

APPENDIX I
Timber Removal Plan

Appendix I

Draft Timber Removal Plan for the Jefferson National Forest

Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1

2 **1.0 INTRODUCTION..... 1**

3 **2.0 CURRENT CONDITIONS 2**

4 **3.0 PLANNED TIMBER CRUISE 3**

5 **4.0 TIMBER REMOVAL 3**

6 4.1 General Construction 4

7 4.2 Timber Clearing Methods 5

8 4.3 Timber Hauling 5

9 **5.0 SCHEDULE 6**

10 **6.0 PLAN UPDATES 6**

11 **7.0 LITERATURE CITED..... 6**

LIST OF TABLES

12

13 **Table 1.** USFS Management Prescription Areas Impacted by the MVP Project on the

14 Jefferson National Forest 2

LIST OF ATTACHMENTS

15

16 Attachment A 2016 Tree Survey Plot Locations and Survey Results (from MVP 2016)

1
2
3
4
5
6
7
8
9
10
11
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Draft
Mountain Valley Pipeline Project
Timber Removal Plan

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on National Forest System lands will occur in 2018.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in Braxton County, West Virginia, which is administered by the U.S. Army Corps of Engineers (USACE). Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this plan focuses on the JNF, noting any additional or different requirements that are specific to the crossing of the Weston and Gauley Turnpike.

The USFS will be responsible for enforcement of the terms and conditions of the BLM's right-of-way Grant on National Forest System lands during the term of the right-of-way

1 Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF
 2 portion of this project by the USFS Project Manager and the Authorized Officer's
 3 designated compliance monitors. USFS will have stop work authority per terms outlined
 4 in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work
 5 conditions are encountered during construction.

6 The Project has potential to impact sensitive environmental resources and, as a result,
 7 environmental protection measures have been developed to minimize potential impacts
 8 on these resources and will be applied, as applicable, to the Project.

9 2.0 Current Conditions

10 Several forested/woodland communities are found near the proposed 3.5-mile crossings
 11 of the JNF, including mixed mesophytic forests, conifer-northern hardwood forests, dry-
 12 mesic oak forests, dry and dry-mesic oak-pine forests, dry and xeric oak forests,
 13 woodlands, as well as xeric pine and pine-oak forests and woodlands. The following
 14 USFS Management Prescriptions will be crossed by the Project on the JNF: 4A
 15 (*Appalachian National Scenic Trail Corridor*); 4J (*Urban/Suburban Interface*), 6C (*Old-
 16 Growth Forest Communities Associated with Disturbance*); and 8A1 (*Mix of Successional
 17 Habitats in Forested Landscapes*). The exact extent of timber that will be affected during
 18 the initial clearing on the JNF in these areas will not be known until a timber cruise is
 19 conducted (discussed in more detail within Section 3.0). However, based on current
 20 information, approximately 82.7 acres of forested/woodland areas within the JNF will be
 21 impacted during initial clearing, which includes approximately 72.8 acres of land that are
 22 classified by the USFS as suitable for timber production (see Table 1).

23 **Table 1.** USFS Management Prescription Areas Impacted by the MVP Project on the
 24 Jefferson National Forest

Management Prescription a/	Construction Impacts (acres)	Permanent Operational Impacts (acres)
Prescriptions containing areas that are suitable for timber production		
4J	14.1	5.8
8A1	58.7	30.9
Prescriptions containing areas that are not suitable for timber production		
4A	2.5	1.7
6C	7.4	3.4
Grand Total	82.7	41.7

a/ 4J = Urban/Suburban Interface

8A1 = Mix of Successional Habitats in Forested Landscapes

4A = Appalachian National Scenic Trail Corridor

6C = Old-Growth Forest Communities Associated with Disturbance

Based on the route revision *October 2016 Proposed Route Revised December 2016*

25

26 MVP has conducted preliminary tree surveys of the Project Area on the JNF (MVP 2016).
 27 A total of 35 plots within the JNF were surveyed in order to determine the dominant
 28 species of trees present, tree age (based on tree core samples), estimated trees per acre,
 29 as well as the height and basal area of measured trees. The Project's tree survey report
 30 (MVP 2016) contains more details regarding the methods used during these initial

1 surveys. Figures displaying the location of the 35 survey plots as well as the results of
2 these surveys are provided in Attachment A. As shown in Attachment A, the density of
3 trees identified along the Project's route ranged from 0.49 to 114.59 trees per acre, and
4 the age of trees within the plots ranged from 35 to 250 years. Tree species identified
5 during these surveys included various species of oak (e.g., *Quercus alba*, *Q. arboretum*,
6 *Q. coccinea*, *Q. montana*, *Q. velutina*), pine (e.g., *Pinus echinata*, *P. pungens*, *P. strobus*,
7 *P. virginiana*), hickory (e.g., *Carya glabra*, *C. ovata*, *C. tomentosa*), maple (e.g., *Acer*
8 *pensylvanicum* and *A. rubrum*), birch (*Betula lenta*), hemlock (*Tsuga canadensis*), cherry
9 (*Prunus serotina*), tulip poplar (*Liriodendron tulipifera*), black tuelo (*Nyssa sylvatica*),
10 magnolia (*Magnolia acuminata*), sassafras (*Sassafras albidum*), and sourwood
11 (*Oxydendrum arboretum*).

12 **3.0 Planned Timber Cruise**

13 A detailed timber cruise will be conducted prior to the proposed timber removal by the
14 USFS. The timber cruise will determine the location, volumes, market values, and species
15 compositions of the timber that will be removed from the JNF as part of the Project.

16 Following completion of the timber cruise, a final Timber Removal Plan will be developed,
17 which will include the following information:

- 18 • The total volume of timber to be removed, as well as the size of trees that will be
19 removed;
- 20 • The market value (in dollars) of the timber;
- 21 • Updates as necessary regarding the logging systems that will be used to cut the
22 timber;
- 23 • Updates as necessary regarding the yarding and timber hauling methods that will
24 be used;
- 25 • The volume of timber that will be yarded to each proposed landing.

26 The final Timber Removal Plan will be submitted to the USFS for their review and
27 approval. The final Timber Removal Plan will incorporate any USFS comments and
28 suggestions that are provided in regard to this draft plan.

29 **4.0 Timber Removal**

30 All merchantable timber, as define by the JNF Merchantability Specifications, that is
31 reasonably accessible will be paid for prior to cut and removal, and will be cleared in
32 accordance with Forest Service regulations.

33 The following subsections provide general details regarding how timber will be cleared
34 and removed from the Project Area on the JNF. More details regarding the proposed
35 clearing of timber will be provided in the final Timber Removal Plan, which will be
36 developed following completion of the timber cruise.

1 **4.1 General Construction**

2 Prior to initiation of timber clearing and construction on the JNF, all Project personnel will
3 receive environmental training. Training will emphasize the need to comply with all
4 environmental laws and regulations, including all Project-specific permitting documents.
5 The roles and responsibilities of all pertinent parties, flagging/staking methodology, and
6 disturbance limits will be some of the major topics covered in the training (see Appendix C
7 of the Plan of Development).

8 The pipeline's 125-foot-wide construction right-of-way (which has been narrowed to 75
9 feet wide in some locations) and temporary workspaces will be cleared of vegetation
10 (including timber) prior to the initiation of construction. All areas to be cleared during
11 construction will be clearly marked by the USFS with paint and staked by the civil survey
12 crew prior to the start of clearing operations. Also, in accordance with the invasive species
13 plan, MVP will arrange a location in which a JNF designated employee will examine and
14 certify that equipment is clean and permitted to be used on USFS property. Once removal
15 has begun, timber will be cut into usable lengths and stacked adjacent to the right-of-way
16 in accordance with the USFS requirements. Stumps will be cut as close to the ground as
17 feasible and left in place, except for in areas directly over the trenchline. All non-
18 merchantable brush and slash will be windrowed to the edge of the right-of-way, utilized
19 in downslope areas of the right-of-way and/or removed from the area in accordance with
20 USFS requirements (see Appendix C of the Plan of Development).

21 Windrowing of non-merchantable brush and slash along the right-of-way will result in
22 habitat for many types of wildlife including: rabbits and other small mammals, ruffed
23 grouse, song birds and reptiles and provide food for insects. The windrows can also serve
24 as escape cover from predators as well as locations for nesting and shelter from inclement
25 weather. The windrows will generally range from 10 to 20 feet in width and 6 to 8 feet in
26 height. Breaks will be left in the windrows at approximately 100 feet in order to provide
27 fire breaks and wildlife crossings. Non-merchantable brush and slash can be utilized in
28 downslope areas of the right-of-way and access roads to aide in soil stabilization and
29 erosion control. Layering the brush and slash at the toe of a low-side slope along an
30 access road provides soil stabilization, and erosion and sediment control. Layering of
31 brush and slash can promote physical protection to the downslope areas of the right-of-
32 way. Additionally, the layering can provide long-term support for revegetation in
33 downslope areas of the right-of-way.

34 In roadless areas, non-merchantable brush and slash will either be stacked as described
35 above within the approved 125-foot construction right-of-way or removed from the area.
36 MVP will employ Environmental Inspectors to monitor environmental compliance during
37 timber removal activities. The MVP Environmental Inspectors will be responsible for:
38 1) monitoring compliance with mitigating measures required by the Project's permits,
39 clearances, certificates, and other approvals of an environmental nature that are issued
40 for the Project; 2) evaluating the contractor's implementation of the environmental
41 mitigation measures required by the FERC Certificate, federal right-of-way grants, and
42 any agreements made between MVP and the USFS; 3) issuing stop-activity orders and
43 corrective actions to maintain environmental compliance; 4) documenting compliance

1 with environmental requirements; and 5) preparing required status reports for submittal
2 to the FERC environmental staff and the USFS.

3 Erosion control measures from the FERC's Upland Erosion Control, Revegetation, and
4 Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation
5 Procedures (Procedures) will be implemented within the disturbance areas, and erosion
6 controls will be properly maintained throughout construction and restoration (see
7 Appendix C of the Plan of Development). Appendices C through Z of the Plan of
8 Development contain a description of the measures and Best Management Practices that
9 will be implemented on the JNF to avoid or minimize impacts during the initial clearing of
10 timber and construction of the Project.

11 **4.2 Timber Clearing Methods**

12 The exact methods that will be used to clear timber along the portion of the Project on the
13 JNF will be determined by the timber contractor following the Project's timber cruise (see
14 Section 3.0). The choice of timber contractor will be provided to the USFS in the Project's
15 final Timber Removal Plan, which will be developed following completion of the timber
16 cruise.

17 It is anticipated that the timber contractor will propose and utilize standard timber clearing
18 methods appropriate for the site specific conditions in this region. The timber contractor
19 will likely use standard mechanical cutting systems in areas that contain slopes with a
20 gradient less than 35 percent. MVP has committed to using advanced timber clearing
21 methods (e.g., as skyline systems or shovel logging) in areas that contain slopes steeper
22 than 35 percent, as requested by the USFS. The timber contractor will be informed of this
23 commitment, and this requirement will be incorporated into the final Timber Removal
24 Plan. A description of the potential timber clearing methods is provided below.

- 25 • *Mechanical Harvesting:* Mechanical harvesting may be employed whenever
26 possible. The very nature of this style of work creates an efficient, safer
27 environment for the workers. Under mechanical harvesting, excavators (e.g.,
28 shovels), dozers, and skidders are used for timber extraction to roadside or yarder
29 side for transportation out of the site.
- 30 • *Skyline Systems:* Skyline systems remove felled timber with the use of cables and
31 blocks, using a tower and an anchor line. Skyline systems may be implemented
32 in some areas because of steep terrain or limited access.

33 MVP will compensate the USFS for all merchantable timber cut on the JNF, based on the
34 market value of the timber determined during the timber cruise, as well as agreements
35 made between MVP and the USFS. This compensation will occur prior to the clearing of
36 any timber. All merchantable timber will be cut and removed from the JNF per the USFS
37 specification and requirements outlined in the USFS Handbook, agreements made with
38 MVP, and the JNF Land and Resource Management Plan.

39 **4.3 Timber Hauling**

40 Timber will be cut and moved to roadside loading areas using methods that are
41 determined by the timber contractor and the USFS to be the best suited to the site-specific

1 conditions in this area. In order to minimize disturbance to the JNF and reduce the extent
2 of work areas that will be required, timber hauling routes and landing areas will be
3 coincident with access roads and staging areas used for construction, to the extent
4 practical. These areas are shown on the figures provided in Attachment B.

5 At this time, Pocahontas Road, Mystery Ridge Road, and the right-of-way itself will be the
6 routes proposed for use as timber hauling routes for MVP. However, once the timber
7 volumes and tree sizes that will be cleared are determined during the timber cruise, MVP
8 will develop a detailed plan for the hauling routes and extraction of timber from the work
9 area, which will include the layout of landing areas that would be used within the approved
10 125-foot right-of-way. This information will be provided to the USFS as part of the final
11 Timber Removal Plan.

12 **5.0 Schedule**

13 It is anticipated that the clearing of timber on the JNF will occur within a single calendar
14 year. If conditions require that timber clearing be conducted during the winter months,
15 MVP will implement the measures outlined in their Winter Construction Plan (see
16 Appendix L of the Plan of Development). The start of clearing will be coordinated with the
17 USFS.

18 **6.0 Plan Updates**

19 This Timber Removal Plan outlines MVP's commitments to the USFS regarding how
20 timber removal will be conducted on the JNF. As discussed in Section 3.0, a final Timber
21 Removal Plan will be developed once the Project's timber cruise has been conducted
22 (which will provide information regarding the timber volumes and species that will be cut,
23 as well as the market value of the timber) and more details regarding the timber clearing
24 methods and landing locations. In addition, communication with the USFS is ongoing, and
25 it is anticipated that additional recommendations will be provided by the USFS in
26 response to this draft plan. The final Timber Removal Plan will be provided to the USFS
27 for their review and approval prior to the clearing of timber on the JNF.

28 **7.0 Literature Cited**

29 MVP (Mountain Valley Pipeline, LLC). 2016. Tree Surveys Within the Jefferson National
30 Forest for the Mountain Valley Pipeline Project in Monroe County, West Virginia
31 and Giles, and Montgomery Counties, Virginia. April 2016.

ATTACHMENT A
2016 TREE SURVEY PLOT LOCATIONS AND SURVEY RESULTS
(from MVP 2016)

**APPENDIX A
DATA SHEETS**





Tree Plot Survey Data

Property of: Environmental Solutions & Innovations, Inc
4525 Este Avenue, Cincinnati, OH 45232 (Phone: 513-451-1777)

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: West Virginia County: Monroe

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 1 Plot ID: 00 Percent Slope: 30 Trees Per Acre: 70.40 Site Index: <40

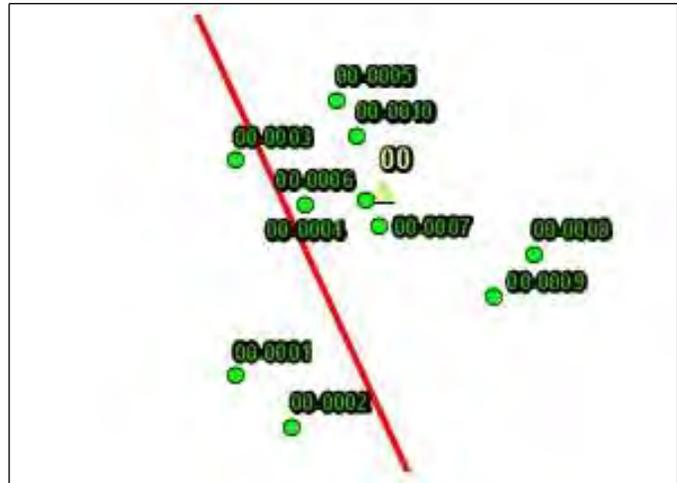
Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/01/2016	00-0009	<i>Quercus montana</i>	15	Alive	45	n/a	1.23	
03/01/2016	00-0003	<i>Quercus coccinea</i>	19	Alive	50	n/a	1.97	
03/01/2016	00-0005	<i>Quercus coccinea</i>	21	Alive	50	n/a	2.41	
03/01/2016	00-0002	<i>Quercus coccinea</i>	20	Alive	55	n/a	2.18	
03/01/2016	00-0007	<i>Quercus alba</i>	10	Alive	35	n/a	0.55	
03/01/2016	00-0001	<i>Quercus coccinea</i>	21	Alive	53	130	2.41	Core Sample Taken
03/01/2016	00-0010	<i>Quercus montana</i>	14	Dead	25	n/a	1.07	Snag
03/01/2016	00-0008	<i>Quercus montana</i>	17	Alive	45	n/a	1.58	
03/01/2016	00-0004	<i>Quercus montana</i>	13	Alive	40	n/a	0.92	
03/01/2016	00-0006	<i>Quercus coccinea</i>	21	Alive	55	n/a	2.41	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 2 Plot ID: 01 Percent Slope: 15 Trees Per Acre: 68.97 Site Index: <20

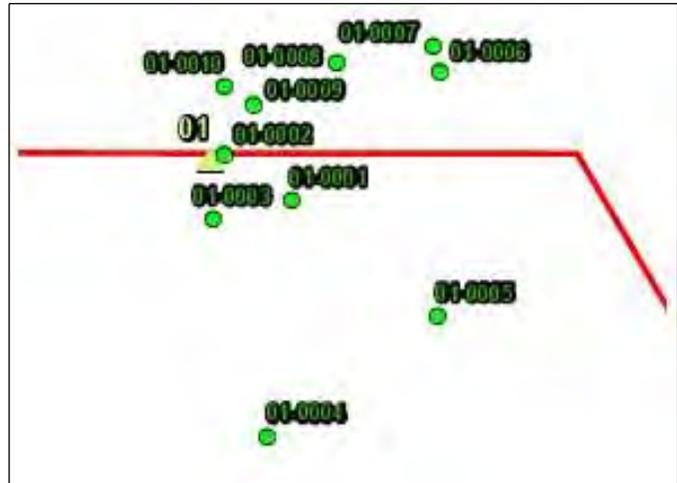
Comments: Located on ridge

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/01/2016	01-0002	<i>Quercus alba</i>	17	Alive	40	n/a	1.58	
03/01/2016	01-0010	<i>Betula lenta</i>	12	Alive	40	n/a	0.79	
03/01/2016	01-0001	<i>Quercus alba</i>	18	Alive	40	n/a	1.77	
03/01/2016	01-0009	<i>Quercus coccinea</i>	38	Alive	45	n/a	7.88	
03/01/2016	01-0008	<i>Carya ovata</i>	14	Alive	45	n/a	1.07	
03/01/2016	01-0007	<i>Quercus coccinea</i>	12	Alive	45	n/a	0.79	
03/01/2016	01-0006	<i>Quercus coccinea</i>	19	Alive	50	n/a	1.97	
03/01/2016	01-0005	<i>Quercus alba</i>	18	Dead	40	n/a	1.77	Snag
03/01/2016	01-0004	<i>Quercus alba</i>	17	Alive	45	250	1.58	Core Sample Taken
03/01/2016	01-0003	<i>Quercus alba</i>	17	Dead	40	n/a	1.58	Snag

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 3 Plot ID: 02 Percent Slope: 25 Trees Per Acre: 272.30 Site Index: <30

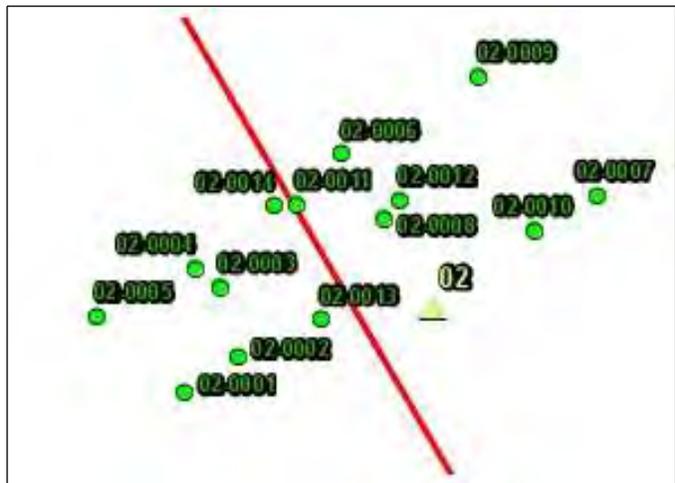
Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/01/2016	02-0013	<i>Quercus montana</i>	7	Alive	40	n/a	0.27	
03/01/2016	02-0012	<i>Quercus montana</i>	9	Alive	35	n/a	0.44	
03/01/2016	02-0010	<i>Quercus montana</i>	13	Alive	40	n/a	0.92	
03/01/2016	02-0009	<i>Nyssa sylvatica</i>	12	Alive	35	n/a	0.79	
03/01/2016	02-0008	<i>Quercus alba</i>	9	Alive	35	n/a	0.44	
03/01/2016	02-0014	<i>Quercus alba</i>	4	Alive	25	n/a	0.09	
03/01/2016	02-0007	<i>Pinus echinata</i>	17	Dead	20	n/a	1.58	Snag
03/01/2016	02-0006	<i>Quercus alba</i>	14	Alive	45	n/a	1.07	
03/01/2016	02-0005	<i>Quercus montana</i>	17	Alive	50	n/a	1.58	
03/01/2016	02-0011	<i>Quercus montana</i>	9	Alive	40	105	0.44	Core Sample Taken
03/01/2016	02-0004	<i>Quercus montana</i>	20	Alive	55	n/a	2.18	
03/01/2016	02-0003	<i>Quercus montana</i>	21	Alive	50	n/a	2.41	Leaning
03/01/2016	02-0002	<i>Acer rubrum</i>	9	Alive	40	n/a	0.44	
03/01/2016	02-0001	<i>Quercus montana</i>	19	Alive	50	n/a	1.97	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 4 Plot ID: 03 Percent Slope: 18 Trees Per Acre: 240.19 Site Index: 30 - 40

Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/01/2016	03-0015	<i>Sassafras albidum</i>	11	Dead	35	n/a	0.66	Snag
03/01/2016	03-0011	<i>Acer rubrum</i>	8	Alive	55	n/a	0.35	
03/01/2016	03-0013	<i>Quercus montana</i>	12	Alive	55	82	0.79	Core Sample Taken
03/01/2016	03-0010	<i>Quercus alba</i>	20	Alive	65	n/a	2.18	
03/01/2016	03-0014	<i>Sassafras albidum</i>	11	Alive	40	n/a	0.66	
03/01/2016	03-0009	<i>Quercus montana</i>	14	Alive	65	n/a	1.07	
03/01/2016	03-0008	<i>Quercus montana</i>	13	Alive	60	n/a	0.92	
03/01/2016	03-0007	<i>Sassafras albidum</i>	7	Partially alive	35	n/a	0.27	
03/01/2016	03-0006	<i>Sassafras albidum</i>	7	Alive	35	n/a	0.27	
03/01/2016	03-0001	<i>Quercus coccinea</i>	15	Alive	70	n/a	1.23	
03/01/2016	03-0005	<i>Quercus montana</i>	12	Alive	65	n/a	0.79	
03/01/2016	03-0004	<i>Quercus montana</i>	10	Alive	65	n/a	0.55	
03/01/2016	03-0012	<i>Quercus alba</i>	13	Alive	55	127	0.92	Core Sample Taken
03/01/2016	03-0003	<i>Quercus montana</i>	13	Alive	70	n/a	0.92	
03/01/2016	03-0016	<i>Sassafras albidum</i>	8	Alive	35	n/a	0.35	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 5 Plot ID: 04 Percent Slope: 15 Trees Per Acre: 91.16 Site Index: 45

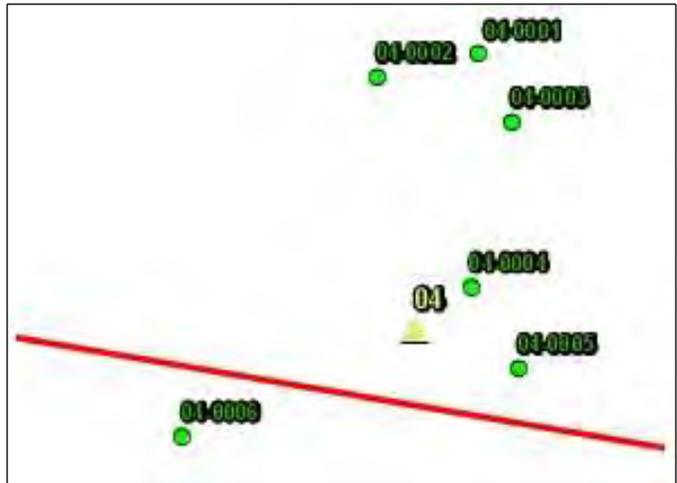
Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/01/2016	04-0006	<i>Quercus montana</i>	10	Alive	50	n/a	0.55	
03/01/2016	04-0005	<i>Acer rubrum</i>	7	Alive	40	n/a	0.27	
03/01/2016	04-0004	<i>Quercus montana</i>	11	Alive	60	88	0.66	Core Sample Taken
03/01/2016	04-0003	<i>Quercus montana</i>	12	Alive	55	n/a	0.79	
03/01/2016	04-0002	<i>Quercus montana</i>	13	Alive	60	n/a	0.92	
03/01/2016	04-0001	<i>Quercus coccinea</i>	14	Alive	66	n/a	1.07	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Property of: Environmental Solutions & Innovations, Inc
4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 6 Plot ID: 05 Percent Slope: 12 Trees Per Acre: 140.74 Site Index: 40 - 55

Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/01/2016	05-0008	<i>Quercus montana</i>	12	Alive	60	n/a	0.79	
03/01/2016	05-0007	<i>Pinus virginiana</i>	12	Alive	55	n/a	0.79	
03/01/2016	05-0006	<i>Pinus virginiana</i>	13	Alive	55	n/a	0.92	
03/01/2016	05-0005	<i>Nyssa sylvatica</i>	5	Alive	30	n/a	0.14	
03/01/2016	05-0004	<i>Pinus virginiana</i>	9	Alive	50	n/a	0.44	
03/01/2016	05-0003	<i>Pinus virginiana</i>	12	Alive	60	116	0.79	Core Sample Taken
03/01/2016	05-0002	<i>Quercus montana</i>	17	Alive	65	141	1.58	Core Sample Taken
03/01/2016	05-0001	<i>Quercus montana</i>	19	Alive	68	n/a	1.97	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 6 Plot ID: 06 Percent Slope: 10 Trees Per Acre: 140.74 Site Index: n/a

