 0.5 mile (HDD construction) from the Project area |
| Noise - operation | Facilities that would impact any Noise Sensitive Areas (NSAs) located within 1 mile of noise emitting permanent aboveground facility |
| Socioeconomics | Affected counties and municipalities |
| Environmental Justice | Census tracts that are affected by and adjacent to project facilities |

An assumption related to identifying projects to include in the cumulative impact analysis is that information necessary to compile the analysis is available to the public from various local, county, state, and federal sources, and is up to date and accurate. The level of information available varies considerably based on the source. For example, information is available to interested parties in a variety of formats regarding natural gas exploration and production, and current and future natural gas related projects; however, providing an informed cumulative impact analysis requires the gathering of pertinent information from a number of different sources for an individual project. Where publicly available information does not include estimates of disturbance or environmental impacts associated with identified projects the quantitative impacts could not be determined. In these instances, the Project will use a qualitative comparison for the cumulative impacts assessment.

The following are sources of projects included in this evaluation:

- Federal Agencies – Information on projects pending before the FERC (either in the Pre-filing Process or with a filed Certificate application) is available through FERC's eLibrary system. USACE regional websites provide information regarding recently approved permits and pending USACE permits that are available for public comment. Available information varies by website but a brief description of the activity requiring the permit and the applicant is provided.

- State Agencies – Information on projects recently reviewed or under review for the Virginia and North Carolina state agencies. Available information varies by agency; however, projects that are publically posted will be included.

- County Agencies – County and local government websites are possible sources of information about natural gas or energy-related projects. In addition, each county has been contacted directly for information related to potential developments within 0.5 mile from the pipeline corridor. In cases where individual counties do not maintain a comprehensive list for planned development, the individual townships have also been contacted.

- Private Companies – Information on projects listed by their owners and developers on their public websites is included.

Projects with potential cumulative impacts on resources within the Project area are listed in Table 1.10-1 and shown in Figure 1.10-1.

**Table 1.10-2**

**Projects with Potential Cumulative Impacts**

| Project / Proponent | Description | County/ State | Shared Watershed | Shared Air Quality Control Region | Approximate Distance from Project | Direction | Status | Potential/ Anticipated Impacts | Potential Permits |
|---|---|---|---|---|---|---|---|---|---|
| **Energy Projects** | | | | | | | | | |
| Atlantic Coast Pipeline Project / Dominion, Duke Energy, Piedmont Natural Gas, and AGL Resources | An approximately 550-mile, 42-inch natural gas pipeline is proposed by four energy companies that have entered into a joint venture: Dominion, Duke Energy, Piedmont Natural Gas and AGL Resources. The capacity of the pipeline is projected to be 1.5 billion cubic feet/day. | Various- WV, VA, NC | N/A | 81.143 Central Virginia | 100 miles | East | Under Construction. In-service Q4 2019 | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife, Air and Noise | FERC, State and Local |
| Reidsville Energy Center / NTE Energy | NTE Energy is developing and plans to construct, own and operate the Reidsville Energy Center, an approximately 500 MW natural gas electric generating facility in Rockingham County, North Carolina. | Rockingham, NC | NA | 81.150 Northern Piedmont | 12 miles | West | Construction to start 2018 | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife, Air and Noise | FERC, State and Local |
| Virginia Southside Expansion / Williams - Transco | 100 miles of new 24-inch diameter pipeline extending from the Transco mainline in Pittsylvania County, Va., and into Halifax, Charlotte, Mecklenburg, and terminating in Brunswick County, Va. Also construction of a 21,800 hp compressor station in Pittsylvania County, VA. | Pittsylvania County, VA | Cherrystone Creek-Banister River, Stinking River-Banister River | 81.143 Central Virginia | 2 miles | North | In-service September 2015 | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife, Air and Noise | FERC, State and Local |
| Southeastern Trail / Williams - Transco | Transco Southeastern Trail expansion project will consist of 7.7 miles of 42-in. pipeline looping facilities in Virginia, horsepower additions at existing compressor stations in Virginia, and piping and valve modifications on other existing facilities in South Carolina, Georgia, and Louisiana to allow for bidirectional flow. Compressor Station 165 upgrade in Chatham, VA within Pittsylvania County, VA. | Various; Pittsylvania County, VA | Cherrystone Creek-Banister River | 81.143 Central Virginia | <5 miles | West | FERC Application Filed April 2018 | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife, Air and Noise | FERC, State and Local |

**Table 1.10-2**

**Projects with Potential Cumulative Impacts**

| Project / Proponent | Description | County/ State | Shared Watershed | Shared Air Quality Control Region | Approximate Distance from Project | Direction | Status | Potential/ Anticipated Impacts | Potential Permits |
|---|---|---|---|---|---|---|---|---|---|
| Mountain Valley Pipeline / Mountain Valley Pipeline, LLC and Equitrans, LP | Natural gas pipeline system that spans approximately 303 miles from northwestern West Virginia to southern Virginia | Various; ends at Pittsylvania, VA | Cherrystone Creek-Banister River | 81.143 Central Virginia | 0 miles | North | Under Construction | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife, Land Use, Air and Noise | FERC, State and Local |
| **Transportation Projects** | | | | | | | | | |
| U.S. Route 29 South / Virginia Department of Transportation ("VADOT") | Replacement of structurally deficient bridge. | Pittsylvania County, VA | Cascade Creek-Dan River | 81.143 Central Virginia | 7 miles | Southeast | Completed 2017 | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife | State and Local |
| Route 58 over Route 311 / VADOT | About 3.3 million in upgrades to the intersection of Berry Hill Road and U.S. 58 West of Danville to accommodate traffic for the nearby Berry Hill Road industrial Park | Pittsylvania County, VA | Wolf Island Creek-Dan River | 81.143 Central Virginia | 2 miles | East | Planning | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |
| Berry Hill Road / VADOT | Reconstruction of Berry Hill Road in order to accommodate more traffic- 23.7 million | Pittsylvania County, VA | Wolf Island Creek-Dan River, Cascade Creek-Dan River | 81.143 Central Virginia | 2 miles | East | Planning | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |
| Stony Mill Road / VADOT | The construction of a single lane roundabout at the intersection of Stony Mill Road and Tunstall High Road- 2.2 million | Pittsylvania County, VA | Wolf Island Creek-Dan River | 81.143 Central Virginia | 0.5 mile | East | Planning | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |
| Mount Cross Road / VADOT | A two-phase plan to widen Mount Cross Road to the city limits, making the road a five-lane section with a two-way center turn lane with a new park and ride lot and sidewalk -17 million | Pittsylvania County, VA | Wolf Island Creek-Dan River | 81.143 Central Virginia | 5 miles | East | Planning | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |
| Climax Road / VADOT | Widening Climax Road to a minimum of 20 feet to accommodate traffic- 1.3 million | Pittsylvania County, VA | N/A | 81.143 Central Virginia | 12 miles | Northwest | Planning | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |

**Table 1.10-2**

**Projects with Potential Cumulative Impacts**

| Project / Proponent | Description | County/ State | Shared Watershed | Shared Air Quality Control Region | Approximate Distance from Project | Direction | Status | Potential/ Anticipated Impacts | Potential Permits |
|---|---|---|---|---|---|---|---|---|---|
| U. S. Route 29 South over Norfolk Southern Railroad / VADOT | Replacement of the structurally deficient bridge on U.S. Route 29 South over Norfolk Southern Railroad with approaches on this Principal Rural Arterial roadway in Pittsylvania County | Pittsylvania County, VA | Cherrystone Creek-Banister River | 81.143 Central Virginia | 10 miles | East | Complete 2017 | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife | State and Local |
| Future I-73 / North Carolina Department of Transportation ("NCDOT") | Construction of a 9.4-mile, four-lane interstate from Joseph M. Bryan Boulevard/Airport Parkway interchange to U.S. 220 near the Haw River | Guilford, NC | Reedy Fork | 81.150 Northern Piedmont | 25 miles | West | Complete October 2017 | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife | State and Local |
| Greensboro Urban Loop / NCDOT | Completion of the Greensboro Urban Loop to help relieve I-40 congestion at I-85 Business and U.S. routes 29, 70, 220 and 421 | Guilford, NC | Reedy Fork | 81.150 Northern Piedmont | 10 miles | West | Under Construction | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife, Air and Noise | State and Local |
| Big Mill Farm/Hopkins Road Improvements / NCDOT | Proposed widening of Big Mill Farm Road and Hopkins Road in Kernersville from Business 40/U.S. 421 to West Mountain Street (N.C. 66) and construction of an interchange at Business 40/U.S. 421 | Forsyth, NC | NA | 81.150 Northern Piedmont | 33 miles | West | In Development | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |
| Macy Grove Road Improvements / NCDOT | Proposed improvements and an extension to Macy Grove Road in Forsyth and Guilford counties | Forsyth/Guilford, NC | Reedy Fork | 81.150 Northern Piedmont | 32 miles | West | In Development | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |
| NC 119 Relocation / NCDOT | Proposed relocation of a portion of N.C. 119 in Mebane – from I-85 to existing the N.C. 119 near Mrs. White Lane | Alamance, NC | Back Creek-Haw River | 81.150 Northern Piedmont | 5 miles | East | In Development | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |
| N.C. 62 Widening - Ramada Road to U.S. 70 / NCDOT | Proposed widening an approximately 1-mile stretch of N.C. 62 to improve traffic flow and safety | Alamance, NC | Back Creek-Haw Rive | 81.150 Northern Piedmont | 4 miles | West | In Development | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |

**Table 1.10-2**

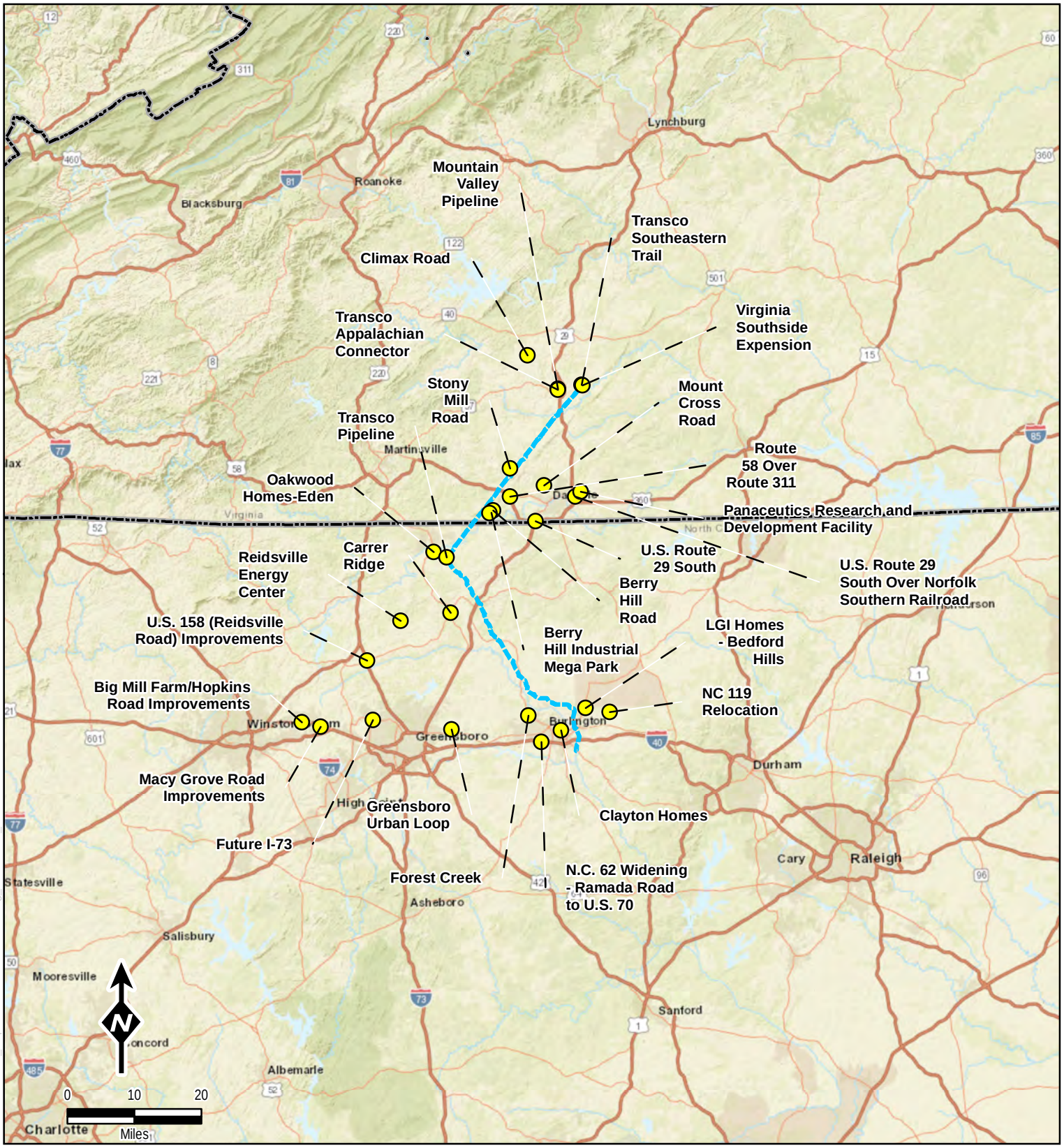
**Projects with Potential Cumulative Impacts**

| Project / Proponent | Description | County/ State | Shared Watershed | Shared Air Quality Control Region | Approximate Distance from Project | Direction | Status | Potential/ Anticipated Impacts | Potential Permits |
|---|---|---|---|---|---|---|---|---|---|
| U.S. 158 (Reidsville Road) Improvements / NCDOT | Proposed 18.8-mile widening of U.S. 158 from U.S. 421/Business 40 in Winston-Salem to U.S. 220 in Guilford County | Guilford, NC | Headwaters Haw River | 81.150 Northern Piedmont | 18 miles | West | In Development | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |
| **Commercial, Industrial, Residential Projects** | | | | | | | | | |
| Berry Hill Industrial Park / Danville and Pittsylvania Counties | A 3,500 acre mega-park owned by Danville and Pittsylvania Counties through the Regional Industrial Facilities Act. Phase I activities began in March 2017 and include approximately 133 acres of site preparation. Schedule for additional phases is unknown. | Pittsylvania County, VA | Wolf Island Creek-Dan River, Cascade Creek-Dan River | 81.143 Central Virginia | 1.3 miles | East | In Development | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife, Land Use, Air and Noise | State and Local |
| Panaceutics Research and Development Facility / Panaceutics, Inc. | Panaceutics, a manufacturer of personalized medicine and nutrition solutions, will invest $5.8 million to establish a research and development and high-tech manufacturing facility in the Ringgold East Industrial Park in Pittsylvania County, Virginia. | Pittsylvania, VA | Hogans Creek-Dan River | 81.143 Central Virginia | 10 miles | East | Under Construction | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |
| Oakwood Homes-Eden / Oakwood Homes | New construction mobile home park at S Van Buren Rd. Eden, NC; approx. 18 new homes | Rockingham, NC | Cascade Creek-Dan River | 81.150 Northern Piedmont | 2 miles | West | Under Construction | No resources expected to be cumulatively affected given the unknown construction timeframe | State and Local |
| Carter Ridge / Keystone Homes | Carter Ridge new construction homes, Carter Ridge Drive, Reidsville, NC | Rockingham, NC | NA | 81.150 Northern Piedmont | 5 miles | West | Under Construction | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife | State and Local |
| Clayton Homes-Burlington / Clayton Homes | New construction housing development single family homes off S Graham Hopedale Rd, Burlington | Alamance, NC | Back Creek-Haw River | 81.150 Northern Piedmont | 2.5 miles | West | Under Construction | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife | State and Local |

**Table 1.10-2**

**Projects with Potential Cumulative Impacts**

| Project / Proponent | Description | County/ State | Shared Watershed | Shared Air Quality Control Region | Approximate Distance from Project | Direction | Status | Potential/ Anticipated Impacts | Potential Permits |
|---|---|---|---|---|---|---|---|---|---|
| LGI Homes- Bedford Hills / LGI Homes | New construction housing development single family homes near 111 Pillow Ln., Burlington, NC | Alamance, NC | Back Creek-Haw River | 81.150 Northern Piedmont | 1.5 miles | East | Under Construction | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife | State and Local |
| Forest Creek / True Homes | New construction housing development 5 new homes in development | Alamance, NC | Back Creek-Haw River | 81.150 Northern Piedmont | 3.5 miles | Southwest | Under Construction | Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife | State and Local |


Mountain Valley Pipeline
Transco Southeastern Trail
Climax Road
Transco Appalachian Connector
Virginia Southside Expension
Stony Mill Road
Mount Cross Road
Transco Pipeline
Route 58 Over Route 311
Oakwood Homes-Eden
Panaceutics Research and Development Facility
Carrer Ridge
Reidsville Energy Center
U.S. Route 29 South
U.S. Route 29 South Over Norfolk Southern Railroad
Berry Hill Road
U.S. 158 (Reidsville Road) Improvements
Berry Hill Industrial Mega Park
LGI Homes - Bedford Hills
Big Mill Farm/Hopkins Road Improvements
NC 119 Relocation
Macy Grove Road Improvements
Greensboro Urban Loop
Clayton Homes
Future I-73
Forest Creek
N.C. 62 Widening - Ramada Road to U.S. 70
Lynchburg
Roanoke
Blacksburg
Martinsville
Greensboro
Durham
Cary
Raleigh
Statesville
Asheboro
Salisbury
Mooresville
Sanford
Albemarle
Charlotte
0 10 20
Miles
West Virginia
Virginia
North Carolina
South Carolina
Legend
Cumulative Impact Locations
Proposed Pipeline Route
State Boundary
Data Sources: ESRI, USGS, TRC, EQT
1 inch = 20 miles
When Printed 8.5x11
Mountain Valley PIPELINE
Figure 1.10-1
Projects with Potential Cumulative Impacts
TRC
600 Willowbrook Ln
West Chester, PA 19382
October 2018
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### 1.10.2 FERC-jurisdictional Natural Gas Interstate Transportation Projects

FERC-regulated natural gas projects identified within the proximity of the Project are summarized in more detail in this section. Additional information regarding these projects may be obtained through the FERC website utilizing the FERC docket numbers, as provided below.

#### Atlantic Coast Pipeline

The Atlantic Coast Pipeline Project, FERC Docket CP15-554, would involve the construction and operation of approximately 333 miles of 42-inch-diameter mainline pipeline; 186 miles of 36-inch-diameter mainline pipeline; 83.4 miles of 20-inch-diameter lateral pipeline; 0.4 mile of 16-inch-diameter lateral pipeline; 1.0 mile of 16-inch-diameter lateral pipeline; three new compressor stations; and appurtenances in West Virginia, Virginia, and North Carolina. The Atlantic Coast Pipeline Project would be capable of delivering up to 1.5 billion cubic feet per day of natural gas to customers in Virginia and North Carolina. Information for this project was obtained from the *Atlantic Coast Pipeline and Supply Header Project Final Environmental Impact Statement Volume I, July 2017*. The Supply Header Project is a smaller, related project outside of the geographic scope of the Southgate Project that involves the construction and operation of approximately 37 miles of 30-inch-diameter pipeline loop; modifications at four existing compressor stations, one meter and regulation station, and valves and pig launchers and receivers in Pennsylvania and West Virginia.

Together, the projects cross 1,669 waterbodies, including 18 major waterbody crossings (those greater than 100 feet wide) and 12 section 10 (navigable) waterbodies. Construction of the projects would temporarily affect approximately 798 acres of wetland, and operation would affect 244 acres of wetland. Most impacts would be on palustrine forested wetlands, affecting 604 acres and 227 acres during construction and operation, respectively. Wetlands affected in all temporary work areas would be allowed to return to preconstruction conditions following construction. Approximately 7.4 acres of wetland would be permanently affected by construction of new aboveground facilities and new or permanently maintained access roads. During construction, the Atlantic Coast Pipeline Project will impact approximately 3,938 acres of prime farmland, 3,653.3 acres of water erodible soils, and 1321.7 acres of wind erodible soils.

Temporary air emissions would be generated during project construction, which would occur over a two year period across four states; however, most air emissions associated with the Atlantic Coast Pipeline and Supply Header projects would result from the long-term operation of the new and modified compressor stations. The Atlantic Coast Pipeline Project operational emissions would exceed the major source modification thresholds, triggering Prevention of Significant Deterioration, and its new Compressor Stations 1, 2, and 3 would be subject to a PSD major source threshold of 250 tons per year. The Atlantic Coast Pipeline and Supply Header projects are outside of the geographic scope for cumulative impacts; however, are located within the shared Air Quality Control Region (81.143 Central Virginia), and therefore included in this discussion due to exceeding major source modification thresholds.

Major environmental permits, licenses, approvals and consultations applicable to the Atlantic Coast Pipeline and Supply Header projects include Federal, State and local permits, including FERC Certificate, Federal Aviation Administration Application, Consultation under Section 7 of the Endangered Species Act and Section 305 of the Magnuson-Stevens Fishery Conservation and Management Act and Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act across four U.S. Army Corps of Engineers Districts. State and local coordination and permits will also be required from the states of Pennsylvania, West Virginia, Virginia, and North Carolina.

### Reidsville Energy Center

Reidsville Energy Center is an approximately 500 megawatt natural gas electric generating facility proposed in Rockingham County, North Carolina. Siting authority was received from the North Carolina Utilities Commission in January 2017, and the air quality permit was received in July 2017.

This facility will discharge low volume wastes and cooling tower blowdown in the Dan River in the Roanoke River Basin. Currently total residual chlorine and temperature are water quality limited. This discharge may affect future allocations in this portion of the Dan River Basin (NCDEQ 2018).

Major environmental permits, licenses, approvals and consultations applicable to this project include Federal, State and local permits. Additional permits required for this project include Clean Water Act Section 404 and 401, National Pollution Discharge Elimination System, and Federal Aviation Administration permits as well as local permits.

### Virginia Southside Expansion

The Virginia Southside Expansion includes approximately 98 miles of new 24-inch natural gas pipeline in Pittsylvania, Halifax, Charlotte, Mecklenburg, and Brunswick Counties, Virginia with a new compressor station in Pittsylvania County, Virginia and appurtenances and upgrades in New Jersey, North Carolina, Maryland and Pennsylvania. Information for the Virginia Southside Expansion was obtained from the *Virginia Southside Expansion Project Environmental Assessment, June 2013 (*FERC Docket CP13-30).

The Environmental Assessment stated construction of the project would affect approximately 1,454 acres of land, including pipeline construction rights-of-way, additional temporary workspace, pipe and contractor yards, temporary and permanent access roads, and new and modified aboveground facilities. Following construction, approximately 1,335 acres would revert to pre-construction conditions and uses. The remaining approximately 119 acres, including the permanent pipeline easements, permanent aboveground facility sites, and permanent access roads, would be retained for operation of the project.

Transco would disturb approximately 51 acres of wetlands during construction of the Virginia Southside Expansion. Of the total construction-related impacts, approximately 4.8 acres of wetlands would be permanently affected by operation of the project. Transco would disturb about approximately 322 acres (24 percent of total vegetative disturbance) of non-silviculture upland forest. Transco would disturb an additional 160 acres (11 percent) of forested silviculture species; of which 15 acres would be logged by the landowner prior to construction. The Virginia Southside Project would impact approximately 703 acres of prime and statewide important soils, and 65 acres of highly erodible soils.

The operation of this project would result in emissions typical of those from natural gas project with compressor stations and associated equipment. The Environmental Assessment concluded that there would be no regionally significant impacts to air quality.

Major environmental permits, licenses, approvals and consultations applicable to this project include Federal, State and local permits: a FERC Certificate; Clean Water Act, Section 404 Permit, Nationwide 12; Section 10 and Section 401; Section 7 consultation with the U.S. Fish and Wildlife Service; and other state and local permits for the states of Virginia, Maryland, North Carolina, and Pennsylvania.

### Southeastern Trail Project

The Southeastern Trail Project is proposed to consist of approximately 7.7 miles of new natural gas pipeline (Manassas Loop) located along the existing Transco Mainline, compressor station horsepower additions at three existing facilities in Virginia (Station 185, Station 175, and Station 165), reversal and / or deodorization modifications at eight existing MLVs in South Carolina, Georgia, and Louisiana, and modifications at 13 existing MLVs in South Carolina and Georgia. Information regarding this project was obtained from the FERC Application, dated April 2018 under Docket CP18-186.

Approximately 2 acres of wetlands and 22 acres of upland forest are anticipated to be impacted as a result of project activities. Prime farmland impacts are expected to be approximately 162 acres. Highly erodible wind soil impacts are expected to be approximately 209 acres and highly erodible water soils impacts are approximately 40 acres.

The operation of this project would result in emissions typical of those from natural gas project with compressor stations and associated equipment. Operational emissions from the proposed modifications to Station 175 and Station 165 involve installation of combustion turbines that burn pipeline-quality natural gas, resulting in combustion emissions, along with pipeline natural gas venting, and piping component fugitive emissions. Anticipated pollutants associated with the Southeastern Trail Project do not exceed the major source threshold for each of the criteria pollutants Therefore, the new compressor stations would be considered minor sources.

Pending receipt of all necessary authorizations and permits, construction activities for the Southeastern Trail Project are targeted to begin by August 2019 and end by the in-service date of November 1, 2020. Major environmental permits, licenses, approvals and consultations applicable to this project include Federal, State and local permits: Section 7(c) NGA Certificate; CWA 404; Section 7 consultation; Section 106 consultation; Section 401 of the Clean Water Act Water Quality Certification; and other state and local permits.

### Mountain Valley Pipeline

Mountain Valley Pipeline Project would involve construction and operation of about 303 miles of new 42-inch-diameter natural gas pipeline and associated facilities in West Virginia and Virginia and three new compressor stations and appurtenances. Construction of the Mountain Valley Pipeline Project would affect approximately 5,120 acres (3,349 acres in West Virginia, and 1,771 acres in Virginia). Information for the Mountain Valley Pipeline Project was obtained from the *Mountain Valley Project and Equitrans Expansion Project Final Environmental Impact Statement, June 2017 (* FERC Docket CP16-10). The Mountain Valley Pipeline Project and the Equitrans Expansion Project are two separate projects; however, as the projects are interrelated and connected actions, they were analyzed together in the Final Environmental Impact Statement. Equitrans Expansion Project involves construction and operation of a total of approximately 7.4 miles of various diameter natural gas pipelines, one new compressor station, appurtenances, and decommissioning of an existing compressor station, in Pennsylvania and West Virginia.

Construction of the Mountain Valley Pipeline and Equitrans Expansion projects would impact approximately 31 acres of wetlands and operation would affect approximately 8 acres of wetlands. During construction, approximately 2,829 acres of prime farmland are anticipated to be impacted, and 5,053 acres of soils with a high water erodibility. No soils with a high wind erodibility were identified within the project area.

Operation of the Mountain Valley Pipeline and Equitrans Expansion projects would result in emissions typical of those from a natural gas project with compressor stations and associated equipment.

Major environmental permits, licenses, approvals and consultations applicable to the projects include Federal, State and local permits: Section 7(c) NGA Certificate; Federal Temporary Use Permit from USDA Forest Service; CWA 404; Section 7 consultation; Section 106 consultation; Section 401 CWA Water Quality Certification; and other state and local permits.

### 1.10.3 Transportation Projects

Transportation projects identified within the geographic scope of the Project include those that may potentially impact water resources within a shared watershed (HUC 10) or sub watershed (HUC 12). The majority of transportation projects identified in Table 10.1-2 are greater than two miles from the Project, and, therefore, will not contribute to cumulative impacts for soils and geology, cultural resources, land use, visual resources, and environmental justice. The identified transportation projects are unlikely to contribute significantly to cumulative impacts for air and noise due to short construction timeframes. The majority of the transportation projects identified share a watershed with the Project, therefore potentially contributing to cumulative impacts relating to water resources. Impacts to groundwater, wetlands, and surface waters are unknown for the identified projects.

The identified transportation projects are anticipated to have short-term and small geographic impact during construction; it is anticipated long term environmental resources will not result in significant impacts.

### 1.10.4 Development Projects

Development projects identified within the vicinity of the project range from small housing developments to large scale industrial park and a research and development facility. The majority of these projects share a watershed with the Project and could potentially have cumulative impacts to water resources within a shared watershed (HUC 10) or sub watershed (HUC 12) such as a specific waterway or wetland. Information regarding development projects was obtained using available online resources.

It is assumed permit approvals are pending or planned coordination is pending for impacts to wetlands and other water resources within the Project vicinity. Long term air and noise impacts are not expected to result from the construction of the listed development projects in Table 1.10-2. The identified projects are anticipated to have short-term and small geographic impact and will not result in significant cumulative impacts to the area.

### 1.10.5 Potential Cumulative Impact on Resources within the Project Area

**Soils and Geology –** The facilities associated with the Project are expected to have a temporary but direct impact on near-surface geology, soils, and sediments. Clearing and grading associated with construction of the Project and the other projects listed in Table 1.10-2 could accelerate the soil erosion process and, without adequate protection, could result in discharge of sediment to adjacent waterbodies and wetlands. Since the direct effects will be localized and limited primarily to the period of construction, cumulative impacts on geology, soils, and sediments will only occur if other projects are constructed at the same time and general location as the proposed Project facilities. The construction schedules of some of the projects listed in Table 1.10-1 coincide with the schedule proposed for the Project. The Project will implement the provisions of the FERC Plan and Procedures and its Project-specific E&SCP to establish a baseline for minimizing the potential for erosion as a result of water or wind action and to aid in reestablishing

vegetation after construction. In addition, disturbance associated with construction activities will be minimized and mitigated through the application of BMP's that are incorporated in the Project-specific E&SCP. Should hazardous materials or contaminated soils and/or sediments be encountered during construction, they will be disposed of at fully licensed and permitted disposal facilities in accordance with applicable state and federal laws and regulations. As a result, the cumulative effect on geological resources, soils, and sediments are expected to be temporary and minor.

**Water Resources and Wetlands –** Cumulative effects on groundwater resources are expected to be temporary and limited to areas that are affected by each project listed in Table 1.10-2. Impacts on groundwater could include turbidity, reduced water levels, and contamination. Construction activities such as blasting could negatively impact wells close to the Project; however, the Project will implement the measures described in its Water Resources Identification and Testing Plan (see Resource Report 2, Appendix 2-E). Cumulative effects on surface water resources affected by the Project would be limited to waterbodies that are affected by other projects located within the same major watersheds. No permanent diversions or dams are planned, so any impacts from construction on surface waters would be temporary. The greatest potential impacts of pipeline construction on surface waters would result from an increase in sediment loading to surface waters and an increase in internal sediment loading due to channel/floodplain instability as a result of a change in erosion deposition patterns. Each of the project proponents will minimize these effects by implementing wetland and waterbody construction and mitigation measures, including erosion control measures by complying with applicable federal and state permit requirements. Construction of the Project facilities will result in temporary impacts to wetlands. However, each proponent for the projects listed in Table 1.10-2 that affects wetlands will be required by the terms and conditions of their respective Section 404 permits to provide compensatory mitigation for unavoidable wetland impacts. The cumulative effect on water resources and wetlands will be temporary and minor.

**Vegetation and Wildlife –** The Project traverses deciduous forest, evergreen forest, mixed deciduous-evergreen forest, scrub-shrub land, herbaceous upland, wetlands, and agricultural lands. Cumulative impacts on vegetation and wildlife in conjunction with other projects can be expected. When projects are constructed at or near the same time, the combination of construction activities could have a cumulative impact on vegetation and wildlife in the immediate area. Clearing and grading and other construction activities associated with the projects will result in the removal of vegetation, alteration of wildlife habitat, displacement of wildlife, and other secondary effects such as forest fragmentation and establishment of invasive plant species.

The total amount of vegetation that may be affected by these projects could appear significant but is still relatively minor compared to the abundance of similar vegetation cover types and wildlife habitats in the Project area. In addition, for some of the projects listed in Table 1.10-2 impacts on vegetation will be temporary. As part of each project's permit conditions, mitigation measures should be implemented to minimize the potential for erosion, revegetate disturbed areas, increase the stabilization of site conditions, and control the spread of noxious weeds. Therefore, the degree and duration of the cumulative impact on vegetation and terrestrial wildlife from these projects will be minimized.

**Land Use** – The Project and several other projects listed in Table 1.10-2 will result in both temporary and permanent modifications to existing land uses. The pipeline is located parallel to or collocated with existing utility corridors, trails, and roads for approximately 54 percent (40 miles) of the proposed alignment. New permanent effects on land use will be minimal because 70 percent of the land affected by construction of the Project facilities will be allowed to revert to pre-construction uses following construction, except for

the habitat conversion of forest to open within 15 feet of the pipeline along the permanent right-of-way to ensure that root systems do not affect the exterior coating of the pipeline.

Following construction, the majority of affected areas will be restored and relinquished back to the landowner without restrictions. Some new restrictions will be imposed on the new (no greater than 50-foot-wide) permanent right-of-way, but primarily these will be limited to activities such as deep excavations or the construction of new, permanent structures or planting of trees that could threaten the integrity of the pipeline or preclude the Project's ability to maintain the pipeline. Because a relatively small area of land used by the Project will be converted to another land use type and because construction will be short term, the cumulative effect on land use will be temporary and minor.

**Cultural Resources –** Past disturbances to cultural resources in the Project area are typically related to urban development, accidental disturbances, intentional destruction or vandalism, lack of awareness of historic value, and construction, maintenance, and operations associated with existing infrastructure. Federally regulated projects will include mitigation measures designed to avoid or minimize additional direct impacts on cultural resources. Non-federal actions will need to comply with any identification procedures and mitigation measures required by the states of Virginia and North Carolina. Cumulative effects on cultural resources are not anticipated.

**Socioeconomics –** The Project and the projects listed in Table 1.10-2 will generate temporary construction jobs. The local supply of construction workers needed for these projects may be derived from workers employed in the area, which will provide a direct economic benefit to those individuals and the communities in which they reside. The non-local laborers could represent an increase in the percent of the total population in the Project area (assuming half the construction workers are non-local); however, the existing local infrastructure and housing availability in the Project area is expected to be sufficient to provide for the needs of non-local workers. There will be both short and long term positive cumulative economic benefits from these projects. Taxes generated from operation of the projects will result in an annual tax revenue increase. Permanent employment will also increase as a result of the operation of many of these projects, with the cumulative benefit of potentially lowering local unemployment rates.

**Air Quality –** Construction equipment and vehicles emit air pollutants in the immediate vicinity of construction, and fugitive dust emissions are generated by soil excavation and other construction activities.

Table 9.2-9 of Resource Report 9, presents the list of the major existing and reasonably foreseeable future projects that may cumulatively or additively impact air quality that could be affected by the construction and operation of the Project along with an approximate distance from the nearest Project facility. Operation of the existing and reasonably foreseeable major air emissions sources listed in Table 9.2-9 will have air emissions associated with them; however, the other sources of air emissions from operation of these recent or planned projects are or will be controlled in accordance with state and federal air pollution laws and regulations.

The existing and proposed offsite major air emissions sources are or will be operated in compliance with all applicable state and federal air regulations; including, stack testing, recordkeeping, reporting, and monitoring requirements in order to establish compliance with federally enforceable emissions standards. Because operation of the Project along with the other existing and proposed major Title V projects/facilities, will be regulated by the Virginia Department of Environmental Quality through the air permitting process, the cumulative effect of operation of the Project with other projects is not expected to result in adverse air quality impacts.

**Noise Quality –** Construction activities also have the potential to produce an increase in noise levels. Similar to potential cumulative air quality impacts, cumulative impacts from construction noise from the Project and the other projects listed in Table 1.10-2 also depends on the type of construction activities that are taking place at the same time and how close in proximity the construction activities are occurring. Because the noise generated by construction activities will be temporary and localized, construction activities for the Project along with the other projects are not expected to result in significant adverse noise impacts.

The design of the proposed compressor station will include noise abatement measures, as applicable, to ensure the off-site impact of the noise generated by operation of the compressor station is in compliance with all applicable noise standards, including the FERC sound level limits.

### 1.10.6 Conclusion

The majority of cumulative impacts associated with the Southgate Project would be temporary and minor when considered in combination with past, present, and reasonably foreseeable activities.

The primary factors associated with the Southgate Project that will minimize its contribution to cumulative impacts are as follows:

- The impacts resulting from the Project pipeline facilities will primarily be short-term and constitute temporary impacts associated with construction;
- Approximately 54 percent of the Project pipeline facilities will be parallel to existing utility corridors and other rights-of-way; thereby minimizing impacts associated with construction; and
- The Project has been designed to avoid and minimize impacts to the extent practicable and will implement various plans and techniques to ensure potential impacts are further minimized (e.g., Project-specific E&SCP).

In addition, significant long-term cumulative benefits to the communities in the Project area will also be realized from increased tax revenues, and short-term cumulative benefits will also be realized through jobs and wages and purchases of goods and materials for the Project.

## 1.11 REFERENCES

Federal Energy Regulatory Commission (FERC). 2013. Upland Erosion Control, Revegetation and Maintenance Plan. May 2013.

Federal Energy Regulatory Commission (FERC). 2013. Wetland and Waterbody Construction and Mitigation Procedures. May 2013.

Gulf Interstate Engineering. 1999. Temporary Right-of-Way Width Requirements for Pipeline Construction. Prepared for the INGAA Foundation, Inc. Available online at: http://www.ingaa.org/File.aspx?id=19105.

North Carolina Department of Environmental Quality (NC DEQ). 2018. Reidsville Energy Center Permit #NC0089699. https://deq.nc.gov/reidsville-energy-center-permit-nc0089699. Accessed October 3, 2018.

# MVP Southgate Project

## Docket No. CP19-XX-000

## Resource Report 1

## Appendix 1-A

## Alignment Sheets and Full Size USGS Quadrangle Maps (Provided Under Separate Cover)

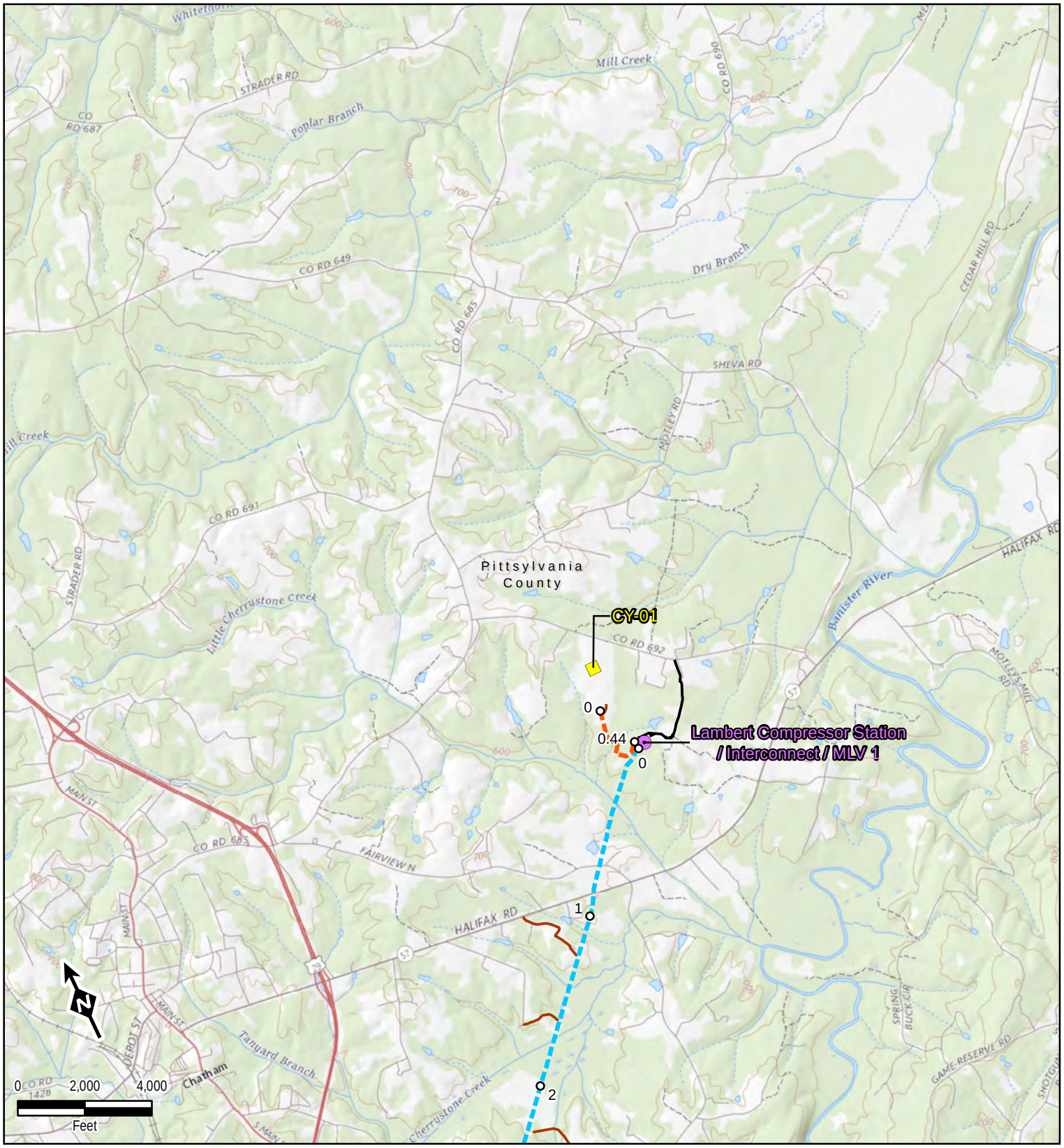
# MVP Southgate Project

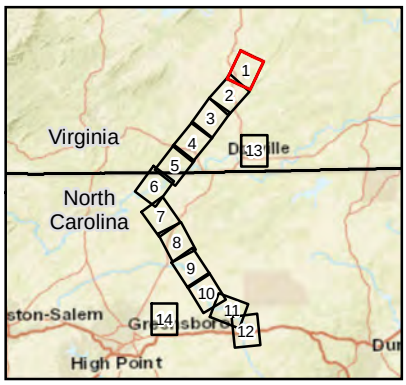
# Docket No. CP19-XX-000

# Resource Report 1

# Appendix 1-B

# USGS 7.5-Minute Topographic Map Excerpts




**Legend**

- Mileposts
- Compressor Station
- Contractor Yard
- Meter Station
- Valve Site
- Permanent Access Road
- Temporary Access Road
- H-605 Pipeline
- H-650 Pipeline
- County Boundary
- State Boundary

**Data Sources:** ESRI, USGS, TRC, EQT

1 inch = 4,000 feet
When Printed 8.5x11

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**Appendix 1-B**

USGS Quadrangle Excerpts

Sheet 1 of 14

TRC
Results you can rely on
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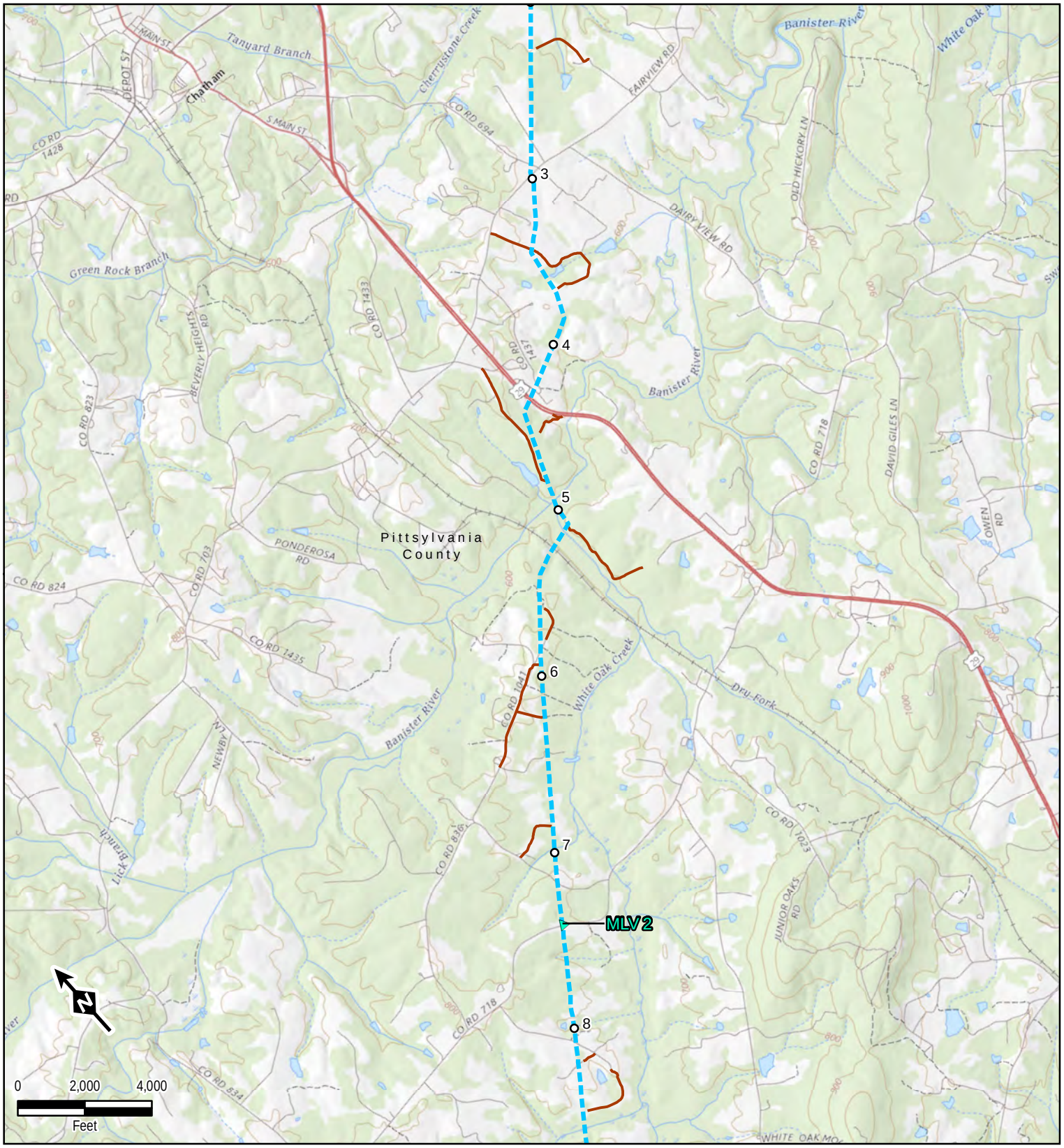


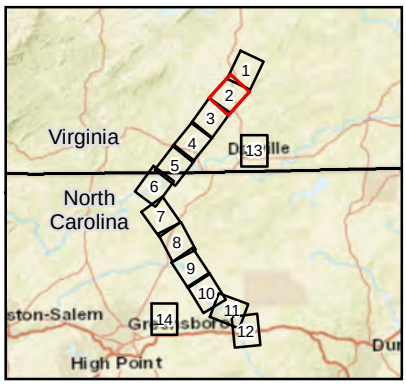


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**Appendix 1-B**

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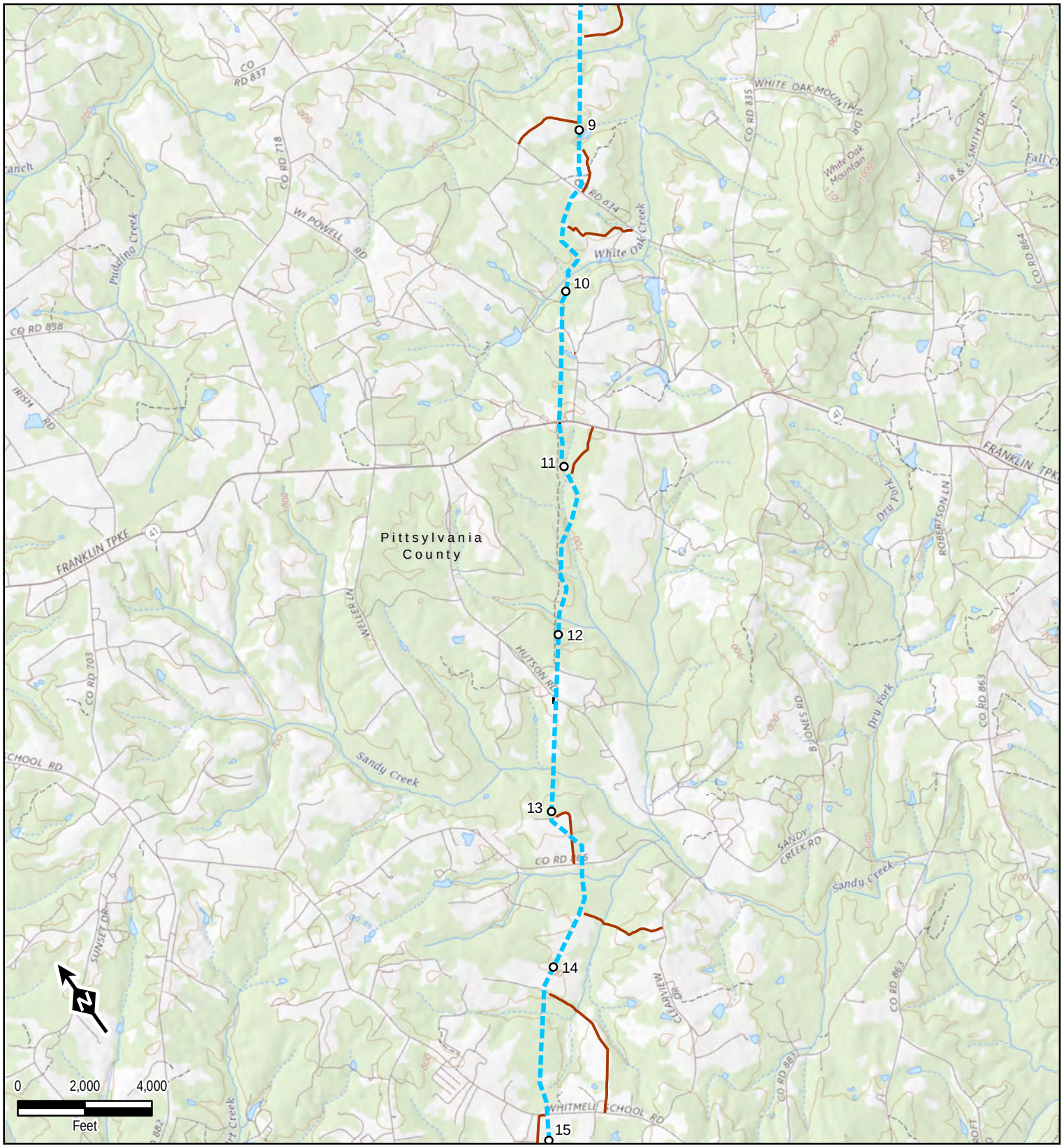


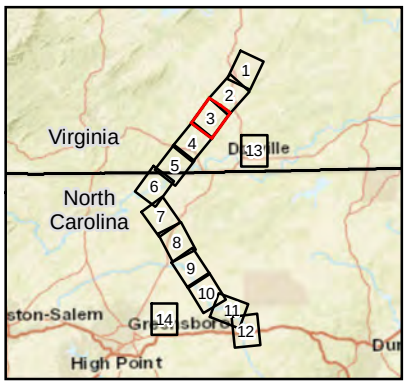


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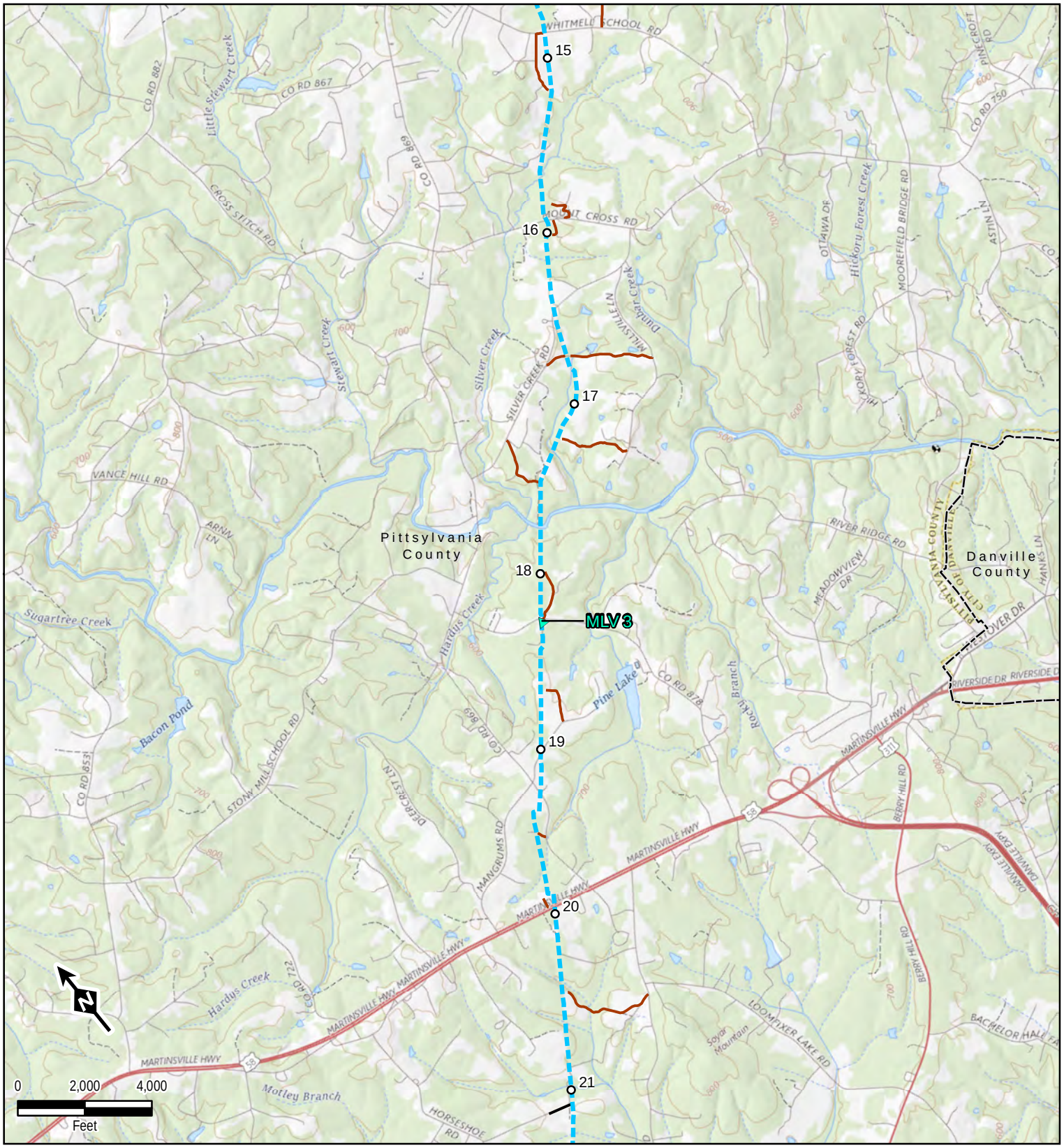


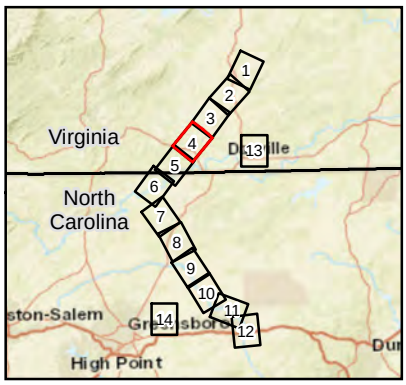


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**Appendix 1-B**

USGS Quadrangle Excerpts

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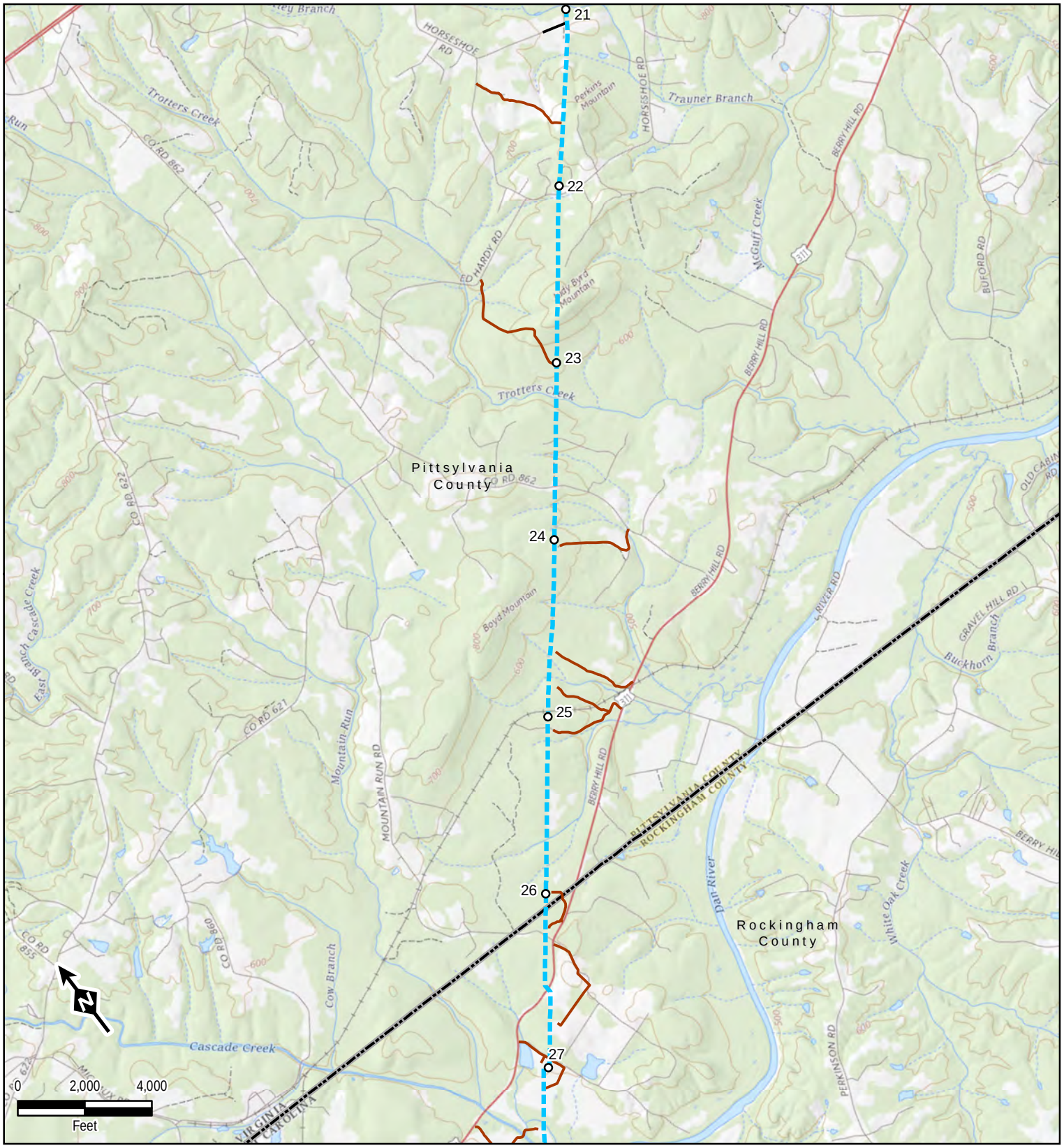


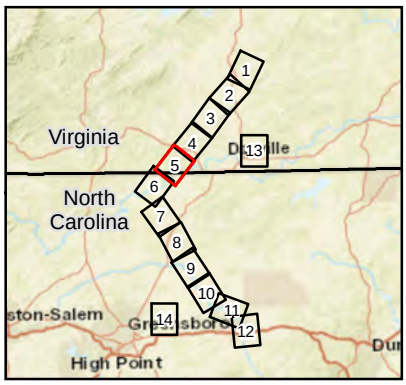


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**Appendix 1-B**

USGS Quadrangle Excerpts

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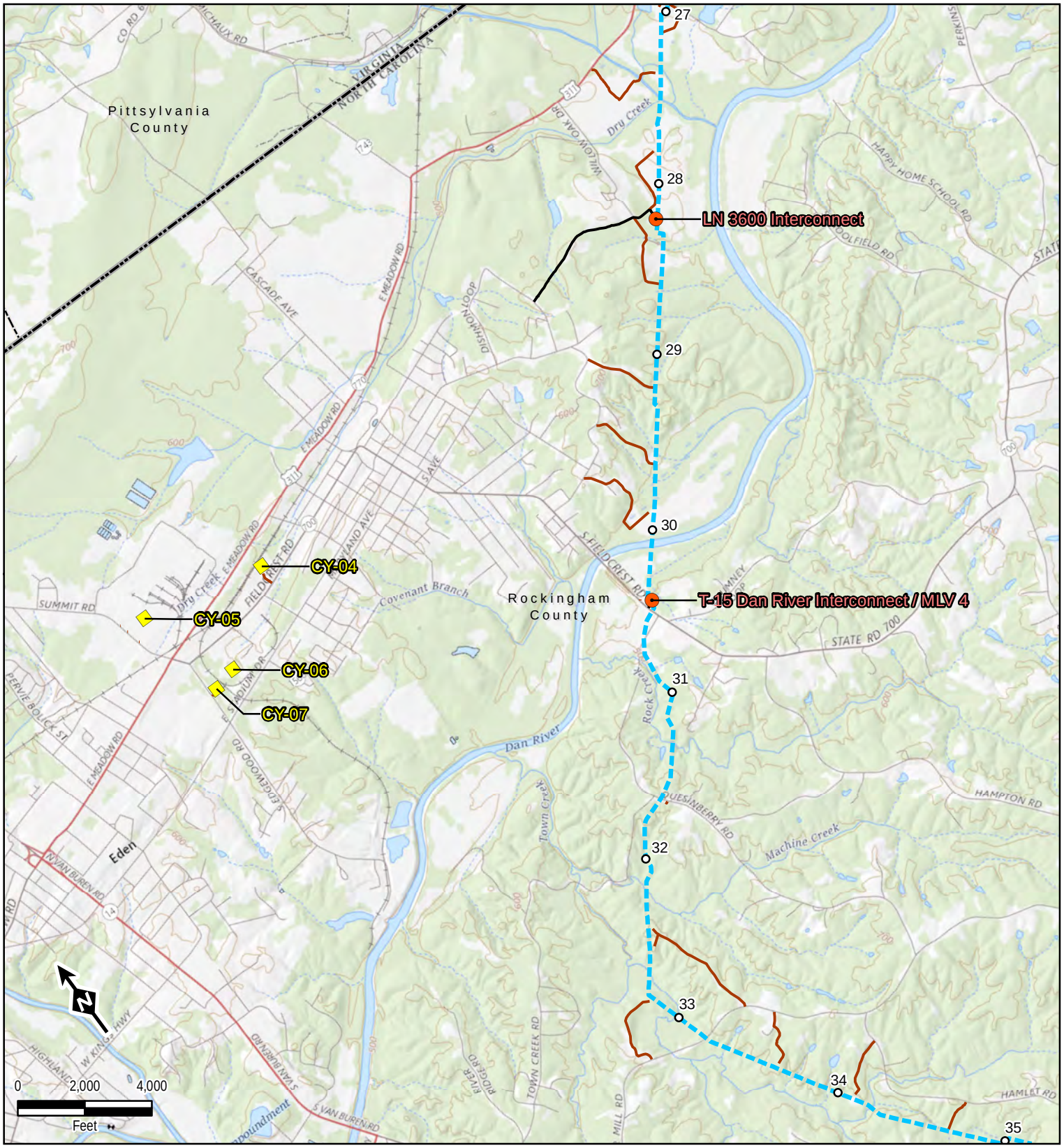


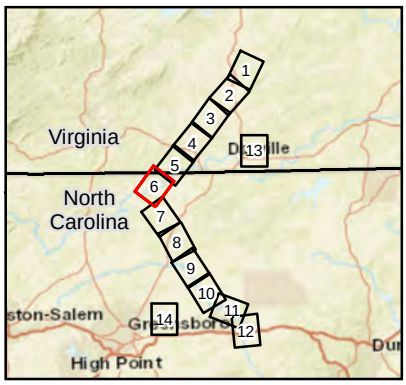


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**Appendix 1-B**

USGS Quadrangle Excerpts

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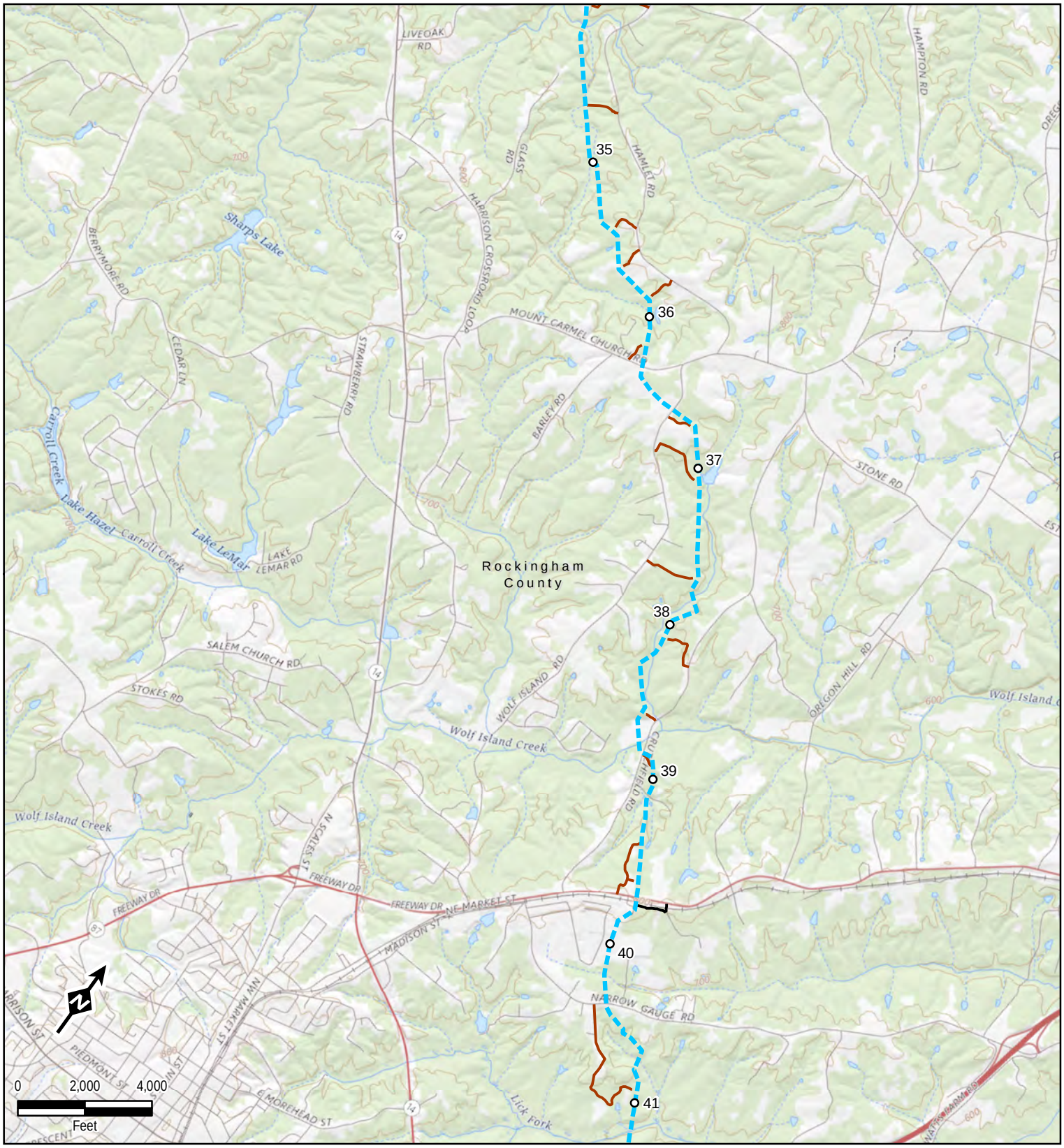


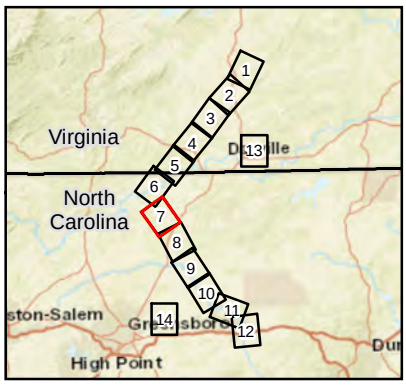


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**Appendix 1-B**

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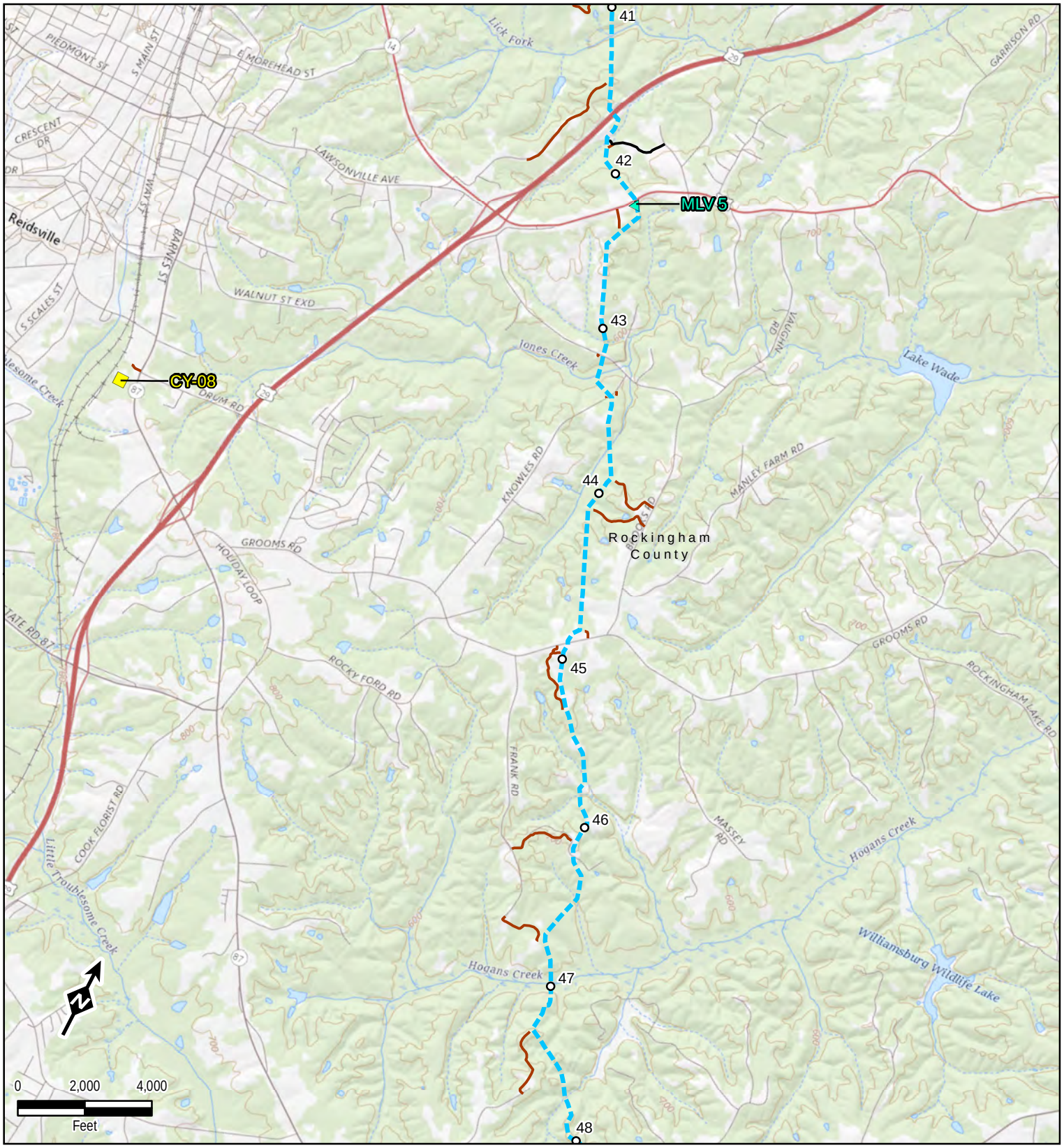


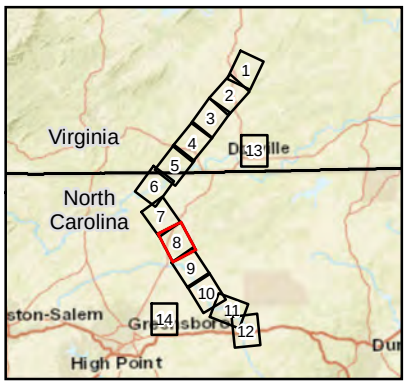


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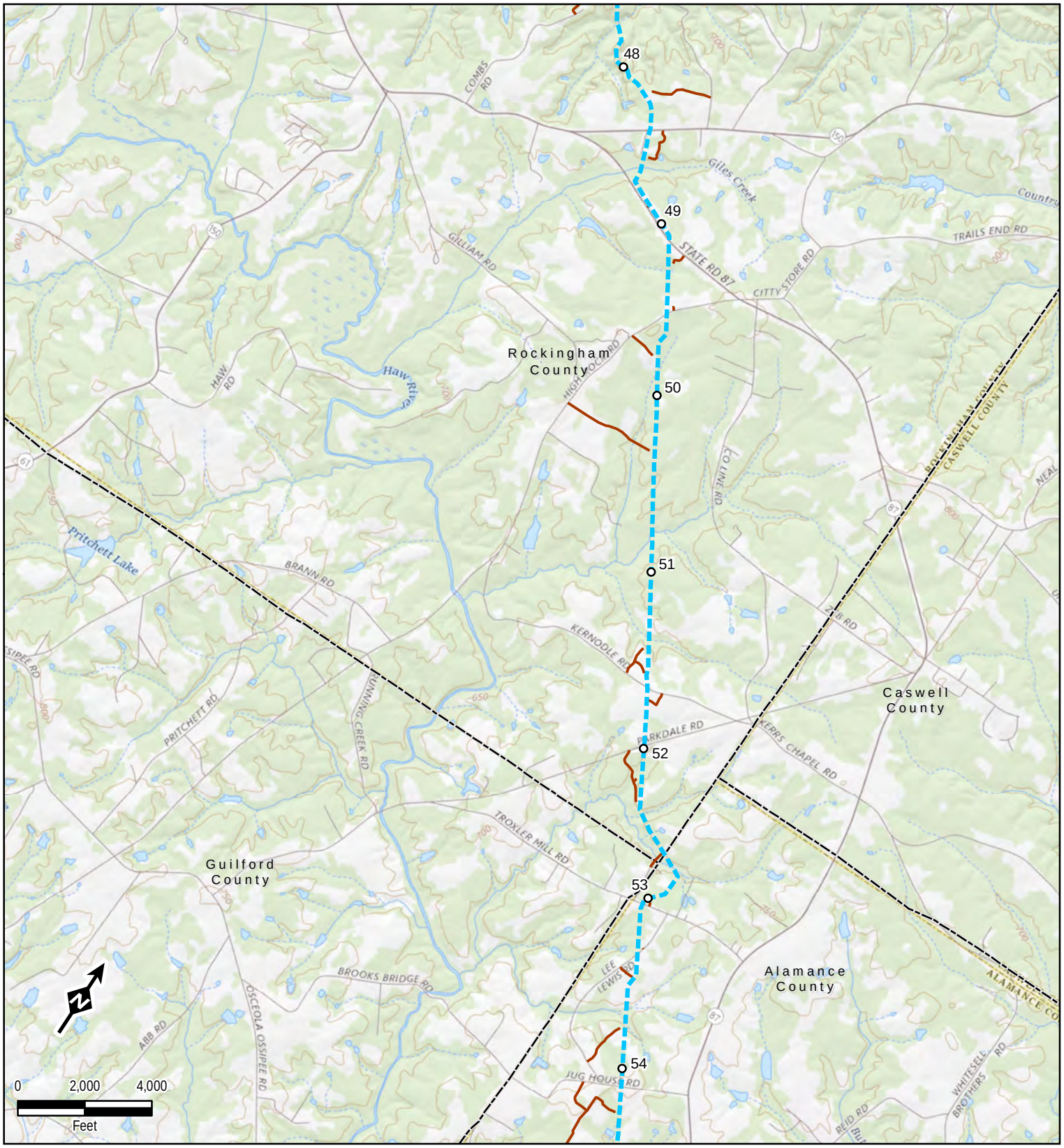


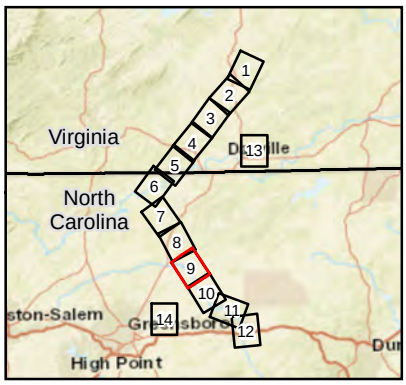


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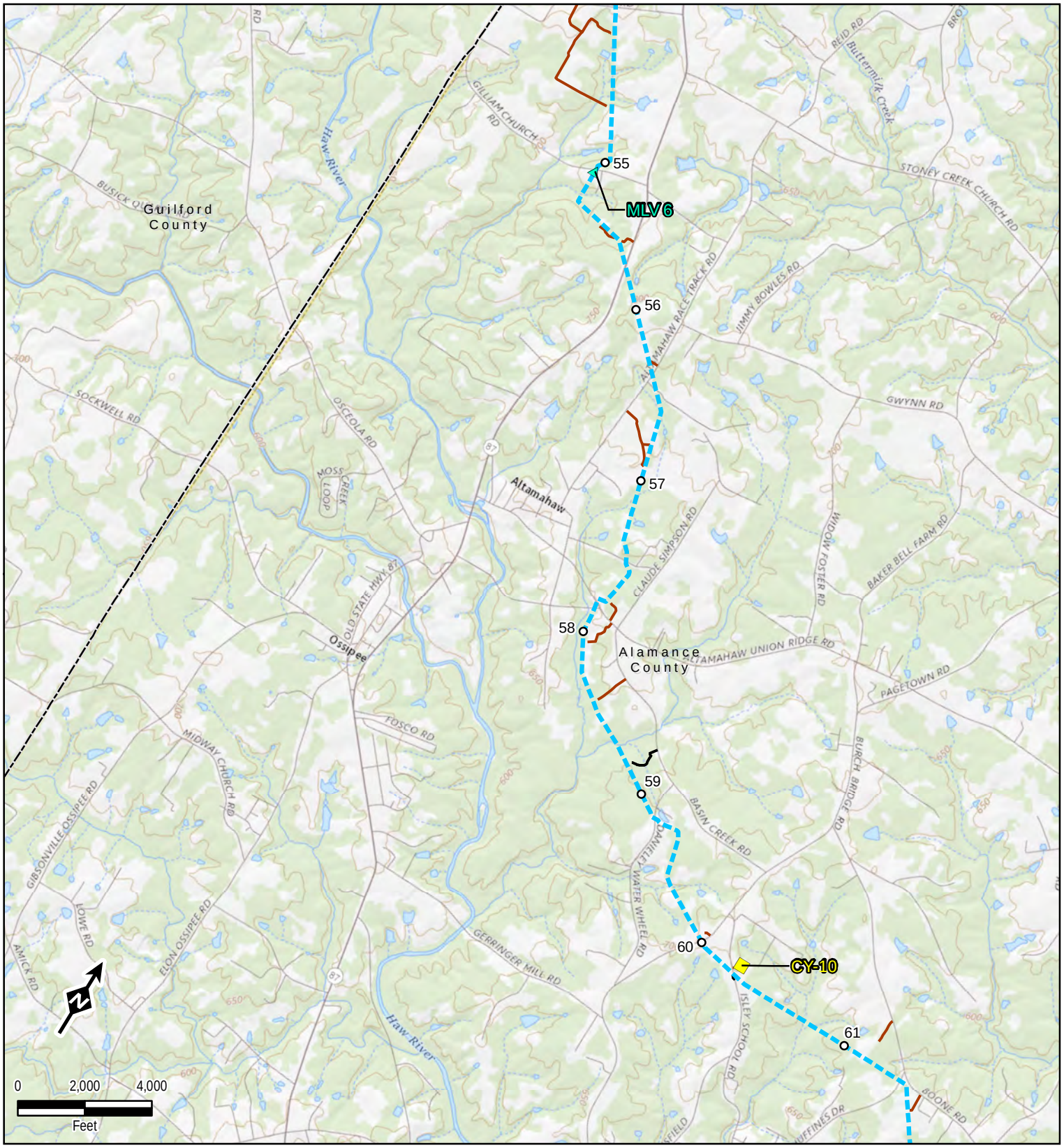


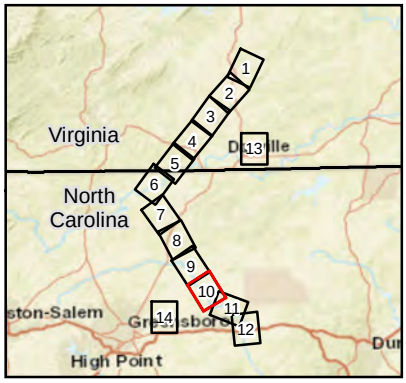


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**Appendix 1-B**

USGS Quadrangle Excerpts

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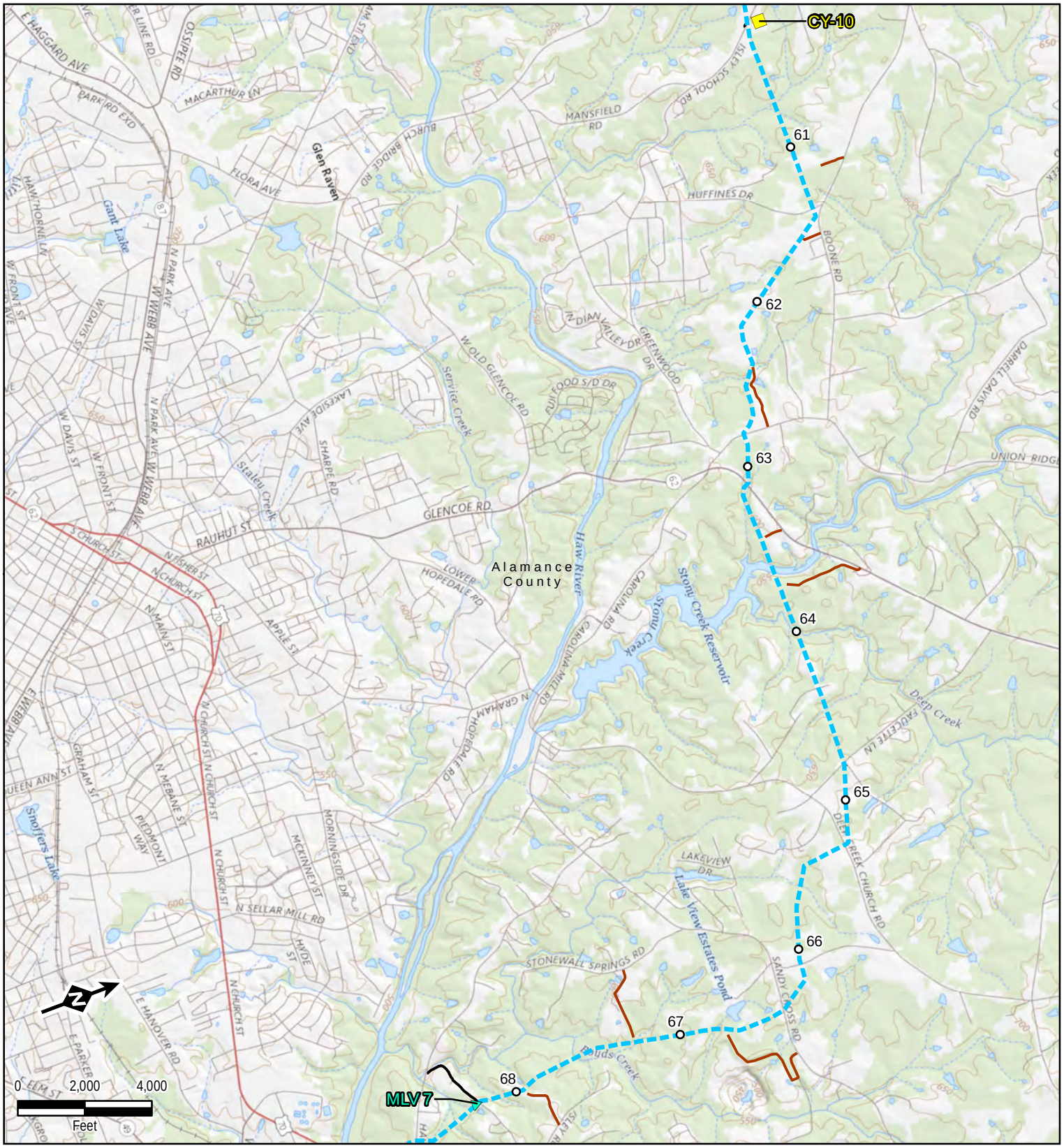