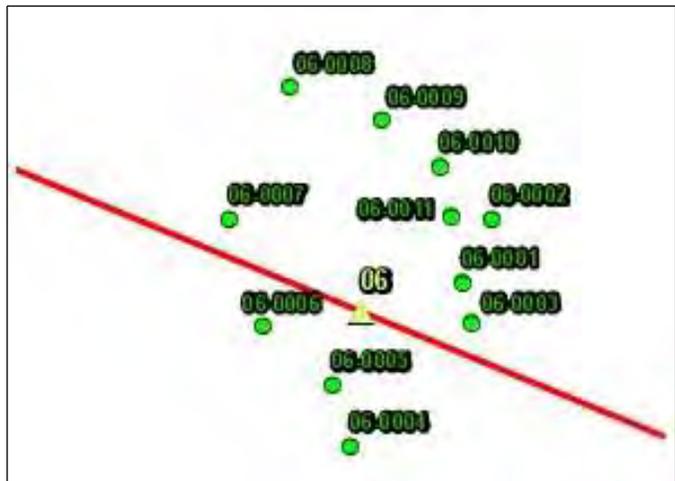
Comments: No tree cores taken; same stand as plot 05

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/02/2016	06-0011	<i>Quercus montana</i>	6	Alive	25	n/a	0.20	
03/02/2016	06-0010	<i>Quercus montana</i>	7	Alive	35	n/a	0.27	
03/02/2016	06-0009	<i>Quercus montana</i>	12	Alive	50	n/a	0.79	
03/02/2016	06-0008	<i>Quercus montana</i>	16	Alive	55	n/a	1.40	
03/02/2016	06-0007	<i>Quercus montana</i>	20	Alive	60	n/a	2.18	
03/02/2016	06-0006	<i>Quercus montana</i>	13	Alive	55	n/a	0.92	
03/02/2016	06-0005	<i>Quercus montana</i>	12	Alive	55	n/a	0.79	
03/02/2016	06-0004	<i>Quercus montana</i>	20	Alive	60	n/a	2.18	
03/02/2016	06-0003	<i>Pinus virginiana</i>	15	Alive	50	n/a	1.23	
03/02/2016	06-0002	<i>Quercus montana</i>	13	Alive	50	n/a	0.92	
03/02/2016	06-0001	<i>Quercus montana</i>	16	Alive	53	n/a	1.40	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Property of: Environmental Solutions & Innovations, Inc
4525 Este Avenue, Cincinnati, OH 45232 (Phone: 513-451-1777)

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 7 Plot ID: 07 Percent Slope: 15 Trees Per Acre: 437.69 Site Index: 35 - 40

Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/02/2016	07-0012	<i>Nyssa sylvatica</i>	3	Alive	25	n/a	0.05	
03/02/2016	07-0008	<i>Acer rubrum</i>	5	Alive	35	n/a	0.14	
03/02/2016	07-0007	<i>Acer rubrum</i>	5	Alive	25	n/a	0.14	
03/02/2016	07-0006	<i>Acer rubrum</i>	6	Alive	40	n/a	0.20	
03/02/2016	07-0005	<i>Quercus coccinea</i>	16	Alive	55	n/a	1.40	
03/02/2016	07-0010	<i>Nyssa sylvatica</i>	6	Alive	40	n/a	0.20	
03/02/2016	07-0004	<i>Quercus montana</i>	11	Alive	50	100	0.66	Core Sample Taken
03/02/2016	07-0003	<i>Quercus alba</i>	15	Alive	60	n/a	1.23	
03/02/2016	07-0002	<i>Quercus montana</i>	7	Alive	45	n/a	0.27	
03/02/2016	07-0001	<i>Quercus coccinea</i>	11	Alive	54	95	0.66	Core Sample Taken
03/02/2016	07-0009	<i>Acer rubrum</i>	6	Alive	40	n/a	0.20	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 8 Plot ID: 08 Percent Slope: 10 Trees Per Acre: 180.66 Site Index: 40 - 50

Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/02/2016	08-0010	<i>Quercus coccinea</i>	15	Alive	65	n/a	1.23	
03/02/2016	08-0009	<i>Quercus alba</i>	17	Alive	70	n/a	1.58	
03/02/2016	08-0008	<i>Carya tomentosa</i>	11	Alive	70	n/a	0.66	
03/02/2016	08-0007	<i>Quercus coccinea</i>	12	Alive	60	76	0.79	Core Sample Taken
03/02/2016	08-0006	<i>Carya tomentosa</i>	5	Alive	25	n/a	0.14	
03/02/2016	08-0005	<i>Oxydendrum arboreum</i>	5	Alive	25	n/a	0.14	
03/02/2016	08-0004	<i>Quercus coccinea</i>	16	Alive	60	n/a	1.40	
03/02/2016	08-0003	<i>Quercus alba</i>	14	Alive	65	90	1.07	Core Sample Taken
03/02/2016	08-0002	<i>Quercus coccinea</i>	9	Dead	50	n/a	0.44	Snag
03/02/2016	08-0001	<i>Quercus coccinea</i>	17	Alive	67	n/a	1.58	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 9 Plot ID: 09 Percent Slope: 15 Trees Per Acre: 89.43 Site Index: 50 - 60

Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/02/2016	09-0003	<i>Quercus coccinea</i>	18	Alive	70	n/a	1.77	
03/02/2016	09-0009	<i>Quercus alba</i>	13	Alive	65	n/a	0.92	
03/02/2016	09-0001	<i>Quercus coccinea</i>	20	Alive	75	62	2.18	Core Sample Taken
03/02/2016	09-0008	<i>Quercus rubra</i>	19	Dead	65	n/a	1.97	Snag
03/02/2016	09-0007	<i>Betula lenta</i>	7	Alive	40	n/a	0.27	
03/02/2016	09-0002	<i>Quercus alba</i>	22	Alive	75	n/a	2.64	
03/02/2016	09-0006	<i>Quercus velutina</i>	21	Alive	75	n/a	2.41	
03/02/2016	09-0010	<i>Quercus rubra</i>	14	Alive	65	n/a	1.07	
03/02/2016	09-0011	<i>Quercus rubra</i>	18	Alive	70	95	1.77	Core Sample Taken
03/02/2016	09-0005	<i>Quercus rubra</i>	27	Alive	75	n/a	3.98	
03/02/2016	09-0004	<i>Betula lenta</i>	12	Alive	55	n/a	0.79	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 9 Plot ID: 10 Percent Slope: 15 Trees Per Acre: 89.43 Site Index: n/a

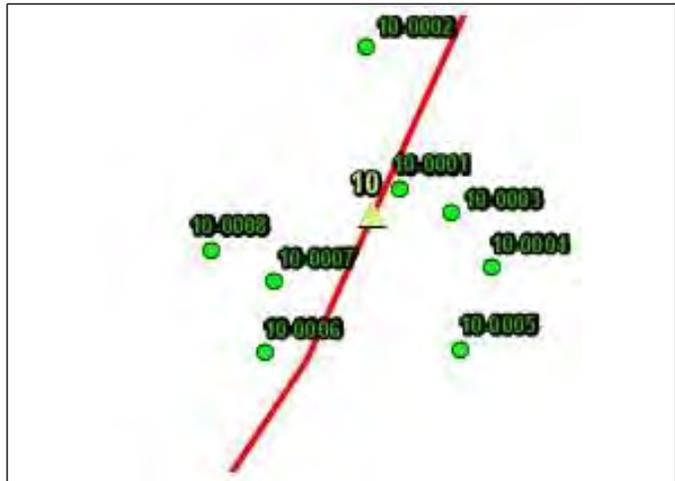
Comments: No cores taken; mostly snags and same stand composition as 09

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/02/2016	10-0008	<i>Quercus coccinea</i>	24	Dead	65	n/a	3.14	Snag
03/02/2016	10-0007	<i>Quercus coccinea</i>	22	Alive	70	n/a	2.64	
03/02/2016	10-0006	<i>Quercus rubra</i>	26	Dead	65	n/a	3.69	Snag
03/02/2016	10-0005	<i>Carya glabra</i>	13	Alive	65	n/a	0.92	
03/02/2016	10-0004	<i>Quercus rubra</i>	14	Dead	55	n/a	1.07	Snag
03/02/2016	10-0003	<i>Acer rubrum</i>	11	Alive	55	n/a	0.66	
03/02/2016	10-0002	<i>Quercus coccinea</i>	27	Dead	65	n/a	3.98	Snag
03/02/2016	10-0001	<i>Quercus coccinea</i>	25	Dead	70	n/a	3.41	Snag

Plot Photo



Tree Location Map





Tree Plot Survey Data

Property of: Environmental Solutions & Innovations, Inc
4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 9 Plot ID: 11 Percent Slope: 20 Trees Per Acre: 89.43 Site Index: n/a

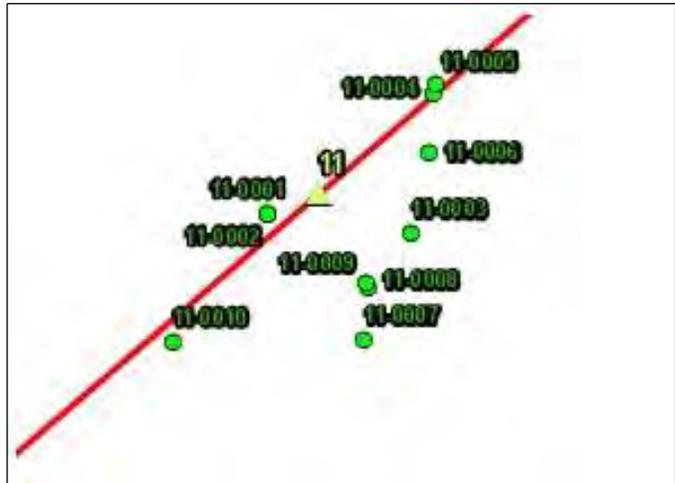
Comments: Similar stand composition to plot 10; no cores taken

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/03/2016	11-0010	<i>Quercus coccinea</i>	15	Alive	75	n/a	1.23	
03/03/2016	11-0009	<i>Acer rubrum</i>	5	Alive	30	n/a	0.14	
03/03/2016	11-0008	<i>Quercus montana</i>	15	Alive	70	n/a	1.23	
03/03/2016	11-0002	<i>Quercus coccinea</i>	26	Alive	90	n/a	3.69	
03/03/2016	11-0001	<i>Quercus coccinea</i>	26	Alive	95	n/a	3.69	
03/03/2016	11-0007	<i>Quercus coccinea</i>	36	Alive	70	n/a	7.07	
03/03/2016	11-0006	<i>Quercus coccinea</i>	23	Dead	75	n/a	2.89	Snag
03/03/2016	11-0005	<i>Acer pensylvanicum</i>	8	Alive	25	n/a	0.35	
03/03/2016	11-0004	<i>Quercus montana</i>	9	Alive	65	n/a	0.44	
03/03/2016	11-0003	<i>Quercus montana</i>	14	Alive	70	n/a	1.07	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Property of: Environmental Solutions & Innovations, Inc
4525 Este Avenue, Cincinnati, OH 45232 (Phone: 513-451-1777)

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 10 Plot ID: 12 Percent Slope: 20 Trees Per Acre: 141.51 Site Index: 50 - 60

Comments: Sparse remnant mixed oak canopy; hemlock canopy and subcanopy present along stream; thick rhododendron understory

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/04/2016	12-0008	<i>Tsuga canadensis</i>	8	Dead	40	n/a	0.35	Snag
03/04/2016	12-0007	<i>Tsuga canadensis</i>	14	Alive	50	n/a	1.07	Top broken
03/04/2016	12-0006	<i>Quercus velutina</i>	9	Alive	55	n/a	0.44	
03/04/2016	12-0005	<i>Acer rubrum</i>	7	Alive	55	n/a	0.27	
03/04/2016	12-0004	<i>Quercus velutina</i>	18	Alive	70	n/a	1.77	
03/04/2016	12-0003	<i>Quercus velutina</i>	17	Alive	75	105	1.58	Core Sample Taken
03/04/2016	12-0002	<i>Acer rubrum</i>	7	Alive	35	n/a	0.27	Leaning
03/04/2016	12-0001	<i>Tsuga canadensis</i>	14	Alive	75	62	1.07	Core Sample Taken

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 10 Plot ID: 13 Percent Slope: 25 Trees Per Acre: 141.51 Site Index: n/a

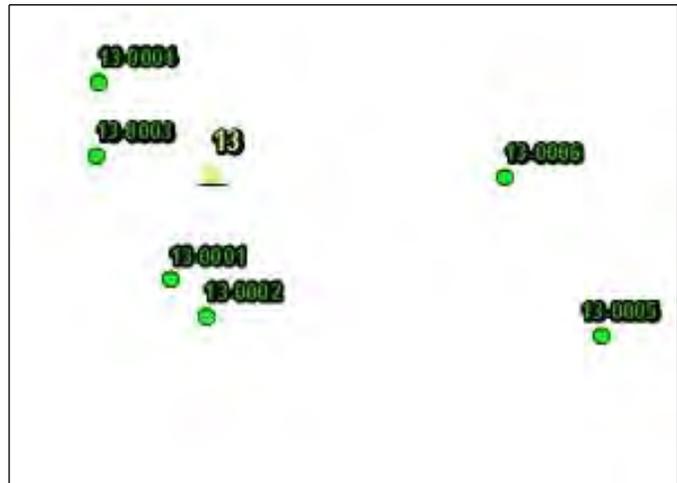
Comments: No cores taken; Thick rhododendron in understory; uneven-aged stand with mixed oak canopy and mixed mesophytic subcanopy

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/04/2016	13-0006	<i>Quercus montana</i>	13	Alive	55	n/a	0.92	
03/04/2016	13-0005	<i>Tsuga canadensis</i>	5	Alive	20	n/a	0.14	
03/04/2016	13-0004	<i>Quercus velutina</i>	24	Alive	55	n/a	3.14	Top broken
03/04/2016	13-0003	<i>Acer rubrum</i>	7	Alive	25	n/a	0.27	
03/04/2016	13-0002	<i>Quercus alba</i>	18	Alive	75	n/a	1.77	
03/04/2016	13-0001	<i>Acer rubrum</i>	5	Alive	30	n/a	0.14	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 11 Plot ID: 14 Percent Slope: 20 Trees Per Acre: 137.51 Site Index: 51

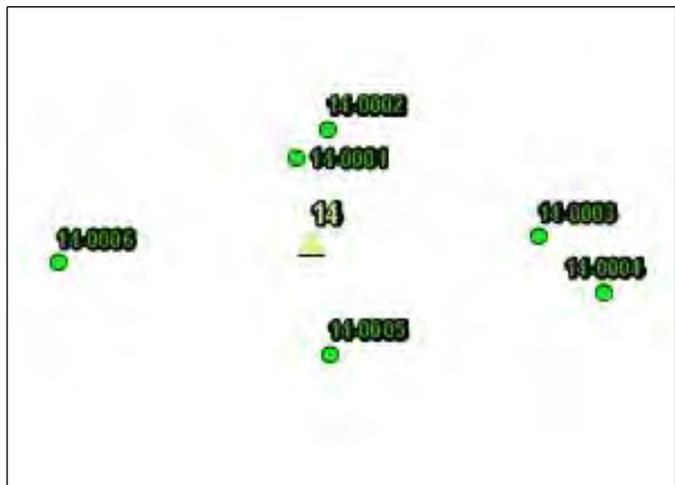
Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/04/2016	14-0006	<i>Oxydendrum arboreum</i>	8	Alive	40	n/a	0.35	
03/04/2016	14-0005	<i>Nyssa sylvatica</i>	5	Alive	30	n/a	0.14	
03/04/2016	14-0004	<i>Nyssa sylvatica</i>	8	Alive	40	n/a	0.35	
03/04/2016	14-0003	<i>Nyssa sylvatica</i>	10	Alive	50	n/a	0.55	
03/04/2016	14-0002	<i>Quercus velutina</i>	15	Alive	70	95	1.23	Core Sample Taken
03/04/2016	14-0001	<i>Quercus montana</i>	21	Alive	75	n/a	2.41	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 12 Plot ID: 15 Percent Slope: 10 Trees Per Acre: 112.26 Site Index: 57 - 58

Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/04/2016	15-0011	<i>Quercus montana</i>	14	Alive	70	n/a	1.07	
03/04/2016	15-0006	<i>Quercus coccinea</i>	19	Alive	70	n/a	1.97	
03/04/2016	15-0005	<i>Quercus montana</i>	7	Alive	40	n/a	0.27	
03/04/2016	15-0004	<i>Acer rubrum</i>	10	Alive	55	n/a	0.55	
03/04/2016	15-0003	<i>Quercus alba</i>	11	Alive	55	n/a	0.66	
03/04/2016	15-0002	<i>Quercus alba</i>	14	Alive	65	n/a	1.07	
03/04/2016	15-0009	<i>Quercus coccinea</i>	15	Alive	70	n/a	1.23	
03/04/2016	15-0008	<i>Quercus montana</i>	23	Alive	75	n/a	2.89	
03/04/2016	15-0007	<i>Quercus coccinea</i>	16	Alive	80	95	1.40	Core Sample Taken
03/04/2016	15-0010	<i>Quercus coccinea</i>	15	Dead	30	n/a	1.23	Snag
03/04/2016	15-0001	<i>Quercus montana</i>	20	Alive	80	100	2.18	Core Sample Taken

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 13 Plot ID: 16 Percent Slope: 15 Trees Per Acre: 42.10 Site Index: 73

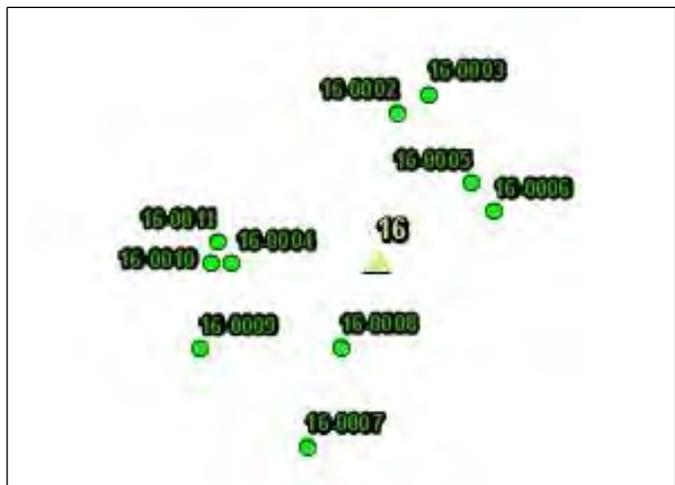
Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/04/2016	16-0011	<i>Quercus rubra</i>	28	Alive	125	n/a	4.28	
03/04/2016	16-0010	<i>Magnolia acuminata</i>	19	Alive	95	n/a	1.97	
03/04/2016	16-0009	<i>Quercus rubra</i>	21	Alive	80	n/a	2.41	
03/04/2016	16-0006	<i>Quercus rubra</i>	23	Alive	100	88	2.89	Core Sample Taken
03/04/2016	16-0005	<i>Magnolia acuminata</i>	20	Alive	110	120	2.18	Core Sample Taken
03/04/2016	16-0003	<i>Quercus montana</i>	23	Alive	110	n/a	2.89	
03/04/2016	16-0002	<i>Quercus rubra</i>	34	Alive	130	n/a	6.30	
03/04/2016	16-0004	<i>Betula lenta</i>	13	Alive	90	n/a	0.92	
03/04/2016	16-0007	<i>Quercus rubra</i>	27	Alive	90	n/a	3.98	
03/04/2016	16-0008	<i>Quercus rubra</i>	15	Alive	75	n/a	1.23	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 14 Plot ID: 17 Percent Slope: 20 Trees Per Acre: 117.03 Site Index: n/a

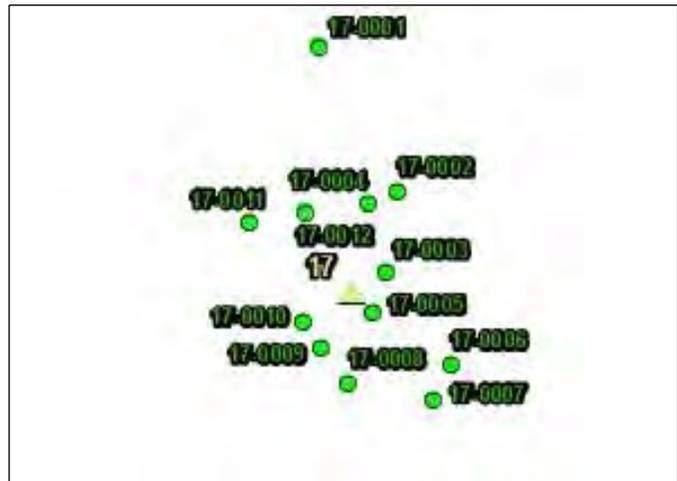
Comments: No cores taken; similar stand composition to plot 18

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/04/2016	17-0010	<i>Quercus montana</i>	9	Alive	60	n/a	0.44	
03/04/2016	17-0009	<i>Quercus montana</i>	9	Alive	60	n/a	0.44	
03/04/2016	17-0008	<i>Quercus montana</i>	20	Alive	80	n/a	2.18	
03/04/2016	17-0007	<i>Quercus montana</i>	13	Alive	75	n/a	0.92	
03/04/2016	17-0006	<i>Quercus montana</i>	12	Alive	70	n/a	0.79	
03/04/2016	17-0005	<i>Acer rubrum</i>	8	Alive	60	n/a	0.35	
03/04/2016	17-0004	<i>Quercus montana</i>	11	Alive	60	n/a	0.66	
03/04/2016	17-0003	<i>Quercus montana</i>	9	Alive	55	n/a	0.44	
03/04/2016	17-0011	<i>Quercus montana</i>	12	Alive	70	n/a	0.79	
03/04/2016	17-0002	<i>Quercus montana</i>	13	Alive	60	n/a	0.92	
03/04/2016	17-0001	<i>Quercus coccinea</i>	15	Alive	80	n/a	1.23	
03/04/2016	17-0012	<i>Oxydendrum arboreum</i>	12	Alive	65	n/a	0.79	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 14 Plot ID: 18 Percent Slope: 20 Trees Per Acre: 117.03 Site Index: 50

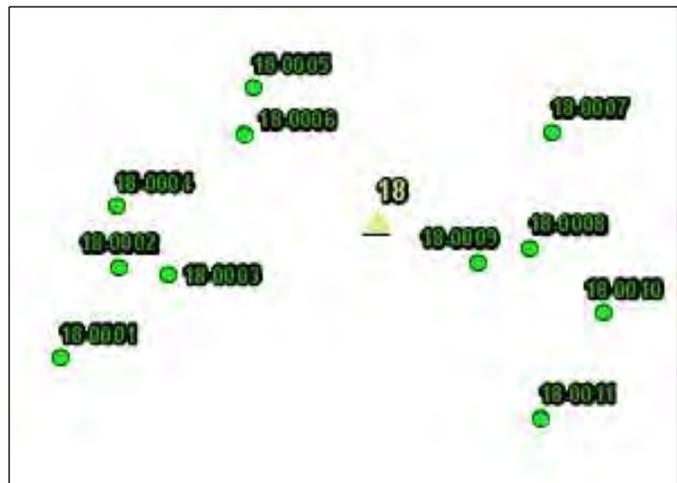
Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/03/2016	18-0009	<i>Quercus montana</i>	14	Alive	70	n/a	1.07	
03/03/2016	18-0008	<i>Quercus montana</i>	19	Alive	75	n/a	1.97	
03/03/2016	18-0007	<i>Quercus montana</i>	32	Alive	85	n/a	5.58	
03/03/2016	18-0006	<i>Quercus montana</i>	23	Alive	80	n/a	2.89	
03/03/2016	18-0005	<i>Quercus velutina</i>	17	Alive	75	90	1.58	Core Sample Taken
03/03/2016	18-0004	<i>Quercus velutina</i>	12	Alive	70	n/a	0.79	
03/03/2016	18-0003	<i>Quercus montana</i>	12	Alive	65	n/a	0.79	
03/03/2016	18-0010	<i>Quercus montana</i>	17	Alive	75	130	1.58	Core Sample Taken
03/03/2016	18-0002	<i>Quercus velutina</i>	19	Alive	85	n/a	1.97	
03/03/2016	18-0001	<i>Quercus coccinea</i>	34	Alive	85	n/a	6.30	
03/03/2016	18-0011	<i>Quercus coccinea</i>	16	Alive	75	n/a	1.40	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 15 Plot ID: 19 Percent Slope: 15 Trees Per Acre: 398.97 Site Index: 60