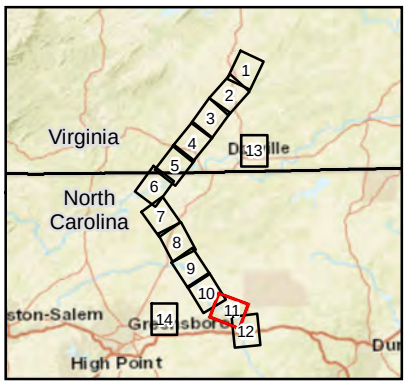


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**Appendix 1-B**

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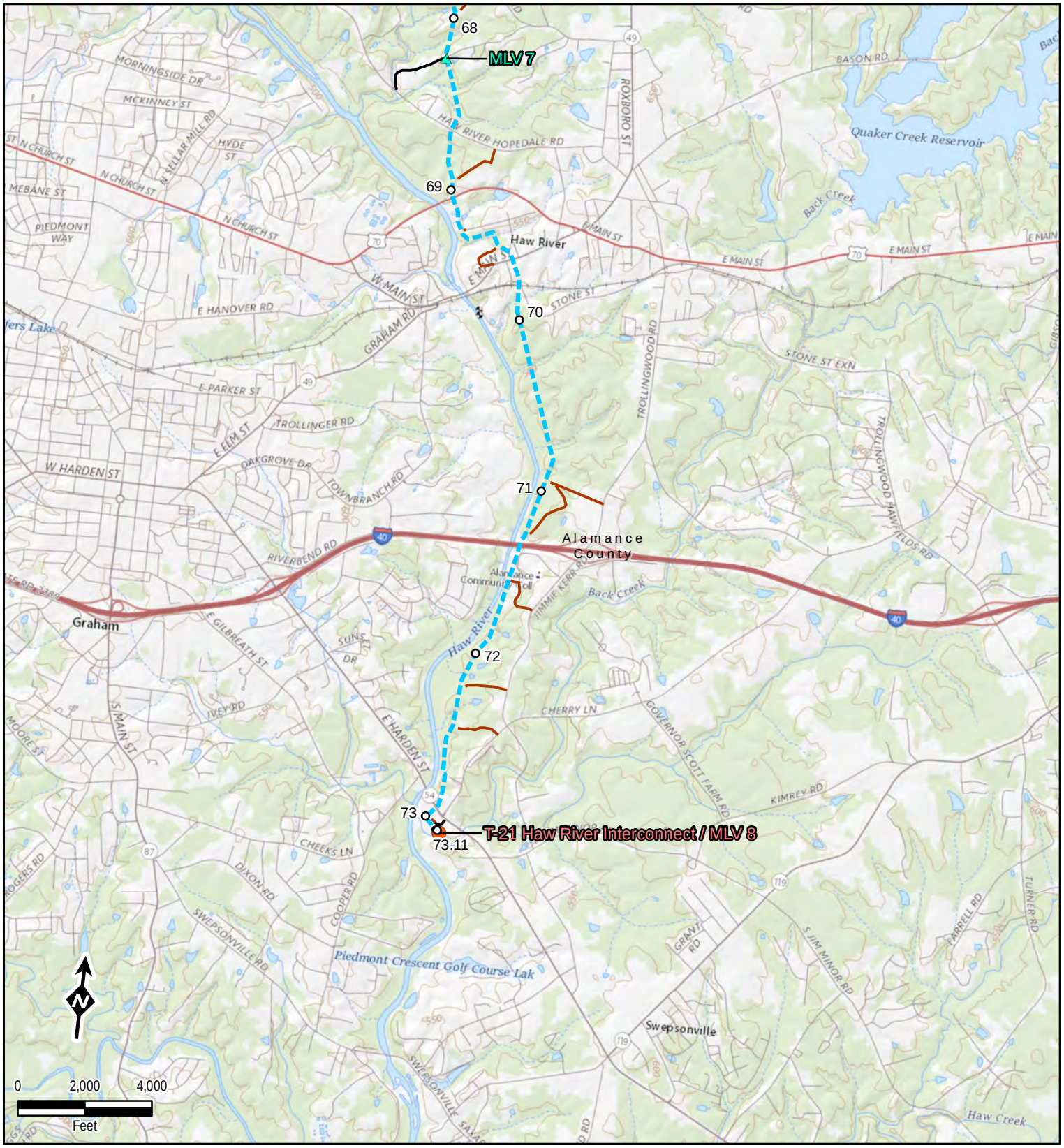


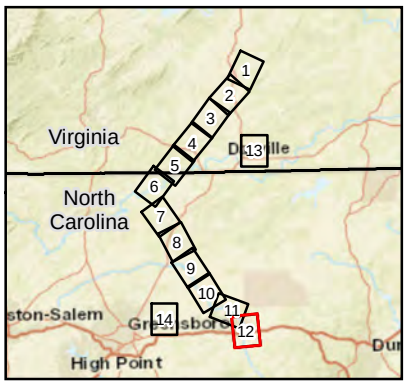


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- County Boundary
- State Boundary

**Data Sources:** ESRI, USGS, TRC, EQT

1 inch = 4,000 feet
When Printed 8.5x11

Mountain Valley PIPELINE LLC

**Appendix 1-B**

USGS Quadrangle Excerpts

Sheet 12 of 14

TRC
600 Willowbrook Ln
West Chester, PA 19382

October 2018

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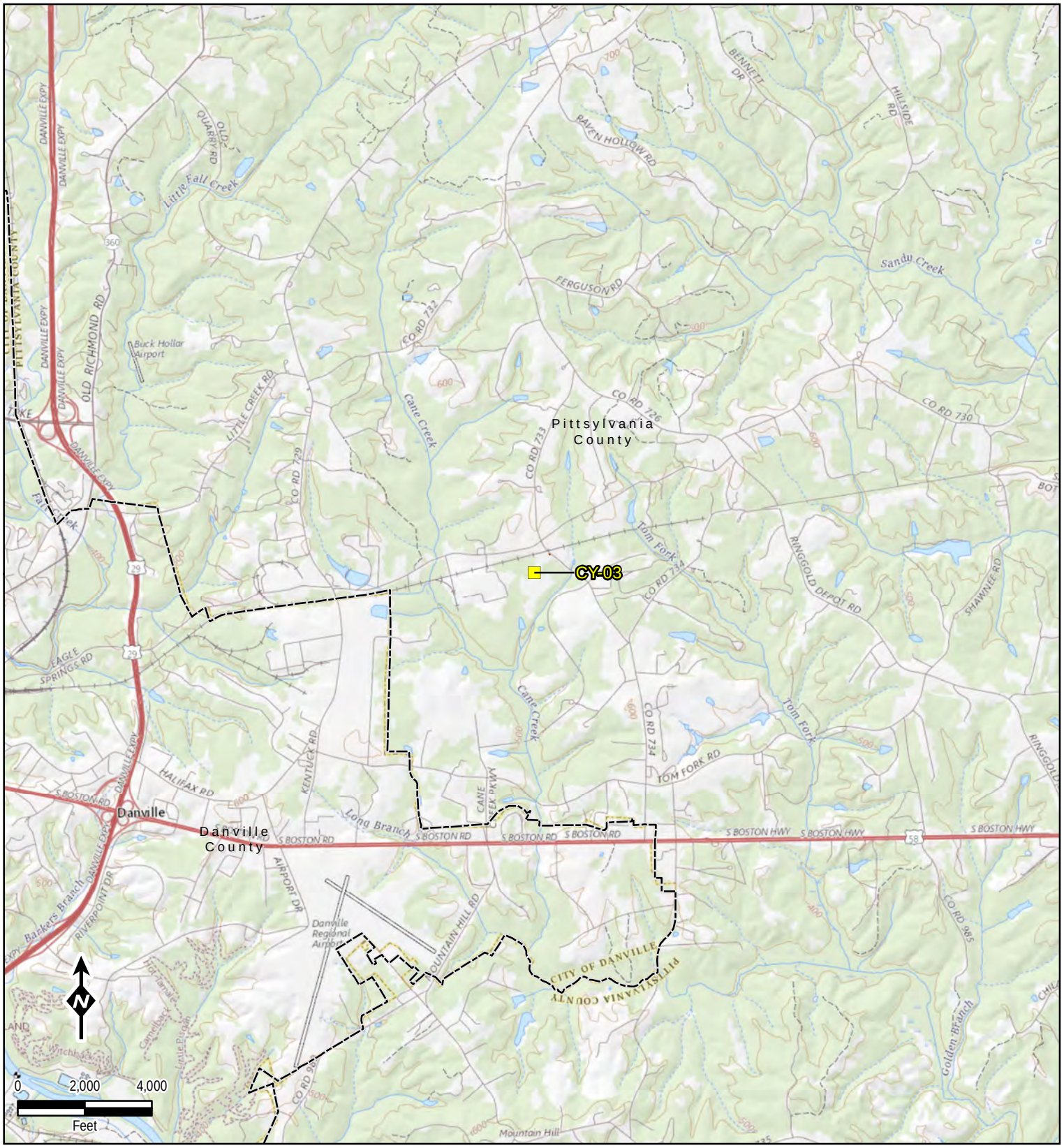


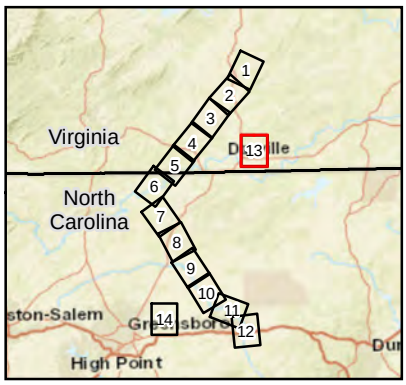


**Legend**

- Mileposts
- Compressor Station
- Contractor Yard
- Meter Station
- Valve Site
- Permanent Access Road
- Temporary Access Road
- County Boundary
- State Boundary

**Data Sources:** ESRI, USGS, TRC, EQT

1 inch = 4,000 feet
When Printed 8.5x11

Mountain Valley PIPELINE LLC

**Appendix 1-B**

USGS Quadrangle Excerpts

Sheet 13 of 14

TRC
600 Willowbrook Ln
West Chester, PA 19382

October 2018

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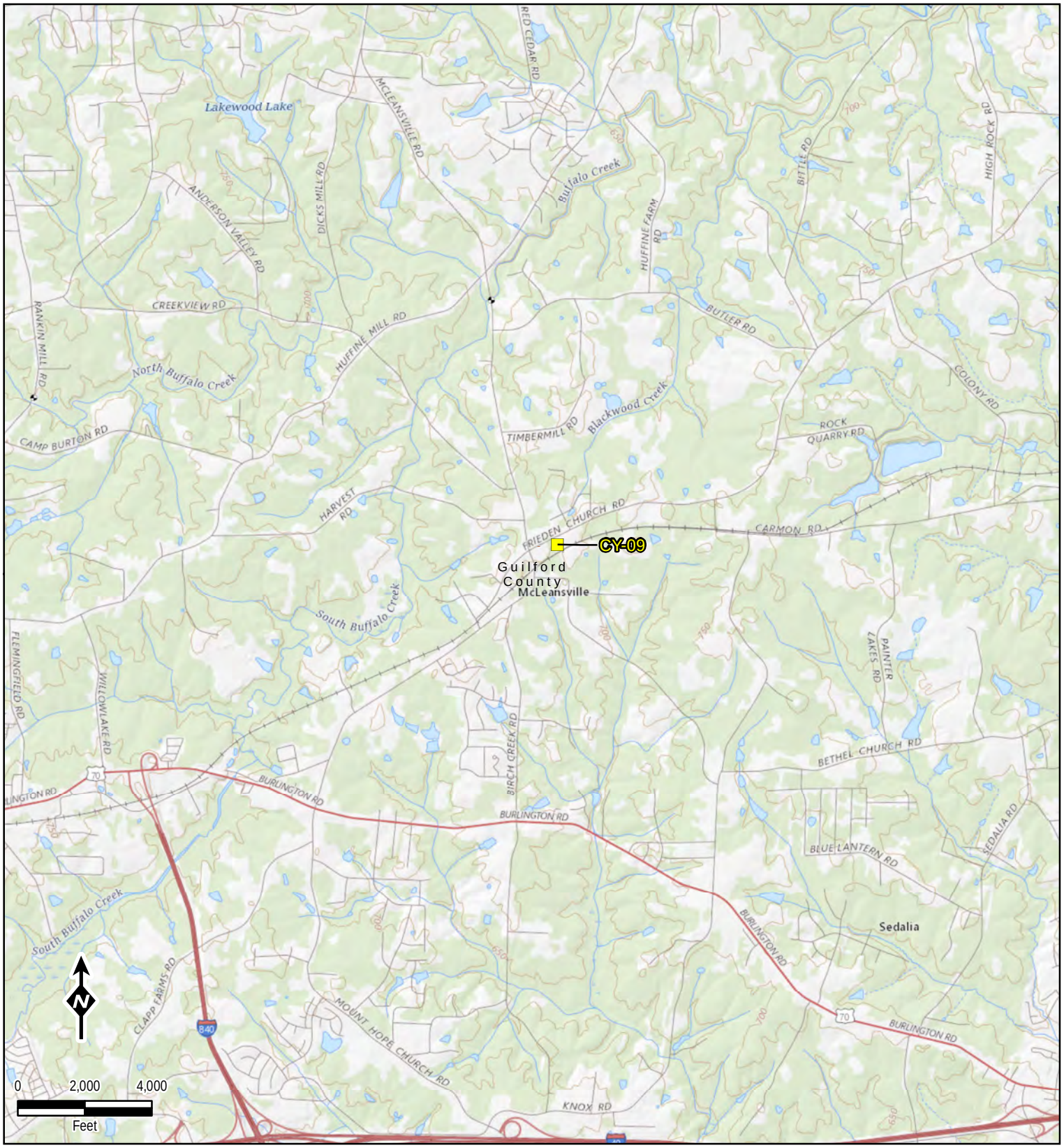


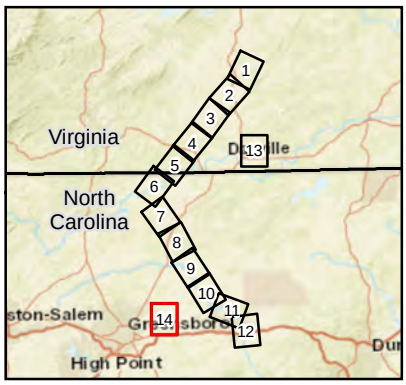


**Legend**

- Mileposts
- Compressor Station
- Contractor Yard
- Meter Station
- Valve Site
- Permanent Access Road
- Temporary Access Road
- County Boundary
- State Boundary

**Data Sources:** ESRI, USGS, TRC, EQT

1 inch = 4,000 feet
When Printed 8.5x11

Mountain Valley Pipeline, LLC

**Appendix 1-B**

USGS Quadrangle Excerpts

Sheet 14 of 14

TRC
600 Willowbrook Ln
West Chester, PA 19382

October 2018

S:\1-PROJECTS\NEXTERA\300423_MVP_Southgate\6-MXD\Resource_Reports\RR1\Appendix_1B_USGS_Excerpts_OCT_2018.mxd

# MVP Southgate Project

# Docket No. CP19-XX-000

# Resource Report 1

# Appendix 1-C1

# Typical Drawings

# MVP SOUTHGATE PROJECT

## PROPOSED H-650 PIPELINE
## ENGINEERING SERVICES DESIGN; JOB NUMBERS 300423
## CONSTRUCTION TYPICAL DRAWINGS

| DRAWING NO. | DRAWING TITLE | REV. |
|---|---|---|
| CONST-TYP | MOUNTAIN VALLEY PIPELINE PROJECT PROPOSED H650 PIPELINE CONSTRUCTION TYPICALS | P1 |
| MVP-3 | MAINLINE CONSTRUCTION NON-PARALLEL CONSTRUCTION NO TOP SOIL SEGREGATION 100' R.O.W. | P |
| MVP-5 | MAINLINE CONSTRUCTION ROAD CROSSING BORED 100' R.O.W. | P |
| MVP-7 | MAINLINE CONSTRUCTION RAILROAD CROSSING BORED 100' R.O.W. | P |
| MVP-9 | MAINLINE CONSTRUCTION WATERBODY CROSSING OPEN CUT - FLUME | P |
| MVP-10 | MAINLINE CONSTRUCTION TYPICAL DIRECTIONAL DRILL ENTRY SITE PLAN & PROFILE | P |
| MVP-11 | MAINLINE CONSTRUCTION TYPICAL DIRECTIONAL DRILL EXIT SITE PLAN & PROFILE | P |
| MVP-12 | MAINLINE CONSTRUCTION HORIZONTAL DIRECTIONAL DRILL (HDD) | P |
| MVP-13 | MAINLINE CONSTRUCTION PARALLEL TO POWER LINES 100' R.O.W. | P |
| MVP-17 | MAINLINE CONSTRUCTION PARALLEL TO FOREIGN LINES 100' R.O.W. | P |
| MVP-25 | MAINLINE CONSTRUCTION ROAD CROSSING BORED WITH PARALLEL PIPELINES 100' R.O.W. | P |
| MVP-27 | MAINLINE CONSTRUCTION RAILROAD CROSSING BORED WITH PARALLEL PIPELINES 100' R.O.W. | P |
| MVP-29 | MAINLINE CONSTRUCTION WATERBODY CROSSING WITH PARALLEL PIPELINES OPEN CUT - FLUME | P |
| MVP-SG-17 | SLOPE BREAKER/RIGHT-OF-WAY DIVERSION/WATERBAR | P1 |
| MVP-SG-17.1 | SLOPE BREAKER/RIGHT-OF-WAY DIVERSION/WATERBAR | P1 |
| MVP-SG-17.2 | SLOPE BREAKER/RIGHT-OF-WAY DIVERSION/WATERBAR | P1 |
| MVP-SG-17.3 | WATERBAR END TREATMENT PERPENDICULAR TO SLOPE EXAMPLE | P1 |
| MVP-SG-17.4 | WATERBAR END TREATMENT CROSS SLOPE EXAMPLE | P1 |
| MVP-SG-17.7 | WATERBAR END TREATMENT DETAIL | P1 |
| MVP-SG-20 | TYPICAL TRENCH BREAKER REQUIREMENTS | P1 |
| MVP-SG-24 | SIDEHILL LOW-POINTS DRAIN TYPICAL | P1 |
| MVP-SG-24 | SIDEHILL LOW-POINTS DRAIN TYPICAL | P1 |
| MVP-SG-31 | MAINLINE CONSTRUCTION STEEP HILL PARALLEL CONSTRUCTION NO TOP SOIL SEGREGATION | P1 |

| DRAWING NO. | DRAWING TITLE | REV. |
|---|---|---|
| MVP-SG-32 | MAINLINE CONSTRUCTION STEEP HILL STOVE PIPE CONSTRUCTION NO TOP SOIL SEGREGATION | P1 |
| MVP-SG-35 | TRENCH BREAKER DAYLIGHT DRAIN | P1 |
| MVP-SG-36A | CUTOFF DRAIN-SIDEHILL | P1 |
| MVP-SG-36B | CUTOFF DRAIN-SIDEHILL | P1 |
| MVP-SG-37 | CUTOFF DRAIN-PLANAR | P1 |
| MVP-SG-38A | TRANSVERSE TRENCH DRAIN | P1 |
| MVP-SG-38B | TRANSVERSE TRENCH DRAIN | P1 |
| MVP-SG-39 | ROCK LINED SWALE | P1 |
| MVP-SG-40 | RIP-RAP NATURAL DRAIN | P1 |
| MVP-SG-41 | RIP-RAP SLOPE BREAKERS | P1 |
| MVP-SG-42A | GEOGRID-SIDEHILL | P1 |
| MVP-SG-42B | GEOGRID-PLANAR | P1 |
| MVP-SG-42C | GEOGRID-NOTES | P1 |
| MVP-SG-43A | TRENCH BREAKER PASS-THROUGH DRAIN | P1 |
| MVP-SG-43B | TRENCH BREAKER PASS-THROUGH DRAIN | P1 |
| MVP-SG-44A | SLIDE MITIGATION HIGHWALL REVETMENT SIDE VIEW | P1 |
| MVP-SG-44B | SLIDE MITIGATION HIGHWALL REVETMENT FRONT VIEW AND DRAIN DETAIL | P1 |
| MVP-SG-45 | STEEP SLOPE REVETMENT | P1 |
| MVP-SG-46 | BROW DITCH DETAIL | P1 |
| MVP-SG-47 | TIMBER MAT AND PIPE BUNDLE TEMPORARY STREAM CROSSING | P1 |
| MVP-SG-48 | TIMBER MAT AND JERSEY BARRIER TEMPORARY STREAM CROSSING | P1 |
| MVP-SG-49 | MOBILE BRIDGE | P1 |
| MVP-SG-50 | MODULAR TEMPORARY BAILEY BRIDGE | P1 |
| MVP-SG-53 | WETLAND CROSSING TYPICAL FOR USACE NORFOLK (VA) DISTRICT | P1 |

**ISSUED FOR FERC**
11/02/18

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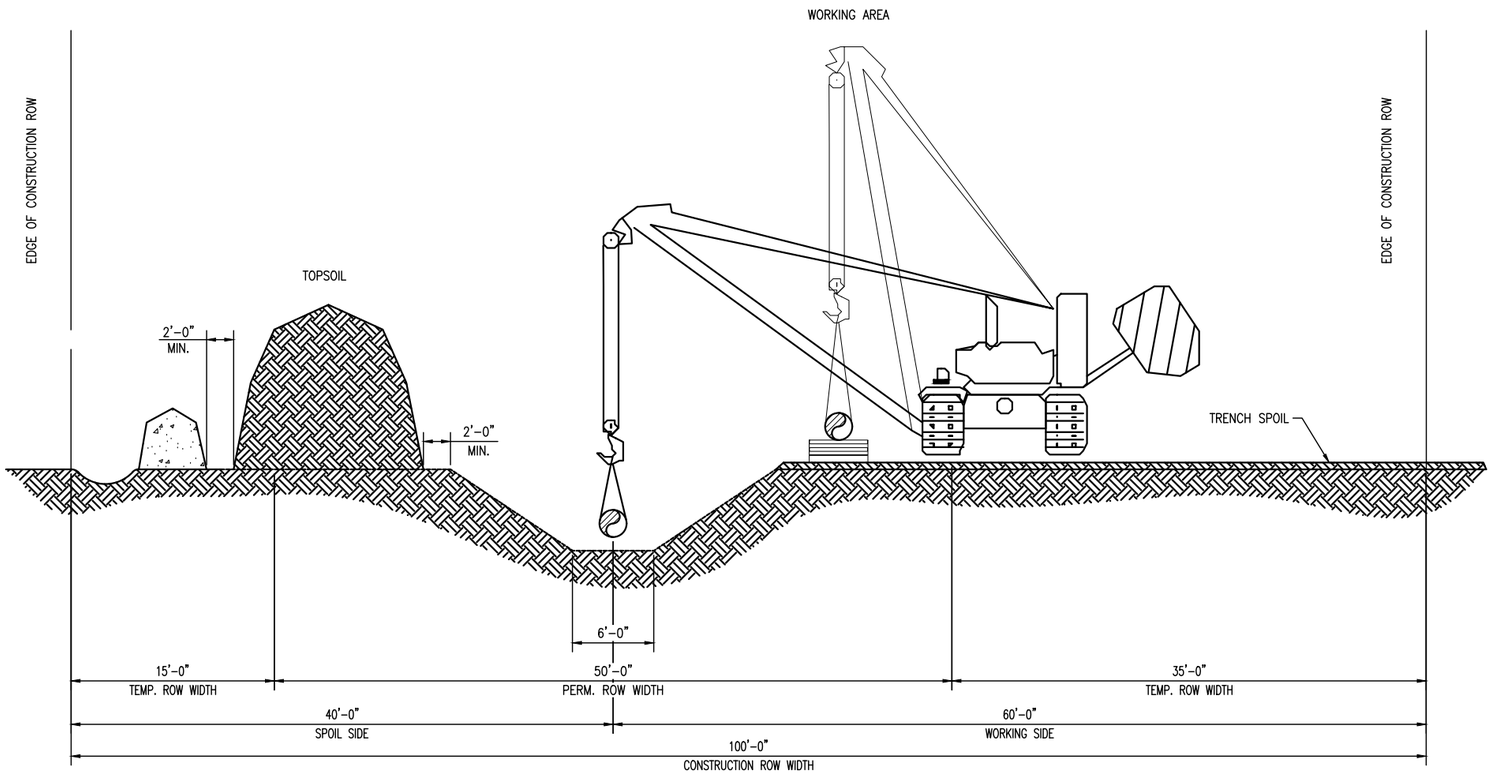
PROJECT ID 300423
DRAWING SCALE NTS

DRAWING TITLE:
MOUNTAIN VALLEY PIPELINE
SOUTHGATE PROJECT
PROPOSED H-650 PIPELINE
CONSTRUCTION TYPICALS

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | CONST-TYP | - | 1 | P1 |




NOTE:
1. DRAWING DEPICTS SOIL SWELL OF 20% AND ROCK SWELL OF 40%.
2. DRAWING ASSUMES TYPE "C" SOIL

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.

| REFERENCE DRAWINGS | | NO. | DATE | REVISION | BY | CHK | APPD | NO. | DATE | REVISION | BY | CHK | APPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DRAWING NUMBER | DRAWING TITLE | P | 05/07/2018 | PRELIMINARY FOR REVIEW | JIL | AAL | NFF | – | | | | | |
| | | P1 | 11/02/2018 | ISSUED FOR FERC | MEM | AAL | NFF | – | | | | | |
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TO THE BEST OF MY KNOWLEDGE, ALL COMPONENTS OF THIS DRAWING ARE DESIGNED IN ACCORDANCE WITH APPLICABLE GUIDELINES AND SPECIFICATIONS

ALINA LAWRENCE — MECHANICAL DESIGN ENGINEER — 06/11/18 — DATE

ELECTRICAL DESIGN ENGINEER — DATE

NOTE: ANY CHANGES TO THE DESIGN SHOWN ON THIS DRAWING MUST BE APPROVED BY THE DESIGN ENGINEER.

Mountain Valley PIPELINE

DESIGN ENGINEERING

PROJECT ID: – – – –

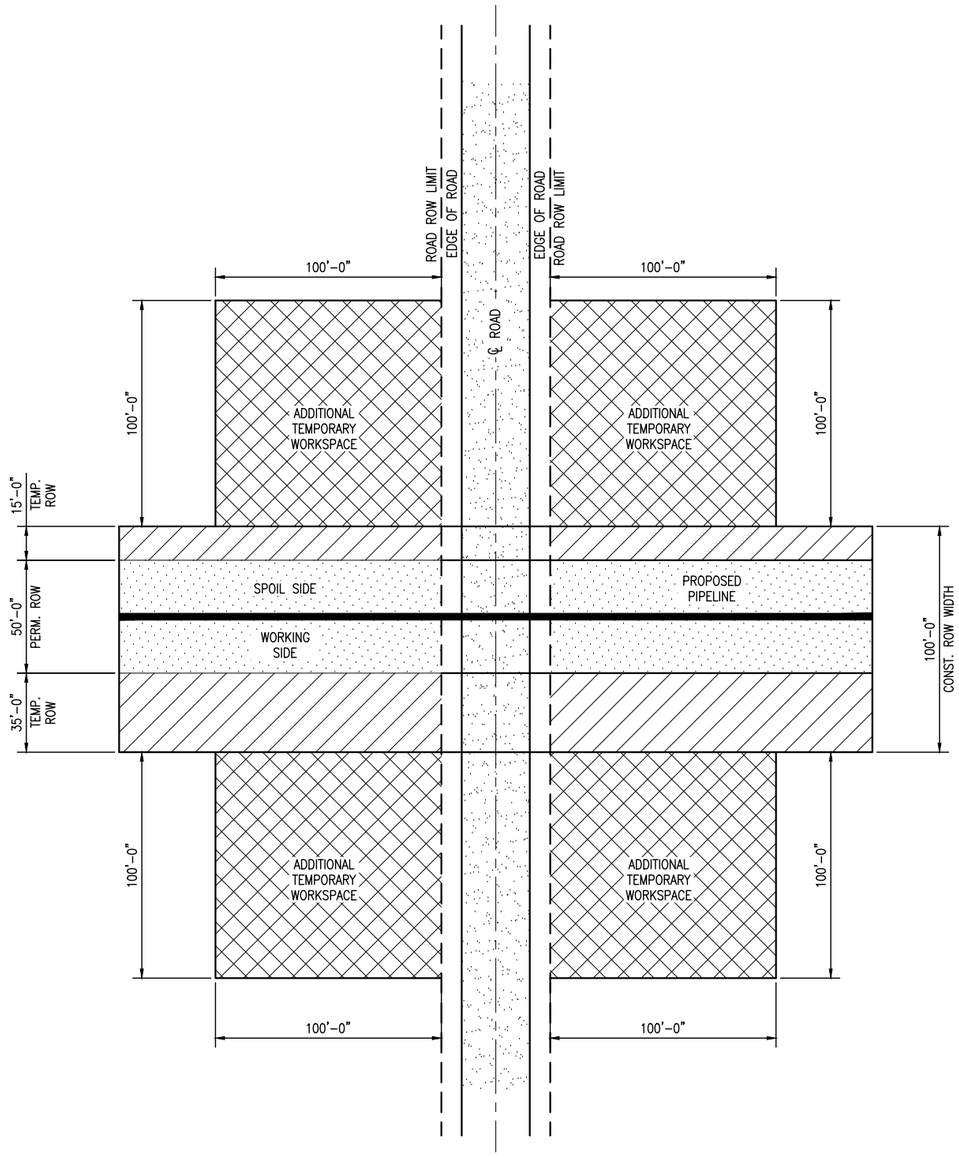
DRAWING SCALE: 3/16" = 1'-0"

DRAWING TITLE:
MAINLINE CONSTRUCTION
NON-PARALLEL CONSTRUCTION
WITH TOP SOIL SEGREGATION
100' RIGHT OF WAY

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H-650 | 3 | 1 | P1 |

Plotted by: McCarthy, Matthew (Contractor) on: October 15, 2018 - 10:29 AM

File Path: C:\Vault Working\Systems\MVP\SouthGate\Construction Typicals\MVP-3.dwg

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DRAWING ASSUMES TYPE "C" SOIL

| REFERENCE DRAWINGS | | NO. | DATE | REVISION | BY | CHK | APPD | NO. | DATE | REVISION | BY | CHK | APPD |
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| DRAWING NUMBER | DRAWING TITLE | P | 05/07/2018 | PRELIMINARY FOR REVIEW | JIL | AAL | NFF | – | | | | | |
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ALINA LAWRENCE — MECHANICAL DESIGN ENGINEER — 06/11/18 — DATE

ELECTRICAL DESIGN ENGINEER — DATE

NOTE: ANY CHANGES TO THE DESIGN SHOWN ON THIS DRAWING MUST BE APPROVED BY THE DESIGN ENGINEER.

Mountain Valley PIPELINE, LLC

DESIGN ENGINEERING

PROJECT ID: – – – –

DRAWING SCALE: 1/32" = 1'–0"

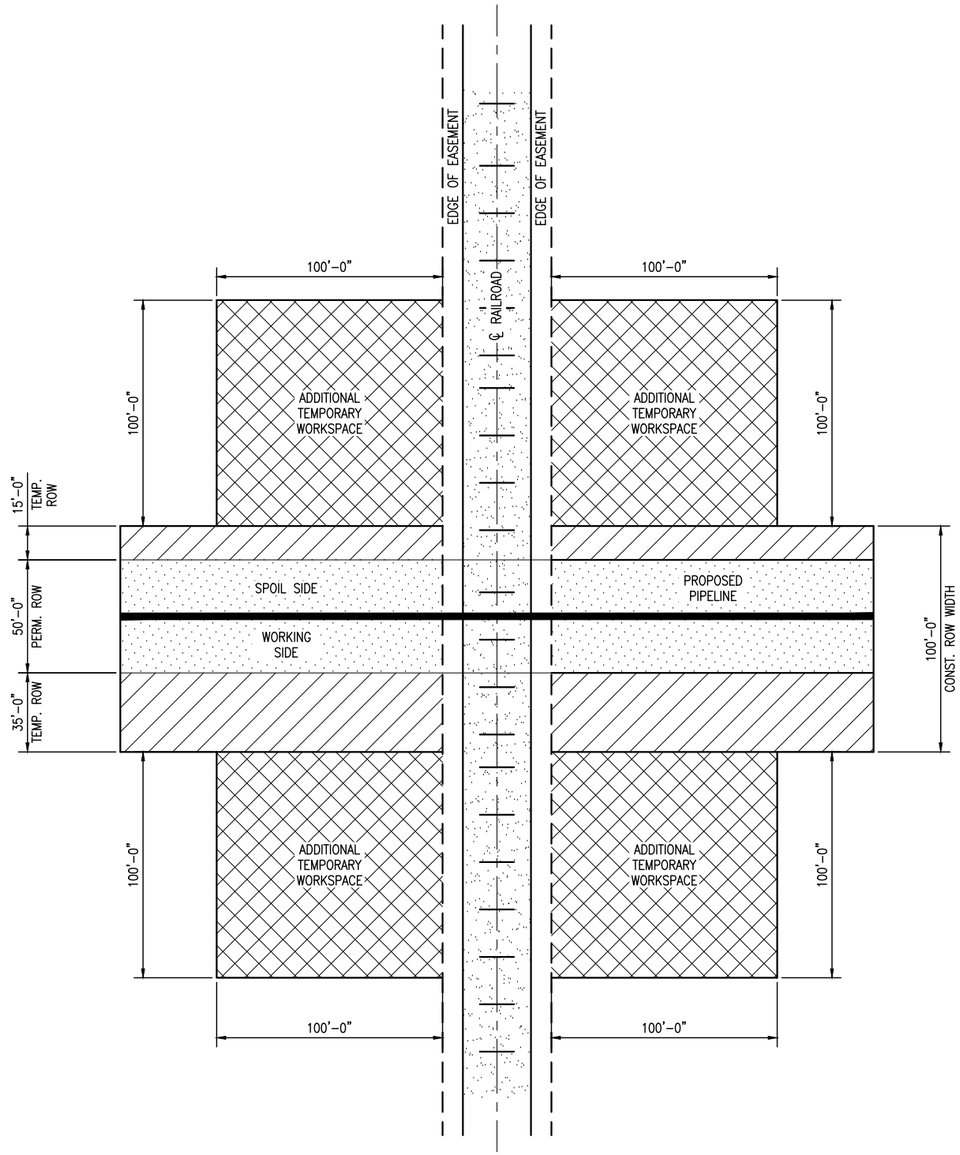
DRAWING TITLE:

# MAINLINE CONSTRUCTION ROAD CROSSING BORED 100' RIGHT OF WAY

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H–650 | 5 | 1 | P1 |

Plotted by: McCarthy, Matthew (Contractor) on October 15, 2018 - 10:29 AM

File Path: C:\Vault Working\Systems\MVP\SouthGate\Construction Typicals\MVP-5.dwg




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.

DRAWING ASSUMES TYPE "C" SOIL

| REFERENCE DRAWINGS | | NO. | DATE | REVISION | BY | CHK | APPD | NO. | DATE | REVISION | BY | CHK | APPD |
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| DRAWING NUMBER | DRAWING TITLE | P | 05/07/2018 | PRELIMINARY FOR REVIEW | JIL | AAL | NFF | – | | | | | |
| | | P1 | 11/02/2018 | ISSUED FOR FERC | MEM | AAL | NFF | – | | | | | |
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ALINA LAWRENCE — MECHANICAL DESIGN ENGINEER — 06/11/18 — DATE

ELECTRICAL DESIGN ENGINEER — DATE

NOTE: ANY CHANGES TO THE DESIGN SHOWN ON THIS DRAWING MUST BE APPROVED BY THE DESIGN ENGINEER.

Mountain Valley PIPELINE, LLC

DESIGN ENGINEERING

PROJECT ID: – – – –

DRAWING SCALE: 1/32" = 1'–0"

DRAWING TITLE:

# MAINLINE CONSTRUCTION RAILROAD CROSSING BORED 100' RIGHT OF WAY

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H–650 | 7 | 1 | P1 |

Plotted by: McCarthy, Matthew (Contractor) on October 15, 2018 - 10:29 AM

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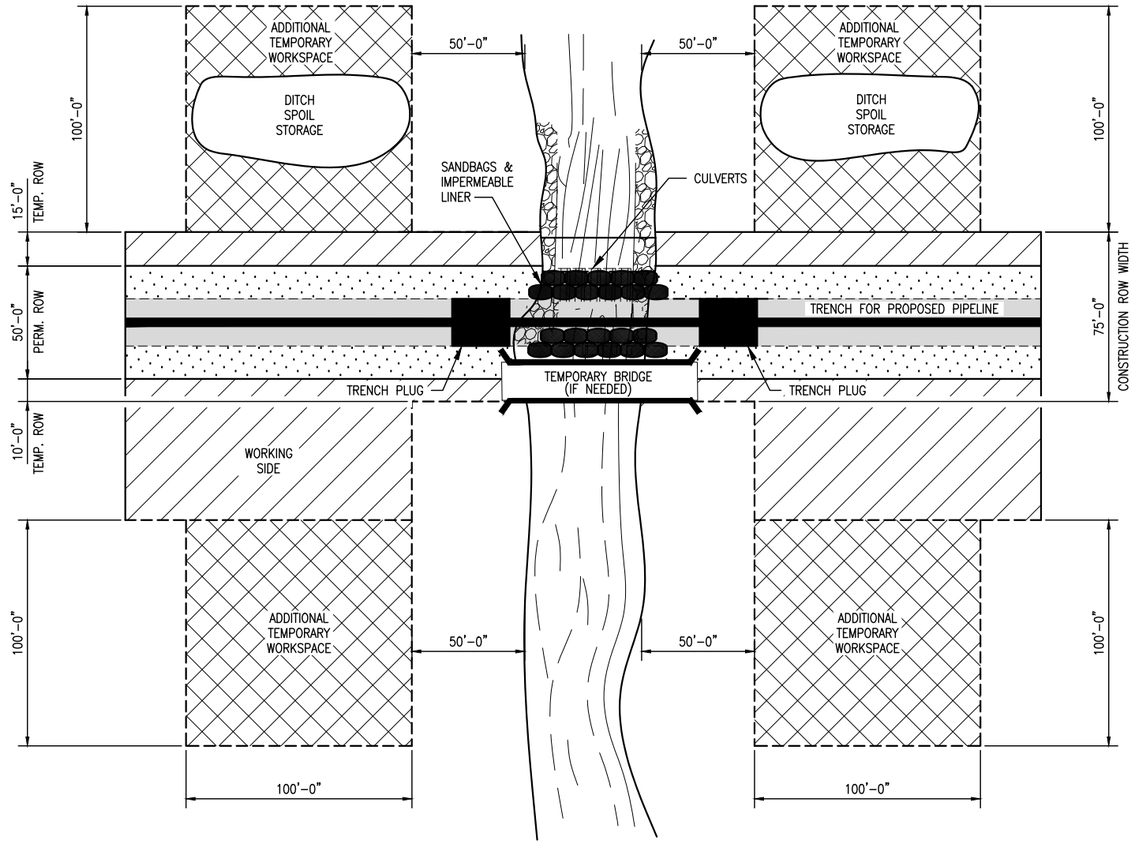


THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWING ASSUMES TYPE "C" SOIL

| REFERENCE DRAWINGS | | NO. | DATE | REVISION | BY | CHK | APPD | NO. | DATE | REVISION | BY | CHK | APPD |
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ALINA LAWRENCE — MECHANICAL DESIGN ENGINEER — 06/11/18 — DATE

ELECTRICAL DESIGN ENGINEER — DATE

NOTE: ANY CHANGES TO THE DESIGN SHOWN ON THIS DRAWING MUST BE APPROVED BY THE DESIGN ENGINEER.

Mountain Valley PIPELINE, LLC

DESIGN ENGINEERING

PROJECT ID ----

DRAWING SCALE: 1/8" = 1'–0"

DRAWING TITLE:

# MAINLINE CONSTRUCTION WATERBODY CROSSING OPEN CUT – FLUME

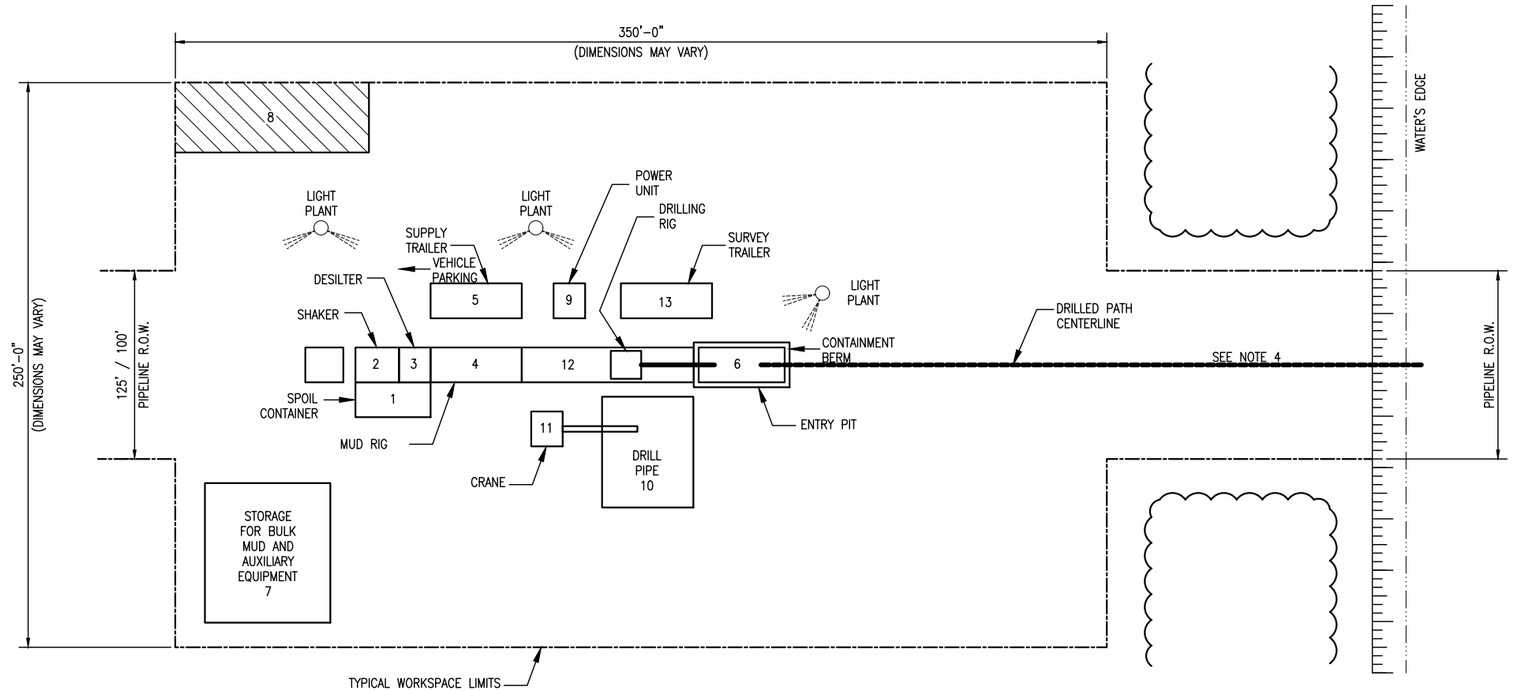
| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H–650 | 9 | 1 | P1 |

Plotted by: McCarthy, Matthew (Contractor) on October 15, 2018 - 10:29 AM

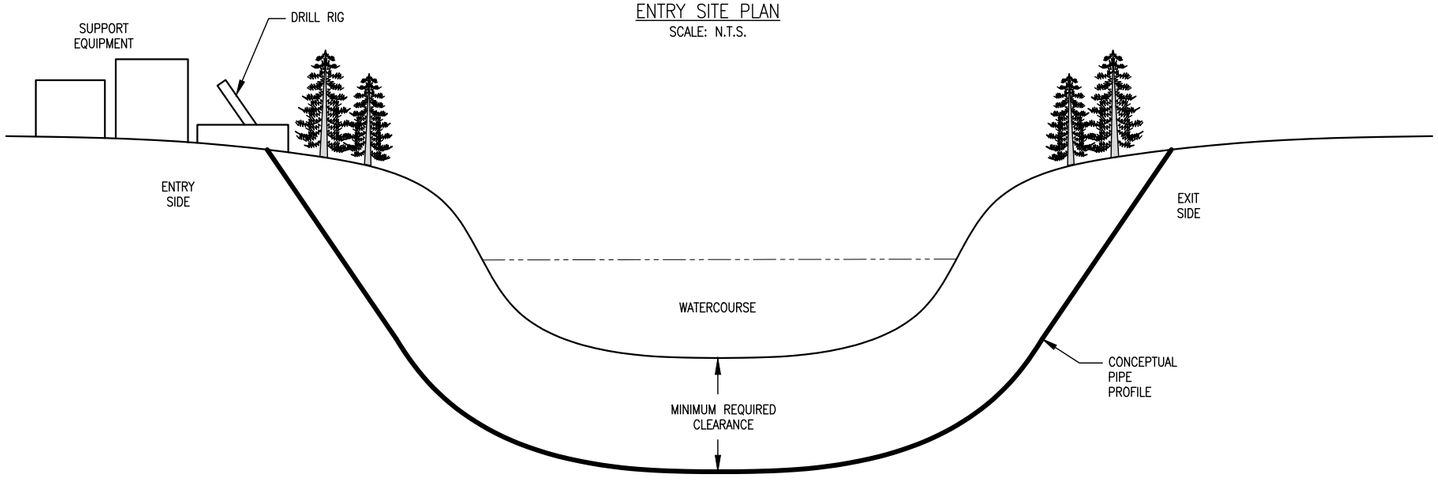
File Path: C:\Vault Working\Systems\MVP\SouthGate\Construction Typicals\MVP-9.dwg

EQUIPMENT:

1. SPOIL CONTAINER: 8' X 20'
2. SHAKER: 8' X 12'
3. DESILTER: 8' X 8'
4. MUD RIG: 8' X 25'
5. SUPPLY TRAILER: 8' X 25'
6. ENTRY PIT: 8' X 20'
7. STORAGE: 30' X 30'
8. VEHICLE PARKING: 15' X 50'
9. POWER UNIT: 8' X 10'
10. DRILL PIPE: 30' X 30'
11. CRANE: 8' X 8'
12. DRILLING RIG: 8' X 45'
13. SURVEY TRAILER: 8' X 25'




ENTRY SITE PLAN
SCALE: N.T.S.




PROFILE
SCALE: N.T.S.

NOTES:

1. EQUIPMENT ORIENTATION MAY VARY DEPENDING ON CONTRACTOR OR SITE CONDITIONS.
2. EQUIPMENT TO BE SUPPORTED ON THE GROUND SURFACE OR TIMBER MATS AS CONDITIONS DICTATE.
3. SILT FENCE, BERMS AND/OR STRAW BALE BARRIER TO BE USED AS REQUIRED TO PREVENT IMPACTS FROM OCCURRING OUTSIDE OF PROJECT LIMITS.
4. HAND CLEARED ACCESS PATH WILL BE USED TO OBTAIN WATER FROM SOURCE WHERE PERMITTED.
5. ENTRANCE & EXIT ANGLES VARY BY LOCATION. REFER TO BORE PROFILE FOR DETAILED INFORMATION.

GENERAL NOTES:

1. PIPE DEPTHS MAY VARY.

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.

DRAWING ASSUMES TYPE "C" SOIL

| REFERENCE DRAWINGS | | NO. | DATE | REVISION | BY | CHK | APPD | NO. | DATE | REVISION | BY | CHK | APPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DRAWING NUMBER | DRAWING TITLE | P | 05/07/2018 | PRELIMINARY FOR REVIEW | JIL | AAL | NFF | – | | | | | |
| | | P1 | 11/02/2018 | ISSUED FOR FERC | MEM | AAL | NFF | – | | | | | |
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ALINA LAWRENCE — MECHANICAL DESIGN ENGINEER — 06/11/18 — DATE

ELECTRICAL DESIGN ENGINEER — DATE

NOTE: ANY CHANGES TO THE DESIGN SHOWN ON THIS DRAWING MUST BE APPROVED BY THE DESIGN ENGINEER.

Mountain Valley PIPELINE

DESIGN ENGINEERING

PROJECT ID
---

DRAWING SCALE:
NTS

DRAWING TITLE:
MAINLINE CONSTRUCTION
TYPICAL DIRECTIONAL DRILL
ENTRY SITE PLAN & PROFILE

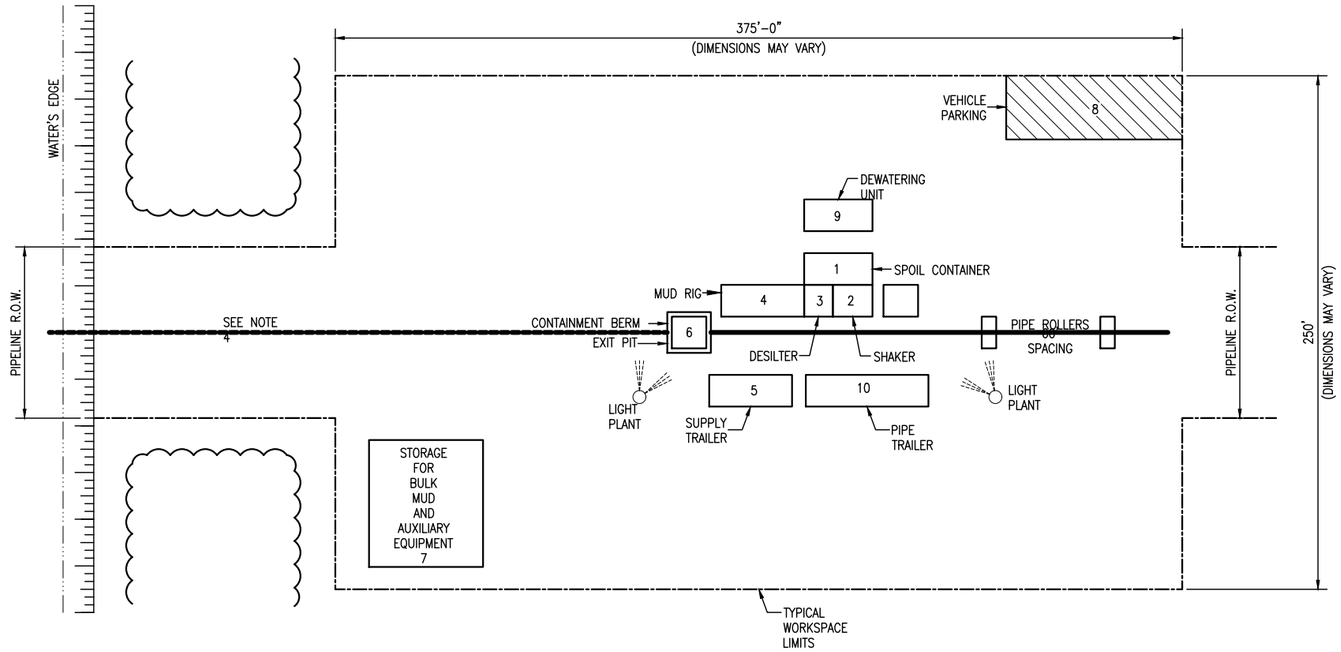
| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H-650 | 10 | 1 | P1 |

Plotted by: McCarthy, Matthew (Contractor) on October 15, 2018 - 10:29 AM

File Path: C:\Vault Working\Systems\MVP\SouthGate\Construction Typicals\MVP-10.dwg

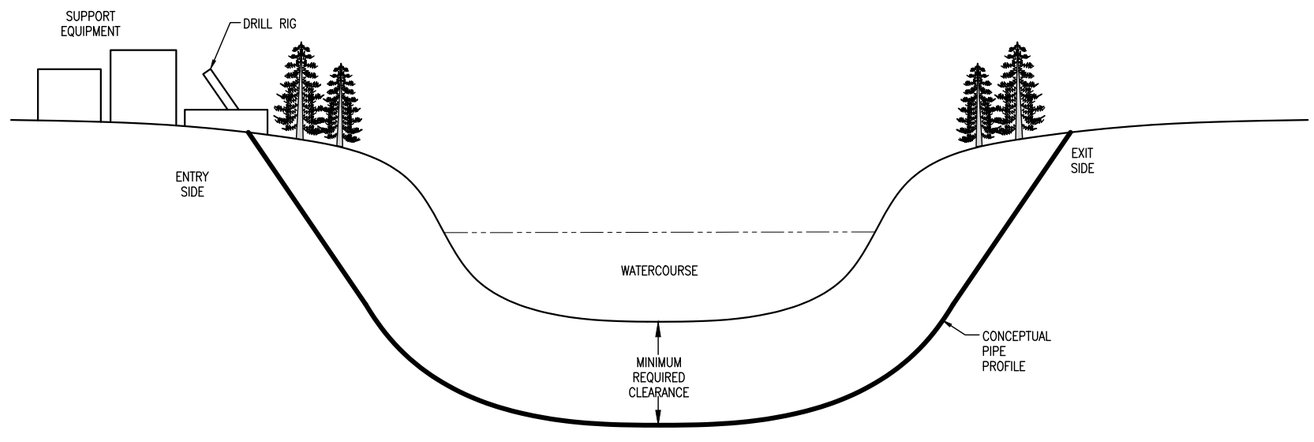
EQUIPMENT:

1. SPOIL CONTAINER: 8' X 20'
2. SHAKER: 8' X 12'
3. DESILTER: 8' X 8'
4. MUD RIG: 8' X 25'
5. SUPPLY TRAILER: 8' X 25'
6. EXIT PIT: 8' X 10'
7. STORAGE: 30' X 30'
8. VEHICLE PARKING: 15' X 50'
9. DEWATERING UNIT: 8' X 20'
10. PIPE TRAILER: 8' X 40'




EXIT SITE PLAN

SCALE: N.T.S.




PROFILE

SCALE: N.T.S.

NOTES:

1. EQUIPMENT ORIENTATION MAY VARY DEPENDING ON CONTRACTOR OR SITE CONDITIONS.
2. EQUIPMENT TO BE SUPPORTED ON THE GROUND SURFACE OR TIMBER MATS AS CONDITIONS DICTATE.
3. SILT FENCE, BERMS AND/OR STRAW BALE BARRIER TO BE USED AS REQUIRED TO PREVENT IMPACTS FROM OCCURRING OUTSIDE OF PROJECT LIMITS.
4. HAND CLEARED ACCESS PATH WILL BE USED TO OBTAIN WATER FROM SOURCE WHERE PERMITTED.

GENERAL NOTES:

1. PIPE DEPTHS MAY VARY.

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.

DRAWING ASSUMES TYPE "C" SOIL

| REFERENCE DRAWINGS | | NO. | DATE | REVISION | BY | CHK | APPD |
|---|---|---|---|---|---|---|---|
| DRAWING NUMBER | DRAWING TITLE | P | 05/07/2018 | PRELIMINARY FOR REVIEW | JIL | AAL | NFF |
| | | P1 | 11/02/2018 | ISSUED FOR FERC | MEM | AAL | NFF |

TO THE BEST OF MY KNOWLEDGE, ALL COMPONENTS OF THIS DRAWING ARE DESIGNED IN ACCORDANCE WITH APPLICABLE GUIDELINES AND SPECIFICATIONS

ALINA LAWRENCE — MECHANICAL DESIGN ENGINEER — 06/11/18 — DATE

ELECTRICAL DESIGN ENGINEER — DATE

NOTE: ANY CHANGES TO THE DESIGN SHOWN ON THIS DRAWING MUST BE APPROVED BY THE DESIGN ENGINEER.

Mountain Valley PIPELINE

DESIGN ENGINEERING

PROJECT ID ----

DRAWING SCALE: 1/32" = 1'-0"

DRAWING TITLE:

MAINLINE CONSTRUCTION
TYPICAL DIRECTIONAL DRILL
EXIT SITE PLAN & PROFILE

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H-650 | 11 | 1 | P1 |

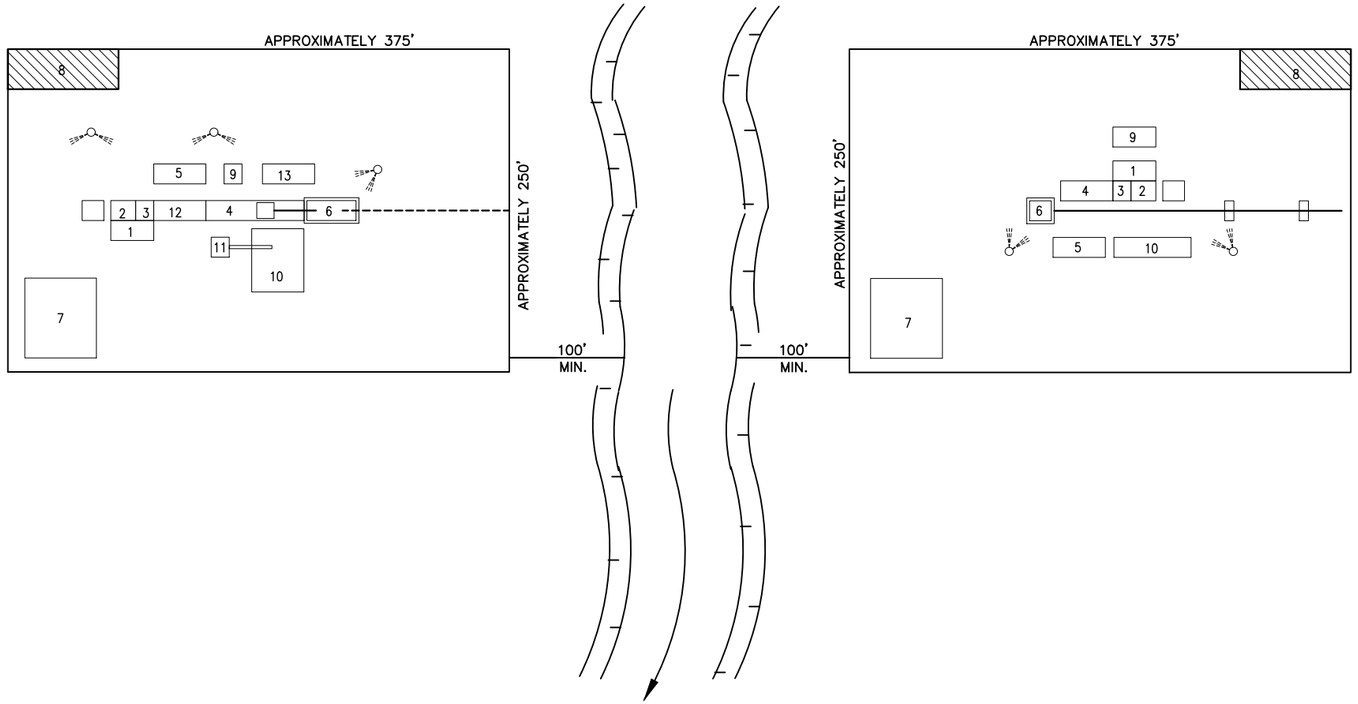
Plotted by: McCarthy, Matthew (Contractor) on October 15, 2018 - 10:29 AM

File Path: C:\Vault Working\Systems\MVP\SouthGate\Construction Typicals\MVP-11.dwg

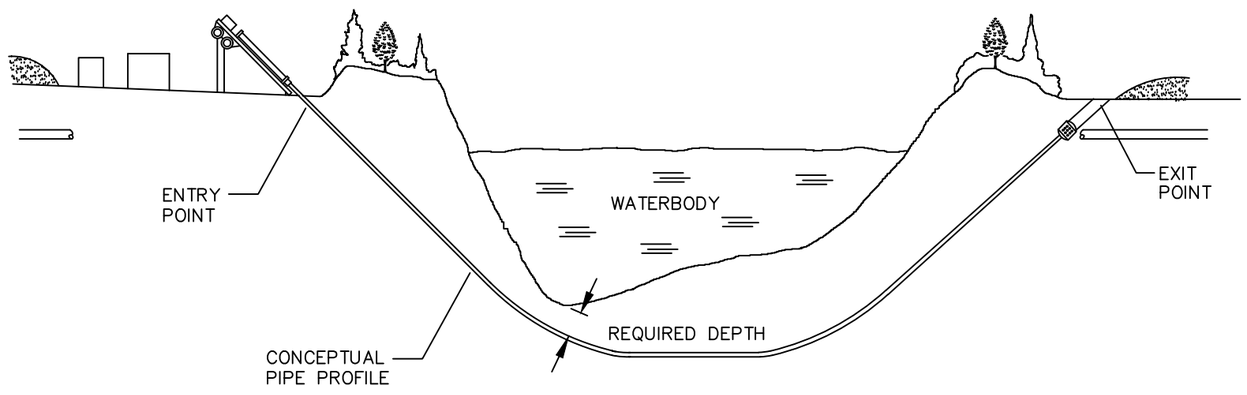
EQUIPMENT:

1. SPOIL CONTAINER: 8' X 20'
2. SHAKER: 8' X 12'
3. DESILTER: 8' X 8'
4. MUD RIG: 8' X 25'
5. SUPPLY TRAILER: 8' X 25'
6. EXIT PIT: 8' X 10'
7. STORAGE: 30' X 30'
8. VEHICLE PARKING: 15' X 50'
9. DEWATERING UNIT: 8' X 20'
10. PIPE TRAILER: 8' X 40'

# HORIZONTAL DIRECTIONAL DRILL METHOD 7




PLAN




PROFILE

## NOTES:

1. SET UP DRILLING EQUIPMENT A MINIMUM OF 100 FEET FROM THE EDGE OF THE WATERCOURSE. DO NOT CLEAR OR GRADE WITHIN THE 100 FOOT ZONE.
2. ENSURE THAT ONLY BENTONITE BASED DRILLING MUD IS USED. DO NOT ALLOW THE USE OF ANY ADDITIVES TO THE DRILLING MUD WITHOUT THE APPROVAL OF COMPANY INSPECTOR.
3. INSTALL SUITABLE DRILLING MUD TANKS OR SUMPS TO PREVENT CONTAMINATION OF WATERCOURSE.
4. INSTALL BERMS DOWNSLOPE FROM THE DRILL ENTRY AND ANTICIPATED EXIT POINTS TO CONTAIN ANY RELEASE OF DRILLING MUD.
5. DISPOSE OF DRILLING MUD IN ACCORDANCE WITH THE APPROPRIATE REGULATORY AUTHORITY REQUIREMENTS.
6. A SEDIMENT BARRIER SHALL BE PLACED ON THE DOWN SLOPE SIDE OF RIGHT-OF-WAY, PER THE PROJECT NARRATIVE.

NOTES:

1. EQUIPMENT ORIENTATION MAY VARY DEPENDING ON CONTRACTOR OR SITE CONDITIONS.
2. EQUIPMENT TO BE SUPPORTED ON THE GROUND SURFACE OR TIMBER MATS AS CONDITIONS DICTATE.
3. SILT FENCE, BERMS AND/OR STRAW BALE BARRIER TO BE USED AS REQUIRED TO PREVENT IMPACTS FROM OCCURRING OUTSIDE OF PROJECT LIMITS.
4. HAND CLEARED ACCESS PATH WILL BE USED TO OBTAIN WATER FROM SOURCE WHERE PERMITTED.
5. ENTRANCE & EXIT ANGLES VARY BY LOCATION. REFER TO BORE PROFILE FOR DETAILED INFORMATION.

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.

DRAWING ASSUMES TYPE "C" SOIL

| REFERENCE DRAWINGS | | NO. | DATE | REVISION | BY | CHK | APPD | NO. | DATE | REVISION | BY | CHK | APPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DRAWING NUMBER | DRAWING TITLE | P | 05/07/2018 | PRELIMINARY FOR REVIEW | JIL | AAL | NFF | – | | | | | |
| | | P1 | 11/02/2018 | ISSUED FOR FERC | MEW | AAL | NFF | – | | | | | |
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TO THE BEST OF MY KNOWLEDGE, ALL COMPONENTS OF THIS DRAWING ARE DESIGNED IN ACCORDANCE WITH APPLICABLE GUIDELINES AND SPECIFICATIONS

ALINA LAWRENCE — MECHANICAL DESIGN ENGINEER — 06/11/18 — DATE

ELECTRICAL DESIGN ENGINEER — DATE

NOTE: ANY CHANGES TO THE DESIGN SHOWN ON THIS DRAWING MUST BE APPROVED BY THE DESIGN ENGINEER.

Mountain Valley PIPELINE, LLC

DESIGN ENGINEERING

PROJECT ID ----

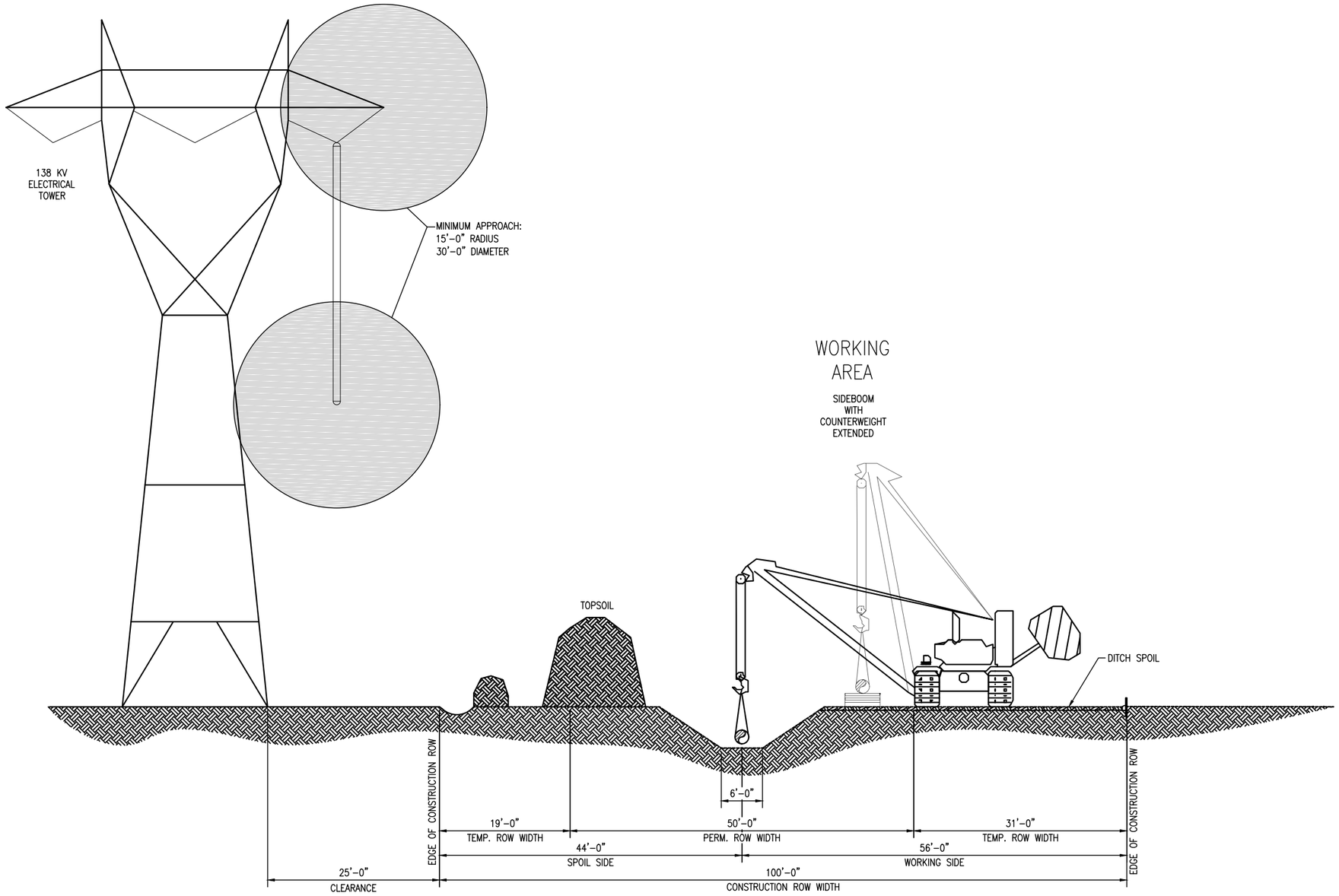
DRAWING SCALE: 1/64" = 1'-0"

DRAWING TITLE: MAINLINE CONSTRUCTION HORIZONTAL DIRECTIONAL DRILL (HDD)

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H-650 | 12 | 1 | P1 |

Plotted by: McCarthy, Matthew (Contractor) on: October 15, 2018 - 10:29 AM

File Path: C:\Vault Working\Systems\MVP\SouthGate\Construction Typicals\MVP-12.dwg

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DRAWING ASSUMES TYPE "C" SOIL

| REFERENCE DRAWINGS | | NO. | DATE | REVISION | BY | CHK | APPD | NO. | DATE | REVISION | BY | CHK | APPD |
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ALINA LAWRENCE — MECHANICAL DESIGN ENGINEER — 06/11/18 — DATE

ELECTRICAL DESIGN ENGINEER — DATE

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Mountain Valley PIPELINE, LLC

DESIGN ENGINEERING

PROJECT ID

– – – –

DRAWING SCALE: 1/8" = 1'–0"

DRAWING TITLE:

# MAINLINE CONSTRUCTION PARALLEL TO POWER LINES 100' RIGHT OF WAY

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H–650 | 13 | 1 | P1 |

Plotted by: McCarthy, Matthew (Contractor) on: October 15, 2018 - 10:29 AM

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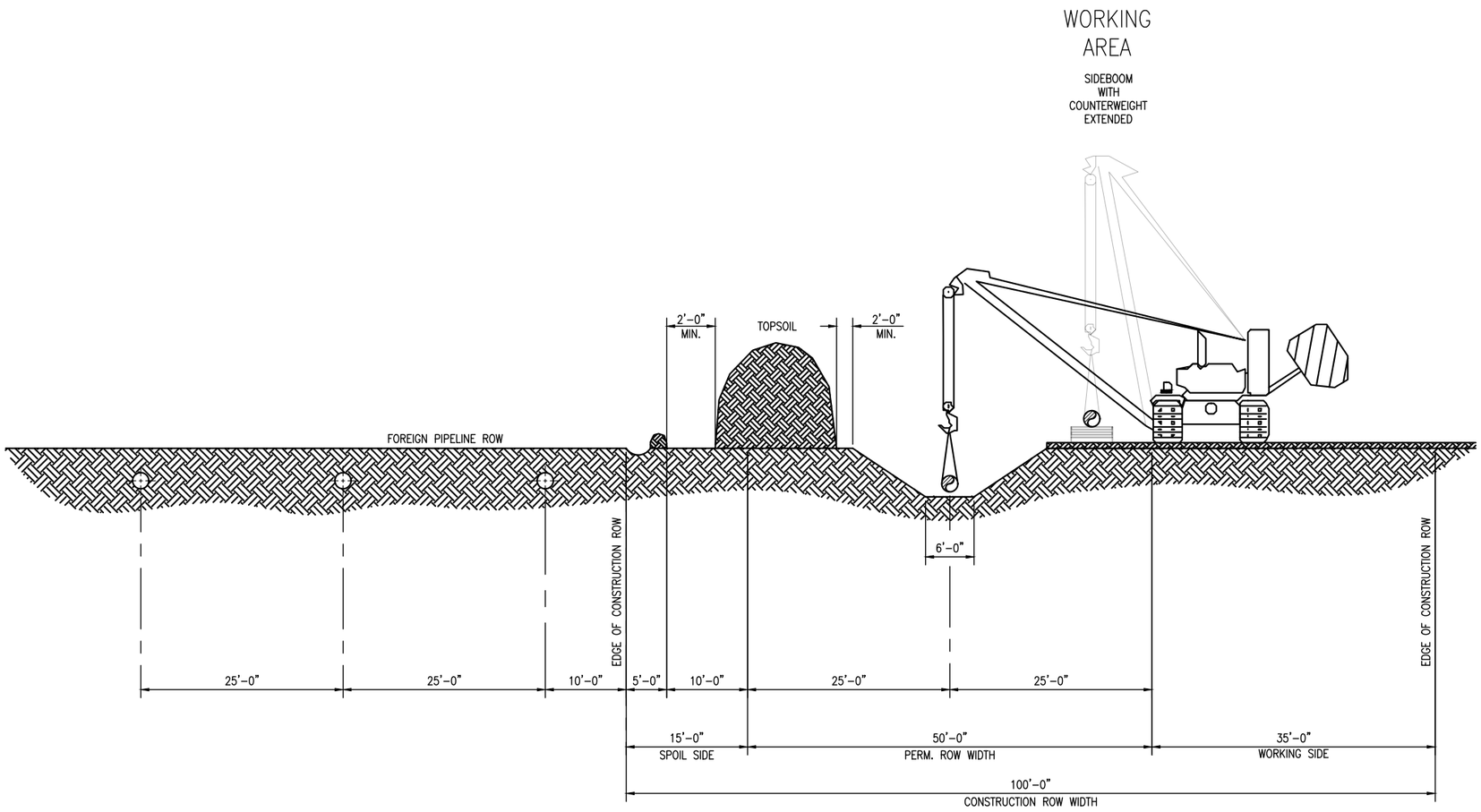


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DRAWING ASSUMES TYPE "C" SOIL

| REFERENCE DRAWINGS | | NO. | DATE | REVISION | BY | CHK | APPD |
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| DRAWING NUMBER | DRAWING TITLE | P | 05/07/2018 | PRELIMINARY FOR REVIEW | JIL | AAL | NFF |
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ALINA LAWRENCE — MECHANICAL DESIGN ENGINEER — 06/11/18 — DATE

ELECTRICAL DESIGN ENGINEER — DATE

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Mountain Valley PIPELINE

DESIGN ENGINEERING

PROJECT ID: – – – –

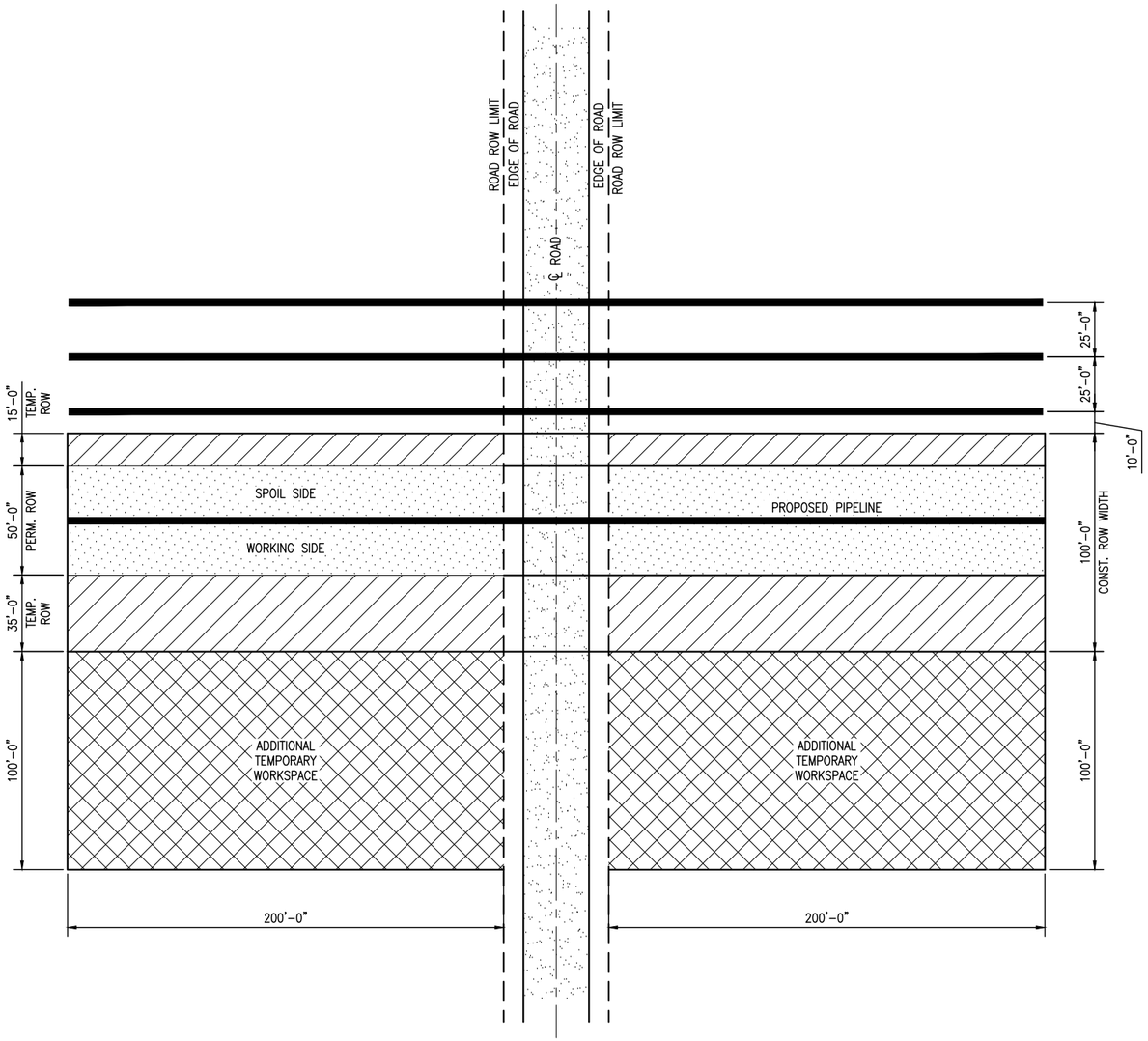
DRAWING SCALE: 1/8" = 1'-0"

DRAWING TITLE:
MAINLINE CONSTRUCTION
PARALLEL TO FOREIGN LINES
100' RIGHT OF WAY

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H-650 | 17 | 1 | P1 |

Plotted by: McCarthy, Matthew (Contractor) on October 15, 2018 - 10:29 AM

File Path: C:\Vault Working\Systems\MVP\SouthGate\Construction Typicals\MVP-17.dwg

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DRAWING ASSUMES TYPE "C" SOIL

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ALINA LAWRENCE — MECHANICAL DESIGN ENGINEER — 06/11/18 — DATE

ELECTRICAL DESIGN ENGINEER — DATE

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Mountain Valley PIPELINE

DESIGN ENGINEERING

PROJECT ID: – – – –

DRAWING SCALE: 1/32" = 1'-0"

DRAWING TITLE:

MAINLINE CONSTRUCTION
ROAD CROSSING BORED WITH PARALLEL PIPELINES
100' RIGHT OF WAY

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H-650 | 25 | 1 | P1 |

Plotted by: McCarthy, Matthew (Contractor) on October 15, 2018 - 10:29 AM

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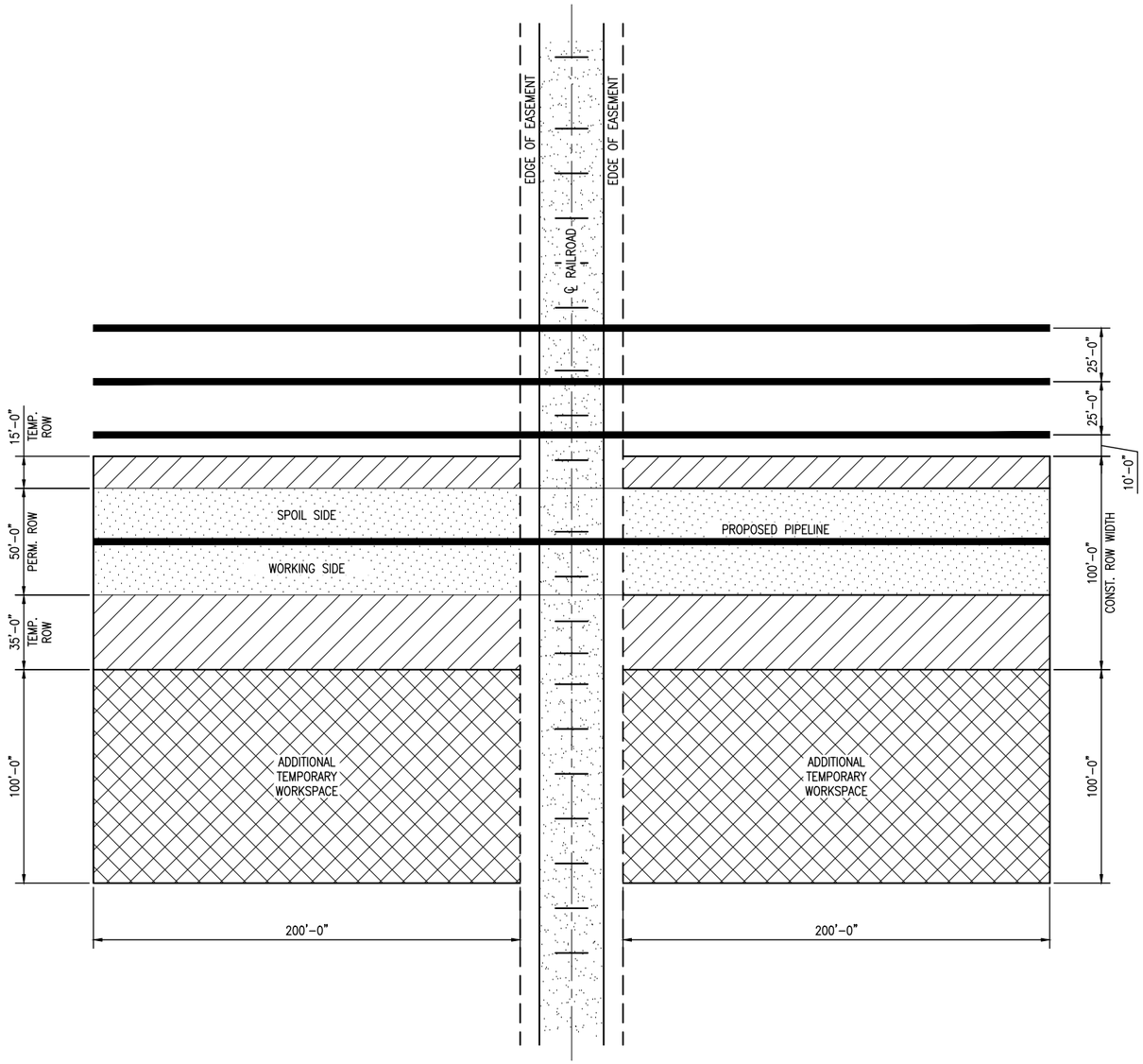


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DRAWING ASSUMES TYPE "C" SOIL

| REFERENCE DRAWINGS | | NO. | DATE | REVISION | BY | CHK | APPD | NO. | DATE | REVISION | BY | CHK | APPD |
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| DRAWING NUMBER | DRAWING TITLE | P | 05/07/2018 | PRELIMINARY FOR REVIEW | JIL | AAL | NFF | – | | | | | |
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ELECTRICAL DESIGN ENGINEER — DATE

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Mountain Valley PIPELINE

DESIGN ENGINEERING

PROJECT ID: – – – –

DRAWING SCALE: 1/32" = 1'-0"

DRAWING TITLE:

MAINLINE CONSTRUCTION
RAILROAD CROSSING BORED WITH PARALLEL PIPELINES
100' RIGHT OF WAY

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H-650 | 27 | 1 | P1 |

Plotted by: McCarthy, Matthew (Contractor) on October 15, 2018 - 10:29 AM

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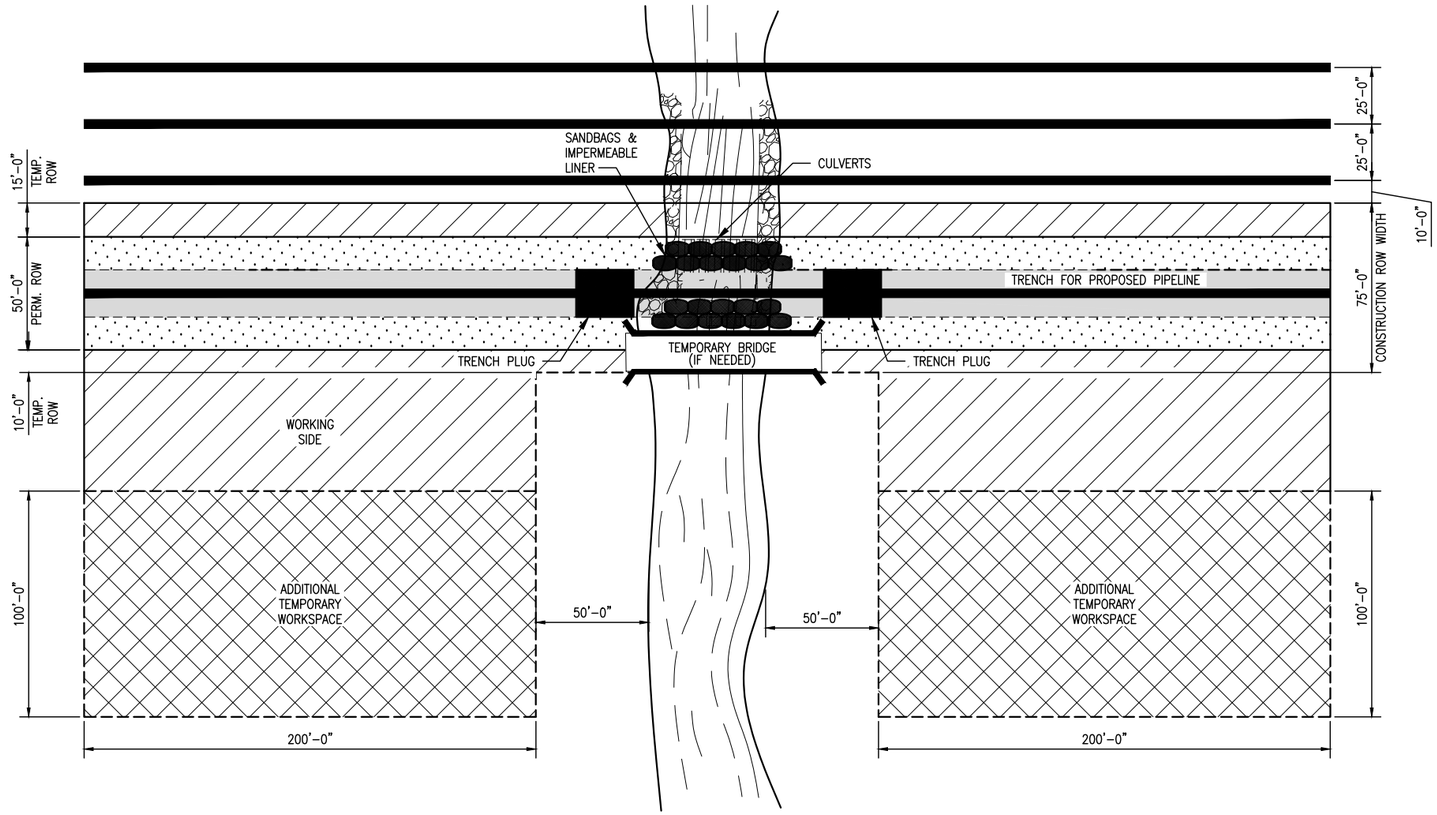


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DRAWING ASSUMES TYPE "C" SOIL

| REFERENCE DRAWINGS | | NO. | DATE | REVISION | BY | CHK | APPD | NO. | DATE | REVISION | BY | CHK | APPD |
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| DRAWING NUMBER | DRAWING TITLE | P | 05/07/2018 | PRELIMINARY FOR REVIEW | JIL | AAL | NFF | – | | | | | |
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ALINA LAWRENCE — MECHANICAL DESIGN ENGINEER — 06/11/18 — DATE

ELECTRICAL DESIGN ENGINEER — DATE

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Mountain Valley PIPELINE

DESIGN ENGINEERING

PROJECT ID ----

DRAWING SCALE: 1/8" = 1'-0"

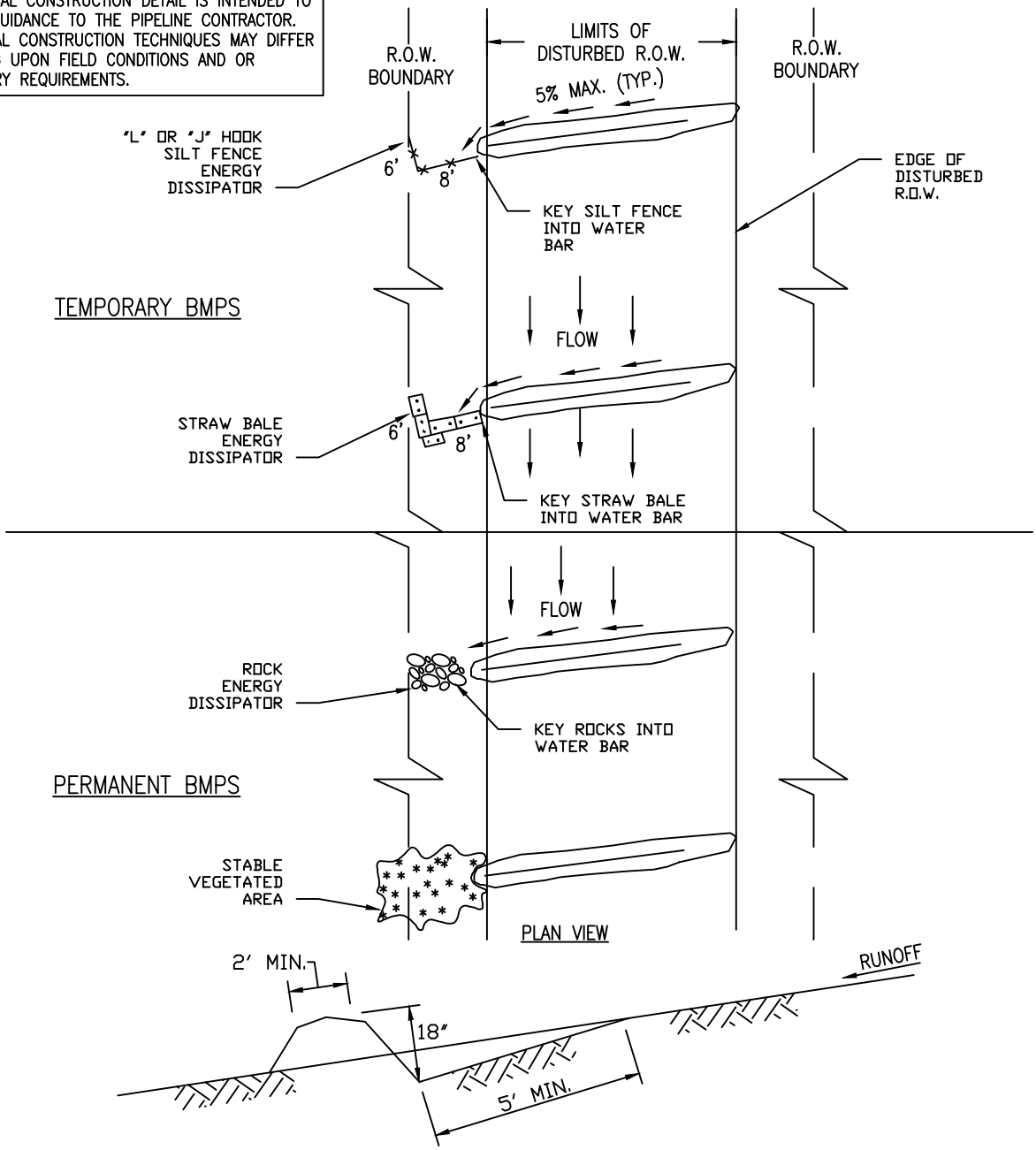
DRAWING TITLE:
MAINLINE CONSTRUCTION
WATERBODY CROSSING WITH PARALLEL PIPELINES
OPEN CUT – FLUME

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H-650 | 29 | 1 | P1 |

Plotted by: McCarthy, Matthew (Contractor) on October 15, 2018 - 10:29 AM

File Path: C:\Vault Working\Systems\MVP\SouthGate\Construction Typicals\MVP-29.dwg

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.