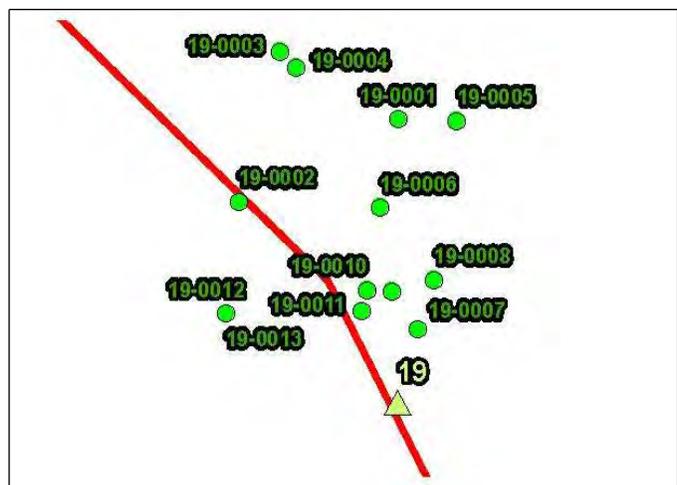
Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/03/2016	19-0011	<i>Quercus montana</i>	11	Dead	55	n/a	0.66	Snag
03/03/2016	19-0010	<i>Quercus montana</i>	11	Dead	60	n/a	0.66	Snag
03/03/2016	19-0009	<i>Acer rubrum</i>	7	Alive	40	n/a	0.27	
03/03/2016	19-0008	<i>Oxydendrum arboreum</i>	5	Alive	25	n/a	0.14	
03/03/2016	19-0007	<i>Quercus velutina</i>	14	Dead	35	n/a	1.07	Snag
03/03/2016	19-0006	<i>Quercus montana</i>	6	Dead	10	n/a	0.20	Snag
03/03/2016	19-0005	<i>Acer rubrum</i>	5	Alive	20	n/a	0.14	
03/03/2016	19-0004	<i>Quercus montana</i>	10	Dead	50	n/a	0.55	Snag
03/03/2016	19-0012	<i>Acer rubrum</i>	11	Alive	60	50	0.66	Core Sample Taken
03/03/2016	19-0003	<i>Quercus montana</i>	14	Dead	55	n/a	1.07	Snag
03/03/2016	19-0013	<i>Acer rubrum</i>	13	Alive	65	n/a	0.92	
03/03/2016	19-0002	<i>Nyssa sylvatica</i>	4	Alive	20	n/a	0.09	
03/03/2016	19-0001	<i>Acer rubrum</i>	10	Alive	55	n/a	0.55	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Giles

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 16 Plot ID: 20 Percent Slope: 20 Trees Per Acre: 288.81 Site Index: 63 - 72

Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/03/2016	20-0001	<i>Quercus alba</i>	17	Alive	80	67	1.58	Core Sample Taken
03/03/2016	20-0010	<i>Prunus serotina</i>	4	Alive	25	n/a	0.09	
03/03/2016	20-0009	<i>Prunus serotina</i>	6	Alive	45	n/a	0.20	
03/03/2016	20-0008	<i>Prunus serotina</i>	6	Alive	40	n/a	0.20	
03/03/2016	20-0007	<i>Liriodendron tulipifera</i>	11	Alive	65	n/a	0.66	
03/03/2016	20-0006	<i>Liriodendron tulipifera</i>	8	Alive	55	n/a	0.35	
03/03/2016	20-0005	<i>Quercus alba</i>	27	Alive	85	n/a	3.98	
03/03/2016	20-0002	<i>Quercus velutina</i>	19	Alive	80	82	1.97	Core Sample Taken
03/03/2016	20-0004	<i>Acer rubrum</i>	17	Alive	70	n/a	1.58	
03/03/2016	20-0003	<i>Quercus montana</i>	11	Alive	80	60	0.66	Core Sample Taken

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 17 Plot ID: 21 Percent Slope: 30 Trees Per Acre: 120.31 Site Index: 37 - 50

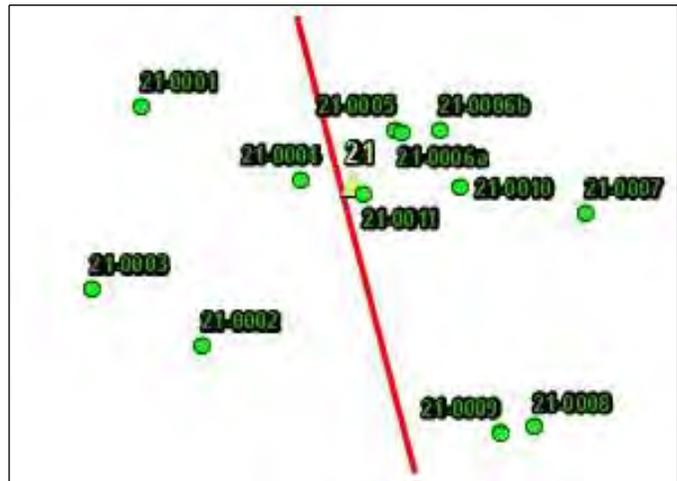
Comments: Plot moved downslope to avoid boulders; also moved eastward to match centerline flagging

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/05/2016	21-0009	<i>Quercus montana</i>	13	Dead	45	n/a	0.92	Snag
03/05/2016	21-0008	<i>Quercus montana</i>	25	Dead	30	n/a	3.41	Snag
03/05/2016	21-0007	<i>Carya tomentosa</i>	13	Alive	65	n/a	0.92	
03/05/2016	21-0006b	<i>Nyssa sylvatica</i>	8	Alive	45	n/a	0.35	
03/05/2016	21-0006a	<i>Carya tomentosa</i>	10	Alive	40	n/a	0.55	Leaning
03/05/2016	21-0005	<i>Quercus velutina</i>	10	Alive	55	n/a	0.55	
03/05/2016	21-0004	<i>Quercus velutina</i>	10	Alive	55	n/a	0.55	
03/05/2016	21-0003	<i>Quercus montana</i>	14	Alive	70	n/a	1.07	
03/05/2016	21-0002	<i>Quercus velutina</i>	19	Alive	75	n/a	1.97	
03/05/2016	21-0001	<i>Quercus velutina</i>	21	Alive	75	147	2.41	Core Sample Taken
03/05/2016	21-0011	<i>Carya tomentosa</i>	12	Alive	60	125	0.79	Core Sample Taken
03/05/2016	21-0010	<i>Quercus montana</i>	10	Alive	45	n/a	0.55	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 17 Plot ID: 22 Percent Slope: 20 Trees Per Acre: 120.31 Site Index: n/a

Comments: No cores taken; similar stand composition to plot 21

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/05/2016	22-0009	<i>Quercus montana</i>	19	Alive	70	n/a	1.97	
03/05/2016	22-0008	<i>Quercus montana</i>	11	Alive	60	n/a	0.66	
03/05/2016	22-0007	<i>Quercus montana</i>	7	Alive	45	n/a	0.27	
03/05/2016	22-0006	<i>Acer rubrum</i>	10	Alive	55	n/a	0.55	
03/05/2016	22-0005	<i>Oxydendrum arboreum</i>	8	Alive	30	n/a	0.35	
03/05/2016	22-0004	<i>Carya tomentosa</i>	11	Alive	65	n/a	0.66	
03/05/2016	22-0003	<i>Quercus velutina</i>	19	Alive	80	n/a	1.97	
03/05/2016	22-0010	<i>Pinus virginiana</i>	18	Alive	80	n/a	1.77	Bear claw marks
03/05/2016	22-0002	<i>Pinus virginiana</i>	18	Alive	85	n/a	1.77	
03/05/2016	22-0001	<i>Quercus velutina</i>	21	Alive	75	n/a	2.41	
03/05/2016	22-0011	<i>Quercus alba</i>	25	Alive	75	n/a	3.41	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 18 Plot ID: 23 Percent Slope: 15 Trees Per Acre: 36.41 Site Index: 55 - 111

Comments: Spring/stream through plot

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/05/2016	23-0010	<i>Liriodendron tulipifera</i>	23	Alive	125	83	2.89	Core Sample Taken
03/05/2016	23-0009	<i>Liriodendron tulipifera</i>	24	Alive	130	n/a	3.14	
03/05/2016	23-0008	<i>Liriodendron tulipifera</i>	15	Alive	120	n/a	1.23	
03/05/2016	23-0007	<i>Quercus montana</i>	19	Alive	80	n/a	1.97	
03/05/2016	23-0006	<i>Quercus montana</i>	18	Alive	80	137	1.77	Core Sample Taken
03/05/2016	23-0005	<i>Quercus montana</i>	32	Alive	90	n/a	5.58	
03/05/2016	23-0004	<i>Quercus montana</i>	29	Dead	70	n/a	4.59	Snag
03/05/2016	23-0003	<i>Liriodendron tulipifera</i>	41	Alive	125	n/a	9.17	
03/05/2016	23-0002	<i>Liriodendron tulipifera</i>	19	Alive	125	n/a	1.97	
03/05/2016	23-0001	<i>Liriodendron tulipifera</i>	23	Alive	130	n/a	2.89	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 19 Plot ID: 24 Percent Slope: 20 Trees Per Acre: 272.60 Site Index: 92

Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/05/2016	24-0010	<i>Acer rubrum</i>	10	Alive	70	n/a	0.55	
03/05/2016	24-0009	<i>Acer rubrum</i>	11	Alive	70	n/a	0.66	
03/05/2016	24-0008	<i>Quercus velutina</i>	8	Alive	65	n/a	0.35	
03/05/2016	24-0007	<i>Quercus velutina</i>	12	Alive	75	35	0.79	Core Sample Taken
03/05/2016	24-0006	<i>Quercus montana</i>	8	Alive	70	n/a	0.35	
03/05/2016	24-0005	<i>Quercus velutina</i>	12	Alive	75	n/a	0.79	
03/05/2016	24-0004	<i>Quercus velutina</i>	12	Alive	70	n/a	0.79	
03/05/2016	24-0011	<i>Betula lenta</i>	4	Alive	40	n/a	0.09	
03/05/2016	24-0003	<i>Quercus velutina</i>	11	Alive	70	n/a	0.66	
03/05/2016	24-0002	<i>Quercus montana</i>	14	Alive	75	n/a	1.07	
03/05/2016	24-0001	<i>Quercus coccinea</i>	14	Alive	80	n/a	1.07	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 20 Plot ID: 25 Percent Slope: 15 Trees Per Acre: 201.24 Site Index: 86

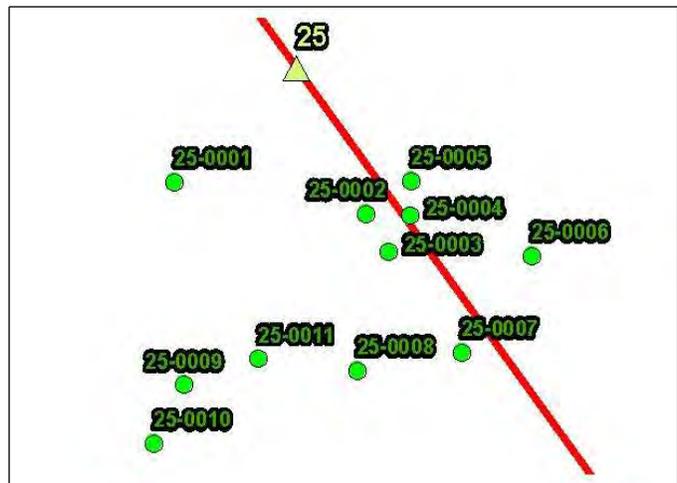
Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/05/2016	25-0009	<i>Liriodendron tulipifera</i>	8	Alive	80	n/a	0.35	
03/05/2016	25-0010	<i>Liriodendron tulipifera</i>	11	Alive	85	n/a	0.66	
03/05/2016	25-0008	<i>Quercus coccinea</i>	9	Alive	80	n/a	0.44	
03/05/2016	25-0007	<i>Liriodendron tulipifera</i>	13	Alive	95	n/a	0.92	
03/05/2016	25-0006	<i>Liriodendron tulipifera</i>	9	Alive	90	n/a	0.44	
03/05/2016	25-0005	<i>Liriodendron tulipifera</i>	8	Alive	70	n/a	0.35	
03/05/2016	25-0004	<i>Liriodendron tulipifera</i>	11	Alive	90	n/a	0.66	
03/05/2016	25-0003	<i>Carya glabra</i>	8	Alive	70	n/a	0.35	
03/05/2016	25-0002	<i>Quercus montana</i>	12	Alive	75	n/a	0.79	
03/05/2016	25-0001	<i>Liriodendron tulipifera</i>	10	Alive	80	40	0.55	Core Sample Taken
03/05/2016	25-0011	<i>Quercus coccinea</i>	11	Alive	85	n/a	0.66	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 21 Plot ID: 26 Percent Slope: 2 Trees Per Acre: 208.59 Site Index: 61 - 76

Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/05/2016	26-0010	<i>Quercus coccinea</i>	10	Dead	50	n/a	0.55	Snag
03/05/2016	26-0009	<i>Quercus coccinea</i>	5	Alive	45	n/a	0.14	
03/05/2016	26-0008	<i>Quercus coccinea</i>	12	Alive	85	n/a	0.79	
03/05/2016	26-0007	<i>Pinus strobus</i>	15	Alive	85	n/a	1.23	
03/05/2016	26-0006	<i>Liriodendron tulipifera</i>	8	Alive	70	n/a	0.35	
03/05/2016	26-0005	<i>Liriodendron tulipifera</i>	10	Alive	80	n/a	0.55	
03/05/2016	26-0004	<i>Liriodendron tulipifera</i>	7	Alive	70	n/a	0.27	
03/05/2016	26-0003	<i>Quercus coccinea</i>	11	Alive	75	n/a	0.66	
03/05/2016	26-0002	<i>Quercus coccinea</i>	10	Alive	70	43	0.55	Core Sample Taken
03/05/2016	26-0001	<i>Pinus strobus</i>	11	Alive	75	35	0.66	Core Sample Taken

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 22 Plot ID: 27 Percent Slope: 2 Trees Per Acre: 222.00 Site Index: 70

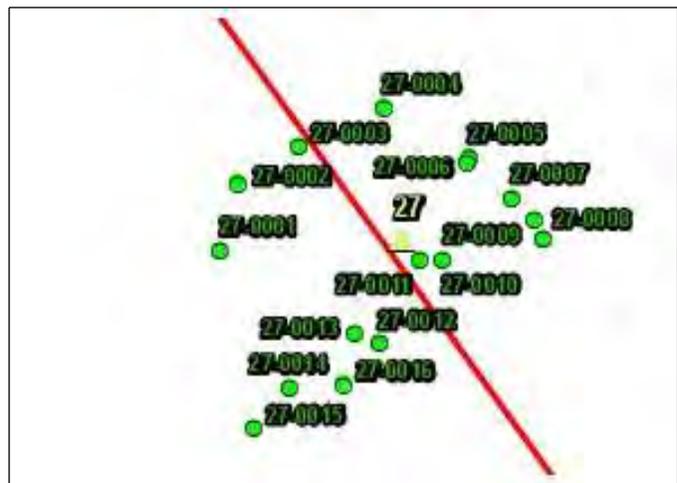
Comments: Core taken: plot moved to centerline flagging

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/06/2016	27-0016	<i>Pinus strobus</i>	21	Alive	100	n/a	2.41	
03/06/2016	27-0011	<i>Pinus strobus</i>	11	Alive	60	n/a	0.66	
03/06/2016	27-0013	<i>Pinus strobus</i>	10	Alive	50	n/a	0.55	
03/06/2016	27-0010	<i>Pinus strobus</i>	6	Alive	45	n/a	0.20	
03/06/2016	27-0009	<i>Pinus strobus</i>	18	Alive	90	n/a	1.77	
03/06/2016	27-0008	<i>Quercus coccinea</i>	14	Alive	90	n/a	1.07	
03/06/2016	27-0007	<i>Liriodendron tulipifera</i>	13	Alive	90	n/a	0.92	
03/06/2016	27-0006	<i>Quercus coccinea</i>	11	Alive	60	n/a	0.66	
03/06/2016	27-0015	<i>Quercus coccinea</i>	18	Alive	70	n/a	1.77	
03/06/2016	27-0005	<i>Pinus strobus</i>	18	Alive	70	n/a	1.77	
03/06/2016	27-0004	<i>Quercus alba</i>	8	Alive	55	n/a	0.35	
03/06/2016	27-0003	<i>Pinus strobus</i>	22	Alive	100	n/a	2.64	
03/06/2016	27-0002	<i>Quercus coccinea</i>	21	Alive	90	n/a	2.41	
03/06/2016	27-0014	<i>Pinus virginiana</i>	9	Dead	50	n/a	0.44	Snag
03/06/2016	27-0012	<i>Pinus strobus</i>	8	Alive	50	n/a	0.35	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 23 Plot ID: 28 Percent Slope: 10 Trees Per Acre: 296.51 Site Index: n/a

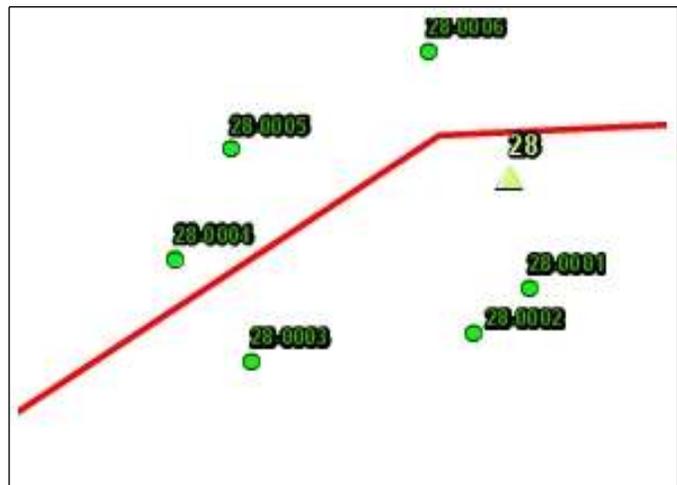
Comments: Moved to centerline flagging

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/06/2016	28-0006	<i>Quercus coccinea</i>	18	Alive	65	n/a	1.77	
03/06/2016	28-0005	<i>Quercus alba</i>	7	Alive	40	n/a	0.27	
03/06/2016	28-0004	<i>Quercus coccinea</i>	13	Alive	55	n/a	0.92	
03/06/2016	28-0003	<i>Acer rubrum</i>	3	Dead	25	n/a	0.05	
03/06/2016	28-0002	<i>Quercus coccinea</i>	13	Dead	60	n/a	0.92	
03/06/2016	28-0001	<i>Quercus coccinea</i>	16	Alive	75	n/a	1.40	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 23 Plot ID: 29 Percent Slope: 15 Trees Per Acre: 296.51 Site Index: 55

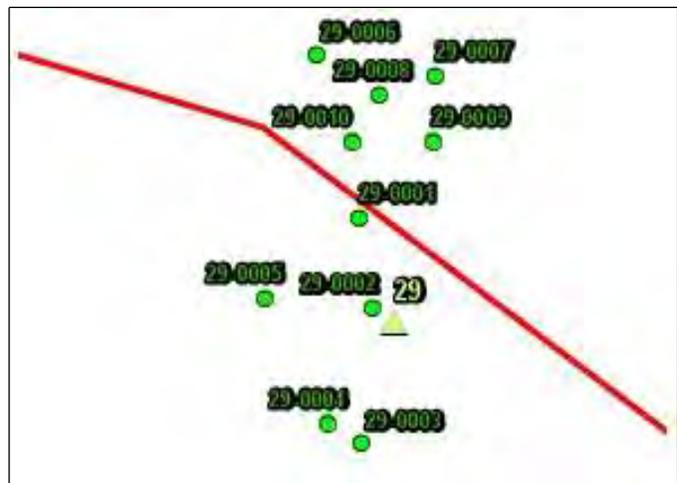
Comments: _____

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/06/2016	29-0006	<i>Quercus coccinea</i>	21	Alive	70	n/a	2.41	
03/06/2016	29-0004	<i>Quercus montana</i>	10	Alive	60	n/a	0.55	
03/06/2016	29-0003	<i>Quercus coccinea</i>	17	Alive	70	n/a	1.58	
03/06/2016	29-0005	<i>Quercus montana</i>	10	Alive	60	n/a	0.55	
03/06/2016	29-0002	<i>Quercus montana</i>	9	Alive	35	n/a	0.44	
03/06/2016	29-0001	<i>Quercus coccinea</i>	19	Alive	70	81	1.97	Core Sample Taken
03/06/2016	29-0010	<i>Quercus montana</i>	7	Alive	50	n/a	0.27	
03/06/2016	29-0009	<i>Quercus coccinea</i>	18	Alive	70	n/a	1.77	
03/06/2016	29-0008	<i>Quercus coccinea</i>	12	Alive	65	n/a	0.79	
03/06/2016	29-0007	<i>Quercus coccinea</i>	17	Alive	80	n/a	1.58	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 24 Plot ID: 30 Percent Slope: 2 Trees Per Acre: 588.89 Site Index: <30

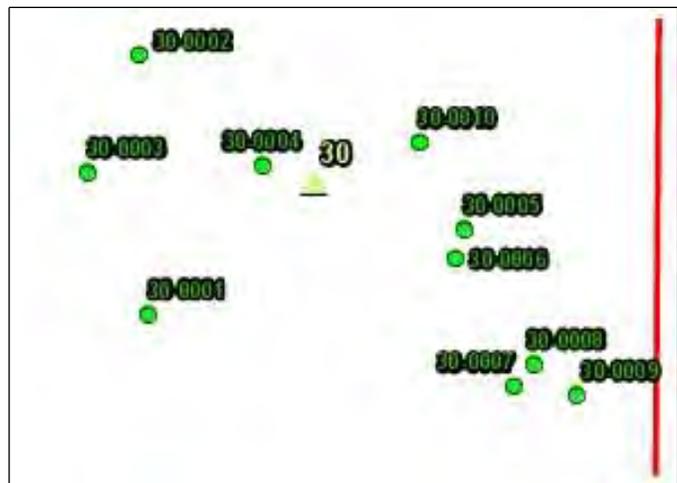
Comments: Moved to where flagging occurs

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/06/2016	30-0007	<i>Quercus montana</i>	7	Alive	30	n/a	0.27	
03/06/2016	30-0005	<i>Quercus montana</i>	8	Alive	30	75	0.35	Core Sample Taken
03/06/2016	30-0004	<i>Quercus montana</i>	4	Alive	25	n/a	0.09	
03/06/2016	30-0003	<i>Quercus montana</i>	5	Alive	25	n/a	0.14	
03/06/2016	30-0002	<i>Quercus montana</i>	6	Alive	25	n/a	0.20	
03/06/2016	30-0001	<i>Pinus pungens</i>	7	Alive	25	n/a	0.27	
03/06/2016	30-0006	<i>Quercus montana</i>	7	Alive	30	n/a	0.27	
03/06/2016	30-0010	<i>Quercus montana</i>	4	Alive	20	n/a	0.09	
03/06/2016	30-0009	<i>Quercus coccinea</i>	7	Alive	35	n/a	0.27	
03/06/2016	30-0008	<i>Quercus montana</i>	4	Alive	15	n/a	0.09	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 25 Plot ID: 31 Percent Slope: 15 Trees Per Acre: 422.65 Site Index: n/a

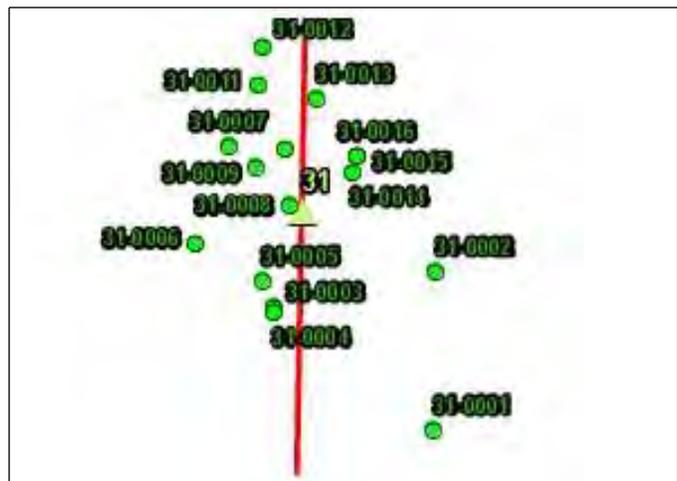
Comments: No cores taken; similar stand conditions to plot 34

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/06/2016	31-0009	<i>Nyssa sylvatica</i>	4	Alive	15	n/a	0.09	
03/06/2016	31-0008	<i>Pinus pungens</i>	8	Alive	40	n/a	0.35	
03/06/2016	31-0007	<i>Pinus pungens</i>	12	Alive	50	n/a	0.79	
03/06/2016	31-0006	<i>Pinus pungens</i>	13	Alive	50	n/a	0.92	
03/06/2016	31-0005	<i>Pinus pungens</i>	5	Alive	30	n/a	0.14	
03/06/2016	31-0004	<i>Quercus coccinea</i>	8	Alive	50	n/a	0.35	
03/06/2016	31-0003	<i>Quercus coccinea</i>	9	Alive	50	n/a	0.44	
03/06/2016	31-0016	<i>Quercus montana</i>	10	Alive	50	n/a	0.55	
03/06/2016	31-0015	<i>Quercus montana</i>	10	Alive	50	n/a	0.55	
03/06/2016	31-0014	<i>Quercus montana</i>	11	Alive	50	n/a	0.66	
03/06/2016	31-0002	<i>Pinus pungens</i>	11	Alive	45	n/a	0.66	
03/06/2016	31-0013	<i>Quercus montana</i>	11	Alive	50	n/a	0.66	
03/06/2016	31-0011	<i>Pinus pungens</i>	10	Alive	50	n/a	0.55	
03/06/2016	31-0001	<i>Pinus pungens</i>	11	Alive	40	n/a	0.66	
03/06/2016	31-0012	<i>Pinus pungens</i>	10	Alive	50	n/a	0.55	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 25 Plot ID: 32 Percent Slope: 25 Trees Per Acre: 422.65 Site Index: n/a

Comments: No cores taken; same stand

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/06/2016	32-0008	<i>Quercus montana</i>	8	Alive	30	n/a	0.35	
03/06/2016	32-0007	<i>Quercus montana</i>	8	Alive	30	n/a	0.35	
03/06/2016	32-0006	<i>Nyssa sylvatica</i>	2	Alive	15	n/a	0.02	
03/06/2016	32-0005	<i>Quercus coccinea</i>	8	Alive	35	n/a	0.35	
03/06/2016	32-0004	<i>Quercus montana</i>	12	Alive	35	n/a	0.79	
03/06/2016	32-0003	<i>Quercus montana</i>	3	Alive	15	n/a	0.05	
03/06/2016	32-0002	<i>Quercus montana</i>	4	Alive	20	n/a	0.09	
03/06/2016	32-0001	<i>Pinus pungens</i>	10	Dead	20	n/a	0.55	Snag
03/06/2016	32-0009	<i>Quercus montana</i>	12	Alive	35	n/a	0.79	

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 25 Plot ID: 33 Percent Slope: 30 Trees Per Acre: 422.65 Site Index: n/a

Comments: Plot moved to reflect centerline flagging

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
03/06/2016	33-0008	<i>Quercus montana</i>	8	Alive	15	n/a	0.35	
03/06/2016	33-0007	<i>Quercus montana</i>	8	Alive	20	n/a	0.35	
03/06/2016	33-0006	<i>Quercus montana</i>	4	Alive	10	n/a	0.09	
03/06/2016	33-0005b	<i>Quercus montana</i>	7	Alive	15	n/a	0.27	
03/06/2016	33-0005a	<i>Quercus montana</i>	6	Alive	15	n/a	0.20	
03/06/2016	33-0004	<i>Quercus montana</i>	7	Alive	25	n/a	0.27	
03/06/2016	33-0003	<i>Quercus montana</i>	11	Alive	25	n/a	0.66	
03/06/2016	33-0002	<i>Pinus pungens</i>	10	Alive	30	n/a	0.55	
03/06/2016	33-0001	<i>Pinus pungens</i>	11	Alive	25	62	0.66	Core Sample Taken

Plot Photo



Tree Location Map





Tree Plot Survey Data

Project Number: 593.02 Project Name: MVP - JNF Tree Survey 2016 State: Virginia County: Montgomery

Permitted Staff: Valerie Clarkston Field Technician: Doug Gilbert

Stand ID: 25 Plot ID: 34 Percent Slope: 15 Trees Per Acre: 422.65 Site Index: 40

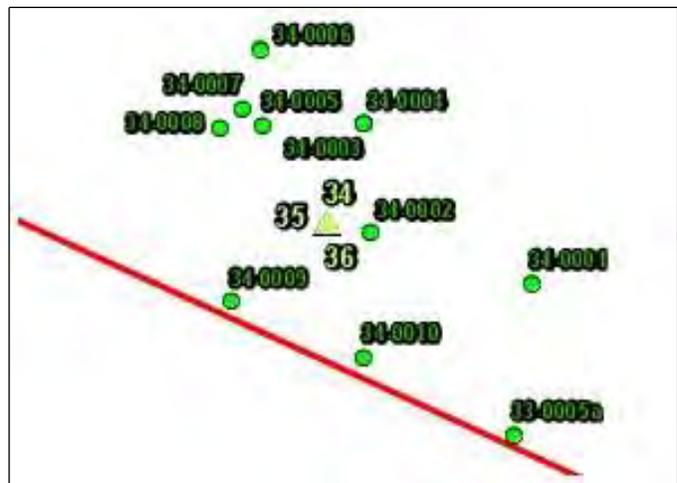
Comments: Moved based on centerline flagging

Date	Tree ID	Tree Species	Tree DBH	Tree Status	Tree Height	Estimated Tree Age	Tree Basal Area (SqFt)	Comments
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03/06/2016	34-0008	<i>Quercus montana</i>	7	Alive	30	n/a	0.27	
03/06/2016	34-0007	<i>Quercus montana</i>	5	Alive	25	n/a	0.14	
03/06/2016	34-0006	<i>Quercus montana</i>	19	Alive	55	n/a	1.97	
03/06/2016	34-0005	<i>Quercus montana</i>	14	Alive	55	n/a	1.07	
03/06/2016	34-0004	<i>Quercus montana</i>	11	Alive	50	n/a	0.66	
03/06/2016	34-0003	<i>Quercus montana</i>	9	Alive	20	n/a	0.44	
03/06/2016	34-0002	<i>Quercus montana</i>	10	Alive	50	n/a	0.55	
03/06/2016	34-0001	<i>Quercus montana</i>	11	Alive	50	75	0.66	Core Sample Taken
03/06/2016	34-0010	<i>Pinus pungens</i>	9	Alive	50	n/a	0.44	

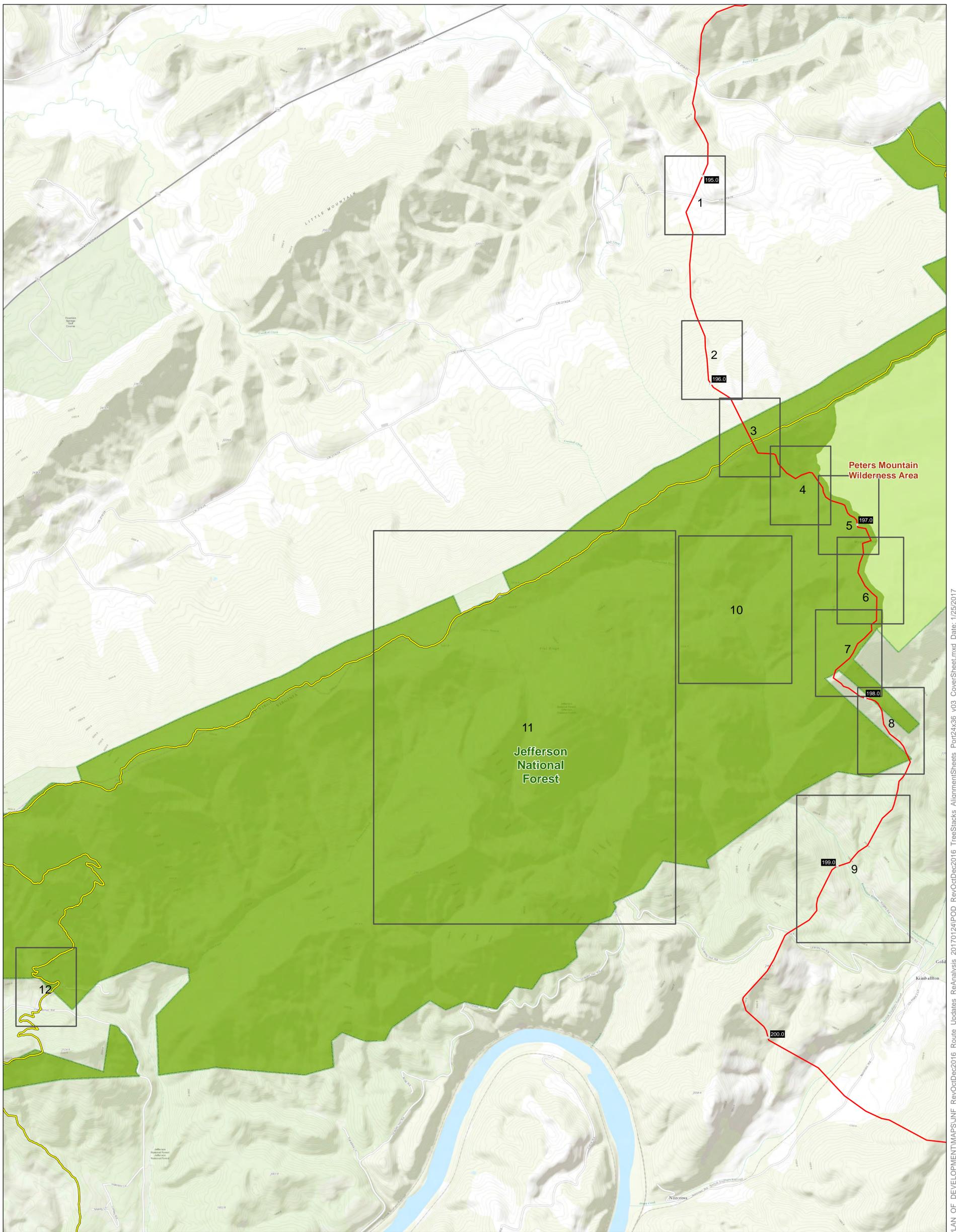
Plot Photo



Tree Location Map

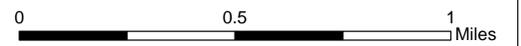


**ATTACHMENT B
FIGURES DISPLAYING TIMBER HAULING ROUTES AND LANDING
AREAS**

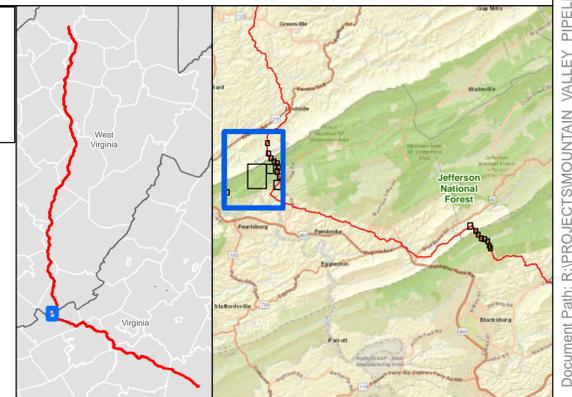
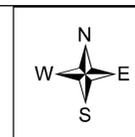


Mountain Valley Pipeline Project

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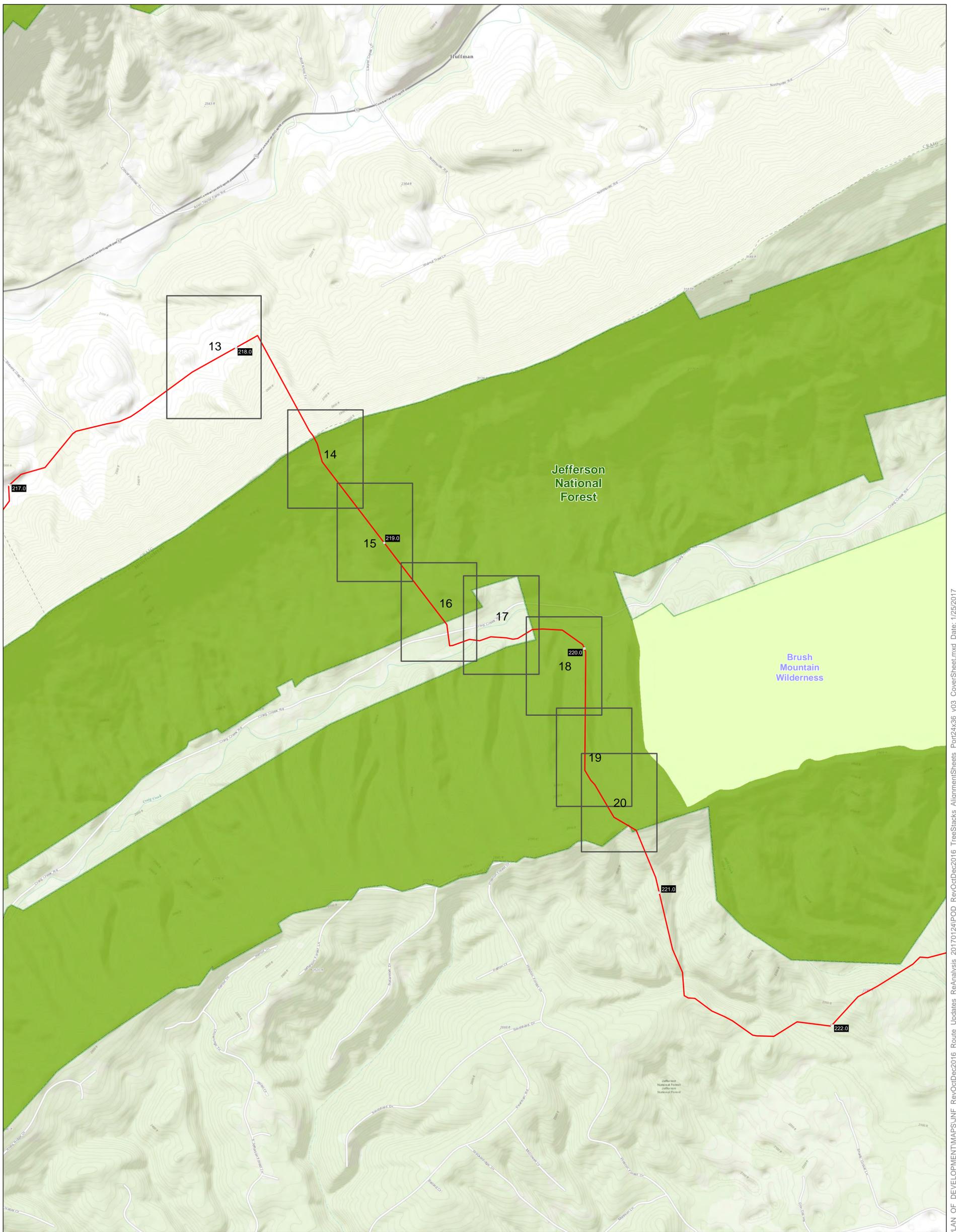
- Legend**
- Map Sheet Index
 - Mile
 - October 2016 Proposed Route Revised December 2016
 - Appalachian National Scenic Trail
 - Wilderness Area
 - U.S. Forest Service (National Forest) Lands



**Tree Stack and Access
Map Index North**

January 2017

Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

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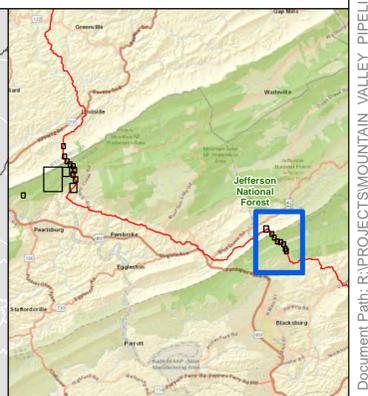
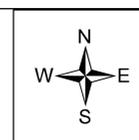


**Tree Stack and Access
Map Index South**

January 2017

Legend

- Map Sheet Index
- Mile
- October 2016 Proposed Route Revised December 2016
- Appalachian National Scenic Trail
- Wilderness Area
- U.S. Forest Service (National Forest) Lands



Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

NAD 1983 UTM 17N

1:800



Tree Stack and Access

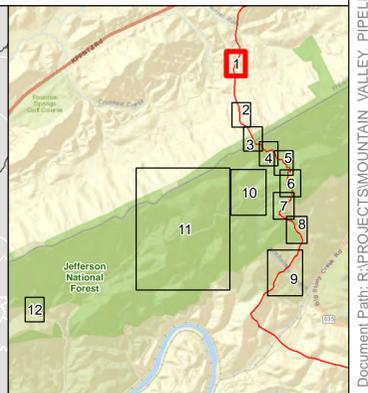
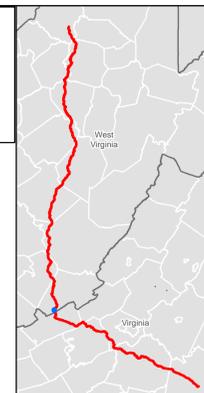
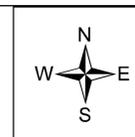
Page 1 of 20

January 2017

Legend

- 50foot Contour (NED10m)
- Mile
- Tenth-mile
- October 2016 Proposed Route Revised December 2016
- Appalachian National Scenic Trail
- Permanent Impact
- Temporary Impact
- Road

- Timber Stacking Area
- Timber Staging Area
- Access Point



Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

NAD 1983 UTM 17N

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Tree Stack and Access

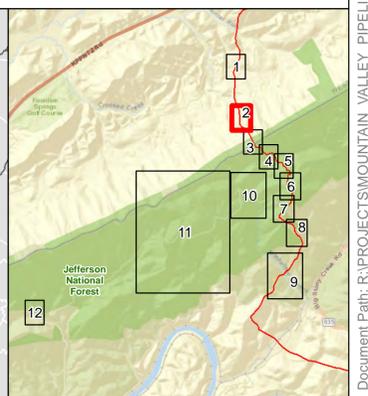
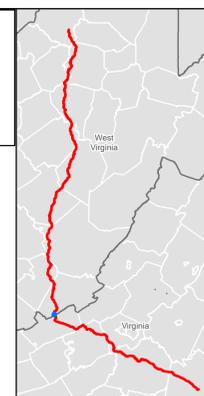
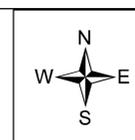
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January 2017

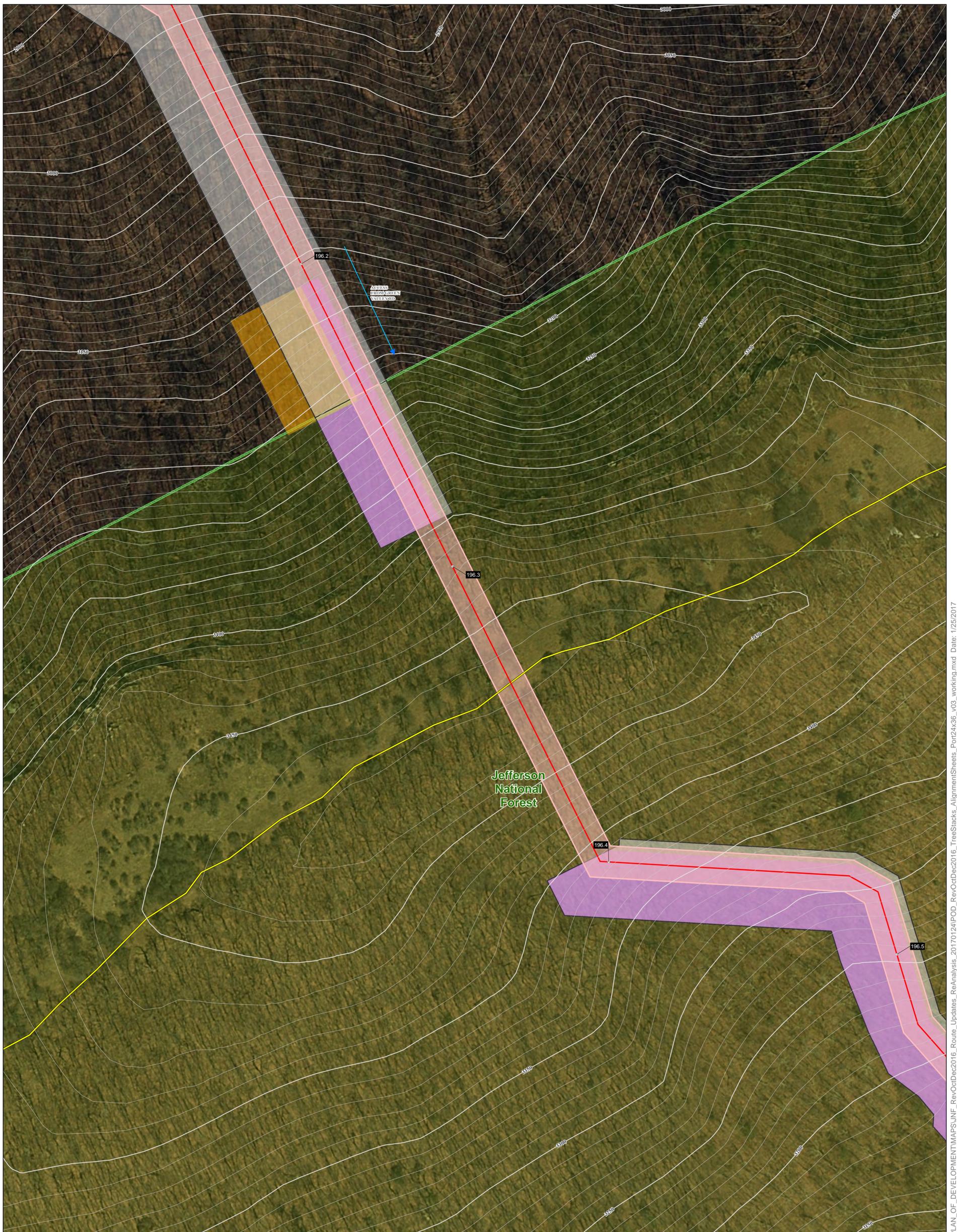
Legend

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- Timber Staging Area
- Access Point



Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

NAD 1983 UTM 17N

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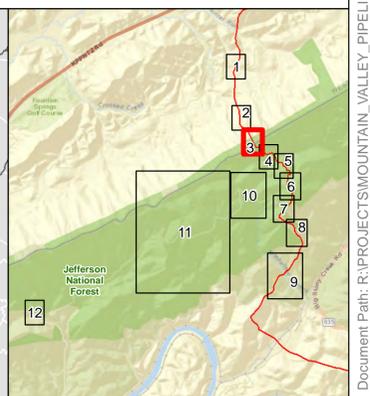
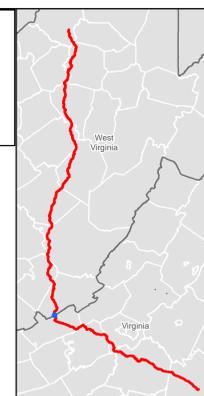
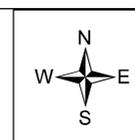
Tree Stack and Access

Page 3 of 20

January 2017

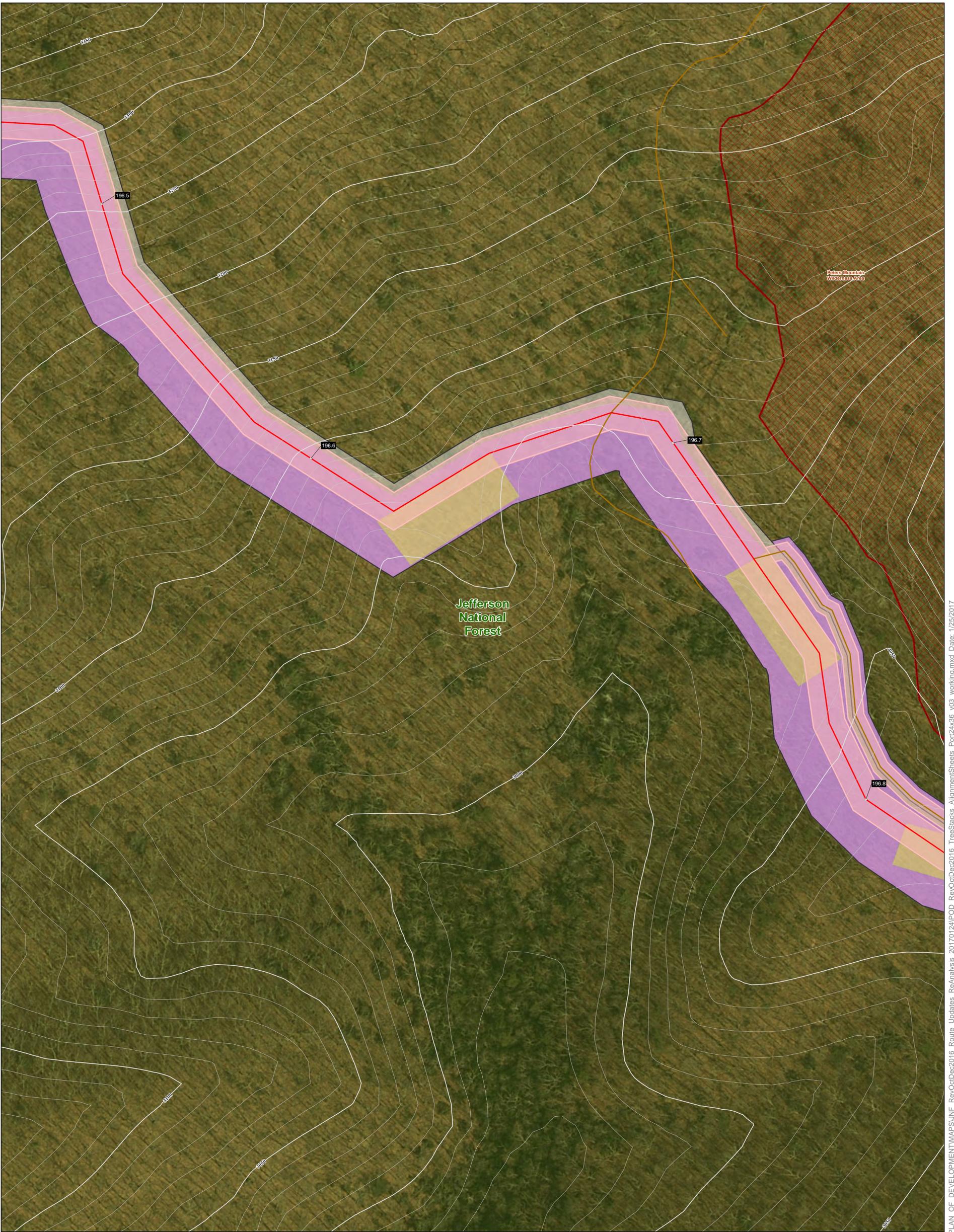
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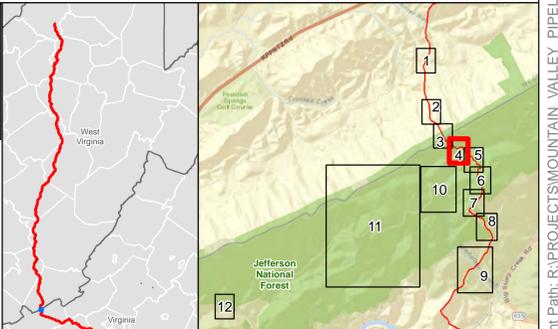
- 50foot Contour (NED10m)
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Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



<p>Mountain Valley Pipeline Project</p>	<p>NAD 1983 UTM 17N 1:800</p>	<p>0 250 500 Feet</p>
 <p>Tree Stack and Access</p> <p>Page 4 of 20</p> <p>January 2017</p>	<p>Legend</p> <ul style="list-style-type: none"> 50foot Contour (NED10m) Tenth-mile October 2016 Proposed Route Revised December 2016 Appalachian National Scenic Trail Permanent Impact Temporary Impact Peters Mountain Wilderness U.S. Forest Service (National Forest) Lands Road Timber Stacking Area Timber Staging Area Access Point 	 <p>W N E S</p> <p>West Virginia Virginia</p> <p>1 2 3 4 5 6 7 8 9 10 11 12</p>
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Mountain Valley Pipeline Project