NOTES:

1. SLOPE BREAKERS SHALL BE CONSTRUCTED OF COMPACTED NATIVE SOIL AND INSTALLED AT LOCATIONS AS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE COMPANY'S INSPECTOR.

2. SLOPE BREAKERS SHALL BE ORIENTED AS SHOWN OR OTHER PATTERN AS DIRECTED BY THE COMPANY'S INSPECTOR TO DIRECT THE WATER OFF THE R.O.W.

3. SLOPE BREAKERS SHALL BE CONSTRUCTED AT A 5% MAXIMUM GRADIENT ACROSS THE SLOPE.

4. THE SLOPE BREAKERS SHALL BE 18" DEEP (AS MEASURED FROM THE TROUGH TO THE TOP OF THE SLOPE BREAKER). THE TROUGH WILL BE A MINIMUM OF 5' WIDE ACROSS THE WIDTH OF THE RIGHT-OF-WAY.

5. THE OUTLET OF THE SLOPE BREAKER MUST FREELY DISCHARGE RUNOFF OFF FROM THE DISTURBED RIGHT-OF-WAY INTO A STABLE, WELL VEGETATED AREA OR INTO AN ENERGY DISSIPATER.

6. WHERE SLOPE BREAKERS EXTEND BEYOND THE EDGE OF THE CONSTRUCTION R.O.W. DIRECT RUNOFF INTO STABLE, WELL VEGETATED AREAS, THESE LOCATIONS MUST BE APPROVED BY THE COMPANY'S INSPECTOR.

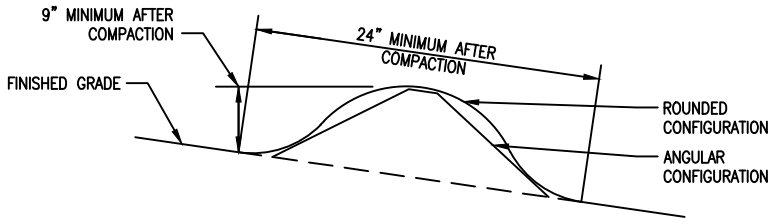
| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

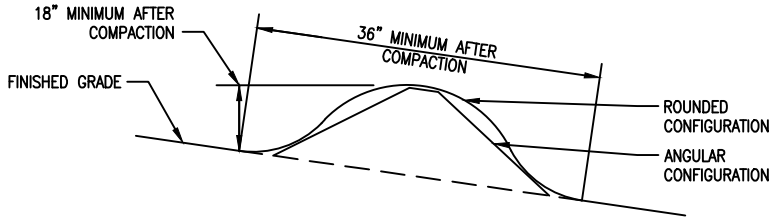
# TYPICAL CONSTRUCTION DETAIL

SLOPE BREAKER/RIGHT-OF-WAY DIVERSION/WATERBAR

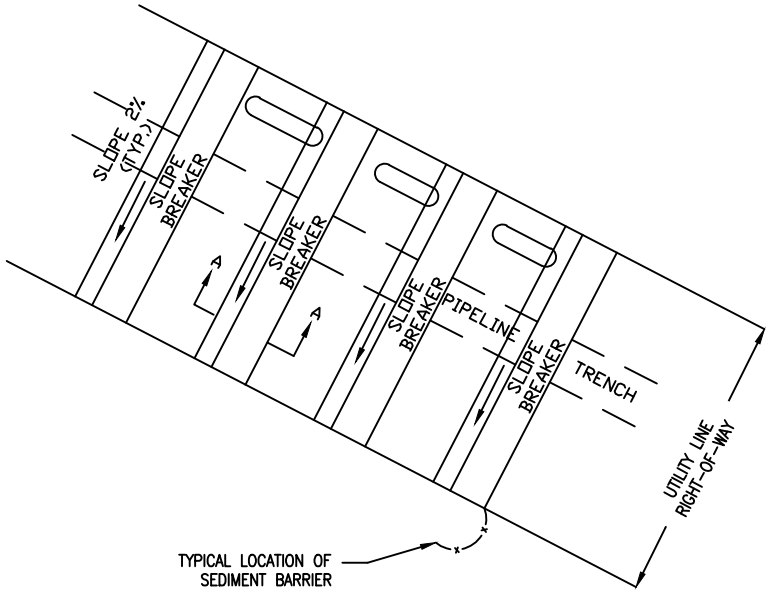
| DRAWING NO. | REV. |
|---|---|
| MVP-SG-17 | P1 |




SECTION A–A
(TEMPORARY INSTALLATION)




SECTION A–A
(PERMANENT INSTALLATION)




SKETCH

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| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H–650–TYP | | | |

Mountain Valley PIPELINE LLC

# TYPICAL CONSTRUCTION DETAIL

SLOPE BREAKER/RIGHT–OF–WAY DIVERSION/WATERBAR

| DRAWING NO. | REV. |
|---|---|
| MVP–SG–17.1 | P1 |

| RECOMMENDED MAXIMUM SPACING FOR **PERMANENT SLOPE BREAKERS** | |
|---|---|
| **PIPELINE GRADE** | **DISTANCE (FEET)** |
| <2% | - [1,2] |
| 2-5% | 400 |
| 6-15% | 200 |
| 16-30% | 100 |
| >31% | 50 [3] |

[1] PERMANENT SLOPE BREAKERS WILL BE INSTALLED AS NEEDED BASED ON FIELD CONDITIONS.

[2] PERMANENT SLOPE BREAKERS WILL BE INSTALLED 25 FEET FROM EACH WATERBODY BOUNDARY REGARDLESS OF SLOPE CONDITIONS.

[3] SLOPES GREATER THAN 65% MAY REQUIRE SITE SPECIFIC STABILIZATION MEASURES BASED ON FIELD CONDITIONS AS APPROVED BY MVP DESIGN ENGINEERING AND MVP ENVIRONMENTAL INSPECTOR.

NOTES:

WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION

MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL ROADWAY, SKIDTRAIL, OR RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION

WATERBARS ON RETIRED ROADWAYS, SKIDTRAILS, AND RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED

SUMP FILTERS TO BE INSTALLED AT END OF WATERBARS. REFER TO SUMP FILTER DETAIL ON SHEET 0.09 FOR MORE DETAIL.

OUTLET PROTECTION/COMPOST FILTER SOCK SHOULD BE INSTALLED AT THE OUTLET OF ALL WATERBARS.



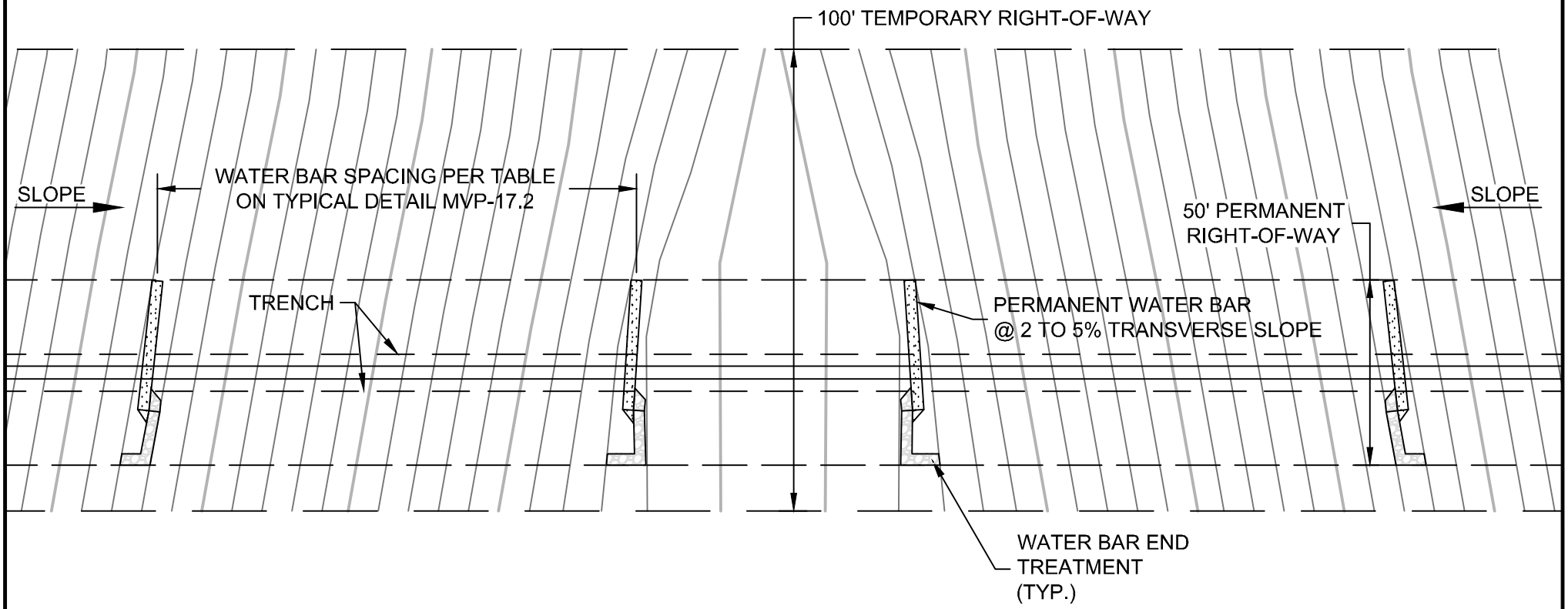
| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# TYPICAL CONSTRUCTION DETAIL

SLOPE BREAKER/RIGHT-OF-WAY DIVERSION/WATERBAR

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-17.2 | P1 |

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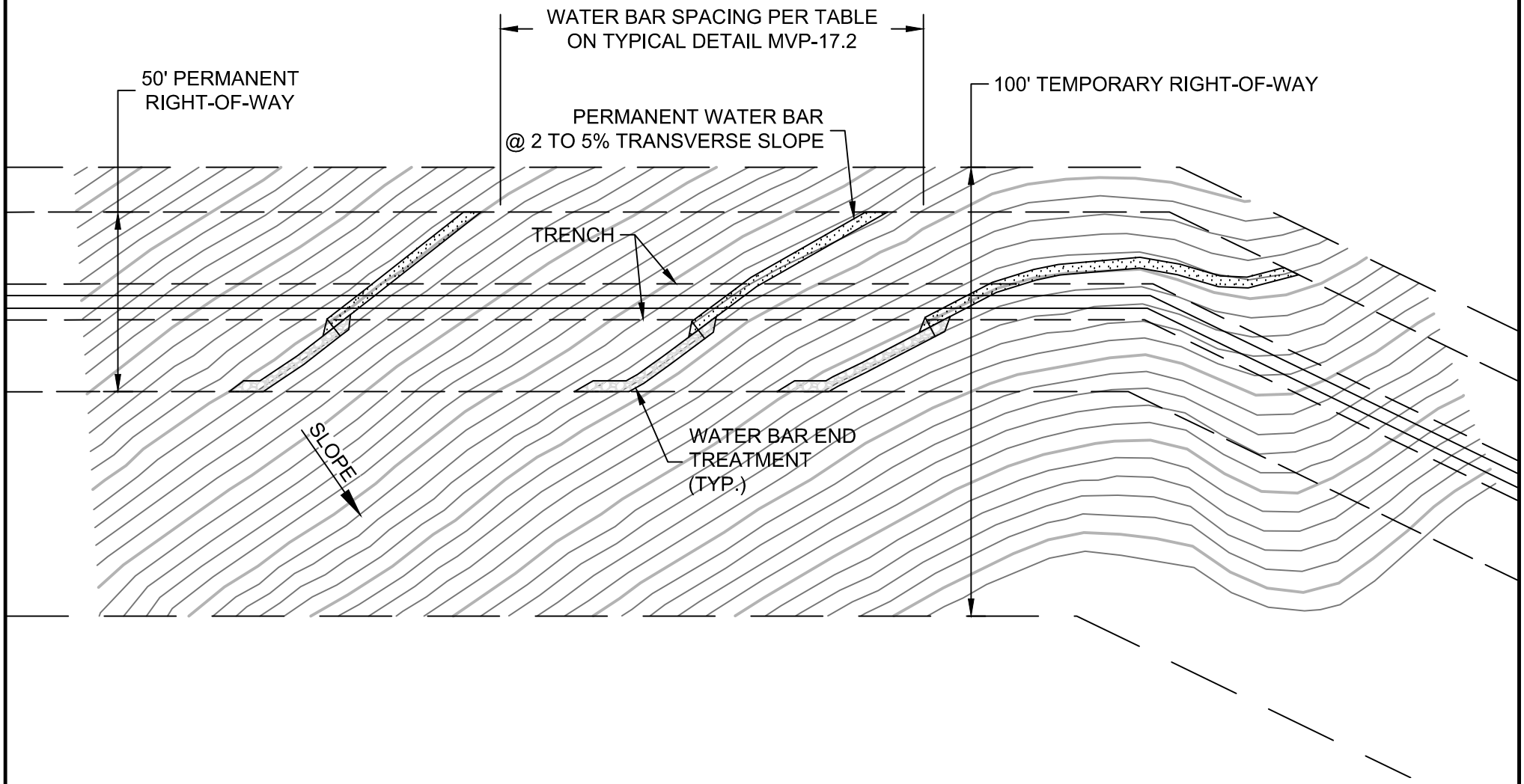
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# TYPICAL CONSTRUCTION DETAIL

WATERBAR END TREATMENT
PERPENDICULAR TO SLOPE EXAMPLE

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-17.3 | P1 |



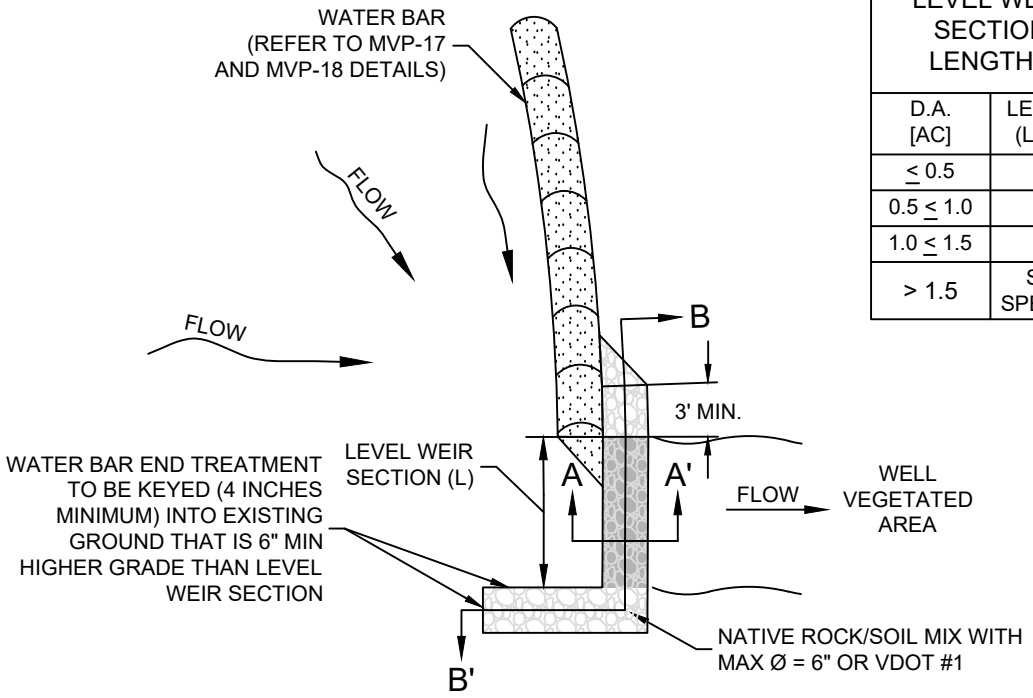

| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

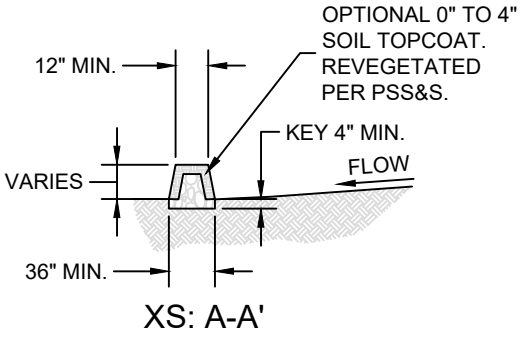
# TYPICAL CONSTRUCTION DETAIL

WATERBAR END TREATMENT
CROSS SLOPE EXAMPLE

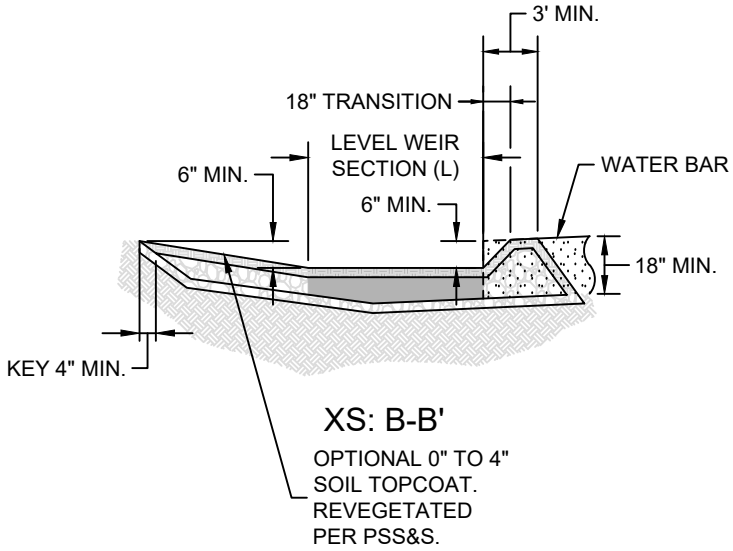
| DRAWING NO. | REV. |
|---|---|
| MVP-SG-17.4 | P1 |




| LEVEL WEIR SECTION LENGTHS | |
|---|---|
| D.A. [AC] | LENGTH (L) [FT] |
| ≤ 0.5 | 10 |
| 0.5 ≤ 1.0 | 15 |
| 1.0 ≤ 1.5 | 20 |
| > 1.5 | SITE SPECIFIC |




XS: A-A'




XS: B-B'

OPTIONAL 0" TO 4"
SOIL TOPCOAT.
REVEGETATED
PER PSS&S.

| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

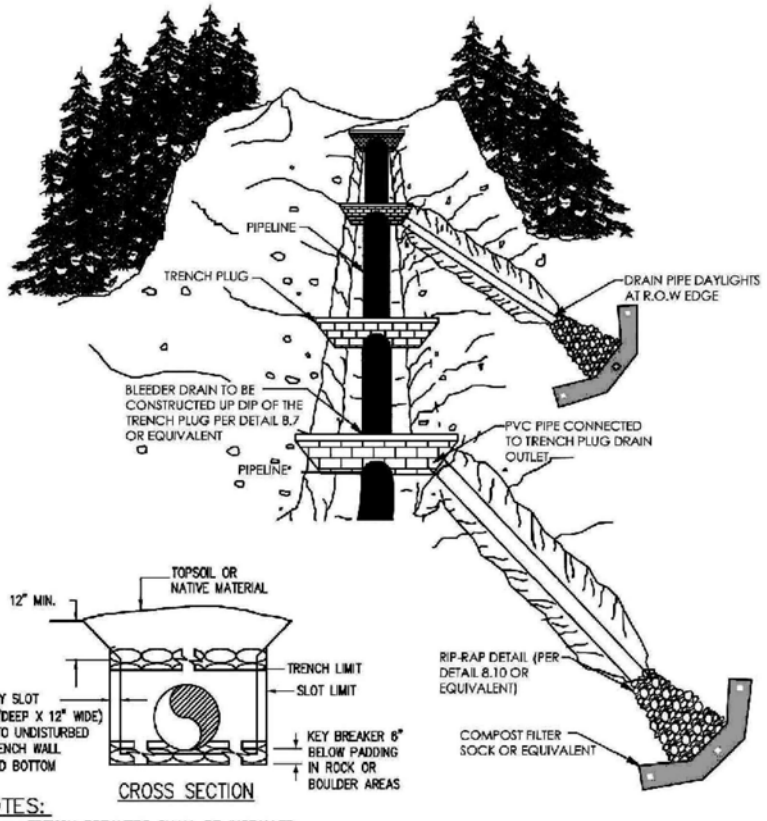
**TYPICAL CONSTRUCTION DETAIL**

WATERBAR END
TREATMENT DETAIL

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-17.7 | P1 |

| SLOPE % | DISTANCE | PLUG MATERIAL |
|---|---|---|
| 0% – 5% | SEE NOTE 6 | CONCRETE FILLED SACKS |
| 5% – 15% | 500 FT | SANDBAGS OR CONCRETE FILLED SACKS |
| 15% – 25% | 300 FT | SANDBAGS OR CONCRETE FILLED SACKS |
| 25% – 35% | 200 FT | SANDBAGS OR CONCRETE FILLED SACKS |
| 35% – 100% | 100 FT | SANDBAGS OR CONCRETE FILLED SACKS |
| > 100% | 50 FT | CONCRETE FILLED BAGS (WETTED) |

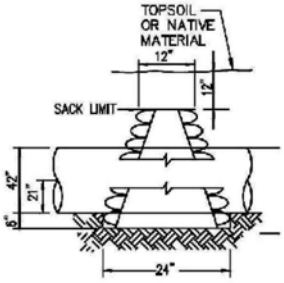
THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.







CROSS SECTION




SIDE VIEW

NOTES:

1. TRENCH BREAKERS SHALL BE INSTALLED:
   - ON SLOPES ALONG THE TRENCH LINE WHERE THE NATURAL DRAINAGE PATTERN, PROFILE, AND TYPE OF BACKFILL MATERIAL MAY RESULT IN LOSS OF BACKFILL MATERIAL OR ALTERATION OF THE NATURAL PATTERN;
   - AT THE BASE OF SLOPES ADJACENT TO WATERBODIES AND WETLANDS;
   - WHERE NEEDED TO AVOID DRAINING A WETLAND;
   - ON UPLAND SLOPES, AT THE SAME SPACING AS SLOPE BREAKERS AND UP SLOPE OF SLOPE BREAKERS;
   - IN CULTIVATED LAND AND RESIDENTIAL AREAS WHERE PERMANENT SLOPE BREAKERS ARE NOT TYPICALLY INSTALLED, AT THE SAME SPACING AS IF PERMANENT SLOPE BREAKERS WHERE REQUIRED.
2. MATERIALS APPROPRIATE FOR USE AS PERMANENT TRENCH BREAKERS INCLUDE SANDBAGS OR CONCRETE FILLED SACKS. TOPSOIL SHALL NOT BE USED FOR TRENCH BREAKERS.
3. TRENCH BREAKERS INSTALLED AT WATERBODY AND WETLAND CROSSINGS SHALL BE CONSTRUCTED OF IMPERVIOUS MATERIALS (CONCRETE FILLED SACKS).
4. BREAKER SPACING AND CONFIGURATION MAY BE CHANGED AS DIRECTED BY MVP. DEPTH OF DITCH MAY VARY WITH SITE CONDITIONS.
5. ALL MATERIALS SHALL BE SUPPLIED BY CONTRACTOR.
6. TRENCH BREAKERS ARE REQUIRED AT ALL WATERBODY CROSSINGS REGARDLESS OF TRENCH SLOPE. OTHERWISE NOTE REQUIRED AT SLOPES < 5%.
7. SINGLE TRENCH BREAKERS WILL BE A MINIMUM WIDTH OF 24" AND DOUBLE TRENCH BREAKERS WILL BE A MINIMUM WIDTH OF 36".
8. FOR SUBSURFACE AND TRENCH BREAKER DRAINAGE DETAILS INCLUDING THOSE FOR STEEP SLOPES, SEE LANDSLIDE MITIGATION TYPICAL DETAILS.
9. FOR SLOPES EXCEEDING 50%, CONCRETE FILLED SACKS ARE REQUIRED UNLESS OTHERWISE APPROVED BY MVP.

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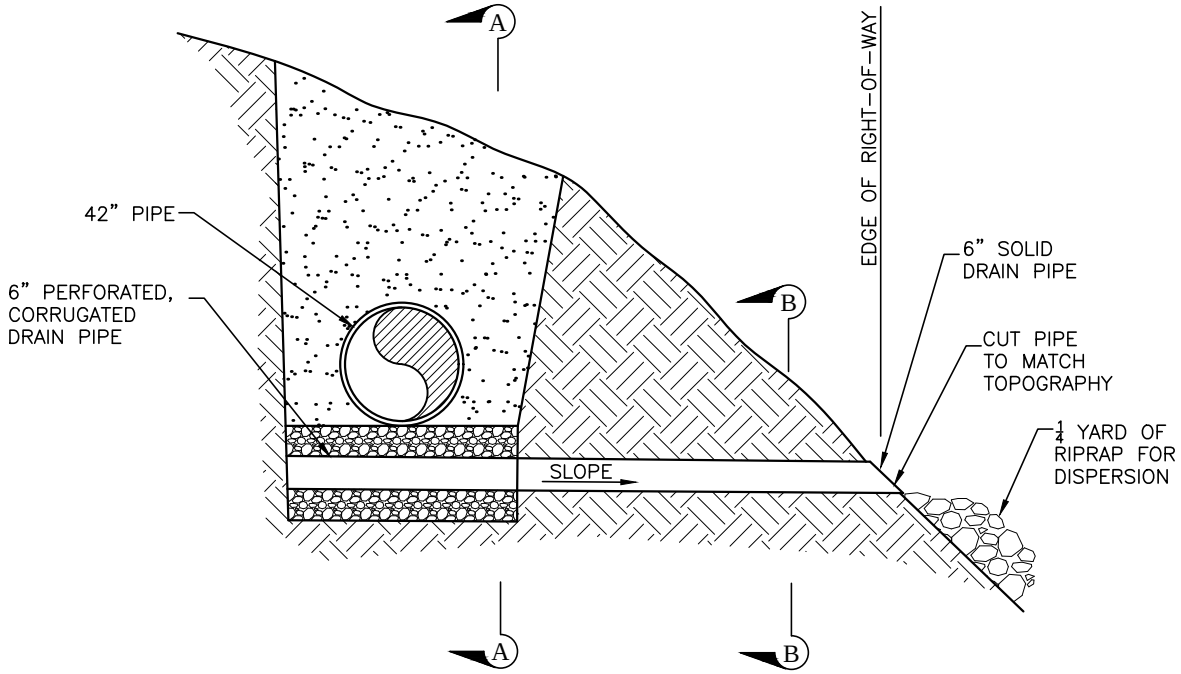
| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

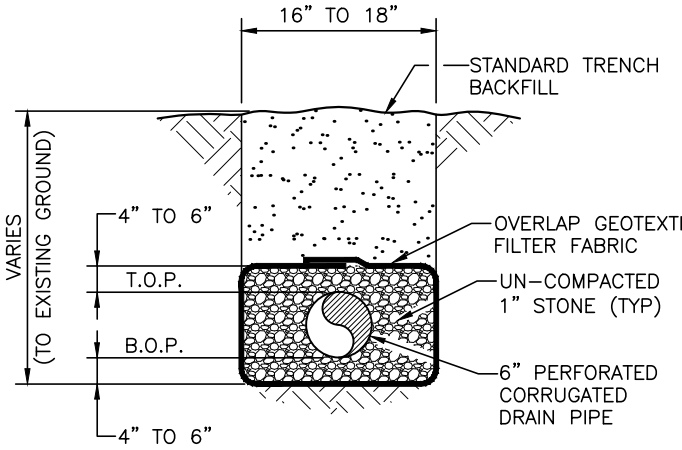
# TYPICAL CONSTRUCTION DETAIL

TYPICAL TRENCH BREAKER REQUIREMENTS

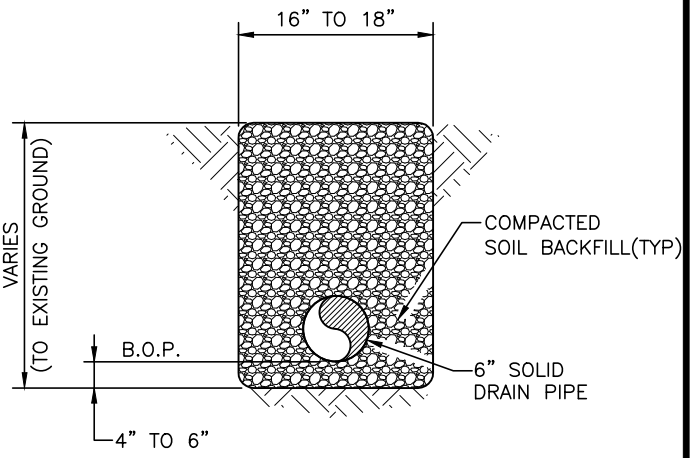
| DRAWING NO. | REV. |
|---|---|
| MVP-SG-20 | P1 |




MAINLINE CROSS SECTION




SECTION A–A




SECTION B–B

NOTES

1. LOW POINT DITCH DRAINS SHALL BE INSTALLED AT LOCATIONS SPECIFIED IN THE APPROVED EROSION & SEDIMENTATION CONTROL PLAN, AND AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
2. FILL STONE SHOULD BE 1" AGGREGATE WITHOUT FINES, CRUSHER RUN WITHOUT FINES, OR EQUIVALENT.
3. DRAIN PIPE TO BE CONNECTED USING STANDARD PIPE COLLARS.

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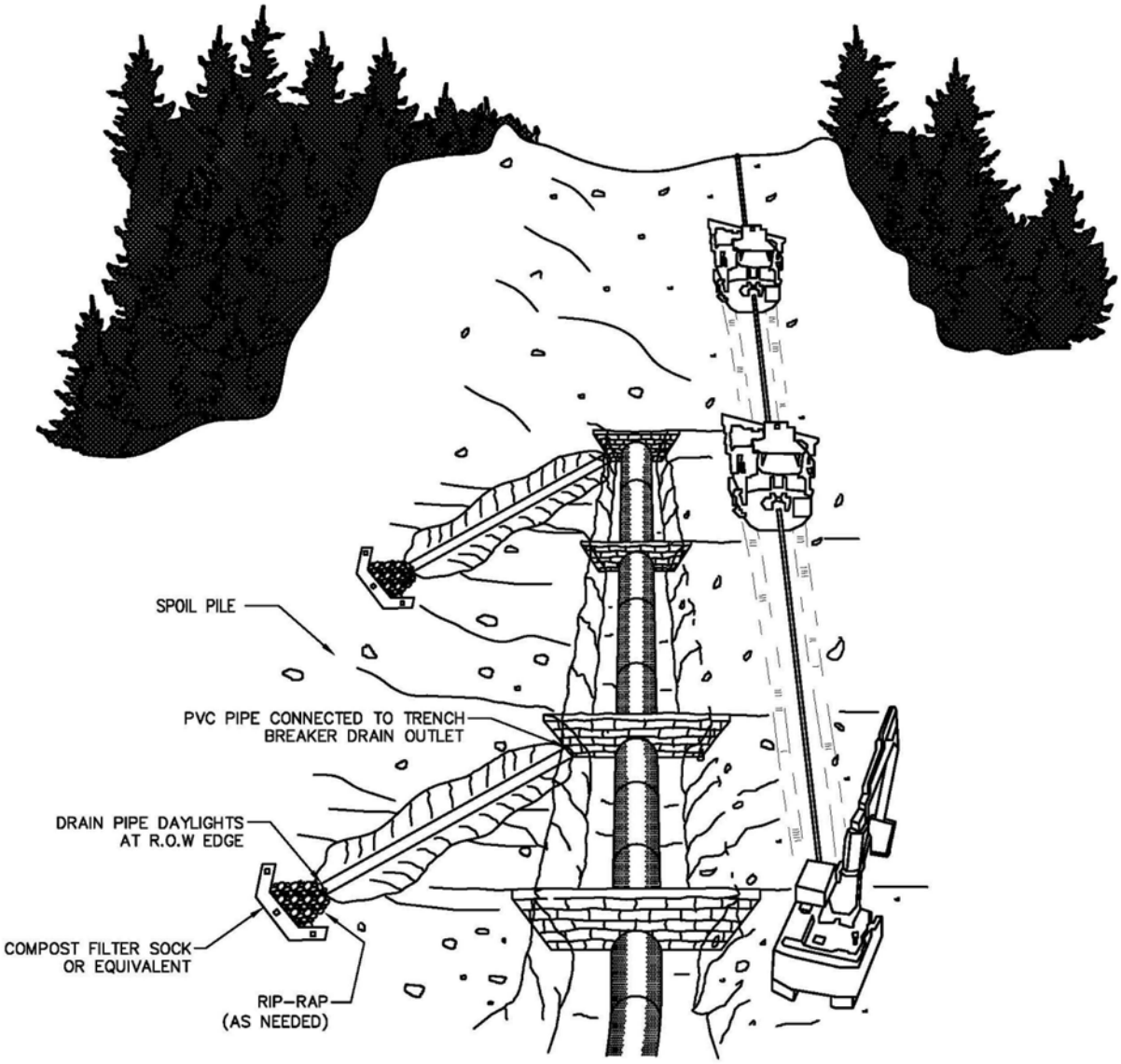
| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# TYPICAL CONSTRUCTION DETAIL

SIDEHILL LOW-POINT DRAIN TYPICAL

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-24 | P1 |




NOTES:

1. WINCHES MAY BE REQUIRED FOR MOVING EQUIPMENT AND MATERIAL, AND DURING CONSTRUCTION ON STEEP LONGITUDINAL SLOPES.
2. WINCHES WILL EITHER BE FIXED WINCHES OR TRACKED EQUIPMENT WITH WINCHES.
3. WINCHES WILL TYPICALLY BE REQUIRED FOR SLOPES OF 30% (17°) AND UP.

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.

DRAWING ASSUMES TYPE "B" SOIL

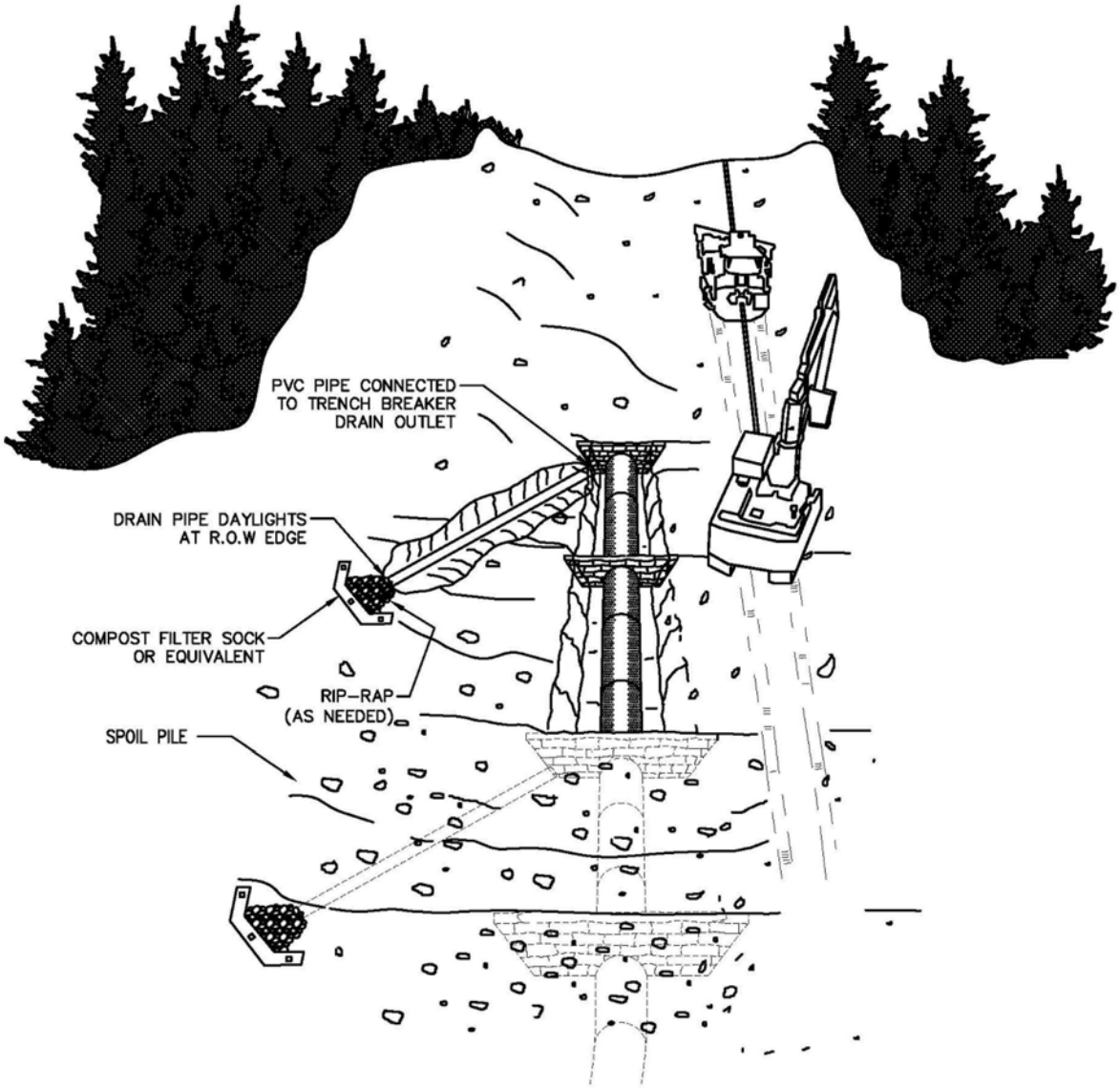
| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# TYPICAL CONSTRUCTION DETAIL

MAINLINE CONSTRUCTION
STEEP HILL PARALLEL CONSTRUCTION
NO TOP SOIL SEGREGATION

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-31 | P1 |




NOTES:

1. WINCHES MAY BE REQUIRED FOR MOVING EQUIPMENT AND MATERIAL, AND DURING CONSTRUCTION ON STEEP LONGITUDINAL SLOPES.
2. WINCHES WILL EITHER BE FIXED WINCHES OR TRACKED EQUIPMENT WITH WINCHES.
3. WINCHES WILL TYPICALLY BE REQUIRED FOR SLOPES OF 30% (17°) AND UP.

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.

DRAWING ASSUMES TYPE "B" SOIL

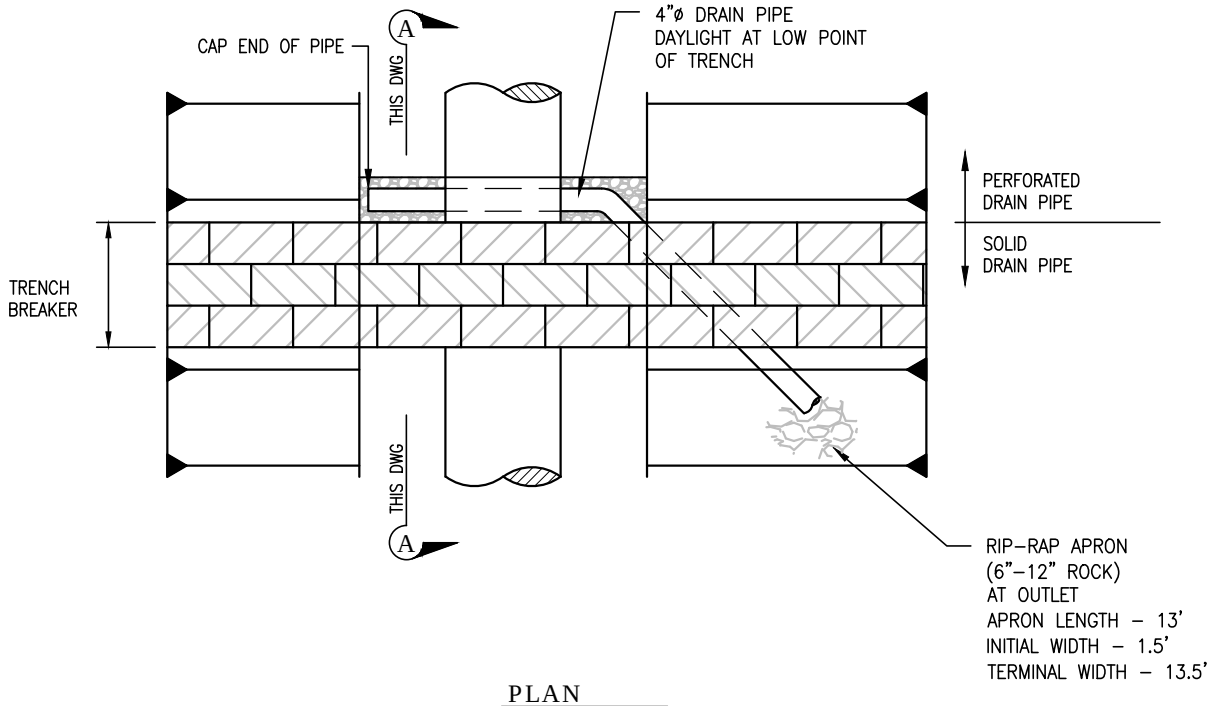
| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

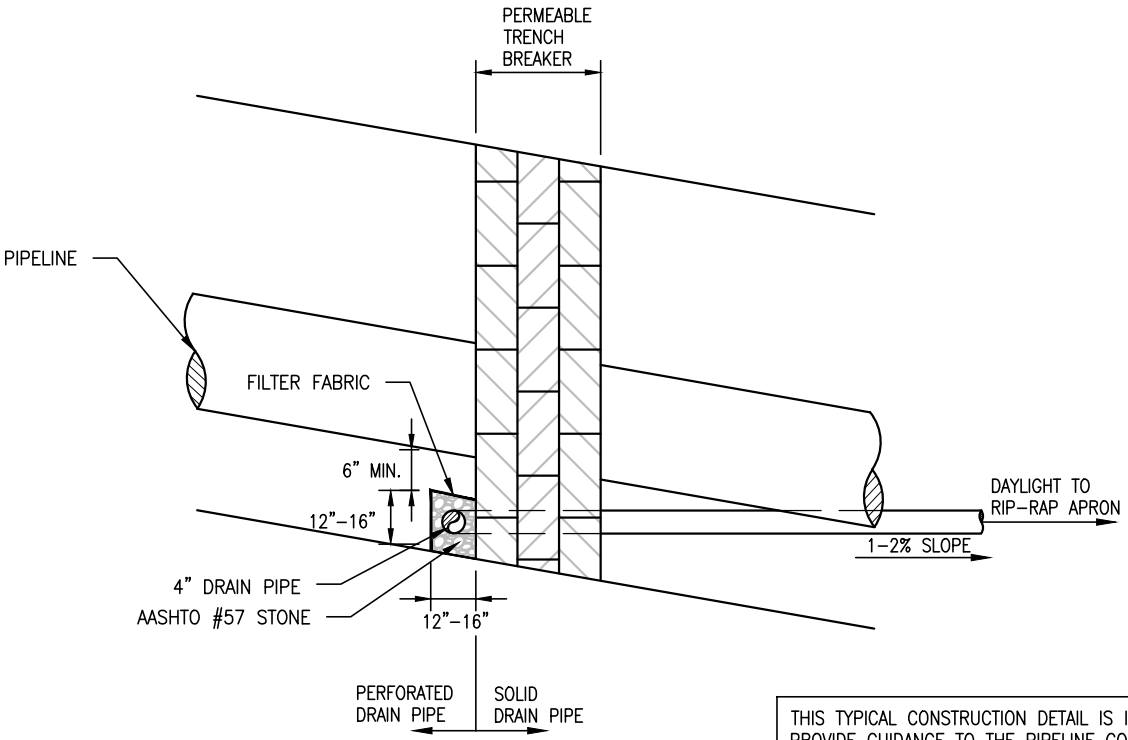
# TYPICAL CONSTRUCTION DETAIL

MAINLINE CONSTRUCTION
STEEP HILL STOVE PIPE CONSTRUCTION
NO TOP SOIL SEGREGATION

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-32 | P1 |




PLAN
SCALE: NOT TO SCALE




SECTION A-A
SCALE: NOT TO SCALE

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.

| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

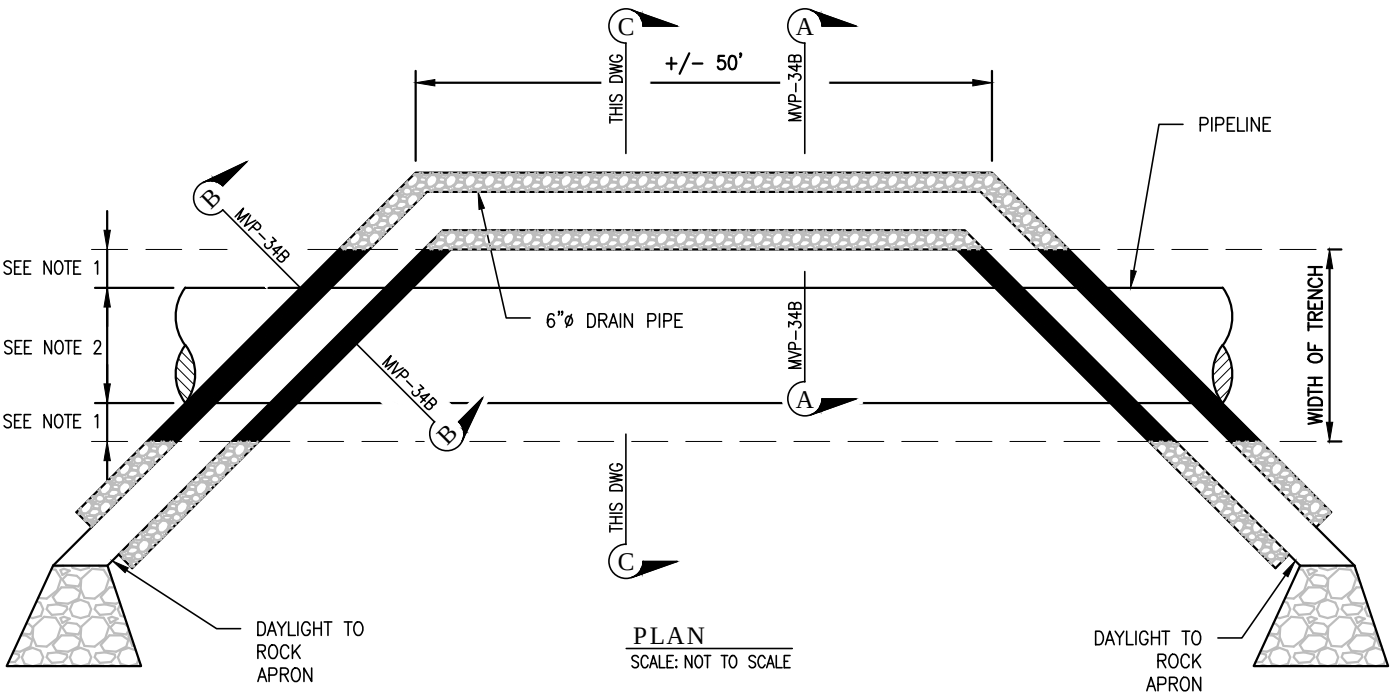
# TYPICAL CONSTRUCTION DETAIL

TRENCH BREAKER DAYLIGHT DRAIN

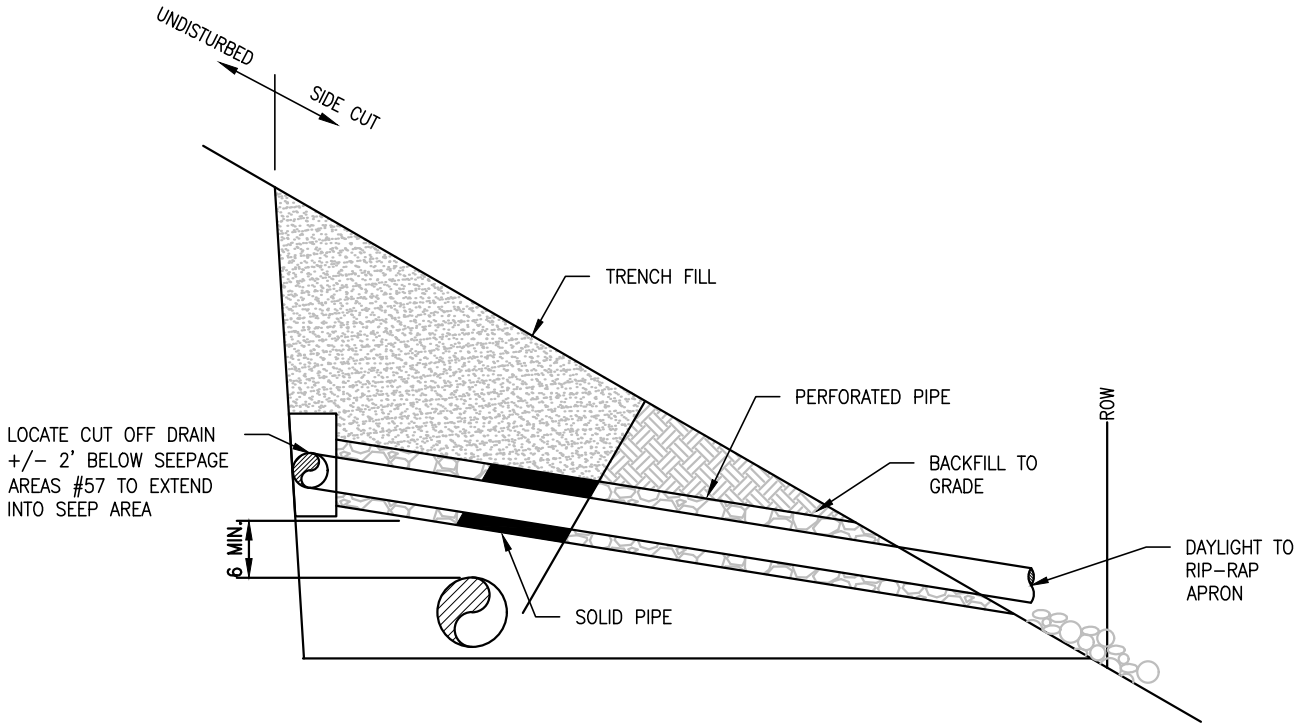
| DRAWING NO. | REV. |
|---|---|
| MVP-SG-35 | P1 |

Plotted by: Sample, Stanley on: August 16, 2018 - 12:39 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-35.dwg




PLAN
SCALE: NOT TO SCALE




SECTION C-C
SCALE: NOT TO SCALE

NOTES:
1. PERFORATED PIPE SURROUNDED BY #57 STONE.
2. SOLID PIPE (IN TRENCH) SURROUNDED BY TRENCH BACKFILL.

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.

| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 2 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

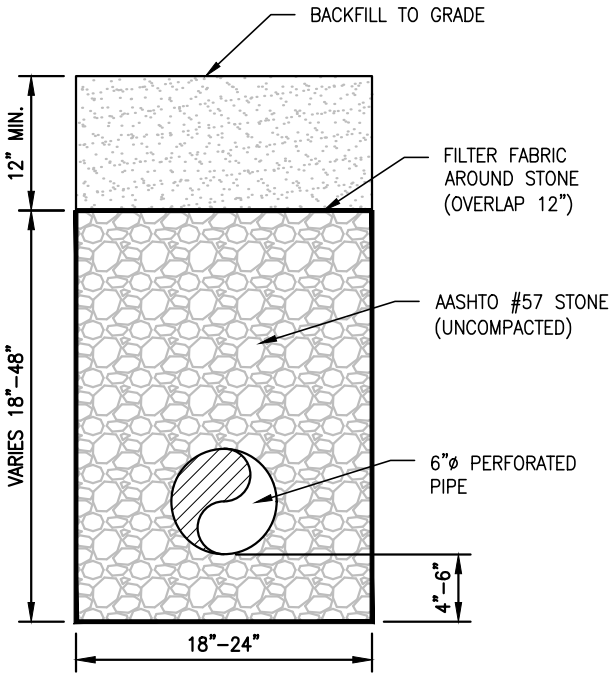
# TYPICAL CONSTRUCTION DETAIL

CUTOFF DRAIN-SIDEHILL

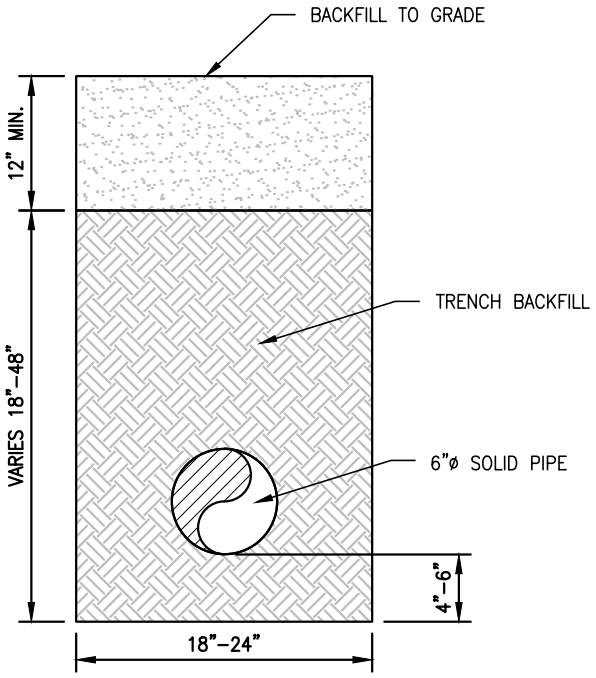
| DRAWING NO. | REV. |
|---|---|
| MVP-SG-36A | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:39 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-36A.dwg




SECTION A-A
SCALE: NOT TO SCALE
FROM MVP–34A




SECTION B-B
SCALE: NOT TO SCALE
FROM MVP–34A

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| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 2 OF 2 |
| JOB NO. | | | |
| PROJECT ID: H–650–TYP | | | |

Mountain Valley PIPELINE LLC

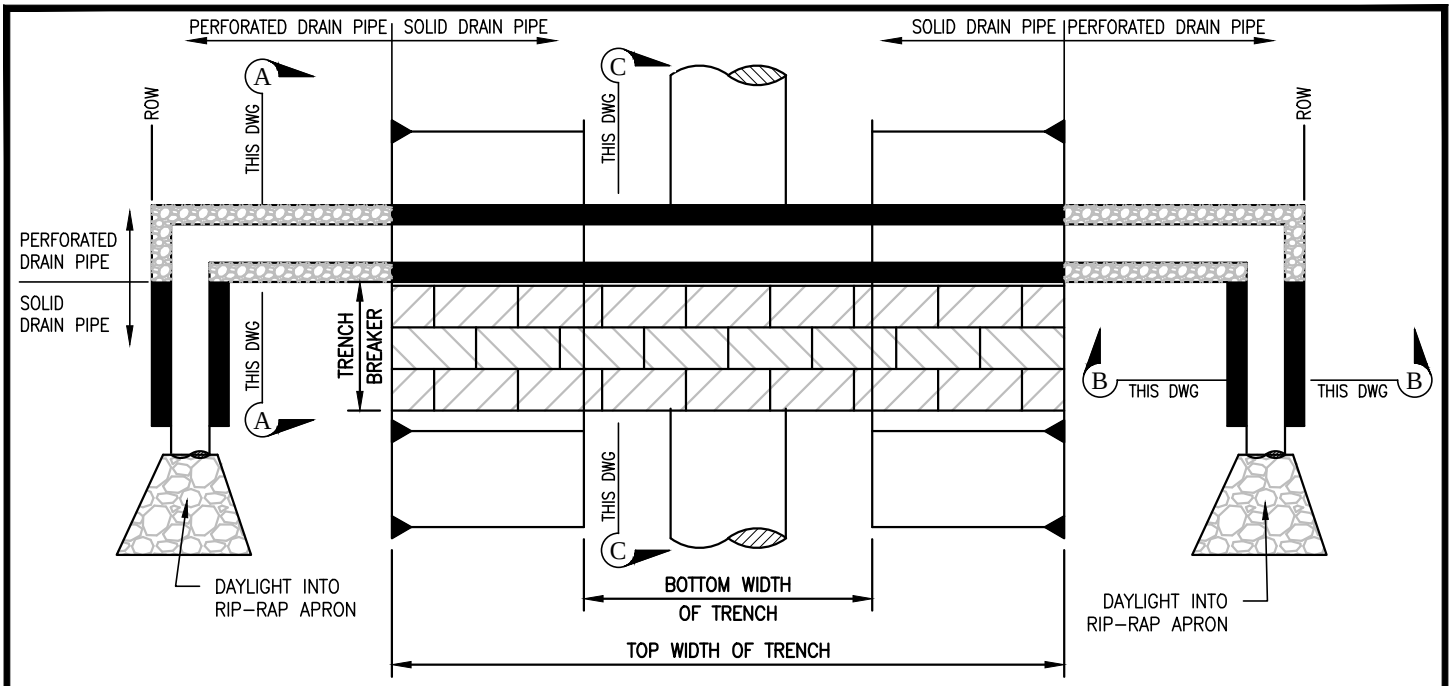
# TYPICAL CONSTRUCTION DETAIL

CUTOFF DRAIN–SIDEHILL

| DRAWING NO. | REV. |
|---|---|
| MVP–SG–36B | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:39 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-36B.dwg




PLAN
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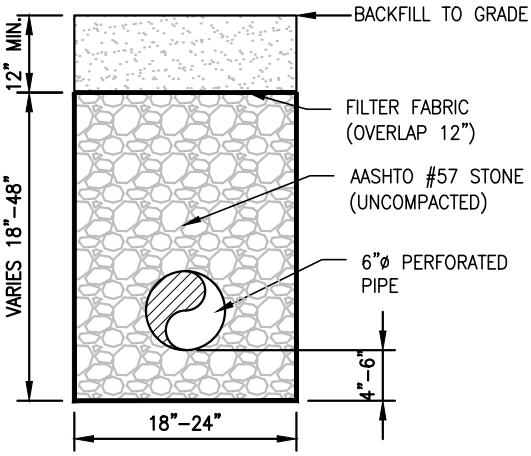
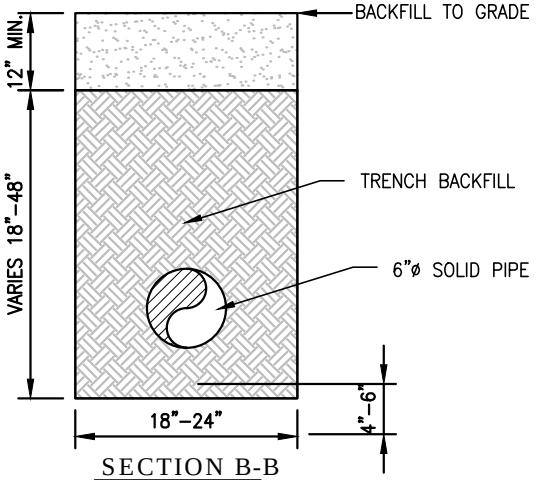
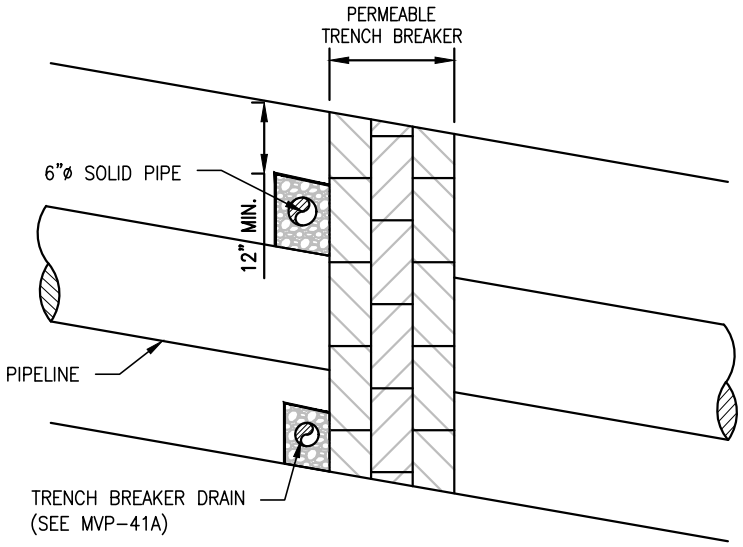



SECTION A-A
SCALE: NOT TO SCALE




SECTION B-B
SCALE: NOT TO SCALE

NOTES:
1. EACH CUTOFF DRAIN SHALL UTILIZE A TRENCH BREAKER DRAIN (SEE DETAIL 1) TO DRAIN THE TRENCH.




SECTION C-C
SCALE: NOT TO SCALE

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| DRAWN | TRC | DATE | 8/7/2018 |
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| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

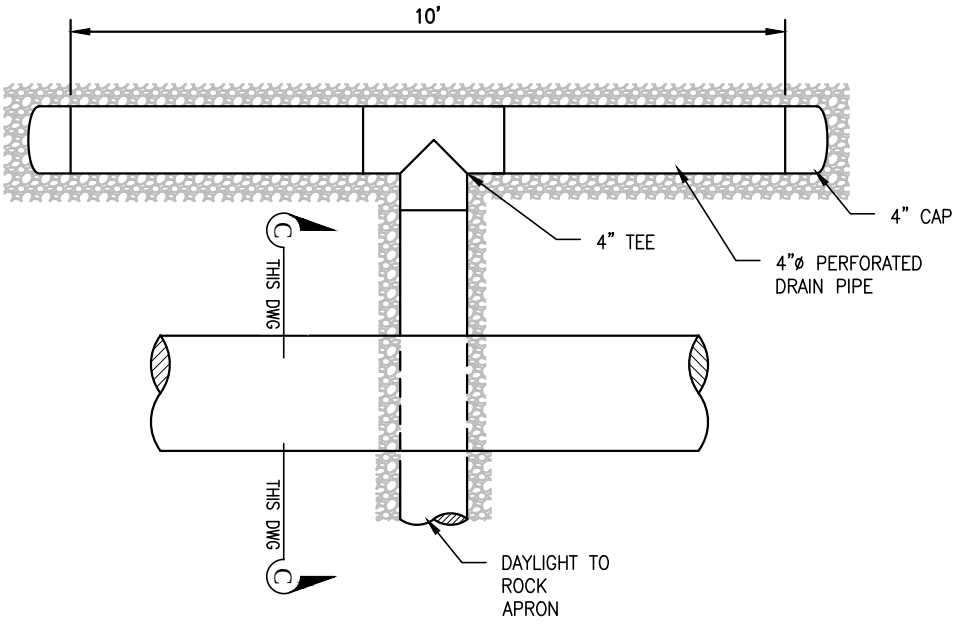
# TYPICAL CONSTRUCTION DETAIL

CUTOFF DRAIN-PLANAR

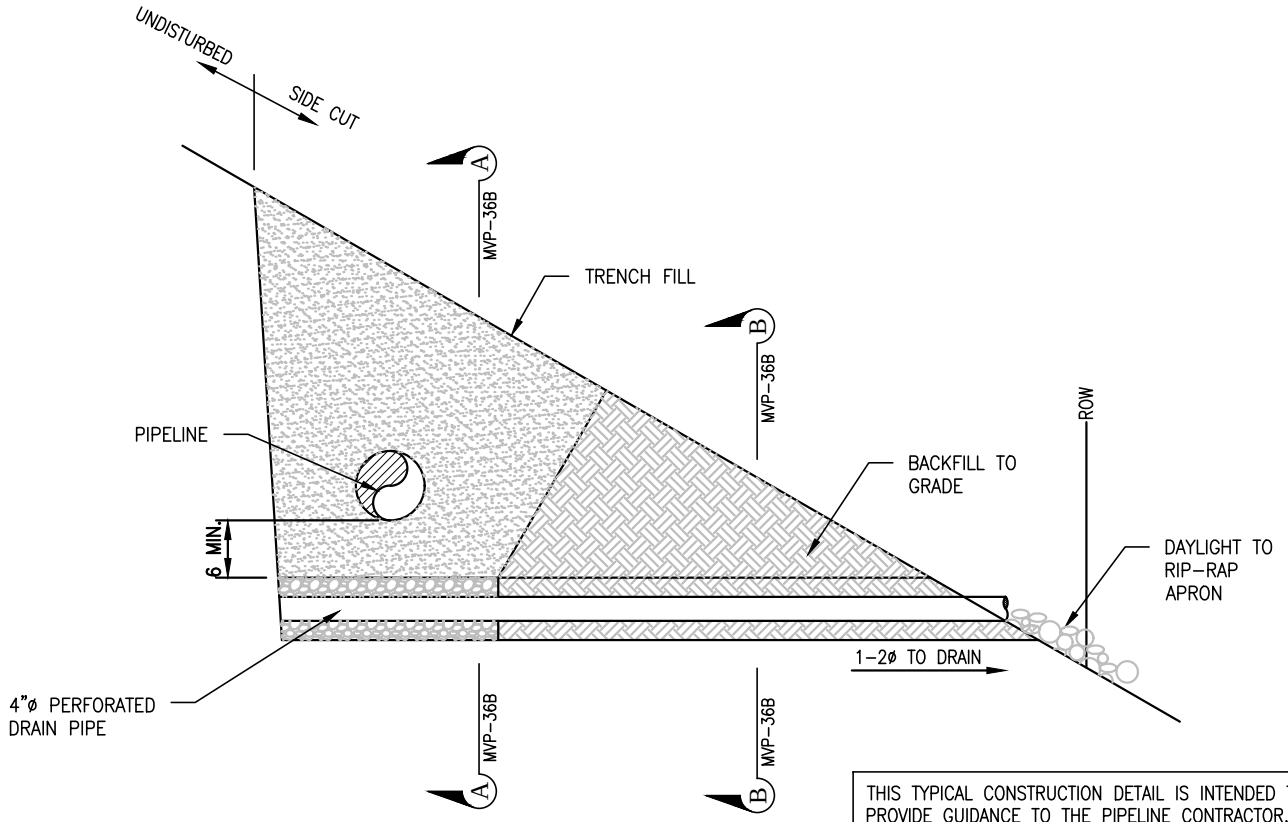
| DRAWING NO. | REV. |
|---|---|
| MVP-SG-37 | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:39 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-37.dwg




PLAN
SCALE: NOT TO SCALE




C-C
SCALE: NOT TO SCALE

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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|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 2 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

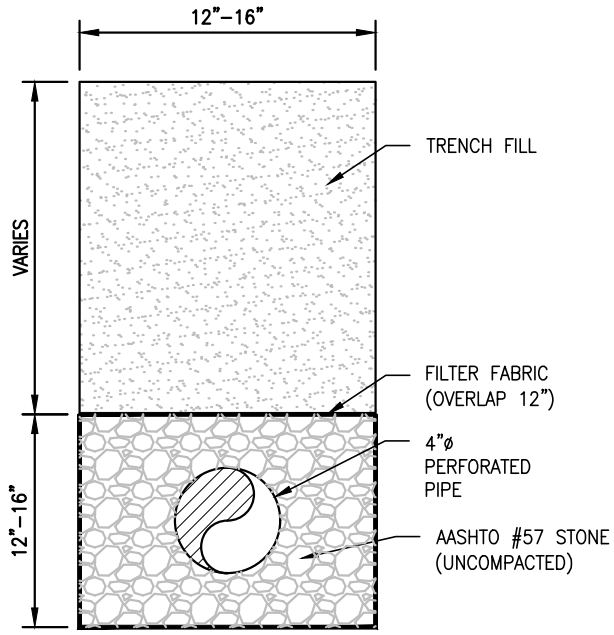
# TYPICAL CONSTRUCTION DETAIL

TRANSVERSE TRENCH DRAIN

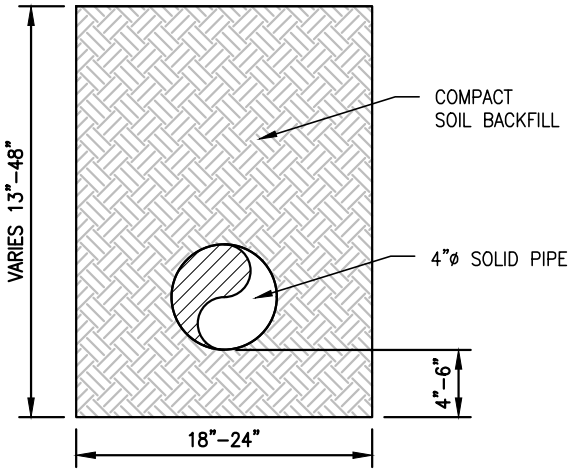
| DRAWING NO. | REV. |
|---|---|
| MVP-SG-38A | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:39 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-38A.dwg




SECTION A-A
SCALE: NOT TO SCALE
FROM MVP–36A




SECTION B-B
SCALE: NOT TO SCALE
FROM MVP–36A

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.

| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 2 OF 2 |
| JOB NO. | | | |
| PROJECT ID: H–650–TYP | | | |

Mountain Valley PIPELINE LLC

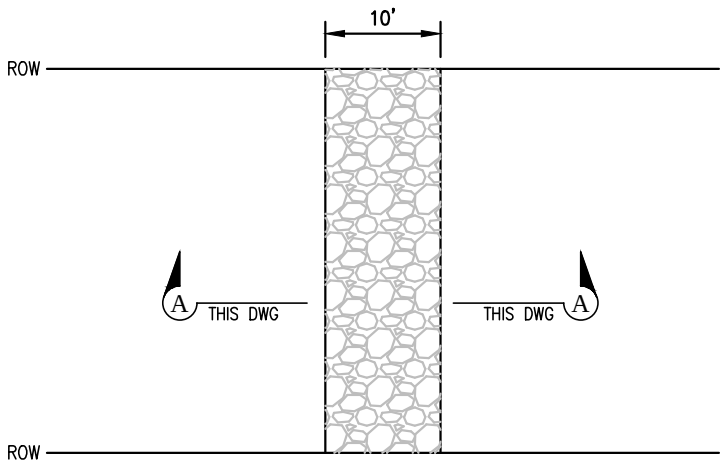
# TYPICAL CONSTRUCTION DETAIL

TRANSVERSE TRENCH DRAIN

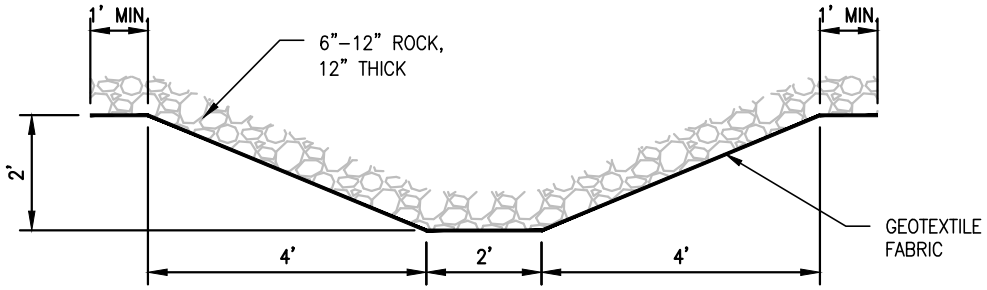
| DRAWING NO. | REV. |
|---|---|
| MVP–38B | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:39 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-38B.dwg




PLAN
SCALE: NOT TO SCALE




SECTION A-A
SCALE: NOT TO SCALE

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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|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H–650–TYP | | | |

Mountain Valley PIPELINE LLC

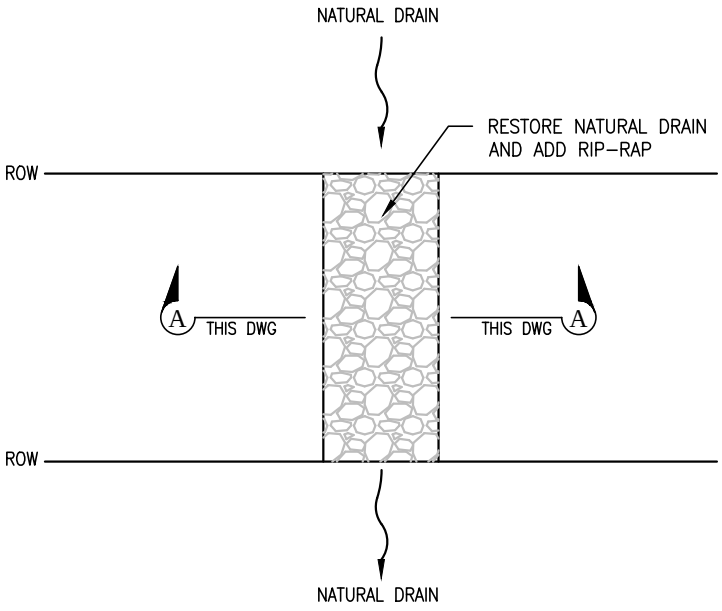
# TYPICAL CONSTRUCTION DETAIL

ROCK LINED SWALE

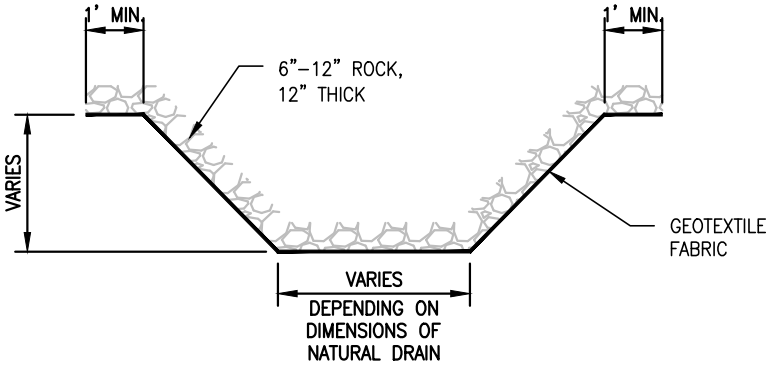
| DRAWING NO. | REV. |
|---|---|
| MVP–SG–39 | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:39 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-39.dwg




PLAN
SCALE: NOT TO SCALE




SECTION A-A
SCALE: NOT TO SCALE

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|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

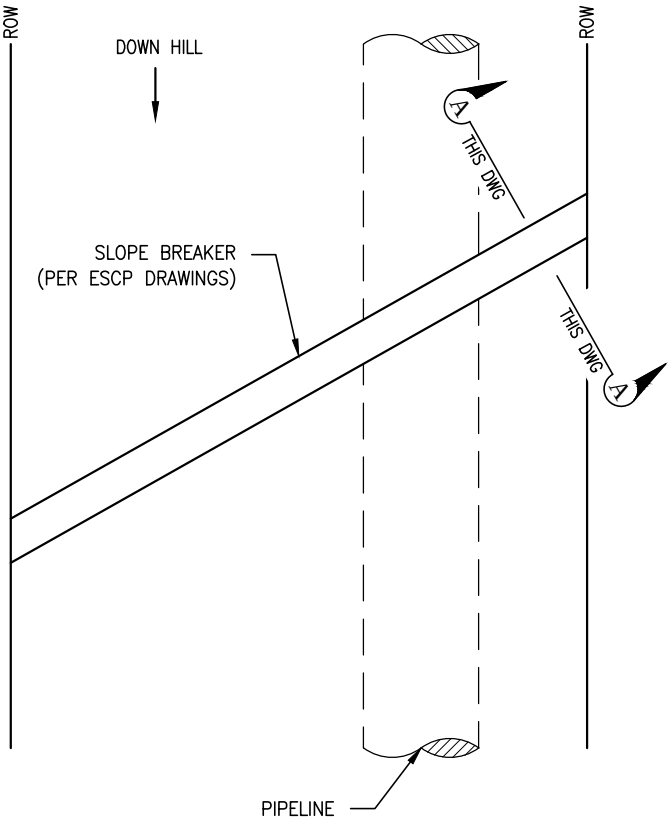
# TYPICAL CONSTRUCTION DETAIL

RIP-RAP NATURAL DRAIN

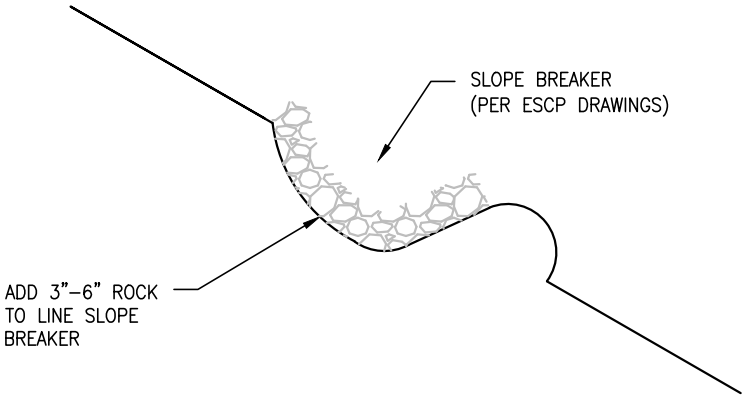
| DRAWING NO. | REV. |
|---|---|
| MVP-SG-40 | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:39 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-40.dwg




PLAN
SCALE: NOT TO SCALE




SECTION A-A
SCALE: NOT TO SCALE

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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| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H–650–TYP | | | |

Mountain Valley PIPELINE LLC

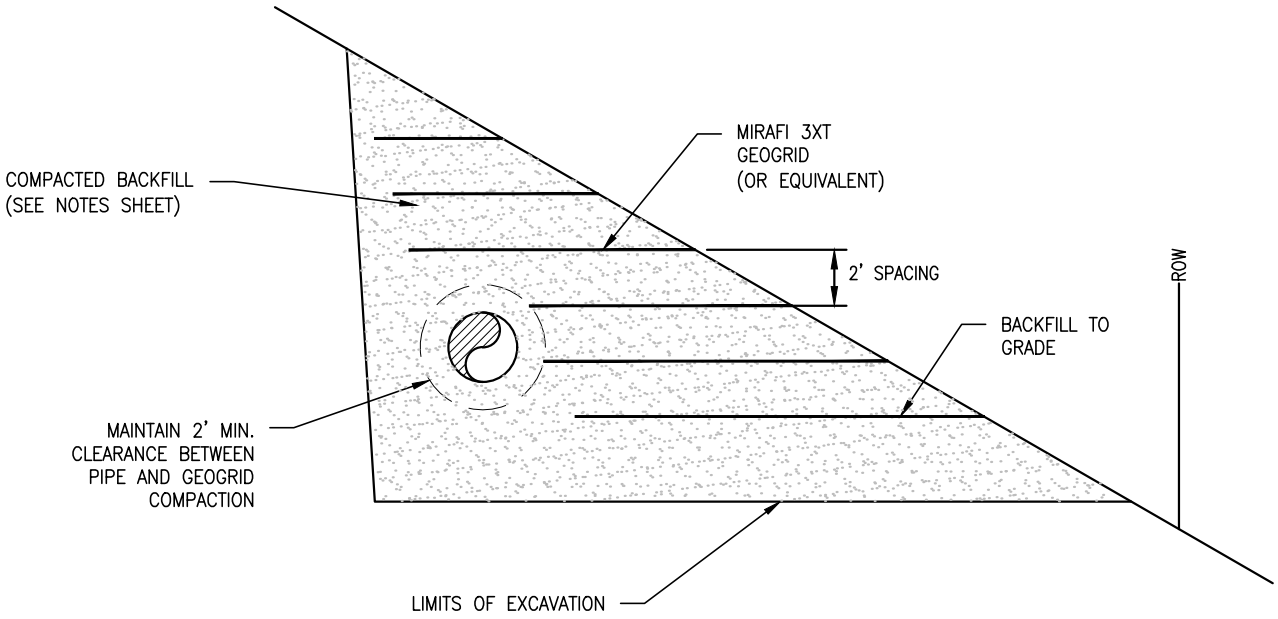
# TYPICAL CONSTRUCTION DETAIL

RIP–RAP SLOPE BREAKERS

| DRAWING NO. | REV. |
|---|---|
| MVP–SG–41 | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:39 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-41.dwg

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| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 3 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

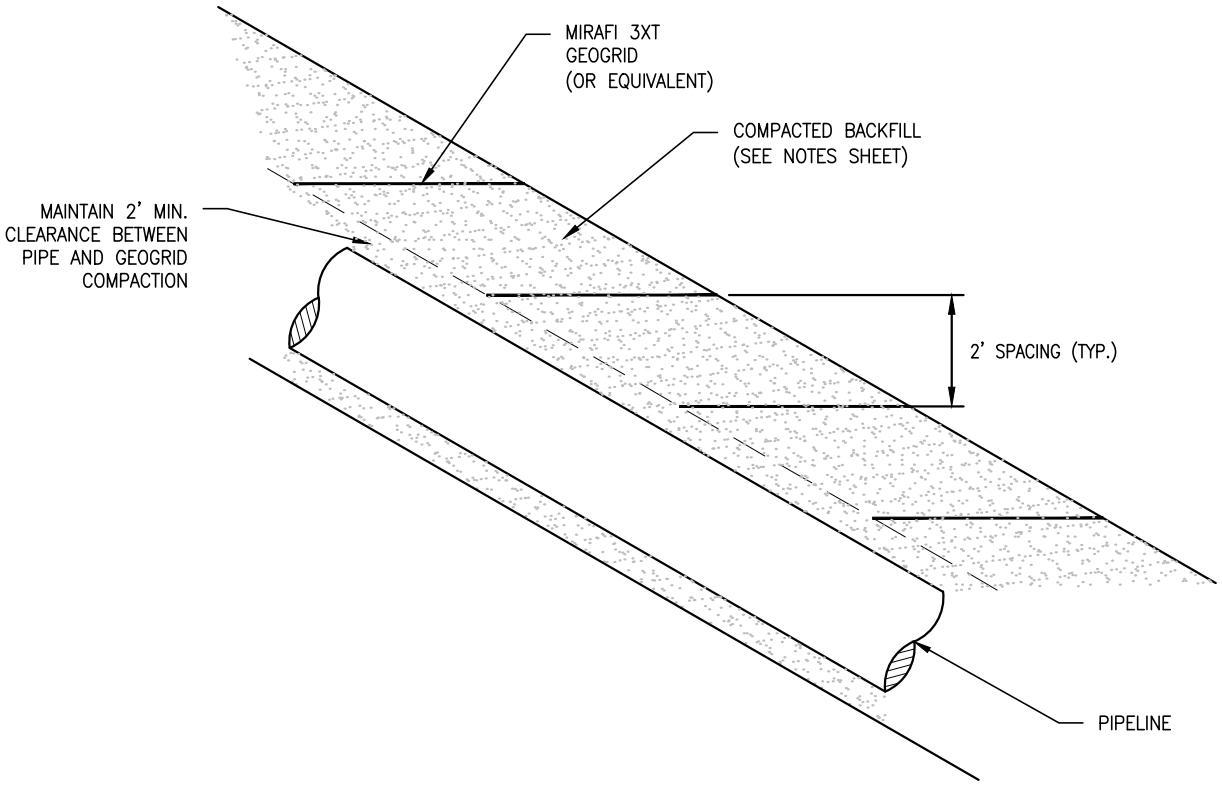
# TYPICAL CONSTRUCTION DETAIL

GEOGRID-SIDEHILL

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-42A | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:40 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-42A.dwg




SECTION VIEW
SCALE: NOT TO SCALE

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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|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 2 OF 3 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# SLIDE MITIGATION DETAIL

GEOGRID-PLANAR

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-42B | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:58 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-42B.dwg

COMPACTION NOTES

1) ALL ROCKS LARGER THAN 6 INCHES IN SIZE, AND MORE THAN 10 PERCENT BY VOLUME SHOULD BE REMOVED AND PROPERLY DISPOSED FROM THE BACKFILL MATERIAL.
2) THE SUBGRADE AT THE BASE OF THE EXCAVATION SHOULD BE PROOFROLLED WITH A PNEUMATIC TIRED ROLLER OR VEHICLE.
3) THE EXCAVATED AREA SHALL BE BACKFILLED WITH THE CLEANED EXCAVATED SOIL MATERIAL AND COMPACTED IN PLACE.
4) BACKFILL OPERATIONS SHALL BE PERFORMED WHEN SOIL IS SUITABLE FOR COMPACTION (I.E., NOT IMMEDIATELY FOLLOWING A LARGE RAIN, SNOW, OR ICE EVENT). FROZEN FILL SHALL NOT BE USED.
5) THE BACKFILL SHALL BE PLACED IN COMPACTED LIFTS NO GREATER THAN 12 INCHES.
6) MAINTAIN A MINIMUM 2FT CLEARANCE BETWEEN COMPACTION ACTIVITY AND THE GAS PIPELINE.

GRAVEL DRAIN NOTES

1) GEOTEXTILE FABRIC SHALL BE TENCATE MIRAFI 140N OR APPROVED EQUIVALENT.
2) THE GEOTEXTILE FABRIC SHALL BE STORED UNDAMAGED PURSUANT TO MANUFACTURERS RECOMMENDATIONS.
3) DO NOT OPERATE CONSTRUCTION EQUIPMENT DIRECTLY ON THE GEOTEXTILE FABRIC.
4) DRAINAGE AGGREGATE SHALL MEET THE REQUIREMENTS OF AASHTO NO. 57 STONE.
5) DRAINAGE AGGREGATE SHALL NOT BE COMPACTED.

GEOGRID NOTES

1) GEOGRID REINFORCEMENT SHALL BE TENCATE MIRAFI 3XT OR APPROVED EQUIVALENT.
2) THE GEOGRID MATERIAL SHALL BE STORED UNDAMAGED PURSUANT TO MANUFACTURERS RECOMMENDATIONS.
3) GEOGRID SHALL BE PLACED HORIZONTALLY ON THE BACKFILL WITH THE PRINCIPAL STRENGTH DIRECTION PERPENDICULAR TO THE FACE OF THE SLOPE. ADJACENT PIECES OF PRIMARY GEOGRID SHALL NOT OVERLAP BUT ARE TO BE BUTTED SIDE TO SIDE.
4) REMOVE ALL SLACK IN THE GEOGRID MATERIAL AND ANCHOR AS NECESSARY WITH PINS, OR BAGS TO PREVENT SLACK FROM DEVELOPMENT DURING FILL PLACEMENT AND COMPACTION.
5) FILL IS TO BE PLACED AND SPREAD DIRECTLY ON THE GEOGRID MATERIAL WITH RUBBER TIRED EQUIPMENT ONLY. SPEEDS ARE TO BE KEPT SLOW WITH AS FEW STOPS AND TURNS AS PRACTICAL.
6) DO NOT OPERATE TRACKED EQUIPMENT DIRECTLY ON THE GEOGRID MATERIAL.
7) MAINTAIN A MINIMUM 2FT CLEARANCE BETWEEN GEOGRID MATERIAL AND THE GAS PIPELINE.

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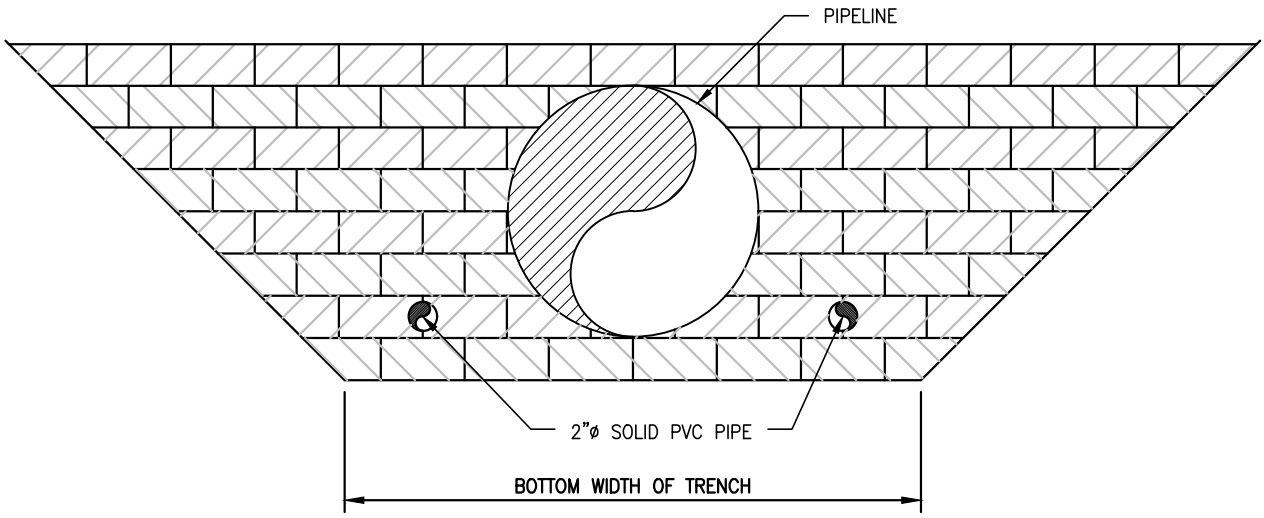
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 3 OF 3 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

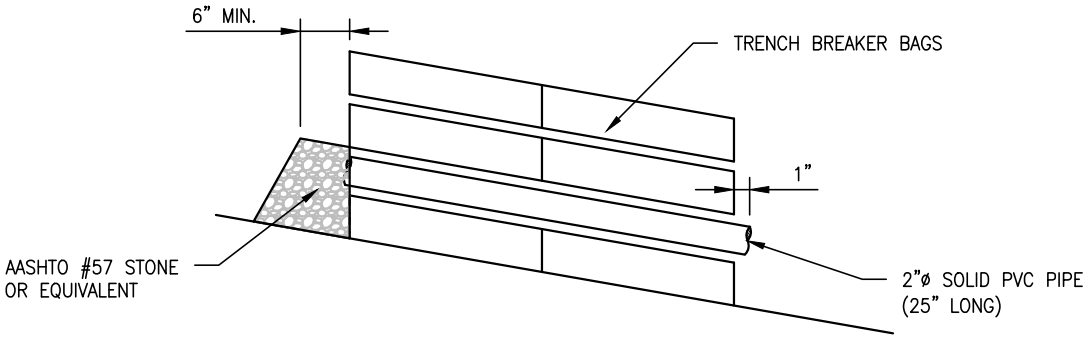
# TYPICAL CONSTRUCTION DETAIL

GEOGRID NOTES

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-42C | P1 |




FRONT VIEW
SCALE: NOT TO SCALE




SECTION VIEW
SCALE: NOT TO SCALE

NOTES:
1. PLACE PVC DRAIN PIPE ON FIRST LAYER OF TRENCH BREAKER BAGS.
2. PLACE PVC DRAIN PIPE EQUADISTANT FROM THE OUTSIDE EDGE OF THE 30" GAS PIPE AND THE BOTTOM LIMITS OF THE TRENCH.
3. EXTEND PVC PIPE THROUGH ENTIRE TRENCH BREAKER AND EXTEND APPROX. 1" PAST END OF BREAKER.
4. AASHTO#57 STONE SHALL BE PLACED TO A MINIMUM 6" THICKNESS UPSLOPE OF THE DRAIN PIPE.

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|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 2 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

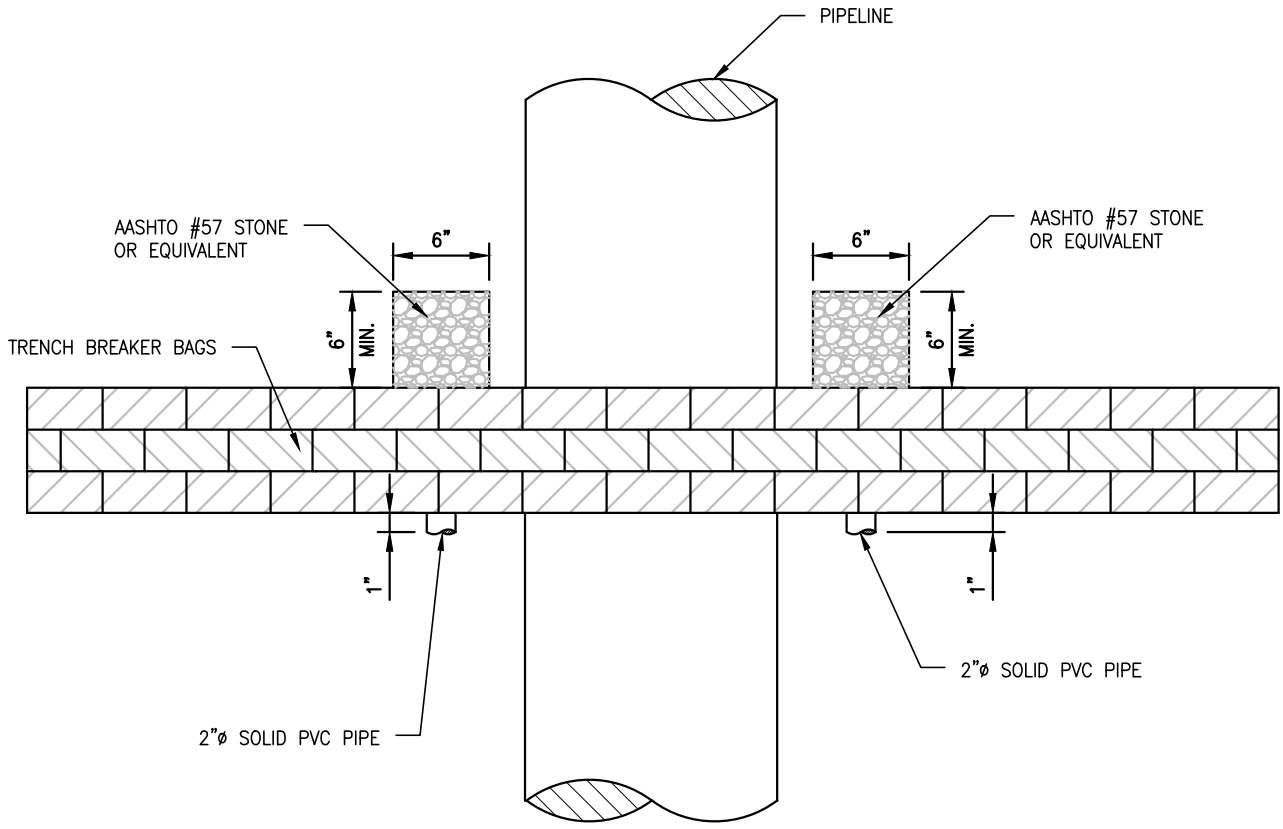
# TYPICAL CONSTRUCTION DETAIL

TRENCH BREAKER
PASS-THROUGH DRAIN

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-43A | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:40 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-43A.dwg




PLAN VIEW
SCALE: NOT TO SCALE

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| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 2 OF 2 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

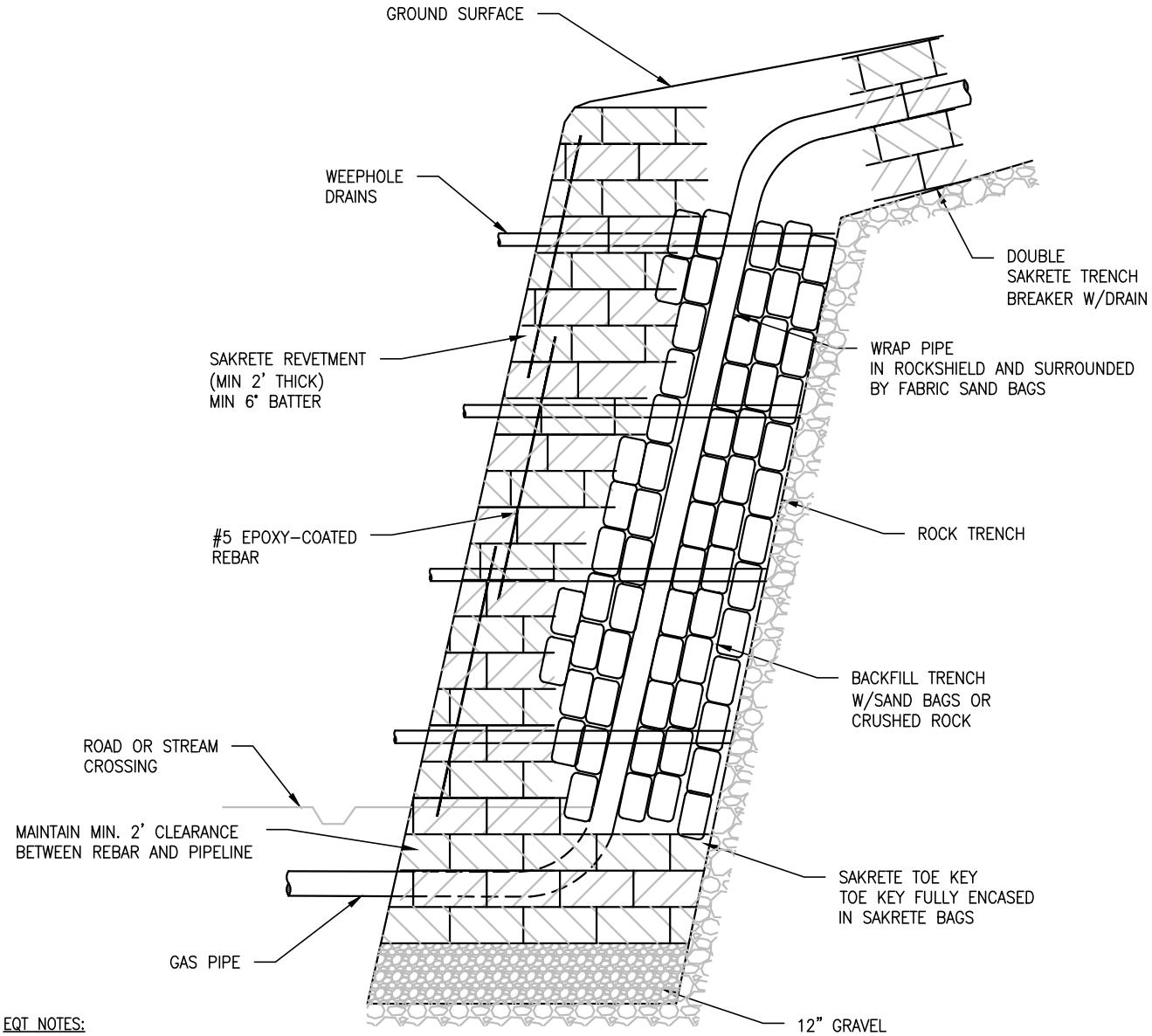
# TYPICAL CONSTRUCTION DETAIL

TRENCH BREAKER
PASS-THROUGH DRAIN

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-43B | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:40 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-43B.dwg




SIDE VIEW
SCALE: NOT TO SCALE

EQT NOTES:

1. SAKRETE BAGS SHOULD EXTEND 4 BAGS DEEP PIPE SHOULD BE COMPLETELY SURROUNDED BY SAND BAGS, OR CRUSHED ROCK (MAX 6").
2. SAKRETE BAGS SHOULD BE STAGGERED IN A MASONRY FASHION. THE FACE OF THE WELL SHALL BE INCLINED 6°-10° FROM VERTICAL.
3. #5 REBAR SHOULD BE DRIVEN THROUGH THE SAKRETE BAGS (SEE DETAIL 1).
4. 2"ø PVC WEEPHOLE DRAINS SHALL BE INSTALLED EVERY 15 FT.

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|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 2 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

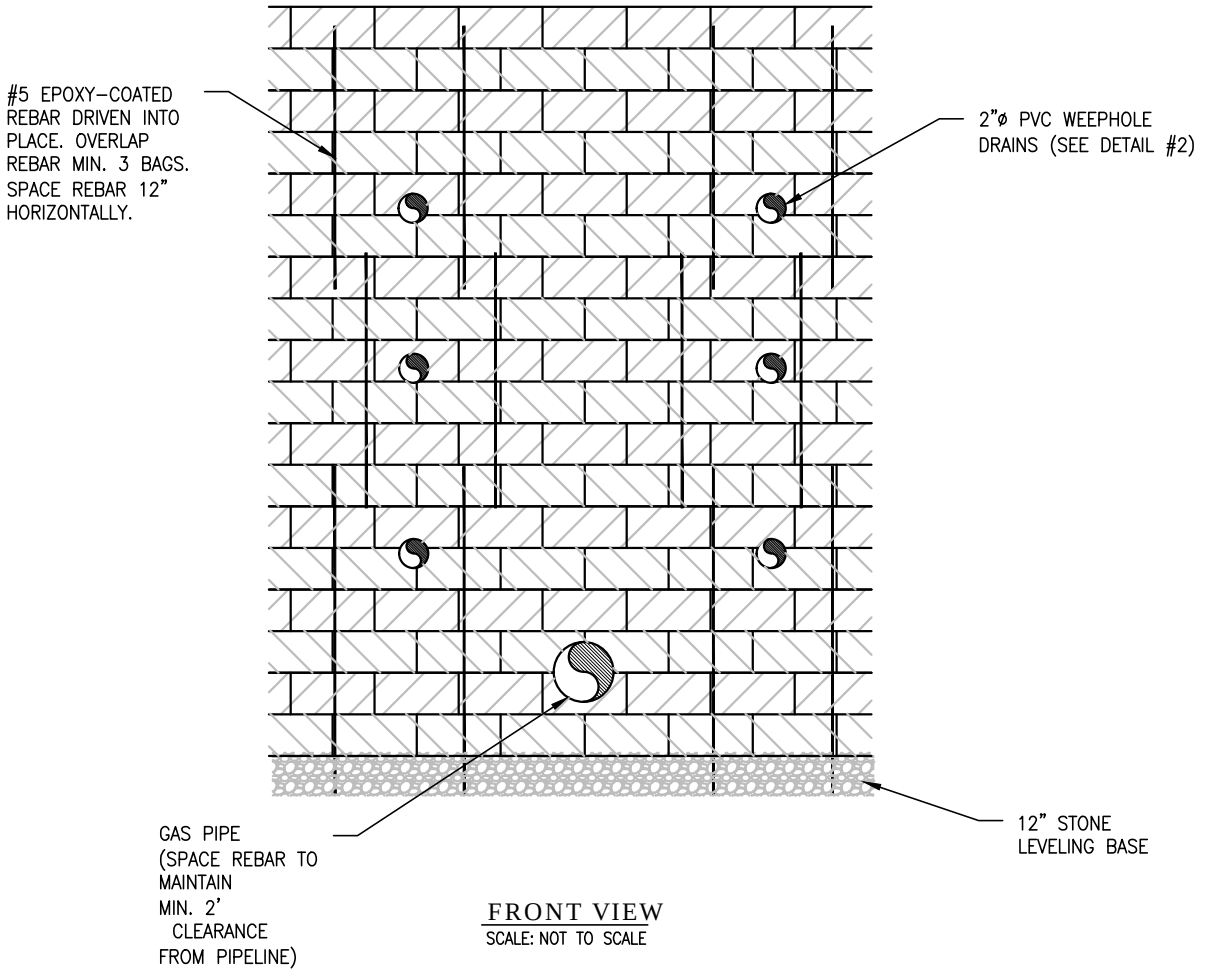
# TYPICAL CONSTRUCTION DETAIL

SLIDE MITIGATION
HIGHWALL REVETMENT
SIDE VIEW

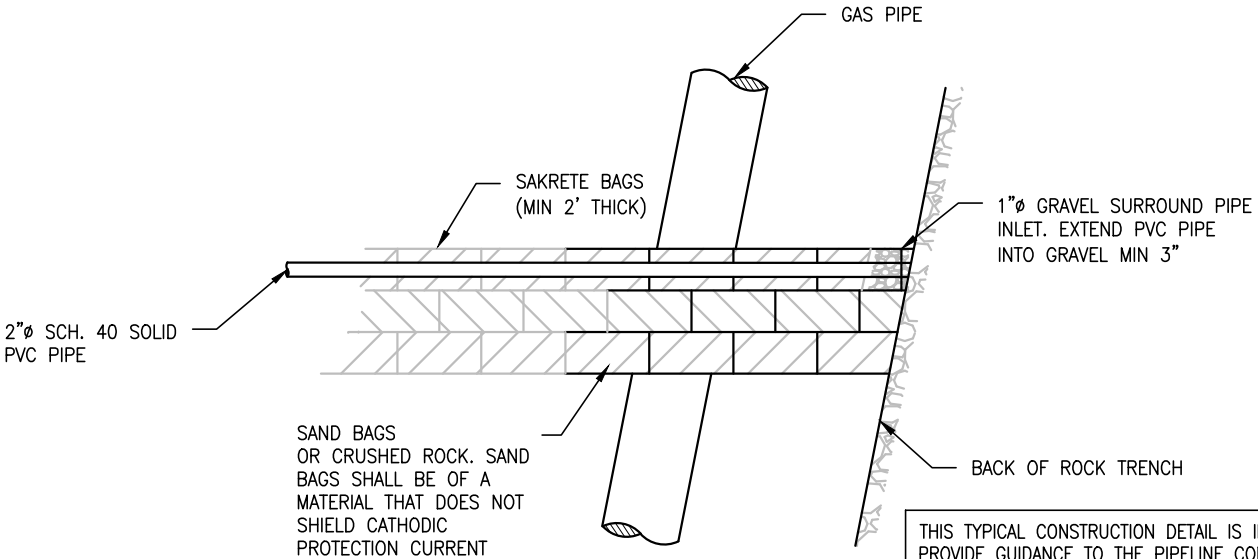
| DRAWING NO. | REV. |
|---|---|
| MVP-SG-44A | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:40 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-44A.dwg




FRONT VIEW
SCALE: NOT TO SCALE




DRAIN DETAIL
SCALE: NOT TO SCALE

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| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 2 OF 2 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

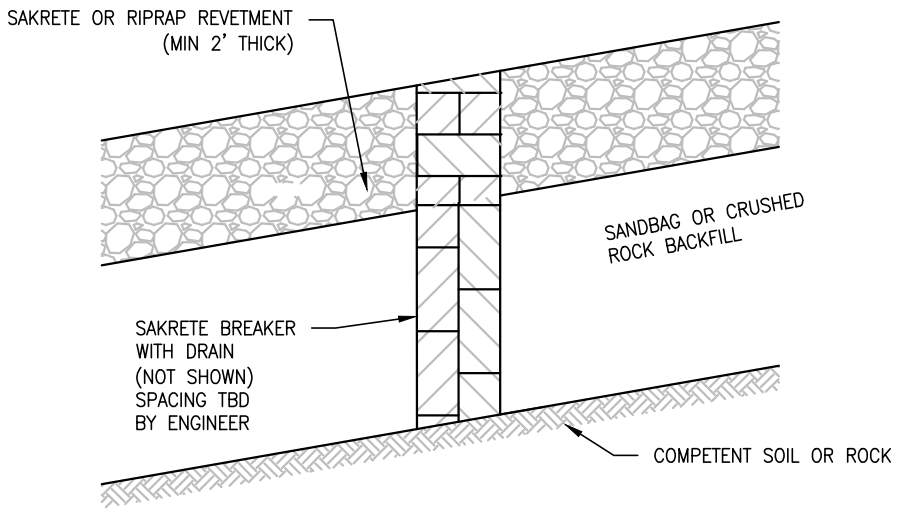
# TYPICAL CONSTRUCTION DETAIL

SLIDE MITIGATION
HIGHWALL REVETMENT
FRONT VIEW AND DRAIN DETAIL

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-44B | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:40 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-44B.dwg




SIDE VIEW
SCALE: NOT TO SCALE

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| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

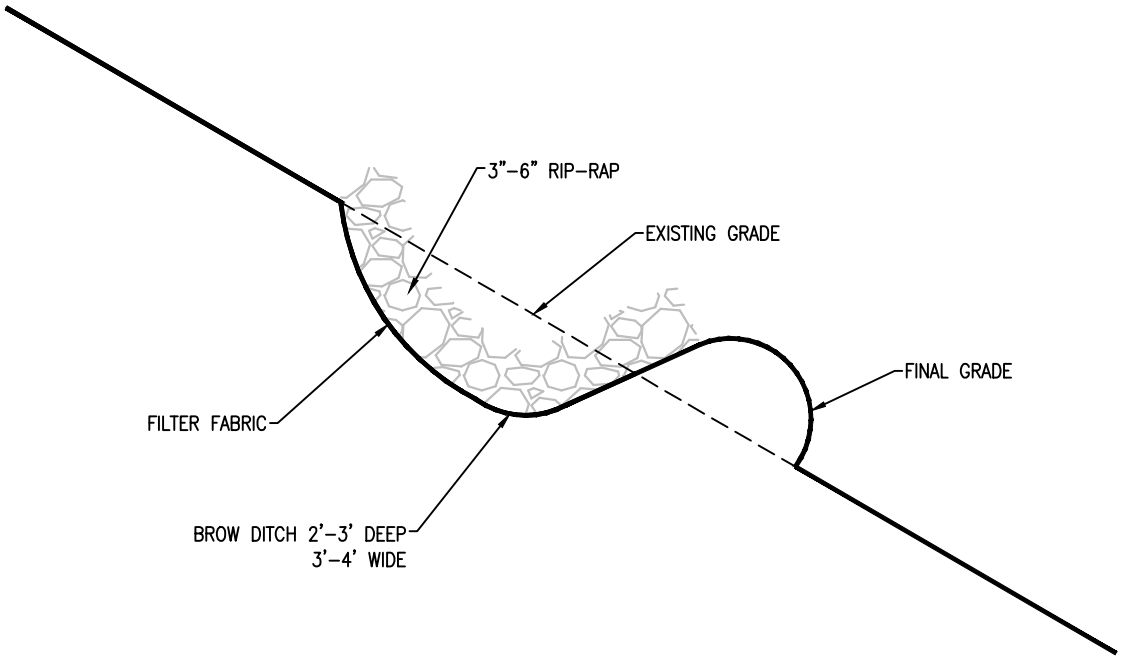
# TYPICAL CONSTRUCTION DETAIL

STEEP SLOPE REVETMENT

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-45 | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:40 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-45.dwg

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| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H–650–TYP | | | |

Mountain Valley PIPELINE LLC

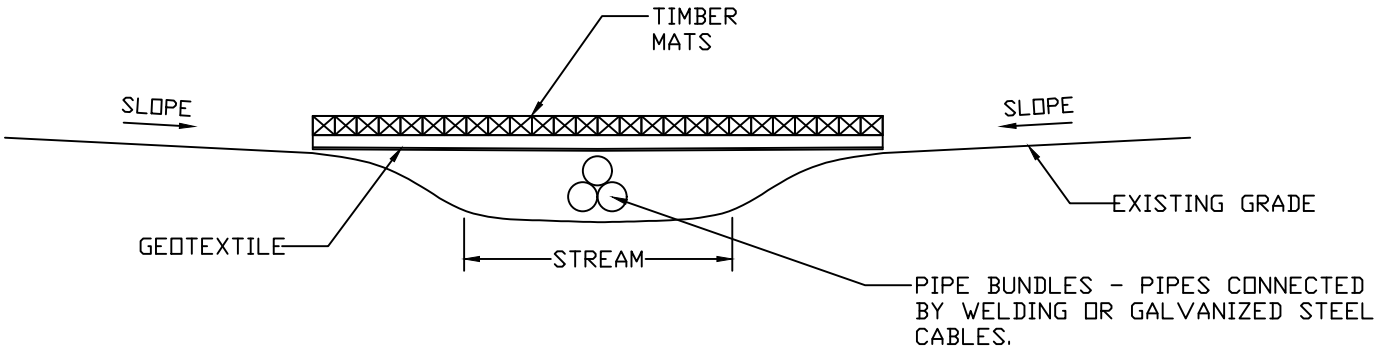
# TYPICAL CONSTRUCTION DETAIL

BROW DITCH DETAIL

| DRAWING NO. | REV. |
|---|---|
| MVP–SG–46 | P1 |

Plotted by: Sample, Stanley on: August 14, 2018 - 12:40 PM

File Path: O:\Projects\300423 - NextEra MVP Southgate\CA - CADD\Pipeline\Drawings\Typicals\MVP-SG-46.dwg




NOTE:

CFS TO BE INSTALLED AT THE END OF EACH WORKING DAY.

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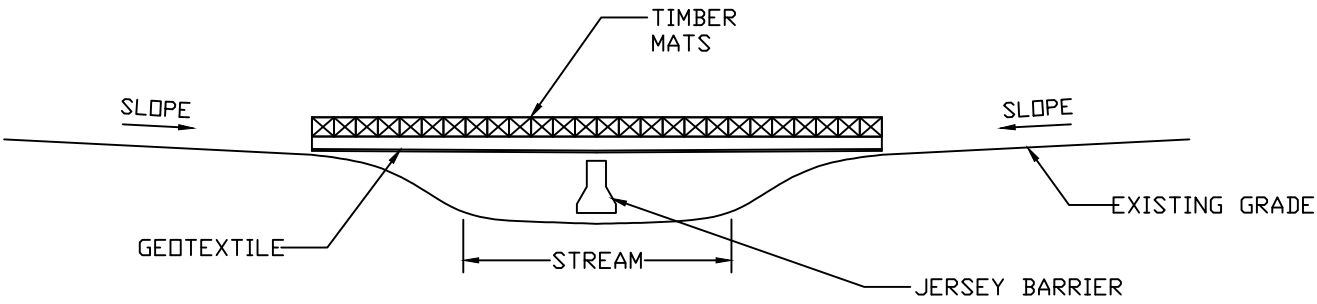
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# TYPICAL CONSTRUCTION DETAIL

TIMBER MAT AND PIPE BUNDLE TEMPORARY STREAM CROSSING

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-47 | P1 |




NOTE:

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|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
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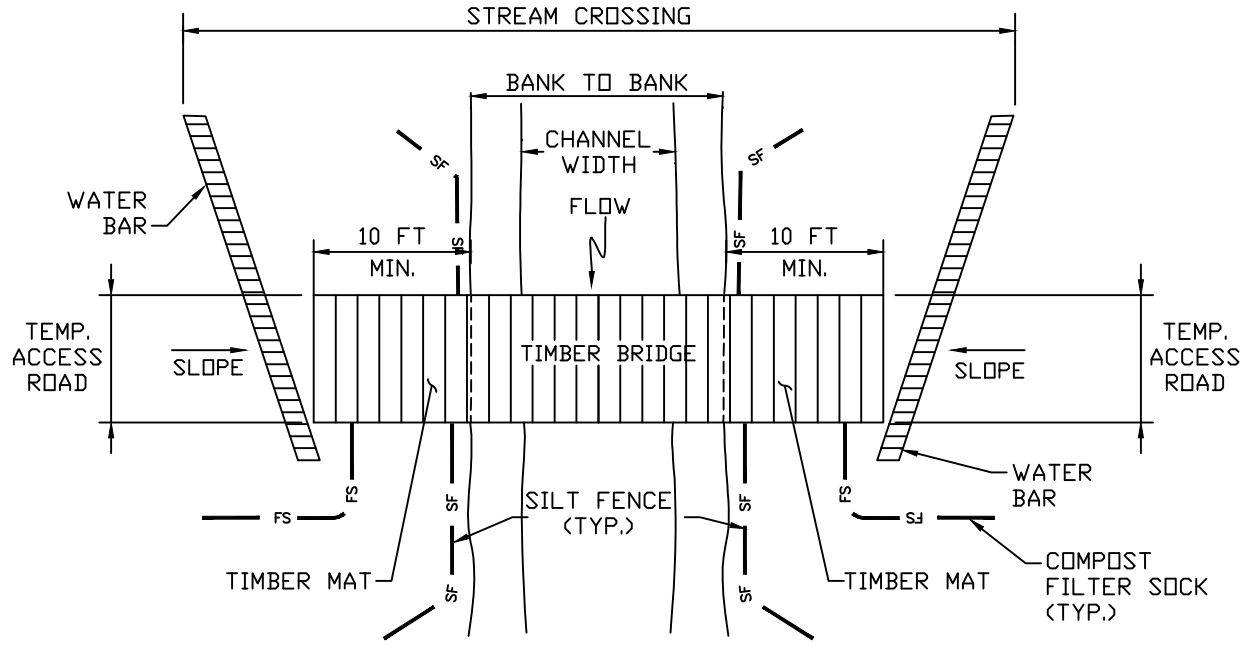
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

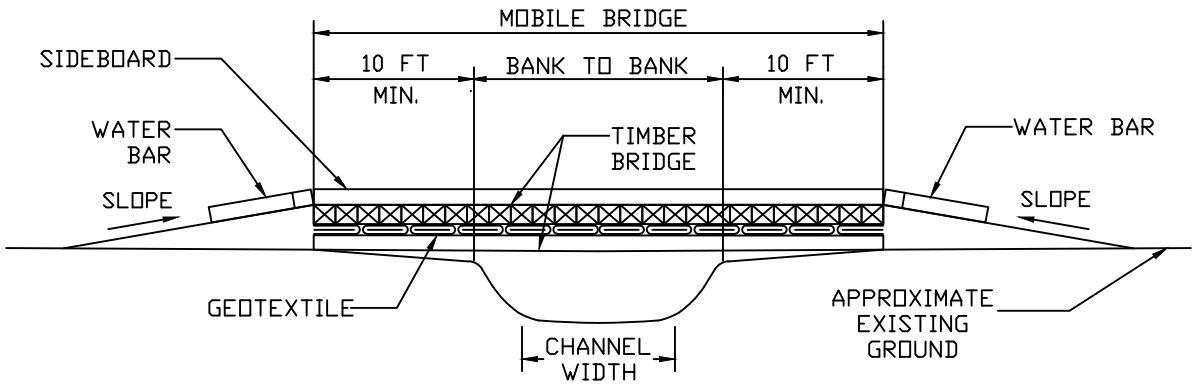
# TYPICAL CONSTRUCTION DETAIL

TIMBER MAT AND JERSEY BARRIER
TEMPORARY STREAM CROSSING

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-48 | P1 |




PLAN VIEW




CROSS SECTION - MOBILE BRIDGE

NOTES:

1. INSTALL WATER BARS OR SILT FENCE AT APPROACHES TO STREAM CROSSING AND COMPOST FILTER SOCKS ALONG STREAM BANKS. INSTALL COMPOST FILTER SOCK AT OUTLET OF WATER BARS.
2. MAINTAIN SURFACE OF TEMPORARY EQUIPMENT CROSSING TO PREVENT SOIL DISCHARGES TO STREAM.
3. APPROACHES TO CROSSINGS ARE NOT TO EXCEED A DEPTH OF 6 INCHES ABOVE ORIGINAL GRADE.
4. GEOTEXTILE LINER TO COME UP ON THE SIDES OF THE BRIDGE A MINIMUM OF 18".
5. SIDEBOARDS TO BE ATTACHED TO THE UPPER DECK. GEOTEXTILE TO BE WRAPPED AROUND SIDEBOARDS PRIOR TO FASTENING.

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.

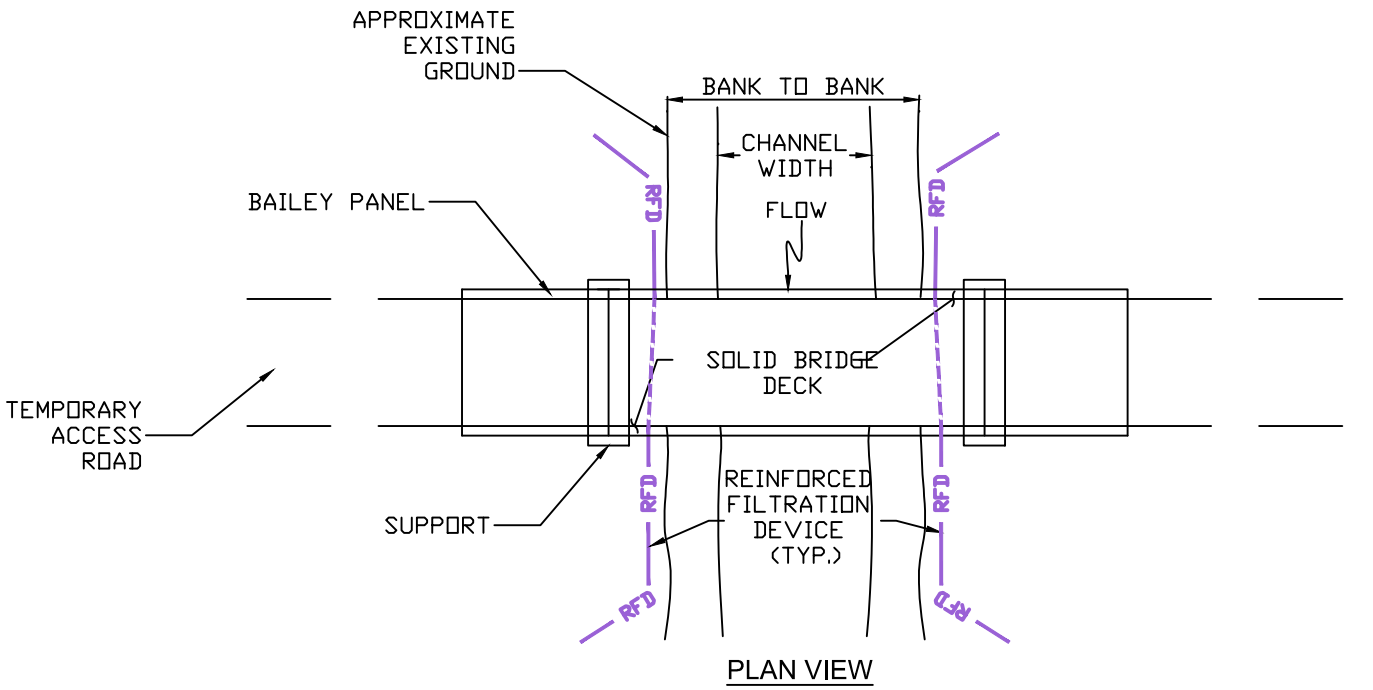
| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

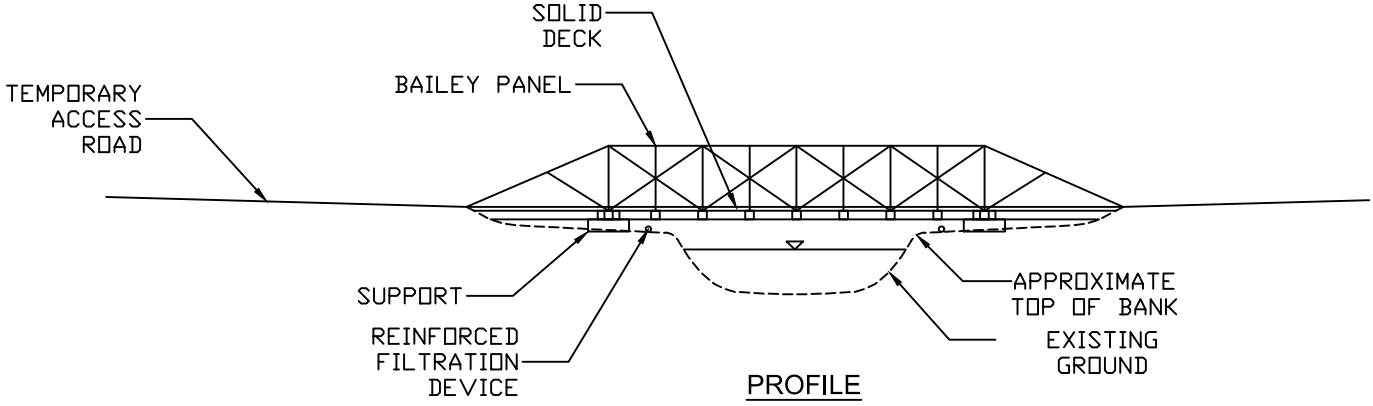
# TYPICAL CONSTRUCTION DETAIL

MOBILE BRIDGE

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-49 | P1 |




PLAN VIEW




PROFILE

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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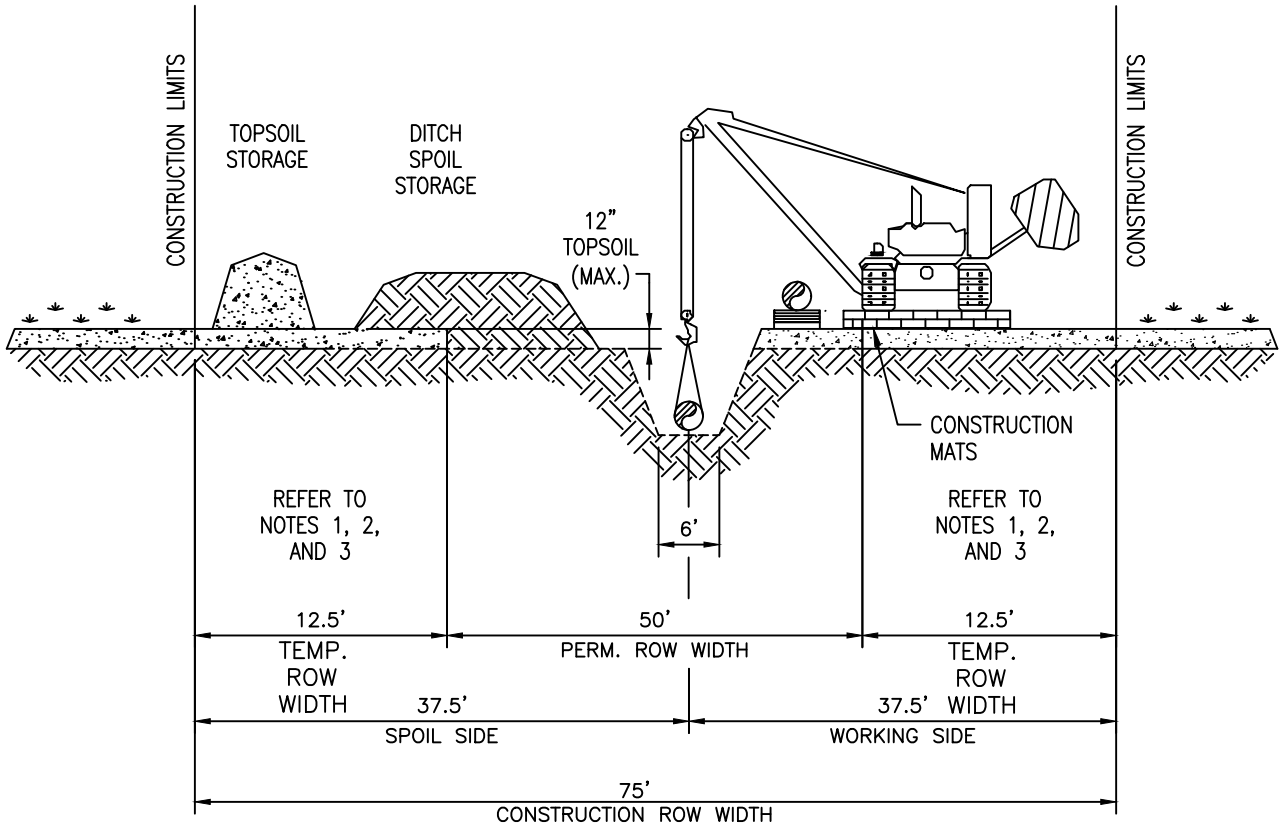
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# TYPICAL CONSTRUCTION DETAIL

MODULAR TEMPORARY BAILEY BRIDGE

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-50 | P1 |




NOTES:

1. TOPSOIL SEGREGATION/REMOVAL WILL ONLY BE CONDUCTED WITHIN THE PERMANENT EASEMENT AT ALL WETLAND CROSSINGS IN VIRGINIA.

2. GRUBBING ACTIVITIES SHALL BE LIMITED TO THE PERMANENT EASEMENT AT ALL WETLAND CROSSINGS IN VIRGINIA. OUTSIDE OF THE PERMANENT EASEMENT, WETLAND VEGETATION SHALL ONLY BE REMOVED AT OR ABOVE THE GROUND SURFACE. WOODY VEGETATION WITHIN THE TEMPORARY EASEMENT SHALL BE CUT AT GROUND SURFACE WITH THE STUMPS TO REMAIN IN-PLACE.

3. WETLAND CROSSINGS IN VIRGINIA SHALL BE CONDUCTED IN ACCORDANCE WITH NWP12 GENERAL AND NORFOLK DISTRICT REGIONAL CONDITIONS.

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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| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: | | | |
| H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# TYPICAL CONSTRUCTION DETAIL

WETLAND CROSSING TYPICAL FOR USACE NORFOLK (VA) DISTRICT

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-53 | P1 |

# MVP SOUTHGATE PROJECT

## PROPOSED H-650 PIPELINE
## ENGINEERING SERVICES DESIGN; JOB NUMBERS 300423
## ENVIRONMENTAL TYPICAL DRAWINGS

| DRAWING NO. | DRAWING TITLE | REV. |
|---|---|---|
| ENV-TYP | MOUNTAIN VALLEY PIPELINE PROJECT PROPOSED H650 PIPELINE ENVIRONMENTAL TYPICALS | P1 |
| MVP-SG-ES6 | PROPOSED ACCESS ROAD TYPICAL LAYOUT | P1 |
| MVP-SG-ES8 | DAM AND PUMP | P1 |
| MVP-SG-ES9.1 | BELTED SILT RETENTION FENCE (BSRF) | P1 |
| MVP-SG-ES9.2 | SUPER SILT FENCE | P1 |
| MVP-SG-ES9.3 | STACKED COMPOST FILTER SOCK DETAIL CROSS SECTION VIEW | P1 |
| MVP-SG-ES13.2 | COFFERDAM STREAM CROSSING METHOD | P1 |
| MVP-SG-ES14 | WATER DEFLECTOR | P1 |
| MVP-SG-ES17 | ROCK FILTER OUTLET | P1 |
| MVP-SG-ES19 | WATERBAR | P1 |
| MVP-SG-ES20 | ROCK CONSTRUCTION ENTRANCE WITH WASH RACK | P1 |
| MVP-SG-ES25 | RIPRAP STREAMBANK PROTECTION WITH OPTIONAL LIVE STAKES | P1 |
| MVP-SG-ES33 | GAP GRADED GRAVEL DETAIL FOR MAINLINE VALVE PADS & PERMANENT ACCESS ROADS | P1 |
| MVP-SG-ES34 | PROPOSED ACCESS ROAD TYPICAL SECTION | P1 |

| DRAWING NO. | DRAWING TITLE | REV. |
|---|---|---|
| MVP-SG-ES35 | TRENCH DETAIL | P1 |
| MVP-SG-ES37 | TIMBER MAT/WETLAND CROSSING | P1 |
| MVP-SG-ES38 | DIVERSION DIKE/WATERBARS WITH COMPOST | P1 |
| MVP-SG-ES42 | TYPICAL SUMP FILTER | P1 |
| MVP-SG-ES43 | TURBIDITY CURTAIN DETAIL | P1 |
| MVP-SG-ES43.1 | TURBIDITY CURTAIN DETAIL | P1 |
| MVP-SG-ES43.2 | TURBIDITY CURTAIN DETAIL | P1 |
| MVP-SG-ES43.3 | TURBIDITY CURTAIN DETAIL | P1 |
| MVP-SG-ES43.4 | TURBIDITY CURTAIN DETAIL | P1 |
| MVP-SG-ES46 | TOPSOILING & SOIL HANDLING | P1 |
| MVP-SG-ES46.1 | TOPSOILING & SOIL HANDLING | P1 |
| MVP-SG-ES46.2 | TOPSOILING & SOIL HANDLING | P1 |
| MVP-SG-ES46.3 | TOPSOILING & SOIL HANDLING | P1 |
| MVP-SG-ES49 | TIMBER MAT BRIDGE STREAM CROSSING | P1 |
| MVP-SG-ES54 | TEMPORARY VEHICLE PULL OFF DETAIL | P1 |

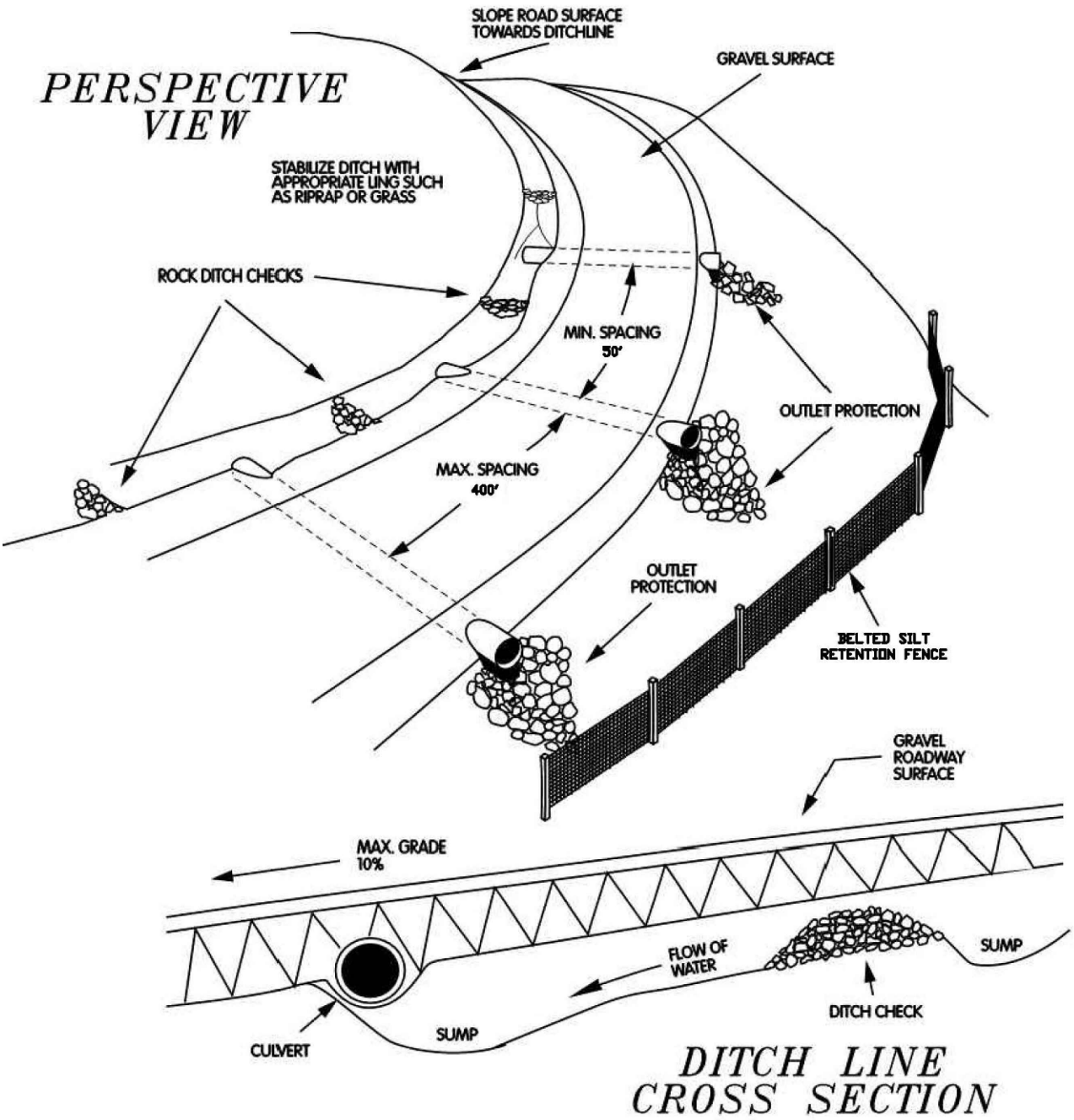
**ISSUED FOR FERC**
11/02/18

O:\PROJECTS\300423 - NEXTERA MVP SOUTHGATE\CA - CADD\PIPELINE\DRAWINGS\TYPICALS\TYPICAL COVER.DWG

PROJECT ID 300423
DRAWING SCALE NTS

DRAWING TITLE:
MOUNTAIN VALLEY PIPELINE
SOUTHGATE PROJECT
PROPOSED H-650 PIPELINE
ENVIRONMENTAL TYPICALS

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | ENV-TYP | – | 2 | P1 |

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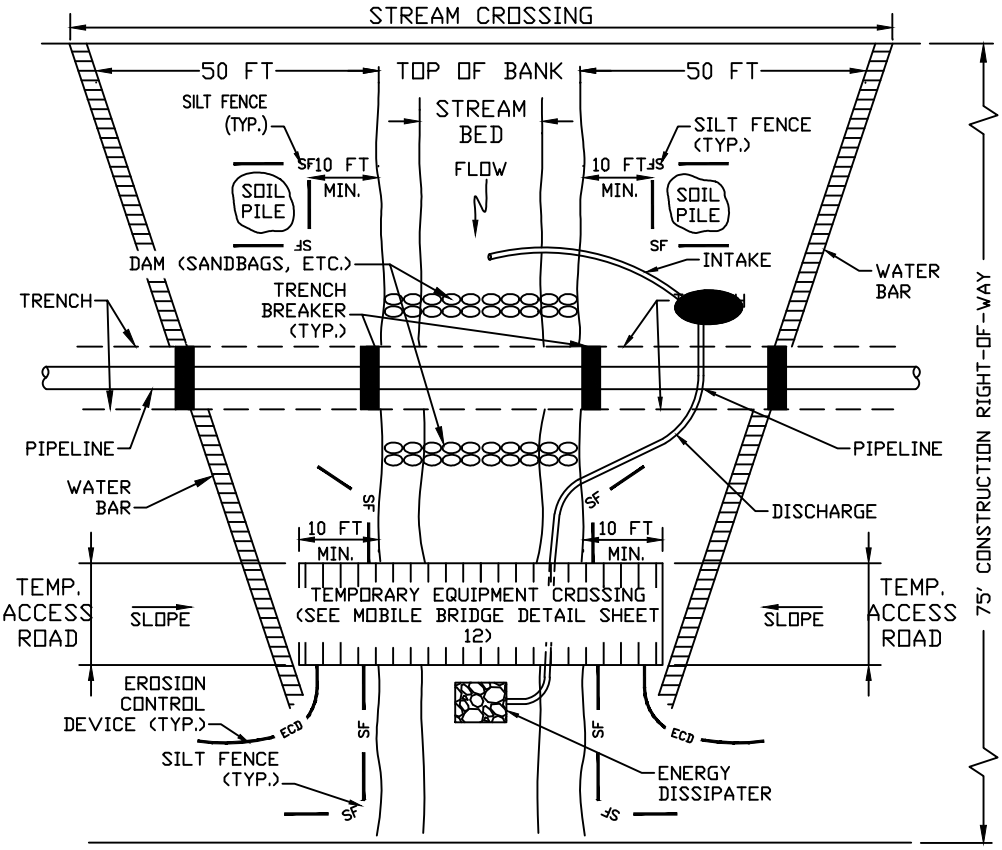
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

PROPOSED ACCESS ROAD
TYPICAL LAYOUT

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES6 | P1 |




## PLAN VIEW

NOTES:

1. INSTALL EROSION CONTROL DEVICES, TRENCH BREAKERS, PUMP, ENERGY DISSIPATER, AND DAMS BEFORE TRENCHING STREAM.
2. PUMP MUST BE OF SUFFICIENT CAPACITY TO CONVEY NORMAL AND/OR EXISTING STREAM FLOW OVER TRENCH. A BACK-UP PUMP OF EQUAL CAPACITY MUST BE AVAILABLE ON-SITE DURING CONSTRUCTION OF THE PIPELINE CROSSING. PUMPS WILL BE PLACED WITHIN SECONDARY CONTAINMENT.
3. PLACE SOIL PILES A MINIMUM OF 10 FEET FROM TOP OF BANK.
4. INSTALL WATER BARS AT APPROACHES TO STREAM CROSSING AND EROSION CONTROL DEVICES, SILT FENCE, OR SUPER SILT FENCE (AS INDICATED ON PLAN SHEETS).
5. MAINTAIN SURFACE OF TEMPORARY EQUIPMENT CROSSING TO PREVENT SOIL DISCHARGES TO STREAM.
6. APPROACHES TO CROSSINGS ARE NOT TO EXCEED A DEPTH OF 6 INCHES ABOVE ORIGINAL GRADE.
7. RESTORE AREA TO ORIGINAL CONTOURS.

| | | | |
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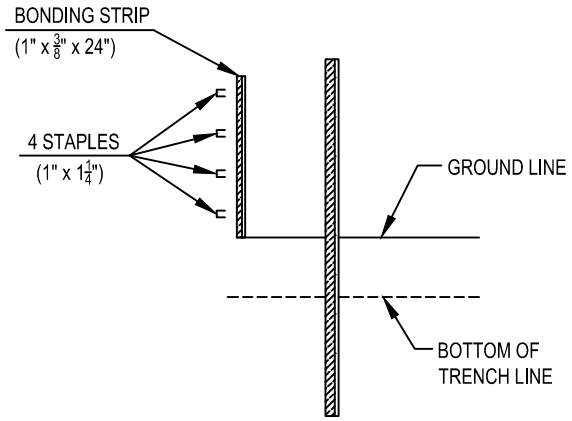
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

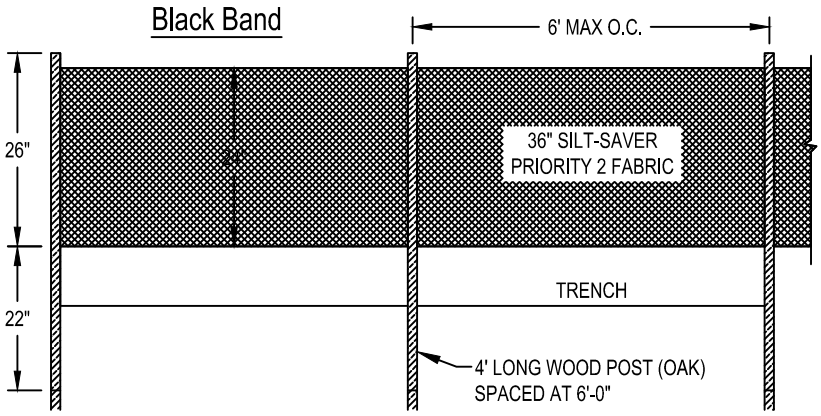
STREAM CROSSING
DAM AND PUMP

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES8 | P1 |




## POST (OAK)

(1-3/4" X 1-1/4" X 48")




## FRONT ELEVATION

## PRIORITY 2

TAKEN FROM SILT-SAVER, INC OR EQUAL

NOTES:

THE TYPE OF REINFORCED FILTRATION DEVICE (PRIORITY 1 OR PRIORITY 2) WILL BE SELECTED BASED ON FIELD CONDITIONS DURING CONSTRUCTION

| | | | |
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| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

**ENVIRONMENTAL DETAIL**

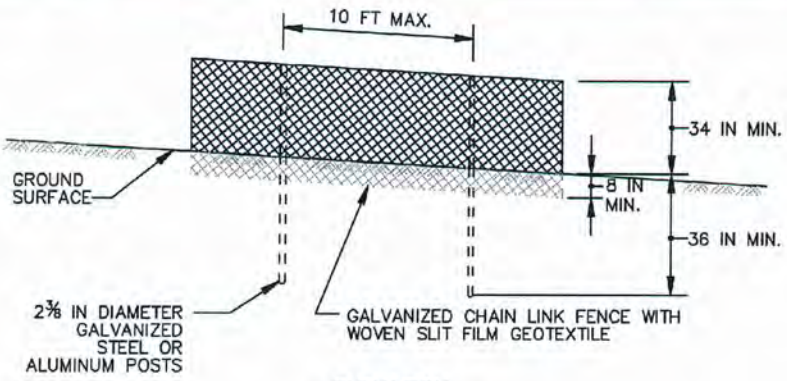
BELTED SILT RETENTION FENCE (BSRF)

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES9.1 | P1 |

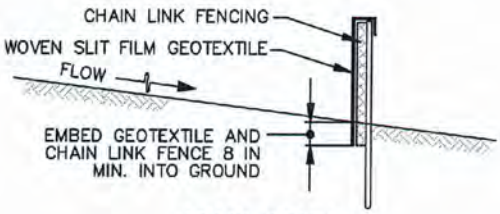
## DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL

—SSF—




ELEVATION




CROSS SECTION

### CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

| | | | |
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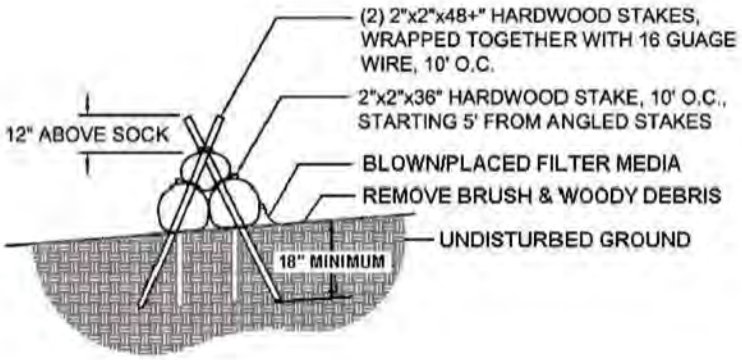
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

**TYPICAL CONSTRUCTION DETAIL**

SUPER SILT FENCE

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES9.2 | P1 |




NOTES:

THE TYPE OF REINFORCED FILTRATION DEVICE (PRIORITY 1 OR PRIORITY 2) WILL BE SELECTED BASED ON FIELD CONDITIONS DURING CONSTRUCTION

| | | | |
|---|---|---|---|
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| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
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| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

STACKED COMPOST FILTER SOCK
DETAIL CROSS SECTION VIEW

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES9.3 | P1 |

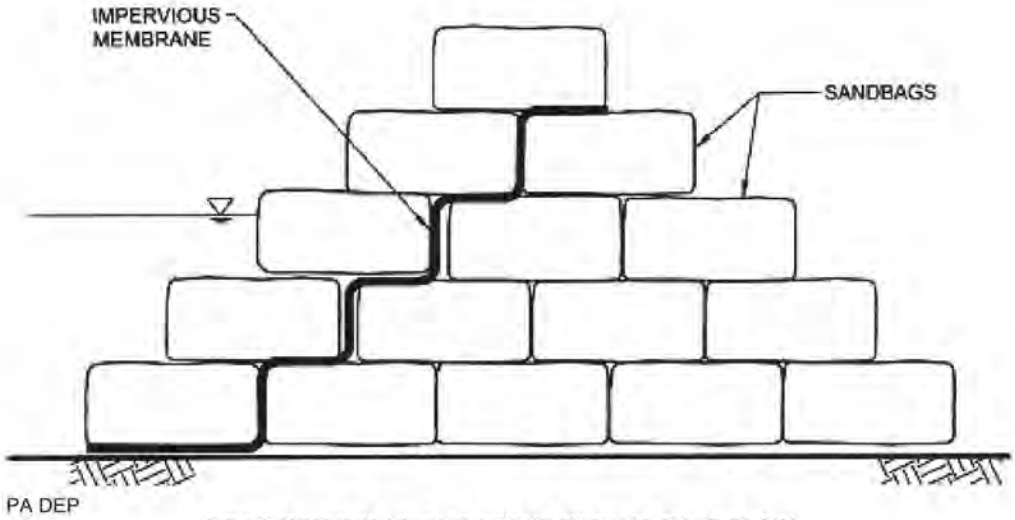
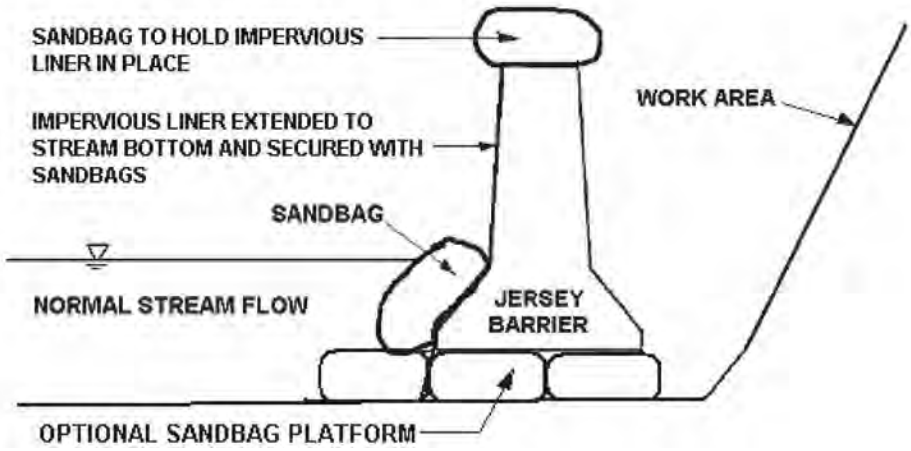



FIGURE 3.13
Jersey Barrier Cofferdam – End View




**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.**

| | | | |
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| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

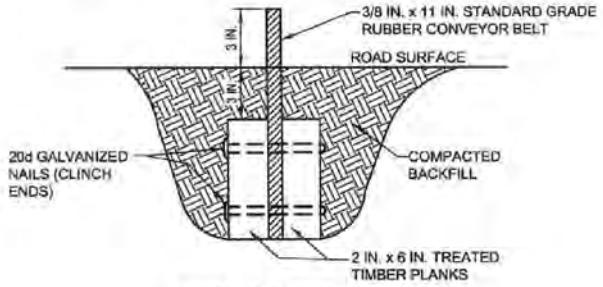
Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

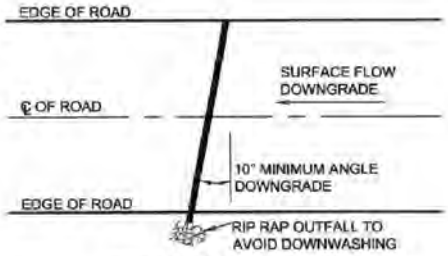
COFFERDAM STREAM CROSSING METHOD

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES13.2 | P1 |

## STANDARD CONSTRUCTION DETAIL
### Water Deflector




TYPICAL CROSS-SECTION




TYPICAL PLAN VIEW

USDA Forest Service

**Deflector shall be inspected weekly and after each runoff event.**

**Accumulated sediment shall be removed from deflector within 24 hours of inspection.**

**Belt shall be replaced when worn and no longer effective.**

**Deflectors may be used to direct runoff from an access road to a well-vegetated area or sediment removal facility.**

**A deflector is typically constructed from rubber belting ranging from 5/16" to 1/2" thick held between two 2" x 6" wooden planks.**

**This method of directing runoff from an access road works best on low traffic roads. deflectors can be used on roads with grades exceeding 10%.**

Table III Spacing of Broad-Based Dips

| Road Grade (%) | Distance Between Dams (Ft) |
|---|---|
| 2 | 300 |
| 3 | 235 |
| 4 | 200 |
| 5 | 180 |
| 6 | 165 |
| 7 | 155 |
| 8 | 150 |
| 9 | 145 |
| 10 | 140 |

| | | | |
|---|---|---|---|
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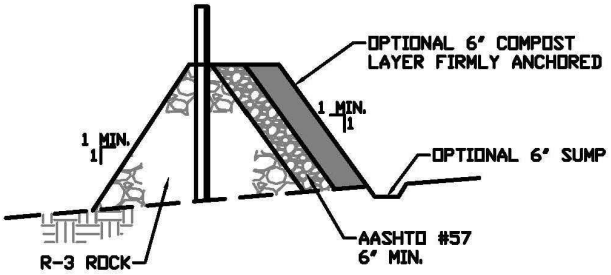
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

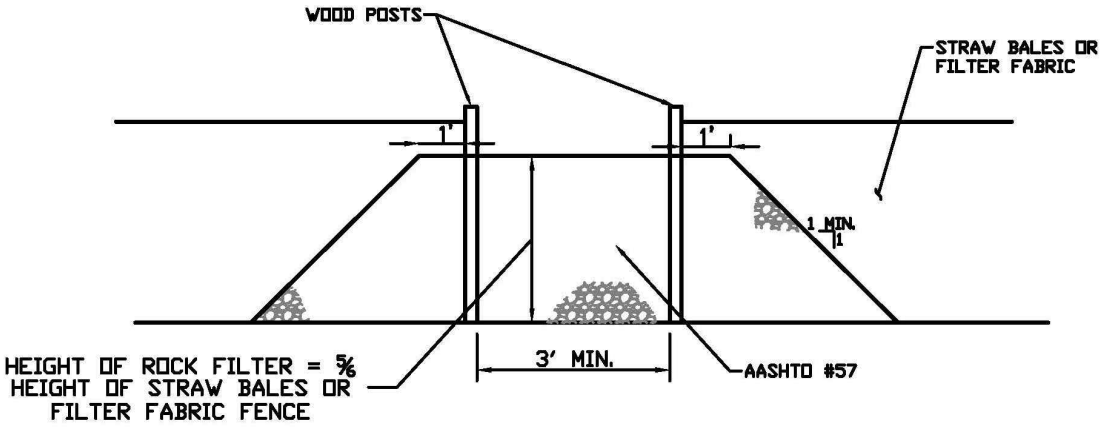
**ENVIRONMENTAL DETAIL**

WATER DEFLECTOR

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES14 | P1 |




OUTLET CROSS SECTION




UP-SLOPE FACE

**A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A SILT FENCE OR STRAW BALE BARRIER HAS OCCURRED DUE TO CONCENTRATED FLOW. ANCHORED COMPOST LAYER SHALL BE USED ON UPSLOPE FACE IN HQ AND EV WATERSHEDS.**

**SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.**

| | | | |
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| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

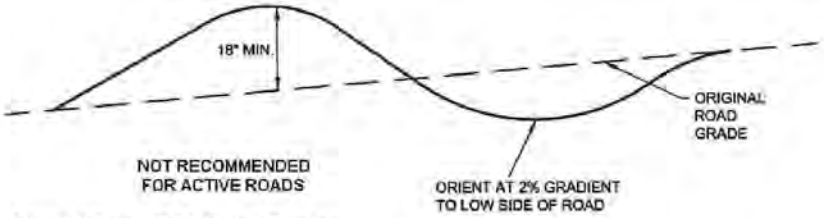
Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

ROCK FILTER OUTLET

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES17 | P1 |

## STANDARD CONSTRUCTION DETAIL #3-5
## Waterbar




Adapted from USDA Forest Service

**Waterbars shall discharge to a stable area.**

**Waterbars shall be inspected weekly (daily on active roads) and after each runoff event. Damaged or eroded waterbars shall be restored to original dimensions within 24 hours of inspection.**

**Maintenance of waterbars shall be provided until roadway, skidtrail, or right-of-way has achieved permanent stabilization.**

**Waterbars on retired roadways, skidtrails, and right-of-ways shall be left in place after permanent stabilization has been achieved.**

**TABLE 3.1 – Maximum Waterbar Spacing**

| PERCENT SLOPE | SPACING (FT) |
|---|---|
| <5 | 250 |
| 5 - 15 | 150 |
| 15 - 30 | 100 |
| > 30 | 50 |

Adapted from USDA Forest Service

| | | | |
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Mountain Valley PIPELINE LLC

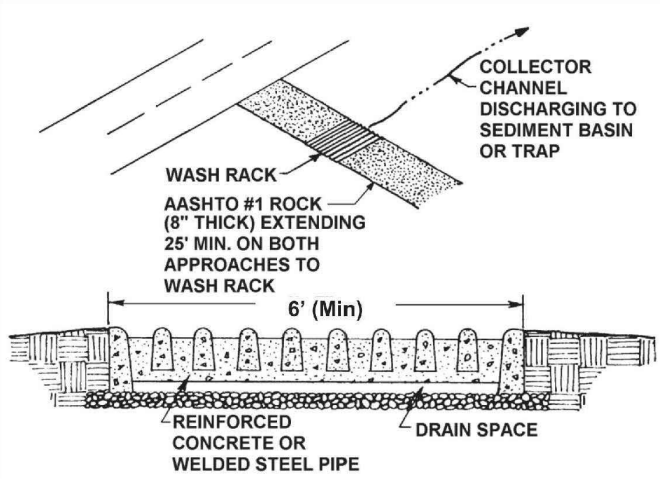
**ENVIRONMENTAL DETAIL**

WATERBAR

DRAWING NO. MVP-SG-ES19

REV. P1

## Rock Construction Entrance with Wash Rack




Modified from Smith Cattleguard Company

**IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 70 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK.**

Wash rack shall be 20 feet (min.) wide or total width of access.

Wash rack shall be designed and constructed to accommodate anticipated construction vehicular traffic.

A water supply shall be made available to wash the wheels of all vehicles exiting the site.

MAINTENANCE: Rock construction entrance thickness shall be constantly maintained to the specified dimensions by adding rock. A stockpile of rock material shall be maintained on site for this purpose. Drain space under wash rack shall be kept open at all times. Damage to the wash rack shall be repaired prior to further use of the rack. All sediment deposited on roadways shall be removed and returned to the construction site immediately. Washing the roadway or sweeping the deposits into roadway ditches, sewers, culverts, or other drainage courses is not acceptable.

**A metal wash rack or livestock grate is an acceptable alternative to the reinforced concrete one shown in the standard detail. Approaches to the wash rack should be lined with aashto #1 at a minimum of 25' on both sides. The wash rack should discharge to a sediment removal facility, such as a vegetated filter strip or into a channel leading to a sediment removal device (e.g. a sediment trap or sediment basin). Rock construction entrances with wash racks should be maintained to the specified dimensions by adding rock when necessary at the end of each workday. A stockpile of rock material should be maintained on site for this purpose. Sediment deposited on paved roadways should be removed and returned to the construction site.**

**NOTE: Washing the roadway or sweeping the deposits into roadway ditches, sewers, culverts, or other drainage courses is not acceptable. Damaged wash racks should be repaired as necessary to maintain their effectiveness. In lieu of washrack installation, MVP will extend the RCE by 70' increments until mud tracking condition is alleviated.**

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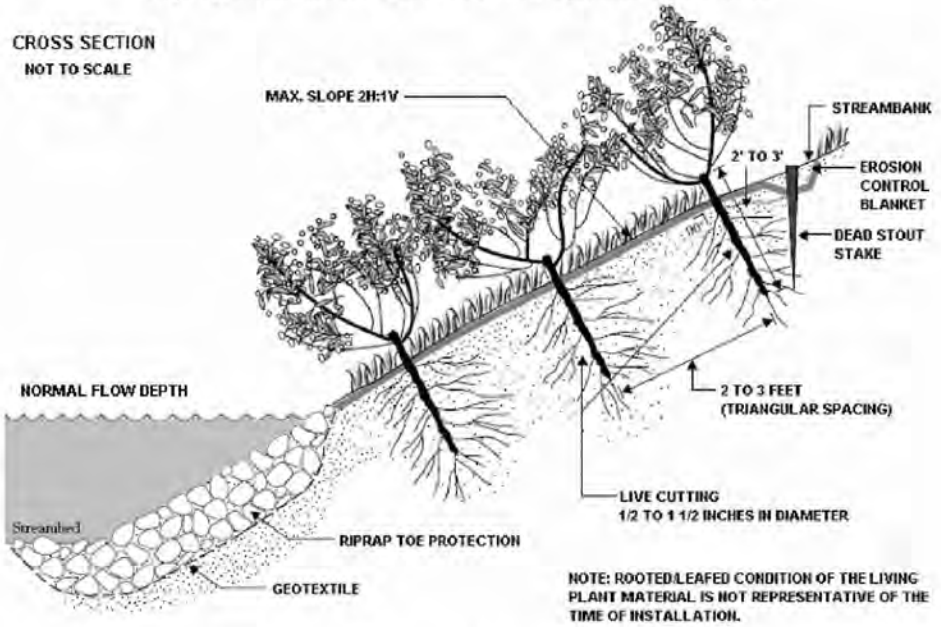
Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

ROCK CONSTRUCTION ENTRANCE WITH WASH RACK

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES20 | P1 |

## Riprap Streambank Protection with Optional Live Stakes




Adapted from USDA NRCS, *Engineering Field Handbook*, Chapter 16

**Filter stone may be substituted for the geotextile where site and soil conditions warrant.**

**NOTE: Extend riprap into streambed only as far as required to provide proper toe support.**

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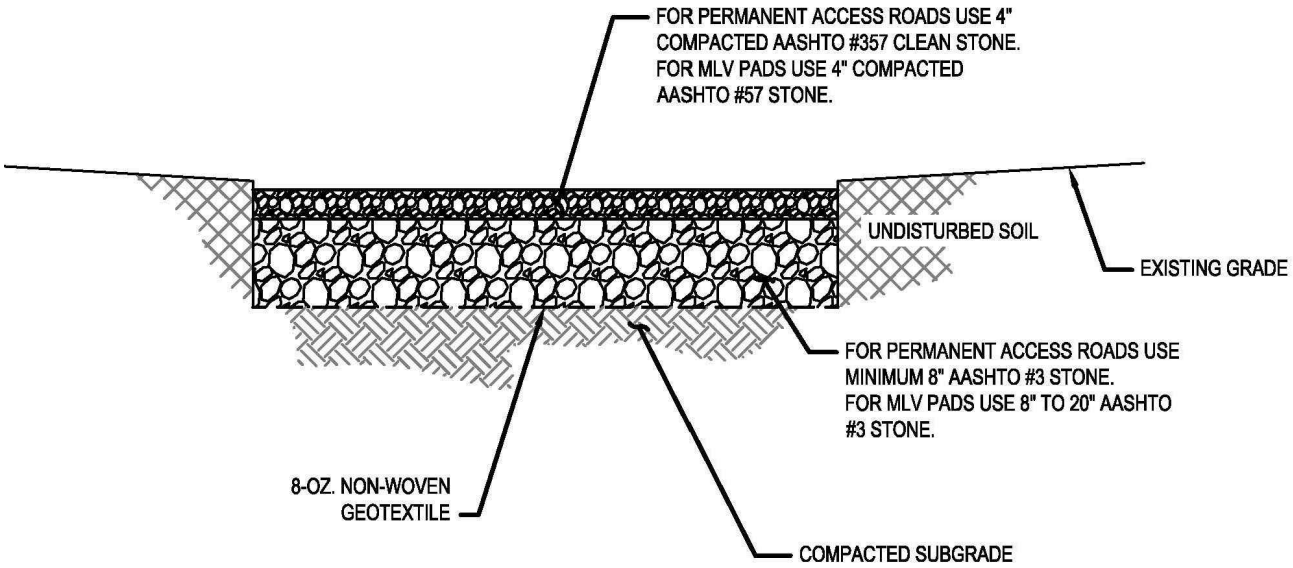
Mountain Valley PIPELINE LLC

**ENVIRONMENTAL DETAIL**

RIPRAP STREAMBANK PROTECTION WITH OPTIONAL LIVE STAKES

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES25 | P1 |




NOTES:

1. THICKNESS OF AASHTO #3 STONE/AGGREGATE LAYER FOR MLV PADS TO BE BETWEEN 8" AND 20" DEPENDING ON THE STORAGE VOLUME NEEDED TO MEET STORMWATER QUANTITY REQUIREMENTS.
2. THICKNESS OF ASSHTO #3 STONE/AGGREGATE LAYER FOR ACCESS ROADS TO BE A MINUMUM OF 8" OR MORE AS DIRECTED.
3. COMPACT SUBGRADE PRIOR TO BACKFILL PLACEMENT. FOR BACKFILL, A MIN. 95% COMPACTION (ASTM D 698) IS REQUIRED.
4. UNSUITABLE MATERIAL SHALL BE REMOVED PRIOR TO SUBGRADE COMPACTION AND BACKFILL PLACEMENT. ADDITIONAL SUBGRADE COMPACTION NOT REQUIRED FOR MLV PADS.