NAD 1983 UTM 17N

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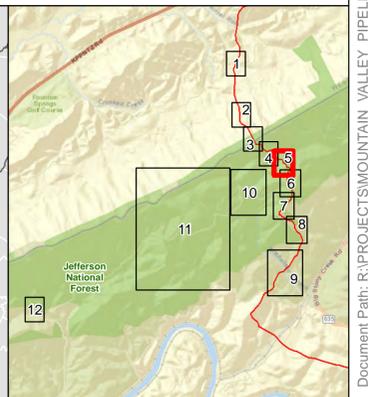
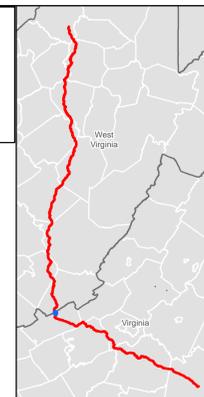
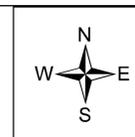
Tree Stack and Access

Page 5 of 20

January 2017

Legend

- 50foot Contour (NED10m)
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Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

NAD 1983 UTM 17N

1:800



Tree Stack and Access

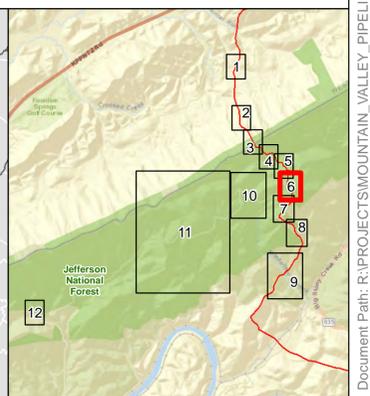
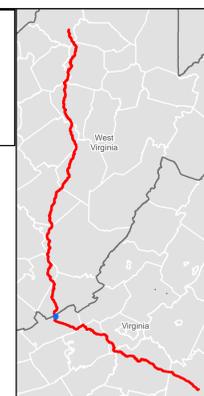
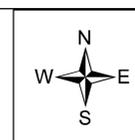
Page 6 of 20

January 2017

Legend

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Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

NAD 1983 UTM 17N

1:800



Tree Stack and Access

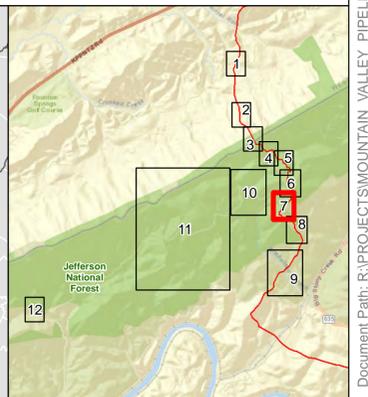
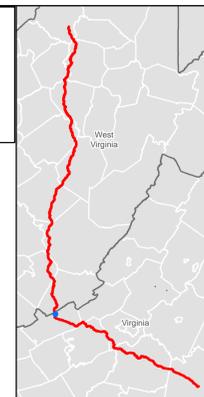
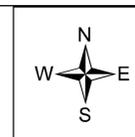
Page 7 of 20

January 2017

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Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

NAD 1983 UTM 17N

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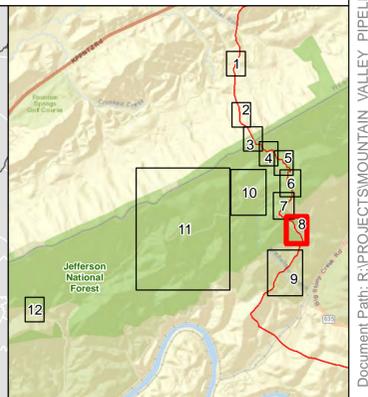
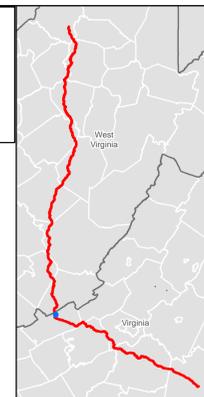
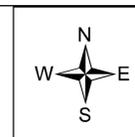
Tree Stack and Access

Page 8 of 20

January 2017

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Mountain Valley Pipeline Project

NAD 1983 UTM 17N

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0 250 500 Feet



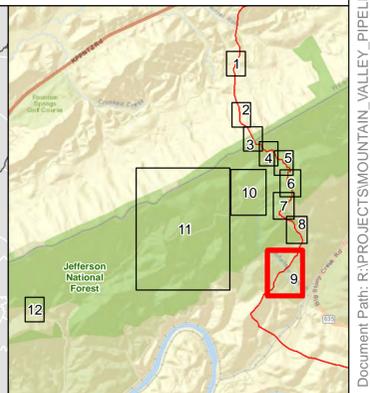
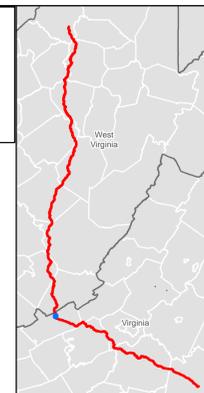
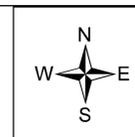
Tree Stack and Access

Page 9 of 20

January 2017

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Mountain Valley Pipeline Project

NAD 1983 UTM 17N

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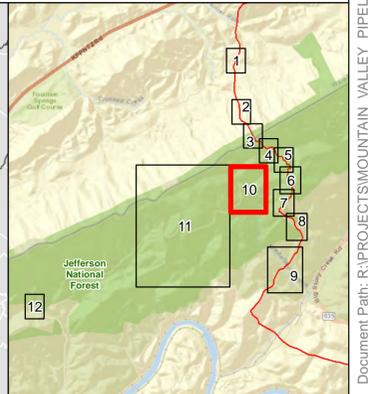
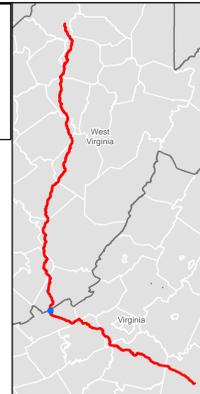
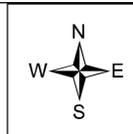
Tree Stack and Access

Page 10 of 20

January 2017

Legend

- 50foot Contour (NED10m)
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Mountain Valley Pipeline Project

NAD 1983 UTM 17N

1:4,000

0 250 500 Feet



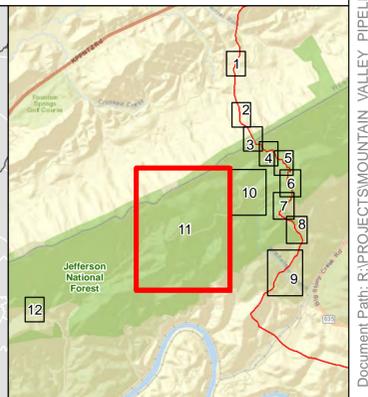
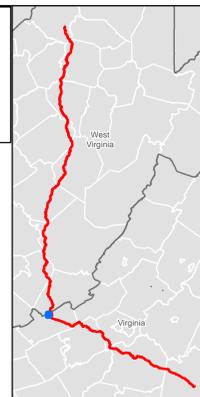
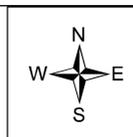
Tree Stack and Access

Page 11 of 20

January 2017

Legend

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Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

NAD 1983 UTM 17N

1:800



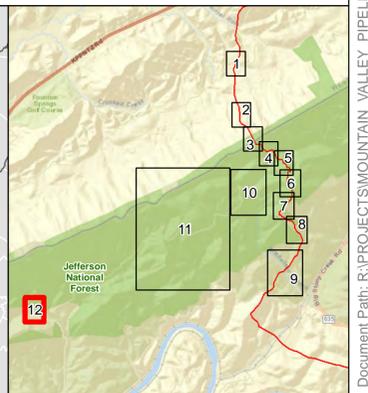
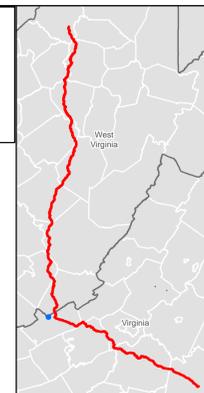
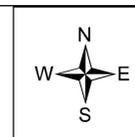
Tree Stack and Access

Page 12 of 20

January 2017

Legend

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Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

NAD 1983 UTM 17N

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Tree Stack and Access

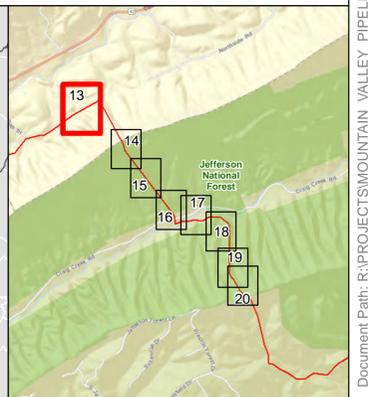
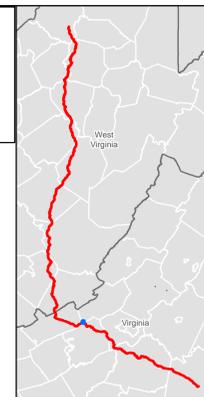
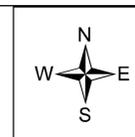
Page 13 of 20

January 2017

Legend

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Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

NAD 1983 UTM 17N

1:800



Tree Stack and Access

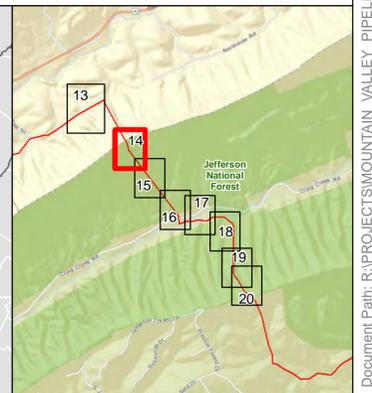
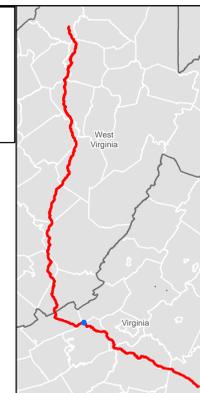
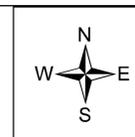
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January 2017

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Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

NAD 1983 UTM 17N 1:800



Tree Stack and Access

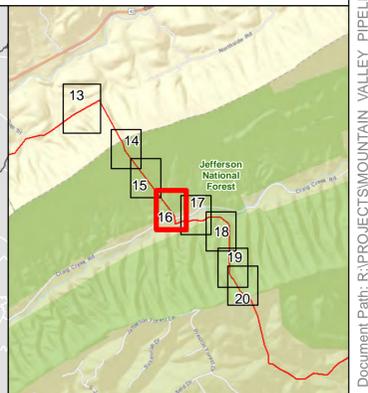
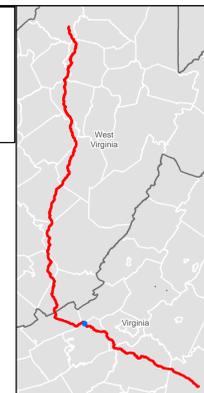
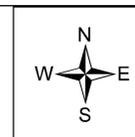
Page 16 of 20

January 2017

Legend

- 50foot Contour (NED10m)
- Tenth-mile
- October 2016 Proposed Route Revised December 2016
- Appalachian National Scenic Trail
- Permanent Impact
- Temporary Impact
- U.S. Forest Service (National Forest) Lands
- Road

- Timber Stacking Area
- Timber Staging Area
- Access Point



Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project

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1:800



Tree Stack and Access

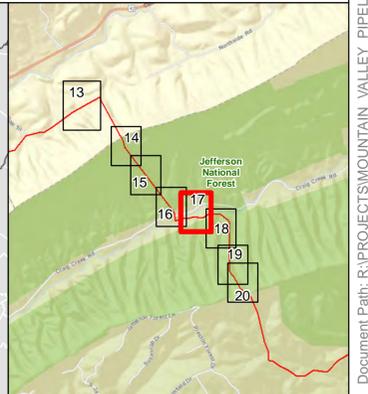
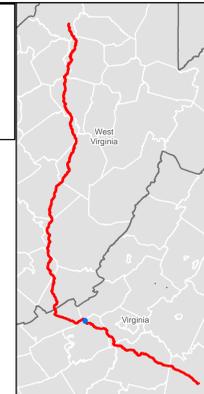
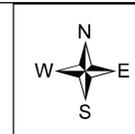
Page 17 of 20

January 2017

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Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Jefferson National Forest

Mountain Valley Pipeline Project

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Tree Stack and Access

Page 18 of 20

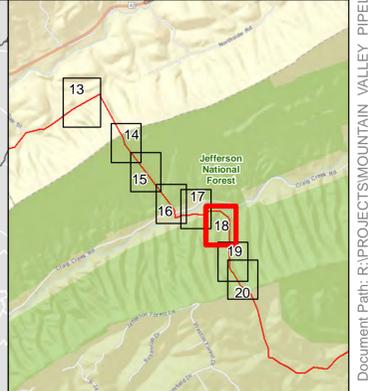
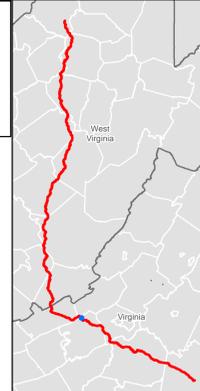
January 2017

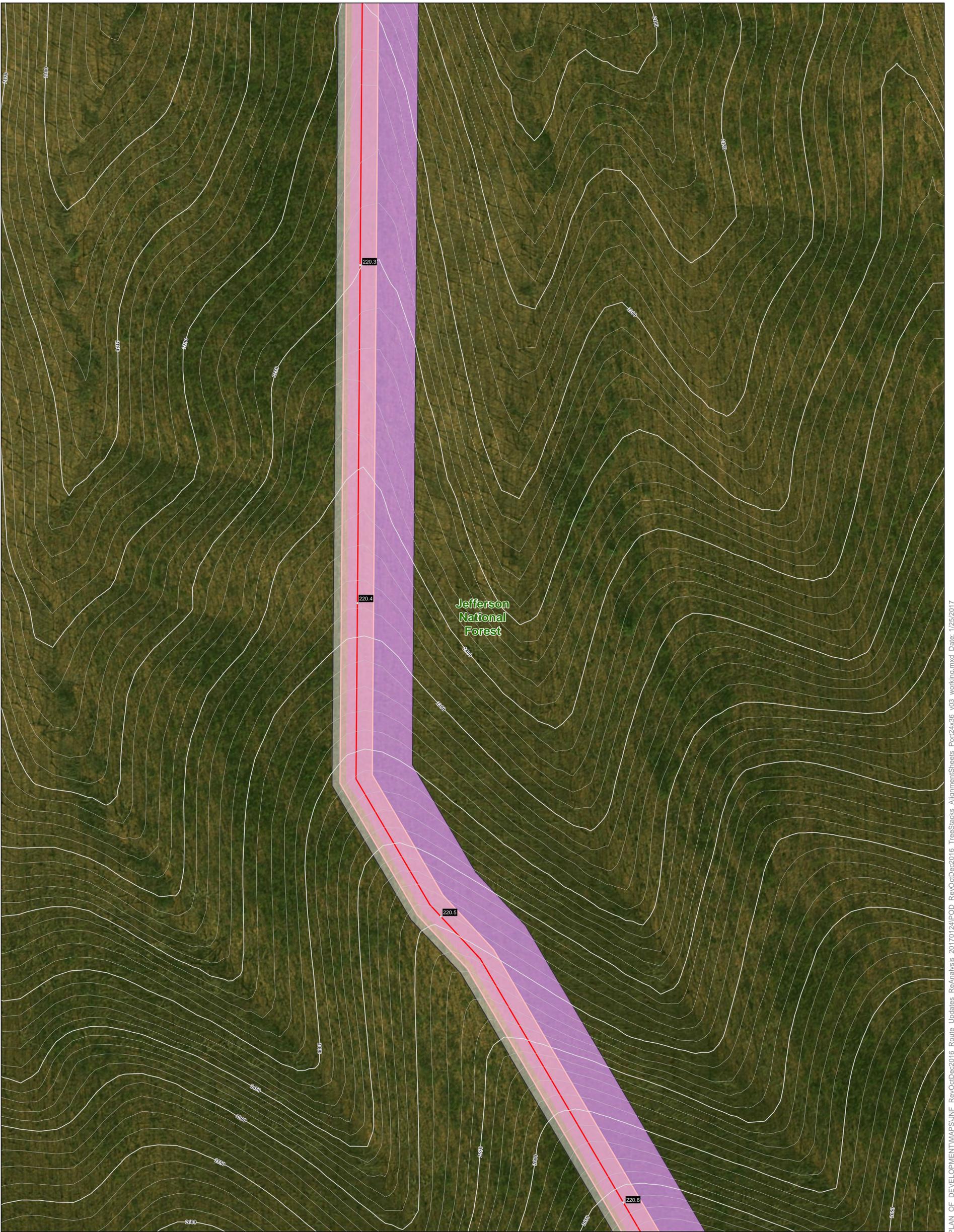
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Legend

- 50foot Contour (NED10m)
- Mile
- Tenth-mile
- October 2016 Proposed Route Revised December 2016
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- Permanent Impact
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- Timber Staging Area
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Mountain Valley Pipeline Project

NAD 1983 UTM 17N

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Tree Stack and Access

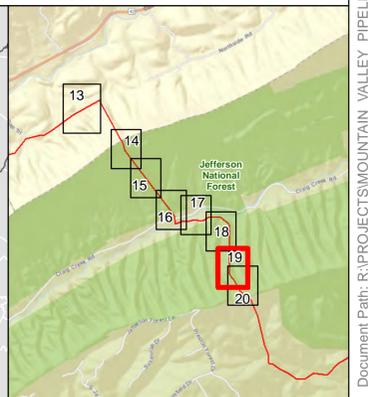
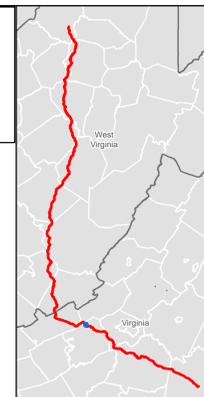
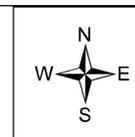
Page 19 of 20

January 2017

Legend

- 50foot Contour (NED10m)
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Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.



Mountain Valley Pipeline Project NAD 1983 UTM 17N 1:800 0 250 500 Feet	
Tree Stack and Access Page 20 of 20 January 2017	
Legend — 50foot Contour (NED10m) • Tenth-mile — October 2016 Proposed Route Revised December 2016 — Appalachian National Scenic Trail Permanent Impact Temporary Impact Brush Mountain Wilderness U.S. Forest Service (National Forest) Lands Road Timber Stacking Area Timber Staging Area Access Point	
Data Sources: ESRI Streaming Data, 2014, ESRI, 2014, Ventyx, 2014.	

APPENDIX J
General Blasting Plan

Appendix J

General Blasting Plan for Jefferson National Forest

Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1

2 **1.0 INTRODUCTION.....J-1**

3 **2.0 BACKGROUND.....J-2**

4 **3.0 GEOLOGIC SETTINGJ-2**

5 **4.0 BLASTING SPECIFICATIONS.....J-2**

6 4.1 Regulatory Framework J-3

7 **5.0 PRE-BLAST INSPECTIONSJ-4**

8 **6.0 MONITORING OF BLASTING ACTIVITIES.....J-4**

9 **7.0 BLASTING REQUIREMENTS.....J-5**

10 7.1 General Provisions J-5

11 7.2 Storage Use at Sites J-8

12 7.3 Pre-Blast Operations J-8

13 7.4 Discharging Explosives J-11

14 7.5 Waterbody Crossing Blasting Procedures.....J-12

15 7.6 Wetland Crossing Blasting Procedures.....J-13

16 7.7 Rock Disposal Due to Blasting.....J-14

17 7.8 Disposal of Explosive Materials.....J-14

18 7.9 Blasting Records J-14

19 **8.0 POST-BLAST INSPECTION.....J-16**

LIST OF TABLES

20

21

22 **Table 7-1. Contacts and Related Permitting Prior to BlastingI-7**

23

LIST OF ATTACHMENTS

- 24
- 25
- 26 Attachment I-1 Pre-Blast Survey
- 27 Attachment I-2 Blast Report
- 28 Attachment I-3 Seismograph Report
- 29 Attachment I-4 Post-Blast Survey

Draft**Mountain Valley Pipeline Project
Blasting Plan****1.0 INTRODUCTION**

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on National Forest System lands will occur in 2018.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in Braxton County, West Virginia, which is administered by the U.S. Army Corps of Engineers (USACE). Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this plan focuses on the JNF, noting any additional or different requirements that are specific to the crossing of the Weston and Gauley Turnpike.

1 The USFS will be responsible for enforcement of the terms and conditions of the BLM's
2 right-of-way Grant on National Forest System lands during the term of the right-of-way
3 Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF
4 portion of this project by the USFS Project Manager and the Authorized Officer's
5 designated compliance monitors. USFS will have stop work authority per terms outlined
6 in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work
7 conditions are encountered during construction.

8 The Project has potential to impact sensitive environmental resources and, as a result,
9 environmental protection measures have been developed to minimize potential impacts
10 on these resources and will be applied, as applicable, to the Project.

11 **2.0 BACKGROUND**

12 The Mountain Valley Pipeline General Blasting Plan (Plan) outlines the procedures
13 and safety measures that the contractor will adhere to while implementing blasting
14 activities during the construction of the Project. This plan addresses blasting for the
15 proposed route within the JNF. MVP will cross the Weston and Gauley Turnpike via
16 conventional bore; therefore, no blasting will occur on USACE property.

17 Information for blast and rip characteristics of the bedrock may be evaluated, at least in
18 a general sense, and applied toward an appropriate bedrock excavation method. The
19 hard and intact nature of the unweathered sedimentary bedrock (sandstones, limestones,
20 and shales) dictates what blasting methods will be utilized. Soft bedrock, such as
21 weathered sandstones, limestones, and shales, may possibly be removed by ripping
22 or mechanical means.

23 Other geologic features may control the effects of blasting. Rock fabric, or the
24 arrangements of minerals, determines intrinsic rock strength, and thus influences rock
25 excavation. Joint spacing, bedding, and foliation also influence rock excavation.

26 **3.0 GEOLOGIC SETTING**

27 The JNF is located in the Valley and Ridge province, and the Project alignment crosses
28 Lower Devonian and Silurian sandstone and shale through the JNF. It is anticipated that
29 minimal blasting would be required through the JNF. The JNF is located in the area with
30 high seismic hazards; however, these hazards (including soil liquefaction near water
31 crossings and the potential for landslides and rock falls) are not considered severe and
32 can be mitigated with appropriate construction design. Karst hazards are not present
33 along the pipeline alignment within JNF lands. An estimated 888,000 cubic feet of material
34 will be excavated and temporarily stored along the right-of-way within the 3.5 miles of
35 pipeline that cross the JNF. Two access roads are anticipated to be improved on JNF
36 lands (Pocahontas and Mystery Ridge Road). Excess excavation from cut slopes will be
37 hauled to an approved location.

38 **4.0 BLASTING SPECIFICATIONS**

39 Blasting for grade or trench excavation will be considered only after all other reasonable
40 means of excavation have been evaluated and determined to be unlikely to achieve the

1 required results. MVP may specify locations (foreign line crossings, nearby structures,
2 etc.) where consolidated rock will be removed by approved mechanical equipment, such
3 as rock-trenching machines, rock saws, hydraulic rams, or jack hammers, instead of
4 blasting. Areas where blasting may be required will be surveyed for features such as
5 karst terrain, structures, utilities, and wells. The pre-construction condition of human-
6 occupied buildings will be documented. Occupied buildings and their condition within 150
7 feet of the blasting area will be documented as to their pre-blast condition, as set forth
8 in Attachment I-1 – Pre-Blast Survey, and their condition after blasting, as set forth in
9 Attachment I-4 – Post-Blast Survey. MVP will provide verbal notification, followed by
10 written documentation, to the buildings' occupant(s) of any blasting activity during both
11 pre-construction and post-construction within 150 feet of a blast location.

12 If blasting is conducted within 150 feet of an active water well MVP will conduct a pre-
13 construction evaluation of the well. Upon request by a landowner who had a pre-
14 construction test, a post-construction test will be performed. Landowners will be
15 contacted by an MVP representative, and a qualified independent contractor will
16 conduct the testing.

17 MVP will evaluate, on a timely basis, landowner complaints regarding damage resulting
18 from blasting to wells, homes, or outbuildings. If the damage is substantiated, MVP will
19 negotiate a settlement with the landowner that may include repair or replacement.

20 Before any blasting occurs, the contractor will complete a project/site-specific blasting
21 plan and provide it to MVP for review. No blasting shall be done without prior approval
22 by MVP. In no event shall explosives be used where, in the opinion of MVP, such use will
23 endanger existing facilities. The contractor shall obtain MVP approval and provide 48
24 hours' notice prior to the use of any explosives. MVP will provide at least 24 hours' notice
25 to occupants of nearby (within 150 feet of blasting area) buildings, stores, residences,
26 businesses, farms, and other occupied areas prior to initiating blasting operations. These
27 notices will be verbal, followed by written documentation of the 24-hour notice.

28 **4.1 Regulatory Framework**

29 Blasting shall adhere to the following federal, state, county, township, local, and MVP
30 standards and regulations. These standards and regulations are to be considered as the
31 minimum requirements. Should there be a conflict between jurisdictions, standards, and
32 regulations, the most stringent jurisdictions, standards, and regulations shall be followed.