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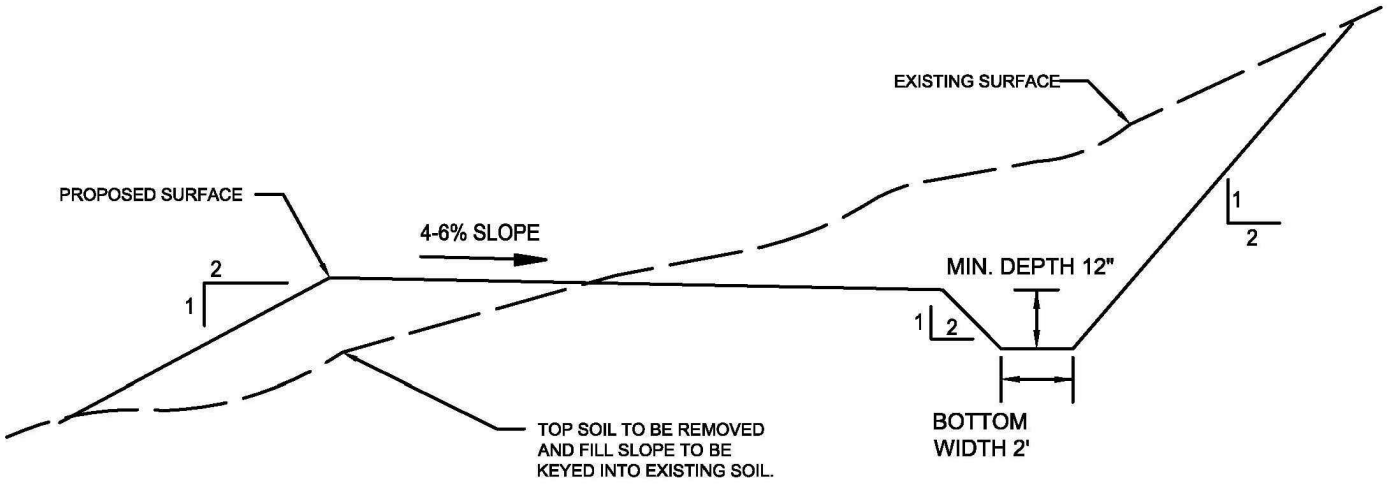
Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

GAP GRADED GRAVEL DETAIL FOR MAINLINE VALVE PADS & PERMANENT ACCESS ROADS

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES33 | P1 |




NOTE:

1. INSLOPE WITH DITCH SECTION FOR USE ON STEEP SLOPE AND AREAS WITH POOR SOILS.

2. EROSION CONTROL MATTING TO BE INSTALLED ON CUT AND FILL SLOPES STEEPER THAN 3H:1V. SLOPES LESS THAN 3H:1V WILL BE MULCHED PER MVP-ES45 TO MVP-ES45.5.

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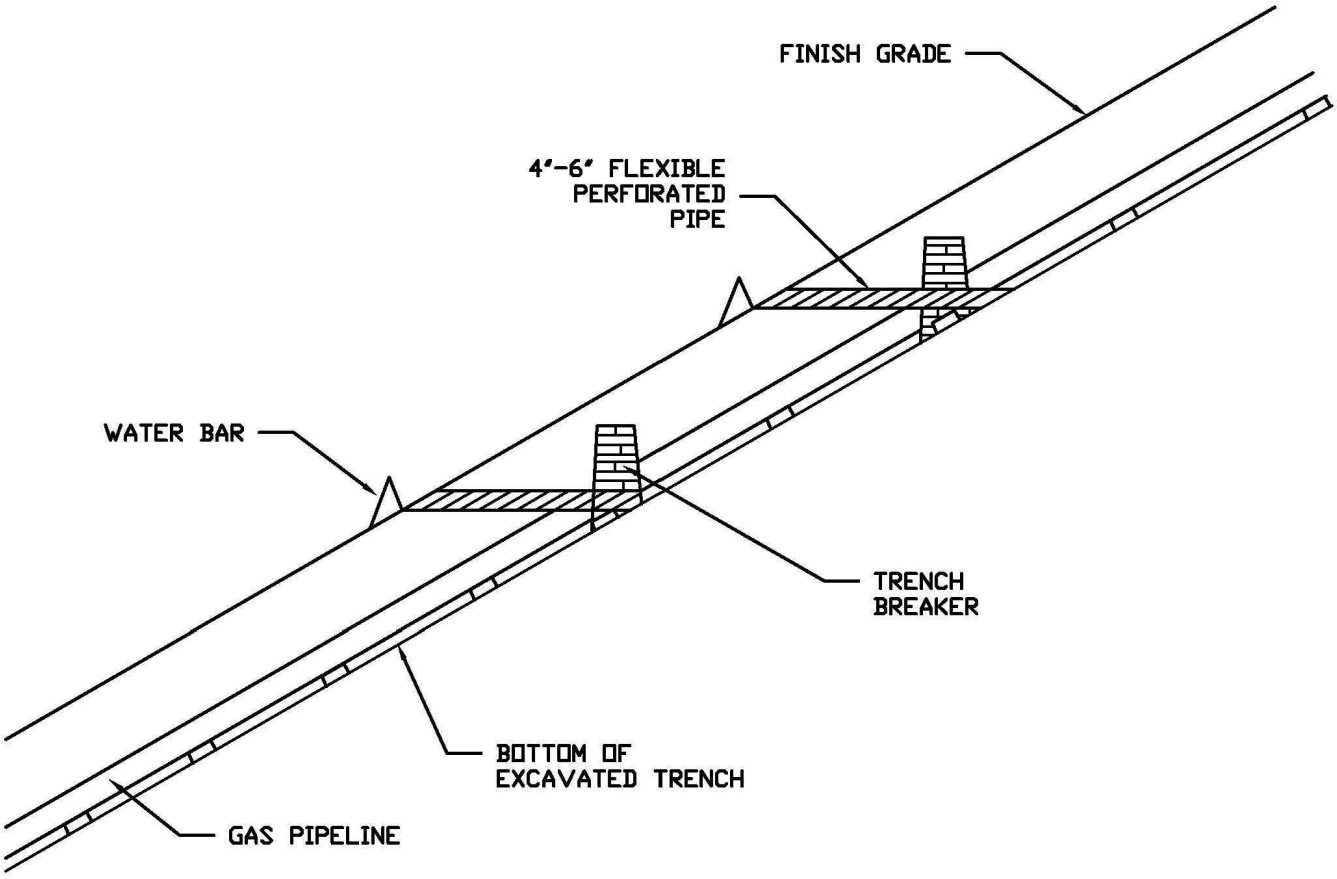
Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

PROPOSED ACCESS ROAD
TYPICAL SECTION

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES34 | P1 |




NOTE:

4"-6" FLEXIBLE PERFORATED PIPE TO BE INSTALLED AT TRENCH BREAKERS ON STEEP SLOPES TO DRAIN SUBSURFACE WATER INTO WATER BARS.

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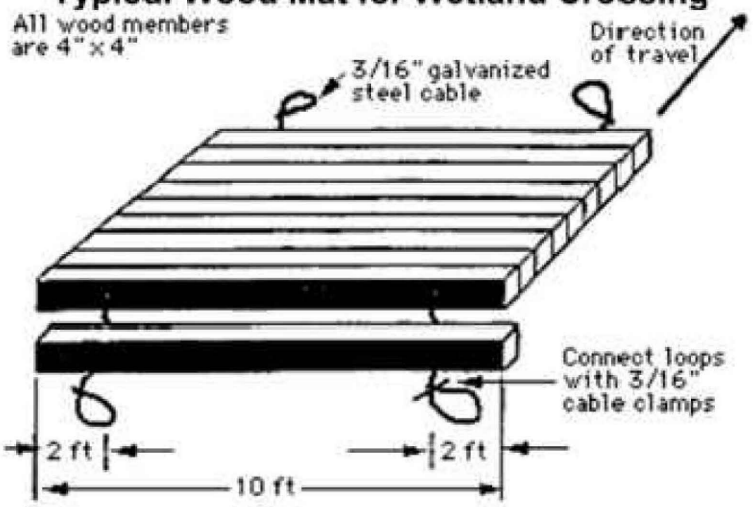
Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

TRENCH DETAIL

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES35 | P1 |

## Typical Wood Mat for Wetland Crossing




University of Minnesota FS 07009

**A geotextile underlayment shall be used under the wood mat.**

Source: PaDEP, E&S Pollution Control Manual, March 2012

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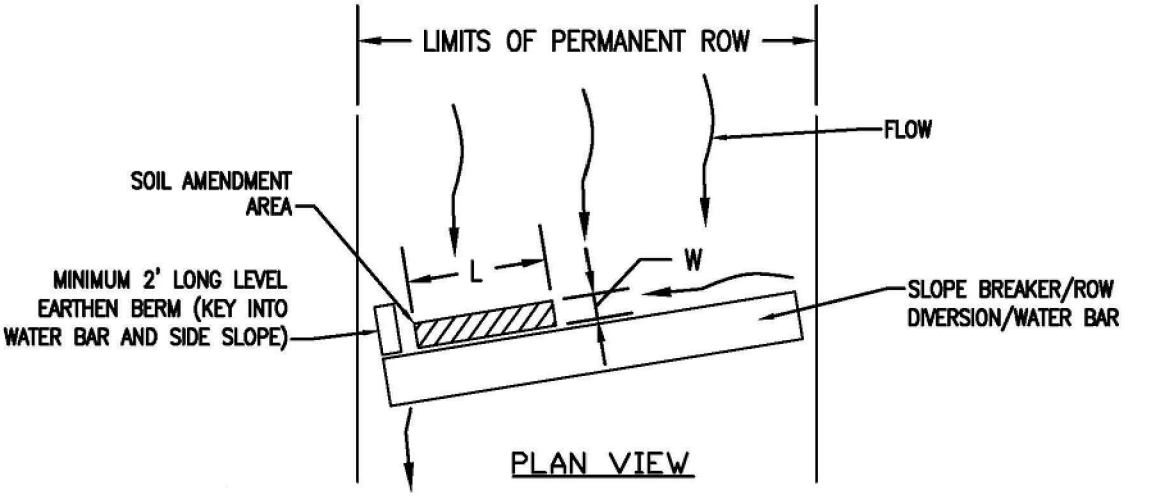
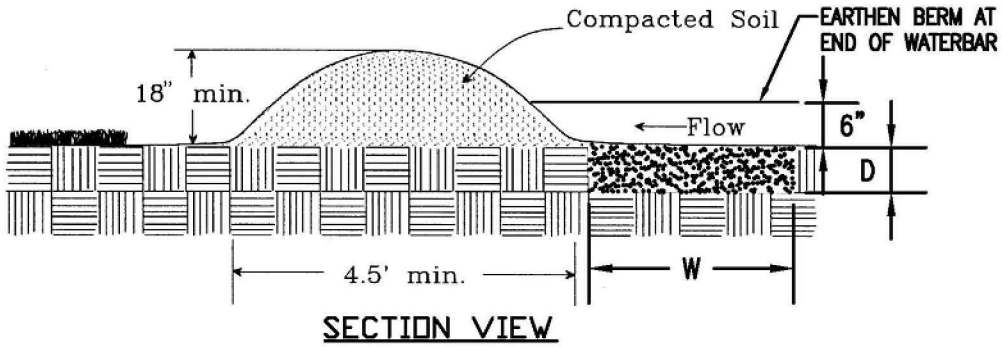
Mountain Valley PIPELINE LLC

**ENVIRONMENTAL DETAIL**

TIMBER MAT/WETLAND CROSSING

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES37 | P1 |




NOTES

1. WIDTH "W" OF SOIL AMENDMENT PER PERMANENT DIVERSION DIKE/WATERBAR WITH SOIL AMENDMENT SCHEDULE.
2. THE INCORPORATION DEPTH "D" IS ASSUMED TO BE 1 FT PER TABLE 4.3 IN VA DEQ STORMWATER DESIGN SPEC #4. AN INCORPORATION DEPTH OF 2 FT IS USED IN CASES WHERE ADDITIONAL STORAGE CAPACITY IS NEEDED IN ORDER TO MEET WATER QUANTITY REQUIREMENTS.
3. DEVELOPED FROM VA. DSWC PLATE 3.09-1.
4. SEE SHEET 0.7, TEMPORARY RIGHT OF WAY DIVERSION/WATERBAR ADDITIONAL DETAILS FOR PLAN VIEW.

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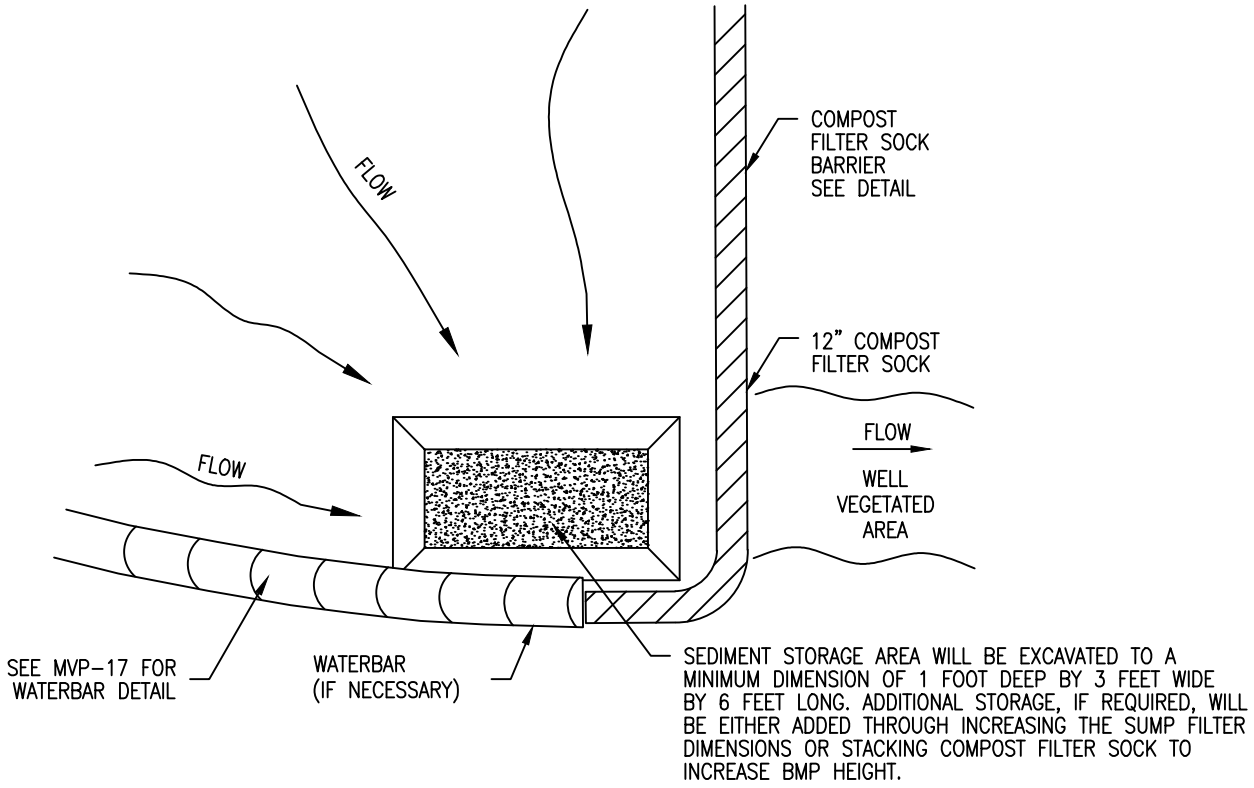
Mountain Valley PIPELINE LLC

ENVIRONMENTAL DETAIL

DIVERSION DIKE/WATERBARS WITH COMPOST

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES38 | P1 |




NOTES:

1. SUMP FILTER MAY BE USED IN CONJUNCTION WITH TEMPORARY WATERBAR (AS DIRECTED BY OWNER REPRESENTATIVE).
2. SUMP FILTER SHALL BE LOCATED ENTIRELY WITHIN THE LIMITS OF DISTURBANCE.
3. BMP SHOULD BE CHECKED EVERY 4 BUSINESS DAYS FOR SEDIMENT ACCUMULATION, PROPER OPERATION, AND COMPOST FILTER SOCK INTEGRITY.
4. ADDITIONAL COMPOST FILTER SOCKS MAY BE NECESSARY BEYOND WHAT IS SHOWN ON DETAIL TO MEET INTENDED BMP REQUIREMENTS.

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Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

TYPICAL SUMP FILTER

| DRAWING NO. | REV. |
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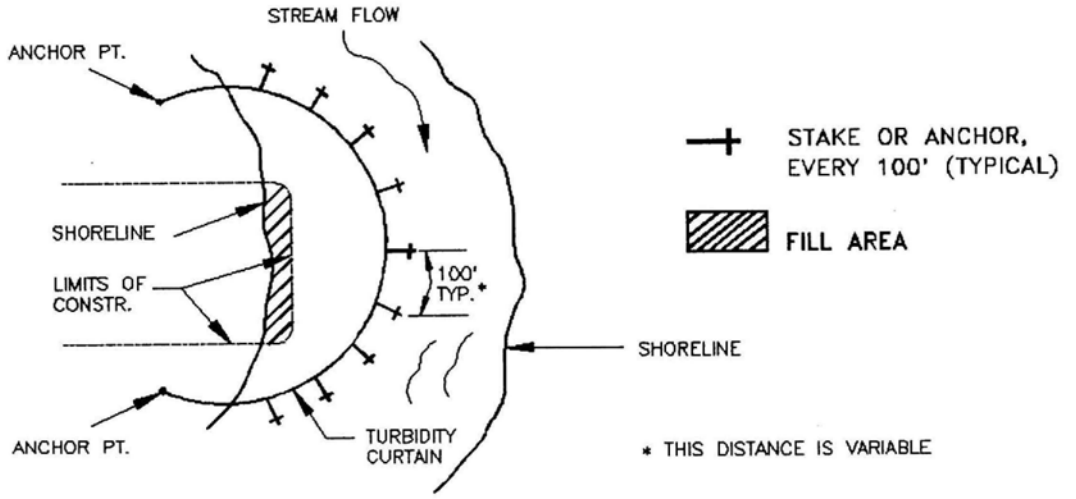
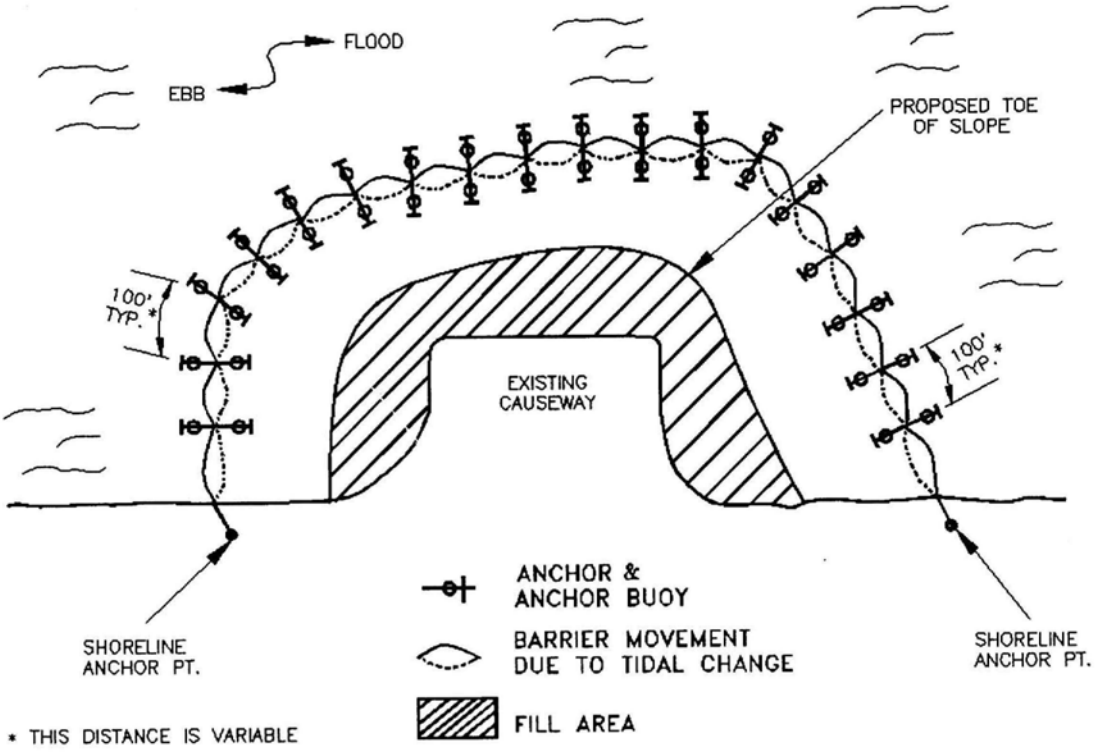
| MVP-SG-ES42 | P1 |

# TYPICAL LAYOUTS:
# STREAMS, PONDS & LAKES (PROTECTED & NON-TIDAL)




## TIDAL WATERS AND/OR HEAVY WIND & WAVE ACTION

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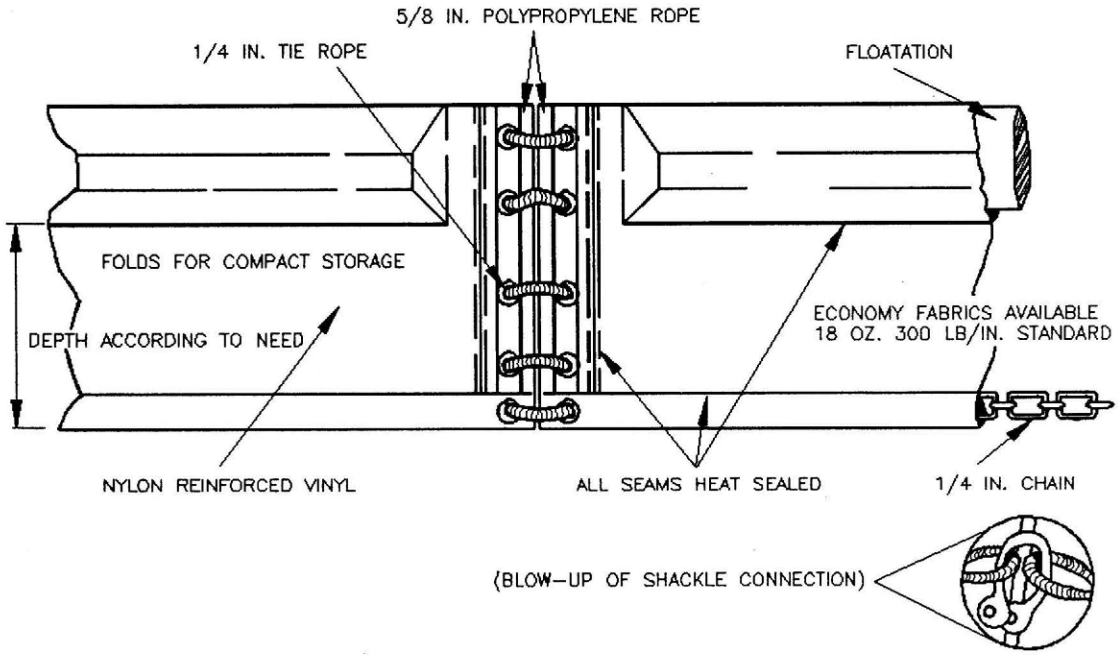
**ENVIRONMENTAL DETAIL**

TURBIDITY CURTAIN DETAIL

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES43 | P1 |

# TYPE I

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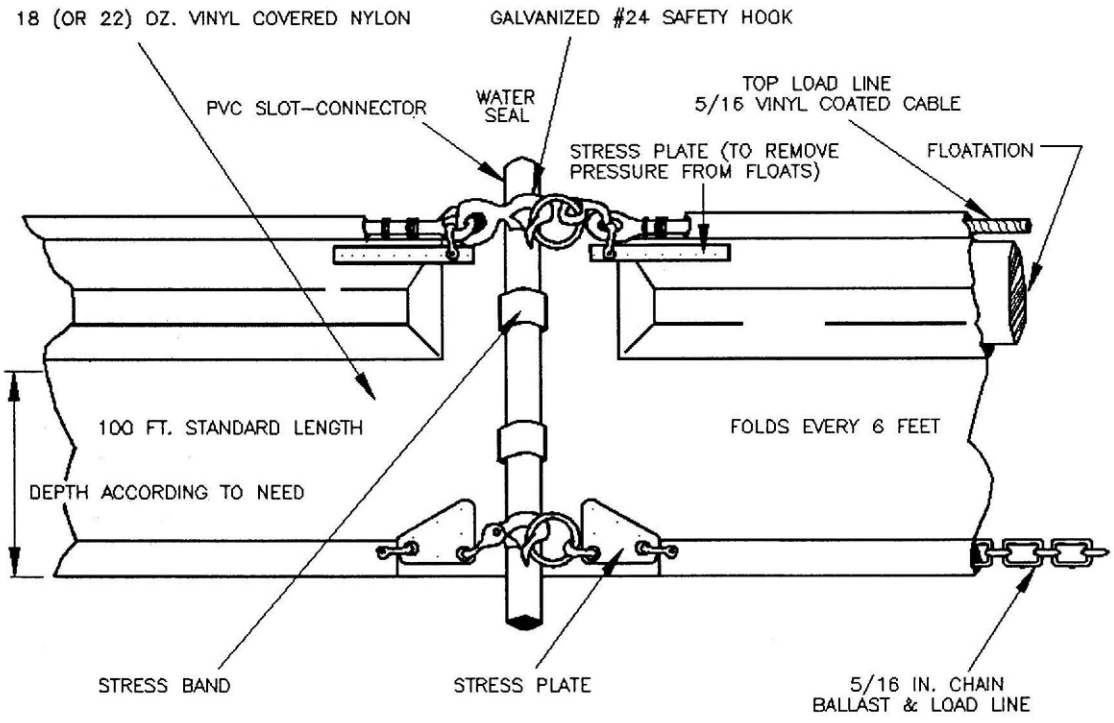
Mountain Valley PIPELINE LLC

**ENVIRONMENTAL DETAIL**

TURBIDITY CURTAIN DETAIL

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES43.1 | P1 |

# TYPE II

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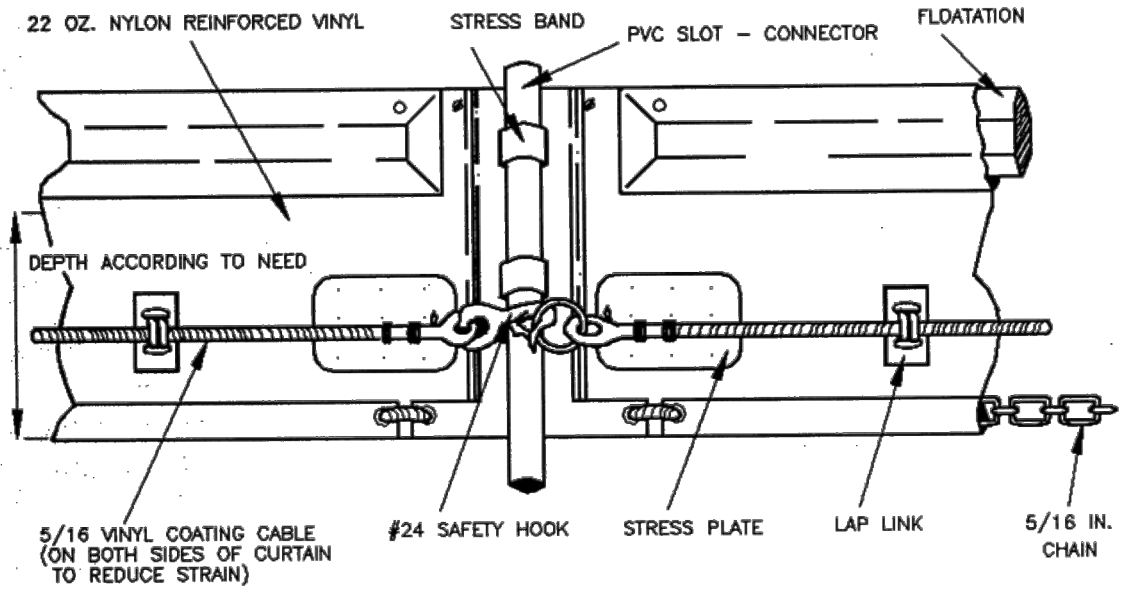
**ENVIRONMENTAL DETAIL**

TURBIDITY CURTAIN DETAIL

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES43.2 | P1 |

# TYPE III

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ENVIRONMENTAL DETAIL

TURBIDITY CURTAIN DETAIL

| DRAWING NO. | REV. |
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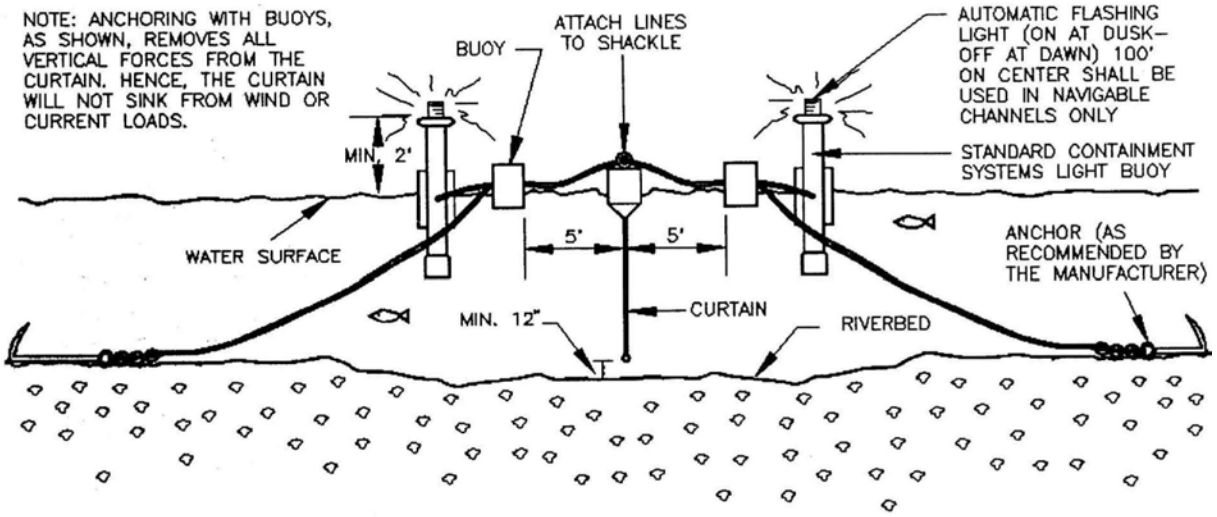
| MVP-SG-ES43.3 | P1 |

# ORIENTATION WHEN INSTALLED
# (TIDAL SITUATION – TYPE III)

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Mountain Valley PIPELINE LLC

**ENVIRONMENTAL DETAIL**

TURBIDITY CURTAIN DETAIL

| DRAWING NO. | REV. |
|---|---|
| MVP–SG–ES43.4 | P1 |

# TOPSOILING AND SOIL HANDLING FROM SOUTHGATE

## Definition

Methods of preserving and using the surface layer of undisturbed soil, often enriched in organic matter, in order to obtain a more desirable planting and growth medium.

## Purposes

To provide a suitable growth medium for final site stabilization with vegetation and promote successful reforestation.

## Conditions Where Practice Applies

1. Where the preservation or importation of topsoil is determined to be the most effective method of providing a suitable growth medium.

2. Where the subsoil or existing soil presents the following problems:
   a. The texture, pH, or nutrient balance of the available soil cannot be modified by reasonable means to provide an adequate growth medium.
   b. The soil material is too shallow to provide an adequate root zone and to supply necessary moisture and nutrients for plant growth.
   c. The soil contains substances potentially toxic to plant growth.

3. Only on slopes that are 2:1 or flatter unless other measures are taken to prevent erosion and sloughing.

## Planning Considerations

Topsoil is the surface layer of the soil profile, generally characterized as being darker than the subsoil due to the presence of organic matter. It is the major zone of root development, carrying much of the nutrients available to plants, and supplying a large share of the water used by plants.

Although topsoil provides an excellent growth medium, there are disadvantages to its use. Stripping, stockpiling, and reapplying topsoil, or importing topsoil, may not always be cost-effective. Topsoiling can delay seeding or sodding operations, increasing the exposure time of denuded areas. Most topsoil contains weed seeds, and weeds may compete with desirable species.

Advantages of topsoil include its high organic matter content and friable consistence, water-holding capacity, and nutrient content.

In site planning, the option of topsoiling should be compared with that of preparing a seedbed in subsoil. The clay content of subsoils does provide high moisture availability and deter leaching of nutrients and, when properly limed and fertilized, subsoils may provide a good growth medium which is generally free

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**ENVIRONMENTAL DETAIL**

TOPSOILING & SOIL HANDLING

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES46 | P1 |

of weed seeds. In many cases topsoiling may not be required for the establishment of less demanding, lower maintenance plant material. Topsoiling is strongly recommended where ornamental plants or high-maintenance turf will be grown. Topsoiling is a required procedure when establishing vegetation on shallow soils, soils containing potentially toxic materials, and soils of critically low pH (high acid) levels.

If topsoiling is to be done, the following items should be considered:

1. Whether an adequate volume of topsoil exists on the site. Topsoil will be spread at a compacted depth of 2 to 4 inches (depths closer to 4 inches are preferred).

2. Location of the topsoil stockpile so that it meets specifications and does not interfere with work on the site.

3. Allow sufficient time in scheduling for topsoil to be spread and bonded prior to seeding or planting.

4. Care must be taken not to apply topsoil to subsoil if the two soils have contrasting textures. Clayey topsoil over sandy subsoil is a particularly poor combination, as water may creep along the junction between the soil layers, causing the topsoil to slough. Sandy topsoil over a clay subsoil is equally as likely to fail.

5. If topsoil and subsoil are not properly bonded, water will not infiltrate the soil profile evenly and it will be difficult to establish vegetation. Topsoiling of steep slopes should be discouraged unless good bonding of soils can be achieved.

## Specifications

Materials

Field exploration of the site shall be made to determine if there is sufficient surface soil of good quality to justify stripping. Topsoil shall be friable and loamy (loam, sandy loam, silt loam, sandy clay loam, clay loam). It shall be free of debris, trash, stumps, rocks, roots, and noxious weeds, and shall give evidence of being able to support healthy vegetation. It shall contain no substance that is potentially toxic to plant growth.

In areas where revegetation is of concern based on existing soil conditions and determined by the MVP Environmental Inspector (EI), topsoil samples shall be taken for analysis. Samples will be collected by the MVP EI and sent to a recognized laboratory for analysis of the following criteria:

Organic matter content shall be not less than 1.5% by weight.

pH range shall be from 6.0-7.5. If pH is less than 6.0, lime shall be added in accordance with soil test results or in accordance with the recommendations of the vegetative establishment practice being used.

Soluble salts shall not exceed 500 ppm.

Soil samples collected and sent for analysis will be identified by the MVP Constructions Spread # and pipeline station from which the sample was obtained. Areas that fail to revegetate following restoration will be sampled and analyzed based on the above parameters.

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ENVIRONMENTAL DETAIL

TOPSOILING & SOIL HANDLING

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES46.1 | P1 |

Topsoil Importing

Topsoil would be imported as needed in residential areas only. If additional off-site topsoil is needed, it must meet the standards stated above.

Stripping

Topsoil operations should not be performed when the soil is wet or frozen. Stripping shall be confined to the immediate construction area. A 4-to 6-inch stripping depth is common, but depth may vary depending on the particular soil. All perimeter dikes, basins, and other sediment controls shall be in place prior to stripping.

Stockpiling

Topsoil shall be stockpiled in such a manner that natural drainage is not obstructed and no off-site sediment damage shall result. Stabilize or protect stockpiles in accordance with MS #2.

Excavated subsoil shall be stockpiled separately from topsoil.

Side slopes of the stockpile shall not exceed 2:1.

Perimeter controls must be placed around the stockpile immediately; seeding of stockpiles shall be completed within 7 days of the formation of the stockpile, in accordance with Std. & Spec. 3.31, TEMPORARY SEEDING if it is to remain dormant for longer than 14 days (refer to MS #1 and MS #2).

Site Preparation Prior to and Maintenance During Topsoiling and Excavation

Before topsoiling or excavation, establish needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, level spreaders, waterways, sediment basins, etc. These practices must be maintained during topsoiling and excavation.

Grading: Previously established grades on the areas to be topsoiled shall be maintained according to the approved plan.

Liming: Where the pH of the subsoil is 6.0 or less, or the soil is composed of heavy clays, agricultural limestone shall be spread in accordance with the soil test or the vegetative establishment practice being used.

Bonding: After the areas to be topsoiled have been brought to grade, and immediately prior to dumping and spreading the topsoil, the subgrade shall be loosened by disking or scarifying to a depth of at least 4-6 inches to ensure bonding of the topsoil and subsoil. Refer to 2.8.3 Soil Compaction Mitigation within the Project Standards and Specifications for additional information.

Applying Topsoil

Topsoil shall not be placed while in a frozen or muddy condition, when topsoil or subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading or seeding. The topsoil shall be uniformly distributed to a minimum compacted depth of 2 inches on 3:1 or steeper slopes and 4 inches on flatter slopes or to mimic existing conditions present in the adjacent undisturbed areas. (See Table 3.30-A to determine volume of topsoil required for application to various depths). Any irregularities in the surface, resulting from topsoiling or other operations, shall be corrected in order to prevent the formation of depressions or water pockets.

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Mountain Valley PIPELINE LLC

ENVIRONMENTAL DETAIL

TOPSOILING & SOIL HANDLING

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES46.2 | P1 |

Once the topsoil has been applied to the subgrade the topsoil should be disked and raked. Excess rock will be removed from at least the top 12 inches of soil to the extent practicable in all cultivated or rotated cropland, managed pastures, hayfields, and residential areas, as well as other areas at the landowner's request. The size, density, and distribution of rock on the construction work area shall be similar to adjacent areas not disturbed by construction. The landowner or land management agency may approve other provisions in writing. Refer to Standards and Specifications Section 2.8 Final Grading for additional information.

TABLE 3.30-A

CUBIC YARDS OF TOPSOIL REQUIRED FOR APPLICATION TO VARIOUS DEPTHS

| DEPTH (INCHES) | PER 1,000 (SQUARE FEET) | PER ACRE |
|---|---|---|
| 1 | 3.1 | 134 |
| 2 | 6.2 | 268 |
| 3 | 9.3 | 403 |
| 4 | 12.4 | 537 |
| 5 | 15.5 | 672 |
| 6 | 18.6 | 806 |

SOURCE: Va. DSWC

Soil Sterilants

No seed shall be placed on soil which has been treated with soil sterilants until sufficient time has elapsed to permit dissipation of toxic materials.

Special Soil Related Requirements for Working in Wetlands

Norfolk District 2017 Nationwide Permit Regional Conditions, dated March 20, 2017 (subject to revision in Spring of 2017), NWP 12 – Utility Line Activities items 3.b.iii, 5.a, and 5.b require the following:

1. Minimizing clearing of wetlands. Grubbing shall be limited to the permanent easement for underground utility lines. Outside of the permanent easement, wetland vegetation shall only be removed at or above the ground surface unless written justification is provided and the impacts are reviewed and approved by the Corps.

2. Whenever practicable, excavated material shall be placed on a Corps confirmed upland site. However, when this is not practicable, temporary stockpiling is hereby authorized provided that:

   a. All excavated material stockpiled in a vegetated wetland area is placed on filter cloth, mats, or some other semi-permeable surface. The material will be stabilized with straw bales, filter cloth, etc. to prevent reentry into any waterway.

   b. All excavated material must be placed back into the trench to the original contour and all excess excavated material must be completely removed from the wetlands within 30 days after the pipeline has been laid through the wetland areas. Permission must be granted by the District Commander or his authorized representatives if the material is to be stockpiled longer than 30 days.

| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: | | | |

H-650-TYP

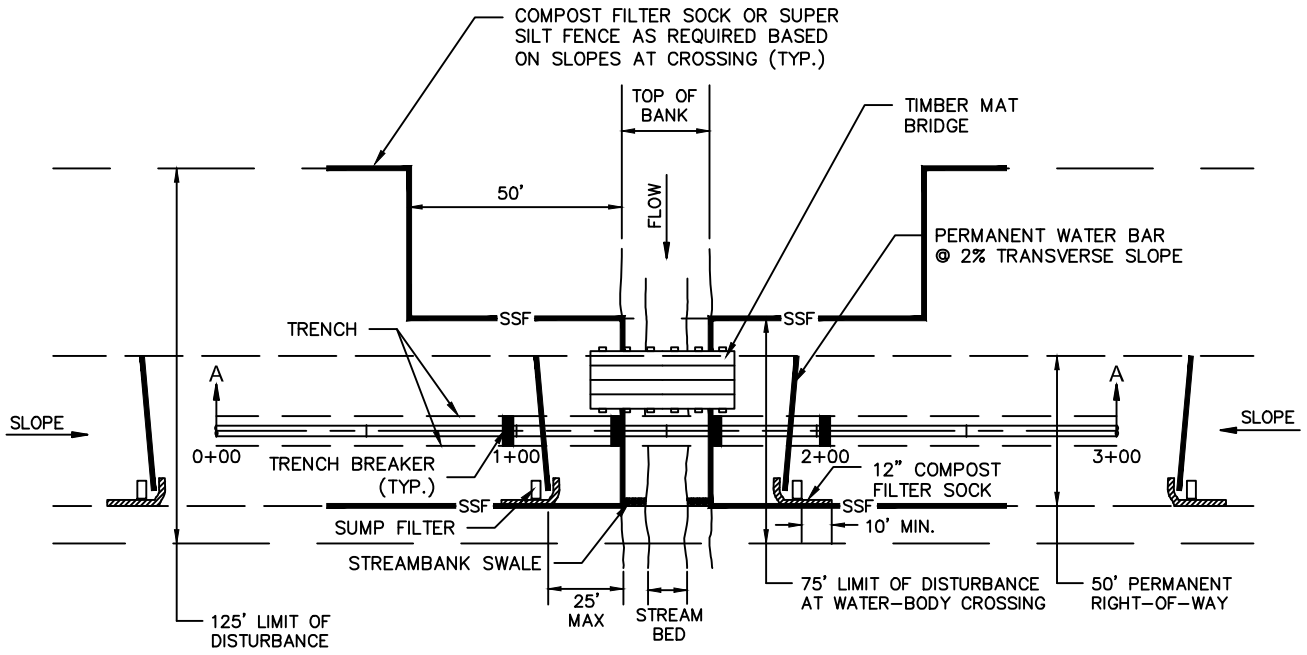
Mountain Valley PIPELINE LLC

ENVIRONMENTAL DETAIL

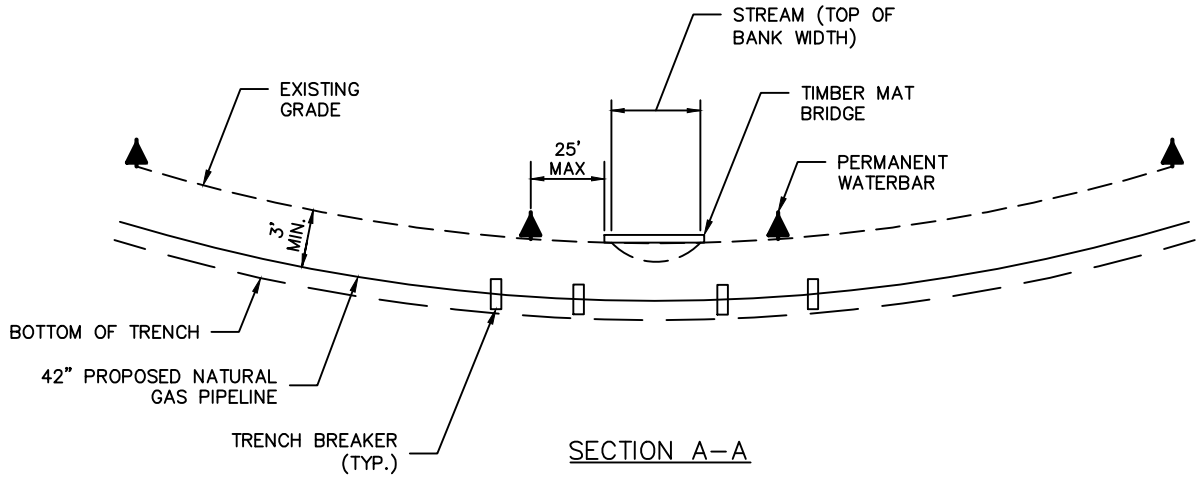
TOPSOILING & SOIL HANDLING

DRAWING NO. MVP-SG-ES46.3

REV. P1




PLAN




SECTION A–A

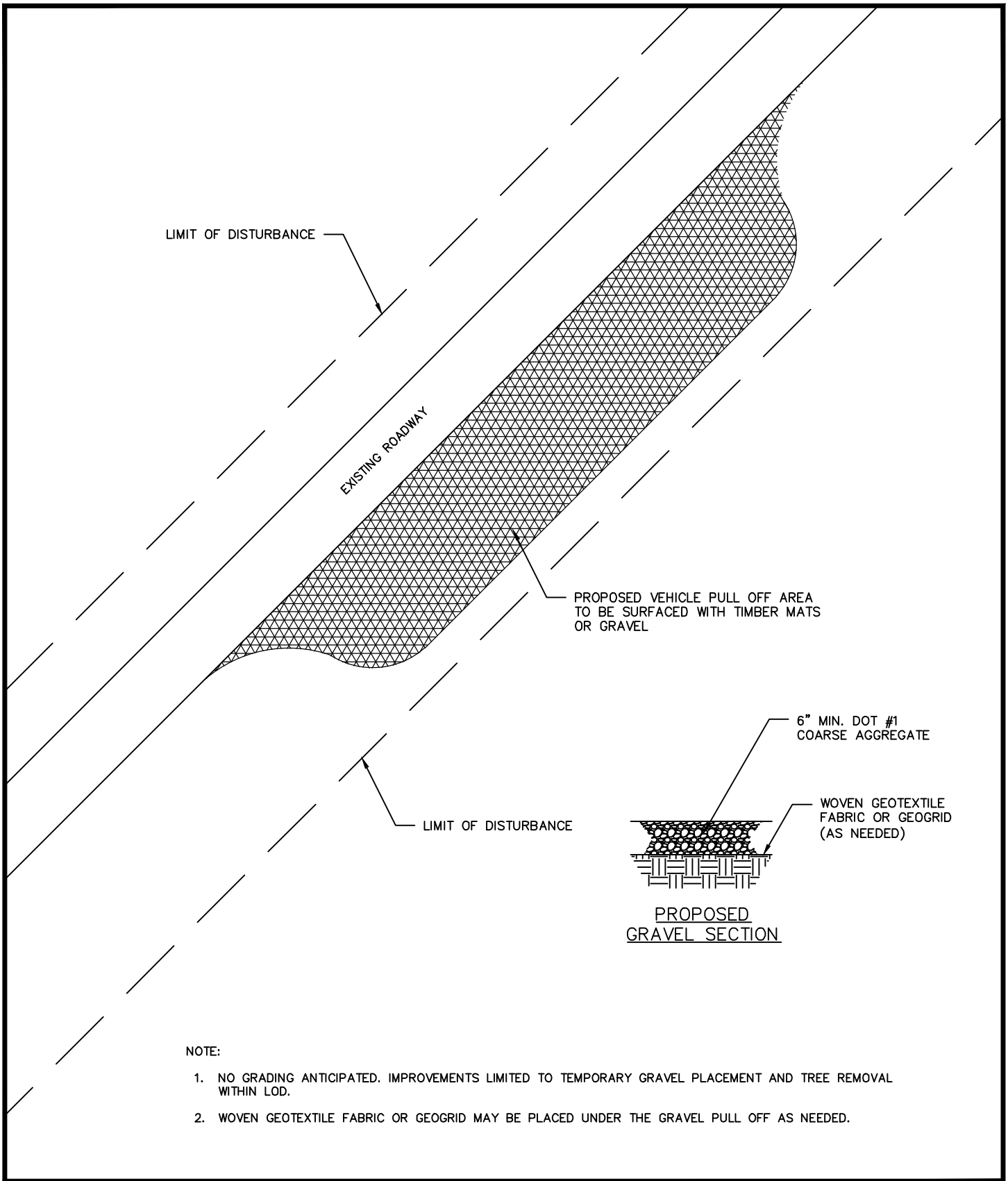
| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H–650–TYP | | | |

Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

TIMBER MAT BRIDGE
STREAM CROSSING

| DRAWING NO. | REV. |
|---|---|
| MVP–SG–ES49 | P1 |




NOTE:

1. NO GRADING ANTICIPATED. IMPROVEMENTS LIMITED TO TEMPORARY GRAVEL PLACEMENT AND TREE REMOVAL WITHIN LOD.
2. WOVEN GEOTEXTILE FABRIC OR GEOGRID MAY BE PLACED UNDER THE GRAVEL PULL OFF AS NEEDED.

| | | | |
|---|---|---|---|
| DRAWN | TRC | DATE | 8/7/2018 |
| CHECKED | XXX | DATE | X/X/2018 |
| APP'D | XXX | DATE | X/X/2018 |
| SCALE | N.T.S. | SHEET | 1 OF 1 |
| JOB NO. | | | |
| PROJECT ID: H-650-TYP | | | |

Mountain Valley PIPELINE LLC

# ENVIRONMENTAL DETAIL

## TEMPORARY VEHICLE PULL OFF DETAIL

| DRAWING NO. | REV. |
|---|---|
| MVP-SG-ES54 | P1 |

# MVP Southgate Project

## Docket No. CP19-XX-000

## Resource Report 1

## Appendix 1-C2

## Plot Plans

## (Critical Energy/Electric Infrastructure Information, CUI//CEII Provided Under Separate Cover)

# MVP Southgate Project

# Docket No. CP19-XX-000

# Resource Report 1

# Appendix 1-C3

# Horizontal Directional Drill Site-specific Plans

# MVP SOUTHGATE PROJECT

## PROPOSED H-650 PIPELINE
## ENGINEERING SERVICES DESIGN; JOB NUMBERS 300423
## ROAD - RAILROAD - WATERBODY - PERMIT DRAWINGS

| DRAWING NO. | DRAWING TITLE | REV. |
|---|---|---|
| PERMITS-COV | MVP SOUTHGATE PROJECT H-650 PIPELINE - ROAD - RAILROAD - WATERBODY - PERMIT DRAWINGS | P1 |
| HDD-DanRiver-001 | MVP SOUTHGATE PROJECT H-650 PIPELINE DAN RIVER HDD | P1 |
| HDD-StonyCreek-002 | MVP SOUTHGATE PROJECT H-650 PIPELINE STONY CREEK HDD | P1 |

**ISSUED FOR FERC**
11/02/18

O:\PROJECTS\300423 - NEXTERA MVP SOUTHGATE\CA - CADD\PIPELINE\DRAWINGS\PERMITS\COVER PERMITS.DWG

PROJECT ID 300423

DRAWING SCALE NTS

DRAWING TITLE:
MOUNTAIN VALLEY PIPELINE
SOUTHGATE PROJECT
PROPOSED H-650 PIPELINE
ROAD-RAILROAD-WATERBODY-PERMIT DRAWINGS

| FACILITY | STATE | IDENTIFICATION | SERIES | SHEET | REVISION |
|---|---|---|---|---|---|
| MVP | VA/NC | H-650 | 1 | 1 | P1 |

PIPE STATIONING

26+98 HDD EXIT POINT

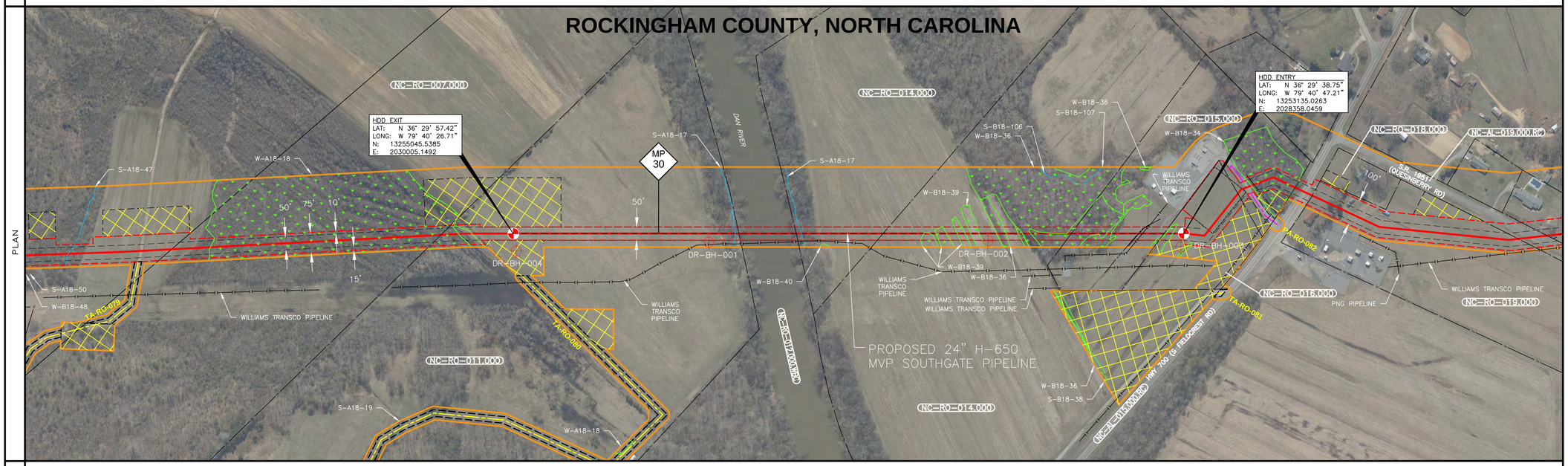
15+63 CL DAN RIVER S-A18-17

1+55 CL WILLIAMS TRANSCO PIPELINE

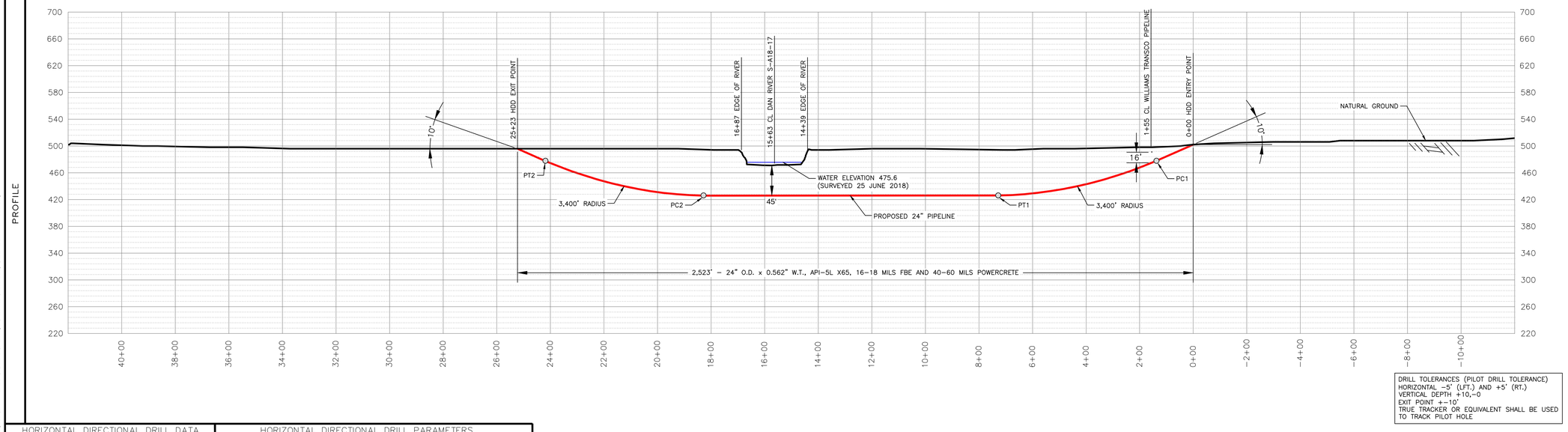
0+00 HDD ENTRY POINT

PLAN

# ROCKINGHAM COUNTY, NORTH CAROLINA




PROFILE




DRILL TOLERANCES (PILOT DRILL TOLERANCE)
HORIZONTAL -5' (LFT.) AND +5' (RT.)
VERTICAL DEPTH +10,-0
EXIT POINT +-10'
TRUE TRACKER OR EQUIVALENT SHALL BE USED TO TRACK PILOT HOLE

LEGEND:

- HDD ENTRY / EXIT POINTS
- GEOTECH BORE HOLE LOCATIONS

GENERAL NOTES:

1.) IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE NECESSARY ARRANGEMENTS IF TRAFFIC CONTROL PLANS AND/OR RAILROAD REPRESENTATION ARE REQUIRED.

2.) CONTRACTOR TO LOCATE, MARK AND POTHOLE FOREIGN LINES PRIOR TO EXCAVATION (AND MONITOR DURING DRILLING).

3.) CONTRACTOR TO MAT OVER ANY FOREIGN PIPELINES CROSSED WITH DRILLING EQUIPMENT.

4.) LOCATIONS OF EXISTING FACILITIES SHOWN ARE APPROXIMATE. CONTRACTOR TO LOCATE AND/OR CONFIRM THE LOCATIONS AND DEPTH OF ALL UTILITIES, PIPELINES OR OTHER OBSTACLES PRIOR TO EXCAVATION.

5.) CONTRACTOR TO SUPPORT EXISTING UTILITIES, PIPELINES AND/OR OTHER FEATURES.

6.) CONTRACTOR TO GRADE EXCAVATION AREA AND RESTORE TO ORIGINAL CONDITIONS.

7.) CONTRACTOR TO CONTACT STATE ONE CALL SYSTEM AT LEAST 72 HOURS PRIOR TO DRILLING.

PHOTOGRAPHY:

2018 FLOWN IMAGERY

PROJECTION SYSTEM:

NAD83 UTM 17N (U.S. SURVEY FEET)

INSTALLATION NOTES:

1.) ACCESS: ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY FROM PUBLIC OR APPROVED PRIVATE ROADS.

2.) WORK SPACE: WORK SPACE LIMITS ARE DEPICTED. CLEARING WILL BE RESTRICTED TO THE WORK SPACES INDICATED AT THE ENTRY AND EXIT POINTS AND PULLBACK MAKE-UP AREA ALONG THE RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS IS LIMITED TO THE MINIMUM AMOUNT NECESSARY TO STRING LOCATION WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).

3.) WATER SOURCE: DRILL WATER AND PRE-INSTALLATION HYDRO-STATIC TEST WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE.

4.) HYDROSTATIC TEST: ABOVE GROUND PRE-INSTALLATION HYDROSTATIC TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE CONTRACTOR SHALL DISCHARGE HYDROSTATIC TEST WATER IN ACCORDANCE WITH PROJECT PERMITS.

5.) SPILL-PREVENTION: ALL PUMPS SHALL BE SET IN SECONDARY CONTAINMENT AND IN ACCORDANCE WITH THE SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC). EQUIPMENT AND PUMPS OPERATING WITHIN 100 FEET OF ANY WATER BODY OR WETLAND SHALL BE OPERATED AND REFUELED IN ACCORDANCE WITH THE SPCC PLAN. EQUIPMENT REFUELING AND STORAGE OF HAZARDOUS MATERIALS, FUELS, ETC. SHALL BE CONDUCTED AT LEAST 100 FEET FROM WATER BODIES AND WETLAND. EACH CONSTRUCTION CREW SHALL HAVE ON HAND SUFFICIENT TOOLS AND MATERIALS TO STOP LEAKS AND SUPPLIES OF ABSORBENT AND BARRIER MATERIALS TO ALLOW RAPID CONTAINMENT AND RECOVERY OF SPILLED MATERIALS.

6.) EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.

7.) TOPSOIL SHALL BE STRIPPED AS REQUIRED BY PROJECT DOCUMENTS.

8.) INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN, AND THE DRILL RIG SHALL PULL THE PIPE STRING INTO THE BORE HOLE FROM THE ENTRY POINT. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.

9.) MUD DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING MUD AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING MUD WHICH INADVERTENTLY EXISTS AT POINTS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF AS DIRECTED BY THE COMPANY REPRESENTATIVE IN ACCORDANCE WITH PERMIT CONDITIONS.

10.) CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN PROJECT DOCUMENTS.

ISSUED FOR FERC
11/02/2018

## HORIZONTAL DIRECTIONAL DRILL DATA

| DESCRIPTION | STA. | ELEV. |
|---|---|---|
| ENTRY ANGLE @ 10° | 0+00 | 502.0' |
| POINT OF CURVATURE (PC1) (3,400 FT. RADIUS) | 1+38 | 478.7' |
| POINT OF TANGENCY (PT1) | 7+28 | 427.0' |
| POINT OF CURVATURE (PC2) (3,400 FT. RADIUS) | 18+28 | 427.0' |
| POINT OF TANGENCY (PT2) | 24+19 | 478.7' |
| EXIT ANGLE @ 10° | 25+23 | 496.0' |
| | | |
| | | |

## HORIZONTAL DIRECTIONAL DRILL PARAMETERS

1.) MAX. OPER. PRESS.: 1440 PSIG

2.) PIPE: 24.00" O.D. x 0.562" W.T. GRADE: API-5L X65
DESIGN FACTOR: 0.50

3.) PIPE COATING: 16-18 MILS FBE
EXTERNAL COATING: 40-60 MILS POWERCRETE
LENGTH OF CROSSING: 2,523' HORIZONTAL DISTANCE

4.) TYPE OF PIPE JOINT: WELDED X 60' LG.
LENGTH OF PIPE: 2,532 L.F.

## REFERENCE DRAWINGS

| DWG. NO | DRAWING TITLE |
|---|---|
| PA-RONC-H-650-05 | ALIGNMENT SHEET |
| H-650-12-CONST | HORIZONTAL DIRECTIONAL DRILL (HDD) |

| NO. | DATE | REVISION | BY | APPD. |
|---|---|---|---|---|
| P1 | 10/22/18 | ISSUED FOR CLIENT REVIEW | SJS | SJO |
| P1 | 11/02/18 | ISSUED FOR FERC | SJS | SJO |

0 100 200
PLAN SCALE: 1"=200'

0 100 200
PROFILE (H) SCALE: 1"=200'

0 40 80
PROFILE (V) SCALE: 1"=80'

TRC Results you can rely on

Mountain Valley PIPELINE, LLC

**MVP SOUTHGATE PROJECT**
**H-650 PIPELINE**
**DAN RIVER HDD**

| DRAWN BY: TRC | DATE: 10/04/18 |
|---|---|
| CHECKED BY: SJO | DATE: 10/19/18 |
| APPROVED BY: | EPO APPROVAL: |

| SCALE: | PROJ. NO. | DRAWING NO: | REV. |
|---|---|---|---|
| 1" = 200' | | HDD-DanRiver-001 | P1 |

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October 31, 2018 - 10:35am

PIPE STATIONING

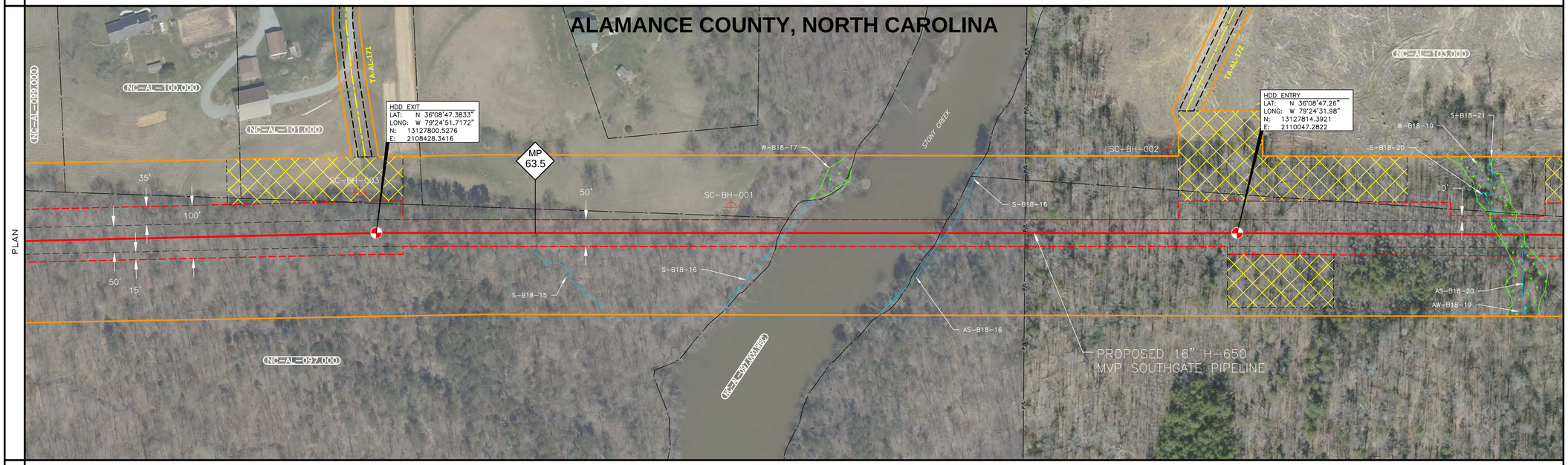
0+00 HDD EXIT POINT

6+98 CL STONY CREEK S-B18-16

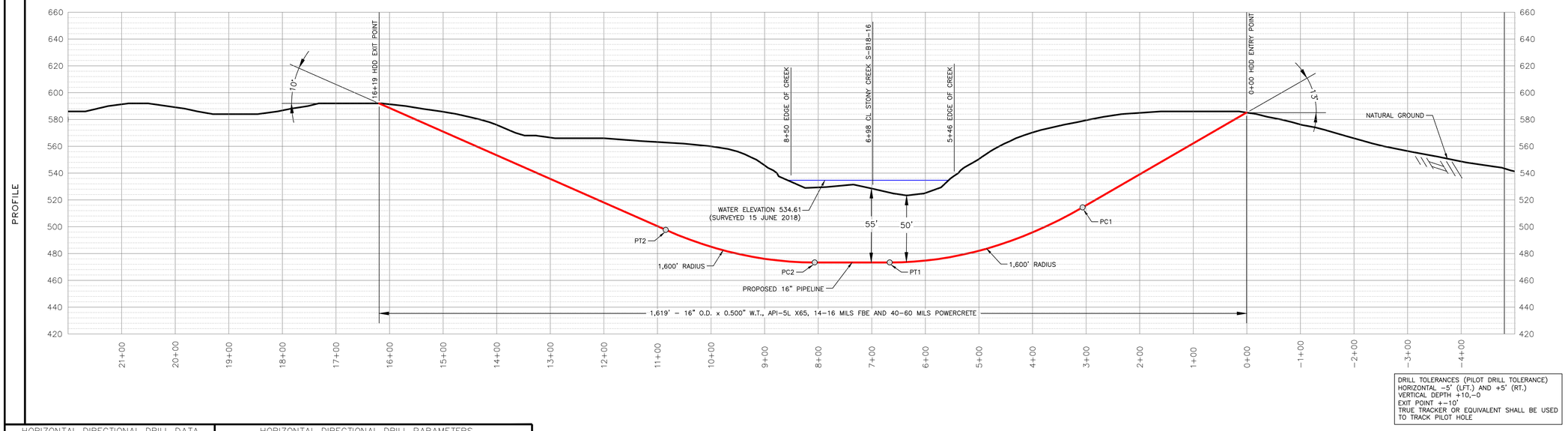
16+19 HDD ENTRY POINT

PLAN

# ALAMANCE COUNTY, NORTH CAROLINA




PROFILE




DRILL TOLERANCES (PILOT DRILL TOLERANCE)
HORIZONTAL –5' (LFT.) AND +5' (RT.)
VERTICAL DEPTH +10,–0
EXIT POINT +–10'
TRUE TRACKER OR EQUIVALENT SHALL BE USED TO TRACK PILOT HOLE

LEGEND:

- HDD ENTRY / EXIT POINTS
- GEOTECH BORE HOLE LOCATIONS

GENERAL NOTES:

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3.) CONTRACTOR TO MAT OVER ANY FOREIGN PIPELINES CROSSED WITH DRILLING EQUIPMENT.

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PHOTOGRAPHY:

2018 FLOWN IMAGERY

PROJECTION SYSTEM:

NAD83 UTM 17N (U.S. SURVEY FEET)

INSTALLATION NOTES:

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10.) CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN PROJECT DOCUMENTS.

**ISSUED FOR FERC**
11/02/2018

## HORIZONTAL DIRECTIONAL DRILL DATA

| DESCRIPTION | STA. | ELEV. |
|---|---|---|
| ENTRY ANGLE @ 13° | 0+00 | 585.1' |
| POINT OF CURVATURE (PC1) (1,600 FT. RADIUS) | 3+06 | 514.4' |
| POINT OF TANGENCY (PT1) | 6+66 | 473.4' |
| POINT OF CURVATURE (PC2) (1,600 FT. RADIUS) | 8+06 | 473.4' |
| POINT OF TANGENCY (PT2) | 10+84 | 497.7' |
| EXIT ANGLE @ 10° | 16+19 | 592.0' |
| | | |
| | | |

## HORIZONTAL DIRECTIONAL DRILL PARAMETERS

1.) MAX. OPER. PRESS.: 1440 PSIG

2.) PIPE: 16.00" O.D. x 0.500" W.T. GRADE: API-5L X65
DESIGN FACTOR: 0.50

3.) PIPE COATING: 14-16 MILS FBE
EXTERNAL COATING: 40-60 MILS POWERCRETE
LENGTH OF CROSSING: 1,619' HORIZONTAL DISTANCE

4.) TYPE OF PIPE JOINT: WELDED X 60' LG.
LENGTH OF PIPE: 1,640 L.F.

## REFERENCE DRAWINGS

| DWG. NO | DRAWING TITLE |
|---|---|
| PA-ALNC-H-650-12 | ALIGNMENT SHEET |
| H-650-12-CONST | HORIZONTAL DIRECTIONAL DRILL (HDD) |

| NO. | DATE | REVISION | BY | APPD. |
|---|---|---|---|---|
| P1 | 10/22/18 | ISSUED FOR CLIENT REVIEW | SJS | SJO |
| P1 | 11/02/18 | ISSUED FOR FERC | SJS | SJO |

0 50 100
PLAN SCALE: 1"=100'

0 50 100
PROFILE (H) SCALE: 1"=100'

0 20 40
PROFILE (V) SCALE: 1"=40'

TRC Results you can rely on

Mountain Valley PIPELINE LLC

**MVP SOUTHGATE PROJECT**
**H-650 PIPELINE**
**STONY CREEK HDD**

| | | | |
|---|---|---|---|
| DRAWN BY: TRC | | DATE: 10/09/18 | |
| CHECKED BY: SJO | | DATE: 10/23/18 | |
| APPROVED BY: | | EPO APPROVAL: | |

| SCALE: | PROJ. NO. | DRAWING NO: | REV. |
|---|---|---|---|
| 1" = 100' | | HDD-StonyCreek-002 | P1 |

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October 30, 2018 - 4:49pm

# MVP Southgate Project

## Docket No. CP19-XX-000

## Resource Report 1

## Appendix 1-D

## Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 0.0 | 1000 | VA-PI-001.000 & VA-PI-002.000 | 0.83 | FW | materials, parking, turn around,pipe staging |
| Pittsylvania, VA | 0.0 | 1000A | VA-PI-001.000 | 1.05 | FW, OL | parking, pipe staging, frac tanks for hydro test, materials |
| Pittsylvania, VA | 0.1 | 1001 | VA-PI-002.000 | 0.23 | FW | materials, pumps, mats, pipe fab |
| Pittsylvania, VA | 0.3 | 1001A | VA-PI-002.000 | 0.47 | FW, OL | materials, equipment, pipe staging, pipe fab, mats |
| Pittsylvania, VA | 0.4 | 1001B | VA-PI-002.000 | 1.22 | FW, AG, OL | materials, equipment, dumpsters for spoils from hydrovac around transco line, parking, pipe |
| Pittsylvania, VA | 0.4 | 1001C | VA-PI-002.000, VA-PI-002.000, VA-PI-001.200.AR | 1.13 | FW, AG, OL | equipment, parking, materials, turn around for unload of materials, pipe, fab yard. |
| Pittsylvania, VA | 0.4 | 1001D | VA-PI-002.000 | 0.30 | FW, AG, OL | pipe, materials, parking, work trailers, |
| Pittsylvania, VA | 0.0 | 1001E | VA-PI-002.000 | 13.32 | FW, AG, OL | parking, pipe storage, material storage |
| Pittsylvania, VA | 0.1 | 1001F | VA-PI-002.000 | 0.20 | FW | material, equipment, mats |
| Pittsylvania, VA | 0.2 | 1008 | VA-PI-002.000 | 0.20 | FW | material, equipment, mats, pumps |
| Pittsylvania, VA | 0.3 | 1009 | VA-PI-002.000 | 0.23 | FW | material, pumps, mats |
| Pittsylvania, VA | 0.5 | 1010 | VA-PI-003.000 | 0.30 | FW, OL | material, pumps, mats |
| Pittsylvania, VA | 0.6 | 1012 | VA-PI-003.000 | 0.36 | OL | material, parking, equipment |
| Pittsylvania, VA | 0.7 | 1013 | VA-PI-005.000 | 0.50 | OL | material, equipment, boring equipment |
| Pittsylvania, VA | 0.8 | 1014 | VA-PI-005.000 | 0.52 | OL | material, pipe, boring equipment, parking |
| Pittsylvania, VA | 0.9 | 1015 | VA-PI-006.000 | 0.50 | OL, SC | material, pipe, boring equipment, parking |
| Pittsylvania, VA | 1.0 | 1016 | VA-PI-008.000 | 0.46 | AG | material, pipe, mats, pumps, equipment |
| Pittsylvania, VA | 1.2 | 1017 | VA-PI-009.000 | 0.51 | OL | material, pipe, mats, pumps, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 1.2 | 1018 | VA-PI-009.000 | 0.30 | OL, RD | mats, material, parking, pipe |
| Pittsylvania, VA | 1.2 | 1019 | VA-PI-009.000 | 0.11 | OL | turn around for trucks, material. |
| Pittsylvania, VA | 1.3 | 1020 | VA-PI-009.000 | 0.45 | FW, OL | material, pumps, mats, pipe |
| Pittsylvania, VA | 1.6 | 1021 | VA-PI-010.000 | 0.17 | WL | material, pumps, mats, pipe |
| Pittsylvania, VA | 1.6 | 1022 | VA-PI-010.000 | 0.46 | OL | parking, material, mats, equipment |
| Pittsylvania, VA | 1.7 | 1023 | VA-PI-010.000 | 0.07 | OL | materials, equipment |
| Pittsylvania, VA | 1.7 | 1024 | VA-PI-010.000 | 0.14 | OL | materials, pumps, mats |
| Pittsylvania, VA | 2.1 | 1025 | VA-PI-012.000 | 0.23 | OL, WL | materials, pumps, mats |
| Pittsylvania, VA | 2.3 | 1025A | VA-PI-012.000 | 0.84 | FW, OL | materials, pumps, mats, equipment, pipe |
| Pittsylvania, VA | 2.8 | 1026 | VA-PI-014.000 | 0.15 | OL, CI | materials, equipment, pipe |
| Pittsylvania, VA | 2.8 | 1027 | VA-PI-015.000 | 0.21 | AG | materials, equipment, pipe |
| Pittsylvania, VA | 2.9 | 1028 | VA-PI-015.000 | 0.49 | AG | material, parking, equipment, pipe |
| Pittsylvania, VA | 2.9 | 1029 | VA-PI-016.000 | 0.14 | AG | materials, equipment |
| Pittsylvania, VA | 3.0 | 1030 | VA-PI-018.000 | 0.51 | AG | boring equipment, materials, parking |
| Pittsylvania, VA | 3.2 | 1031 | VA-PI-022.000 | 0.45 | OL | materials, pumps, mats, pipe |
| Pittsylvania, VA | 3.3 | 1032 | VA-PI-023.000 | 0.51 | FW, OL, AG | materials, pumps, mats, pipe |
| Pittsylvania, VA | 3.4 | 1033 | VA-PI-023.000 | 0.12 | AG | turn around, materials, equipment |
| Pittsylvania, VA | 3.4 | 1034 | VA-PI-023.000 | 0.09 | AG | turn around, materials, equipment |
| Pittsylvania, VA | 3.5 | 1035 | VA-PI-023.000 | 0.29 | FW, AG | pumps, mats, equipment |
| Pittsylvania, VA | 3.6 | 1036 | VA-PI-022.000 | 0.20 | FW, AG | pumps, mats, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 3.7 | 1037 | VA-PI-022.000 | 0.17 | AG | materials, parking, turn around, |
| Pittsylvania, VA | 3.8 | 1037A | VA-PI-025.000 | 0.34 | AG | materials, equipment, pipe |
| Pittsylvania, VA | 4.0 | 1038 | VA-PI-025.000 | 0.22 | AG | pumps, mats, equipment |
| Pittsylvania, VA | 4.1 | 1039 | VA-PI-025.000 | 0.35 | FW, AG | pumps, mats, equipment |
| Pittsylvania, VA | 4.1 | 1040 | VA-PI-026.000 | 0.22 | AG | pumps, mats, equipment |
| Pittsylvania, VA | 4.2 | 1041 | VA-PI-026.000 | 0.21 | AG | boring equipment, materials, parking |
| Pittsylvania, VA | 4.3 | 1042 | VA-PI-030.000 | 0.15 | OL | boring equipment, materials, parking, pipe |
| Pittsylvania, VA | 4.3 | 1043 | VA-PI-031.000 | 0.28 | FW, OL | boring equipment, materials, parking, pipe |
| Pittsylvania, VA | 4.3 | 1044 | VA-PI-030.001 | 0.31 | FW | boring equipment, materials, parking, pipe |
| Pittsylvania, VA | 4.4 | 1045 | VA-PI-032.000 | 0.62 | FW, OL | fab sections, equipment, materials, parking |
| Pittsylvania, VA | 4.4 | 1046 | VA-PI-032.000 | 0.64 | FW, OL | fab sections, equipment, materials, parking |
| Pittsylvania, VA | 4.6 | 1047 | VA-PI-033.000 | 1.25 | FW, OL | pipe, material, parking, turn around |
| Pittsylvania, VA | 4.7 | 1048 | VA-PI-032.000 | 0.45 | FW, OL | mats, equipment, pipe |
| Pittsylvania, VA | 4.8 | 1049 | VA-PI-032.000 | 0.46 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 5.0 | 1050 | VA-PI-034.000 | 0.11 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 5.1 | 1051 | VA-PI-034.000 | 0.70 | FW, OL | pumps, mats, pipe, equipment, material |
| Pittsylvania, VA | 5.2 | 1052 | VA-PI-034.000 | 0.46 | FW, WL | boring equipment, pipe, materials |
| Pittsylvania, VA | 5.3 | 1053 | VA-PI-035.000 | 0.49 | FW | boring equipment, pipe, materials |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 5.6 | 1054 | VA-PI-036.000 | 0.69 | FW, OL | pipe, materials, turn around, parking |
| Pittsylvania, VA | 5.8 | 1055 | VA-PI-036.000 | 1.06 | FW, OL | pipe, materials, turn around, parking |
| Pittsylvania, VA | 5.9 | 1056 | VA-PI-036.000 | 0.40 | OL / CI | materials, mats, equipment |
| Pittsylvania, VA | 6.0 | 1057 | VA-PI-036.000 | 0.55 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 6.1 | 1058 | VA-PI-036.000 | 0.25 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 6.2 | 1059 | VA-PI-036.000 | 0.46 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 6.2 | 1060 | VA-PI-037.000 | 0.55 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 6.2 | 1061 | VA-PI-037.000 | 0.90 | OL | parking, mats, material, pipe |
| Pittsylvania, VA | 6.5 | 1062 | VA-PI-037.000 | 0.46 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 6.7 | 1063 | VA-PI-038.000 | 0.46 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 6.8 | 1064 | VA-PI-038.000 | 0.25 | FW, OL | mats, material, parking |
| Pittsylvania, VA | 6.9 | 1065 | VA-PI-039.000 | 0.53 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 7.0 | 1066 | VA-PI-040.000 | 0.32 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 7.1 | 1067 | VA-PI-040.000 | 1.20 | FW, OL, AG | pipe, materials, parking, equipment |
| Pittsylvania, VA | 7.2 | 1068 | VA-PI-041.000 | 0.45 | FW, OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 7.4 | 1069 | VA-PI-042.000 | 0.24 | FW | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 7.4 | 1070 | VA-PI-044.000 | 0.48 | OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 7.6 | 1071 | VA-PI-044.000 | 0.26 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 7.6 | 1072 | VA-PI-044.000 | 0.23 | FW | pumps, mats, equipment, material |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 7.9 | 1074 | VA-PI-045.000 | 0.47 | OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 8.0 | 1075 | VA-PI-045.000 | 0.27 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 8.1 | 1076 | VA-PI-045.000 | 0.45 | OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 8.1 | 1077 | VA-PI-046.000 | 0.32 | FW, OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 8.2 | 1078 | VA-PI-047.000 | 0.34 | FW, OL | parking, pipe storage, material storage |
| Pittsylvania, VA | 8.4 | 1079 | VA-PI-048.000 | 0.52 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 8.5 | 1080 | VA-PI-048.000 | 0.63 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 8.6 | 1081 | VA-PI-048.000 | 0.52 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 8.9 | 1082 | VA-PI-050.000 | 0.87 | OL | parking, pipe storage, material storage |
| Pittsylvania, VA | 9.1 | 1084 | VA-PI-052.000 | 0.31 | FW, OL, AG | pumps, mats, equipment, material |
| Pittsylvania, VA | 9.3 | 1085 | VA-PI-052.000 | 0.33 | AG | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 9.4 | 1086 | VA-PI-053.000 | 0.46 | FW, OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 9.6 | 1088 | VA-PI-053.000 | 0.20 | FW, AG | turn around for trucks, material |
| Pittsylvania, VA | 9.7 | 1088A | VA-PI-053.000 | 0.51 | FW | materials, equipment, pipe |
| Pittsylvania, VA | 9.8 | 1088B | VA-PI-053.000 | 0.85 | FW, OL, AG | pumps, mats, equipment, material |
| Pittsylvania, VA | 9.9 | 1089 | VA-PI-053.000 | 0.23 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 10.0 | 1090 | VA-PI-053.000 | 0.61 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 10.1 | 1091 | VA-PI-055.000 | 0.23 | FW | pumps, mats, equipment, material |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 10.1 | 1092 | VA-PI-055.000 | 0.23 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 10.3 | 1093 | VA-PI-061.000 | 0.69 | OL | parking, pipe storage, material storage |
| Pittsylvania, VA | 10.8 | 1094 | VA-PI-075.000 | 0.67 | FW, OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 10.8 | 1095 | VA-PI-075.000 | 0.49 | OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 10.9 | 1095A | VA-PI-075.000 | 0.77 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 11.1 | 1096 | VA-PI-075.000 | 1.14 | OL | parking, pipe storage, material storage |
| Pittsylvania, VA | 11.4 | 1097 | VA-PI-076.000 | 0.37 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 11.4 | 1098 | VA-PI-076.000 | 0.51 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 11.6 | 1099 | VA-PI-076.000 | 0.48 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 11.7 | 1100 | VA-PI-077.000 | 0.36 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 11.9 | 1101 | VA-PI-077.000 | 0.47 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 12.0 | 1103 | VA-PI-077.000 | 0.69 | FW, OL | materials, pipe, equipment |
| Pittsylvania, VA | 12.3 | 1105 | VA-PI-079.000 | 0.52 | AG | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 12.4 | 1106 | VA-PI-082.000 | 0.29 | FW, AG | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 12.5 | 1106A | VA-PI-082.000 | 0.23 | AG | materials, pipe, equipment |
| Pittsylvania, VA | 12.7 | 1107 | VA-PI-082.000 | 0.97 | FW, AG | materials, pipe, equipment |
| Pittsylvania, VA | 12.7 | 1108 | VA-PI-082.000 | 0.26 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 12.8 | 1109 | VA-PI-084.000 | 0.46 | FW | pumps, mats, equipment, material |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 13.1 | 1110 | VA-PI-084.000 | 0.46 | FW, OL | materials, pipe, equipment |
| Pittsylvania, VA | 13.3 | 1111 | VA-PI-085.000 | 0.26 | FW, OL | materials, pipe, equipment |
| Pittsylvania, VA | 13.4 | 1112 | VA-PI-087.000 | 0.44 | OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 13.4 | 1112A | VA-PI-087.000 | 0.11 | OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 13.4 | 1113 | VA-PI-089.000 | 0.09 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Pittsylvania, VA | 13.5 | 1114 | VA-PI-090.000 | 0.44 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 13.7 | 1115 | VA-PI-091.000 | 0.23 | FW, OL | turn around for trucks, material |
| Pittsylvania, VA | 14.1 | 1116 | VA-PI-092.000 | 0.54 | OL | materials, pipe, equipment |
| Pittsylvania, VA | 14.2 | 1117 | VA-PI-094.000 | 0.46 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 14.3 | 1118 | VA-PI-094.000 | 0.51 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 14.7 | 1118A | VA-PI-094.000 | 0.41 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 14.8 | 1118B | VA-PI-096.000 | 0.46 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 14.8 | 1119 | VA-PI-096.000 | 0.47 | OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 14.9 | 1120 | VA-PI-099.000 | 0.36 | AG | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 15.2 | 1120A | VA-PI-100.000 | 0.21 | AG | pumps, mats, equipment, material |
| Pittsylvania, VA | 15.2 | 1120B | VA-PI-100.000 | 0.39 | AG | pumps, mats, equipment, material |
| Pittsylvania, VA | 15.3 | 1120C | VA-PI-100.000 | 0.38 | FW, AG | pumps, mats, equipment, material |
| Pittsylvania, VA | 15.6 | 1122 | VA-PI-101.000 | 0.64 | FW, OL | pumps, mats, equipment, material |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 15.7 | 1123 | VA-PI-102.000 | 0.52 | FW | pumps, mats, equipment, material |
| Pittsylvania, VA | 15.8 | 1124 | VA-PI-103.000 | 0.90 | FW, OL | pumps, mats, equipment, material |
| Pittsylvania, VA | 16.0 | 1126 | VA-PI-106.000 | 0.41 | FW, OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 16.0 | 1126A | VA-PI-106.000 | 0.23 | FW, OL | materials, pipe, equipment |
| Pittsylvania, VA | 16.0 | 1127 | VA-PI-106.000 | 0.54 | FW, AG | pumps, mats, equipment, material |
| Pittsylvania, VA | 16.1 | 1128 | VA-PI-106.000 | 0.21 | FW, AG | pumps, mats, equipment, material |
| Pittsylvania, VA | 16.3 | 1129 | VA-PI-107.000 | 0.46 | AG, RD | materials, pipe, equipment |
| Pittsylvania, VA | 16.4 | 1130 | VA-PI-111.000 | 0.30 | AG, RD | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 16.5 | 1131 | VA-PI-115.000 | 0.55 | FW, AG | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 16.6 | 1131A | VA-PI-115.000 | 0.23 | AG | pumps, mats, equipment, material |
| Pittsylvania, VA | 16.7 | 1132 | VA-PI-115.000 | 0.07 | FW, OL, AG | pumps, mats, equipment, material |
| Pittsylvania, VA | 16.8 | 1133 | VA-PI-115.000 | 0.06 | FW, AG | pumps, mats, equipment, material |
| Pittsylvania, VA | 16.9 | 1134 | VA-PI-115.000 | 0.66 | AG | pumps, mats, equipment, material, pipe |
| Pittsylvania, VA | 17.2 | 1135 | VA-PI-118.000 | 0.88 | FW, OL, AG | pumps, mats, equipment, material, pipe |
| Pittsylvania, VA | 17.4 | 1136 | VA-PI-118.000 | 0.62 | OL | pumps, mats, equipment, material, pipe |
| Pittsylvania, VA | 17.5 | 1136A | VA-PI-118.000 | 0.10 | OL | pumps, mats, equipment, material, pipe |
| Pittsylvania, VA | 17.3 | 1137 | VA-PI-118.000 | 0.11 | FW, OL | pumps, mats, equipment, material, pipe |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 17.7 | 1138 | VA-PI-119.000 | 0.55 | FW | pumps, mats, equipment, material, pipe |
| Pittsylvania, VA | 17.8 | 1139 | VA-PI-120.000 | 0.46 | FW | pumps, mats, equipment, material, pipe |
| Pittsylvania, VA | 18.0 | 1140 | VA-PI-120.000 | 0.47 | FW | pumps, mats, equipment, material, pipe |
| Pittsylvania, VA | 18.1 | 1141 | VA-PI-120.000 | 0.61 | FW, OL | pumps, mats, equipment, material, pipe |
| Pittsylvania, VA | 18.2 | 1142 | VA-PI-120.000 | 0.47 | OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 18.3 | 1143 | VA-PI-124.000 | 0.45 | AG | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 18.7 | 1144 | VA-PI-128.000 | 0.57 | FW, OL | materials, pipe, equipment |
| Pittsylvania, VA | 18.9 | 1145 | VA-PI-128.000 | 0.62 | FW, OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 19.0 | 1146 | VA-PI-130.000 | 0.44 | FW, OL, AG | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 19.2 | 1146A | VA-PI-132.000 | 0.17 | RD | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 19.3 | 1147 | VA-PI-135.000 | 0.32 | FW, AG | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 19.4 | 1147A | VA-PI-137.100 | 0.27 | FW, AG | materials, pipe, equipment |
| Pittsylvania, VA | 19.7 | 1148 | VA-PI-144.000 | 0.23 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 19.8 | 1149 | VA-PI-150.000 | 0.23 | FW, OL | material, pumps, mats, pipe |
| Pittsylvania, VA | 19.9 | 1150 | VA-PI-150.100 | 2.03 | FW, OL | pipe, materials, parking, equipment, boring equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 19.9 | 1151 | VA-PI-151.000 | 0.27 | FW, OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 20.0 | 1152 | VA-PI-152.000 | 0.50 | OL, CI | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 20.3 | 1158 | VA-PI-160.000 | 0.46 | AG | material, pumps, mats, pipe |
| Pittsylvania, VA | 20.4 | 1160 | VA-PI-160.000 | 0.66 | OL / AG | material, pumps, mats, pipe |
| Pittsylvania, VA | 20.6 | 1161 | VA-PI-160.000 | 0.46 | FW, AG | material, pumps, mats, pipe |
| Pittsylvania, VA | 20.6 | 1162 | VA-PI-160.000 | 0.37 | OL | material, pumps, mats, pipe |
| Pittsylvania, VA | 20.9 | 1163 | VA-PI-162.000 | 0.46 | FW, AG | material, pumps, mats, pipe |
| Pittsylvania, VA | 21.0 | 1164 | VA-PI-162.000 | 0.64 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 21.2 | 1165 | VA-PI-164.000 | 0.46 | FW, OL | material, pumps, mats, pipe |
| Pittsylvania, VA | 21.3 | 1166 | VA-PI-163.000 | 0.46 | FW, OL | material, pumps, mats, pipe |
| Pittsylvania, VA | 21.6 | 1167 | VA-PI-165.000 | 0.11 | FW | turn around for trucks, material |
| Pittsylvania, VA | 21.7 | 1168 | VA-PI-165.000 | 0.88 | FW, OL | parking, pipe storage, material storage |
| Pittsylvania, VA | 22.0 | 1169 | VA-PI-169.000 | 0.15 | RD | material, pumps, mats, pipe, boring equipment |
| Pittsylvania, VA | 22.1 | 1170 | VA-PI-171.000 | 0.46 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Pittsylvania, VA | 22.2 | 1170A | VA-PI-171.000 | 0.41 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 22.4 | 1171 | VA-PI-173.000 | 0.34 | FW, OL | turn around for trucks, material |
| Pittsylvania, VA | 22.4 | 1173 | VA-PI-173.000 | 0.34 | FW, OL | materials, pipe, equipment |
| Pittsylvania, VA | 22.6 | 1175 | VA-PI-173.000 | 0.34 | FW, OL | materials, pipe, equipment |
| Pittsylvania, VA | 22.7 | 1176 | VA-PI-173.000 | 0.34 | FW, OL | materials, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 23.0 | 1177 | VA-PI-174.000 | 0.46 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 23.0 | 1178 | VA-PI-174.000 | 0.21 | FW | parking, pipe storage, material storage |
| Pittsylvania, VA | 23.0 | 1179 | VA-PI-174.000 | 0.36 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 23.1 | 1180 | VA-PI-174.000 | 0.46 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 23.2 | 1181 | VA-PI-174.000 | 0.40 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 23.5 | 1183 | VA-PI-175.000 | 0.46 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 23.6 | 1184 | VA-PI-175.000 | 0.40 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 23.7 | 1185 | VA-PI-175.000 | 0.47 | FW | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 23.7 | 1186 | VA-PI-178.000 | 0.48 | FW, OL | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 23.8 | 1187 | VA-PI-178.000 | 0.23 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 23.9 | 1188 | VA-PI-178.000 | 0.23 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 24.0 | 1189 | VA-PI-178.000 | 0.46 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 24.1 | 1190 | VA-PI-178.000 | 0.69 | FW, OL | parking, pipe storage, material storage |
| Pittsylvania, VA | 24.3 | 1191 | VA-PI-178.000 | 0.46 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 24.4 | 1192 | VA-PI-178.000 | 0.43 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 24.6 | 1193 | VA-PI-178.000 | 0.92 | FW, OL | parking, pipe storage, material storage |
| Pittsylvania, VA | 24.8 | 1194 | VA-PI-178.000 | 0.23 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 24.8 | 1195 | VA-PI-179.000 | 1.02 | FW, OL | parking, pipe storage, material storage |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Pittsylvania, VA | 24.9 | 1196 | VA-PI-179.000 | 0.47 | FW | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 25.0 | 1197 | VA-PI-180.000 | 0.45 | FW | pipe, materials, parking, equipment, boring equipment |
| Pittsylvania, VA | 25.1 | 1198 | VA-PI-180.000 | 0.69 | FW, OL | parking, pipe storage, material storage |
| Pittsylvania, VA | 25.2 | 1200 | VA-PI-180.000 | 0.23 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 25.7 | 1201 | VA-PI-180.000 | 0.46 | FW, OL | material, pumps, mats, pipe |
| Pittsylvania, VA | 25.7 | 1202 | VA-PI-180.000 | 0.46 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 25.8 | 1203 | VA-PI-180.000 | 0.35 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 25.9 | 1204 | VA-PI-180.000 | 0.46 | FW | material, pumps, mats, pipe |
| Pittsylvania, VA | 26.0 | 1205 | VA-PI-180.000 | 0.46 | FW | parking, pipe storage, material storage |
| Rockingham, NC | 26.2 | 1206 | NC-RO-001.000 | 0.53 | FW, OL | pipe, materials, parking, equipment, boring equipment |
| Rockingham, NC | 26.3 | 1207 | NC-RO-002.000 | 0.37 | FW | pipe, materials, parking, equipment, boring equipment |
| Rockingham, NC | 26.5 | 1208 | NC-RO-002.000 | 0.46 | FW | pipe, materials, parking, equipment, boring equipment |
| Rockingham, NC | 26.6 | 1209 | NC-RO-004.000 | 0.53 | OL | pipe, materials, parking, equipment, boring equipment |
| Rockingham, NC | 26.6 | 1209A | NC-RO-004.000 | 0.06 | RD | parking, pipe storage, material storage |
| Rockingham, NC | 26.6 | 1210 | NC-RO-004.000 | 0.46 | OL | parking, pipe storage, material storage |
| Rockingham, NC | 26.8 | 1211 | NC-RO-004.000 | 1.25 | FW, OL | parking, pipe storage, material storage |
| Rockingham, NC | 26.7 | 1211A | NC-RO-004.000 | 0.06 | OL | pipe, materials, parking, equipment, boring equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 26.9 | 1212 | NC-RO-004.000 | 0.13 | FW | pipe, materials, parking, equipment, boring equipment |
| Rockingham, NC | 27.0 | 1213 | NC-RO-005.000 | 0.45 | AG | pipe, materials, parking, equipment, boring equipment |
| Rockingham, NC | 27.0 | 1213A | NC-RO-005.000 | 1.02 | AG, OL, RD | parking, pipe storage, material storage |
| Rockingham, NC | 27.1 | 1213B | NC-RO-005.000 | 0.24 | OL | material, pumps, mats, pipe |
| Rockingham, NC | 27.1 | 1213C | NC-RO-005.000 | 0.22 | AG | material, pumps, mats, pipe |
| Rockingham, NC | 27.2 | 1213D | NC-RO-005.000 | 0.46 | AG | material, pumps, mats, pipe |
| Rockingham, NC | 27.4 | 1213E | NC-RO-006.000 | 0.46 | AG, OL | parking, pipe storage, material storage |
| Rockingham, NC | 27.4 | 1218 | NC-RO-006.000 | 0.39 | AG, OL | parking, pipe storage, material storage |
| Rockingham, NC | 27.6 | 1222 | NC-RO-006.000 | 0.76 | OL | materials, pipe, equipment |
| Rockingham, NC | 27.8 | 1224 | NC-RO-006.000 | 0.92 | AG | materials, pipe, equipment |
| Rockingham, NC | 28.0 | 1224A | NC-RO-006.000 | 1.33 | OL, AG | material, mats, pipe |
| Rockingham, NC | 28.1 | 1224B | NC-RO-006.000 | 1.77 | OL, SC | materials, pipe, equipment |
| Rockingham, NC | 28.1 | 1224C | NC-RO-006.000 | 0.71 | OL | materials, pipe, equipment |
| Rockingham, NC | 28.2 | 1229 | NC-RO-006.000 | 0.34 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 28.3 | 1230 | NC-RO-006.000 | 0.97 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 28.5 | 1231 | NC-RO-006.000 | 0.23 | FW, OL | material, pumps, mats, pipe |
| Rockingham, NC | 28.6 | 1232 | NC-RO-006.000 | 0.92 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 28.6 | 1233 | NC-RO-006.000 | 0.46 | FW | materials, pipe, equipment |
| Rockingham, NC | 28.7 | 1234 | NC-RO-007.000 | 0.46 | FW | materials, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 28.8 | 1235 | NC-RO-007.000 | 0.46 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 28.9 | 1236 | NC-RO-007.000 | 0.46 | FW | material, pumps, mats, pipe |
| Rockingham, NC | 29.0 | 1237 | NC-RO-007.000 | 0.46 | FW | material, pumps, mats, pipe |
| Rockingham, NC | 29.1 | 1238 | NC-RO-007.000 | 0.23 | FW | material, pumps, mats, pipe |
| Rockingham, NC | 29.2 | 1239 | NC-RO-007.000 | 0.47 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 29.2 | 1240 | NC-RO-007.000 | 0.46 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 29.3 | 1240A | NC-RO-007.000 | 0.80 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 29.6 | 1241 | NC-RO-007.000 | 0.23 | FW | material, pumps, mats, pipe |
| Rockingham, NC | 29.6 | 1242 | NC-RO-007.000 | 0.46 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 29.6 | 1243 | NC-RO-007.000 | 0.77 | AG | material, pumps, mats, pipe |
| Rockingham, NC | 29.9 | 1244 | NC-RO-011.000 | 2.13 | FW, OL, AG, WL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 29.9 | 1244A | NC-RO-011.000 | 0.51 | AG, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 29.9 | 1247 | NC-RO-011.000 | 0.43 | AG | materials, pipe, equipment |
| Rockingham, NC | 30.0 | 1247A | NC-RO-011.000 | 0.03 | AG, OL | materials, pipe, equipment |
| Rockingham, NC | 30.4 | 1249 | NC-RO-014.000 | 4.36 | OL, CI, WL, AG | material, mats, pumps, pipe, equipment, hydro testing materials |
| Rockingham, NC | 30.5 | 1250 | NC-RO-015.000 | 0.17 | OL, CI, WL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 30.4 | 1251 | NC-RO-016.000 | 0.06 | OL, WL | material, mats, pumps, pipe |
| Rockingham, NC | 30.5 | 1252 | NC-RO-018.000 | 0.12 | OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 30.6 | 1252A | NC-RO-019.000 | 0.28 | OL | materials, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 30.7 | 1253 | NC-RO-022.000 | 0.40 | OL | materials, pipe, equipment |
| Rockingham, NC | 31.0 | 1253A | NC-RO-025.000 | 0.60 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 31.1 | 1253B | NC-RO-025.000 | 0.26 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 31.1 | 1253C | NC-RO-025.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 31.2 | 1258 | NC-RO-025.000 | 0.36 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 31.3 | 1259 | NC-RO-025.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 31.3 | 1260 | NC-RO-027.000 | 0.25 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 31.7 | 1261 | NC-RO-033.000 | 0.63 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 31.8 | 1262 | NC-RO-033.000 | 0.53 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 32.0 | 1263 | NC-RO-035.000 | 0.17 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 32.2 | 1265 | NC-RO-037.000 | 0.17 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 32.3 | 1266 | NC-RO-038.000 | 0.46 | OL | material, mats, pumps, pipe |
| Rockingham, NC | 32.4 | 1267 | NC-RO-038.000 | 0.57 | OL | materials, pipe, equipment |
| Rockingham, NC | 32.5 | 1268 | NC-RO-038.000 | 0.34 | OL | materials, pipe, equipment |
| Rockingham, NC | 32.6 | 1269 | NC-RO-038.000 | 0.46 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 32.8 | 1270 | NC-RO-039.000 | 0.74 | FW | materials, pipe, equipment |
| Rockingham, NC | 32.8 | 1271 | NC-RO-040.000 | 0.27 | FW | materials, pipe, equipment |
| Rockingham, NC | 32.8 | 1272 | NC-RO-039.000 | 0.37 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 32.9 | 1273 | NC-RO-040.000 | 0.23 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 33.0 | 1274 | NC-RO-040.000 | 0.19 | FW, OL | material, mats, pumps, pipe |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 33.1 | 1275 | NC-RO-041.000 | 0.17 | OL | material, mats, pumps, pipe |
| Rockingham, NC | 33.2 | 1276 | NC-RO-041.000 | 0.31 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 33.2 | 1277 | NC-RO-041.000 | 0.18 | FW | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 33.2 | 1278 | NC-RO-042.000 | 0.19 | FW | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 33.3 | 1279 | NC-RO-042.000 | 0.27 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 33.4 | 1280 | NC-RO-042.000 | 0.49 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 33.4 | 1280A | NC-RO-043.000.ABU | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 33.5 | 1281 | NC-RO-044.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 33.6 | 1282 | NC-RO-044.000 | 0.46 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 33.7 | 1283 | NC-RO-042.000 | 0.29 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 33.8 | 1284 | NC-RO-042.000 | 0.52 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 33.9 | 1285 | NC-RO-045.000 | 0.46 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 34.0 | 1286 | NC-RO-045.000 | 0.46 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 34.1 | 1287 | NC-RO-045.000 | 0.46 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 34.2 | 1288 | NC-RO-047.000 | 0.25 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 34.3 | 1289 | NC-RO-047.000 | 0.37 | OL | materials, pipe, equipment |
| Rockingham, NC | 34.5 | 1290 | NC-RO-051.000 | 0.48 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 34.6 | 1291 | NC-RO-051.000 | 0.44 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 34.7 | 1293 | NC-RO-054.000 | 0.47 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 34.8 | 1294 | NC-RO-054.000 | 0.23 | FW | material, mats, pumps, pipe |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 34.8 | 1296 | NC-RO-054.000 | 0.46 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 35.0 | 1297 | NC-RO-054.000 | 0.57 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 35.1 | 1297A | NC-RO-057.000 | 0.46 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 35.2 | 1297B | NC-RO-057.000 | 0.48 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 35.4 | 1299 | NC-RO-057.000 | 0.55 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 35.4 | 1300 | NC-RO-057.000 | 0.40 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 35.7 | 1301 | NC-RO-058.000 | 0.37 | FW, AG | materials, pipe, equipment |
| Rockingham, NC | 35.9 | 1302 | NC-RO-058.000 | 0.40 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 35.9 | 1303 | NC-RO-058.000 | 0.41 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 36.0 | 1303A | NC-RO-061.000 | 0.17 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 36.2 | 1305 | NC-RO-061.000 | 0.46 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 36.3 | 1306 | NC-RO-061.000 | 0.25 | AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 36.3 | 1307 | NC-RO-061.000 | 0.18 | AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 36.3 | 1308 | NC-RO-063.000 | 0.25 | AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 36.3 | 1309 | NC-RO-062.000 | 0.18 | FW, AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 36.3 | 1310 | NC-RO-063.000 | 0.40 | FW, AG | materials, pipe, equipment |
| Rockingham, NC | 36.6 | 1311 | NC-RO-063.000 | 0.24 | OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 36.6 | 1312 | NC-RO-063.000 | 0.18 | OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 36.6 | 1313 | NC-RO-067.000.ABU | 0.13 | FW, RD | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 36.8 | 1315 | NC-RO-068.000 | 0.38 | FW, AG | materials, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 36.8 | 1316 | NC-RO-068.000 | 0.23 | FW, AG | materials, pipe, equipment |
| Rockingham, NC | 37.0 | 1316A | NC-RO-069.000 | 0.16 | OL | materials, pipe, equipment |
| Rockingham, NC | 37.1 | 1317 | NC-RO-069.000 | 0.46 | OL | materials, pipe, equipment |
| Rockingham, NC | 37.1 | 1318 | NC-RO-072.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 37.2 | 1319 | NC-RO-072.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 37.2 | 1320 | NC-RO-072.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 37.3 | 1321 | NC-RO-073.000 | 0.26 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 37.6 | 1324 | NC-RO-077.000 | 0.53 | OL | materials, pipe, equipment |
| Rockingham, NC | 37.8 | 1324A | NC-RO-080.000 | 0.44 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 37.8 | 1326 | NC-RO-080.000 | 0.54 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 37.9 | 1327 | NC-RO-083.000 | 0.42 | FW, RD | materials, pipe, equipment |
| Rockingham, NC | 38.0 | 1328 | NC-RO-084.000 | 0.76 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 38.2 | 1329 | NC-RO-086.000 | 0.29 | OL | materials, pipe, equipment |
| Rockingham, NC | 38.2 | 1330 | NC-RO-087.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 38.3 | 1331 | NC-RO-088.000 | 0.25 | FW | materials, pipe, equipment |
| Rockingham, NC | 38.4 | 1332 | NC-RO-089.000 | 0.53 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 38.6 | 1333 | NC-RO-089.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 38.6 | 1334 | NC-RO-089.000 | 0.40 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 38.8 | 1335 | NC-RO-090.000 | 0.28 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 38.8 | 1336 | NC-RO-090.000 | 0.45 | FW, OL, AG | material, pumps, mats, pipe, boring equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 38.8 | 1337 | NC-RO-091.000 | 0.24 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 38.9 | 1338 | NC-RO-091.000 | 0.31 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 38.9 | 1339 | NC-RO-091.000 | 0.52 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 39.0 | 1340 | NC-RO-091.000 | 0.45 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 39.1 | 1341 | NC-RO-092.000 | 0.25 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 39.1 | 1342 | NC-RO-092.000 | 0.19 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 39.2 | 1342A | NC-RO-092.000 | 0.06 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 39.3 | 1343 | NC-RO-094.000 | 0.13 | AG | material, mats, pumps, pipe |
| Rockingham, NC | 39.6 | 1344 | NC-RO-095.000 | 0.60 | FW, OL, RD | materials, pipe, equipment |
| Rockingham, NC | 39.7 | 1345 | NC-RO-095.000 | 0.12 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 39.7 | 1346 | NC-RO-100.000 | 0.30 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 39.7 | 1347 | NC-RO-100.000 | 0.57 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 39.9 | 1348 | NC-RO-100.000 | 0.39 | FW | materials, pipe, equipment |
| Rockingham, NC | 40.0 | 1349 | NC-RO-099.000.AR | 0.70 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 40.1 | 1350 | NC-RO-101.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 40.2 | 1351 | NC-RO-101.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 40.2 | 1352 | NC-RO-101.000 | 0.24 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 40.3 | 1353 | NC-RO-103.000 | 0.11 | RD | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 40.4 | 1354 | NC-RO-104.000 | 0.45 | FW, OL, AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 40.5 | 1355 | NC-RO-106.000 | 0.44 | AG | materials, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 40.5 | 1356 | NC-RO-108.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 40.6 | 1357 | NC-RO-108.000 | 0.22 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 40.6 | 1358 | NC-RO-108.000 | 0.29 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 40.7 | 1359 | NC-RO-109.000 | 0.50 | FW | materials, pipe, equipment |
| Rockingham, NC | 40.8 | 1360 | NC-RO-109.000 | 0.27 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 40.8 | 1361 | NC-RO-109.000 | 0.18 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 40.8 | 1362 | NC-RO-109.000 | 0.40 | FW | materials, pipe, equipment |
| Rockingham, NC | 40.9 | 1363 | NC-RO-109.000 | 0.35 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 41.1 | 1364 | NC-RO-110.000 | 0.46 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 41.2 | 1366 | NC-RO-111.000 | 0.53 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 41.4 | 1367 | NC-RO-111.000 | 0.85 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 41.5 | 1368 | NC-RO-111.000 | 0.42 | FW | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 41.6 | 1369 | NC-RO-112.000 | 0.28 | FW | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 41.8 | 1371 | NC-RO-112.000 | 0.45 | OL | material, mats, pumps, pipe |
| Rockingham, NC | 41.8 | 1373 | NC-RO-113.000 | 0.52 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 41.9 | 1374 | NC-RO-113.000 | 0.44 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 42.2 | 1376 | NC-RO-112.000 | 0.59 | OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 42.2 | 1377 | NC-RO-112.200 | 0.17 | FW | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 42.3 | 1378 | NC-RO-112.200 | 0.09 | FW | materials, pipe, equipment |
| Rockingham, NC | 42.4 | 1379 | NC-RO-117.000 | 0.26 | FW, OL | materials, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 42.5 | 1380 | NC-RO-117.000 | 0.82 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 43.1 | 1383 | NC-RO-117.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 43.1 | 1384 | NC-RO-118.000.ABU | 0.14 | FW, OL, RD | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 43.2 | 1385 | NC-RO-122.000 | 0.52 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 43.3 | 1386 | NC-RO-122.000 | 0.23 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 43.3 | 1389 | NC-RO-122.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 43.4 | 1390 | NC-RO-122.000 | 0.30 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 43.4 | 1391 | NC-RO-122.000 | 0.24 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 43.4 | 1392 | NC-RO-122.100 | 0.38 | OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 43.4 | 1393 | NC-RO-122.100 | 0.27 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 43.7 | 1394 | NC-RO-126.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 43.8 | 1395 | NC-RO-133.200 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 43.8 | 1396 | NC-RO-133.200 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 43.9 | 1397 | NC-RO-133.200 | 0.40 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 44.0 | 1401 | NC-RO-133.000 | 0.23 | OL | materials, pipe, equipment |
| Rockingham, NC | 44.1 | 1402 | NC-RO-133.000 | 0.14 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 44.1 | 1403 | NC-RO-133.000 | 0.26 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 44.2 | 1404 | NC-RO-133.000 | 0.59 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 44.4 | 1404A | NC-RO-135.000 | 0.46 | FW, OL, RD | materials, pipe, equipment |
| Rockingham, NC | 44.5 | 1407 | NC-RO-136.000 | 0.46 | FW, AG | materials, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 44.6 | 1407A | NC-RO-137.000 | 0.46 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 44.8 | 1408 | NC-RO-138.000 | 0.56 | FW, OL, AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 44.9 | 1409 | NC-RO-138.000 | 0.09 | AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 44.9 | 1410 | NC-RO-138.000 | 0.59 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 44.9 | 1411 | NC-RO-139.000 | 0.46 | AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 44.9 | 1412 | NC-RO-139.000 | 0.15 | FW, AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 45.0 | 1413 | NC-RO-139.000 | 0.11 | FW, AG | materials, pipe, equipment |
| Rockingham, NC | 45.3 | 1414 | NC-RO-139.000 | 0.51 | FW, AG | materials, pipe, equipment, parking |
| Rockingham, NC | 45.6 | 1415 | NC-RO-140.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 45.7 | 1416 | NC-RO-142.000 | 0.44 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 45.8 | 1417 | NC-RO-142.000 | 0.51 | OL | material, mats, pumps, pipe |
| Rockingham, NC | 45.8 | 1418 | NC-RO-142.000 | 0.17 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 45.8 | 1419 | NC-RO-142.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 46.1 | 1420 | NC-RO-143.000 | 0.48 | FW, AG, OL | materials, pipe, equipment, parking |
| Rockingham, NC | 46.3 | 1421 | NC-RO-143.000 | 0.39 | FW, AG, OL | materials, pipe, equipment |
| Rockingham, NC | 46.4 | 1422 | NC-RO-146.100 | 0.23 | FW | materials, pipe, equipment |
| Rockingham, NC | 46.4 | 1423 | NC-RO-146.100 | 0.30 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 46.5 | 1423A | NC-RO-146.100 | 0.23 | OL | material, mats, pumps, pipe |
| Rockingham, NC | 46.7 | 1426 | NC-RO-148.500 | 1.29 | FW, AG, OL | materials, pipe, equipment, parking |
| Rockingham, NC | 47.0 | 1427 | NC-RO-148.500 | 0.23 | FW | material, mats, pumps, pipe |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 47.0 | 1428 | NC-RO-148.500 | 0.16 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 47.0 | 1429 | NC-RO-149.000 | 0.48 | OL | material, mats, pumps, pipe |
| Rockingham, NC | 47.1 | 1431 | NC-RO-149.000 | 0.76 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 47.3 | 1432 | NC-RO-153.000 | 0.42 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 47.4 | 1433 | NC-RO-153.000 | 0.17 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 47.4 | 1434 | NC-RO-153.000 | 0.15 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 47.5 | 1435 | NC-RO-154.000 | 0.32 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 47.6 | 1436 | NC-RO-154.000 | 0.56 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 47.6 | 1437 | NC-RO-154.000 | 0.58 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 47.7 | 1438 | NC-RO-154.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 47.7 | 1438A | NC-RO-155.000 | 0.21 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 47.8 | 1439 | NC-RO-155.000 | 0.06 | FW | materials, pipe, equipment |
| Rockingham, NC | 47.8 | 1440 | NC-RO-155.000 | 0.57 | FW | materials, pipe, equipment |
| Rockingham, NC | 47.9 | 1441 | NC-RO-155.000 | 0.06 | FW | materials, pipe, equipment |
| Rockingham, NC | 47.9 | 1442 | NC-RO-155.000 | 0.40 | FW | materials, pipe, equipment |
| Rockingham, NC | 48.2 | 1443 | NC-RO-156.000 | 1.50 | AG | materials, pipe, equipment |
| Rockingham, NC | 48.4 | 1444 | NC-RO-157.000 | 0.35 | AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 48.4 | 1445 | NC-RO-156.000 | 0.26 | FW, AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 48.4 | 1446 | NC-RO-160.000 | 0.23 | AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 48.6 | 1447 | NC-RO-160.000 | 0.22 | FW, AG | materials, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 48.6 | 1448 | NC-RO-162.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 48.7 | 1449 | NC-RO-162.000 | 0.29 | FW, CI | material, mats, pumps, pipe |
| Rockingham, NC | 48.7 | 1450 | NC-RO-162.000 | 0.46 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 49.1 | 1451 | NC-RO-162.000 | 0.20 | FW, RD | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 49.1 | 1452 | NC-RO-165.000 | 0.47 | OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 49.2 | 1453 | NC-RO-165.000 | 0.23 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 49.2 | 1454 | NC-RO-165.000 | 0.31 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 49.3 | 1455 | NC-RO-165.000 | 0.23 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 49.5 | 1456 | NC-RO-168.000 | 0.51 | OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 49.5 | 1457 | NC-RO-169.000 | 0.32 | FW | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 49.6 | 1458 | NC-RO-169.000 | 0.39 | FW | materials, pipe, equipment |
| Rockingham, NC | 49.7 | 1459 | NC-RO-170.000 | 0.40 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 49.8 | 1460 | NC-RO-171.000 | 0.32 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 49.8 | 1461 | NC-RO-171.000 | 0.46 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 50.0 | 1462 | NC-RO-173.000 | 0.61 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 50.2 | 1462A | NC-RO-174.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 50.3 | 1463 | NC-RO-175.000 | 0.46 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 50.7 | 1463A | NC-RO-179.000 | 0.46 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 51.2 | 1464 | NC-RO-181.000 | 0.25 | FW, AG | material, mats, pumps, pipe |
| Rockingham, NC | 51.3 | 1465 | NC-RO-181.000 | 0.62 | OL, AG | material, mats, pumps, pipe |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Rockingham, NC | 51.4 | 1466 | NC-RO-181.000 | 0.52 | FW, OL, AG | material, mats, pumps, pipe |
| Rockingham, NC | 51.6 | 1467 | NC-RO-181.000 | 0.74 | AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 51.7 | 1469 | NC-RO-183.000 | 0.52 | AG | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 52.0 | 1472 | NC-RO-184.000 | 0.50 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Rockingham, NC | 52.1 | 1473 | NC-RO-185.000 | 0.23 | FW | material, mats, pumps, pipe |
| Rockingham, NC | 52.2 | 1474 | NC-GU-001.000 | 0.46 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 52.3 | 1475 | NC-GU-001.000 | 0.68 | FW, OL | material, mats, pumps, pipe |
| Rockingham, NC | 52.4 | 1475A | NC-GU-001.000 | 0.11 | FW, AG | material, mats, pumps, pipe |
| Rockingham, NC | 52.6 | 1478 | NC-RO-186.000 | 0.14 | FW, OL | materials, pipe, equipment |
| Rockingham, NC | 52.6 | 1478 | NC-AL-000.005 | 0.41 | FW | materials, pipe, equipment |
| Alamance, NC | 52.7 | 1480 | NC-AL-000.005 | 0.33 | FW | materials, pipe, equipment |
| Alamance, NC | 52.7 | 1481 | NC-AL-000.005 | 0.17 | FW | material, mats, pumps, pipe |
| Alamance, NC | 52.8 | 1482 | NC-AL-000.015 | 0.28 | FW, RD | material, mats, pumps, pipe |
| Alamance, NC | 52.9 | 1483 | NC-AL-000.020 | 0.19 | FW | materials, pipe, equipment |
| Alamance, NC | 53.0 | 1484 | NC-AL-000.045 | 0.52 | FW, OL, RD | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 53.1 | 1485 | NC-AL-000.050 | 0.62 | FW, AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 53.3 | 1486 | NC-AL-000.055 | 0.57 | FW, OL, AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 53.3 | 1487 | NC-AL-000.065 | 0.23 | FW, SC | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 53.5 | 1489 | NC-AL-000.065 | 0.31 | FW, SC, RD | materials, pipe, equipment |
| Alamance, NC | 53.6 | 1492 | NC-AL-000.065 | 0.46 | SC, RD | materials, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Alamance, NC | 53.8 | 1493 | NC-AL-003.000 | 0.52 | FW, OL, AG | materials, pipe, equipment |
| Alamance, NC | 53.9 | 1494 | NC-AL-005.000 | 0.46 | FW, OL | material, mats, pumps, pipe |
| Alamance, NC | 54.1 | 1496 | NC-AL-005.000 | 0.47 | AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 54.1 | 1497 | NC-AL-006.000 | 0.47 | AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 54.3 | 1498 | NC-AL-006.000 | 0.54 | AG | materials, pipe, equipment, parking. |
| Alamance, NC | 54.4 | 1499 | NC-AL-006.000 | 0.82 | FW, AG | material, mats, pumps, pipe |
| Alamance, NC | 54.6 | 1500 | NC-AL-007.000 | 0.78 | FW | material, mats, pumps, pipe |
| Alamance, NC | 54.7 | 1502 | NC-AL-007.000 | 0.63 | FW, AG | material, mats, pumps, pipe |
| Alamance, NC | 54.9 | 1503 | NC-AL-008.000 | 0.46 | OL, AG | material, mats, pumps, pipe |
| Alamance, NC | 55.0 | 1504 | NC-AL-009.000 | 0.44 | FW | material, mats, pumps, pipe |
| Alamance, NC | 55.0 | 1505 | NC-AL-009.000 | 0.13 | AG, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 55.1 | 1506 | NC-AL-009.000 | 0.39 | AG, FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 55.1 | 1507 | NC-AL-010.000 | 0.27 | AG | materials, pipe, equipment |
| Alamance, NC | 55.2 | 1508 | NC-AL-010.000 | 0.46 | OL, AG | material, mats, pumps, pipe |
| Alamance, NC | 55.3 | 1509 | NC-AL-010.000 | 0.47 | FW | material, mats, pumps, pipe |
| Alamance, NC | 55.5 | 1511 | NC-AL-018.000 | 1.02 | FW, AG, OL | material, mats, pumps, pipe, equipment |
| Alamance, NC | 55.7 | 1514 | NC-AL-022.000 | 0.32 | FW | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 55.8 | 1515 | NC-AL-022.000 | 1.03 | FW, AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 56.0 | 1516 | NC-AL-025.000 | 0.46 | FW, AG | materials, pipe, equipment |
| Alamance, NC | 56.3 | 1518 | NC-AL-025.000 | 0.54 | OL, FW, AG | materials, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Alamance, NC | 56.3 | 1519 | NC-AL-027.000 | 0.13 | FW | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 56.4 | 1521 | NC-AL-028.000 | 0.09 | FW | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 56.6 | 1522 | NC-AL-028.000 | 0.20 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 56.7 | 1524 | NC-AL-028.000 | 0.46 | OL, FW, AG | material, mats, pumps, pipe, equipment |
| Alamance, NC | 56.8 | 1524A | NC-AL-033.000 | 0.22 | OL, FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 56.9 | 1526 | NC-AL-036.000 | 0.65 | AG | material, mats, pumps, pipe, equipment |
| Alamance, NC | 57.0 | 1527 | NC-AL-037.000 | 0.12 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 57.1 | 1529 | NC-AL-039.000 | 0.49 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 57.3 | 1530 | NC-AL-039.000 | 0.05 | RD | materials, pipe, equipment |
| Alamance, NC | 57.3 | 1531 | NC-AL-039.000 | 0.38 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 57.4 | 1532 | NC-AL-041.000 | 0.45 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 57.5 | 1533 | NC-AL-042.000 | 0.15 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 57.5 | 1533A | NC-AL-042.000 | 0.61 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 57.6 | 1533B | NC-AL-043.000 | 0.46 | FW, OL, AG | material, mats, pumps, pipe, equipment |
| Alamance, NC | 57.7 | 1535 | NC-AL-043.000 | 0.41 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 57.8 | 1536 | NC-AL-043.000 | 0.22 | RD | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 57.8 | 1537 | NC-AL-044.000 | 0.24 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 57.9 | 1538 | NC-AL-046.000 | 0.34 | OL | material, mats, pumps, pipe, equipment |
| Alamance, NC | 57.9 | 1539 | NC-AL-046.000 | 0.15 | OL | material, mats, pumps, pipe, equipment |
| Alamance, NC | 58.1 | 1540 | NC-AL-046.000 | 0.46 | OL | material, mats, pumps, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Alamance, NC | 58.3 | 1540A | NC-AL-050.000 | 0.41 | OL | materials, pipe, equipment |
| Alamance, NC | 58.4 | 1541 | NC-AL-050.000 | 0.27 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 58.6 | 1542 | NC-AL-051.000 | 0.23 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 58.6 | 1543 | NC-AL-051.000 | 0.23 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 58.7 | 1544 | NC-AL-052.000 | 0.23 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 58.7 | 1545 | NC-AL-052.000 | 0.21 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 58.8 | 1546 | NC-AL-052.000 | 0.41 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 59.1 | 1548 | NC-AL-054.000 | 0.44 | FW, OL, RD | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 59.1 | 1549 | NC-AL-054.000 | 0.34 | FW, RD | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 59.2 | 1550 | NC-AL-058.000 | 0.32 | OL, RD | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 59.3 | 1551 | NC-AL-057.000 | 0.41 | FW | materials, pipe, equipment |
| Alamance, NC | 59.6 | 1552 | NC-AL-064.000 | 0.39 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 59.6 | 1553 | NC-AL-064.000 | 0.49 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 59.7 | 1554 | NC-AL-064.000 | 0.26 | FW, OL | material, mats, pumps, pipe, equipment |
| Alamance, NC | 60.0 | 1555 | NC-AL-066.000 | 0.64 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 60.0 | 1556 | NC-AL-067.000 | 0.49 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 60.2 | 1557 | NC-AL-068.000 | 0.40 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 60.4 | 1558 | NC-AL-070.000 | 0.46 | OL | materials, pipe, equipment |
| Alamance, NC | 60.7 | 1559 | NC-AL-075.000 | 0.23 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 60.7 | 1560 | NC-AL-075.000 | 0.23 | FW | material, mats, pumps, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Alamance, NC | 60.8 | 1561 | NC-AL-074.000 | 0.23 | OL | material, mats, pumps, pipe, equipment |
| Alamance, NC | 61.1 | 1561A | NC-AL-076.100.AR | 2.04 | FW, AG | materials, pipe, equipment |
| Alamance, NC | 61.4 | 1562 | NC-AL-077.000 | 0.22 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 61.4 | 1563 | NC-AL-081.000 | 0.35 | FW, OL, AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 61.4 | 1564 | NC-AL-081.000 | 0.45 | FW, OL, AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 61.4 | 1565 | NC-AL-081.000 | 0.38 | OL, AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 61.5 | 1566 | NC-AL-081.000 | 0.37 | OL, AG | materials, pipe, equipment |
| Alamance, NC | 61.7 | 1567 | NC-AL-081.000 | 0.23 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 61.8 | 1568 | NC-AL-081.000 | 0.53 | OL | material, mats, pumps, pipe, equipment |
| Alamance, NC | 62.2 | 1569 | NC-AL-084.000 | 0.39 | FW, OL, AG | materials, pipe, equipment |
| Alamance, NC | 62.2 | 1569A | NC-AL-084.000 | 0.37 | AG | materials, pipe, equipment |
| Alamance, NC | 62.4 | 1571 | NC-AL-085.000 | 0.54 | FW, OL | material, mats, pumps, pipe, equipment |
| Alamance, NC | 62.5 | 1572 | NC-AL-086.000 | 0.27 | OL | material, mats, pumps, pipe, equipment |
| Alamance, NC | 62.6 | 1573 | NC-AL-086.000 | 0.23 | OL | material, mats, pumps, pipe, equipment |
| Alamance, NC | 62.7 | 1574 | NC-AL-086.000 | 0.20 | OL | material, mats, pumps, pipe, equipment |
| Alamance, NC | 62.8 | 1575 | NC-AL-089.000 | 0.58 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 62.8 | 1576 | NC-AL-093.000 | 0.24 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 63.0 | 1577 | NC-AL-093.000 | 0.41 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 63.1 | 1580 | NC-AL-096.000 | 0.41 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 63.2 | 1581 | NC-AL-097.000 | 0.39 | FW, AG | material, mats, pumps, pipe, equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Alamance, NC | 63.4 | 1582 | NC-AL-101.000.AR | 0.64 | FW, OL, AG | material, mats, pumps, pipe, equipment |
| Alamance, NC | 63.8 | 1584 | NC-AL-103.000 | 1.15 | FW, OL, SC | material, mats, pumps, pipe, equipment |
| Alamance, NC | 63.8 | 1585 | NC-AL-104.000 | 0.46 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 63.9 | 1587 | NC-AL-103.000 | 0.19 | FW, SC | material, mats, pumps, pipe, equipment |
| Alamance, NC | 64.0 | 1588 | NC-AL-103.000 | 0.33 | FW, SC | material, mats, pumps, pipe, equipment |
| Alamance, NC | 64.4 | 1588A | MVF-NC-AL-002.000 | 0.23 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 64.5 | 1588B | MVF-NC-AL-004.000 | 0.23 | FW | material, mats, pumps, pipe, equipment |
| Alamance, NC | 64.8 | 1588C | MVF-NC-AL-005.000 | 0.29 | FW | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 64.8 | 1588D | MVF-NC-AL-005.000 | 0.29 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 64.8 | 1588E | MVF-NC-AL-007.000 | 0.34 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 64.8 | 1588F | MVF-NC-AL-007.000 | 0.13 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 65.2 | 1588G | MVF-NC-AL-007.000 | 0.41 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 65.3 | 1588H | MVF-NC-AL-007.000 | 0.27 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 65.3 | 1588I | MVF-NC-AL-012.000.ABU | 0.22 | FW, OL, AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 65.3 | 1588J | MVF-NC-AL-011.000 | 0.22 | OL, AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 65.5 | 1588K | MVF-NC-AL-013.000 | 0.81 | FW, OL | material, mats, pipe, equipment |
| Alamance, NC | 65.6 | 1588L | NC-AL-119.000 | 0.46 | FW, OL | material, mats, pumps, pipe, equipment |
| Alamance, NC | 66.1 | 1588M | FA34-AL-001.000 | 0.23 | AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 66.1 | 1588N | FA34-AL-001.000 | 0.21 | AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 66.1 | 1588O | FA3-AL-003.000 | 0.24 | FW, OL, AG | material, pumps, mats, pipe, boring equipment |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Alamance, NC | 66.1 | 1588P | FA3-AL-002.000 | 0.22 | OL, AG | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 66.2 | 1588Q | FA3-AL-003.000 | 0.58 | RD, OL, AG | materials, pipe, equipment |
| Alamance, NC | 66.4 | 1588R | FA3-AL-005.000 | 0.33 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 66.4 | 1588S | FA3-AL-005.000 | 0.32 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 66.4 | 1588T | FA3-AL-006.000 | 0.27 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 66.4 | 1588U | FA3-AL-006.000 | 0.27 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 66.7 | 1588V | FA3-AL-009.000 | 0.51 | OL | materials, pipe, equipment |
| Alamance, NC | 66.7 | 1588W | FA3-AL-010.000 | 0.74 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 66.8 | 1588X | NC-AL-128.000 | 0.20 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 66.8 | 1588Y | NC-AL-128.000 | 0.46 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 67.3 | 1588Z | NC-AL-128.000 | 0.46 | FW | material, pumps, mats, pipe |
| Alamance, NC | 67.6 | 1619 | NC-AL-135.000 | 0.23 | FW | material, pumps, mats, pipe |
| Alamance, NC | 67.6 | 1619A | NC-AL-135.000 | 0.20 | FW | material, pumps, mats, pipe |
| Alamance, NC | 67.6 | 1619B | NC-AL-137.000 | 0.20 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 67.6 | 1620 | NC-AL-137.000 | 0.23 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 68.0 | 1621 | NC-AL-139.000 | 0.78 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 68.0 | 1622 | NC-AL-139.000 | 0.69 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 68.1 | 1622A | NC-AL-141.000 | 0.12 | FW | material, pumps, mats, pipe |
| Alamance, NC | 68.1 | 1623 | NC-AL-141.000 | 0.23 | FW | material, pumps, mats, pipe |
| Alamance, NC | 68.1 | 1623A | NC-AL-142.000 | 0.23 | FW | material, pumps, mats, pipe |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Alamance, NC | 68.1 | 1624 | NC-AL-142.000 | 0.23 | FW | material, pumps, mats, pipe |
| Alamance, NC | 68.2 | 1625 | NC-AL-142.000 | 0.45 | FW, OL, RD | materials, pipe, equipment |
| Alamance, NC | 68.2 | 1627 | NC-AL-142.000 | 0.22 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 68.2 | 1627A | NC-AL-143.000 | 0.06 | OL | materials, pipe, equipment |
| Alamance, NC | 68.3 | 1628 | NC-AL-143.000 | 0.23 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 68.3 | 1629 | NC-AL-143.000 | 0.20 | FW | material, pumps, mats, pipe |
| Alamance, NC | 68.3 | 1630 | NC-AL-143.000 | 0.23 | FW | material, pumps, mats, pipe |
| Alamance, NC | 68.3 | 1631 | NC-AL-143.000 | 0.20 | FW | material, pumps, mats, pipe |
| Alamance, NC | 68.4 | 1632 | NC-AL-143.000 | 0.22 | FW, SC | material, pumps, mats, pipe |
| Alamance, NC | 68.4 | 1633 | NC-AL-143.000 | 0.23 | FW | material, pumps, mats, pipe |
| Alamance, NC | 68.4 | 1634 | NC-AL-143.000 | 0.22 | FW | material, pumps, mats, pipe |
| Alamance, NC | 68.5 | 1635 | NC-AL-145.000 | 0.23 | FW | material, pumps, mats, pipe |
| Alamance, NC | 68.6 | 1636 | NC-AL-144.000 | 0.23 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 68.6 | 1637 | NC-AL-144.000 | 0.11 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 68.7 | 1639 | NC-AL-148.000 | 0.29 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 68.8 | 1640 | NC-AL-148.000 | 0.23 | FW | material, pumps, mats, pipe |
| Alamance, NC | 68.8 | 1641 | NC-AL-148.000 | 0.22 | FW | material, pumps, mats, pipe |
| Alamance, NC | 68.8 | 1643 | NC-AL-148.000 | 0.08 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 68.9 | 1644 | NC-AL-148.000 | 0.48 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 68.9 | 1645 | NC-AL-148.000 | 0.23 | FW | material, pumps, mats, pipe |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Alamance, NC | 69.0 | 1646 | NC-AL-149.000 | 0.52 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 69.0 | 1647 | NC-AL-149.000 | 0.18 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 69.0 | 1648 | NC-AL-149.000 | 0.53 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 69.1 | 1649 | NC-AL-150.000 | 0.10 | FW, RD | material, pumps, mats, pipe |
| Alamance, NC | 69.2 | 1650 | NC-AL-151.000 | 0.29 | OL | material, pumps, mats, pipe |
| Alamance, NC | 69.3 | 1651 | NC-AL-164.000.ABU | 0.26 | FW | material, pumps, mats, pipe |
| Alamance, NC | 69.4 | 1652 | NC-AL-161.000 | 0.17 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 69.5 | 1653 | NC-AL-166.000 | 0.50 | FW | material, pumps, mats, pipe |
| Alamance, NC | 69.7 | 1653A | NC-AL-179.000.ABU | 0.93 | FW, OL, RD, CI | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 69.7 | 1653B | NC-AL-176.000.ABU | 0.32 | CI | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 69.8 | 1653C | NC-AL-180.000.ABU | 0.40 | FW, OL, RD | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 69.8 | 1653D | NC-AL-183.000.ABU | 0.45 | FW, OL, CI | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 69.8 | 1653E | NC-AL-184.000 | 0.26 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 69.9 | 1653F | NC-AL-184.000 | 0.24 | FW | materials, pipe, equipment |
| Alamance, NC | 70.2 | 1661 | NC-AL-184.000 | 0.20 | FW | material, pumps, mats, pipe |
| Alamance, NC | 70.3 | 1662 | NC-AL-186.000 | 0.20 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 70.4 | 1663 | NC-AL-186.000 | 0.20 | FW | material, pumps, mats, pipe |
| Alamance, NC | 70.4 | 1664 | NC-AL-188.000 | 0.20 | FW | material, pumps, mats, pipe |
| Alamance, NC | 70.6 | 1665 | NC-AL-188.000 | 0.20 | FW | material, pumps, mats, pipe |
| Alamance, NC | 70.7 | 1666 | NC-AL-188.000 | 0.20 | FW | material, pumps, mats, pipe |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Alamance, NC | 70.7 | 1667 | NC-AL-189.000 | 0.23 | FW | material, pumps, mats, pipe |
| Alamance, NC | 70.8 | 1668 | NC-AL-189.000 | 0.57 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 70.9 | 1669 | NC-AL-191.000 | 0.23 | FW | material, pumps, mats, pipe |
| Alamance, NC | 70.9 | 1670 | NC-AL-191.000 | 0.59 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 70.9 | 1671 | NC-AL-191.000 | 0.05 | OL | material, pumps, mats, pipe |
| Alamance, NC | 71.0 | 1672 | NC-AL-191.000 | 0.19 | FW | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 71.0 | 1674 | NC-AL-191.100.AR | 0.11 | OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 71.1 | 1675 | NC-AL-191.000 | 0.23 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 71.3 | 1676 | NC-AL-191.000 | 0.50 | FW | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 71.3 | 1677 | NC-AL-191.000 | 0.51 | FW | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 71.4 | 1678 | NC-AL-192.000 | 0.71 | FW, OL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 71.7 | 1679 | NC-AL-192.000 | 0.60 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 71.8 | 1680 | NC-AL-193.000 | 0.50 | FW | material, pumps, mats, pipe |
| Alamance, NC | 72.3 | 1680A | NC-AL-198.000 | 0.26 | FW | materials, pipe, equipment |
| Alamance, NC | 71.9 | 1681 | NC-AL-194.000 | 0.57 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 72.0 | 1683 | NC-AL-194.000 | 0.24 | FW, OL | materials, pipe, equipment |
| Alamance, NC | 72.1 | 1684 | NC-AL-199.000 | 0.21 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 72.2 | 1685 | NC-AL-196.000 | 0.23 | FW | material, pumps, mats, pipe |
| Alamance, NC | 72.2 | 1686 | NC-AL-197.000 | 0.36 | FW, OL | material, pumps, mats, pipe |
| Alamance, NC | 72.4 | 1688 | NC-AL-199.000 | 1.00 | FW, OL | materials, pipe, equipment, parking |

**Appendix 1-D**

**Additional Temporary Workspace Areas Associated with Construction of MVP Southgate Project**

| County State | Milepost | Name ID Number a/ | Ownership | Area (Acres) | Current Land Use b/ | Purpose |
|---|---|---|---|---|---|---|
| Alamance, NC | 72.5 | 1688A | NC-AL-199.000 | 0.13 | FW | material, pumps, mats, pipe |
| Alamance, NC | 72.6 | 1688B | NC-AL-199.000 | 0.23 | FW | material, pumps, mats, pipe |
| Alamance, NC | 72.7 | 1689 | NC-AL-200.000 | 0.23 | FW | materials, pipe, equipment |
| Alamance, NC | 72.8 | 1689A | NC-AL-204.000 | 0.15 | FW, RD | materials, pipe, equipment |
| Alamance, NC | 72.9 | 1690 | NC-AL-207.000 | 0.21 | FW, OL | material, pumps, mats, pipe, boring equipment, parking |
| Alamance, NC | 72.9 | 1691 | NC-AL-207.000 | 0.06 | OL | material, pumps, mats, pipe, boring equipment, parking |
| Alamance, NC | 73.0 | 1692 | NC-AL-210.000 | 2.86 | OL, CI, WL | material, pumps, mats, pipe, boring equipment, parking |
| Alamance, NC | 73.0 | 1692A | NC-AL-210.000 | 0.69 | OL, CI, WL | material, pumps, mats, pipe, boring equipment |
| Alamance, NC | 73.1 | 1692B | NC-AL-210.000 | 0.07 | OL | material, pumps, mats, pipe |

Note:

a/ Includes additional temporary workspace (“ATWS”) areas for the H-605 pipeline, the H-650 pipeline, and aboveground facilities.

b/ AG = Agricultural; CI = Commercial / Industrial; FW = Upland Forest / Woodland; OL = Upland Open Land; RD = Residential; SC = Silviculture; WL = Wetland.

# MVP Southgate Project

## Docket No. CP19-XX-000

## Resource Report 1

## Appendix 1-E1

## Existing Utility Corridors Adjacent to the MVP Southgate Project

## Appendix 1-E2

## Deviations from Existing Utility Corridors along the MVP Southgate Project

**Appendix 1-E1**

**Existing Utility Corridors Adjacent to the MVP Southgate Project**

| Begin MP | End MP | Name | Type | Distance (Miles) | Off-Set between Pipe and Edge of Right-of-way | Construction Right-of-way Overlap |
|---|---|---|---|---|---|---|
| **H-605 Pipeline** | | | | | | |
| 0.0 | 0.22 | Mountain Valley Pipeline | Pipeline Transmission | 0.22 | 25 | 15 |
| 0.22 | 0.44 | Williams Transco | Pipeline Transmission | 0.22 | 25 | 15 |
| **H-650 Pipeline** | | | | | | |
| 0.13 | 3.42 | Williams Transco | Pipeline Transmission | 3.29 | 25 | 15 |
| 4.4 | 5.0 | Williams Transco | Pipeline Transmission | 0.6 | 25 | 15 |
| 5.26 | 9.24 | Williams Transco | Pipeline Transmission | 3.98 | 25 | 15 |
| 9.38 | 9.65 | Williams Transco | Pipeline Transmission | 0.27 | 25 | 15 |
| 10.06 | 10.98 | Williams Transco | Pipeline Transmission | 0.92 | 25 | 15 |
| 11.45 | 11.66 | Williams Transco | Pipeline Transmission | 0.21 | 25 | 15 |
| 11.84 | 13.06 | Williams Transco | Pipeline Transmission | 1.22 | 25 | 15 |
| 14.1 | 14.7 | Williams Transco | Pipeline Transmission | 0.6 | 25 | 15 |
| 15.6 | 15.9 | Williams Transco | Pipeline Transmission | 0.3 | 25 | 15 |
| 16.0 | 16.5 | Williams Transco | Pipeline Transmission | 0.5 | 25 | 15 |
| 17.45 | 26.08 | Williams Transco | Pipeline Transmission | 8.63 | 25 | 15 |
| 26.08 | 29.3 | Williams Transco | Pipeline Transmission | 3.22 | 25 | 15 |
| 29.98 | 30.74 | Williams Transco | Pipeline Transmission | 0.76 | 25 | 15 |
| 31.73 | 32.01 | Williams Transco | Pipeline Transmission | 0.28 | 25 | 15 |
| 32.12 | 32.78 | Williams Transco | Pipeline Transmission | 0.66 | 25 | 15 |
| 33.2 | 35.35 | Duke Power Co | Pipeline Transmission | 2.15 | 0 | 15 |
| 38.28 | 38.53 | Duke Power Co | Pipeline Transmission | 0.25 | 0 | 15 |
| 38.87 | 39.04 | Duke Power Co | Pipeline Transmission | 0.17 | 0 | 15 |
| 40.67 | 40.73 | Duke Power Co | Pipeline Transmission | 0.06 | 0 | 15 |
| 40.83 | 41.6 | Duke Power Co | Pipeline Transmission | 0.77 | 0 | 15 |
| 41.74 | 41.91 | Duke Power Co | Pipeline Transmission | 0.17 | 0 | 15 |
| 42.55 | 42.95 | Duke Power Co | Electric Transmission | 0.4 | 0 | 15 |
| 44.1 | 44.8 | Duke Power Co | Electric Transmission | 0.7 | 0 | 35 |
| 45.52 | 45.71 | Duke Power Co | Electric Transmission | 0.19 | 0 | 35 |
| 49.1 | 52.34 | Duke Power Co | Electric Transmission | 3.24 | 0 | 35 |
| 53.05 | 54.97 | Duke Power Co | Electric Transmission | 1.92 | 0 | 35 |
| 55.6 | 57.35 | Duke Power Co | Electric Transmission | 1.75 | 0 | 35 |
| 57.72 | 57.9 | Duke Power Co | Electric Transmission | 0.18 | 0 | 15 |
| 58.15 | 58.24 | Duke Power Co | Electric Transmission | 0.09 | 0 | 35 |
| 59.5 | 60.1 | Williams Transco | Electric Transmission | 0.6 | 0 | 15 |

| Appendix 1-E2<br><br>Deviations from Existing Corridors Along the MVP Southgate Project | | | |
|---|---|---|---|
| **Begin MP** | **End MP** | **Distance (Miles)** | **Reasons for Deviation** |
| **H-605 Pipeline** | | | |
| N/A | N/A | N/A | N/A |
| **H-650 Pipeline** | | | |
| 0.0 | 0.13 | 0.13 | Terrain and location of pipeline starting point |
| 3.42 | 4.4 | 0.98 | Pond, home site |
| 5.0 | 5.26 | 0.26 | Large stream & Wetland |
| 9.24 | 9.38 | 0.14 | Existing pipeline facility |
| 9.65 | 10.06 | 0.41 | Avoid sensitive resource area and less impact to stream |
| 10.98 | 11.45 | 0.47 | Terrain, stream |
| 11.66 | 11.84 | 0.18 | Avoid sensitive resource area |
| 13.06 | 14.1 | 1.04 | Multiple Homes, terrain |
| 14.7 | 15.6 | 0.9 | Home site, pond |
| 15.9 | 16 | 0.1 | Avoid sensitive resource area |
| 16.5 | 17.45 | 0.95 | Road crossing, home sites |
| 29.3 | 29.98 | 0.68 | Terrain |
| 30.74 | 31.73 | 0.99 | Avoid sensitive resource area |
| 32.01 | 32.12 | 0.11 | Avoid Stream Impact |
| 32.78 | 33.2 | 0.42 | Avoid large Wetland and Stream Impacts |
| 35.35 | 38.28 | 2.93 | Pond, wetland, terrain, home sites |
| 38.53 | 38.87 | 0.34 | Terrain, large wetland, road crossing angle |
| 39.04 | 40.67 | 1.63 | Less stream impact, terrain, power substation, home sites |
| 40.73 | 40.83 | 0.1 | Terrain |
| 41.6 | 41.74 | 0.14 | Conventional Bore, crossing angle, terrain |
| 41.91 | 42.55 | 0.64 | Convenient store |
| 42.95 | 44.1 | 1.15 | Home sites, terrain |
| 44.8 | 45.52 | 0.72 | Home sites, terrain |
| 45.71 | 49.1 | 3.39 | Terrain, pond, electrical substation, home sites, solar panel farm |
| 52.34 | 53.05 | 0.71 | Buildings, homes sites |
| 54.97 | 55.6 | 0.63 | Home sites |
| 57.35 | 57.72 | 0.37 | Pond, terrain |
| 57.9 | 58.15 | 0.25 | Pond |
| 58.24 | 59.5 | 1.26 | Home sites, terrain |
| 60.1 | 73.11 | 13.01 | Ponds, home sites, terrain |

# MVP Southgate Project

# Docket No. CP19-XX-000

# Resource Report 1

# Appendix 1-F

# Proposed New, Improved, and Private Access Roads for the MVP Southgate Project

**Appendix 1-F**

**Proposed New, Improved, and Private Access Roads for the MVP Southgate Project**

| State/ Facility/ Road ID a/ | Road Name | Milepost b/ | New or Existing | Proposed for Temporary or Permanent Use | Ownership / Management | Road Dimensions | | Existing Surface c/ | Existing Land Use d/ | Proposed Improvement e/ | Construction Area (acres) f/ | Operation Area (acres) g/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Width (feet) | Length (feet) | | | | | |
| **Virginia** | | | | | | | | | | | | |
| TAR | TA-PI-000 | 0.0 | Existing | Temporary | Mountain Valley Pipeline, LLC | 25 | 233 | Gr | FW, OL | G, S | 0.19 | 0.00 |
| TAR | TA-PI-000A | 0.0 | Existing | Temporary | Mountain Valley Pipeline, LLC | 25 | 13 | G | CI, OL | S, W | 0.02 | 0.00 |
| TAR | TA-PI-000B | CY-03 | Existing | Temporary | Private | 25 | 46 | A | CI | | 0.07 | 0.00 |
| PAR | PA-PI-001A | 0.0 | Existing | Permanent | Transcontinental Gas Pipeline Company, LLC Private Mountain Valley Pipeline, LLC | 25 | 3,135 | A, G, D | FW, OL, AG, CI | S, W | 1.80 | 1.80 |
| PAR | PA-PI-001B | 0.0 | New | Permanent | Transcontinental Gas Pipeline Company, LLC Private Mountain Valley Pipeline, LLC | 25 | 546 | Gr | FW, OL, AG | S, W | 0.24 | 0.24 |
| TAR | TA-PI-003 | 1.2 | Existing | Temporary | Private | 25 | 2,348 | G, Gr | OL, RD, CI | S, W | 1.35 | 0.00 |
| TAR | TA-PI-004 | 1.6 | Existing | Temporary | Private | 25 | 1,196 | D | FW, OL, CI | S, W | 0.69 | 0.00 |
| TAR | TA-PI-005 | 2.3 | Existing | Temporary | Private | 25 | 1,946 | G, D, Gr | FW, OL, OL OW, RD, WL | S, C, W | 1.09 | 0.00 |
| TAR | TA-PI-006 | 3.7 | Existing | Temporary | Private | 25 | 4,781 | G, D, Gr | FW, OL, AG, CI | S, C, W | 2.74 | 0.00 |
| TAR | TA-PI-007 | 4.6 | Existing | Temporary | Private | 25 | 856 | G, D, Gr | OL, RD | S, W | 0.48 | 0.00 |
| TAR | TA-PI-008 | 4.6 | Existing | Temporary | Private | 25 | 321 | G | CI, RD | S, W | 0.18 | 0.00 |
| TAR | TA-PI-009 | 4.8 | Existing | Temporary | Private | 25 | 3,978 | G | FW, OL, CI | S, W | 2.28 | 0.00 |
| TAR | TA-PI-011 | 5.1 | Existing | Temporary | Private | 25 | 3,099 | D | FW, OL, WL | S, W | 1.79 | 0.00 |
| TAR | TA-PI-015 | 5.6 | Existing | Temporary | Pittsylvania County, VA | 25 | 1,079 | G | FW, OL | S, W | 0.62 | 0.00 |
| TAR | TA-PI-016 | 5.9 | Existing | Temporary | Pittsylvania County, VA | 25 | 3,453 | G, Gr | FW, OL, CI | S, W | 1.98 | 0.00 |
| TAR | TA-PI-017 | 6.2 | Existing | Temporary | Pittsylvania County, VA | 25 | 820 | G | OL, CI | S, W | 0.47 | 0.00 |
| TAR | TA-PI-018 | 6.8 | Existing | Temporary | Private | 25 | 1,530 | D | FW, OL | S, W | 0.88 | 0.00 |

**Appendix 1-F**

**Proposed New, Improved, and Private Access Roads for the MVP Southgate Project**

| State/ Facility/ Road ID a/ | Road Name | Milepost b/ | New or Existing | Proposed for Temporary or Permanent Use | Ownership / Management | Road Dimensions | | Existing Surface c/ | Existing Land Use d/ | Proposed Improvement e/ | Construction Area (acres) f/ | Operation Area (acres) g/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Width (feet) | Length (feet) | | | | | |
| PAR | PA-PI-018A | 7.2 | New | Temporary | Private | 25 | 18 | Gr | OL, CI | S, W | <0.01 | <0.01 |
| PAR | PA-PI-018B | 7.4 | New | Temporary | Private | 25 | 50 | Gr | CI | S, W | 0.03 | 0.03 |
| TAR | TA-PI-021 | 8.2 | Existing | Temporary | Private | 25 | 419 | D | FW, OL, CI | S, W | 0.24 | 0.00 |
| TAR | TA-PI-022 | 8.5 | Existing | Temporary | Private | 25 | 2,130 | D | FW, OL, RD | S, W | 1.22 | 0.00 |
| TAR | TA-PI-023 | 8.9 | Existing | Temporary | Private | 25 | 2,120 | G | FW, OL, AG, RD | S, W | 1.22 | 0.00 |
| TAR | TA-PI-024 | 9.1 | Existing | Temporary | Private | 25 | 1,391 | G, D, Gr | FW, OL, AG | S, W | 0.80 | 0.00 |
| TAR | TA-PI-025 | 9.6 | Existing | Temporary | Private | 25 | 2,243 | D, Gr | FW, OL, AG, CI | S, W | 1.29 | 0.00 |
| TAR | TA-PI-026B | 10.3 | New | Temporary | Private | 25 | 40 | D, Gr | OL, CI | S, W | 0.02 | 0.00 |
| PAR | PA-PI-026C | 10.7 | New | Permanent | Independent Timber, Inc. | 25 | 30 | Gr | OL | S, W | 0.01 | 0.01 |
| TAR | TA-PI-027 | 11.1 | Existing | Temporary | Independent Timber, Inc. | 25 | 1,593 | G, D | FW, OL | S, W | 0.91 | 0.00 |
| PAR | PA-PI-029 | 12.4 | Existing | Permanent | Private | 25 | 212 | G | CI, AG | S | 0.12 | 0.12 |
| TAR | TA-PI-032 | 13.0 | Existing | Temporary | Private | 25 | 1,049 | G | OL | S, W | 0.60 | 0.00 |
| TAR | TA-PI-033 | 13.2 | Existing | Temporary | Private | 25 | 739 | G | FW, OL | S, W | 0.42 | 0.00 |
| TAR | TA-PI-034 | 13.7 | Existing | Temporary | Private | 25 | 2,594 | G, D, Gr | FW, OL, OL OW, WL, CI | S, W | 1.49 | 0.00 |
| TAR | TA-PI-035 | 14.1 | Existing | Temporary | Private | 25 | 4,369 | D, Gr | FW, OL, OL OW, WL, RD, AG | S, W | 2.51 | 0.00 |
| TAR | TA-PI-036 | 14.9 | Existing | Temporary | Private | 25 | 196 | G | AG, CI | S, W | 0.11 | 0.00 |
| TAR | TA-PI-037 | 15.2 | Existing | Temporary | Private | 25 | 1,810 | G | OL, AG, CI | S, W | 1.04 | 0.00 |
| TAR | TA-PI-038 | 15.8 | Existing | Temporary | Private | 25 | 1,061 | G, Gr | OL, OL OW, RD | S, W | 0.61 | 0.00 |

**Appendix 1-F**

**Proposed New, Improved, and Private Access Roads for the MVP Southgate Project**

| State/ Facility/ Road ID a/ | Road Name | Milepost b/ | New or Existing | Proposed for Temporary or Permanent Use | Ownership / Management | Road Dimensions | | Existing Surface c/ | Existing Land Use d/ | Proposed Improvement e/ | Construction Area (acres) f/ | Operation Area (acres) g/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Width (feet) | Length (feet) | | | | | |
| TAR | TA-PI-039 | 16.0 | Existing | Temporary | Private | 25 | 543 | G | FW, OL, AG | S, W | 0.31 | 0.00 |
| TAR | TA-PI-041 | 16.7 | Existing | Temporary | Private | 25 | 634 | G | FW, OL, RD, CI | S, W | 0.36 | 0.00 |
| TAR | TA-PI-042 | 16.7 | Existing | Temporary | Private | 25 | 2,507 | G, D | FW, OL, AG, CI | S, W | 1.44 | 0.00 |
| TAR | TA-PI-043 | 17.2 | Existing | Temporary | Private | 25 | 2,118 | D | FW, OL, OL OW, AG, RD, CI | S, W | 1.22 | 0.00 |
| TAR | TA-PI-045 | 17.5 | Existing | Temporary | Private | 25 | 1,841 | G, D, Gr | FW, OL, OL OW, RD | S, W | 1.06 | 0.00 |
| TAR | TA-PI-046 | 18.0 | Existing | Temporary | Private | 25 | 1,529 | G, D, Gr | FW, OL, AG, CI | S, W | 0.88 | 0.00 |
| PAR | PA-PI-046A | 18.3 | New | Permanent | Private | 25 | 24 | Gr | CI, AG | S, W | 0.02 | 0.02 |
| TAR | TA-PI-048 | 18.7 | Existing | Temporary | Private | 25 | 1,259 | G, D, Gr | FW, OL, AG, CI, RD | S, W | 0.72 | 0.00 |
| TAR | TA-PI-049 | 19.5 | Existing | Temporary | Private | 25 | 273 | G | OL, CI | S, W | 0.16 | 0.00 |
| TAR | TA-PI-050 | 19.9 | Existing | Temporary | Private | 25 | 316 | A | OL, CI | | 0.18 | 0.00 |
| TAR | TA-PI-052 | 20.4 | Existing | Temporary | Private | 25 | 2,912 | D | FW, OL, OL OW, WL, AG, CI | S, W, C | 1.67 | 0.00 |
| PAR | PA-PI-053 | 21.1 | Existing | Permanent | Private | 25 | 743 | G, Gr | OL, RD | S, W | 0.43 | 0.43 |
| TAR | TA-PI-055 | 21.6 | Existing | Temporary | Private | 25 | 2,959 | G, D, Gr | FW, OL, RD, AG, CI | S, W | 1.70 | 0.00 |
| TAR | TA-PI-061 | 23.0 | Existing | Permanent | Danville-Pittsylvania Regional Industrial Facility Authority | 25 | 4,104 | G, D, Gr | FW, OL, OL OW, CI | S, W, C | 2.36 | 0.00 |

**Appendix 1-F**

**Proposed New, Improved, and Private Access Roads for the MVP Southgate Project**

| State/ Facility/ Road ID a/ | Road Name | Milepost b/ | New or Existing | Proposed for Temporary or Permanent Use | Ownership / Management | Road Dimensions | | Existing Surface c/ | Existing Land Use d/ | Proposed Improvement e/ | Construction Area (acres) f/ | Operation Area (acres) g/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Width (feet) | Length (feet) | | | | | |
| TAR | TA-PI-063 | 24.0 | Existing | Temporary | Danville-Pittsylvania Regional Industrial Facility Authority | 25 | 2,745 | G, D, Gr | FW, OL, OL OW, CI | S, W, C | 1.58 | 0.00 |
| TAR | TA-PI-064 | 24.6 | Existing | Temporary | Danville-Pittsylvania Regional Industrial Facility Authority | 25 | 2,663 | G, D, Gr | FW, OL, CI | S, W | 1.53 | 0.00 |
| TAR | TA-PI-066 | 24.8 | Existing | Temporary | Private | 25 | 2,350 | G, D, Gr | FW, OL, CI | S, W | 1.35 | 0.00 |
| TAR | TA-PI-067 | 25.1 | Existing | Temporary | Private | 25 | 1,925 | G, D, Gr | FW, OL, OL OW, WL, | S, W | 1.11 | 0.00 |
| TAR | TA-PI-068 | 26.0 | Existing | Temporary | Private | 25 | 472 | D | FW, OL, WL | S, W | 0.23 | 0.00 |
| **Virginia Subtotal:** | | | | | | | | | | | **47.8** | **2.7** |
| **North Carolina** | | | | | | | | | | | | |
| TAR | TA-PI-068 | 26.0 | Existing | Temporary | Private | 25 | 731 | D | FW, OL, WL | S, W | 0.46 | 0.00 |
| TAR | TA-RO-070 | 26.2 | Existing | Temporary | Private | 25 | 514 | G, D, Gr | FW, OL | S, W | 0.29 | 0.00 |
| TAR | TA-RO-071 | 26.7 | Existing | Temporary | Private | 25 | 3,306 | G, D | FW, OL, RD, CI | S, W | 1.90 | 0.00 |
| TAR | TA-RO-072 | 26.9 | Existing | Temporary | Private | 25 | 1,039 | G | FW, OL, OL OW, CI | S, W | 0.60 | 0.00 |
| TAR | TA-RO-072A | 27.0 | New | Temporary | Private | 25 | 225 | Gr | OL, AG, RD | S, W | 0.13 | 0.00 |
| TAR | TA-RO-073 | 27.1 | Existing | Temporary | Private | 25 | 1,346 | G, D, Gr | FW, OL, CI, WL, AG | S, W | 0.77 | 0.00 |
| TAR | TA-RO-073A | 27.4 | Existing | Temporary | Private | 25 | 2,759 | G, D, Gr | OL, OL OW, CI, AG | S, W | 1.57 | 0.00 |
| TAR | TA-RO-075 | 27.8 | Existing | Temporary | Private | 25 | 2,217 | G, D, Gr | OL, AG | S, W | 1.27 | 0.00 |
| PAR | PA-RO-000 | 28.2 | Existing | Permanent | Private | 25 | 4,967 | G, Gr | FW, OL | S, W | 2.85 | 2.85 |
| TAR | TA-RO-000A | CY-08 | Existing | Temporary | Private | 25 | 354 | A | OL, CI | | 0.20 | 0.00 |

**Appendix 1-F**

**Proposed New, Improved, and Private Access Roads for the MVP Southgate Project**

| State/ Facility/ Road ID a/ | Road Name | Milepost b/ | New or Existing | Proposed for Temporary or Permanent Use | Ownership / Management | Road Dimensions | | Existing Surface c/ | Existing Land Use d/ | Proposed Improvement e/ | Construction Area (acres) f/ | Operation Area (acres) g/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Width (feet) | Length (feet) | | | | | |
| TAR | TA-RO-076 | 28.6 | Existing | Temporary | Private | 25 | 2,484 | G, D | FW, OL, WL | S, W | 1.43 | 0.00 |
| TAR | TA-RO-078 | 29.2 | Existing | Temporary | Private | 25 | 2,190 | C, G, D | FW, OL, RD, CI | S, W | 1.26 | 0.00 |
| TAR | TA-RO-079 | 29.6 | Existing | Temporary | Private | 25 | 2,270 | G, D, Gr | FW, OL, CI, AG | S, W | 1.22 | 0.00 |
| TAR | TA-RO-080 | 29.9 | Existing | Temporary | Private | 25 | 3,546 | G, D, Gr | FW, OL, WL, AG, RD, CI | S, W | 2.04 | 0.00 |
| TAR | TA-RO-081 | 30.4 | New | Temporary | Private | 25 | 27 | G | OL, CI | S, W | 0.02 | 0.00 |
| PAR | PA-RO-082 | 30.4 | Existing | Permanent | Public Service Company Of North Carolina, Inc | 25 | 245 | G | OL, CI, WL | S, W | 0.14 | 0.14 |
| TAR | TA-RO-082A | CY-04 | Existing | Temporary | Private | 25 | 413 | Gr | OL, CI | S, W | 0.25 | 0.00 |
| TAR | TA-RO-082B | CY-07 | Existing | Temporary | City Of Eden | 25 | 27 | A, G | OL, CI, FW | | 0.06 | 0.00 |
| TAR | TA-RO-082C | CY-05 | Existing | Temporary | Private | 25 | 8 | C | CI | | 0.02 | 0.02 |
| TAR | TA-RO-082D | CY-05 | Existing | Temporary | Private | 25 | 6 | A | CI | | 0.01 | 0.01 |
| TAR | TA-RO-082E | CY-05 | Existing | Temporary | Private | 25 | 7 | A | CI | | 0.01 | 0.01 |
| TAR | TA-RO-084 | 31.7 | New | Temporary | Private | 25 | 97 | Gr | OL, CI | S, W | 0.06 | 0.00 |
| TAR | TA-RO-085 | 32.4 | Existing | Temporary | Private | 25 | 3,682 | G, D | FW, OL, CI | S, W | 2.11 | 0.00 |
| TAR | TA-RO-086 | 32.5 | Existing | Temporary | Private | 25 | 365 | D | OL | S, W | 0.21 | 0.00 |
| TAR | TA-RO-087 | 32.8 | Existing | Temporary | Private | 25 | 2,614 | G, D, Gr | FW, OL, RD, CI | S, W | 1.50 | 0.00 |
| TAR | TA-RO-088 | 33.6 | Existing | Temporary | Private | 25 | 1,756 | G, D, Gr | FW, OL, RD, CI | S, W | 1.01 | 0.00 |
| TAR | TA-RO-089 | 34.1 | Existing | Temporary | Private | 25 | 1,825 | G, Gr | FW, OL, RD, CI | S, W | 1.05 | 0.00 |

**Appendix 1-F**

**Proposed New, Improved, and Private Access Roads for the MVP Southgate Project**

| State/ Facility/ Road ID a/ | Road Name | Milepost b/ | New or Existing | Proposed for Temporary or Permanent Use | Ownership / Management | Road Dimensions | | Existing Surface c/ | Existing Land Use d/ | Proposed Improvement e/ | Construction Area (acres) f/ | Operation Area (acres) g/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Width (feet) | Length (feet) | | | | | |
| TAR | TA-RO-091 | 34.7 | Existing | Temporary | Private | 25 | 995 | D | OL, FW | S, W | 0.57 | 0.00 |
| TAR | TA-RO-092 | 35.4 | Existing | Temporary | Private | 25 | 838 | G, D | FW, OL, RD, CI | S, W | 0.48 | 0.00 |
| TAR | TA-RO-093 | 35.7 | Existing | Temporary | Private | 25 | 732 | D | FW, OL, CI | S, W | 0.42 | 0.00 |
| TAR | TA-RO-094 | 35.9 | Existing | Temporary | Private | 25 | 827 | D | FW, OL, CI | S, W | 0.47 | 0.00 |
| TAR | TA-RO-095 | 36.2 | Existing | Temporary | Private | 25 | 603 | G, D | FW, OL, AG | S, W | 0.35 | 0.00 |
| TAR | TA-RO-099 | 36.7 | Existing | Temporary | Private | 25 | 742 | D | FW, RD, AG, CI | S, W | 0.43 | 0.00 |
| TAR | TA-RO-100 | 37.1 | Existing | Temporary | Private | 25 | 1,940 | D | OL, FW | S, W | 1.11 | 0.00 |
| TAR | TA-RO-102 | 37.6 | Existing | Temporary | Private | 25 | 1,517 | A, G, D, Gr | RD, CI, OL | S, W | 0.87 | 0.00 |
| TAR | TA-RO-103 | 38.1 | Existing | Temporary | Private | 25 | 1,467 | G, D | OL, FW, CI | S, W | 0.84 | 0.00 |
| TAR | TA-RO-104 | 38.6 | Existing | Temporary | Private | 25 | 349 | D | FW, OL, WL, CI | S, W | 0.20 | 0.00 |
| TAR | TA-RO-106 | 38.9 | Existing | Temporary | City Of Reidsville | 25 | 433 | G | FW, OL | S, W | 0.25 | 0.00 |
| TAR | TA-RO-107 | 39.4 | Existing | Temporary | Private | 25 | 1,960 | D | FW, OL, AG, CI, RD | S, W | 1.13 | 0.00 |
| TAR | TA-RO-108 | 39.6 | New | Temporary | Private | 25 | 192 | Gr | FW, OL | S, W | 0.11 | 0.00 |
| PAR | PA-RO-109 | 39.7 | Existing | Permanent | Private Duke Power Company | 25 | 1,149 | G | OL, CI | S, W | 0.66 | 0.66 |
| TAR | TA-RO-111 | 40.9 | Existing | Temporary | Private | 25 | 4,522 | G, D, Gr | OL, RD, FW, CI, AG | S, W | 2.60 | 0.00 |
| TAR | TA-RO-112 | 41.4 | Existing | Temporary | Private | 25 | 3,466 | G, D | FW, OL, CI | S, W | 1.99 | 0.00 |
| TAR | TA-RO-113 | 41.8 | Existing | Temporary | Private | 25 | 192 | D, Gr | FW, OL | S, W | 0.11 | 0.00 |
| PAR | PA-RO-113A | 41.8 | Existing | Permanent | Private | 25 | 1,911 | D, Gr | FW, OL, CI, WL | S, W | 1.03 | 1.03 |