33 These blasting requirements for the MVP Project are as follows:

- 34 • MVP, Design and Construction Manual, Design Standard, Pipeline, 4.11 Blasting
35 Proximate to Buried Pipelines
- 36 • 29 CFR Part 1926 Subpart U – Blasting and the Use of Explosives, Occupational
37 Safety and Health Administration (OSHA)
- 38 • 27 CFR Part 555 Subpart K, U.S. Bureau of Alcohol, Tobacco, and Firearms
- 39 •
- 40 • 49 CFR Part 192, U.S. Department of Transportation

- 1 • National Fire Protection Association 495: Explosive Materials Code
- 2 • West Virginia Surface Mining Blasting Rule, 199 CSR 1

3 **5.0 PRE-BLAST INSPECTIONS**

4 MVP will conduct pre-blast surveys, with landowner permission, to assess the conditions
5 of structures, wells, springs, and utilities within 150 feet of the proposed construction right-
6 of-way. The survey will include, at a minimum:

- 7 • Informal discussions to familiarize the adjacent property owners with blasting
8 effects and planned precautions to be taken on this Project;
- 9 • Determination of the existence and location of site-specific structures, utilities,
10 septic systems, and wells;
- 11 • Detailed examination, photographs, and/or video records of adjacent structures and
12 utilities; and
- 13 • Detailed mapping and measurement of large cracks, crack patterns, and other
14 evidence of structural distress.

15 The results will be summarized in a Pre-Blast Condition Report that will include
16 photographs and be completed prior to the commencement of blasting. The pre-blast
17 conditions will be documented with the information outlined by “Pre-Blast Survey, MVP
18 Project.” This Pre-Blast Survey Form is considered the minimum information needed.
19 Attachment I-1 presents the Pre-Blast Survey Form. The completion of the Pre-Blast
20 Survey Form is in addition to all other local, county, township, state, or federal
21 reporting/survey data collection and reports.

22 **6.0 MONITORING OF BLASTING ACTIVITIES**

23 During blasting, MVP contractors will take precautions to minimize damage to adjacent
24 areas and structures. Precautions include:

- 25 • Dissemination of blast warning signals in the area of blasting, post signs on JNF
26 lands near the blasting zones, and post public announcements on the USFS
27 bulletin board and website as authorized to do so by the USFS.
- 28 • Backfilling if the blast holes with subsoil (no topsoil to be used), blasting mats, or
29 other approved methods.
- 30 • Blast warning in congested areas, in shallow waterbodies, or near structures that
31 could be damaged by fly-rock.
- 32 • Use of matting or other suitable cover, as necessary, to prevent fly-rock from
33 damaging adjacent protected natural resources.
- 34 • Following federal, state, local, and MVP procedures and regulations for safe
35 storage, handling, loading, firing, and disposal of explosive materials.
- 36 • Manning adjacent pipelines at valves for emergency response, as appropriate.
- 37 • Posting of portable signage, portable barricades, and visual survey of the blast
38 area access ways to prevent unauthorized entrance into the blast zone by
39 spectators and/or intruders.

- 1 • Maintain communications between all persons involved for security of the blast
2 zone during any and all blasting/firing.

3 Excessive vibration will be controlled by limiting the size of charges and by using charge
4 delays, which stagger each charge in a series of explosions.

5 If the contractor has to blast near buildings or wells, a qualified independent contractor
6 will inspect structures or wells within 150 feet, or farther if required by local or state
7 regulations, of the construction right-of-way prior to blasting, and with landowner
8 permission. Post-blast inspections by the blasting company's representative will also be
9 performed, as warranted. All blasting will be performed by registered blasters and
10 monitored by experienced blasting inspectors. Recording seismographs will be installed
11 by the contractor at selected monitoring stations under the observation of MVP
12 personnel. During construction, the contractor will submit blast reports for each blast and
13 keep detailed records as described in Section 7.10.

14 , MVP will notify individuals within ½ mile of the blasting area and conduct surveys on
15 structures within 1000 feet of the blasting area. The effects of each discharge will be
16 monitored at the closest adjacent facilities by seismographs.

17 If a charge greater than eight pounds per delay is used, the distance of monitoring will
18 be in accordance with the U.S. Bureau of Mines Report of Investigations 8507.

19 To maximize its responsiveness to the concerns of affected landowners, MVP will
20 evaluate all complaints of well or structural damage associated with construction
21 activities, including blasting. A toll-free landowner hotline will be established by MVP for
22 landowners to use in reporting complaints or concerns. In the unlikely event that blasting
23 activities temporarily impair a water well, MVP will provide alternative sources of water or
24 otherwise compensate the owner. If well or structural damage is substantiated, MVP will
25 either compensate the owner for damages or arrange for a new well to be drilled.

26 **7.0 BLASTING REQUIREMENTS**

27 MVP has standard practices for blasting operations, as outlined by Sections 1.0 and
28 4.0 of this Blasting Plan. The potential for blasting along the pipeline to affect any wetland,
29 municipal water supply, waste disposal site, well, septic system, spring, or pipelines will
30 be minimized by controlled blasting techniques and by using mechanical methods for
31 rock excavation as much as possible. Controlled blasting techniques have been
32 effectively employed by MVP and other companies to protect active gas pipelines within
33 15 feet of trench excavation. The following text presents details of procedures for
34 powder blasting.

35 **7.1 General Provisions**

36 The contractor will provide all personnel, labor, and equipment to perform necessary
37 blasting operations related to the work. The contractor will provide a permitted blaster
38 possessing all permits required by the local, county, township, and states in which
39 blasting is required during construction, and having a working knowledge of state and
40 local laws and regulations that pertain to explosives.

1 Project blasting will be done in accordance with the above referenced specification;
2 all other state and local laws, when required; and regulations applicable to obtaining,
3 transporting, storing, handling, blast initiation, ground motion monitoring, and disposal of
4 explosive materials and/or blasting agents.

5 The contractor shall be responsible for supplying explosives and blasting materials that
6 are perchlorate-free in order to eliminate the potential for perchlorate contamination of
7 groundwater. Further, the use of ammonium nitrate is prohibited.

8 The contractor shall be responsible for securing and complying with all necessary permits
9 required for the transportation, storage, and use of explosives. The contractor shall be
10 responsible for all damages or liabilities occurring on or off the right-of-way resulting from
11 the use of explosives. When the use of explosives is necessary to perform the work, the
12 contractor shall use utmost care not to endanger life or adjacent property and shall
13 comply with all applicable laws, rules, and regulations governing the storage, handling,
14 and use of such explosives. MVP will conduct a pre- and post- surficial leak survey
15 along the centerline of each adjacent live pipeline to the planned blast area. The
16 surficial leak survey will be conducted by MVP's employees and/or designated
17 representative, with the surficial leak survey extending a minimum of 100 feet (both
18 directions) past the limits of the planned blast area.

19 Blasting activities will strictly adhere to all MVP, local, state, and federal regulations and
20 requirements applying to controlled-blasting and blast-vibration limits in regard to
21 structures, underground gas pipelines, and underground utilities. In addition to following
22 state and federal blasting guidelines, MVP will contact each governmental agency (if
23 the Project is not undertaken within 12 months as of the date of this Blasting Plan) along
24 the proposed route to determine local ordinances or guidelines for blasting (refer to
25 Table 7-1).

1 **Table 7-1. Contacts and Related Permitting Prior to Blasting**

2

Table 7.1 MVP Project			
Contacts and Related Permitting Prior to Blasting			
State	Contact	Agency	Permit/Notification
West Virginia	D. Vande Linde 304-926-0464	West Virginia Office of Explosives and Blasting	Permit and Notification
West Virginia	Anita Bradburn 304-399-5890	US Army Corps of Engineers	Notification when blasting within 0.25-mile of the Weston and Gauley Bridge Turnpike Trail
West Virginia and Virginia	Joby Timms 540-265-5118	US Forest Service – Jefferson National Forest	Notification when blasting within 0.25-mile of the Jefferson National Forest
Virginia	John Cullinane 804-371-7270	State Fire Marshall	Permit and Notification
Virginia	Steven Sites 540-317-7670	State Fire Marshall	Permit and Notification
Virginia	Region 3 Office 276-783-4860	Virginia Department of Game and Inland Fisheries	Notification – 48-hours
Virginia	Office 804-371-0220	Virginia State Fire Marshal	Permit and Notification – 24-hours

3
4
5 The construction contractor will be made aware of all applicable procedures and local
6 requirements, and it will ultimately be the contractor's responsibility to notify officials
7 and receive appropriate blasting permits and authorization.

8 Typically, local regulations require copies of the blasting contractor's certificate of
9 Insurance and License. In some jurisdictions, a Certificate of Bond will also be required,
10 as well as a qualified person hired to oversee the blasting procedure.

11 The MVP Chief Blasting Inspector (CBI) or designated representative shall have the
12 opportunity to witness all rock excavations or other use of explosives. The contractor
13 shall conduct all blasting operations in a safe manner that will not cause harm to the
14 existing pipelines and structures in the vicinity. If the CBI determines that any project
15 blasting operations have been conducted in an unsafe manner, the CBI will notify the
16 contractor of the unsafe activity. If any further unsafe actions occur on the part of the
17 blasting firm, the CBI will request the contractor terminate the contract of the blasting
18 firm and hire another blasting company.

1 Any failure to comply with the appropriate law and/or regulations is the sole liability of
2 the contractor. The contractor and the contractor's permitted blaster shall be responsible
3 for the conduct of all blasting operations, which shall be subject to inspection
4 requirements.

5 A Blasting Fact Sheet will be distributed to landowners where blasting is proposed and
6 affected landowners will be contacted prior to any blasting activities.

7 **7.2 Storage Use at Sites**

8 Explosives and related materials shall be stored in approved facilities required under the
9 applicable provisions contained in 27 CFR Part 555, Commerce in Explosives. The
10 handling of explosives may be performed by the person holding a permit to use
11 explosives or by other employees under his or her direct supervision, provided that such
12 employees are at least 21 years of age. While explosives are being handled or used,
13 smoking shall not be permitted, and no one shall possess matches, open light, or other
14 fire or flame within 50 feet of the explosives, in accordance with OSHA requirements.
15 Suitable devices or lighting safety fuses are exempt from this requirement. No person
16 shall handle explosives while under the influence of intoxicating liquors or narcotics at
17 any time during construction of the Project. Original containers or Class II magazines
18 shall be used for taking detonators and other explosives from storage magazines to the
19 blasting area. Partial reels of detonating cord do not need to be in closed containers,
20 unless transported over public highways. Containers of explosives shall not be opened
21 in any magazine or within 50 feet of any magazine. In opening kegs, or wooden cases,
22 no sparking metal tools shall be used; wooden wedges and wood, fiber, or rubber mallets
23 shall be used. Non-sparking metallic slitters may be used for opening fiberboard cases.

24 No explosive materials shall be located or stored where they may be exposed to flame,
25 excessive heat, sparks, or impact.

26 Explosives or blasting equipment that are obviously deteriorated or damaged shall not be
27 used. Explosive materials shall be protected from unauthorized possession and shall
28 not be abandoned.

29 No attempt shall be made to fight a fire if it is determined the fire cannot be contained or
30 controlled before it reaches explosive materials. In such cases, all personnel shall be
31 immediately evacuated to a safe location, and the area shall be guarded from entry by
32 spectators or intruders.

33 No firearms shall be discharged into or in the vicinity of a vehicle containing explosive
34 materials or into or in the vicinity of a location where explosive materials are being
35 handled, used, or stored.

36 **7.3 Pre-Blast Operations**

37 Prior to commencement of any blasting or pre-blast operation, the contractor is required
38 to submit a planned schedule of blasting operations to the CBI or his designated
39 representative for approval that indicates the maximum charge weight per delay, hole
40 size, spacing, depth, and blast layout. If blasting is to be conducted adjacent to an existing

1 pipeline, approval must be received from the pipeline's engineering department prior to
2 the start of work. The contractor shall provide this schedule to the CBI at least five working
3 days prior to any pre-blast operation for approval and use. Where residences or other
4 structures are within 150 feet of the blasting operation, the CBI may require notification
5 in excess of five days. The blasting schedule is to include the blast geometry, drill hole
6 dimensions, type and size of charges, stemming, and delay patterns and should also
7 include a location survey of any dwelling or structures that may be affected by the
8 proposed operation. Face material shall be carefully examined before drilling to
9 determine the possible presence of unfired explosive material. Drilling shall not be started
10 until all remaining butts of old holes are examined for unexploded charges, and if any
11 are found, they shall be re-fired before work proceeds. No person shall be allowed
12 to deepen the drill holes that have contained explosives.

13 Drill holes shall be large enough to permit free insertion of cartridges of explosive
14 materials. Drill holes shall not be collared in bootlegs or in holes that have previously
15 contained explosive materials. Holes shall not be drilled where there is a danger of
16 intersecting another hole containing explosive material. Charge loading shall be spread
17 throughout the depth of the drill hole or at the depths or rock concentration in order to
18 obtain the optimum breakage of rock.

19 Loading and firing shall be performed or supervised only by a person possessing an
20 appropriate blasting permit and license. All drill holes shall be inspected and cleared of
21 any obstruction before loading. No holes shall be loaded, except those to be fired in the
22 next round of blasting. After loading, all remaining explosives shall be immediately
23 returned to an authorized magazine.

24 A maximum loading factor of 4.0 pounds of explosive per cubic yard of rock shall not be
25 exceeded. However, should this loading fail to effectively break up the rock, a higher
26 loading factor shall be allowed if the charge weight per delay is reduced by a proportional
27 amount and approved by the CBI. The minimum safe distance from the blasting area
28 to a live buried pipeline is 10 feet measured horizontally from the edge of the blasting
29 area to the outer edge of the affected pipeline. The site-by-site minimum safe distance
30 between blasting areas and adjacent live natural gas pipelines will be calculated each
31 time blasting is to occur using PIPEBLAST computer modeling program or other
32 recognized industrial standards and applying the measured site conditions. The minimum
33 safe distance and supporting calculations and site measurements are to be submitted for
34 approval to MVP's CBI at least 48 hours before blasting is to occur.

35 All blasts will be monitored to ensure the peak particle velocity does not exceed the
36 following specified maximum velocities:

- 37 • Four inches per second for underground, welded, steel pipeline.
- 38 • Two inches per second for underground, coupled, steel pipelines; aboveground
39 and underground structures; or water wells.

40 The MVP engineering department may approve higher peak particle velocities in writing,
41 given site-specific conditions.

1 The maximum amplitude of the elastic wave created by any blast shall not exceed
2 0.0636 inches.

3 One of the following types of explosive and initiation systems will be used:

4 **Dyno Nobel Unimax® (or equivalent)**

5 An extra-gelatin dynamite with a specific gravity of 1.51 grams per cubic centimeter (g/cc),
6 a detonation rate of 17,400 feet per second (f/s) (unconfined) and a calculated energy of
7 1,055 c/g. The cartridge size will generally be 2 inches x 8 inches (1.25 lbs/cartridge) or
8 2 inches x 16 inches (2.50 lbs/cartridge).

9 **Dyno Nobel Unigel® (or equivalent)**

10 A semi-gelatin dynamite with a specific gravity of 1.30 g/cc, a detonation rate of 14,200 f/s
11 (unconfined) and a calculated energy of 955 c/g. The cartridge size will generally be 2
12 inches x 8 inches (1.15 lbs/cartridge) or 2 inches x 26 inches (2.30 lbs/cartridge).

13 **Dyno Nobel Dynamax Pro™ (or equivalent)**

14 A propagation-resistant dynamite, with a specific gravity of 1.45 g/cc, a detonation rate of
15 19,700 f/s (unconfined) and a calculated energy of 1,055 c/g. The cartridge size will
16 generally be 2 inches x 8 inches (1.225 lbs/cartridge) or 2 inches x 16 inches
17 (24.45 lbs/cartridge).

18 **Dyno Nobel NONEL® 17 or 25 Millisecond Delay Connectors or Dyno Nobel NONEL
19 EZ Det® (or equivalent)**

20 A nonelectric delay detonator with a 25/350, 25/500, or 25/700 millisecond delay.

21 **Dyno Nobel NONEL® Nonelectric Shock Tube System Detonator (or equivalent)**

22 The Shock Tube will be used to initiate all shots. The Shock Tube will be attached at one
23 point only for initiation of the entire shot and will not be used for downhole priming.

24 Each borehole shall be primed with NONEL EZ Det® system. The total grains of the
25 detonator system should be limited to prevent blowing stemming out of the drill hole.
26 Boreholes shall be delayed with a minimum of 25 milliseconds (ms). Slightly longer
27 delays may be used over steep hills with prior approval of the CBI. Primers shall not be
28 assembled closer than 50 feet from any magazine. Primers shall be made up only when
29 and as required for immediate needs.

30 Blasting shall not be permitted if any part of an in-service pipeline lies within the perimeter
31 of the crater zone, regardless of size of the blast/shot. The crater zone shall be defined
32 as a circle created by turning a radius along the ground surface equal to the length of
33 the depth below the surfaces where the shot is placed.

34 Tamping shall be done only with wood rods without exposed metal parts, but non-
35 sparking metal connectors may be used for jointed poles. Plastic tamping poles may be

1 used, provided the authority having jurisdiction has approved them. Violent tamping
2 shall be avoided.

3 Recommended stemming material shall consist of crushed stone with $d_{50} - 3/8$ inch,
4 which will not bridge over like dirt and will completely fill voids in the hole.

5 When safety fuse is used, the burning rate shall be determined and in no case shall
6 fuse lengths less than 120 seconds be used. The blasting cap shall be securely attached
7 to the safety fuse with a standard ring-type cap crimper.

8 Pneumatic loading of blasting agents in blast holes primed with electric blasting caps or
9 other static-sensitive initiation systems shall comply with the following requirements:

- 10 • A positive grounding device shall be used for the equipment to prevent
11 accumulation of static electricity;
- 12 • A semi-conductive discharge hose shall be used; and
- 13 • A qualified person shall evaluate all systems to assure they will adequately
14 dissipate static charges under field conditions.

15 No blasting caps or other detonators shall be inserted in the explosives without first
16 making a hole in the cartridge for the cap with a wooden punch of proper size or standard
17 cap crimper.

18 After loading for a blast is completed, all excess blasting caps or electric blasting caps
19 and other explosives shall immediately be removed from the area and returned to their
20 separate storage magazines.

21 **7.4 Discharging Explosives**

22 Persons authorized to prepare explosive charges or conduct blasting operations shall
23 use every reasonable precaution, including, but not limited to, warning signals, flags,
24 barricades, or woven wire mats to ensure the safety of the general public and workmen.

25 The contractor shall obtain MVP's approval and provide them at least 48-hour notice prior
26 to the use of any explosives. The contractor shall comply with local and state
27 requirements for pre-blast notifications, such as the One-Call regulations in West Virginia
28 and Virginia, which require a minimum 72-hour notice.

29 Whenever blasting is being conducted in the vicinity (within 150 feet) of gas, electric,
30 water, fire alarm, telephone, telegraph, and other utilities as identified by the West Virginia
31 or Virginia one call system, the blaster shall notify the appropriate representatives of such
32 utilities at least 24 hours in advance of blasting. Verbal notice shall be confirmed with
33 written notice. In an emergency, the local authority issuing the original permit may
34 waive this time limit. MVP's CBI is to be notified, both verbally and copied, with the
35 written notice for notifications.

36 Blasting operations, except by special permission of the authority having jurisdiction and
37 MVP, shall be conducted during daylight hours.

1 When blasting is done in congested areas or in proximity to a significant natural resource,
2 structure, railway, highway, or any other installation that may be damaged, the blast shall
3 be backfilled before firing or covered with a mat, constructed so it is capable of
4 preventing fragments from being thrown. In addition, all other possible precautions shall
5 be taken to prevent damage to livestock and other property and inconvenience to the
6 property owner or tenant during blasting operations. Any rock scattered outside the right-
7 of-way by blasting operations shall immediately be hauled off or returned to the right-of-
8 way.

9 Precautions shall be taken to prevent accidental discharge of blasting caps from currents
10 induced by lightning, adjacent power lines, dust and snow storms, or other sources
11 of extraneous electricity. These precautions shall include:

- 12 • Suspension of all blasting operations and removal of all personnel from the
13 blasting area during the approach and progress of an electrical storm; and
- 14 • Mandatory use of lightning detectors.

15 No blast shall be fired until the blaster in charge has made certain that all surplus
16 explosive materials are in a safe place, all persons and equipment are at a safe distance
17 or under sufficient cover, and an adequate warning signal has been given.

18 No loaded holes shall be left unattended or unprotected. Explosive shall not be primed
19 or fused until immediately before the blast. After each blasting sequence, the blasting
20 contractor shall inspect the site for cut-offs and misfires. All explosives or blasting
21 agents shall be verified as discharged prior to starting/resuming excavation.

22 Only the person making connections between the cap and fuse system shall fire the shot.
23 All connections should be made from the bore hole back to the source of ignition. If there
24 are any misfires while using cap and fuse, all persons shall remain away from the
25 charge for at least 15 minutes. Misfires shall be handled under the direction of the person
26 in charge of the blasting, and the construction right-of-way shall be carefully searched for
27 the unexploded charges.

28 Explosives shall not be extracted from a hole that has once been charged or has misfired
29 unless it is impossible to detonate the unexploded charge by insertion of a fresh
30 additional primer.

31 **7.5 Waterbody Crossing Blasting Procedures**

32 Blasting should not be conducted within or near a stream channel without prior
33 consultation and approval from the appropriate federal, state, and local authorities having
34 jurisdiction to determine what protective measures must be taken to minimize damage to
35 the environment and aquatic life of the stream. At a minimum, a five-working-day notice
36 must be provided to the appropriate federal, state, and/or local authorities. In addition to
37 the blasting permits, separate permits and approvals are required for blasting within the
38 waters of the states of West Virginia and Virginia.

39 Rock drill or test excavation will occur within the limits of a flowing stream only after the
40 streamflow has been redirected and maintained via dam-and-pump or flume crossing.

1 For those streams that have no flow at the time of rock drill or test excavation activities,
2 the rock testing will be conducted in the streambed and the streambed disturbance
3 created by the rock testing will be restored within the same day of disturbance.

4 Rock drill or test excavation and resulting blasting will only occur once the streamflow
5 has been redirected and maintained via dam-and-pump or flume crossing method. For
6 these crossings of flowing streams, work will commence immediately after the initial
7 disturbance and continue until the stream crossing is completely installed and the
8 streambed restored.

9 To facilitate planning for blasting activities for waterbody crossings, rock drilled or test
10 excavations may be used in waterbodies to test the ditch-line during mainline blasting
11 operations to evaluate the presence of rock in the trench-line. The excavation of the
12 test pit or rock drilling is not included in the time window requirements for completing the
13 crossing. For testing and any subsequent blasting operations, streamflow will be
14 maintained through the site. When blasting is required, the FERC timeframes for
15 completing in-stream construction begin when the removal of blast rock from the
16 waterbody commences. If, after removing the blast rock, additional blasting is required, a
17 new timing window will be determined in consultation with the Environmental Inspector
18 (EI). If blasting impedes the flow of the waterbody, the contractor can use a backhoe
19 to restore the stream flow without triggering the timing window. The complete waterbody
20 crossing procedures are included in MVP's Erosion and Sediment Control Plan.

21 MVP will immediately halt all construction activities if the loss of streamflow occurs after
22 a blasting event. The construction contractor and MVP's EI will immediately evaluate the
23 loss of water and develop a Contingency Plan to restore streamflow. This Contingency
24 Plan will be provided to the local, state, and federal agencies having jurisdiction over the
25 stream impacted for their review and approval. Congruent with the contractor and MVP
26 EI's evaluation, temporary emergency contingency measures will be employed to halt
27 the loss of streamflow. Immediately upon the agencies' approval of the Contingency Plan,
28 the contractor will implement the measures outlined in the agency-approved
29 Contingency Plan.

30 **7.6 Wetland Crossing Blasting Procedures**

31 Blasting for trench excavation crossing a wetland will only be considered after all other
32 reasonable means of excavating have been evaluated and determined to be unlikely to
33 achieve the required trench grade.

34 Blasting should not be conducted within or near a wetland without MVP's EI review and
35 development of a Wetland Crossing Blasting Plan that includes protective measures to
36 minimize damage to wetlands. At a minimum, the individual Wetland Crossing Blasting
37 Plan will be provided to the appropriate federal, state, and local authorities for review
38 and approval five working days prior to conducting the blasting.

39 Blasting will be conducted in a manner that will not compromise the structural integrity
40 of the wetland hydrology of known wetlands. If rock is required to be blasted to achieve
41 trench grade, then the following parameters will be adhered to:

- 1 a. The excavation will be carefully inspected for any voids, openings, fractures, or
2 other telltale signs of dewatering activity by MVP's EI.
- 3 b. If the rock removal intercepts an open void, channel, or fracture, the work in that
4 area will be stopped until a remedial assessment can be carried out by MVP's
5 EI.
- 6 c. All use of explosives will be limited to low-force charges that are designed to
7 transfer the explosive force only to the rock which is designated for removal (e.g.,
8 maximum charge of two inches per second ground acceleration).

9 **7.7 Rock Disposal Due to Blasting**

10 During the course of blasting for grade and trench excavation excess rock fragments
11 that are deemed as unacceptable for trench backfill may be incurred. This excess rock
12 may be used in the restoration of the disturbed right-of-way limits, with the rock buried
13 within the reclamation limits of the right-of-way. With the execution of individual
14 landowner agreements for the placement of this excess rock, the rock placement will be
15 to a depth that will help stabilize the right-of-way restoration and will be below the root
16 zones of the cover vegetation.

17 If the excess rock is to be removed from the construction area, it is to be hauled to an
18 approved local- and state-permitted disposal site. This disposal facility will need to
19 demonstrate that it is permitted to accept and dispose of the excess rock from the blasting
20 operations. MVP will obtain a copy of the disposal facility's permit, as issued by the local
21 jurisdiction having authority over the disposal facility and the disposal site within.

22 **7.8 Disposal of Explosive Materials**

23 All explosive materials that are obviously deteriorated or damaged shall not be used
24 and shall be destroyed according to applicable local, state, and federal requirements.

25 Empty containers and packages and paper or fiberboard packing materials that have
26 previously contained explosive materials shall not be reused for any purpose. Such
27 packaging materials shall be destroyed by burning (outside of the construction right-of-
28 way) at an approved outdoor location or by other approved method. All personnel shall
29 remain at a safe distance from the disposal area.