**Appendix 1-F**

**Proposed New, Improved, and Private Access Roads for the MVP Southgate Project**

| State/ Facility/ Road ID a/ | Road Name | Milepost b/ | New or Existing | Proposed for Temporary or Permanent Use | Ownership / Management | Road Dimensions | | Existing Surface c/ | Existing Land Use d/ | Proposed Improvement e/ | Construction Area (acres) f/ | Operation Area (acres) g/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Width (feet) | Length (feet) | | | | | |
| PAR | PA-RO-114A | 42.2 | New | Permanent | Private | 25 | 83 | Gr | FW, RD, OL | S, W | 0.05 | 0.05 |
| TAR | TA-RO-115 | 42.4 | Existing | Temporary | Private | 25 | 598 | G | FW, OL, RD, CI | S, W | 0.34 | 0.00 |
| TAR | TA-RO-115A | 43.2 | New | Temporary | Private Duke Power Company | 25 | 87 | G, Gr | FW, OL, CI | S, W | 0.05 | 0.00 |
| TAR | TA-RO-117 | 43.4 | New | Temporary | Private | 25 | 44 | Gr | OL, CI | S, W | 0.02 | 0.00 |
| TAR | TA-RO-118 | 43.4 | New | Temporary | Private | 25 | 132 | Gr | OL | S, W | 0.08 | 0.00 |
| TAR | TA-RO-119 | 43.9 | Existing | Temporary | Private | 25 | 1,889 | G, D | OL, FW, RD | S, W | 1.08 | 0.00 |
| TAR | TA-RO-122 | 44.1 | Existing | Temporary | Private | 25 | 1,867 | G, D | OL, FW, CI, RD | S, W | 1.07 | 0.00 |
| TAR | TA-RO-124 | 44.8 | Existing | Temporary | Private | 25 | 265 | D | OL, FW, CI | S, W | 0.15 | 0.00 |
| PAR | PA-RO-124A | 44.9 | New | Permanent | Private | 25 | 27 | Gr | AG, CI | S, W | 0.01 | 0.01 |
| TAR | TA-RO-125 | 45.0 | New | Temporary | Private | 25 | 218 | Gr | AG | S, W | 0.13 | 0.00 |
| TAR | TA-RO-126 | 45.3 | Existing | Temporary | Private | 25 | 2304 | D | FW, AG, CI | S, W | 1.32 | 0.00 |
| TAR | TA-RO-127 | 46.1 | Existing | Temporary | Private | 25 | 2,143 | G, D | FW, OL, RD, AG | S, W | 1.23 | 0.00 |
| TAR | TA-RO-129 | 46.8 | Existing | Temporary | Private | 25 | 1651 | G, D | FW, OL, AG | S, W | 0.95 | 0.00 |
| TAR | TA-RO-130 | 47.3 | Existing | Temporary | Private | 25 | 2,226 | G, D | FW, OL, RD, CI | S, W | 1.28 | 0.00 |
| TAR | TA-RO-131 | 48.2 | Existing | Temporary | Private | 25 | 1,861 | G, D, Gr | OL, RD, CI | S, W | 1.07 | 0.00 |
| TAR | TA-RO-133 | 48.6 | Existing | Temporary | Duke Power Company Private | 25 | 1,218 | D, Gr | FW, OL, AG | S, W | 0.70 | 0.00 |
| TAR | TA-RO-134 | 48.9 | Existing | Temporary | Private | 25 | 28 | G | CI | S, W | 0.02 | 0.00 |
| TAR | TA-RO-135 | 49.2 | Existing | Temporary | Private | 25 | 467 | D | OL | S, W | 0.27 | 0.00 |
| TAR | TA-RO-136 | 49.5 | New | Temporary | Private | 25 | 135 | Gr | OL, CI | S, W | 0.08 | 0.00 |

**Appendix 1-F**

**Proposed New, Improved, and Private Access Roads for the MVP Southgate Project**

| State/ Facility/ Road ID a/ | Road Name | Milepost b/ | New or Existing | Proposed for Temporary or Permanent Use | Ownership / Management | Road Dimensions | | Existing Surface c/ | Existing Land Use d/ | Proposed Improvement e/ | Construction Area (acres) f/ | Operation Area (acres) g/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Width (feet) | Length (feet) | | | | | |
| TAR | TA-RO-138 | 49.8 | Existing | Temporary | Private | 25 | 858 | D, Gr | OL, FW | S, W | 0.49 | 0.00 |
| TAR | TA-RO-139 | 50.3 | Existing | Temporary | Private | 25 | 2,851 | D | OL, FW, AG, CI | S, W | 1.64 | 0.00 |
| TAR | TA-RO-140 | 51.4 | Existing | Temporary | Private | 25 | 919 | D | FW, WL, AG, CI | S, W | 0.53 | 0.00 |
| TAR | TA-RO-141 | 51.6 | Existing | Temporary | Private | 25 | 471 | D | AG | S, W | 0.27 | 0.00 |
| TAR | TA-RO-142 | 51.7 | Existing | Temporary | Private | 25 | 664 | D | OL, AG, CI | S, W | 0.38 | 0.00 |
| TAR | TA-RO-144 | 52.2 | Existing | Temporary | Private | 25 | 1,205 | D | FW, OL, AG, CI | S, W | 0.69 | 0.00 |
| TAR | TA-RO-145 | 52.3 | Existing | Temporary | Private | 25 | 608 | D | FW, OL | S, W | 0.35 | 0.00 |
| TAR | TA-RO-146A | 52.6 | Existing | Temporary | Private | 25 | 306 | G | OL, CI | S, W | 0.18 | 0.00 |
| TAR | TA-RO-146A | 52.6 | Existing | Temporary | Private | 25 | 244 | G | OL, CI | S, W | 0.14 | 0.00 |
| TAR | TA-GU-000 | CY-09 | Existing | Temporary | | 25 | 19 | G, D | OL | S, W | 0.04 | 0.00 |
| TAR | TA-AL-147 | 53.0 | Existing | Temporary | Private | 25 | 116 | D | FW, RD, Commercial | S, W | 0.07 | 0.00 |
| TAR | TA-AL-149 | 53.3 | New | Temporary | Private | 25 | 20 | Gr | OL, CI | S, W | 0.01 | 0.00 |
| TAR | TA-AL-152 | 53.5 | Existing | Temporary | Private | 25 | 490 | G | OL, SC, CI | S, W | 0.28 | 0.00 |
| TAR | TA-AL-153 | 53.8 | Existing | Temporary | Private | 25 | 1,432 | D | OL, OL OW, AG, CI | S, W | 0.82 | 0.00 |
| TAR | TA-AL-154 | 54.3 | Existing | Temporary | Private | 25 | 2,329 | D | FW, AG | S, W | 1.34 | 0.00 |
| TAR | TA-AL-155 | 54.7 | Existing | Temporary | Private | 25 | 3,329 | D | FW, OL, OL OW, AG | S, W | 1.91 | 0.00 |
| PAR | PA-AL-155A | 55.1 | New | Permanent | Private | 25 | 40 | Gr | OL, AG | S, W | 0.03 | 0.03 |
| TAR | TA-AL-156 | 55.5 | Existing | Temporary | Private | 25 | 599 | D | FW, OL, AG | S, W | 0.34 | 0.00 |

**Appendix 1-F**

**Proposed New, Improved, and Private Access Roads for the MVP Southgate Project**

| State/ Facility/ Road ID a/ | Road Name | Milepost b/ | New or Existing | Proposed for Temporary or Permanent Use | Ownership / Management | Road Dimensions | | Existing Surface c/ | Existing Land Use d/ | Proposed Improvement e/ | Construction Area (acres) f/ | Operation Area (acres) g/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Width (feet) | Length (feet) | | | | | |
| TAR | TA-AL-157 | 55.6 | Existing | Temporary | Private | 25 | 425 | D | FW, OL | S, W | 0.24 | 0.00 |
| TAR | TA-AL-159 | 56.3 | Existing | Temporary | Private | 25 | 229 | G | FW, OL, CI | S, W | 0.13 | 0.00 |
| TAR | TA-AL-159A | 56.9 | Existing | Temporary | Private | 25 | 1,852 | A, G, Gr | OL, CI | S, W | 1.06 | 0.00 |
| TAR | TA-AL-159B | 56.8 | Existing | Temporary | Private | 25 | 219 | G, D, Gr | OL | S, W | 0.13 | 0.00 |
| TAR | TA-AL-161 | 57.7 | New | Temporary | Private | 25 | 651 | G, Gr | FW, OL, RD | S, W | 0.37 | 0.00 |
| TAR | TA-AL-162 | 58.1 | Existing | Temporary | Private | 25 | 1,038 | Gr, D | FW, OL, AG, CI | S, W | 0.60 | 0.00 |
| TAR | TA-AL-163 | 58.4 | Existing | Temporary | Private | 25 | 1,044 | OL, G | OL, CI | S, W | 0.60 | 0.00 |
| PAR | PA-AL-164 | 58.8 | Existing | Permanent | Private | 25 | 1,068 | D | FW, OL, CI | S, W | 0.61 | 0.61 |
| TAR | TA-AL-165 | 60 | New | Temporary | Private | 25 | 200 | Gr | FW, OL, CI | S, W | 0.11 | 0.00 |
| TAR | TA-AL-165A | 60.2 | New | Temporary | Private | 25 | 23 | Gr | OL, CI | S, W | 0.02 | 0.00 |
| PAR | PA-AL-166 | 60.3 | Existing | Permanent | Private | 25 | 143 | Gr | OL, CI | S, W | 0.08 | 0.08 |
| TAR | TA-AL-167 | 61.1 | Existing | Temporary | Private | 25 | 738 | D | FW, OL, AG, CI | S, W | 0.42 | 0.00 |
| TAR | TA-AL-168 | 61.6 | Existing | Temporary | Private | 25 | 577 | G, Gr | FW, OL, AG, CI | S, W | 0.33 | 0.00 |
| TAR | TA-AL-169 | 62.4 | Existing | Temporary | Private | 25 | 1,936 | D | FW, OL, OL OW, WL, RD | S, W | 1.11 | 0.00 |
| TAR | TA-AL-171 | 63.4 | Existing | Temporary | Private | 25 | 538 | D, Gr | OL, AG | S, W | 0.31 | 0.00 |
| TAR | TA-AL-172 | 63.7 | New | Temporary | Private | 25 | 2,384 | Gr | FW, OL, CI, SC | S, W | 1.37 | 0.00 |
| PAR | PA-AL-175A | 64.8 | New | Permanent | Private | 25 | 24 | Gr | OL | S, W | 0.01 | 0.01 |
| TAR | TA-AL-179A | 66.7 | Existing | Temporary | Private | 25 | 3,927 | G, Gr | FW, OL, CI | S, W | 2.25 | 0.00 |

**Appendix 1-F**

**Proposed New, Improved, and Private Access Roads for the MVP Southgate Project**

| State/ Facility/ Road ID a/ | Road Name | Milepost b/ | New or Existing | Proposed for Temporary or Permanent Use | Ownership / Management | Road Dimensions | | Existing Surface c/ | Existing Land Use d/ | Proposed Improvement e/ | Construction Area (acres) f/ | Operation Area (acres) g/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Width (feet) | Length (feet) | | | | | |
| TAR | TA-AL-180 | 67.3 | New | Temporary | Private | 25 | 2,245 | G, Gr | FW, OL, OL OW, CI, RD | S, W | 1.29 | 0.00 |
| TAR | TA-AL-181 | 68.0 | Existing | Temporary | Private | 25 | 1,546 | G, D | FW, OL, CI, RD | S, W | 0.89 | 0.00 |
| PAR | PA-AL-181A | 68.2 | Existing | Permanent | Private | 25 | 2,089 | G | FW, OL, RD | S, W | 1.20 | 1.20 |
| TAR | TA-AL-185 | 68.9 | Existing | Temporary | Private | 25 | 1,591 | Gr | FW, OL, CI | S, W | 0.91 | 0.00 |
| TAR | TA-AL-186 | 69.2 | Existing | Temporary | Private | 25 | 72 | G, Gr | FW, RD | S, W | 0.04 | 0.00 |
| TAR | TA-AL-187 | 69.5 | Existing | Temporary | Private | 25 | 1,258 | A, G, Gr | FW, RD, CI | S, W | 0.72 | 0.00 |
| TAR | TA-AL-188 | 70.9 | Existing | Temporary | Private | 25 | 1,715 | C, D | FW, OL, CI | S, W | 0.98 | 0.00 |
| TAR | TA-AL-189 | 71.2 | Existing | Temporary | Private | 25 | 2,134 | Gr | FW, OL | S, W | 1.23 | 0.00 |
| TAR | TA-AL-190 | 71.5 | Existing | Temporary | Alamance Community College | 25 | 1,512 | A, G, Gr | FW, OL, CI | S, W | 0.87 | 0.00 |
| TAR | TA-AL-192 | 72.2 | Existing | Temporary | Private | 25 | 1,270 | G, D, Gr | FW, OL | S, W | 0.73 | 0.00 |
| TAR | TA-AL-193 | 72.4 | Existing | Temporary | Private | 25 | 1,293 | Gr | FW, OL, CI | S, W | 0.74 | 0.00 |
| PAR | PA-AL-194 | 73.1 | Existing | Permanent | Transcontinental Gas Pipeline Company, LLC Public Service Company Of North Carolina, Inc. Private | 25 | 605 | G | OL, CI | S | 0.32 | 0.32 |
| PAR | PA-AL-194A | 73.1 | Existing | Permanent | Transcontinental Gas Pipeline Company, LLC Public Service Company Of North Carolina, Inc. Private | 25 | 194 | G | OL, CI | S | 0.10 | 0.10 |
| TAR | TA-AL-194B | 73.1 | Existing | Temporary | Transcontinental Gas Pipeline Company, LLC Public Service Company Of North Carolina, Inc. Private | 25 | 161 | G | CI | S | 0.09 | 0.00 |
| | | | | | | | | | | **North Carolina Subtotal:** | **75.3** | **7.1** |

**Appendix 1-F**

**Proposed New, Improved, and Private Access Roads for the MVP Southgate Project**

| State/ Facility/ Road ID a/ | Road Name | Milepost b/ | New or Existing | Proposed for Temporary or Permanent Use | Ownership / Management | Road Dimensions | | Existing Surface c/ | Existing Land Use d/ | Proposed Improvement e/ | Construction Area (acres) f/ | Operation Area (acres) g/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Width (feet) | Length (feet) | | | | | |
| | | | | | | | | | | **PROJECT TOTAL:** | **123.1** | **9.7** |

Note: The totals shown in this table may not equal the sum of addends due to rounding.
a/ TAR=Temporary, PAR=Permanent Access Road.
b/ Milepost (MP) at final intersection of access road with construction workspace. Approximate MP rounded to the nearest tenth.
c/ Dominant surface condition provided. A=Asphalt, C=Concrete, G=Gravel, D=Dirt, Gr=Greenfield.
d/ AG = Agricultural; CI = Commercial / Industrial; FW = Upland Forest / Woodland; OL = Upland Open Land; OW = Open Water; RD = Residential; SC = Silviculture; WL = Wetland.
e/ P=Paving, G=Grading, S=Stone, C=Culverts, W=Widening, R=Realignment. No improvements to occur within WLs crossed by the access road.
f/ Does not include area overlapping with pipeline, aboveground facility, or contractor/pipe storage yard construction workspaces.
g/ Does not include area overlapping with pipeline permanent right-of-way or aboveground facility permanent facility boundary (fence line/footprint). Only PARs will have an operational area impact.

# MVP Southgate Project

## Docket No. CP19-XX-000

## Resource Report 1

## Appendix 1-G

## Spill, Prevention, Control, and Countermeasures Plan and Unanticipated Discovery of Contamination Plan

# MVP Southgate Project

## Spill Prevention, Control, and Countermeasure Plan
## and
## Unanticipated Discovery of Contamination Plan for Construction Activities in Virginia and North Carolina

November 2018

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| A | acceptable |
| BMP | best management practice |
| CFR | Code of Federal Regulations |
| FERC | Federal Energy Regulatory Commission |
| VDEQ | Virginia Department of Environmental Quality |
| EC | Emergency Coordinator |
| MVP | Mountain Valley Pipeline, LLC |
| E&SCP | Erosion and Sediment Control Plan |
| ID | Identification |
| MP | milepost |
| NCDEQ | North Carolina Department of Environmental Quality |
| PCB | Polychlorinated Biphenyl |
| Plan | Preparedness, Prevention, and Contingency and Spill Prevention Control and Countermeasures Plan |
| PPC | Preparedness, Prevention, and Contingency |
| PPE | Personal Protective Equipment |
| ppm | parts per million |
| Project or Southgate Project | MVP Southgate Project |
| ROW | right-of-way |
| SDS | Safety Data Sheet |
| SOP | standard operating procedure |
| SPCC | Spill Prevention Control and Countermeasures |
| U | unacceptable |

# 1.0 OVERVIEW

The MVP Southgate Project ("Project" or "Southgate Project") has potential to impact sensitive environmental resources and, as a result, environmental protection measures have been developed to minimize potential impacts on these resources and will be applied, as applicable, to the Project. This Spill Prevention and Countermeasures Plan is intended to serve as the general plan for the Project. Site-specific plans will be developed for each facility and yard, as applicable. Tables shown below will be completed by the Contractor prior to/during construction.

The Federal Energy Regulatory Commission ("FERC") may utilize a third-party Compliance Inspection Contractor ("CIC") contracted to the Southgate Project to act on behalf of the agency to provide Project-wide construction oversight and monitor compliance. The CIC will inspect and monitor preconstruction and construction activities and enforce requirements related to the National Historic Preservation Act, the Endangered Species Act, and other applicable laws and regulations. The Project will adhere to all federal, state, and local permits.

# 2.0 WASTE MANAGEMENT

This waste management section provides an overview and checklist to be used before each phase of construction begins at each spread. Each job might require different chemicals and equipment with different fuel requirements that must be documented, accounted for, and contained. Also included at the end of this section are the Weekly Hazardous Materials and Waste Inspection Log for weekly inspection of hazardous materials and waste.

## 2.1 Material and Waste Inventory

Prior to each phase of construction at each spread, the material and waste inventory must be completed. The inventory must be provided in the tables 2- 1 to 2- 4 below and will, depending on the specific circumstances of the planned construction activity, include but not limited to the following:

- Nutrients, such as fertilizers, herbicides, and sanitary wastes;
- Solid waste, such as scrap metals, masonry products, and other raw construction materials and debris;
- Construction chemicals, such as paints, soils additives, weld coding, and acids for cleaning;
- Petroleum products, such as diesel fuel, hydraulic fluid, and lubricants; and
- Other materials, including concrete wash from mixers and explosives.

The list must include oils and fuels, commercial chemicals, hazardous and nonhazardous wastes, and incompatible materials to be used or stored on site during construction. The Contractors will be responsible to maintain a log of Material Safety Data Sheets for each chemical listed in Tables 2-1, 2-2, 2-3, and 2-4 on the construction site at all times.

**TABLE 2-1**

**List of Oil and Fuel to be Used or Stored On-Site during Construction**

| Spread | Contractor | Type | Quantity | Containment Method | Location |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Notes: A Safety Data Sheet (SDS) for all hazardous substances listed in the above tables shall be provided by the contractor. Chemicals, solvents, and fuels shall be kept at least 100 feet from wetlands, streams, and riparian areas and shall be placed within secondary containment.

**TABLE 2-2**

**List of Commercial Chemicals to be Used or Stored On-Site during Construction**

| Spread | Contractor | Type | Quantity | Containment Method | Location |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
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| | | | | | |
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Notes: A SDS for all hazardous substances listed in the above tables shall be provided by the contractor. Chemicals, solvents, and fuels shall be kept at least 100 feet from wetlands, streams, and riparian areas and shall be placed within secondary containment.

**TABLE 2-3**

**List of Hazardous and Nonhazardous Wastes to be Used or Stored On-Site during Construction**

| Spread | Contractor | Type | Quantity | Containment Method | Location |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Notes: A SDS for all hazardous substances listed in the above tables shall be provided by the contractor. Chemicals, solvents, and fuels shall be kept at least 100 feet from wetlands, streams, and riparian areas and shall be placed within secondary containment.

**TABLE 2-4**

**List of Incompatible Materials to be Used or Stored On-Site during Construction**

| Spread | Contractor | Type | Quantity | Containment Method | Location |
|---|---|---|---|---|---|
| | | | | | |
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| | | | | | |
| | | | | | |
| | | | | | |

Notes: A SDS for all hazardous substances listed in the above tables shall be provided by the contractor. Chemicals, solvents, and fuels shall be kept at least 100 feet from wetlands, streams, and riparian areas and shall be placed within secondary containment.

Incompatible materials shall be stored in separate areas in accordance with nationally recognized standards. Incompatible materials shall not be consecutively placed into a container or tank. Additionally, sources of ignition are prohibited in hazardous materials and wastes areas.

The Contractor shall identify and list all sources of potential large spills, including tank overflow, rupture, or leakage. SPCC information must be included for all containers greater than 55 gallons with a cumulative capacity of 1,320 gallons or greater that contain oil, including petroleum, fuel oil, sludge, oil refuse, and oil mixed with waste, as required in Code of Federal Regulations, Title 40, Part 112 (40 CFR Part 112). The Contractor shall list large spill sources in Table 2-5A. Additional sources of large spills can be listed in Table 2-5B. Additional tables shall be provided as needed.

**TABLE 2-5A**

**List of Large Spill Sources**

| Spread | Contractor | Product | Total Quantity Storage Size, Type | | Potential Direction of Flow | Maximum Rate of Flow | Structures or Equipment to Contain Spills | Location of Use |
|---|---|---|---|---|---|---|---|---|
| | | | Present | Location | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Note: Chemicals, solvents, and fuels shall be kept at least 100 feet from wetlands, streams, and riparian areas and shall be placed within secondary containment.

**TABLE 2-5B**

**List of Large Spill Sources**

| Spread | Contractor | Product | Total Quantity Storage Size, Type | | Potential Direction of Flow | Maximum Rate of Flow | Structures or Equipment to Contain Spills | Location of Use |
|---|---|---|---|---|---|---|---|---|
| | | | Present | Location | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Note: Chemicals, solvents, and fuels shall be kept at least 100 feet from wetlands, streams, and riparian areas and shall be placed within secondary containment.

## 2.2 Hazardous Materials and Waste Inspections

The Contractor shall inspect weekly hazardous materials and waste and associated storage areas. These weekly inspections shall document the condition of the hazardous materials and waste and the associated storage containers. The Contractor shall file all inspection records with the Chief Inspector and Environmental Inspector on a weekly basis. The weekly inspection form is at the end of this section and is titled *Weekly Hazardous Materials and Waste Inspection Log*.

# Weekly Hazardous Materials and Waste Inspection Log

For each item listed below, the Contractor shall indicate whether existing conditions are acceptable ("A") or unacceptable ("U"). Resolution of all unacceptable conditions must be documented. Contractor shall inspect all storage facilities on a regular basis, but not less than weekly. Contractor shall file all inspection records with the Chief Inspector and Environmental Inspector on a weekly basis.

## I. STORAGE AREAS FOR FUELS, LUBRICANTS, AND CHEMICALS

**General A/U**

☐ Construction yard or storage areas secured

☐ National Fire Protection Association symbol posted in storage area or at yard entrance

☐ Storage areas properly prepared and signed

☐ Safety Data Sheets available

☐ Hazardous Materials Management Plan and Spill Prevention and Countermeasure Plan available

**Hazardous Materials Management A/U**

☐ No evidence of spill or leaking materials

☐ Incompatible materials separated

☐ All containers labeled properly

☐ All containers securely closed

☐ All containers upright

☐ No evidence of container bulging, damage, rust, or corrosion

**Secondary Containment Areas A/U**

☐ Containment berm intact and capable of holding 110 percent of material stored plus precipitation

☐ Lining intact

☐ No materials overhanging berms

☐ No materials stored on berms

☐ No flammable materials used for berms

**Compressed Gases A/U**

☐ Cylinders labeled with contents

- ☐ Cylinders secured from falling
- ☐ Oxygen stored at least 25 feet away from fuel
- ☐ Cylinders in bulk storage are separated from incompatible materials by fire barriers or by appropriate distance

## II. HAZARDOUS WASTE MANAGEMENT

### Waste Container Storage A/U

- ☐ No evidence of spilled or leaking wastes
- ☐ Adequate secondary containment for all wastes
- ☐ Separate containers for each waste watercourse (no piles)
- ☐ Waste area not adjacent to combustibles or compressed gases
- ☐ All containers securely closed
- ☐ Bungs secured tightly
- ☐ Open-top drum hoops secured
- ☐ All containers upright
- ☐ No evidence of container bulging or corrosion
- ☐ No severe damage or rust
- ☐ Containers are compatible with waste (e.g., plastic liner for corrosives, metal liner for solvents)
- ☐ No smoking and general danger and/or warning signs posted

### Waste Container Labeling A/U

- ☐ Containers properly labeled

| |
|---|
| |

Name, address, and U.S. Environmental Protection Agency identification (“ID”) number or ID number of generator listed (Not required if Contractor is an exempt small quantity generator)

- ☐ Accumulation start date listed
- ☐ Storage start date listed
- ☐ Chemical and physical composition of waste listed
- ☐ Hazardous property listed

**Nonhazardous Waste Areas A/U**

- ☐ No litter in yard
- ☐ No hazardous wastes or used oil mixed with trash (e.g., contaminated soil, oily rags, diapers, or other oily materials)
- ☐ Empty oil and aerosol containers for disposal are completely emptied

## III. EMERGENCY RESPONSE EQUIPMENT A/U

- ☐ Shovels
- ☐ Absorbent materials (e.g., booms, pads, pillows, socks, “Speedy Dry”)
- ☐ Personal protective equipment (e.g., goggles, gloves)
- ☐ Fire-fighting equipment
- ☐ First aid supplies (e.g., medical supplies, squeeze bottle eye wash)
- ☐ Department-of-Transportation-approved containers
- ☐ Plastic sheeting, bags, and ties
- ☐ Communication equipment
- ☐ Bung wrench (non-sparking)

## IV. CORRECTIVE ACTIONS TAKEN (Required for all unacceptable conditions)

Enter information here

Date: Contractor Name:

Inspected by (Contractor’s Inspector):

Signature:

# 3.0 SPILL PLAN

This section of the SPCC Plan describes spill preparedness, prevention, and containment. Spill preparedness and prevention training is also discussed in this section.

## 3.1 Spill and Leak Preparedness and Prevention

### *3.1.1 Employee Training*

Prior to construction, contractors and the Southgate Project personnel shall be trained in hazardous waste management procedures that will enable them to respond effectively to emergencies by familiarizing them with emergency procedures, equipment, and communication systems. Personnel who handle, sample, or come in direct contact with oils or hazardous matter shall undergo basic training that stresses the importance of pollution control. Spill prevention control procedures shall be thoroughly explained during the training briefings, which will be conducted by the Contractor Superintendent, the Project Chief Inspector, and the Project Environmental Inspector or their designated representative on the job site. The Project Emergency Coordinator ("EC") shall maintain training verification.

Prior to construction, all Southgate Project Chief and Environmental Inspectors shall receive a copy of this SPCC Plan and an approved list of emergency response contractors. Inspectors shall be trained on equipment maintenance, fuel and hazardous material handling, spill prevention procedures, and spill response.

All personnel involved in constructing the proposed facilities shall be aware of the SPCC and the Preparedness, Prevention, and Contingency Plan. Regular training briefings shall be conducted on an as-required basis by the Contractor Superintendent and the Project Chief Inspector on the job site. These briefings shall include the following:

- Precautionary measures to prevent spills
- Potential sources of spills, including equipment failure and malfunction
- Standard operating procedures ("SOPs") in the event of a spill
- Applicable notification requirements
- Equipment, materials, and supplies available for spill clean-up

A log will be kept in the construction trailer documenting that everyone on-site during construction has participated in the necessary training sessions and will be made available to regulatory agencies.

### *3.1.2 Security*

Hazardous wastes and waste containing polychlorinated biphenyls ("PCBs") greater than 50 parts per million ("ppm") shall be stored in a secured location (i.e., fenced, locked). Fuel storage areas shall be located to minimize, as much as possible, tampering by unauthorized personnel during nonoperational hours.

### *3.1.3 Prevention and Preparedness*

A discharge from the construction site into waters of the state is unlikely to occur. The construction site shall have on-site spill prevention and control facilities and routinely inspect tank and container storage

areas (inspection form: Weekly Hazardous Materials/Waste Inspection Log included Section 2), which will mitigate the potential for oil and hazardous material to be released to soil or surface waters. In areas where hazardous materials are required to be stored or used within a wetland, the Contractor shall prepare and submit for approval a secondary containment plan before working in the wetland area.

Spill or overfill of petroleum that results in a release to the environment that is equal to or greater than 25 gallons or that causes a sheen on nearby surface water must be reported immediately. Generally, minor spills or leaks shall be contained within secondary containment areas. In Virginia, spills or overfills must be reported to the Virginia Department of Environmental Quality State Water Control Board within 24 hours in the following cases (Virginia Water Control Law, Article 11, 62.1-44.34:19). The reporting requirements for petroleum products are in North Carolina's Oil Pollution and Hazardous Substances Control Act of 1978, §143-215.85 (a and b) state that if the petroleum discharged, released or spilled must be reported to the North Carolina Department of Environmental Quality within 24 hours of discharge:

- Spill or overfill of a hazardous substance that results in a release to the environment that equals or exceeds its reportable quantity under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (40 CFR Part 302).
- Oil spills less than 25 gallons to lands that cannot be cleaned up within 24 hours

**TABLE 3-1**

**Areas Where Potential Spills and Leaks Might Occur**

| Location\Use or Equipment | Quantity/Reportable Quantity | Containment Method | Product |
|---|---|---|---|
| | / | | |
| | / | | |
| | / | | |
| | / | | |
| Note: All containers shall have secondary containment. | | | |

### *3.1.4 Tanks*

The Contractor shall take the following precautions to prevent a spill from occurring within tank storage areas. Use of storage tanks will be in accordance with Virginia and North Carolina storage tank regulations, as appropriate:

- Only those tanks for fuel and material storage that meet the Southgate Project's approval shall be operated.
- Single-wall tanks shall be provided with temporary secondary containment that will hold at least 110 percent of the tank capacity of the largest tank inside the containment area.
- Precipitation shall be inspected first for evidence of oil, including a sheen, or other contaminants. If a sheen or other indicators of oil or contamination is present, then the material shall be collected for proper disposal off site. Any precipitation shall be removed from the containment area to maintain the available containment volume at 110 percent of the volume of material stored.

- Only self-supporting tanks constructed of carbon steel or other materials compatible with the contents of each tank shall be used.
- PCB storage will be in compliance with 40 CFR 761.
- Elevated tanks shall be a maximum of two feet above grade.
- Tank storage shall be located in areas that are at least 100 feet from all waterbodies, wetlands, and designated municipal watershed areas.
- All tanks shall be inspected daily for leaks and deterioration by the Contractor EC or designee. The results of all inspections shall be recorded on the Weekly Hazardous Materials and Waste Inspection Log (included at the end of Section 2). Copies of the log for unsatisfactory storage area inspections shall be distributed to the Southgate Project's EC and the Project Manager. Leaking and/or deteriorated tanks shall be repaired or replaced as soon as the condition is first detected.
- Tanks and secondary containment drains shall remain closed when not in use.
- Vehicle-mounted tanks shall be equipped with flame and/or spark arrestors on all vents to prevent self-ignition.
- Incompatible materials shall not be stored in sequence in tanks prior to decontamination. A list of incompatible materials is listed in Section 2, Waste Management, Table 2-4.
- Tanks used to store hazardous materials shall be decontaminated before they are used at a different construction location if they could contaminate the next material to be placed in the tank. The tanks shall be decontaminated if they are to be returned to a vendor. The tanks shall also be decontaminated if they are being returned to a Project yard and no immediate specific same service use is scheduled.
- Wastes will be disposed of properly at a permitted facility. The Southgate Project environmental professional or its environmental consultant will determine disposal requirements.

**TABLE 3-2**

**Tank and Container Storage Exception Areas**

| Material | Quantity | Containment Method | Location |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Note: Exception areas must be approved by the EC.

### 3.1.5 Containers

The Contractor shall take the following precautions to prevent a spill from occurring within container storage areas:

- For drum storage, reference the Project's Environmental SOPs; the Project EC shall maintain a copy of the current Environmental SOPs.
- Containers shall remain closed when not in use.
- All containers shall have temporary containment. A list of temporary containment is listed in Section 2, Waste Management, tables 2-1 through 2-4.
- Small cans of gasoline, diesel, solvents, and other hazardous materials shall be stored within the temporary containment or within secured trailers or vehicles when not in use.
- Incompatible materials shall not be in sequence in containers before decontamination. A list of incompatible materials is included in Section 2, Waste Management, Table 2-4.
- Containers used to store hazardous materials shall be decontaminated before they are used at a different construction location if they could contaminate the next material to be placed in the container. The containers shall always be decontaminated if they are being returned to a Project yard and no immediate specific same service use is scheduled.
- If a container contains a hazardous material, then transportation shall follow the steps outlined in the Project's Environmental SOPs.
- No incompatible material shall be stored together in the same containment area.
- Leaking and/or deteriorated containers shall be replaced as soon as the condition is first detected.
- Containers shall be stored in areas that are at least 100 feet from all waterbodies, wetlands, and designated municipal watershed areas, with certain exceptions as approved by the Contractor EC as listed in Table3-2.
- All container storage and containment areas shall be used to store waste or products according to the guidelines described in the Project's Environmental SOPs regarding Facility Inspections.

### 3.1.6 Loading and Unloading Areas

The Contractor shall take the precautions listed below to prevent a spill from occurring within loading and unloading areas when those areas are located at the construction site; Southgate Project personnel shall be present during loading and unloading activities:

- Liquids shall be transferred and refueling shall only occur in predesignated and preapproved locations that are at least 100 feet from all waterbodies and wetlands. Exceptions might be approved by the Environmental Inspector if no reasonable alternatives are available and secondary containment is used. Certain exceptions are listed in Table 3-2.
- All loading and unloading areas shall be closely monitored to prevent any leaks and spills.

- The area beneath loading and unloading locations shall be inspected for spills before and after each use.
- All hose connections shall use drip pans at the hose connections while loading and unloading liquids. If a leak or spill occurs, then the loading and unloading operation shall be stopped and the spill shall be contained, cleaned up, and collected before operations continue.
- All tank truck outlets shall be inspected before trucks leave the loading and unloading area to prevent possible leakage from the truck while in transit.
- Each refueling vehicle shall have a sufficient number of shovels, brooms, 10-millimeter polyethylene sheeting, and fire protection equipment to contain a moderate oil and/or fuel spill.
- Any service vehicle used to transport lubricants and fuel shall be equipped with an emergency response kit that is equipped with materials including absorbents, gloves, drums, and labels.

### 3.1.7 Concrete Coating Areas for Field Joints

Concrete coating of field joints shall be performed at least 100 feet from the edge of all waterbodies. Where topographic conditions and/or work space limitations necessitate applying concrete coating within 100 feet of a watercourse, sufficient containment measures shall be implemented to eliminate the spill of any concrete coating materials into a wetland or watercourse. Containment such as the following (or equivalent as approved by the Project EC in a secondary containment plan to be submitted by the Contractor) shall be used:

- Concrete coating materials shall be temporarily stored in an earthen berm with a polyethylene lining of 10-millimeter thickness or in a portable containment tray constructed of steel plate measuring a minimum of 4-feet-square by 1–foot-deep.
- Portable-mechanical mixing equipment, if required, shall be operated within a containment area constructed of temporary earthen berms and polyethylene lining a minimum of 10-millimeter thickness.
- Concrete materials in a portable container (such as a 55-gallon drum cut in half or equivalent) shall be mixed within an earthen berm with polyethylene lining of 10- millimeter thickness or within a portable containment tray constructed of steel plate, measuring a minimum of 4-feet-square by 1-foot-deep.

### 3.1.8 Equipment Inspections

All construction equipment in use on the pipeline right- of- way ("ROW") shall be inspected daily. Any leaks shall be repaired immediately or the piece of equipment shall be removed from service, removed from the ROW, and repaired prior to returning to service. All inspections shall be documented on a daily leak report submitted to the Project.

### 3.1.9 Emergency Equipment

The construction site and/or contractor yard shall have adequate manpower and equipment necessary to divert any spilled material from waterbodies and wetland areas. Emergency equipment shall include, but is not limited to, shovels, backhoes, dozers, front- end loaders, oil- absorbent booms, pillows, socks and/or

mats, granular oil absorbent, and chemical absorbent pulp. A list of emergency response equipment and personal protective equipment ("PPE") is provided in Section 4.3.

### *3.1.10 Contractor's Site Map*

The Contractor shall prepare a site map before construction begins. At a minimum, the Contractor's site map shall include the following:

- Orientation and scale
- Total land area in square feet
- Access and egress points
- Buildings and/or temporary trailers
- Parking lots
- Adjacent land uses (if business, indicate business name)
- Surrounding roads, storm drains, and waterways (e.g., waterbodies and wetlands)
- Locations of hazardous materials and waste storage
- Underground and aboveground tanks
- Containment or diversion structures (e.g., dikes, berms, retention ponds)
- Shutoff valves and/or circuit breakers
- Location of emergency response materials and equipment
- Location of MSDS and SPCC Plan
- Location of emergency assembly area

## 3.2 Housekeeping Program

The construction area shall be maintained in a neat and orderly manner. Solid wastes, such as food wrappings, cigarette butts and packets, Styrofoam cups and plates, and similar wastes, shall be disposed of offsite and not in any construction excavation area. Any spills or leaks shall be cleaned up as expeditiously as possible. Trash shall be routinely collected for offsite disposal. Container storage areas shall be maintained in a neat and orderly manner.

# 4.0 KARST AREA EROSION AND SEDIMENTATION CONTROL

The Southgate Project conducted a desktop review of peer-reviewed, publicly-available geologic mapping and determined that there is negligible potential for karst features and related karst hazards to be present within 0.25-mile of the Project alignment. While karst hazards are not anticipated, if karst features are observed during construction, the Southgate Project will employ a karst specialist to conduct a field investigation to inspect and characterize the karst features and potential for subsurface connectivity. The karst specialist will coordinate with the Project qualified geologist to conduct the field inspection and will notify the applicable agencies regarding the karst feature. If the karst feature is determined to have

subsurface connectivity and present a potential hazard to pipeline construction and operation, or be a potential conduit to local groundwater resources, appropriate mitigation measures will be identified by the karst specialist, and will be discussed with the applicable agencies prior to implementation.

## 4.1 Regulatory Oversight

Virginia codified a law for protecting caves (the Virginia Cave Protection Act, Code of Virginia Section 10.1-1000 to 1008); there is no corresponding law that specifically protects karst.

The Virginia Department of Conservation and Recreation, a division of the Department of Environmental Quality, includes a Karst Protection Coordinator branch. Coordination with the Karst Protection Coordinator is described in more detail in this plan.

## 4.2 Objectives

The primary objectives for karst-specific ESC are to prevent erosion, overland flow, and sediment transport to water bodies and karst features during pipeline construction, and to prevent erosion, sedimentation, and flooding problems in karst areas after pipeline construction and land reclamation. The primary means to reduce risks for erosion, sedimentation, and flooding in karst terrain is to restore land surface grades to pre-construction characteristics and not significantly change the volume of surface water that enters a karst feature. This can be accomplished by preventing direct impact to karst features and water bodies during construction, and minimizing to the extent practical land surface alterations after pipeline installation and land reclamation. Enhanced Best Management Practices ("BMPs") and construction planning in karst terrain are presented herein to accomplish these objectives.

## 4.3 Considerations for Surface Water Management and Erosion & Sediment

Unlike typical construction and development activities, the Southgate Project will not result in large swaths of impervious land, or large swaths of altered grade. The Project is primarily a relatively narrow linear subsurface construction project that will be regraded to pre-construction characteristics, and revegetated.

To minimize the potential for impacts to a karst feature (e.g., sinkhole, cave opening, etc.,) or a water resource (e.g., well, spring, stream, pond) from pipeline construction in karst areas, industry-standard ESC practices will be supplemented with enhanced BMPs, and implemented by the Project and its contractors, to accomplish the following objectives:

- Minimize the volume of stormwater and other construction-related surface water run-off;
- Minimize the permanent alteration of land surface characteristics and surface runoff patterns (existing drainage patterns and features should be taken into consideration to minimize changes to the rate that water enters the subsurface through a karst feature);
- Promote broad and shallow surface water flow dispersion with suitable spreading or diversion techniques;
- Prevent uncontrolled release of surface water and sediment to a water body or karst feature;
- Prevent artificial routing of storm water to karst features;
- Prevent blockage or filling of karst features;

- Do not construct artificial storm water structures within karst features;
- Prevent disposal of materials into a karst feature that will degrade the quality of water entering the subsurface through karst feature;
- Install double lines of sediment control fencing and straw bales upslope of a water body or karst feature;
- Stock pile excavated material at least 100 feet from a water body so that the material cannot slough back into these areas;
- Monitor ESC and stormwater management structures periodically during construction, and particularly after precipitation events (stormwater and ESC structures include sediment control fencing, straw bales, temporary detention basins, diversion berms, or containerization - clean, repair, and replace structures as necessary);
    - Inspecting and ensuring the maintenance of temporary erosion control measures at least:
        - on a daily basis in areas of active construction or equipment operation;
        - on a weekly basis in areas with no construction or equipment operation; and
        - within 24 hours of each 0.5 inch of rainfall or snow melt;
- Do not discharge hydrostatic test water in karst areas;
- Establish staging areas for the crew, equipment, hazardous materials, chemicals, fuels, lubricating oils, etc., at least 100 feet from a water body or karst feature;
- Install ESC and stormwater management structures surrounding staging areas to prevent run-on to, and then run-off and sediment migration from these sites;
- Store construction waste materials, debris, and excess materials at least 100 feet from a water body or karst features;
- Refuel and maintain construction equipment at least 100 feet from a water body or karst feature;
- Limit the removal of riparian vegetation to only when it is necessary;
- Re-vegetate all disturbed areas as soon as possible after construction using only native plants to reduce soil erosion. Annual species, such as rye or wheat, may initially be planted along with native species in areas subject to immediate soil loss, such as a steep slope, to provide rapid erosion control. Final re-vegetation should use native species only;
- Replace woody riparian vegetation unavoidably lost using native riparian plants to help prevent the spread of invasive plants;
- Where possible and practical, leave a minimum of 100-foot wide natural vegetated buffer area around a water body or karst feature. Plant a vegetative buffer of at least 100 feet around a water body or karst feature if the vegetation was previously cleared;

- Apply fertilizers, herbicides, pesticides, or other chemicals no closer than 100 feet of a water body or karst feature;
- Evaluate the establishment of vegetation after project completion and inspect all sediment control structures at one month intervals for at least 3 months. Retain sediment control structures until site stabilization is achieved;
- Remove and dispose of all debris and excess construction materials properly upon project completion;
- Remove temporary sediment/erosion control structures upon final site stabilization;
- Trench breakers made from sandbags or concrete filled sacks should be included in pipeline installation design and constructed at appropriate intervals along the trench excavation to impede subsurface flow along the trench.

# 5.0 CONTINGENCY PLAN AND EMERGENCY PROCEDURES

Emergency response procedures have been developed for the Southgate Project to guide responses to fires, explosions, releases of oils or hazardous waste to the air, land, or waters of the state regardless of the quantity involved in the incident. For unanticipated release of hydrostatic test waters, the Project shall utilize BMPs, as described in the Project-specific Erosion and Sediment Control Plan (E&SCP) as soon as possible after the release.

## 5.1 Responsibilities of the Project and Contractor Personnel

If notification is given that an evacuation is necessary, all personnel shall evacuate the construction area via the primary evacuation route and await further instructions from the EC. If direct access to the primary evacuation route is restricted by fire, spill, smoke, or vapor, facility personnel shall evacuate the facility via alternate evacuation routes to the nearest accessible open area.

## 5.2 First Responder

Any individual who first observes a spill or any other imminent or actual emergency situation shall take the following steps:

1. Assess the situation to determine if the situation poses an immediate threat to human health or the environment.
2. Identify hazardous substances involved, if any.
3. Report the emergency or spill to the Project and Contractor EC(s) immediately.
4. Standby at a safe distance and keep others away.
5. Activate emergency shutdown, if necessary.

The Contractor Superintendent shall act as the EC for the Contractor. The Chief Inspector shall act as the EC for the Project. The responsibilities of the EC are presented in the remainder of this section.

### 5.2.1 Contractor EC Responsibilities

The Contractor EC shall coordinate the response to all spills that occur as a result of Contractor operations. The Contractor shall not coordinate the response of spills of pipeline liquids, hazardous wastes, or the unanticipated release of hydrostatic test waters; these spills shall be coordinated by the Southgate Project EC.

Following are specific Contractor EC responsibilities:

1. Determine any immediate threat to human health, the environment, and the neighboring community.
2. Ensure personnel safety and evacuate, if necessary.
3. Identify source, character, amount, and extent of release.
4. Determine if hazardous substances are involved.
5. Inform the Project EC and follow instructions.
6. Direct and document remediation efforts to contain and control spill release.
7. Document remedial efforts.
8. Coordinate cleaning and disposal activities.

### 5.2.2 The Project EC Responsibilities

The Southgate Project Emergency Coordinator shall coordinate clean-up of all spills of pipeline liquids, hazardous wastes, and any unanticipated release of hydrostatic test water.

Upon notification of pipeline liquid spills, hazardous materials spills, or the unanticipated release of hydrostatic test waters, the Project EC shall be responsible for the following:

1. Assess situation for potential threat to human health, environment, and the neighboring community
2. Implement evacuation, if necessary
3. Ensure personnel safety
4. Control source as conditions warrant
5. Immediately notify supervisory personnel immediately for spills that meet one or more of the following criteria:
    a. One pound or more of a solid material (excluding horizontal directional drilling mud spilled on land)
    b. Five gallons or more of a liquid spilled on land
    c. Any substance that creates a sheen on water
    d. Air pollution incidents where there might be a release of a toxic substance

e. Unanticipated release of hydrostatic test water

6. If necessary, notify the local fire department, law enforcement authority, or health authority as appropriate, and provide the following information:
   a. Name of the caller and call-back number
   b. The exact location and nature of the incident
   c. The extent of personnel injuries and damage
   d. The extent of release
   e. The material involved and appropriate safety information
7. Ensure that any waste or product that might be incompatible with a released material is kept away from the affected area.
8. Keep any potential ignition source away from emergency area, if spilled material is flammable.
9. Minimize affected area with appropriate containment or diking.
10. Assemble required spill response equipment as required (e.g., protective clothing, gear, heavy equipment, pumps, absorbent material, and empty drums).
11. Place spilled material in appropriate containers, in accordance with the MVP Environmental SOPs.
12. Label and store containers in accordance with the Project Environmental SOPs.
13. Coordinate waste disposal and equipment decontamination.
14. Terminate response.
15. Ensure that all emergency response equipment is fully functional. Any equipment that cannot be reused shall be replaced.
16. For PCB spills, follow special spill response requirements related to PCB spills.
17. Assist with the coordination of clean-up and disposal activities as described in Sections 4.4, 4.5, and 4.6.
18. If necessary, contact outside remediation services to assist with clean-up.
19. Complete Waste Removal Storage and Disposal Record Form to track waste generated during this Project.
20. Complete Field Spill Report (included at the end of this section) and distribute accordingly.
21. For unanticipated release of hydrostatic test waters, notify state contact if required by state permit in accordance with timeframes required by state permit.
22. As required by permit, arrange for immediate sampling of the test water (from the pipe or a representative sample of released water where possible) or soil where the test water was released

and water from adjacent watercourse if test water was released into the watercourse. Samples shall be analyzed in accordance with hydrostatic test discharge permit criteria.

23. Ensure that a Project representative notifies the municipal manager and/or mayor, as required.

## 5.3 Emergency Equipment

The construction site and Contractor yards shall have adequate personnel and equipment necessary to divert any spill from waterbodies and wetland areas. Emergency equipment shall include, but is not limited to, shovels, backhoes, dozers, front-end loaders, oil absorbent booms, pillows, socks and/or mats, granular oil absorbent, and chemical absorbent pulp. Table 5-1 lists emergency response equipment and PPE (to be completed by Contractor).

**TABLE 5-1**

**Spill Response Equipment**

| Equipment | Quantity | Location |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**TABLE 5-2**

**Fire Response Equipment**

| Equipment | Quantity | Location |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**TABLE 5-3**

**Personal Protective Equipment**

| Equipment | Quantity | Location |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

## 5.4 Spill Clean-Up/Waste Disposal Procedures

The following identifies the clean-up and control measures to be used in the event of a spill of oil, fuel, or hazardous substance or unanticipated release of hydrostatic test water.

### *5.4.1 Oil and/or Fuel Spills*

- Ensure no immediate threat to surrounding landowners or environment.

- Remediate small spills and leaks as soon as feasible. Use absorbent pads whenever possible to reduce the amount of contaminated articles.
- Restrict the spill by stopping or diverting flow to the oil and/or fuel tank.
- If the release exceeds the containment system capacity, immediately construct additional containment using sandbags or fill material. Every effort must be made to prevent the seepage of oil into soils and waterways.
- If a release occurs into a facility drain or nearby watercourse, immediately pump any floating layer into drums. For high-velocity watercourses, place oils booms or hay bales between the release area and the site boundary and downstream of affected area. As soon as possible, excavate contaminated soils and sediments.
- After all recoverable oil has been collected and drummed, place contaminated soils and articles in containers.
- For larger quantities of soils, construct temporary waste piles using plastic liners and place the contaminated soils on top of the plastic and covered by plastic. Plastic-lined, roll-off bins should be leased for storing this material as soon as feasible.
- Label the drum following the procedures outlined in the Project's Environmental SOPs.
- Move drum to secure staging or storage area.
- Document and report clean-up activities of the Project EC as soon as feasible.
- If environmentally sensitive resources (e.g., wetlands, waterbodies) exist in the area, ensure that BMPs as described in the Project-specific E&SCP are used to minimize impact to these resources.

### *5.4.2 Hazardous Substance Releases*

- Ensure no immediate threat to surrounding landowners or environment.
- Identify the material and quantity released.
- Block off drains and containment areas to limit the extent of the spill. Never wash down a spill with water.
- Ensure that PPE and containers are compatible with the substance.
- Collect and reclaim as much of the spill as possible using a hand pump or similar device. Containerize contaminated soils in an appropriate Department-of-Transportation approved container in accordance with the Project's Environmental SOPs. (Note: Environmental SOP's are located in all division and area offices and kept by all engineering teams.) Never place incompatible materials in the materials in the same drum.
- Sample the substances for analysis and waste profiling.
- Decontaminate all equipment in a contained area and collect fluids in drums.

- Label the drum.
- Move the drum to secure staging or storage area.
- Document and report activities to the Project EC as soon as feasible.
- If environmentally sensitive resources (wetlands, waterbodies) exist in the area, then ensure that BMPs as described in the Project-specific E&SCP are used to minimize impacts to these resources.

### *5.4.3 Unanticipated Release of Hydrostatic Test Water*

- Ensure no immediate threat to surrounding landowners or environment.
- If environmentally sensitive resources (wetlands, waterbodies) exist in the area, then ensure that BMPs as described in the Project-specific E&SCP are used to minimize impacts to these resources.

## 5.5 Disposal of Contaminated Materials and/or Soils

- The Contractor shall work with the Southgate Project EC to characterize waste generated during this project. All wastes generated as a result of spill response activities shall be analyzed to determine if hazardous or if PCBs are greater than 1 ppm. Knowledge of the contaminant(s) might be applied to classify the waste and spill materials as determined by the Project EC.
- The Contractor is responsible for properly disposing of wastes generated during this project that is determined by the Project EC to be nonhazardous and to contain PCBs less than 1 ppm; this includes obtaining applicable authorizations and registrations for waste disposal.
- The Project EC is responsible for properly disposing of hazardous and PCB-containing wastes containing greater than 1 ppm generated during this project, including obtaining applicable U.S. Environmental Protection Agency ID numbers.
- Hazardous and PCB-containing waste shall be stored in a secured location (i.e. fenced, locked) until the material is transported off site.

## 5.6 Equipment Cleaning/Storage

- Upon completion of remedial activities, the Contractor shall decontaminate emergency response equipment used to remediate a spill resulting from its operations. The Southgate Project shall be responsible if the spill is hazardous material.
- The Contractor shall be responsible for disposing of any contaminated waste or non-PCB containing waste generated as a result of the decontamination process.
- The Project shall be responsible for disposing of any contaminated Hazardous Waste or PCB Containing Material generated as a result of the decontamination process.
- The Contractor shall replace all spent emergency response equipment prior to resuming construction activities if spill resulted from their operations.
- The Contractor shall test and inventory reusable PPE prior to being placed back into service.

## 6.0 REGULATORY COMPLIANCE

This section provides the reader with a high-level overview of the regulatory requirements addressed in this SPCC Plan. This section is arranged by activity, in typical order or occurrence by job, with the corresponding regulation.

| Regulatory Compliance by Activity | | | |
|---|---|---|---|
| **Activity Type** | **Federal Regulation Citation** | **State Regulation Citation** | **SPCC Plan Section** |
| **General Applicability** | | | |
| Is facility under purview of regulations? | 40 CFR Part 112 | 9 VAC 25-91<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | |
| Does facility comply with applicable regulations? | 40 CFR Part 112 | 9 VAC 25-91<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | |
| **Materials Storage and Handling** | | | |
| Material and Waste Inventory | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | Spill Plan (Section 3) |
| Material Transport and Disposal | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | Contingency Plan (Section 5) |
| **Spill Prevention and Containment** | | | |
| Emergency Response Contacts | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | Spill Plan (Section 3) |
| Training | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | |
| Security | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | |
| Prevention and Preparedness | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | |

| Regulatory Compliance by Activity | | | |
|---|---|---|---|
| **Activity Type** | **Federal Regulation Citation** | **State Regulation Citation** | **SPCC Plan Section** |
| Facility Information | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | |
| Facility Drainage and Routes of Flow | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | |
| **Inspections and Reporting** | | | |
| Emergency Response Contacts | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | Spill Plan (Section 3)<br>Contingency Plan (Section 5) |
| Inspections, Tests, and Records | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | |
| Discharge Reporting | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | |
| **Spills and Response** | | | |
| Emergency Procedures and Response | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | Spill Plan (Section 3)<br>Contingency Plan (Section 5) |
| Discharge Notification | 40 CFR Part 112 | 9 VAC 25-91<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | |
| Clean-up | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | |
| **Wastewater Discharge** | | | |
| Facility Drainage | 40 CFR Part 112 | 9 VAC 25-911<br>NC Building Code, Chapter 22<br>National Fire Protection Association Standard 30 and 30A (NFPA 30 and NFPA 30A) | Spill Plan (Section 3) |
| 1 if an oil discharge contingency plan is required | | | |

# Appendix A – Unanticipated Discovery of Contamination Plan

## Unanticipated Discovery of Contamination Plan Introduction

The purpose of this Unanticipated Discovery of Contamination Plan ("Plan") is to provide work, investigation, and reporting procedures for responding to the unanticipated discovery of contamination in soil, groundwater, or sediment during excavation, construction, or maintenance activities associated with construction of the Southgate Project.

Consistent with this purpose, the objectives of this Plan are to protect the health and safety of Project personnel and the environment and to prevent the spread of contamination during and after an unanticipated discovery of contamination.

The greatest potential for the discovery of unanticipated contamination will occur during the excavation of the pipeline trench and horizontal boring procedures. The following response plan will be executed if any Project personnel detects potential contamination such as:

- Odor;
- Visible staining on soil;
- Sheen on ground or purge water;
- Unidentified underground service tank; or
- Potential cultural resources, including human remains.

## Unanticipated Discovery Response Plan

### Stage 1 – Suspend Work Activities

All construction and/or maintenance work in the immediate area of the discovery shall stop. Personnel shall move to upwind areas as necessary.

### Stage 2 – Identify Immediate Threats

If an immediate threat is detected, emergency response (i.e., 911) shall be notified. The area shall be evacuated.

### Stage 3 – Identify and Secure Area

If safe to do so, the area immediately around the potential contamination shall be secured with safety fencing or flagging. Site personnel shall remain on site to restrict access as appropriate.

### Stage 4 – Conduct Notifications

Appropriate Southgate Project environmental professionals and officials shall be notified of the potential contamination. It shall be the decision of the Project environmental professional (To Be Determined) to determine environmental agency or public official notification requirements. Primary points of contact are:

MVP Southgate Project: This should be Cory Chalmers and Megan Stahl. Their information is in the HDD contingency plan.

Virginia: DEQ: VA Department of Emergency Management Watch Center, 800-468-8892

North Carolina: DEQ: 24-hour Emergency Response, 800-858-0368

Stage 5 – Discovery Documentation Protocol

An appropriate Project employee or designee will document the unanticipated contamination utilizing the attached Worksheet 1. Worksheet 1 includes instructions for the appropriate Project employee or designee to record the site name, locations, and how suspected contamination was determined. The Project employee or designee will coordinate with the construction contractor(s) who identified the contamination to assist in completing Worksheet 1.

Stage 6 – Remedial Action Planning

An onsite meeting (if appropriate) will be conducted among site personnel, Project environmental professionals, and any appropriate contamination response contractors to determine remediation requirements and methodologies. If remediation activity is appropriate, an environmental consultant (if appropriate) should be contacted to assist with the remedial activity. Remedial activities should be conducted according to the following general sequence of events. This is a general plan and is not meant to apply to all contamination situations. A more robust, site-specific remedial action plan should be completed by an environmental consultant prior to completing remedial activities.

Step 1: Sampling – Representative samples should be collected and submitted to an environmental laboratory for analysis and/or waste classification. Results of this analysis may dictate notification requirements. An environmental consultant can assist in the determination of these requirements.

Step 2: Remedial Action Determination – Following laboratory analysis, the Project environmental professional and/or the environmental consultant will evaluate the analysis results and, if appropriate, identify the type of remediation (in-situ, removal, etc.) to be completed.

Step 3: Remedial Action – The Project will mobilize an appropriate contractor, and remediation activities will be conducted. Any soil and/or groundwater suspected of containing contamination will be segregated from clean soil and/or water using plastic sheets, fractionation tanks, or other appropriate methodologies. Containers will be clearly labeled. Known hazardous wastes will be labeled and separated with orange construction fencing.

Step 4: Disposal – Wastes will be disposed of properly at a permitted facility. The Project environmental professional or its environmental consultant will determine disposal requirements.

Stage 7 – Record Keeping

A record of the sequence of events from the beginning (unanticipated discovery) to the end (disposal) of the incident will be recorded and kept on file with the Project environmental professional in accordance with all mandated record keeping requirements.

**Worksheet 1 – Unanticipated Discovery of Contamination Documentation Worksheet**

Instructions: Complete this worksheet to document an unanticipated discovery of contamination event. Use a separate sheet (copy) for each occurrence.

**A. Site Name, Physical Location, and Milepost**

_____

_____

_____

_____

**B. How Suspected Contamination was Determined (odor, stain, sheen, etc.). Include photographs as appropriate.**

_____

_____

_____

_____

**C. List dates, times, and officials notified**

_____

_____

_____

_____

**Environmental Response Contact Sheet**

Primary points of contact are:

MVP Southgate Project: TBD, Environmental Permitting Supervisor, TBD

Virginia DEQ: Virginia Department of Emergency Management, 800-468-8892 Additional points of contact may be identified prior to construction.

North Carolina: DEQ: 24-hour Emergency Response, 800-858-0368 Additional points of contact may be identified prior to construction.

# Appendix B – Key Emergency Contacts

Following are the key personnel who shall be contacted in the event of an emergency or spill incident.

| Contact Name | Phone Number |
|---|---|

## 1. MVP Southgate Project Emergency Contacts

MVP Southgate Project Emergency Coordinator -
To be provided prior to construction (within 15 minutes of incident)

## 2. Contractor Emergency Contact

Contractor Emergency Coordinator: To be provided prior to construction

## 3. Local Authorities (as necessary)

| | |
|---|---|
| State Police | To be provided prior to construction |
| Local Police | |
| Local Fire Department | |
| Hospital | |
| Ambulance | |

## 4. Environmental Agencies

Notification to be made by a Project representative.

Virginia Department of Emergency Management Watch Center (800)-468-8892 (24 hours)

North Carolina 24-hour Emergency Response, 800-858-0368

## 5. Potential Environmental Remedial Service Contractors (verify before issuing project-specific SPCC Plan)

Clean Harbors Environmental Services, Inc.: 800- 645- 8265 Safety- Kleen (FS), Inc.: Edward A. Mitchell, 713- 750- 5800

U.S.A. Environment: Cesar Garcia, 713- 425- 6925 or 832- 473- 5354 (cell phone) WRS Infrastructure and Environment, Inc.: Steve Maxwell, 281- 731- 0886

# Appendix C – Petroleum and Hazardous Material Spill Report

The Contractor must complete this for any petroleum or hazardous material spill regardless of size, and submit the form to the Project EC within 48 hours of the occurrence.

Date of Spill _____ Incident No.: _____ Date of spill discovery _____

Time of Spill _____ Time of Spill Recovery _____

Location Name: _____ Spread: _____ County _____

Section _____ Township _____ Range _____

Name and title of discoverer: _____

Type of material spilled and product name: _____

Manufacturer's name: _____

Legal description of spill location _____

Directions from nearest community: ___

Estimated volume of spill: _____

Weather conditions: _____

Topography and surface conditions of spill site: _____

Spill medium (e.g., pavement, sandy soil, water): _____

Proximity of spill to surface waters or wetland: _____

Did the spill reach a watercourse? If so, was a sheen present?

☐ Yes ☐ No

☐ Yes ☐ No

Direction and time of travel (if in watercourse): _____

Name and telephone number of responsible party: _____

Causes and circumstances resulting in the spill: _____

_____

Extent of observed contamination, both horizontal and vertical (e.g., spill-stained soil in a 5-inch radius to a depth of 1 inch): _____

Potentially affected resources and installations: _____

_____

Potential impact on human health: _____

Immediate spill control and/or clean- up methods used and implementation schedule: _____

_____

Current status of clean- up actions: _____

**Name, company, address, and telephone number for the following:**

Construction Superintendent: _____

Spill Coordinator: _____

Person who reported the spill: _____

Environmental Inspector: _____

On-Scene Agency Coordinator (where applicable): _____

Form completed by: _____

Date _____

# MVP Southgate Project

# Docket No. CP19-XX-000

# Resource Report 1

# Appendix 1-H

# Fire Prevention and Suppression Plan

# MVP Southgate Project

# Fire Prevention and Suppression Plan

November 2018

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## 1.0 INTRODUCTION

The objective of this *Fire Prevention and Suppression Plan* ("Fire Plan") is to prevent a fire from occurring during and after the installation of the Mountain Valley Pipeline, LLC's ("Mountain Valley") MVP Southgate Project ("Project" or "Southgate Project") facilities. It describes the hazardous fuel sources and material that could initiate or contribute to the spread of a fire, as well as the communication plan and procedures to suppress the spread of fire.

The Southgate Project recognizes the potential for fire from hot work operations and developed a program to protect the public, employees, property, and the environment from fire resulting from hot work operations.

## 2.0 PURPOSE

The purpose of this Fire Plan is to identify best management practices for preventing fires and responding to inadvertent fires that occur during construction of the Southgate Project. The Fire Plan identifies responsibilities and procedures for suppressing fire ignitions, responding to and reporting fire emergencies, and working with emergency response agencies in the event of fire, regardless of cause. The Fire Plan is designed to be consistent with applicable Federal and State/Commonwealth laws, regulations, plans, and policies, including Chapter 14 of the 2003 International Fire Code (Combustible Dust-Producing Operations) and Section A104 of the International Wildland-Urban Interface Code (Ignition Source Control).

The Fire Plan provides an implementation strategy to ensure immediate and aggressive action to suppress inadvertent fires that occur during construction of the Southgate Project and establishes protocols and lines of communication for reporting fires that occur. Implementation of the Fire Plan will ensure that proper types and quantities of safety and fire extinguishing equipment are available in construction areas to suppress fires, and that construction workers are adequately trained for response to fires. The Plan will be used to familiarize Project personnel with basic fire emergency planning, response, and evacuation procedures, and their individual roles in fire prevention and suppression. Planning and training will help Project personnel respond effectively in the event of a fire, thereby avoiding or minimizing injuries and/or damage to property or the environment.

All employees and personnel have the authority and responsibility to stop work if conditions become unsafe or appear to be unsafe at any time.

## 3.0 TRAINING

Prior to the start of construction, the Southgate Project will conduct environmental and safety training for Company and contractor personnel. The training program will focus on the Federal Energy Regulatory Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan* and *Wetland and Waterbody Construction and Mitigation Procedures*; other construction, restoration, and mitigation plans, including this Fire Plan; and applicable permit conditions. In addition, the Project will provide large-group training sessions before each work crew begins construction with periodic follow-up training for groups of newly assigned personnel.

Training for fire suppression and response will include:

- the chain of command and fire reporting process;

- emergency contacts and numbers;
- basic fire prevention behavior controls;
- basic uses of hand tools, water backpacks, and other fire suppression equipment;
- fire suppression procedures and precautions; and
- emergency response and evacuation procedures.

Contractor Safe Work Rules will also provide a general overview of specific Project policies and procedures and highlights of relevant Occupational Safety and Health Administration ("OSHA") standards for General Industry and Construction. This document does not include all of the standards or procedures that may be applicable to a job or task, nor is it inclusive of all of the information that may be necessary to be in compliance.

Fire prevention is extremely important at the Southgate Project. Aside from natural gas, there are additional fire hazards posed by hydrocarbons, liquids, crude oil and condensate. Also, there may be flammable compressed gases and ordinary combustibles depending on the work site and the jobs being performed. Contractors must comply with OSHA 29 CFR 1910.39, Fire Prevention and Suppression Plan, and 1926.151, Fire Prevention. Contractors must take appropriate steps and preventive measures to minimize the potential for a fire. These steps include, but are not limited to, the following:

- Only smoke in designated areas.
- Do not allow trash or flammable materials to accumulate.
- Identify and protect or eliminate potential sources of fuel, if possible.
- Recognize and eliminate potential ignition sources, including static electricity.
- Keep flammable liquids in approved, self-closing containers.
- Learn the location of firefighting equipment, emergency shutdowns and alarms.
- Each piece of construction equipment will be equipped with a fire extinguisher. All inspectors and managers on-site will have fire extinguishers with their vehicles.

## 3.1 Coordination

The Southgate Project and their contractors will be responsible for fire prevention during construction. The Project, along with the appropriate emergency response or jurisdictional agencies, will be responsible for fire suppression and investigation. All Project personnel, including contractors, will be responsible for complying with applicable laws and regulations for fire prevention and suppression as well as the measures described in this Fire Plan.

### 3.1.1 Interagency Coordination

Interagency coordination of wildfire management in the southeastern United States is overseen by the Southern Area Multi-Agency Coordination Group ("SAMACG"), which includes representation from Federal land managing agencies and State/Commonwealth forestry agencies. The SAMACG and an adjunct organization, the Southern Area Coordination Center ("SACC") includes Virginia and North Carolina. Each

of the States crossed by the Southgate Project have fire prevention and suppression laws, regulations, and programs. Responsible agencies include the Virginia Department of Environmental Quality and North Carolina Department of Environmental Quality. When a fire is initially reported, local and partner firefighting agencies initially respond to the emergency. A local agency can ask for support from the appropriate State/Commonwealth or a regional coordination center if a fire could or does exceed the response capabilities of the local agency. The State/Commonwealth or regional coordination center may in turn request support from the National Interagency Coordination Center ("NICC") if a regional center exhausts its fire suppression resources. During a fire emergency, coordination is implemented through the Incident Command System ("ICS"), which is part of the National Incident Management System ("NIMS"). ICS is a standard incident management system used by firefighters and emergency medical teams to establish an organizational structure for management. A chain of command initially is established by the local response agencies to direct the response. As an incident progresses, personnel with higher authority and training assume responsibility for directing the response. ICS and NIMS provide a framework that assists agencies, non-governmental organizations, and the private sector in preventing, responding to, and mitigating the effects of incidents and ensuring an appropriate response based on the capabilities of response agencies.

## 3.2 Responsibilities

The construction contractors working on the Southgate Project will be required to implement the provisions of this Fire Plan. Additionally, each contractor will be required to prepare and implement an individual fire control plan, which will identify responsibilities and describe actions to be implemented by the contractor in the event of an inadvertent fire. Copies of each fire control plan will be appended to this Fire Plan. The key persons responsible for fire prevention and suppression during construction of the Southgate Project are Chief Inspectors, Spread Superintendents (if applicable), Field Safety Officers ("FSOs"), Facility Superintendents, Environmental Inspectors ("EIs"), and Authorized Officers ("AOs") (if applicable). Contact information for these persons will be appended to the "issued-for-construction" Fire Plan prior to the start of construction. At a minimum, each construction spread for the pipeline and each aboveground facility site will have one FSO trained in accordance with National Fire Protection Standards ("NFPS") 1521, Chapter 4, Responsibilities for a Health and Safety Officer.

### 3.2.1 Chief Inspector

The Chief Inspector will be responsible for oversight of all activities along the pipeline spreads and above ground facilities, including fire prevention and suppression.

### 3.2.2 Spread Superintendents

Spread Superintendents (if applicable) will be responsible for general construction operations associated with their individual spreads including compliance with this Fire Plan. Spread Superintendents will be in communication with Chief Inspectors, FSOs, EIs, AOs, and local emergency response, as necessary, to ensure that construction personnel are aware of fire hazards and prevention methods. Spread Superintendents will coordinate with Federal, State/Commonwealth, and local emergency responders during periods of high or severe fire conditions to ensure that appropriate preventive measures are in place during construction. Spread Superintendents also will be responsible for:

- monitoring construction areas to identify fire hazards and risks;
- developing and implementing fire protection strategies;

- ensuring adequate firefighting equipment is deployed to high risk areas and that equipment is visible and accessible; and
- ensuring that all firefighting equipment is inspected on a regular basis and maintained in good condition.

### 3.2.3 Field Safety Officers

The FSOs will be responsible for managing on-site fire suppression documentation, ensuring that fire suppression equipment is available and maintained, ensuring that construction personnel are trained to use equipment properly, and communicating fire hazards and threat levels to construction personnel. Additional responsibilities of the FSOs include:

- reporting all uncontrolled fires within or in the vicinity of the construction area, regardless of source, to the Spread Superintendent, emergency responders, and nearest fire dispatch;
- conducting weekly inspection of tools, equipment, personal protective equipment, and first aid kits;
- developing and maintaining a register of emergency equipment;
- conducting weekly inspections of flammable materials; posting "No Smoking" and "Designated Smoking Area" signs and fire rules at appropriate locations within the construction area;
- providing initial response support in the event of a fire and supervising fire suppression activities until relieved;
- providing and gaining approval of site-specific burn and smoke management plans for pre- planned controlled fires that will be implemented in accordance with Federal, State/Commonwealth, and Local requirements;
- providing written burning and blasting schedules, as required, to the appropriate Federal, State/Commonwealth, and Local fire control jurisdiction;
- monitoring construction areas where activities may present safety issues, such as blasting;
- complying with regulatory requirements in the storage and handling of flammable substances and maintaining a registry of flammable substances;
- establishing facilities for on-site chemical management and maintaining Safety Data Sheets (formally known as Material Safety Data Sheets) for flammable materials;
- establishing controls that minimize exposure to flammable materials;
- ensuring that flammable substances are removed from the construction area when not in use or when the location is unattended;
- training and instructing workers in the use, handling, and storage of flammable materials;
- ensuring that construction personnel have been trained in the requirements of this Fire Plan; and
- monitoring compliance with applicable Federal, State/Commonwealth, and Local laws, ordinances, and regulations regarding fire prevention and suppression.

### 3.2.4 Facility Superintendents

Facility Superintendents (if applicable) at aboveground facility sites will have the same responsibilities as the Spread Superintendents as described above.

### 3.2.5 Environmental Inspectors

EIs provide environmental regulatory guidance and oversight. This oversight includes fire prevention and suppression within and in the vicinity of construction areas. EIs will be familiar with Federal, State/Commonwealth, and Local rules and regulations pertaining to fire prevention and response. In the event of a fire emergency, EIs will assist with fire suppression.

### 3.2.6 Authorized Officers

AOs (if applicable) are agency representatives who supply information or provide direction regarding potential hazard conditions or changes in prevention methods. AO's may include Interagency Dispatch Centers or staff from land managing agencies. AO's will provide information on current fire danger ratings, the presence of other fires in the vicinity of construction areas, natural disaster warnings, and temporary restrictions on construction activities due to fire or other emergencies. If extreme fire danger is identified by a land managing agency, the AO may direct the Chief Inspector or Spread Superintendents to increase the level of fire monitoring, install additional fire prevention or suppression equipment, or stop work, if necessary. The Chief Inspector, Spread Superintendents, FSOs, EIs, AOs, and local fire authorities have the authority to stop or reduce construction activities or operations that pose a fire hazard until appropriate measures are implemented to minimize risk. The FSOs will accompany Spread Superintendents, AOs, or third-party compliance monitors on fire inspections and take corrective action when observing or having been notified that fire protection measures have not been properly installed or maintained.

## 4.0 EMERGENCY NOTIFICATION

In the event of a fire or other emergency, construction personnel on the scene will notify the appropriate Spread Superintendent and FSO immediately. The Spread Superintendent will be responsible for immediately notifying the appropriate fire dispatch center and AO or land managing agency, where appropriate. In the case of a serious injury, first aid treatment will be provided onsite. The FSO or another supervisor will coordinate with local emergency responders if additional support is required. In the event of a fire emergency, personnel will contact 911 or the nearest emergency response center. Contact information for emergency responders will be appended to the "issued-for-construction" version of this Fire Plan. A fire emergency is defined as an incident requiring a coordinated response from one or more agencies. When a response is required, the Spread Superintendent or person in charge will communicate the location and extent of the fire and steps underway to control or suppress the fire.

## 5.0 FIRE DANGER RATINGS

Fire danger ratings based on standard vegetation fuel models will be used by land managing agencies or local fire authorities to determine required fire prevention, control, and monitoring efforts. Based on the fire danger ratings, certain activities such as blasting, welding, or grinding may be restricted at the discretion of a land managing agency or local fire authority. Additionally, the land managing agency or local fire authority may modify or change requirements based on changes in fire restriction notices or localized hazards or risks. Standard practice Industrial Fire Protection Levels are:

- Closed Season, when fire season requirements are in effect;

- Partial Shutdown, which prohibits activities except as indicated by the State/Commonwealth; and
- General Shutdown, when all operations are prohibited.

Fire danger ratings and associated precautions relevant to the Southgate Project include:

- No Fire Restrictions – normal fire precautions.
- Stage 1 Fire Restrictions – normal fire precautions, except that designated smoking areas and permits for burning are required.
- Stage 2 Red Flag Warning – special fire precautions including:
    - Extra precautions such as designating a fire watch, using a spark shield, or wetting work areas down prior to active construction.
    - Machine treatment of slash, skidding, yarding, blasting, welding, metal cutting, and offloading are subject to land managing agency requirements.
    - No slash burning is allowed.
    - Power saws must be shut down from 1:00 p.m. to 8:00 p.m. local time.
    - Hauling trucking must stay on the right-of-way or surfaced roads after 6:00 p.m. local time.
    - Additional personnel, equipment, and prevention measures are required.
- Stage 3 Fire Restrictions – special fire precautions including:
    - All restrictions listed above.
    - Shutdown of all construction activities except operations on soil or graded areas, watering, grading, trench excavation, padding, backfilling, and clean-up.
    - Activities such as blasting and welding require an exemption from the AO unless these activities are completed on the graded portions of the right-of-way.

State and local fire agencies may authorize their own restrictions within jurisdictions for private lands. Requirements identified in agency-issued fire restrictions will be followed at all times.

The FSOs will contact the appropriate State/Commonwealth, or local fire management office to obtain information on fire danger ratings. Contacts will be daily when conditions are favorable for fires and weekly at other times. The FSOs will communicate the fire danger ratings to the Chief Inspector, Spread Superintendents, Facility Superintendents, EIs, and construction crews.

## 5.1 Fire Prevention

### 5.1.1 Blasting

Procedures for blasting are discussed in the Project's *General Blasting Plan*. Additional measures to be implemented in blasting areas are described below. When fire danger is high, a two-person fire watch will patrol the blast area for a period of one hour after the completion of blasting. If blasting occurs when the fire danger rating is Stage 1, an FSO will be on site during the operation and remain on site for one hour after the completion of blasting. At least one Size 0 or larger shovel and one water-filled backpack pump

or fire extinguisher will be on site. In addition, a fire watch will be assigned to each crew utilizing blasting equipment. When the fire danger rating is Stage 2 or 3, blasting will be prohibited unless an exemption is granted by the local fire authority. If an exemption is granted, additional fire prevention equipment and personnel will be on site prior to blasting. Equipment may include water trucks, fire tankers, shovels, backpack pumps, bulldozers, etc. A fire watch will remain on site for at least two hours after the completion of blasting activities.

### 5.1.2 Welding

During fire season, welding, cutting, or drilling of metal components of the Southgate Project will require the approval of the Spread Superintendent and the Chief Inspector. In areas where approval has been granted, vegetation will be cleared at a minimum diameter of 30 feet around the center of the work area unless the area has been watered to eliminate the fire danger. Each welding crew will be outfitted with at least one Size 0 or larger shovel, one water-filled backpack pump, and one five-pound dry powder ABC fire extinguisher.

When the fire danger rating is Stage 1, a fire watch will be assigned to each crew utilizing cutting and welding equipment. The fire watch will remain on site for one hour after the completion of welding activities.

When the fire danger rating is Stage 2, an exemption by the AO will be required prior to welding activities unless the activities are performed within the graded portions of the right-of -way or other work areas. If an exemption is granted, all Stage 1 measures will be implemented. In addition, a water tanker and bulldozer will be required to be on site during welding operations, and a fire watch will remain on site for at least two hours after the completion of welding activities.

When the fire danger rating is Stage 3, welding activities will require approval from the AO. If an approval is granted, all Stage 1 and 2 measures will be implemented. Fire restriction measures also apply to welding operations performed for equipment maintenance. All welding activities require a permit from the jurisdictional agency as per 29 CFR 1910 Subpart Q (welding) and 29 CFR 1910 Subpart I (personal protective equipment).

### 5.1.3 Equipment

The construction contractor will develop a list of equipment to be used during construction. Equipment used in the construction area may be inspected by the AO or other third-party compliance monitor prior to use on the Southgate Project. The equipment may be used only while in good operating order.

### 5.1.4 Fire Extinguishers

The FSAs will inspect fire extinguishers on a monthly basis to verify that:

- each extinguisher is in its designated place, clearly visible, and not blocked by equipment or other objects that could interfere with access to the fire extinguisher during an emergency;
- the nameplate with operating instructions is legible and facing outwards;
- the pressure gauge is showing that the extinguisher is fully charged;
- the pin and tamper seal are intact; and

- the extinguisher is in good condition, showing no signs of physical damage, corrosion or leakage.

The FSO performing the monthly inspection will initial and date each extinguisher inspection tag. Defective units will be taken out of service and replaced immediately. Fire extinguishers will be used in accordance with 29 CFR 1910.157. Use of fire extinguishers by construction personnel to suppress fires will only be undertaken if:

- the fire is small and is not spreading to other areas;
- escaping the area is possible;
- the fire extinguisher is in working condition and the individual understands how to use it; and
- the fire extinguisher has been professionally inspected and tagged annually;

### 5.1.5 Spark Arrestors

Spark arresters used for portable equipment, such as chainsaws, will be in good working condition. Light trucks and cars with factory installed or equivalent mufflers, in good condition, may be used on roads where the roadway is cleared of vegetation. Vehicles equipped with catalytic converters are potential fire hazards. These vehicles will be inspected and cleaned, as necessary, and parked on areas cleared of vegetation. All vehicles operating in vegetation-covered areas will maintain clean and clear undercarriage and exhaust systems, with no chaff, grass, or brush lodged in the exhaust system and skid plates. Cross- country driving outside designated work areas will be prohibited.

### 5.1.6 Equipment Parking and Storage

Equipment parking areas and small stationary engine sites will be cleared of all extraneous flammable materials. Gas and oil storage areas will be cleared of extraneous flammable material and "No Smoking" signs will be posted within these areas. All used and discarded oil, oil filters, oily rags, or other waste will be disposed of in approved and marked containers. Containers will be stored in approved locations and removed from the site by licensed contractors or approved personnel and disposed of or recycled at approved facilities. Glass containers will not be used to hold gasoline or other flammable materials.

### 5.1.7 Power Saws

All gasoline-powered saws will be provided with approved spark arresters/mufflers and maintained in good operating condition. Chainsaw operation will comply with the following:

- the arrester/muffler will contain a 0.023-inch mesh, stainless steel screen;
- chainsaw operators will have a fire extinguisher or water backpack and shovel available;
- chainsaws will be moved at least 10 feet from the place of fueling before starting; and
- chainsaw fuel and oil will be carried in safety cans designed for that purpose.

### 5.1.8 Warning Devices

Highway flares or other devices with open flames will not be allowed in the construction area because of the danger for fire. Contractors will only use electric or battery-operated warning devices within the construction area. Smoke detectors will be provided in all buildings constructed for the Southgate Project.

These detectors will provide a distinctive and recognizable signal to ensure timely evacuation from the area of fire or to perform actions designated by this plan or by the FSO. The FSO will test smoke detectors to ensure their safe operation.

### 5.1.9 Warming and Cooking Fires

Warming and cooking fires will be prohibited on the right-of-way.

### 5.1.10 Smoking

Smoking is allowed only in areas designated by the FSO. Smoking signs visible to all personnel will be posted at designated areas. The supervisory personnel will be responsible for enforcing smoking restrictions. "No Smoking" signs will be posted in all refueling areas and in areas where flammable materials are used, stored, or discarded.

### 5.1.11 Refueling

All fuel trucks will be equipped with a 35-pound minimum ABC fire extinguisher. If required, helicopter refueling trucks will be electrically grounded to the helicopter during refueling. Storage areas will be cleared of all extraneous flammable materials. All discarded oil, oil filters, oily rags, or other potentially flammable wastes will be disposed of or as described in Section 8.7 above. Only approved and properly maintained containers will be used to store or transport flammable liquids.

## 5.2 Burning

Prior to burning brush, the Southgate Project will apply for and adhere to all local ordinances in addition to acquiring all applicable permits from the proper agencies. Notifications will be given to local fire departments about the locations and durations that burning activities will be taking place. All burning activities will be supervised by a qualified fire watch, equipped with a fire extinguisher, and other applicable suppression equipment and materials such as sand or water. The fire watch will monitor all burning activities until all fire or smoldering debris is extinguished. All debris will be extinguished prior to leaving the work area each day. All brush that will be burned will be started using a propane torch only. There will not be any additives used to enhance the start of the fire or to maintain the fire.

## 5.3 Fire and Emergency Response Equipment

### 5.3.1 Construction Vehicles

All foreman vehicles and crew buses assigned to the construction area will be equipped with one 10-pound ABC fire extinguisher, one shovel, and an operable backpack water pump of four-gallon capacity. One water truck per construction spread during blasting "red flag warnings" and a fire danger rating of Stage 2 will be outfitted with a pressure pump, adjustable nozzle, threaded rubber-lined hose with a minimum of 300 feet of 1½-inch cotton jacket, and have a minimum water storage capacity of 1,500 gallons. Water trucks on the right-of-way will be able to help with wildfire fighting in the vicinity of the Southgate Project. The construction companies use water trucks that typically have a 4,000-gallon capacity and 150 feet of 1½-inch water hose that would support fire suppression activities. Many of these vehicles have water cannons mounted on the roof. All vehicles and auxiliary equipment will be equipped with properly functioning and baffled exhaust systems.

### 5.3.2 Fire Fighting Tools

At least three 10-person tool caches will be maintained per spread. One cache will be placed in an EI's vehicle. The second cache will be located with the Spread Superintendent, or Facility Superintendent. The third cache will be assigned to the FSO. Tool boxes will be red in color, sealed with metal box-car-type seals, and labeled "For Fire Fighting Only." The tool caches will contain the following:

- electric headlamps with batteries;
- one first aid kit, 10-person unit;
- two knapsacks;
- five pulaskis with sheaths;
- five long-handled, round-point, Size 0 shovels; five fire rakes; and
- one-gallon canteens, filled with water.