30 All other explosive materials will be transported from the job site in approved magazines
31 per local and/or state regulations.

32 **7.9 Blasting Records**

33 Within 48 hours following a blast, the blasting contractor must provide a Blast Report to
34 the MVP's CBI. The Blast Report shall provide, at a minimum, the information outlined in
35 Attachment I-2, "Blast Report," which includes the following data for each blast:

- 36 • Name of company or contractor;
- 37 • Location, date, and time of blast;
- 38 • Name, signature, and license number of contractor and blaster in charge;

- 1 • Blast location referenced to the pipeline station/milepost;
- 2 • Picture record of the blast area disturbance and of blasted trench;
- 3 • Type of material blasted;
- 4 • Number of holes, depth of burden and stemming, and spacing;
- 5 • Diameter and depth of holes;
- 6 • Volume of rock in shot;
- 7 • Types of explosives used, specific gravity, energy release, pounds of explosive
- 8 per delay, and total pounds of explosive per shot;
- 9 • Delay type, interval, total number of delays, and holes per delay;
- 10 • Maximum amount of explosives per delay period of 17 milliseconds or greater;
- 11 • Power factor;
- 12 • Method of firing and type of circuit;
- 13 • Direction and distance in feet to nearest structure and utility neither owned or
- 14 leased by the person conducting the blasting;
- 15 • Weather conditions;
- 16 • Type and height or length of stemming;
- 17 • If mats or other protection were used; and
- 18 • Type of detonators used and delay periods used.

19 In addition, the blast design is to be attached and made part of the Blast Report. The
20 Blast Report is in addition to all other local, county, township, state, or federal reporting
21 requirements.

22 At the conclusion of each blasting event, the blasting contractor is to conduct and
23 inventory blasting/explosive materials with a written inventory report attached to the
24 Blast Report. All blasting/explosive materials are to be accounted for. Any discrepancies
25 are to be immediately reported to the governing agencies and the MVP's CBI.

26 When the effects of the discharge are monitored by seismographs, the person taking
27 the seismograph reading shall accurately indicate the exact location of the seismograph
28 and show the distance of the seismograph from the blast. Seismograph records, where
29 required, should include:

- 30 • Name of person and firm operating and analyzing the seismograph record;
- 31 • Seismograph serial number;
- 32 • Seismograph reading; and
- 33 • Maximum number of holes per delay period of 17 milliseconds or greater.

34 Within 72 hours following a blast, at sites monitored by a seismograph, the blasting
35 contractor must provide a Seismograph Report to the MVP's CBI. Attachment I-3 presents
36 the Seismograph Report Form for the MVP Project. The seismograph readings and

1 written interpretations must also be attached to the Seismograph Report. This reporting
2 is in addition to all other local, county, township, state, or federal reporting requirements.
3 Copies of these Seismograph Reports are to be provided to the CBI.

4 **8.0 POST-BLAST INSPECTION**

5 An independent contractor, with landowner permission, will examine the condition of
6 structures within 150 feet, or as required by state or local ordinances, of the
7 construction area after completion of blasting operations, to identify any changes in the
8 conditions of these properties or confirm any damages noted by the landowner. The
9 independent contractor, with landowner approval, will conduct a resampling of wells
10 within 150 feet, or as required by state or local ordinances, of the construction area.
11 Should any damage or change occur during the blasting operations, an additional survey
12 of the affected property may be conducted.

13 Upon receiving notice that a structure or other damages have possibly occurred due to
14 the blasting operations, the Blasting contractor is to conduct a post-blast conditions
15 survey. The post-blast conditions survey shall be conducted within 48 hours after being
16 notified or at the landowner's schedule and permission. The post-blast conditions will be
17 documented with the information outlined in the "Post-Blast Survey for the MVP Project,"
18 Attachment I-4. This post-blast form is considered the minimum information needed.

**ATTACHMENT J-1
PRE-BLAST SURVEY**

PRE-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE PROJECT

STRUCTURE INFORMATION

Owner Name:	
Mailing Address:	
Telephone No.:	
Street Address or Physical Address:	
Latitude:	Longitude:
County/Township:	State:
Nearest Pipeline Station/Milepost:	
Company Structure No.:	

OCCUPANT INFORMATION

Occupant Name:
Mailing Address:
Telephone No.:

SURVEYOR'S INFORMATION

Company Conducting Survey:
Mailing Address:
Telephone No.:
Contact Person to Discuss Survey:
Name of Approved Surveyor:
State of Approval:

STRUCTURE LOCATION MAP

Survey Map:	8 ½" x 11" copy of construction alignment sheet or site specific plan/drawing showing Mountain Valley Pipeline and structure surveyed. Attach map to survey.
-------------	--

SITE PLAN SKETCH

Site Plan:	8 ½" x 11" sketch showing all structures and relative locations, driveways, sidewalks, outbuildings, water wells, septic systems' components, and other man-made features as applicable. Use arrows to show site grade and slope. Include a North arrow and direction and distance to Mountain Valley Pipeline. The site plan sketch shall show the distance from the blast's end points to the adjacent natural gas pipeline(s).
------------	---

PRE-BLAST SURVEY MOUNTAIN VALLEY PIPELINE PROJECT

Exterior Inspection (Check all that apply)

Page 2

Age of Structure

_____ years

- estimated
- provided by owner or occupant
- other (explain) _____

Use of Structure

- private dwelling
- commercial building
 - retail
 - factory
 - office
 - warehouse/storage
- multi-family dwelling
- single-family rental
- apartment building
- other (explain) _____

Type of Structure

- conventional dwelling
- mobile home
- mobile home with frame addition
- modular
- commercial (describe) _____
- other (explain) _____
- single story
- two story
 - other (describe) _____

Frame Materials

- conventional wood frame
- timber frame
- steel
- masonry

Foundation Material

- poured concrete
- stone block
- cinder block
- concrete block
- other (explain) _____

Foundation Type

- crawl space
- full basement
- partial basement
- block on footing with center piers
- piers/posts/pillars with underpinning
- piers/posts/pillars w/out underpinning
- other (describe) _____

If dwelling is a mobile home, are tie-downs in use? yes no

Exterior Finish Materials

- brick
- concrete block
- cinder block
- stone
- stucco
- brick or stone laminate
- wood siding
- aluminum siding
- vinyl siding
- shingle (describe type) _____
- other (explain) _____

PRE-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE PROJECT

Exterior Inspection (cont.)

(Check all that apply)

Page 3

Roofing Material(s)

- shingles
 - asphalt
 - cedar or other wood
 - other (explain) _____
 - slate
 - tile
 - tin or other metal
 - tar & chip
 - tarpaper
 - other (explain) _____
- Gutters installed yes no
- Down spouts installed yes no
- Routed away from foundation
 yes no

Roof Configuration

- sloped
- flat

Chimney Material

- block
- brick
- stone
- metal
- other (explain) _____

Sidewalk/Walkway Material(s)

- concrete
- wood
- brick
- pavers/patio blocks
- flagstone
- other (explain) _____

Driveway Material(s)

- concrete
- asphalt
- gravel
- tar & chip
- other (explain) _____

Exterior Photos Labeled to Match Checklist Items.

Comments (including a description of any substandard construction):

PRE-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE PROJECT

Well/Water Supply System (check all that apply)

Page 4

Public Service Water Supply (if not checked, complete the remainder of this page, and include a water analysis of untreated water).

Water Use

- domestic
- irrigation domestic garden
- irrigation commercial crops
- livestock
- combined domestic and agricultural
- commercial (explain) _____

no water source at the site (explain) _____

cistern

Size _____ gallons

Age _____ years

Supplied by:

- rainwater
- spring
- runoff/stream

Location:

- aboveground
- buried

Material:

- concrete
- plastic
- metal
- other (explain) _____

- spring
- stream
- other (explain) _____

dug well
depth _____ ft. age _____

- brick lining
- stone lining
- other (explain) _____

Pump type & size _____

drilled well

- steel casing
- plastic casing
- other (explain) _____

Casing depth _____ ft.

Casing diameter _____ in.

Well screen/liner diameter _____ in. Depth _____ ft. to _____ ft.

Well screen type _____

Vent type/size _____

Well driller _____

Pump type & size _____

Water Quantity

Has well ever gone dry yes no

Has well capacity ever been measured

yes no If yes, list data (recharge rate): _____ gpm

How many people use this water supply? _____

Water Quality

Does the water cause staining?

yes no

Stain color: _____

Items stained: _____

Are there particulates (solids) in the water? yes no

If yes describe the particles (color, texture): _____

Does the water have an odor?

yes no If yes describe the odor _____

PRE-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE PROJECT

Water Well/Septic-Sewage System

Page 5

Well/Water Supply (continued)

Is there a treatment system?
 yes no
 Type of treatment: _____
 Is the water sampling point prior to treatment? yes no

Sampling Information

May the well be unsealed to measure depth to and of water? yes no
 Depth of water: _____ ft.
 Ground level to water: _____ ft.
 May the well be pumped to measure recharge characteristics? yes no
 Recharge rate _____ gpm
 Date measured: _____
 Date sampled: _____
 Well sample no.: _____

Septic/Sewage Treatment System

public service system
 aeration system
 package plant
 septic tank
 concrete
 plastic
 metal
 other (explain) _____
 drain field
 other (explain) _____

Location Information

water well
 latitude longitude
 springs
 latitude longitude
 septic/sewage
 latitude longitude

Attach lab analysis of the pre-treatment water and any available written well documentation. Provide source of documentation. Photos of water well(s), water supply, water treatment system, and septic/sewage treatment system and area.

Interior Inspection

Provide written documentation of any defects. Written documentation must be accompanied by photos or room sketches for each interior room.

Each interior room sketch must include type of construction materials and covering for each wall, the floor and the ceiling.

Each wall that is found to be defect free must be labeled "room completely surveyed" or "no defects observed".

Show areas hidden from view (hidden by furniture, etc.).

Interior photos of a room should be appropriately labeled to match written documentation to the photo (i.e. room and wall number).

Include a key to abbreviations used.

Include a floor plan sketch with rooms labeled and indicate direction of progression of the inspection.

Comments (include any substandard construction): _____

PRE-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE PROJECT

Additional Buildings

Page 6

Additional Building (attach additional sheets for each additional building).

Type of building

- barn
- garage
- well house
- storage
- other (explain) _____

Age _____

- estimated
- owner provided

Exterior finish material _____

Frame materials _____

Roof materials _____

Floor materials _____

Foundation materials _____

Is interior finished yes no

Interior finish _____

Provide written documentation and photos of exterior and interior with room sketches for each interior room of the additional building.

Comments

Owner/resident: _____

Surveyor: _____

**APPENDIX J-2
BLAST REPORT**

BLAST REPORT

MOUNTAIN VALLEY PIPELINE PROJECT

Blasting Company: _____

Address: _____

Blast Location: _____ to _____
Pipeline Station/Milepost Pipeline Station/Milepost County/Township State

Blast Area: _____
Picture(s) of Blast Area Disturbance Picture(s) of Blasted Trench

Blast Date and Time: _____
Date Military Time

Blaster: _____
Signature of Blaster

Printed Name of Blaster

Blaster's License Number

Blasting Company Name

Blasting Company License Number

Signature of Blasting Company Person in Charge

Printed Name of Person in Charge

Type of Material Blasted: _____
(Geologist Description)

Blast Design: _____
Number of Holes and Diameter

Depth of Burden

Stemming and Spacing

Depth of Holes

Stemming Type and Height/Length

BLAST REPORT

MOUNTAIN VALLEY PIPELINE PROJECT

Page 2

Volume of Shot: _____
Rock Volume of Shot

Explosives and Delays: _____
Type of Explosives Used

Specific Gravity and Energy Release

Pounds of Explosive per Delay

Total Pounds of Explosive per Shot

Type of Delay and Interval

Total Number of Delays and Holes per Delay

Maximum Amount of Explosives per Delay Period of 17 Milliseconds or Greater

Power Factor

Firing: _____
Method of Firing

Type of Circuit

Nearest Structure: _____
Compass Direction and Distance in Feet to Nearest Structure

Nearest Structure Description

Weather: _____
Temperature, Wind and Sky Conditions at Start of Hole Loading

Temperature, Wind and Sky Conditions at Time of Blast

Protection: _____
Mats Description and Weight

Other than Mats Blast Protection

Detonator/Delay: _____
Type of Detonator Used

Delay Period(s) Used

BLAST REPORT

MOUNTAIN VALLEY PIPELINE PROJECT

Page 3

Safety Measures:

Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel
Location of Measure
Dates Safety Measures Placed/Removed
Comments
Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel
Location of Measure
Dates Safety Measures Placed/Removed
Comments
Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel
Location of Measure
Dates Safety Measures Placed/Removed
Comments
Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel
Location of Measure
Dates Safety Measures Placed/Removed
Comments

BLAST REPORT

MOUNTAIN VALLEY PIPELINE PROJECT

Page 4

Safety Measures:

Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel
Location of Measure
Dates Safety Measures Placed/Removed
Comments
Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel
Location of Measure
Dates Safety Measures Placed/Removed
Comments

Communications Systems:

Used to Maintain Safe Blast Area
Location and Use
Comments
Used to Maintain Safe Blast Area
Location and Use
Comments
Used to Maintain Safe Blast Area
Location and Use
Comments

BLAST REPORT

MOUNTAIN VALLEY PIPELINE PROJECT

Page 5

Communications Systems:

_____	Used to Maintain Safe Blast Area
_____	Location and Use
_____	Comments
_____	Used to Maintain Safe Blast Area
_____	Location and Use
_____	Comments
_____	Used to Maintain Safe Blast Area
_____	Location and Use
_____	Comments

Notices of Blast:

_____	Company/Person		
_____	Verbal Date	_____	Military Time
_____	Written Notice Date		
_____	Written Notice Provided By		
_____	Company/Person		
_____	Verbal Date	_____	Military Time
_____	Written Notice Date		
_____	Written Notice Provided By		

BLAST REPORT

MOUNTAIN VALLEY PIPELINE PROJECT

Page 6

Notices of Blast:

Company/Person	
_____	_____
Verbal Date	Military Time

Written Notice Date	

Written Notice Provided By	

Company/Person	
_____	_____
Verbal Date	Military Time

Written Notice Date	

Written Notice Provided By	

Company/Person	
_____	_____
Verbal Date	Military Time

Written Notice Date	

Written Notice Provided By	

Company/Person	
_____	_____
Verbal Date	Military Time

Written Notice Date	

Written Notice Provided By	

**APPENDIX J-3
SEISMOGRAPH REPORT**

SEISMOGRAPH REPORT

MOUNTAIN VALLEY PIPELINE PROJECT

Seismograph Company: _____

Address: _____

Blast Location: _____ to _____
Pipeline Station/Milepost Pipeline Station/Milepost County/Township State

Blast Date and Time: _____
Date Military Time

Seismograph Locations: _____
Seismograph Serial Number Location Description

_____ Distance from Blast in Feet and Location Compass Direction

_____ Seismograph Reading

_____ Seismograph Serial Number Location Description

_____ Distance from Blast in Feet and Location Compass Direction

_____ Seismograph Reading

_____ Seismograph Serial Number Location Description

_____ Distance from Blast in Feet and Location Compass Direction

_____ Seismograph Reading

_____ Seismograph Serial Number Location Description

_____ Distance from Blast in Feet and Location Compass Direction

_____ Seismograph Reading

Holes per Delay: _____
Maximum Number of Holes per Delay Period of 17 Milliseconds or Greater

Person Analyzing Readings: _____
Signature of Seismograph Reader

_____ Printed Name

_____ Name of Company/Firm Analyzing Readings

The seismograph report, copy of seismograph readings, and location sketch and description documenting the location of each seismograph are to be attached to the Blast Report for each blast where seismograph readings are required.

**APPENDIX J-4
POST-BLAST SURVEY**

POST-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE PROJECT

STRUCTURE INFORMATION

Owner Name:	
Mailing Address:	
Telephone No.:	
Street Address or Physical Address:	
Latitude:	Longitude:
County/Township:	State:
Nearest Pipeline Station/Milepost:	
Company Structure No.:	

OCCUPANT INFORMATION

Occupant Name:
Mailing Address:
Telephone No.:

SURVEYOR'S INFORMATION

Company Conducting Survey:
Mailing Address:
Telephone No.:
Contact Person to Discuss Survey:
Name of Approved Surveyor:
State of Approval:

REQUEST FOR POST-BLAST SURVEY

Name of Company/Person Requesting Post-Blasting Survey:
Mailing Address:
Telephone No.:
Physical Address:
Statement of Damage:

STRUCTURE LOCATION MAP

Survey Map: 8 ½" x 11" copy of construction alignment sheet or site specific plan/drawing showing Mountain Valley Pipeline and structure surveyed. Attach map to survey.
--

SITE PLAN SKETCH

Site Plan: 8 ½" x 11" sketch showing all structures and relative locations, driveways, sidewalks, outbuildings, water wells, septic systems' components, and other man-made features as applicable. Use arrows to show site grade and slope. Include a North arrow and direction and distance to Mountain Valley Pipeline. The site plan sketch shall show the distance from the blast's end points to the adjacent natural gas pipeline(s).
--

POST-BLAST SURVEY MOUNTAIN VALLEY PIPELINE PROJECT

Exterior Inspection (Check all that apply)

Page 2

Age of Structure

_____ years

- estimated
- provided by owner or occupant
- other (explain) _____

Use of Structure

- private dwelling
- commercial building
 - retail
 - factory
 - office
 - warehouse/storage
- multi-family dwelling
- single-family rental
- apartment building
- other (explain) _____

Type of Structure

- conventional dwelling
- mobile home
- mobile home with frame addition
- modular
- commercial (describe) _____
- other (explain) _____
- single story
- two story
 - other (describe) _____

Frame Materials

- conventional wood frame
- timber frame
- steel
- masonry

Foundation Material

- poured concrete
- stone block
- cinder block
- concrete block
- other (explain) _____

Foundation Type

- crawl space
 - full basement
 - partial basement
 - block on footing with center piers
 - piers/posts/pillars with underpinning
 - piers/posts/pillars w/out underpinning
 - other (describe) _____
- If dwelling is a mobile home, are tie-downs in use? yes no

Exterior Finish Materials

- brick
- concrete block
- cinder block
- stone
- stucco
- brick or stone laminate
- wood siding
- aluminum siding
- vinyl siding
- shingle (describe type) _____
- other (explain) _____

POST-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE PROJECT

Exterior Inspection (cont.)

(Check all that apply)

Page 3

Roofing Material(s)

- shingles
 - asphalt
 - cedar or other wood
 - other (explain) _____
- slate
- tile
- tin or other metal
- tar & chip
- tarpaper
- other (explain) _____
- Gutters installed yes no
- Down spouts installed yes no
- Routed away from foundation yes no

Roof Configuration

- sloped
- flat

Chimney Material

- block
- brick
- stone
- metal
- other (explain) _____

Sidewalk/Walkway Material(s)

- concrete
- wood
- brick
- pavers/patio blocks
- flagstone
- other (explain) _____

Driveway Material(s)

- concrete
- asphalt
- gravel
- tar & chip
- other (explain) _____

Exterior Photos Labeled to Match Checklist Items.

Comments (including a description of any substandard construction):

POST-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE PROJECT

Well/Water Supply System *(check all that apply)*

Page 4

Public Service Water Supply *(if not checked, complete the remainder of this page, and include a water analysis of untreated water).*

Water Use

- domestic
- irrigation domestic garden
- irrigation commercial crops
- livestock
- combined domestic and agricultural
- commercial (explain) _____

no water source at the site (explain) _____

cistern

Size _____ gallons

Age _____ years

Supplied by:

- rainwater
- spring
- runoff/stream

Location:

- aboveground
- buried

Material:

- concrete
- plastic
- metal
- other (explain) _____

- spring
- stream
- other (explain) _____

dug well

depth _____ ft. age _____

- brick lining
- stone lining
- other (explain) _____
- Pump type & size _____

drilled well

- steel casing
- plastic casing
- other (explain) _____
- Casing depth _____ ft.
- Casing diameter _____ in.
- Well screen/liner diameter _____ in.
- Depth ft. to _____ ft.
- Well screen type _____
- Vent type/size _____
- Well driller _____
- Pump type & size _____

Water Quantity

Has well ever gone dry yes no
 Has well capacity ever been measured
 yes no If yes, list
 data (recharge rate): _____ gpm
 How many people use this water
 supply? _____

Water Quality

Does the water cause staining?
 yes no
 Stain color: _____
 Items stained: _____

Are there particulates (solids) in the
 water? yes no
 If yes describe the particles
 (color, texture): _____

Does the water have an odor?
 yes no If yes describe the odor

POST-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE PROJECT

Water Well/Septic-Sewage System

Page 5

Well/Water Supply (continued)

Is there a treatment system?

yes no

Type of treatment: _____

Is the water sampling point prior to treatment? yes no

Sampling Information

May the well be unsealed to measure depth to and of water? yes no

Depth of water: _____ ft.

Ground level to water: _____ ft.

May the well be pumped to measure recharge characteristics? yes no

Recharge rate _____ gpm

Date measured: _____

Date sampled: _____

Well sample no.: _____

Septic/Sewage Treatment System

public service system

aeration system

package plant

septic tank

concrete

plastic

metal

other (explain) _____

drain field

other (explain) _____

Location Information

water well

latitude longitude

springs

latitude longitude

septic/sewage

latitude longitude

Attach lab analysis of the pre-treatment water and any available written well documentation. Provide source of documentation. Photos of water well(s), water supply, water treatment system, and septic/sewage treatment system and area.

Interior Inspection

Provide written documentation of any defects. Written documentation must be accompanied by photos or room sketches for each interior room.

Each interior room sketch must include type of construction materials and covering for each wall, the floor and the ceiling.

Each wall that is found to be defect free must be labeled "room completely surveyed" or "no defects observed".

Show areas hidden from view (hidden by furniture, etc.).

Interior photos of a room should be appropriately labeled to match written documentation to the photo (i.e. room and wall number).

Include a key to abbreviations used.

Include a floor plan sketch with rooms labeled and indicate direction of progression of the inspection.

Comments (include any substandard construction): _____

POST-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE PROJECT

Additional Buildings

Page 6

Additional Building (attach additional sheets for each additional building).

Type of building

- barn
- garage
- well house
- storage
- other (explain) _____

Age _____

- estimated
- owner provided

Exterior finish material _____

Frame materials _____

Roof materials _____

Floor materials _____

Foundation materials _____

Is interior finished yes no

Interior finish _____

Provide written documentation and photos of exterior and interior with room sketches for each interior room of the additional building.

Comments

Owner/resident: _____

Surveyor: _____

POST-BLAST SURVEY
MOUNTAIN VALLEY PIPELINE PROJECT
DAMAGE SUMMARY

Page 7

Damaged Facility: _____
List Facility Damaged

Type of Damage: _____
(Attach sketch of damaged facility, facility location, and photograph)

Date of Blast and Time: _____
Date Military Time
(Attach copy of blast design and blast report)

Pipeline Trench Location: _____ to _____
Pipeline Station/Milepost Pipeline Station/Milepost County/Township State

Pipeline Trench to Damage Location: _____
Distance from Blasting Site (in Feet) and Location Compass Direction

Seismograph Report: _____
(Attach Seismograph Report)

Pipeline Trench Fracture Zone: _____
Length in Feet Width in Feet

Changes Implemented Blast Design: _____
 _____ Weight of Change
 _____ Distribution of Change in Blast Hole
 _____ Weight of Explosive per Delay
 _____ Shot Hole Pattern
 _____ Supplier/Manufacturer of Explosive
 _____ Explosive Grade

Ground Geology: _____
List Changes Before Blast and After Blast

POST-BLAST SURVEY
MOUNTAIN VALLEY PIPELINE PROJECT
DAMAGE SUMMARY

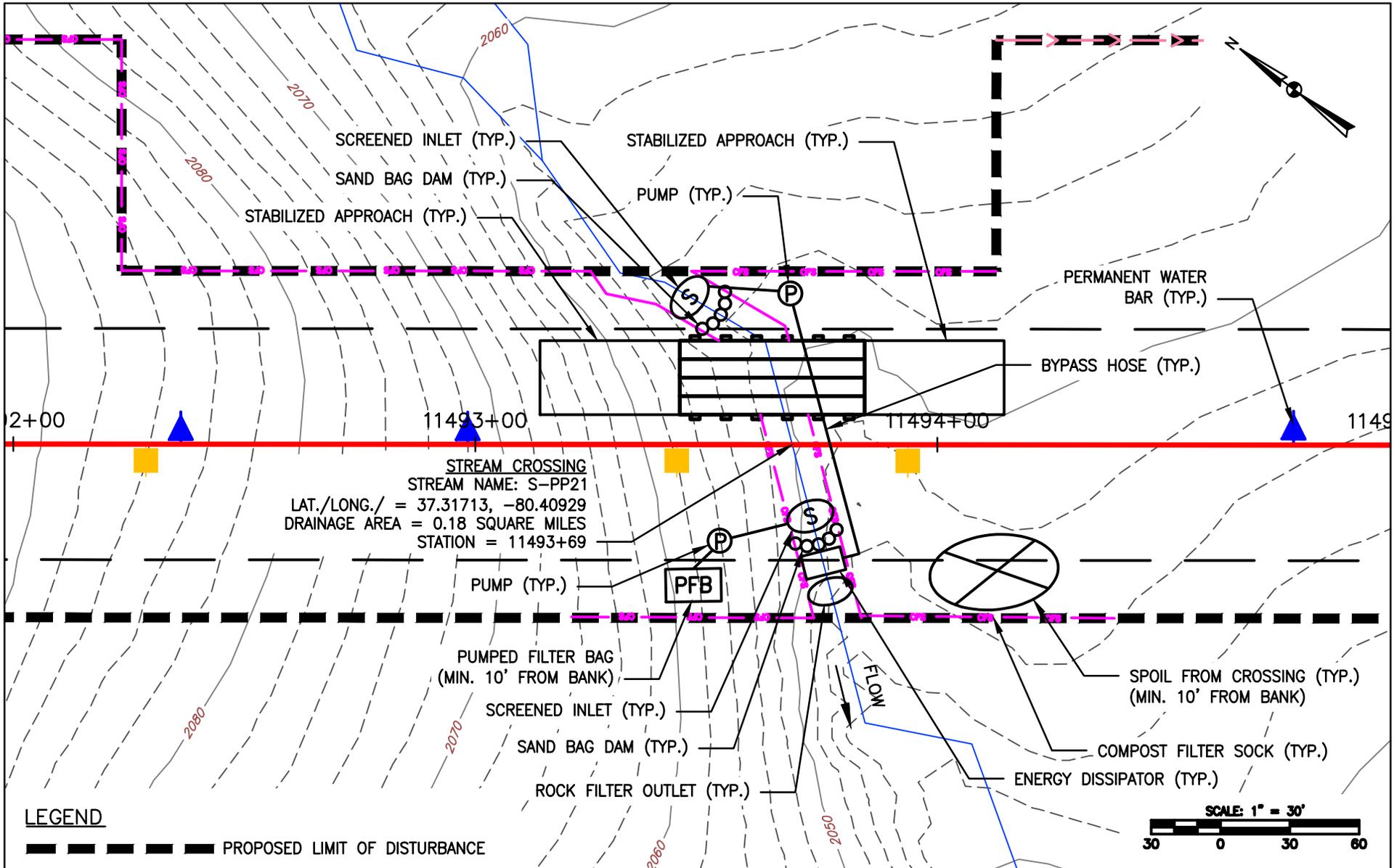
Page 8

Provide Written Comments of: **MVP Chief Blasting Inspector**
 Blaster
 Post-Blast Surveyor
 Seismologist
 Facility Owner

Provide written comments of suggested changes to future blast designs for the Mountain Valley project.