The Spread Superintendent will expedite delivery of the tool caches upon request of the FSO or AO or when alerted to an emergency requiring the tools. In case a tool cache or first aid kit has been used, it will be immediately replenished. All replenished tool caches or first aid boxes will be inspected by the FSO. These will then be resealed before being returned to the construction site.

## 6.0 EVACUATION

During an emergency evacuation, the Southgate Project will depend upon response teams, consisting of trained personnel, to attend to injured and/or trapped victims. Construction workers providing medical attention will not help beyond their capability. The Project will establish a site specific emergency communications system utilizing cell phones, hand-held radios, and/or satellite phones to notify workers of emergencies and contact local law enforcement and fire departments. If an immediate evacuation of a construction work area is required, the Chief Inspector, Spread Supervisor, FSO, EI, or other supervisor will direct the evacuation via the nearest escape route to a "safe area." Otherwise, evacuations will be directed by local emergency responders. Designated evacuation wardens will be assigned to each spread or station to account for all personnel present before, during, and after the evacuation. Construction workers will not return to an evacuated work area until emergency responders have deemed it safe and the Chief Inspector, Spread Supervisor, or Facility Superintendent has given an "all clear" signal.

# MVP Southgate Project

# Docket No. CP19-XX-000

# Resource Report 1

# Appendix 1-I

# Foreign Utility Lines Crossed by MVP Southgate Project

| Appendix 1-I<br><br>Foreign Utility Lines Crossed by the MVP Southgate Project | | | |
|---|---|---|---|
| **State, County** | **Milepost** | **Type (Gas/Electric/Other)** | **Owner** |
| **Virginia** | | | |
| Pittsylvania | 0.81 | Electric | Appalachian Power Co. |
| Pittsylvania | 3.14 | Electric | Appalachian Power Co. |
| Pittsylvania | 3.19 | Electric | Appalachian Power Co. |
| Pittsylvania | 4.53 | Electric | Appalachian Power Co. |
| Pittsylvania | 5.27 | Electric | VA EL |
| Pittsylvania | 6.29 | Electric | DOMINION |
| Pittsylvania | 6.31 | Electric | Virginia Electric and Power Company |
| Pittsylvania | 7.37 | Electric | Danville Utilities |
| Pittsylvania | 7.37 | Electric | Danville Utilities |
| Pittsylvania | 7.37 | Fiber Optic | C & P Telephone |
| Pittsylvania | 7.61 | Electric | Unknown |
| Pittsylvania | 9.5 | Gas | COLUMBIA GAS |
| Pittsylvania | 9.53 | Electric | Danville Utilities |
| Pittsylvania | 10.57 | Electric | Danville Utilities |
| Pittsylvania | 10.88 | Electric | Danville Utilities |
| Pittsylvania | 10.90 | Electric | Danville Utilities |
| Pittsylvania | 12.46 | Unknown | To Be Determined |
| Pittsylvania | 13.28 | Electric | Duke |
| Pittsylvania | 14.83 | Electric | Appalachian Power Co. |
| Pittsylvania | 16.80 | Electric | Appalachian Power Co. |
| Pittsylvania | 16.80 | Electric | American Electric |
| Pittsylvania | 18.37 | Electric | City of Danville |
| Pittsylvania | 18.43 | Electric | Danville Utilities |
| Pittsylvania | 18.44 | Electric | American Electric |
| Pittsylvania | 18.44 | Electric | Danville Utilities |
| Pittsylvania | 19.17 | Electric | Duke |
| Pittsylvania | 19.32 | Electric | Duke |
| Pittsylvania | 19.32 | Electric | Danville Utilities |
| Pittsylvania | 19.36 | Electric | Danville Utilities |
| Pittsylvania | 19.45 | Gas | Williams |
| Pittsylvania | 19.47 | Gas | Williams |
| Pittsylvania | 19.70 | Electric | Danville Utilities |
| Pittsylvania | 19.71 | Electric | Danville Utilities |
| Pittsylvania | 20.27 | Electric | Duke |
| Pittsylvania | 20.28 | Electric | Duke |
| Pittsylvania | 20.35 | Electric | Duke |
| Pittsylvania | 24.84 | Electric | Danville Utilities |

| Appendix 1-I<br><br>Foreign Utility Lines Crossed by the MVP Southgate Project | | | |
|---|---|---|---|
| **State, County** | **Milepost** | **Type (Gas/Electric/Other)** | **Owner** |
| Pittsylvania | 25.07 | Electric | Danville Utilities |
| Pittsylvania | 30.47 | Gas | Williams |
| **North Carolina** | | | |
| Rockingham | 30.58 | Electric | Duke Energy Carolinas |
| Rockingham | 30.77 | Electric | Duke Energy Carolinas |
| Rockingham | 31.70 | Electric | Duke Energy Carolinas |
| Rockingham | 32.10 | Electric | Duke Energy Carolinas |
| Rockingham | 34.28 | Electric | Duke Energy Carolinas |
| Rockingham | 34.29 | Electric | Duke |
| Rockingham | 34.31 | Electric | Duke |
| Rockingham | 34.32 | Electric | Duke |
| Rockingham | 35.56 | Electric | Duke |
| Rockingham | 35.79 | Electric | Duke |
| Rockingham | 35.79 | Electric | Duke |
| Rockingham | 36.33 | Electric | Duke |
| Rockingham | 40.43 | Electric | Duke |
| Rockingham | 40.45 | Electric | Duke |
| Rockingham | 41.96 | Electric | Duke |
| Rockingham | 41.97 | Electric | Duke |
| Rockingham | 41.98 | Electric | Duke |
| Rockingham | 41.99 | Electric | Duke |
| Rockingham | 43.36 | Electric | Duke |
| Rockingham | 43.38 | Electric | Duke |
| Rockingham | 44.98 | Electric | Duke |
| Rockingham | 44.98 | Electric | Duke |
| Rockingham | 51.02 | Gas | Plantation |
| Alamance | 55.59 | Electric | Duke |
| Alamance | 55.61 | Electric | Duke |
| Alamance | 55.78 | Electric | Altamaha EMC Power |
| Alamance | 55.81 | Electric | Duke |
| Alamance | 56.10 | Fiber Optic | AT&T |
| Alamance | 56.43 | Electric | Duke |
| Alamance | 58.05 | Fiber Optic | AT&T |
| Alamance | 60.00 | Electric | Duke Energy Carolinas |
| Alamance | 68.33 | Electric | Duke |
| Alamance | 69.13 | Fiber Optic | AT&T |
| Alamance | 69.14 | Electric | Duke Energy Carolinas |
| Alamance | 69.15 | Electric | Duke Energy Carolinas |

| Appendix 1-I<br><br>Foreign Utility Lines Crossed by the MVP Southgate Project | | | |
|---|---|---|---|
| **State, County** | **Milepost** | **Type (Gas/Electric/Other)** | **Owner** |
| Alamance | 69.38 | Electric | Duke Energy Carolinas |
| Alamance | 69.38 | Electric | Duke Energy Carolinas |
| Alamance | 70.18 | Fiber Optic | AT&T |
| Alamance | 70.18 | Fiber Optic | AT&T |

# MVP Southgate Project

# Docket No. CP19-XX-000

# Resource Report 1

# Appendix 1-J

# Winter Construction Plan

# MVP Southgate Project

# Winter Construction Plan

November 2018

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## 1.0 INTRODUCTION

Based on the MVP Southgate Project ("Project" or "Southgate Project") construction schedule, Mountain Valley Pipeline, LLC ("Mountain Valley") anticipates that standard construction and restoration will continue into and through the 2020 winter seasons. All winter work will be conducted in accordance with the Federal Energy Regulatory Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan ("Plan")* and *Wetland and Waterbody Construction and Mitigation Procedures ("Procedures")*, as well as the Project *National Pollutant Discharge Elimination System ("NPDES") Construction Stormwater General Permits* for Virginia and North Carolina. The Project has developed this Winter Construction Plan ("WCP") to outline the special procedures and best management practices ("BMPs") that will be implemented during the winter season construction period for installation of the Project facilities. These special procedures and BMPs should be considered additions to the other plans as described above that Mountain Valley has specified for use on the Project and will be used in conjunction with those plans, procedures, and BMPs, as applicable. Final restoration and reseeding will occur the following spring.

This WCP will be considered to be in effect when any of the following conditions occur:

- The ground is frozen and plating of topsoil occurs;
- Equipment slippage occurs from operating on frozen ground or vehicles risk sliding outside established right-of-way clearing limits;
- Road crossings cannot be adequately compacted;
- Backfill material freezes to the extent that adequate compaction becomes difficult; and/or
- Topsoil stockpiles are frozen and cannot be uniformly redistributed across disturbed areas or separated from the sub-grade material.

Final restoration and reseeding will occur the following spring.

## 2.0 STABILIZATION/WINTERIZATION

- The trench will be backfilled to the extent possible using subsoil.
- Slope stabilization and stability of cuts and fills will be restored to the extent possible, and water bars will be installed crossing the right-of-way to divert surface run-off away from the construction area.
- Equipment mats will be removed from stream areas where destabilization of installed matting could potentially occur due to any unexpected increase in stream water flow caused by increased snow run-off or other natural factors.
- Breaks will be cut into spoil piles and through the berm across the ditch line to allow proper drainage across the right-of-way.
- Wetland areas where mats are removed will be restored to the extent possible.
- Disturbed soils adjacent to streams and wetlands will be mulched, where needed.
- Water bars, berms, and erosion/sediment control measures will be installed to minimize erosion along the right-of-way and disposition of sediments beyond the boundaries of the right-of-way.

- In areas where final restoration has not been achieved, the right-of-way will be mulched and left in a roughened condition to reduce potential of erosion during times of snow thaw and/or significant rain accumulation.

## 3.0 EROSION AND SEDIMENT CONTROL MEASURES

- Temporary water bars will be constructed on slopes greater than 5 percent where final clean- up and permanent erosion and sediment control devices have not been installed.
- Mulching will be applied to all slopes (actively cultivated cropland exempt) concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Mulch will be uniformly dispersed over the area to cover 100 percent of the ground surface at a rate of 2 tons per acre of straw or its accepted equivalent, unless the local soil conservation authority, landowner, or land managing agency approval make formal request of any alternative action to be taken by the Project in writing.
- Temporary mulch will be applied to the right-of-way at a rate of 3 tons per acre on slopes greater than 5 percent and within 100 feet of waterbodies and wetlands where final restoration has not been established to the satisfaction of the Environmental Inspector.
- If right-of-way is snow covered, the snow will serve as suitable ground cover. If snow cover recedes, exposed right-of-way will be stabilized utilizing the measures detailed in this plan.
- The Environmental Inspector ("EI") and/or Agricultural Inspector ("AI"), if required, will suspend final clean- up activities and topsoil placement if topsoil cannot be evenly distributed. If the topsoil is frozen, spreading the topsoil and allowing it to thaw in the sun before spreading may occur. Frozen topsoil will not be returned to the right-of-way if it cannot be graded evenly.
- If topsoil placement is suspended due to frozen conditions, normal temporary right-of-way stabilization procedures will be applied as ground conditions permit. The final clean-up schedule will vary, depending on ground conditions and time of construction. Where final clean-up and restoration have not been completed, the right-of-way will be left in a roughened condition to reduce potential for erosion during snowmelt. In upland areas, a slight crown may be left over the pipeline to account for settling as backfilled soils thaw.
- Topsoil piles will be left in a stabilized condition and replaced when weather conditions permit proper de-compaction of the areas.
- Temporary seeding will be applied as necessary to areas where topsoil has not been restored.
- Sediment barriers (i.e., silt fence, straw bales, earthen berms) will be installed and maintained throughout the right-of-way at designated water bodies, wetlands, and paved road crossings. These structures will be inspected per the permit conditions and adequately maintained during the winter construction season to ensure there are zero control failures. Erosion and sedimentation control measures will be installed and repaired as determined by the on-site environmental inspector. Equipment will be utilized as needed to assist with installations in frozen conditions.

## 4.0 ACCESS ROAD USAGE

- Access roads will be graded where needed and approved by the assigned EI. All access roads approved for this project will remain in use during winter construction. All roads will be monitored and maintained in accordance with applicable permit and landowner requirements.
- Snow removal by equipment will not be performed beyond the road surface to prevent mixing soil with snow.

## 5.0 RIGHT-OF-WAY SNOW REMOVAL

If a snow event is followed immediately by a period of melting and runoff, the typical erosion and sedimentation control BMPs specified in the Project-specific Erosion and Sediment Control Plan for stormwater management will apply, and no special measures will be necessary. If a significant (greater than 6 inches) snowfall event occurs and is followed by an extended period of freeze, the following procedures will be implemented:

- All snow removed from the right-of-way will be in compliance with the footprint laid out for the Southgate Project. No equipment will be permitted beyond the limits of disturbance for the Project.
- The Project's contractor will work with the Project's Lead EI to designate stockpile areas. Breaks in windrowed snow will be placed at drainage crossings and as requested by the affected landowner.
- Snow will be removed from topsoil or spoil storage areas prior to using.
- The use of snow removal equipment will be restricted to use within the limits of disturbance and approved access roads.
- Snow will only be removed from active work areas at the direction of the EI.
- All snow and ice will be removed from pipe joints prior to being mobilized to position for alignment and welding. Plowing equipment used for snow removal operations will be equipped with 6-inch shoes to ensure blades do not remove topsoil or vegetation.
- Snow removal equipment will consist mainly of plowing equipment, such as bulldozers, loaders, utility trucks, dump trucks, or any construction vehicle that can be equipped with a plow and 6-inch shoes, and may include but is not limited to other equipment, such as snow blowers and hand shovels.
- Rather than blade as low as possible, snow removal operators will blade no lower than a height sufficient for construction vehicles to safely navigate the right-of-way.
- Snow removal operators will adjust blade height in areas of slope changes to ensure that contact with the ground is minimized to the greatest extent practical.
- Pickup trucks with front mounted blades will plow all access roads. Intersections, driveways and other private roads will not be blocked by plowed or stockpiled snow. Removed snow will not mix with sidecast stored soils. Currently, no additional temporary workspace has been identified for snow storage, and will be determined on an as needed basis.

## 6.0 SOIL HANDLING

- Frozen topsoil stripping activities will be limited to the equipment capable of accurately stripping variable depths of topsoil; rippers mounted on a machine may be necessary to achieve depth penetration. If segregation of subsoil and topsoil cannot be accomplished without mixing, the topsoil salvage operation will cease until soil conditions improve and segregation requirements can be met.
- The Southgate Project will minimize the amount of open trench to reduce the amount of snow that will have to be removed.
- The Project will install highly visible construction fence around any open trenches in areas where the pipeline intersects known paths used for snowmobiling, hiking or other such activities.
- The trench may be crowned to allow for more compaction and settling issues to occur in freezing and thawing conditions.

## 7.0 INSPECTION AND MAINTENANCE

- The Southgate Project will monitor and maintain erosion and sedimentation controls as specified in the FERC Plan. Erosion and sedimentation controls will be monitored daily in active construction areas and weekly in areas with no construction or equipment operation during the winter period.
- When snow melts or the ground thaws, the frequency of inspections will increase as determined necessary by the environmental inspector to an extent necessary to confirm the integrity and effectiveness of all erosion and sediment control devices.
- Contractor and the Southgate Project will continuously evaluate the condition of construction areas in an effort to determine if a need exists for additional temporary erosion and sediment control measures, and, as conditions allow, where these corrective measures should be taken.
- Contractor shall have the proper equipment available at all times to allow access to the right- of-way under soft soil conditions.

## 8.0 SPRING AND SUMMER RESTORATION

- The Southgate Project and its contractor will identify any storm or winter damage that may have occurred on the right-of-way.
- Contractor and the Project will evaluate the condition of the right-of-way and will determine if a need exists for additional temporary erosion and sediment control measures.
- Trench compaction will be facilitated by back dragging, walking in backfill material with heavy equipment, and obtaining optimum moisture for the backfill material.
- Contractor will continue final restoration, which may require disking or tilling of the right-of- way to create a seed bed for germination.
- Restoration of topsoil will occur, where practicable, after both the stockpiled topsoil and exposed subsoil have thawed, and the ground has dried following the spring melt.

# MVP Southgate Project

## Docket No. CP19-XX-000

## Resource Report 1

## Appendix 1-K

## Agency Correspondence
## (Provided Under Separate Cover)

# MVP Southgate Project

# Docket No. CP19-XX-000

# Resource Report 1

# Appendix 1-L

# Public, Stakeholder, and Agency Participation Plan

# MVP Southgate Project

# Public, Stakeholder, and Agency Participation Plan

November 2018

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# 1.0 PLAN PURPOSE

The purpose of this Public, Stakeholder and Agency Participation Plan is to identify stakeholders and potential issues related to the proposed MVP Southgate Project ("Project" or "Southgate Project"), determine appropriate and effective methods of communication with stakeholders, identify responsible parties, document the public consultation process, and adhere to communication protocols. The Southgate Project team is dedicated to seeking out greater involvement from the various affected groups early in the planning so that those who are interested may participate in the decision-making process. The Project's goal is to work with stakeholders to achieve consensus and settlements on mutually acceptable Project designs. The Southgate Project team believes an early and more collaborative approach will lead to Project designs that minimize impacts to landowners, communities, and the environment, while enabling us to develop more comprehensive applications for submittal to the Federal Energy Regulatory Commission ("FERC") and other agencies.

# 2.0 PROJECT SCOPE

Mountain Valley Pipeline, LLC ("Mountain Valley") is seeking a Certificate of Public Convenience and Necessity from the FERC" or "Commission pursuant to Section 7(c) of the Natural Gas Act to construct and operate the Southgate Project. The Project will provide timely, cost-effective access to new natural gas supplies to meet the growing needs of natural gas users in the southeastern United States, including for the Project's anchor shipper, PSNC Energy, a wholly-owned subsidiary of SCANA Corporation, a local distribution company serving customers in North Carolina. The Southgate Project is expected be in service by late 2020. The Project is a separate project from the 303-mile Mountain Valley Pipeline that is currently under construction. The Southgate Project will be developed, constructed, and owned by Mountain Valley and will be operated by EQM Midstream Partners, LP.

The Southgate Project includes an approximate 0.4-mile-long 24-inch-diameter pipeline (H-605), 73 miles of 24- and 16-inch-diameter natural gas pipeline (H-650), a new 28,915 nominal horsepower compressor station (Lambert Compressor Station), meter stations and other ancillary facilities (e.g. contractor yards and access roads) required for the safe and reliable operation of the pipeline. The Southgate Project facilities will be located in Pittsylvania County, Virginia and Rockingham and Alamance counties, in North Carolina.

# 3.0 OUTREACH PLAN GOAL

Mountain Valley and the Southgate Project team know that stakeholder outreach and public consultation are essential elements of the permitting process and will play an important role in the overall successful development of the Project.

The Southgate Project team has developed a comprehensive stakeholder list and public participation plan. The plan is built around the fundamental principle that open, honest and proactive communication is simply the right thing to do and necessary for the sound development of the Project. The Project strives to be a good neighbor and a good corporate citizen, and believes that every person, organization, and institution that might be affected by the Project has the right to be informed and should have an opportunity to participate in the decisions that might affect them.

The Southgate Project team, including land agents and survey crews, will participate in Public Consultation Training. This training includes appropriate communication, participation and documentation practices with stakeholders.

The Southgate Project team will also be trained in appropriate research methods about determining property ownership and legal descriptions. They will receive training on landowner negotiations, including effective listening skills. These skills are a fundamental part of the communication process between stakeholder and agent.

# 4.0 OUTREACH AND PUBLIC PARTICIPATION PLAN

It is the Southgate Project's objective to ensure that all potential federal, state and community stakeholders are informed of our intentions relative to the proposed Project in a timely manner. The Public, Stakeholder, and Agency Participation Plan, herein outlined, has the following objectives:

- *Identify all key stakeholders along the proposed pipeline route*. While landowners are the most obvious and directly affected stakeholders, many additional individuals and organizations along the proposed route may have a stake in the Southgate Project. Identifying and engaging them is important to the success of the Project.
- *Establish channels for two-way communication throughout the life of the Project*. Mountain Valley realizes that effective communication must be two-way. In addition to sharing information, the Project's outreach effort is designed to create a continuing dialogue with stakeholders, from the start of the pre-filing process through construction, restoration, and operation. It is also designed to provide stakeholders with a central point of contact to maintain ease of communication and ensure consistency of messaging.
- *Ask for public input at critical stages of planning*. Mountain Valley believes that the Southgate Project is a partnership not only with the commercial partners, but with all stakeholders. With that idea in mind, the Southgate Project team has sought input and ideas from stakeholders during the planning and pre-filing process. This has helped to identify and address areas of concern. The Project held three open houses at locations convenient to affected stakeholders along the proposed Southgate Project route. These open house events initiated the open-dialogue process with our community members. The Southgate Project open houses and other activities outlined herein, have been designed to serve as opportunities for the public to learn about the Project and for the Southgate Project team to listen to concerns of affected stakeholders.
- *Keep stakeholders informed throughout the process*. Early and timely communication with all stakeholders is essential to the Southgate Project's success. The Project is committed to proactively communicating, through the use of website updates and other methods, during all phases of the

Examples of FERC Key Stages and other information to be communicated:

- Pre-filing Request
- Open Houses
- Draft Resource Reports and Alternatives
- Monthly Status Reports
- FERC issues Notice of Intent
- Draft Resource Reports
- FERC Scoping Meetings
- Responses to Scoping Comments
- File Application
- Data Requests & Responses
- Supplemental information
- Commission Order
- Construction
- In-service

Project. Many outreach plans are designed to communicate effectively during early stages of implementation – especially during the approval stage – but then reduce communication during construction. While communication about the Southgate Project will certainly be heaviest early in the process, the Project team plans to proactively communicate, via website updates and other methods, during all phases of the Project, even after all approvals have been received.

- *Engage local resources*. To gain insight into public perceptions along the route and to improve the credibility of the Project, the Southgate Project team has retained community involvement specialists, who are very familiar with and knowledgeable about the local area, to supplement the efforts of the Project team. These specialists will arrange community meetings and other necessary meetings between the Project and stakeholders. Additionally, they will serve as the "eyes and ears" of the Project, helping to identify growing areas of concern, potential issues, and misinformation.

# 5.0 STAKEHOLDER IDENTIFICATION

Mountain Valley will focus its efforts on reaching the following audiences:

- Landowners
- Local elected officials
  - Mayors, city councils, boards of supervisors
  - County commissioners
  - County and municipal planning organizations
  - Zoning boards, etc.
- State elected officials
  - State senators (local area staff)
  - State congressmen (local area staff)
- Federal elected officials
  - U.S. Senators (local area staff)
  - U.S. Congressmen (local area staff)
- Federal, state, and local regulatory agencies
- Native American Tribes
- Economic development agencies/chambers of commerce
- Owners of mineral rights, such as coal companies
- Local law enforcement agencies
- Local emergency services (fire departments, ambulatory)
- Local media outlets

- Environmental non-governmental organizations
- Community at large

The status of contacts made to-date with federal and state agencies, local elected officials and municipal planning agencies can be found in the Southgate Project's pre-filing monthly reports to the FERC.

## 5.1 AGENCIES

In April 2018, the Project team made phone calls to all permitting agencies that require consultation of the projects plan to use the FERC pre-filing process and invited them to participate in the pre-filing process. Additionally, the Southgate Project team sent written correspondence to many of the aforementioned agencies requiring consultation that included a formalized invitation to participate in the FERC pre-filing process, a basic project overview, and a point of contact for the project.

The Southgate Project team remains committed to working with federal and state agencies. In the spirit of two-way engagement, the Project team is responding, and will continue to respond, to requests for information from these agencies in a timely manner. During the initial contacts, a specific line of communication was established between the agency personnel and Project staff. This line of communication will be utilized as confirmation to better understand agency requests and reaffirm agency receipts of requested information.

## 5.2 OTHER STAKEHOLDERS

The Southgate Project contacted stakeholders, including any affected landowners (as that term is defined by 18 CFR Section 157.6(d) (2)). In areas where notifying a larger group may be necessary, the Project will expand the mailing list to include landowners that may fall outside the requirements stated in 18 CFR Section 157.6(d)(2). Many of these stakeholders will have already been contacted, but it is the Project's goal to provide all stakeholders – including those with whom we have been in contact – the same information at the same time. The letter will describe the Project and provide updated information and inform stakeholders of the pre- filing process timeline and invite them to open houses.

## 5.3 STAKEHOLDER OUTREACH ACTIVITIES

Mountain Valley will employ the following methods to ensure successful communication and outreach, including:

*Stakeholder Identification and Issues Management & Database Tracking System:* After identifying stakeholders, the Southgate Project has developed and maintained an issues management system to track contact with these stakeholders in a manner that helps identify address and resolve emerging issues and concerns.

*Information Materials*: The Southgate Project has developed messages and materials to inform stakeholders about the Project and to address potential questions and areas of concern. These materials include, for example:

- A project overview fact sheet
- Frequently Asked Questions (FAQ)
- "Standard presentation" information posters, etc. for use at open houses and other meetings

- Internal project guidance concerning key messages about the Southgate Project to ensure consistency in communication
- Media advisories to announce public meetings and other Project updates
- Project newsletter to be physically mailed directly to affected landowners and other stakeholders 3-4 times per year and made available online via the Project website
- Project website that will include all the above, as well as maps of the proposed pipeline route

*Media Relations:* Keeping the media appropriately informed helps minimize the potential for misunderstanding and allows the Project to inform all stakeholders while reducing inaccurate information. Messages and materials about the Southgate Project will continue to be refined throughout the development effort to contain updated information and to address stakeholder concerns that may arise. In addition, materials contain the following information:

- Purpose and Need of the Project
- Information on Mountain Valley
- Information on environmental and other benefits of natural gas
- Discussion of today's energy market and the need for expanded natural gas infrastructure
    - FERC background information – The role of the FERC and other regulatory agencies in the process, and an overview of the pre-filing and filing processes
    - Information on construction, including the types and sizes of equipment used
    - Information on environmental activities conducted throughout the project, including pre-construction environmental surveys, measures during construction to minimize impact on environmental resources including agricultural resources, restoration, and post-construction monitoring
    - Safety information – A discussion of pre- and post-construction safety, and an overview of the safety record of the interstate natural gas pipeline industry and of the Project's affiliates
    - A Project time line – An intended time frame for completing key phases of the Southgate Project.

*Training*: A significant component of the outreach and communication team's effort is focused on training the Project team. The goal of the training effort is to familiarize all personnel who participate in the Project – both home office and field staff, including sub-contractors – of the Southgate Project outreach and public participation plan and to provide specific modules of training – including those developed by INGAA/IRWA for those personnel and contractors who interface with the public. Southgate Project staff receiving training includes all Project personnel and all contractors involved in field engineering, siting and survey, permitting and environmental impact mitigation, land acquisition, operations, property-owner relations, and government affairs. The Southgate Project's guiding principle is to train each individual shortly after retention for the Project or before the individual engages in his or her designated role.

*Website*: Because of its accessibility and the ability to be constantly updated, online communications will play a vital role in stakeholder dialogue. In addition to serving as a repository for up-to- date materials and information, the MVP Southgate Project website will feature mechanisms for stakeholders to ask questions and provide input about the Project.

*Direct Contact Outreach*: Mountain Valley will utilize direct contact, either in-person, by phone, or correspondence (e-mail and letter) with stakeholders throughout the Project, as appropriate. The Southgate Project will notify landowners affected by the Project as required by FERC's regulations. For example, direct contact by Project right-of-way representatives is a necessity in communicating with affected landowners. Direct contact with agencies has already been initiated by Project environmental staff and will continue.

*Open Houses*: In June 2018, Mountain Valley conducted three community open houses at locations in the project area. The Southgate Project's community open houses were in addition to the FERC scoping meetings. A formal presentation was not given during these open houses. However, attendees had direct, one-on-one access to members of the Project team who listened to stakeholder ideas and concerns and answered questions about the Project. The Project used an "information station" open house format with topic-specific stations covering possible concerns and potential solutions. The stations included rights-of-way, environmental, construction, engineering, etc., as well as a station dedicated specifically for FERC personnel. Each station contained information pertinent to that area of project responsibility, presented both in larger visual aids and/or in handout form and manned by Project team members knowledgeable of the subject presented. This allowed attendees arriving at different times to circulate among the stations and gather information in a more personal and relaxed fashion. Land agents were present at the open houses to review the proposed route and to answer any specific landowner concerns.

The Southgate Project utilized GIS software as a means of highlighting the proximity of the Southgate Project route to individual landowners' properties, businesses, farms, neighbors, etc. Stakeholders were notified and invited directly via invitations sent by U.S. mail and indirectly through news media reports, advertising and the MVP Southgate Project website about the open house schedule.

Locations of the open houses were determined and selected based on their proximity to the Southgate Project route and meeting room capacity, with intent to be as convenient as possible to the majority of landowners along the route. A list of dates and locations are provided in the table below:

| **Project Open House Meetings – MVP Southgate Project** | |
|---|---|
| **Date** | **Location** |
| June 28, 2018 | Olde Dominion Agriculture Complex<br>Chatham, VA |
| June 26, 2018 | Reidsville Event Center<br>Reidsville, NC |
| June 25, 2018 | The Palladium Event Center<br>Burlington, NC |

*Scoping Meetings:* The FERC conducted scoping meetings in the Southgate Project area. The Project participated in those scoping meetings, as well as in meetings with Federal, State, and local resource agencies.

| FERC Scoping Meetings – MVP Southgate Project | |
|---|---|
| **Date** | **Location** |
| August 23, 2018 | Vailtree Event and Conference Center<br>Haw River, NC |
| August 21, 2018 | Olde Dominion Agriculture Complex<br>Chatham, VA |
| August 20, 2018 | Reidsville Event Center<br>Reidsville, NC |

*Project Contact Information*: The Southgate Project maintains and monitors a toll-free phone number, e-mail address, and postal mailing address that enable stakeholders to obtain additional Project information and provide input. This information is included on printed materials and the Project website.

In summary, the Southgate Project understands that Stakeholder Outreach does not stop at submittal of the application or possible receipt of a certificate of Public Convenience and Necessity but is an ongoing commitment to keeping the public at-large, affected landowners, the market, and other interested parties informed of the Project status. The Project will seek to continue the relationships and dialogue built during these crucial early stages of public interaction.

## 5.4 COMMUNICATIONS MILESTONES

- April 2018 to present – Initial communications with agencies and stakeholders
- April 2018 – MVP Southgate Project website live and online
- April 2018 – Landowner welcome packet to introduce the Southgate Project
- May 15, 2018 – FERC accepts the Southgate Project into Pre-filing Process
- May – June 2018 – Additional informational letter to stakeholders; open house invitations; print media outreach
- June 2018 – Community open houses
- August 2018 – MVP Southgate Project first newsletter
- August 2018 – Public scoping meetings hosted by FERC
- November 2018 – File Certificate Application

## 5.5 COMMUNICATION VEHICLES

- Briefing materials for elected officials
- Website: www.mvpsouthgate.com
- Toll-free hotline: 833-MV-SOUTH
- Email: mail@mvpsouthgate.com

- Community open houses
- Site visits
- Maps for stakeholders to view (hard copy and electronic versions)
- High-level maps for general distribution
- Regular mailings to engage stakeholders without internet access and locations set up to review voluminous Project info
- Newspaper advertorials as needed
- Media interviews, including TV, radio, newspapers, to produce ongoing public stories and articles regarding updates on the MVP Southgate Project

## 5.6 FERC LANDOWNER ASSISTANCE

The FERC landowner helpline via telephone is toll-free at 1-877-337-2237 and via email address is LandownerHelp@FERC.gov

## 5.7 MVP SOUTHGATE PROJECT LANDOWNER RESOLUTION PROCESS

In the early stages of the Project's planning and development, the Southgate Project established a protocol to address landowner concerns and answer questions. The protocol utilizes Southgate Project's toll-free phone line (833-MV-SOUTH) and/or email submission to mail@mvpsouthgate.com and this same protocol will be utilized during the construction phase as well. These communication portals were created as a means for landowners, as well as community members, to contact Project representatives with questions, concerns, and issues. The Southgate Project also keeps a formal record of all calls and emails received in order to effectively track inquiries and resolutions. The three-step process is as follows:

### Step 1: Gather Information

- Southgate Project representative will request all necessary information to complete the information section of the Inquiry/Issues Tracking Log, including the individual's name, address, parcel number, phone number, and Project reference. Additionally, any details offered regarding the purpose of the call will be entered on the Tracking Log.

### Step 2: Define the Inquiry/Issue

- Southgate Project representative will work with the individual to help understand and address their concerns. If the representative can resolve the issue, they will record this on the Tracking Log. Otherwise, the individual will be advised that their concerns have been documented and that they can generally expect a return call within three business days from an MVP Southgate Project representative. The questions/concerns/issues as documented on the Tracking Log will then be directed to the appropriate right-of-way agent.

### Step 3: Resolution

- If the issues are resolved during Step 2, the Southgate Project representative will complete the process by documenting how a resolution was reached for the Tracking Log. If a resolution is not

reached during Step 2, the Tracking Log is forwarded to the appropriate right-of-way agent who will return the call and also update the Tracking Log with the resolution. The delegation of the issue should generally follow this progression until resolution is reached. If a right-of-way agent receives a direct phone call relating to environmental, construction, or non- right-of-way issues from a landowner during pre-construction, construction, or post-construction activities, the agent will request all necessary information (as outlined in Step 1) and will initiate submission of the information on the Inquiry/Issues Tracking Log. The agent will then proceed to Steps 2 and 3 until a resolution is reached. After working with the Southgate Project representative and appropriate right-of-way agent, if the landowner is still not completely satisfied with the resolution, the individual should contact the Commission's Landowner Helpline at (877) 337-2237, or by email, LandownerHelp@FERC.gov.

## 5.8 MVP SOUTHGATE PROJECT FORMAL APPLICATION – PUBLIC LOCATIONS FOR VIEWING

When the formal application from Southgate Project is filed with the FERC, it will be sent to a public location in each county in Virginia and North Carolina. The list below identifies the locations in each county where the public can review a hard copy and/or a digital copy (depending on the preference of the library or county building).

| County | Name | Address |
|---|---|---|
| Pittsylvania | Pittsylvania County Public Library | 24 Military Drive, Chatham, VA 24531 |
| Rockingham | Reidsville Public Library | 204 W Morehead Street, Reidsville, NC 27320 |
| Rockingham | Eden Public Library | 598 S. Pierce Street, Eden, NC 27188 |
| Alamance | May Memorial Library | 342 S. Spring Street, Burlington, NC 27215 |

# MVP Southgate Project

## Docket No. CP19-XX-000

## Resource Report 1

## Appendix 1-M

## Stakeholder List (Public)

## Landowner Line List (Privileged and Confidential Information, CUI//PRIV)

## Federal, State, Local Stakeholder List (Public)

## [To be provided 30 days from filing.]

# MVP Southgate Project

## Docket No. CP19-XX-000

## Resource Report 1

## Appendix 1-N

## Response Matrix for FERC Comments on Draft Resource Reports 1 through 12

| FERC Comments on Draft Resource Report 1 [Dated: October 5, 2018] | Location In Resource Report or Response to Comment |
|---|---|
| 1. For each planned compressor station, include a large scale (1:3,600 or greater) plot plan identifying buildings, piping and other equipment, site property line, and nearby noise-sensitive areas (NSAs) (such as residences, farms, or schools). | Appendix 1-A, Figure 1-A |
| 2. Include the Maximum Allowable Operating Pressure (MAOP) for the East Tennessee Gas Line, and the PSNC distribution lines. | The MAOP for the East Tennessee line is 1,440 pounds per square inch gauge ("psig") and for the PSNC line is 800 psig. |
| 3. Add discussion in section 1.2.1 regarding the connection of the planned route to the Russell Compressor Station and the LN-3600 Interconnect. Revise resource reports as needed to incorporate the impacts associated with the 1.2-mile-long lateral to the Russell Compressor Station and the 0.2-mile-long lateral to the Lambert Compressor Station. | Not Applicable ("N/A")<br><br>The Russell Compressor Station is no longer part of the Project scope and a lateral is no longer proposed for the Lambert Compressor Station. |
| 4. In section 1.2.2.1 Mountain Valley states that, "In the event that East Tennessee delivers gas to the Project, flow will bypass the compressor." Clarify how Mountain Valley would maintain the required MAOP if the flow received from East Tennessee Natural Gas would bypass the Russell Compressor Station. | N/A<br><br>The Russell Compressor Station is no longer part of the Project scope. MAOP protection will be located at the interconnect between the two companies. |
| 5. Include justification for 14 contractor yards totaling 234.9 acres, as well as the clearing of forested areas for contractor yards. Revise table 1.3-4 to indicate the total size of the parcel (in acres) that contains the contractor yard, the amount of the parcel that would be utilized for the contractor yard (in acres), and the amount of forest (in acres) cleared for each contractor yard where forest is part of the land use at that site. Confirm that these yards would be acquired from willing leasers. | Section 1.3.5, Table 1.3-4 |
| 6. In section 1.4.1.1 (b) confirm if Mountain Valley intends to windrow timber products with wildlife breaks within all forested areas. Specify the frequency at which wildlife breaks would be placed. Discuss how this method would comply with section III.D of the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan). | Section 1.4.1.1 (b) |
| 7. In section 1.4.1.1 (k), specify state and local regulatory requirements for hydrostatic testing. | Section 1.4.1.1 (k) |
| 8. In table 1.10-1 include the following information:<br>a. sponsor/proponent for each project;<br>b. footprint/layout and anticipated impacts (acres of land/resource [wetlands, vegetation, habitat, etc.] affected); and<br>c. a description of the permits or authorizations required for the Project and a description of any environmental review required to support those permits or authorizations. | Table 1.10-2 |
| 9. In our comments on the first draft of RR1 dated July 18, 2018, we requested Mountain Valley update the cumulative impact assessment to include our standard resource-specific geographic scopes to assess cumulative impacts. We have reviewed Mountain | Section 1.10 |

<table>
<tr><th>FERC Comments on Draft Resource Report 1<br>[Dated: October 5, 2018]</th><th>Location In Resource Report or Response to Comment</th></tr>
<tr><td>Valley's cumulative impact analysis and found that the geographic scopes or 'regions of influence' are not acceptable. The FERC standard geographic scopes to assess cumulative impacts are listed in the table below. Understanding that knowledge of the specific characteristics of a project area may dictate an alternative geographic scope for the cumulative impacts analysis, you may suggest another geographic scope. However, include a detailed justification of why use of this scope is appropriate.<br><br>
<table>
<tr><th colspan="2">Geographic Scope for Cumulative Impact Analysis</th></tr>
<tr><th>Environmental Resource</th><th>Area of Impact</th></tr>
<tr><td>Soils and Geology</td><td>Construction workspaces</td></tr>
<tr><td>Groundwater, Wetlands, Vegetation, Wildlife</td><td>Hydrologic Unit Code (HUC) 12 Watershed</td></tr>
<tr><td>Surface Water Resources</td><td>HUC 10 Watershed. For direct in-water work (e.g. dredging) include potential overlapping impacts from sedimentation, turbidity, and water quality</td></tr>
<tr><td>Cultural Resources</td><td>Overlapping impacts within the Area of Potential Effects</td></tr>
<tr><td>Land Use</td><td>1-mile radius</td></tr>
<tr><td>Visual</td><td>For aboveground facilities, distance that the tallest feature at the planned facility would be visible from neighboring communities. For pipelines, use 0.25 mile and existing visual access points (e.g., road crossings)</td></tr>
<tr><td>Noise - Operations</td><td>Other facilities that would impact any noise sensitive area (NSA) located within 1 mile of a noise emitting permanent aboveground facility</td></tr>
<tr><td>Noise - Construction</td><td>0.25 mile from pipeline or aboveground facilities. 0.5 mile from HDD or direct pipe installation</td></tr>
<tr><td>Air Quality - Operations</td><td>50 kilometers (about 31.1 miles)</td></tr>
<tr><td>Air Quality - Construction</td><td>0.25 mile from pipeline or aboveground facilities</td></tr>
<tr><td>Socioeconomics</td><td>Affected counties and municipalities</td></tr>
<tr><td>Environmental Justice</td><td>Census tracts that are affected by and adjacent to project facilities</td></tr>
</table>
</td><td></td></tr>
<tr><td>10. In section 1.10 quantify the cumulative impacts of other projects within the geographic scopes of resources affected by Mountain Valley facilities. Quantification of impacts should include the amount of impact (e.g., acreage, number of streams, water volumes), and the duration of impact (e.g., short-term, long-term, permanent). In addition:<br>a. where cumulative impacts on soils may occur, quantify impacts on erodible soils and prime farmland;<br>b. where cumulative impacts on wetlands may occur, quantify the acreage and type of wetland that would be affected and the acreage and type of wetland that would be permanently lost;<br>c. where cumulative impacts on forested areas may occur, quantify the acreage of forest land that would be affected;<br>d. where cumulative impacts on air quality may occur, identify each facility that would contribute to the cumulative impact, including the estimated type and amount of pollutant; and<br>e. where cumulative impacts from noise may occur, specify each activity or facility (compressor station, HDD), the duration of each activity, and quantify the noise impacts (e.g. sound decibels) that would contribute to the cumulative impact.</td><td>Section 1.10</td></tr>
</table>

| FERC Comments on Draft Resource Report 1 [Dated: October 5, 2018] | Location In Resource Report or Response to Comment |
|---|---|
| 11. Identify any Project-specific modifications to the FERC's Plan and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures). Provide a detailed justification for each requested modification. | Section 1.4.1.1 Resource Report 2, Appendix 2-F |
| 12. Provide an explanation for the additional temporary construction workspace (ATWS) locations noted outside of the survey corridor. | ATWS locations have been adjusted and are within the survey corridor. |

| FERC Comments on Draft Resource Report 2 [Dated: October 5, 2018] | Location in Resource Report or Response to Comment |
|---|---|
| 13 Based on comments from Virginia Department of Environmental Quality (VDEQ)::<br>a. discuss and identify waters and watersheds included in the Virginia 303(d) List of Impaired Waters for polychlorinated biphenyl (PCB) levels in Fish Tissue, and measures Mountain Valley would use to minimize PCB increases;<br>b. discuss the crossing of Cherrystone Creek and measures Mountain Valley would use to minimize mercury increases;<br>c. discuss and identify waters and watersheds with best management practices (BMPs) being implemented as part of Total Maximum Daily Load (TMDL) protections; include the TMDL and BMPs at each location and mitigation measures in the event that these BMPs are damaged or compromised by construction of the Project; and<br>d. discuss potential downstream impacts on the waters and watersheds indicated above; Virginia water quality monitoring standards, regulations, and requirements; and any additional monitoring or mitigation measures that would be used by Mountain Valley. | Section 2.3.2.5 |
| 14 Section 2.2.1.3 cites the "USGS South Atlantic Water Science Center's 2010 North Carolina Water Use Report" stating that 23.85 million gallons per day (MGD) of groundwater was withdrawn in Alamance County. The 2010 report states that groundwater use was 3.76 MGD for Alamance County and that the 23.85 MGD number includes surface and ground water withdrawals. The same discrepancy is true for the Rockingham County numbers cited in RR2. Correct these figures for the groundwater usage in these two counties. | Section 2.2.1.3 |
| 15 Revise table 2.2-2 to include the status (active, inactive, plugged, etc.) and use (irrigation, monitoring, domestic, etc.) of private water wells within 150 feet of the Project construction workspace. Also, include the name of the owner of the well. | Section 2.2.3.2 |
| 16 Confirm that Mountain Valley would utilize only pre-approved (by FERC and state regulatory agencies, as applicable), non-toxic, non-petrochemical additives to HDD fluids. Also include an *Inadvertent Return Response Plan.* | See Appendix 2-H |
| 17 Describe testing for environmental contaminants that would be conducted on any non-municipal water sources to be used during Project construction (for example, for hydrostatic testing, HDD activities, and dust control). Indicate how HDD fluids would be disposed. | Section 2.3.4 |
| 18 Section 2.2.3.5 references an *Unanticipated Discovery of Contaminated Soils Plan* that is in development and would be provided with the Certificate application. Confirm that this plan would address unanticipated discovery of both contaminated soil and contaminated groundwater. | Section 2.2.3.5 |

| | FERC Comments on Draft Resource Report 2 [Dated: October 5, 2018] | Location in Resource Report or Response to Comment |
|---|---|---|
| 19 | In section 2.2.4 confirm:<br>a. if Mountain Valley would offer pre- and post-construction testing to landowners for all water wells and springs within 150 feet of construction workspaces;<br>b. when yield testing would and would not be recommended when blasting is conducted with 150 feet of an active water well; and<br>c. if Mountain Valley would offer pre- and post-blasting testing, for both groundwater quality and yield, for all water wells and springs within 150 feet of blasting. | Section 2.2.4.1 and 2.2.4.2 |
| 20 | Indicate if there are any public or private surface water intakes within 3 miles downstream of a waterbody crossing. If so, confirm that Mountain Valley would consult with the owners/managers of the intakes and provide notification before the waterbody crossings take place. | Section 2.3.2.7 |
| 21 | Specify potential sources of surface water or groundwater that could be used for dust control water. If surface water is used as a source for dust control, include a description of how Mountain Valley would minimize impacts on the waterbody source (e.g. utilizing an appropriate intake rate and screening the intake hose to prevent entrainment of aquatic species). | Section 2.3.5 |
| 22 | Include a list of special conditions required for the Jordan Lake riparian buffer watershed in accordance with the Jordan Lake Nutrient Strategy. | Section 2.3.6 |
| 23 | Section 2.3.6, under the sub-heading “Impacts to Waterbodies from Potential Releases of Fuels, Lubricants, and Coolants, and Mitigation Measures,” states “chemicals, solvents, and fuels will be kept at least 100 feet from streams and riparian areas, unless placed within secondary containment.” FERC Procedures state hazardous materials must be kept at least 100 feet from wetlands, waterbodies, or designated municipal watershed areas unless the location is designated for such use by an appropriate governmental authority. Clarify this apparent discrepancy. | Section 2.3.6.2 of Resource Report 2 states “Chemicals, solvents, and fuels will be kept at least 100 feet from streams and riparian areas and will be placed within secondary containment.” This measure complies with the FERC Procedures IV.A.1.e |
| 24 | Based on comments from VDEQ, the state water quality classification column for unassessed waters in appendix 2-A should not be blank. These waters should be assumed to have AL, R, FC, and W uses. Alternatively, classifying them as “Unassessed” or a similar code may be acceptable to VDEQ. The waterbody AS-NHD-2317 (Little Cherrystone Creek) should show FC and W uses as it currently only shows AL, R uses. | Appendix 2-A |
| 25 | Based on comments from VDEQ on appendix 2-A, RR2 should address how crossings on Trotters Creek and the Sandy River would affect benthic macroinvertebrates. | See Section 3.2.4.3, Resource Report 3 |
| 26 | Include aerial figures showing the pipeline alignment where it parallels a waterbody/wetland within 15 feet. Include a table within RR2 which provides the location, length of the route that would be within 15 feet of the waterbody/wetland, justification for the location, and any additional protection measures proposed by Mountain Valley. | See Section 2.3.6, Table 2.3-9 and Appendix 2-K |
| 27 | Based the recommendation of the North Carolina Wildlife Resources Commission (NCWRC) in appendix 1-K, describe the feasibility of using an HDD or conventional bore to cross Cascade Creek and Wolf Island Creek in Rockingham County and Deep Creek in Alamance County. | See Section 2.3.6.1 |

| FERC Comments on Draft Resource Report 2 [Dated: October 5, 2018] | | Location in Resource Report or Response to Comment |
|---|---|---|
| 28 | Confirm whether the Project would comply with the recommendation of the NCWRC to collocate the Project route with existing rights-of-way in Rockingham County when crossing Rock Creek, Town Creek, and an intermittent stream in the Town Creek watershed between SR 1978 and SR 1979. | The Project has evaluated collocation recommendations from NCWRC and has determined that the proposed route is the most feasible location to cross Rock Creek and Town Creek due to existing facilities and surrounding residences and environmental resources. |
| 29 | Revise wetland table appendix 2-B to include:<br>a. wetland impacts on individual wetland types (i.e., PEM, PSS, PFO);<br>b. construction impacts to include operational impacts, as well as those within temporary workspaces;<br>c. operation impacts should include all permanent impacts within the operational footprint;<br>d. denote which wetlands were field delineated and which were taken from desktop data (include desktop data only where needed to fill in survey gaps); and<br>e. crossing method. | Appendix 2-B |
| 30 | Specify whether any of the wetlands crossed by the Project are sensitive, protected, or of exceptional value/quality. | Section 2.4.2 |
| 31 | According to section VI.A.6 of the FERC Procedures, aboveground facilities should not be sited within wetlands. Provide additional detail on the permanent impacts identified at wetland W-B18-36 at the T-15 Dan River Interconnect and wetland W-A18-111 at the T-21 Haw River Interconnect. | There are no permanent wetland impacts at the T-15 Dan River Interconnect or the T-21 Haw River Interconnect. |
| 32 | In appendix 2-F, include a more detailed description of each justification for siting ATWS within 50 feet of a wetland or waterbody. Additionally, explain why for several ATWS, the table column for 'Alternative Measure Required' is indicated as "no." | Appendix 2-F |

| FERC Comments on Draft Resource Report 3 [Dated: October 5, 2018] | | Location in Resource Report or Response to Comment |
|---|---|---|
| 33 | Section 3.2.4.1 states, "Specific impact avoidance or minimization measures that may (emphasis added) be used on the Project include…". Confirm which of these measures would be used. | Section 3.2.4.1 |
| 34 | In section 3.2.4.1, provide a citation(s) for what would be considered appropriately sized screened intakes to prevent crushing, entrainment, or entrapment of mussels and fishes. | Section 3.2.4.1 |

| | FERC Comments on Draft Resource Report 3 [Dated: October 5, 2018] | Location in Resource Report or Response to Comment |
|---|---|---|
| 35 | Confirm that table 3.2-1 contains species specific to the Project route; include typical freshwater mussels and/or other aquatic species that may also be present in addition to fishes. | Section 3.2.2 and Table 3.2-1 |
| 36 | Based on comments from the Virginia Marine Resources Commission (VMRC), confirm whether all stream crossings would be completed within the timeframes established by the VMRC. | Section 3.2.4.1 |
| 37 | Discuss impacts on individual vegetation communities (e.g., upland herbaceous). | Section 3.4.5 |
| 38 | List the proposed seeding mixes, and document that they were developed in consultation with appropriate agencies. Specify whether seed mixes would include native flowering plants for the express benefit of native and domestic pollinators. | Section 3.3.4 |
| 39 | Include Project-specific vegetation species common to each land class. Also provide the impacts in acres and miles crossed for each land class. | Section 3.4.2 |
| 40 | With regard to the Exotic and Invasive Species Control Plan noted as in-preparation in section 3.4.4, include aquatic invasive species, as applicable. | Sections 3.2.4.6, 3.4.3, 3.4.4 and Appendix 3-B |
| 41 | Include the results of rare plant survey(s) when available. Include planned dates for completing any outstanding surveys. | Sections 3.4.3 and 3.5.2.1 |
| 42 | Specify whether wildlife escape ramps would be placed within the open trench during construction and, if so, the frequency at which they would be placed. | Section 3.3.4 |
| 43 | Section 3.3.3.1 notes the NCWRC recommended surveys to identify rookeries and bald eagle nests within 0.5 mile of the Project. State whether pre-construction surveys for rookeries and/or eagle nests would be conducted as recommended or if avoidance minimization measures would only be implemented if a rookery or eagle nest is identified during the course of construction. | Section 3.3.3.1 |
| 44 | Clarify whether the Project would comply with the recommendation of the NCWRC in appendix 1-K to conduct surveys for active migratory bird nests prior to construction during the migratory bird nesting season. | The Project currently has no plan to conduct surveys for active migratory bird nests prior to clearing during the migratory bird nesting season as the current schedule allows for clearing to occur outside of the nesting season. See Section 3.3.3.3. |
| 45 | Discuss the recommendations of the NCWRC in appendix 1-K and the North Carolina Department of Environmental Quality (NCDEQ) to collocate the Project route with existing rights-of-way or choose alternate routes to reduce forest fragmentation at multiple points throughout Rockingham and Alamance Counties. | Section 3.3.4, Appendix 1-K (Resource Report 1) |
| 46 | Confirm whether Mountain Valley would comply with the recommendation of the NCWRC in appendix 1-K to avoid mature tree clearing activities during the maternity bat roosting season (May 15 – August 15) if state-listed bat species are documented during bat surveys. | No state-listed bat species were identified in North Carolina. See Section 3.5.2.2.2 |

| FERC Comments on Draft Resource Report 3 [Dated: October 5, 2018] | | Location in Resource Report or Response to Comment |
|---|---|---|
| 47 | In section 3.5.1 under Federal Species of Concern, Mountain Valley states that "these species are not anticipated to be impacted by the Project." Clarify which species this refers to. | Section 3.5.1 |
| 48 | Confirm if Mountain Valley is planning on performing Piedmont plant and mussel surveys in Virginia as suggested in the Virginia Department of Conservation and Recreation's June 8, 2018 letter. | Section 3.5.2.1.3 |

<table>
<tr><th colspan="2">FERC Comments on First Draft Resource Report 4<br>[Dated: September 24, 2018]</th><th>Location in Resource Report or Response to Comment</th></tr>
<tr><td>1.</td><td>Clarify the corridor width in the direct Area of Potential Effect (APE). It is referred to as both 300 feet and 300-400 feet in different sections of the Work Plan. Also, include the North Carolina and Virginia State Historic Preservation Office's (SHPO) comments on Mountain Valley's proposed direct and indirect APE.</td><td>Section 4.4.1<br><br>Appendix 4-A</td></tr>
<tr><td>2.</td><td>Include copies of reviews by the SHPOs of all Work Plans, Research Designs, and Survey and Evaluation Protocols previously submitted.</td><td>Appendix 4-A</td></tr>
<tr><td>3.</td><td>Include tables listing all previously recorded archaeological sites and historic architectural structures identified during the site file search and literature review within 0.5 mile of all Project components. The tables should list resource number/name, cultural type, Milepost (MP), distance (in feet) from component, recorder/organization, date of recording, recorder evaluation, and SHPO evaluation.</td><td>Tables 4.5-1, 4.5-2, 4.5-3, and 4.5-4</td></tr>
<tr><td>4.</td><td>File archaeological and architectural survey reports when available. Include the plan used for identifying high probability areas and anticipated mechanical stripping locations.</td><td>Appendices 4-D, 4-E, 4-F, and 4-G</td></tr>
<tr><td>5.</td><td>Include correspondence dated after August 3, 2018 with SHPO, Indian tribes, historical societies, and local agencies. Include a summary of August 2018 SHPO field visits; as well as, SHPOs' reviews/comments on Inadvertent Discovery Plan and RR4.</td><td>Appendix 4-A</td></tr>
<tr><td>6.</td><td>Update tables 4.5-1 and 4.5-2. For any component not yet inventoried, provide the future date of investigations.</td><td>Tables 4.5-5 and 4.5-6 (formerly Tables 4.5-1 and 4.5-2)</td></tr>
<tr><td>7.</td><td>Revise tables 4.5-3, 4.5-4, 4.5-5, and 4.5-6 to include component, MP, and distance (in feet) to component for all sites.</td><td>Tables 4.5-7, 4.5-8, 4.5-9, and 4.5-10 (formerly Tables 4.5-3, 4.5-4, 4.5-5, and 4.5-6)</td></tr>
<tr><td>8.</td><td>Revise table 4.5-3 and table 4.5-4, include a description in addition to the period reference under the Resource Type column (see below).
<table>
<tr><th>Resource Number</th><th>Resource Type</th><th>Applicant NRHP Assessment</th><th>Applicant Recommendations</th><th>SHPO Comments (if available)</th></tr>
<tr><td>44PY02XX</td><td>Historic dump, precontact lithic scatter</td><td>Not Eligible</td><td>No further investigations</td><td>None to date</td></tr>
</table></td><td>Tables 4.5-7 and 4.5-8 (formerly Tables 4.5-3 and 4.5-4)</td></tr>
</table>

| FERC Comments on First Draft Resource Report 4 [Dated: September 24, 2018] | Location in Resource Report or Response to Comment |
|---|---|
| 9. Clarify what the National Register of Historic Places (NRHP) eligibility status is for the aboveground resource identified in V-CRIS that was once listed in the NRHP but has subsequently been removed. | Section 4.5.5 Table 4.5-3. |
| 10. Confirm blasting would not be conducted near any historic structures within the direct or indirect APE. If applicable, describe the potential impacts that blasting and vibrations could have on those structures, and outline measures Mountain Valley would implement to reduce those impacts. | Section 4.5.3 |
| 11. Confirm that appendix 4-B depicts the survey area for the aboveground resources. | Section 4.5.2; Appendix 4-B |
| 12. Include responses from Indian tribes and Native American Organizations to emails sent by Mountain Valley and its consultants on June 6, July 11, and August 3, 2018 not previously filed. | Appendix 4-A |
| 13. Include responses to letters Mountain Valley sent to local historical organizations, dated July 6, 2018, not previously filed. | Appendix 4-A |
| 14. Illustrate all the site locations shown on 7.5-minute United States Geological Survey topographic quadrangle maps in the "Privileged" volume of RR4 in relation to the proposed pipeline route. | Location maps for all identified archaeological sites are provided in Appendices 4-D and 4-E |
| 15. Indicate if the pipeline or other Project facilities including access roads would have a direct or indirect effect on the features listed below. If not, indicate the distance (in feet) the pipeline would be located in relation to those sites:<br>a. Little Cherrystone in Pittsylvania County, Virginia;<br>b. Bachelors Hall Plantation in Pittsylvania County, Virginia;<br>c. Oak Ridge Plantation in Pittsylvania County, Virginia;<br>d. Oak Hill Plantation in Pittsylvania County, Virginia;<br>e. Windsor Plantation in Pittsylvania County, Virginia;<br>f. Berry Hill Plantation in Pittsylvania County, Virginia;<br>g. Glencoe Mill Village in Alamance County, North Carolina;<br>h. Arches Grove United Church of Christ in Alamance County, North Carolina;<br>i. 1810 farmhouse, the family cemetery, and Native American sites on the Moore farm in Rockingham County; North Carolina;<br>j. site 31AM431 in Alamance County, North Carolina;<br>k. Burlington-Hillsborough Stage Coach Trail in Alamance County, North Carolina;<br>l. William Fonville family house dating to the 1800s in Alamance County;<br>m. Mel Aldridge's two buildings listed on the Alamance County Architectural Inventory of Historic Places, and two family cemeteries dating before 1835; and<br>n. Kerr Scott Farm (site AM641) in Alamance County, North Carolina which is listed on the NRHP. | Table 4-3.5 |

| FERC Comments on Draft Resource Report 5 [DATED: OCTOBER 5, 2018] | Location in Resource Report or Response to Comment |
|---|---|
| 49. Include a justification in section 5.2 for excluding the counties of Henry and Danville in Virginia and Caswell and Guilford in North Carolina from the socioeconomic analysis area. Given that CY-09 is located in Guilford County, North Carolina and these counties are located less than 5 miles from the Project, there could potentially be economic | At the time of the Draft Resource Report filings, proposed contractor yard |

| FERC Comments on Draft Resource Report 5 [DATED: OCTOBER 5, 2018] | Location in Resource Report or Response to Comment |
|---|---|
| impacts during construction and operation of the Project; particularly regarding population and employment, economy and tax revenue, housing, services, and transportation and traffic. | locations were preliminary.<br><br>The Southgate Project is continuing to evaluate the number and location of contractor yards required for construction of the Project. Currently, the only contractor yard proposed outside of the economic impact area of where the Project facilities are located is CY-09 in Guilford County, North Carolina. This yard is located approximately 10 miles away from the closest point of the centerline pipeline at MP 58 in Alamance County, North Carolina.<br><br>The Southgate Project expects that any potential project-related impacts in Guilford County would be related to transportation and traffic along the direct route from the yard(s) to the construction site(s). These potential impacts would be mitigated through the Traffic Management Plan provided in Appendix 5-B. |
| 50. In response to public comments, discuss in more detail the potential conflict for hotels and temporary housing with tourism. Include a list, description, and capacity of existing recreational vehicle (RV) and campground facilities that would be located within commuting distance of the Project. Estimate what percentage of construction workers would bring their own RVs or pop-out trailers and utilize existing RV and campground facilities for temporary housing. | Section 5.3.3.1 includes a new table (Table 5.3-4) that lists existing RV campground facilities and their capacities. Section 5.4.3 provides an expanded narrative discussion. In addition, Table 5.3-3 has been updated to include the number of rooms for |

| FERC Comments on Draft Resource Report 5 [DATED: OCTOBER 5, 2018] | Location in Resource Report or Response to Comment |
|---|---|
| | hotels and number of sites for RV Parks. |
| 51. Confirm that Mountain Valley would not utilize any temporary field "man-camps or worker camps" for housing workers during construction of the Project | The Southgate Project does not anticipate the utilization of any temporary field "man-camps or worker camps" for housing workers during construction of the Southgate Project. |
| 52. Section 5.4.5 states that the construction workforce numbers are provided in table 5.3-5; however, table 5.3-5 provides a list of public services. Anticipated workforce numbers are not included in RR5. Include a table that provides estimated workforce numbers by spread or update table 5.2-1 to include the workforce and construction schedule for each spread. | See Resource Report 1, Table 1.4-1 for a construction schedule and estimation of workforce. |
| 53. Based on comments received, further discuss the ability for local emergency services, such as volunteer fire departments, to adequately respond to an emergency during construction and operation of the Project. Update section 5.4.5 to discuss the results of any coordination between Mountain Valley and local police departments, fire departments, and emergency medical services. | No coordination to date has occurred between the Southgate Project and local police departments, fire departments, or emergency medical services. The Southgate Project will coordinate with these parties prior to construction and will provide the results in supplemental filing. |
| 54. As noted in section 5.4.5 (and section 11.2.2 in RR11), include the *Emergency Response Plan* that would be developed and implemented during construction and operation of the Project. | The Emergency Response Plan is currently under development and will be submitted as a supplement to the Environmental Report. |
| 55. Include additional detail on Public Outreach Programs given the potential for the Project to impact rural areas where access to reliable internet service may be limited. | The Southgate Project has developed and implemented a comprehensive Public, Stakeholder, and Agency Participation Plan that outlines a commitment to engage actively with stakeholders currently and throughout the life of the Project. The Project will directly mail to stakeholders various project updates, including periodic newsletters |

| FERC Comments on Draft Resource Report 5 [DATED: OCTOBER 5, 2018] | Location in Resource Report or Response to Comment |
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| | and other communications from the Project team, as warranted. Additionally, the Project will continue to work with local news media to facilitate accurate and informed reporting on the Project, and work with local government and non-governmental organizations to provide project updates and answers to questions as they arise in the community. |
| 56. Include a table that lists all tourist and public recreation areas in the vicinity of the Project, including areas used for ecotourism. The table should include the name of the attraction, the county, and the distance from the Project. Discuss potential impacts and any proposed mitigation measures. | Resource Report 8, Table 8.4.1. |
| 57. Include a discussion of the measures that Mountain Valley would implement to address project-related traffic concerns. These measures should address:<br>a. traffic control measures Mountain Valley would employ to ensure safety of pedestrians and vehicles where the Project would be located near schools;<br>b. increased traffic from Project-related activities (including commuting workers, construction equipment, and truck deliveries), including the number of workers' cars, equipment, and trucks that would use local roads, and commuting periods;<br>c. plans to bus workers from collection points to the right-of-way;<br>d. locations of commuting workers collection points and bus routes;<br>e. detours and road blockage;<br>f. impacts on existing roads and measures to repair them;<br>g. prior notification to residences;<br>h. in-road work relative to peak-traffic periods; and<br>i. safety measures (including signage, fencing and assurance of immediate backfill of trenches).<br>Also, document consultations with state and local road and transportation agencies regarding these measures. | Appendix 5-B, Traffic Management Plan and Section 5.4.6. |

| FERC Comments on First Draft Resource Report 6 [Dated: September 24, 2018] | Location in Resource Report or Response to Comment |
|---|---|
| 16. Section 6.4 states "no oil or gas wells were identified within 0.25 mile of the Project areas." Confirm this statement pertains to all oil and gas exploration wells (active and historic/plugged). If not, include updated information that describes all active and historic oil and gas exploration within 0.25 mile of the Project area. | Section 6.4 |

| FERC Comments on First Draft Resource Report 6 [Dated: September 24, 2018] | Location in Resource Report or Response to Comment |
|---|---|
| 17. Section 6.5 states that Mountain Valley "anticipates" conducting seismic testing. Clarify whether Mountain Valley would or would not conduct seismic testing for the Project. | Section 6.5.2 |
| 18. Clarify the factors and characteristics (in addition to percent slope) that Mountain Valley would use to identify areas with elevated landslide hazard potential | Section 6.5.4 |
| 19. Identify, by MP, where blasting may be necessary for Project construction. | Section 6.3 and Appendix 6-D |
| 20. Based on comments received, provide a discussion of the impacts on the integrity of the Project components that could potentially result from blasting at quarries in the vicinity of the Project. In particular, discuss the potential impact on the integrity of the Russell Compressor Station (CS) in Rockingham County due to the close proximity of the crushed stone quarry operation. Also, discuss potential impacts on Project components near the Martin Marietta Quarry in Alamance County. | Section 6.3<br><br>The Russell Compressor Station is no longer part of the Project scope |
| 21. Include documentation confirming that current and future crushed stone operations near the Russell CS would not be adversely affected by the Project. | Not Applicable<br><br>The Russell Compressor Station is no longer part of the Project scope |
| 22. Based on comments received from Karen Maute, discuss the potential for uranium to be exposed or mobilized (into surface water [sedimentation into streams], groundwater, and air [fugitive dust emissions and radiation]) during construction in Pittsylvania County, Virginia. This description should address known concentrations of uranium and radium in soil and groundwater in the Project vicinity and potential impacts on the environment, construction workers, and local residents that may result from construction activities. Lastly, discuss any monitoring and mitigation measures Mountain Valley would implement (if any) to avoid or minimize impacts resulting from potential uranium disturbance. Include citations to source documents. | Section 6.4 |
| 23. Provide the results of Mountain Valley's geotechnical investigations related to horizontal directional drilling (HDD), include an assessment which addresses:<br>a. the likelihood of success for each drill;<br>b. any subsurface conditions that were identified as a result of geotechnical investigations that may increase the risk of HDD complications (e.g., existing contamination, artesian groundwater, karst features, gravel);<br>c. the potential for an inadvertent return (IR) of drilling fluid to the ground surface using the U.S. Army Corps of Engineers' Delft method (or an equivalent method) for crossings through unconsolidated material, and/or a qualitative analysis for an IR through bedrock utilizing rock quality designation values obtained from bedrock cores; and<br>d. the measures that would be implemented to minimize the risk of an IR. | Section 6.2.5, Appendix 6-C |
| 24. Clarify if Mountain Valley would conduct geotechnical investigations at the location(s) of planned aboveground facilities. Identify the types of studies planned and indicate when they would be completed and provided to the Commission. If not, justify why geotechnical investigations would not be performed. | Section 6.2.5, Appendix 6-C |
| 25. Include construction practices and mitigation measures that would be implemented in areas of karst terrain, if identified within the Project workspaces. These measures should address:<br>a. a discussion of the potential for groundwater contamination due to blasting and the compounds used in blasting, including potential impacts on wells and springs;<br>b. mitigation measures that would be used, including Best Management Practices (BMPs) to prevent contamination of groundwater and karst systems from run- off from the right-of-way;<br>c. pre- and post-construction monitoring of water quality and yield of wells and springs used for domestic water supplies;<br>d. who would be responsible for identifying karst features and terrain during construction; | Section 6.5.1, Appendix 6-E |

| FERC Comments on First Draft Resource Report 6 [Dated: September 24, 2018] | Location in Resource Report or Response to Comment |
|---|---|
| e. if contractors and Environmental Inspectors would be trained to identify karst features;<br>f. set-back from karst features for equipment storage, fueling, and maintenance;<br>g. procedures in the event of an unanticipated discovery of karst features during construction; and<br>h. measures that would be implemented to repair or mitigate the development of a sinkhole in proximity to the Project facilities, and the monitoring of these features during the Project operation. | |
| 26. If karst terrain is determined to exist within the Project workspace areas, include a discussion of the structural integrity of the proposed pipeline design and its performance in karst areas, including an assessment of the possible unsupported span-width | Section 6.5.1, Appendix 6-E |
| 27. With regard to karst features (if identified) and areas of high susceptibility to landslide occurrence in or adjacent to the Project workspace, evaluate route variations that may avoid these features. | Appendix 6-E |
| 28. Confirm Mountain Valley consulted with the appropriate Virginia resource agencies about springs and caves in the vicinity of all Project facilities and include/summarize any correspondence with these agencies. | Appendix 6-E |
| 29. Describe potential impacts on the function of floodplains and loss of floodplain storage capacity from the construction of planned aboveground facilities | Resource Report 2, Section 2.3.1.2 |
| 30. Revise section 6.5.1 to include the locations of any mapped sinkholes, springs, and cave systems in the area identified as “karst formations” in figure 6-C and their distances from proposed Project facilities. | Appendix 6-E |
| 31. Revise appendix 6-G to include areas of steep slopes and lateral side slopes that would be crossed by the Project. This table should include the following:<br>a. Start/End MP (of each crossing); and<br>b. The range of slope for each crossing location (i.e., 0-15 percent slopes, 15-30 percent slopes, 30-50 percent slopes, 50-70 percent slopes, and greater than 70 percent). | Appendix 6-G |

| FERC Comments on First Draft Resource Report 7 [Dated: September 24, 2018] | Location in Resource Report or Response to Comment |
|---|---|
| 32. Clarify whether calculated acreages for impacts on “Prime Farmland or Farmland of Statewide Importance” include impacts on soil types classified as Unique Farmland and Farmland of Local Importance. If not, provide a revised table 7.2-1 that reflects impacts on these soils. | Section 7.3.7 |
| 33. Identify the amount (in acres) of prime farmland/unique farmland/farmland of statewide or local importance that is currently in agricultural use within the proposed workspace. | Table 7.3-1 |
| 34. Quantify the amount of prime farmland/unique farmland/farmland of statewide or local importance that would be permanently disturbed by Project construction and operation. Any soils within the fence line of permanent aboveground facilities and underlying permanent access roads should be considered to be precluded from future agricultural use and therefore permanently disturbed. | Table 7.3-1 |
| 35. Section 7.4.7 states that Mountain Valley would either conserve or import topsoil in residential areas. Indicate where each would occur and whether landowner approval would be required. | Section 7.4.7 |

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| 58. Clarify whether the impacts associated with the mainline valves in table 8.2-2 are being double counted within the total Project impacts. | Section 8.2.2.3 and Table 8.2-2 |
| 59. Footnote h in table 8.2-2 states that the sums in the table may not equal the total of the addends due to rounding; however, there are several instances where the difference between the totals and addends are 0.4 acre or more, which are too high to be attributable to rounding alone. Rectify acreages and update the table as needed. | Table 8.2-2 |
| 60. Rectify discrepancies between table 8.2-2 and table 3.4-1. For instance:<br>a. table 8.2-2 lists construction impacts on forested land as 605.4 acres and operation impacts as 225.8 acres versus table 3.4-1 that lists forest impacts (sum of forest/woodland categories and PFO) from construction as 612.3 acres and from operation as 226.5 acres; and<br>b. table 8.2-2 lists construction impacts on open land as 597.2 acres and operation impacts as 152.9 acres versus table 3.4-1 that lists open land impacts (sum of upland herbaceous/scrub-shrub and PEM/PSS) from construction as 598.2 acres and from operation as 153.2 acres. | See updated Table 8.2-2 and Table 3.4-1.<br><br>Wetland Impacts are included as a separate category for clarification.<br><br>a. Table 8.2-2 sum of Upland Forest / Woodland and Silviculture is 631.0 construction and 226.7 operation. Table 3.4-1 Upland Forest / Woodland (sum of evergreen, deciduous, and mixed) is 631.0 construction and 226.7 operation.<br><br>b. Table 8.2-2 Upland Open Land and Table 3.4-1 Open Upland (Herbaceous / Scrub-shrub) both total 506.6 construction and 134.6 operation. |
| 61. Update the farmland reserve program discussion to include information regarding any fees or penalties that may be assessed against a landowner due to the Project as well as any mitigation for such fees or penalties that Mountain Valley may provide for Project-related activities. | Section 8.4.2.1 |
| 62. Include a discussion of special farming designations such as the Virginia Century Farm Program. Identify by milepost where Mountain Valley would cross special farming designated areas and the construction and operation impact (acres). Describe the program and, if construction or operation of the Project would conflict with requirements of the program, how Mountain Valley would mitigate impacts. | Section 8.2.3.1 |
| 63. Include a discussion of potential impacts on orchards, syrup-producing trees, bush crops, and apiaries. | Section 8.2.3.1 |
| 64. Include a table that lists all pine plantations and tree farm operations that would be crossed by the Project. Include location by milepost, crossing length of the planned pipeline route, and acreage affected (permanent and temporary). | Table 8.2-4 |
| 65. Confirm that Mountain Valley would install safety fencing around roadway crossings at night and on non-construction days. | Section 8.2.3.5 |
| 66. Update section 8.4.1 to include a discussion of impacts and mitigation for all recreation areas listed in table 8.4-1 due to construction and operation of the Project. | Section 8.4 and 8.4.1 |

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| 67. Update table 8.4-1 to include the Haw River Trail in Alamance County, North Carolina. Confirm if the pipeline or other Project facilities including access roads would have a direct or indirect effect on the Haw River Trail. If not, indicate the distance (in feet) the pipeline would be located in relation to the Haw River Trail. | Table 8.4-1 and Section 8.4.2.1 |
| 68. Ensure that each of the special use and recreation areas discussed in section 8.4.2 are consistent as listed in table 8.4-1. | Section 8.4.2 and Table 8.4-1 |
| 69. Section 8.4.2.1 states that a portion of an ATWS would be located within and across a road that allows access to the Ace Speedway track. Update the section to include the following:<br>a. justification for why the ATWS cannot be relocated or reconfigured to avoid crossing the access road;<br>b. description of the length of time the access road would not be available and the impacts that would result from the this loss; and<br>c. any mitigation measures that would be implemented to minimize impacts on Ace Speedway. | Section 8.4.2.1 |
| 70. As recommended in our *Guidance Manual for Environmental Report Preparation* section 8.2.2, include written landowner agreements for all residences that would be within 10 feet of any construction workspace. For each location where a residence is within 10 feet of the construction workspace, and the landowner has not yet provided a written agreement to Mountain Valley, include a discussion on why measures, such as reducing the workspace, shifting the working side of the construction right-of-way, or moving or removing extra workspaces to maximize the offset between the residence and construction work areas are not feasible. | Appendix 8-F and Section 8.3.2 |
| 71. Include a discussion in section 8.2.3.8 regarding the Project's potential impacts on the Arches Grove United Church of Christ in Burlington, North Carolina. | Section 8.2.3.9 |
| 72. Based on a review of the alignment sheets, there are several locations where the Project centerline and/or construction workspace would cross the driveway leading to a residential structure. Update section 8.3.2 to describe the measures that would be used to ensure that residents would have access to their homes at all times during construction. | Section 8.3.2 |
| 73. Based on stakeholder comments, identify septic systems, if any, that would be affected by construction and operation of the Project. Include their location by milepost and distance and direction from the Project facilities. Specify the timing for temporary and permanent septic system repairs. | Section 8.3.2 |
| 74. Include an analysis of potential visual impacts and other affects that the planned Contractor Yard CY-07 could have on visitors of Eden City Park and Freedom Park. | Section 8.4.1.1 |
| 75. Include a discussion on the Project's potential impacts on Graham Regional Park and the planned expansion of this park. Specify which Project facilities would be located near this park and indicate the distance of these planned facilities from the boundaries of the park. | Section 8.4.1.1 |
| 76. Include the distance (in feet) that the workspace for the T-21 Haw River Interconnect is located away from the public paddle access to the Haw River. Include a description of any vegetation buffers (or lack thereof) that would reduce visual or noise impacts on users of the river access point. | Section 8.4.1.1 |
| 77. In order to reduce visual impacts from aboveground facilities within 500 feet of residential areas or public roads, including mainline valve (MLV)-6, MLV-7, and T-21 Haw River Interconnect, discuss the potential for Mountain Valley to employ the following measures when designing and constructing facilities:<br>a. maintaining existing foliage, to the maximum extent practicable, around the facility;<br>b. installing vegetative screening around the facility boundaries;<br>c. painting buildings and equipment inside the stations in colors that reduce contrast with the natural environment; and<br>d. installing downward-facing, shielded lights to mitigate off-site exposure. | Section 8.5.2 |

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| ***Air Quality*** | |
| 78. Include a discussion of the following applicability determinations, and if applicable, determine how the planned Project would comply with the regulation:<br>a. chemical Accident Prevention Provisions (40 CFR 68);<br>b. for Virginia, open burning regulations (9 VAC 5-130), standards for visible emissions (9 VAC 5-50-80), and standards for fugitive dust/emissions (9 VAC 5-50-90); and<br>c. for North Carolina, open burning regulations (15A NCAC 2D .1900). | Section 9.2.4.6<br>Section 9.2.4.7<br>Section 9.2.4.8 |
| 79. Clarify the construction activity categories in section 9.2.5.1, as construction equipment engines appear to suggest off-road construction equipment and off-road vehicle travel appears to suggest on-road construction equipment. | Section 9.2.5.1 |
| 80. Clarify the construction emissions estimates in tables 9.2-8/9 and appendix 9-A as detailed below.<br>a. According to RR1, burning would be conducted during clearing and grading to dispose of brush, slash, etc. Update tables 9.2-8/9 and appendix 9-A to provide estimated emissions.<br>b. Fugitive emissions for earthmoving fugitives (year 2021) and wind erosion (year 2020) appear to be swapped in tables 9.2-8/9 and appendix 9-A. Correct this apparent discrepancy.<br>c. Clarify if fugitive emissions from paved/unpaved road travel from on-road construction equipment and on-road commuter traffic were calculated. If estimated emissions were not calculated, update tables 9.2-8/9 and appendix 9-A to provide this information.<br>d. Clarify why greenhouse gas emissions are provided for only carbon dioxide (CO2) and not CO2-equivalents which would include methane (CH4) and nitrous oxide (N2O). | Section 9.2.5.1<br>Appendix 9A<br>Table 9.2-8/9 |
| 81. Include a Fugitive Dust Control Plan as noted in section 9.2.6. | The fugitive dust control measures are described in Section 9.2.6. A stand-alone plan has not been developed. |
| 82. Indicate whether construction equipment would use low-sulfur diesel fuel and comply with U.S. Environmental Protection Agency's (EPA) mobile source emissions performance standards. | Section 9.2.6 |
| ***Noise*** | |
| 83. RR1 indicates that blasting would occur during construction. Update section 9.3 to include a discussion/assessment of noise and vibration impacts from blasting consistent with section 4.9 of our *Guidance Manual for Environmental Report Preparation*. | Section 9.3.4.3 |
| 84. HDD/nighttime construction; all NSAs within 1 mile for operational compressor stations; and all NSAs within 0.5 mile for operational meter stations/interconnects). Indicate how the results were a worst-case scenario, and how mitigation (if applicable) would be applied to represent all NSAs regardless of its direction. | Section of 9.3.4.4 |
| 85. Clarify in section 9.3.3.3 why the average day-night difference of 5 decibels (dB) from the T-21 Haw River Interconnect measurement position was applied at the Stoney Creek Reservoir HDD site and Railroad Crossing 4, and the average day-night difference of 5.5 dB from the T-15 Dan River Interconnect measurement location was applied to the other four locations. | Section 9.3.3.3 |

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| 86. Section 9.3.4.2 states, "However, due to the uncertainty of the equipment that might be operating during night construction, the Project will develop a nighttime construction noise management plan if nighttime construction is required at this compressor station." Clarify which compressor station this statement is in reference to. Also, confirm if nighttime construction would occur at any of the interconnect locations and if the plan would apply to this construction. Include the number of days expected for nighttime work for each location. | Section 9.3.4.2 |
| 87. Update table 9.3-13 to include noise estimates for both the entry and exit locations for the Dan River HDD and Stoney Creek Reservoir HDD, rather than only the closest site. Update table 9.3-14 as applicable. Clarify if there are additional NSAs within 0.5 mile from the Stoney Creek Reservoir HDD or Railroad Crossings 3 and 4 that need to be analyzed for impacts/mitigation. For example, several barriers may be needed if the NSAs are located in different directions. | Section 9.3.4.4 |
| 88. Confirm in section 9.3.4.3 whether noise mitigation for the Stoney Creek Reservoir HDD site and Railroad Crossings 3 and 4 would use noise barriers, erected between the sites and the closest NSAs, in addition to temporary compensation or relocation for NSAs near Railroad Crossing 3. | Section 9.3.4.4 |
| 89. Include a list of the noise sources from each interconnect. | Table 9.3-15, Section 9.3.5.1 |
| 90. In table 9.3-17, correct the figures listed in the, "Increase Above Existing Condition" column for each NSA for the Lambert Compressor Station. | Table 9.3-17, Section 9.3.5.1 |
| 91. Include all noise model results/reports as appendices to RR9. | This Resource Report contains all of the noise modeling information for this Project. |

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| 92. Include a table containing all of the landowner-requested and agency-requested minor route deviations filed on the administrative record for this Project and include an additional data column indicating whether modifications have been incorporated that resolve the stakeholder's concerns. | Section 10.6.4, Table 10.6-4 |
| 93. For each system alternative where applicable, include an estimate of the additional gas infrastructure that would be required (e.g. length of pipeline, aboveground facilities, etc.) if that system alternative was used instead of the Project's planned pipeline route. | Sections 10.4.2 to 10.4.4 |
| 94. Revise the comparison tables included in sections 10.5, 10.6, and 10.7 to include:<br>j. federally listed endangered or threatened species habitat and number of species;<br>k. crossings of major waterbodies (>100 feet);<br>l. designated Natural and Scenic Rivers, Nationwide Rivers Inventory, significant fisheries, ponds/lakes;<br>m. national historic landmarks, and unlisted/potentially eligible properties;<br>n. agriculture land, open land, residential land, commercial/industrial land, and other lands;<br>o. state forests, state parks, state wildlife management areas, other state lands; and<br>p. national trails, recreational trails, and other recreational areas. | Sections 10.5, 10.6, and 10.7 |

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| 95. Include aerial figures for each of the FERC requested alternatives and route variations – including the Robert Pollock-Hill View Farms variation. | Figure 10.6-1, Appendix 10-A |
| 96. Indicate how much of the Robert Pollock-Hill View Farms would be avoided by the route variation in that area. | Section 10.6-1 |
| 97. Based on stakeholder comments, include an assessment of family cemeteries that may be located along the Preferred Route and route variations that would avoid these cemeteries. | Resource Report 4 |
| 98. Identify the data source used for forested wetlands as cited in the comparison tables. Report crossings of wetland types in a manner consistent with section 4.10.4 of our *Guidance Manual for Environmental Report Preparation*. | Section 10.5.2 |
| 99. Include in section 10.7 actual (e.g., desktop) data to support and quantify the assertion that Russell Compressor Station Alternative 1 and Russell Compressor Station Alternative 4 are not suitable for construction and are "topology less desirable"." | Not Applicable ("N/A") The Russell Compressor Station is no longer part of the Project scope. |
| 100. For each compressor station alternative location, evaluate site topography and existing vegetation (i.e., trees) as potential sound and visual buffers relative to the nearest NSA and residents. | Section 10.7.1 |
| 101. Include route alternatives for the Russell Compressor Station 1.2-mile-long lateral which increases the amount of collocation with exiting corridors and does not cross Cascade Creek, which the NCWRC (in appendix 1-K) noted as having a high-quality aquatic community. | N/A The Russell Compressor Station is no longer part of the Project scope. |

| FERC Comments on Draft Resource Report 11 [Dated: September 24, 2018] | Location in Resource Report or Response to Comment |
|---|---|
| No comments at this time. | Not Applicable |

| FERC Comments on Draft Resource Report 12 [Dated: September 24, 2018] | Location in Resource Report or Response to Comment |
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| No comments at this time. | Not Applicable |