Provide written comments as to actions to be taken to correct the damages.

APPENDIX K
Waterbody Crossing Drawings



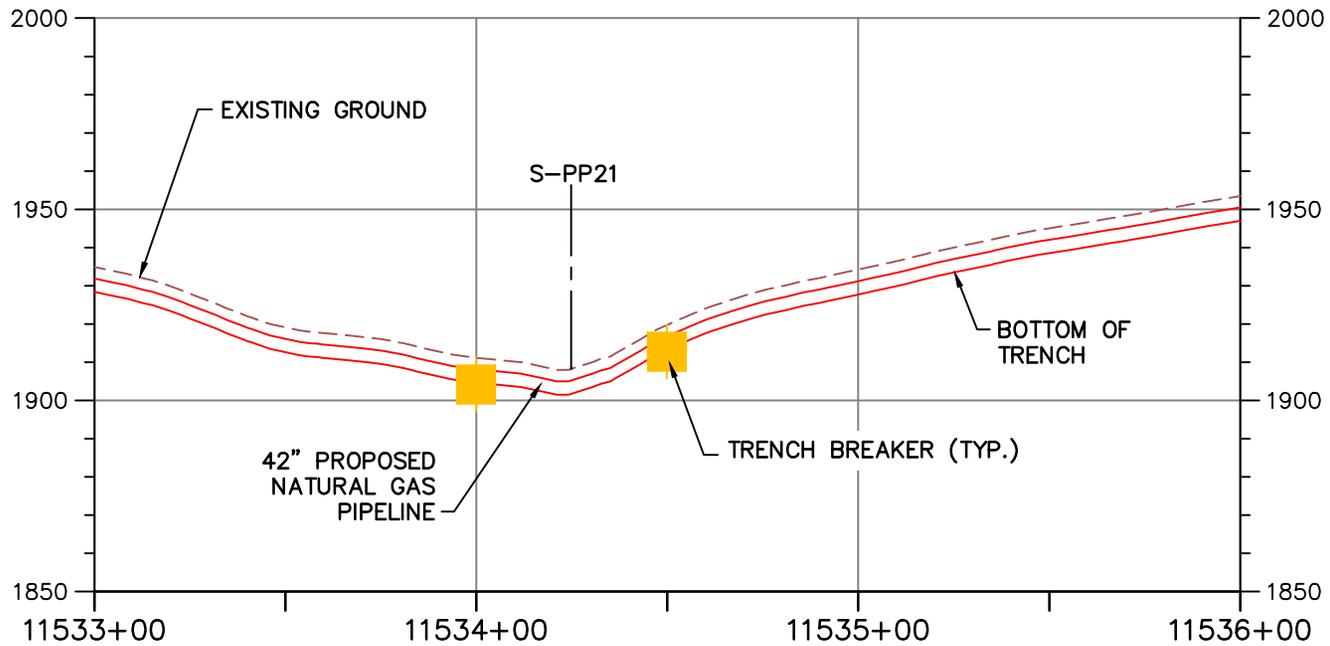
LEGEND

-  PROPOSED LIMIT OF DISTURBANCE
-  PROPOSED R.O.W.
-  PROPOSED PIPELINE
-  PROPOSED COMPOST FILTER SOCK
-  TIMBER MAT
-  PROPOSED TRENCH BREAKER


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MOUNTAIN VALLEY PIPELINE PROJECT
STREAM CROSSING EXHIBIT
 STREAM NAME: S-PP21
 STATION: 11493+69
 COUNTY: MONTGOMERY

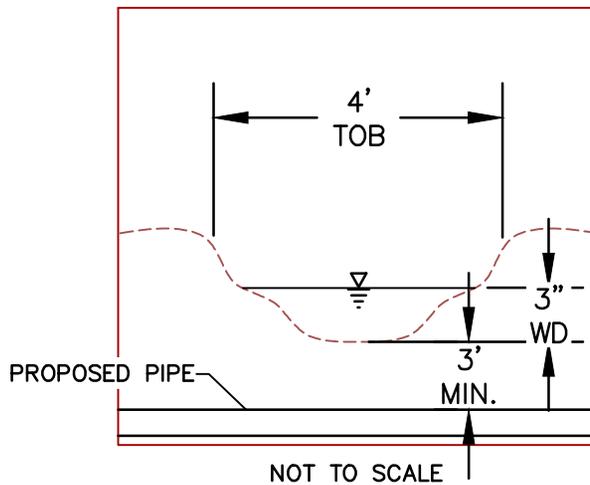
DATE:	12/13/16
PROJECT NO.:	112IC07157
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DRAWN BY:	JK
CHECKED BY:	RE
SHEET:	1 OF 2
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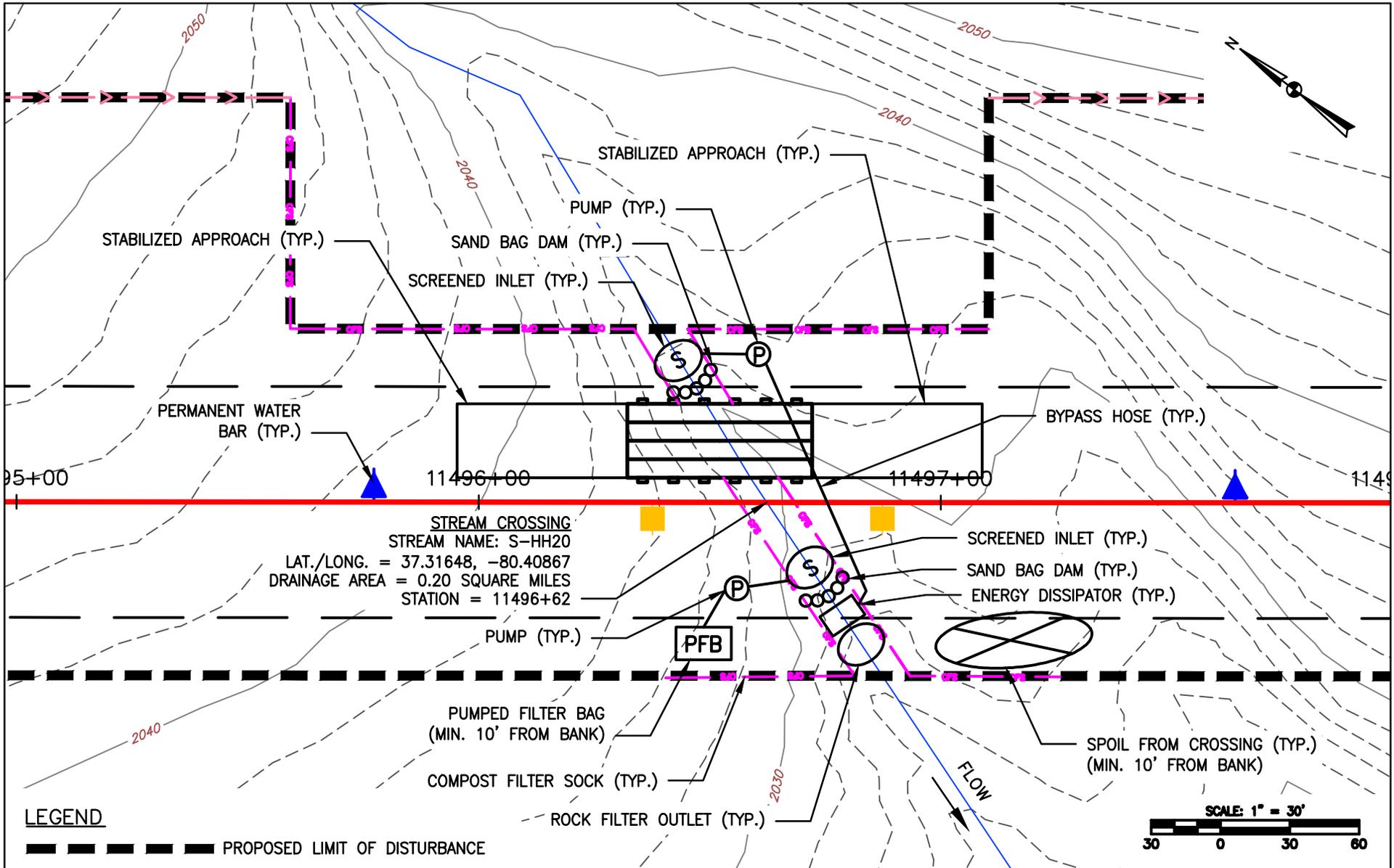
NOTE:
MINIMUM 3' OF COVER BETWEEN STREAM AND BOTTOM OF PIPELINE



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Mountain Valley PIPELINE
MOUNTAIN VALLEY PIPELINE PROJECT
STREAM CROSSING EXHIBIT
 STREAM NAME: S-PP21
 STATION: 11493+69
 COUNTY: MONTGOMERY

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LEGEND

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-  PROPOSED R.O.W.
-  PROPOSED PIPELINE
-  PROPOSED COMPOST FILTER SOCK
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-  PROPOSED TRENCH BREAKER



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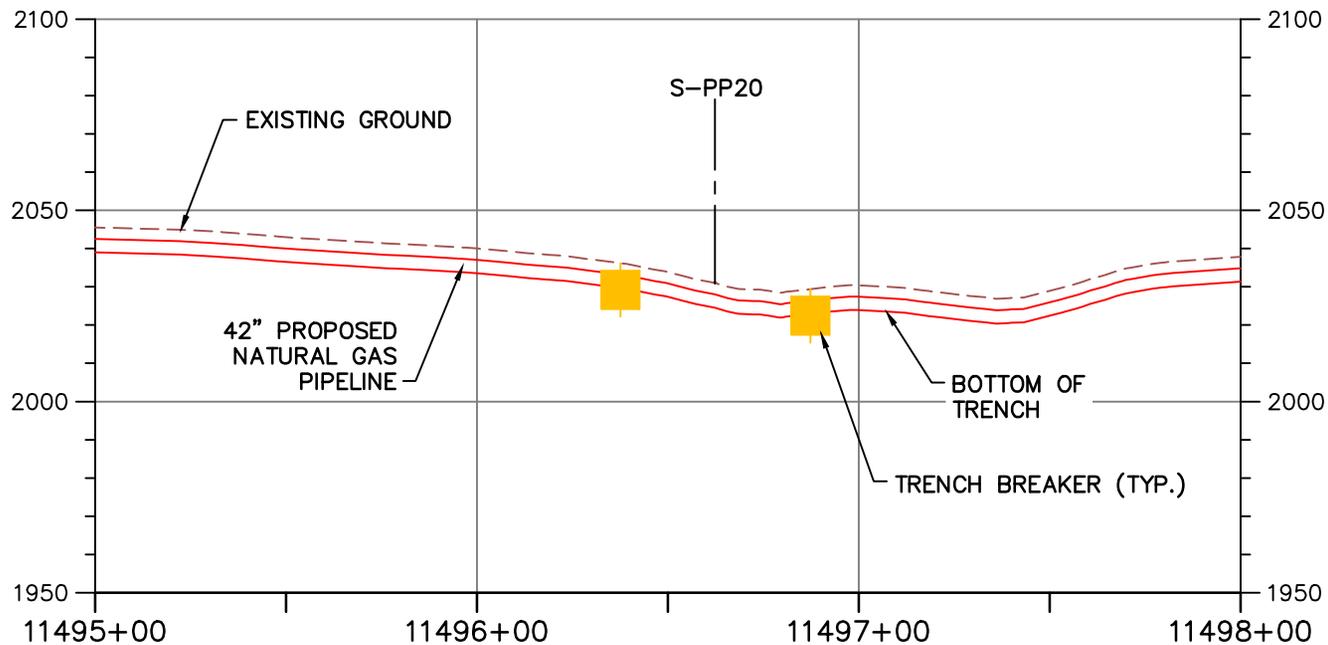


MOUNTAIN VALLEY PIPELINE PROJECT

STREAM CROSSING EXHIBIT

STREAM NAME: S-PP20
STATION: 11496+62
COUNTY: MONTGOMERY

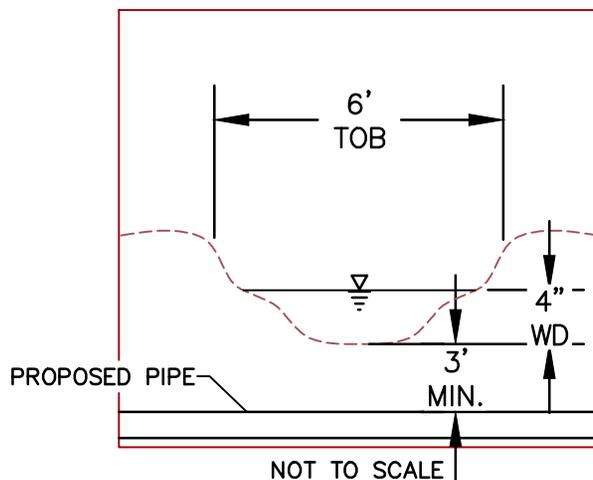
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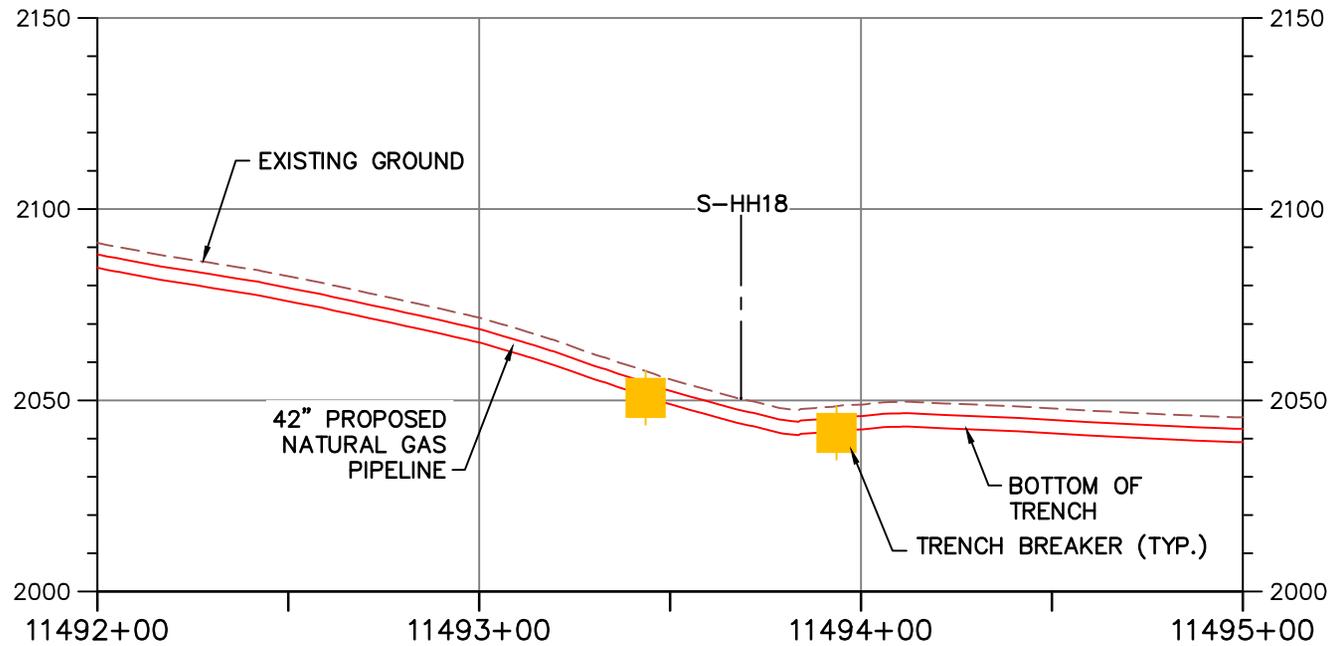
NOTE:
MINIMUM 3' OF COVER BETWEEN STREAM AND BOTTOM OF PIPELINE



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STREAM CROSSING EXHIBIT
STREAM NAME: S-PP20
STATION: 11496+62
COUNTY: MONTGOMERY

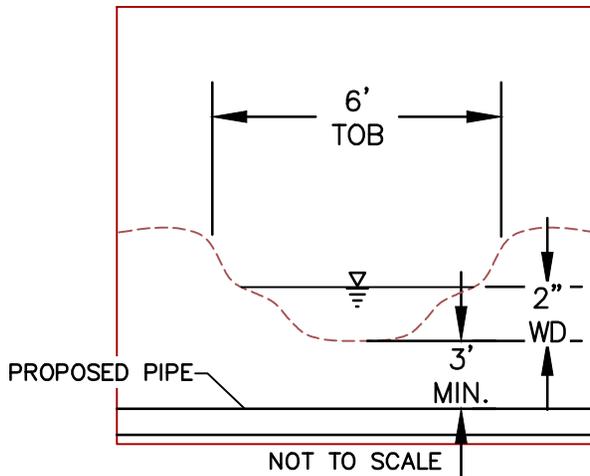
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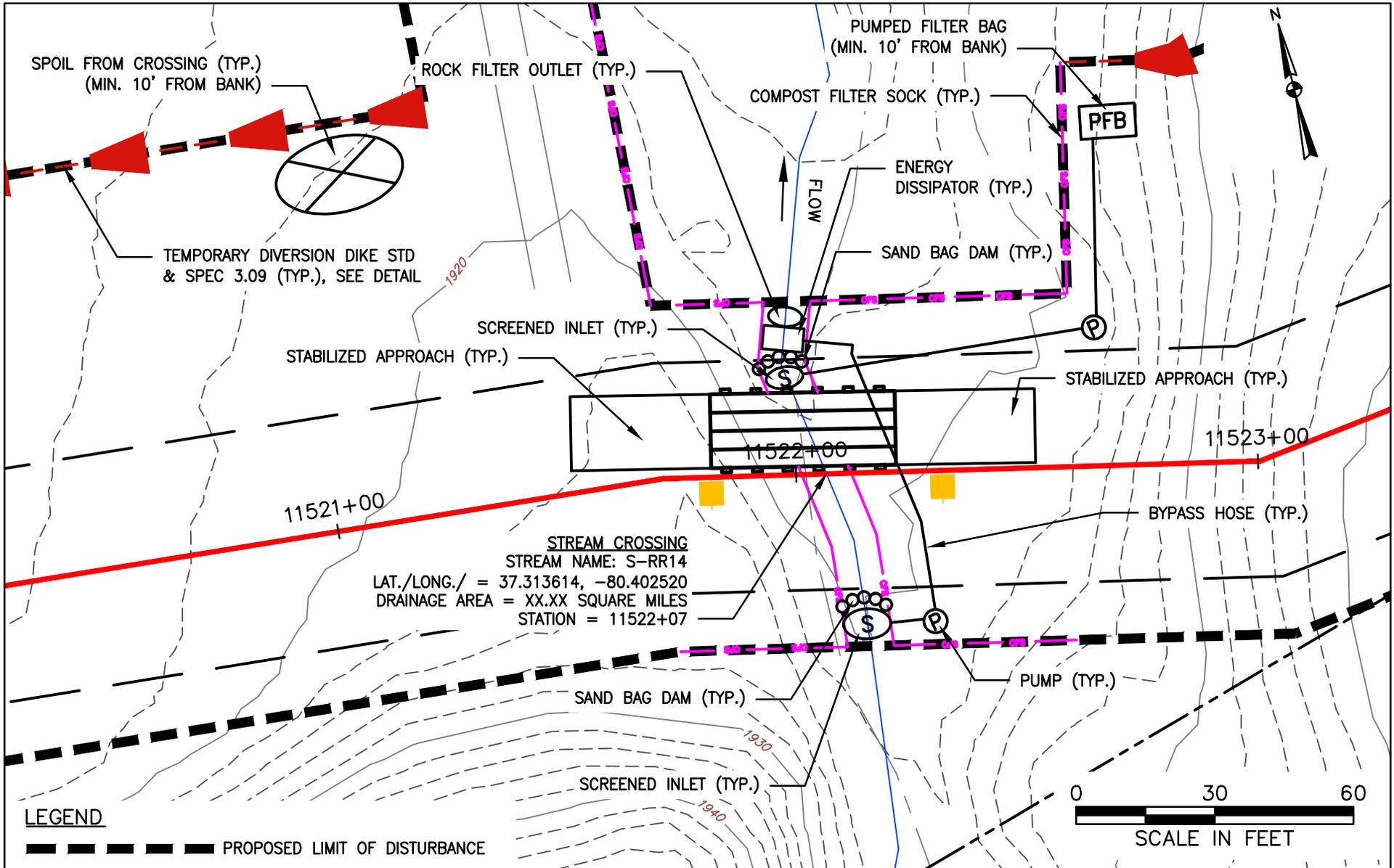
NOTE:
MINIMUM 3' OF COVER BETWEEN STREAM AND BOTTOM OF PIPELINE



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MOUNTAIN VALLEY PIPELINE PROJECT
STREAM CROSSING EXHIBIT
 STREAM NAME: S-HH18
 STATION: 11493+69
 COUNTY: MONTGOMERY

DATE:	12/13/16
PROJECT NO.:	112IC07157
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STREAM CROSSING
 STREAM NAME: S-RR14
 LAT./LONG./ = 37.313614, -80.402520
 DRAINAGE AREA = XX.XX SQUARE MILES
 STATION = 11522+07

LEGEND

- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED R.O.W.
- PROPOSED PIPELINE
- PROPOSED COMPOST FILTER SOCK
- TIMBER MAT
- PROPOSED TRENCH BREAKER

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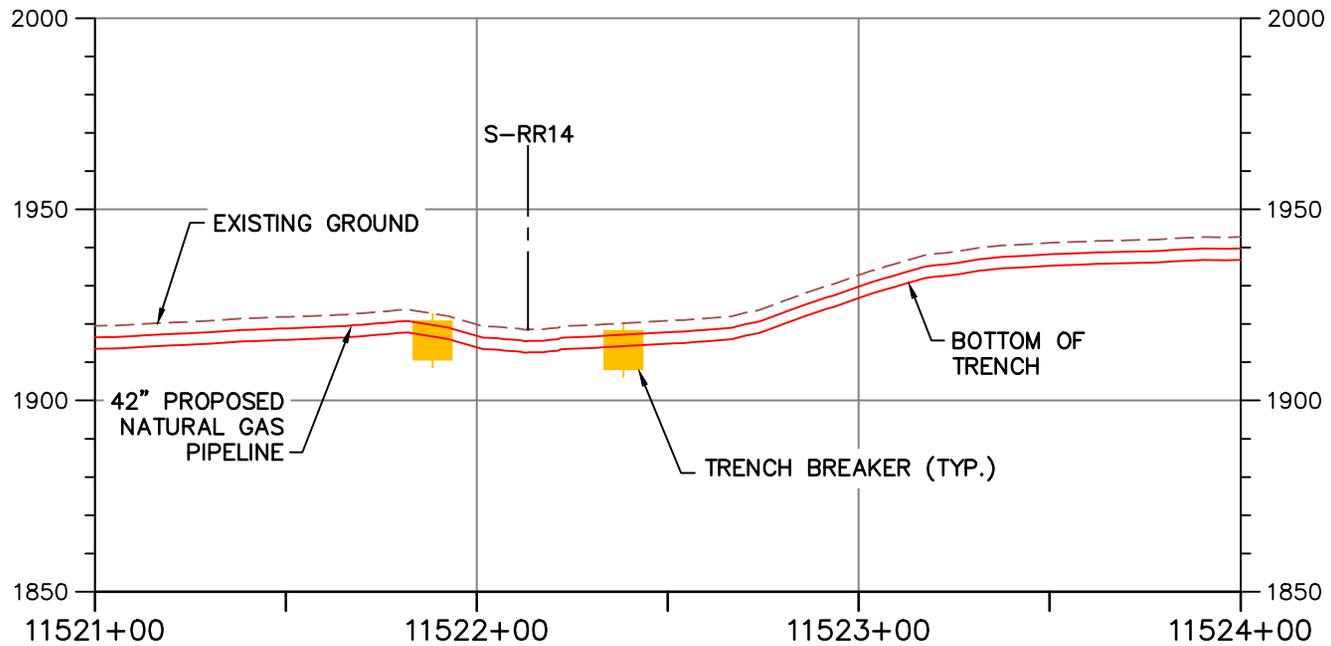
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MOUNTAIN VALLEY PIPELINE PROJECT

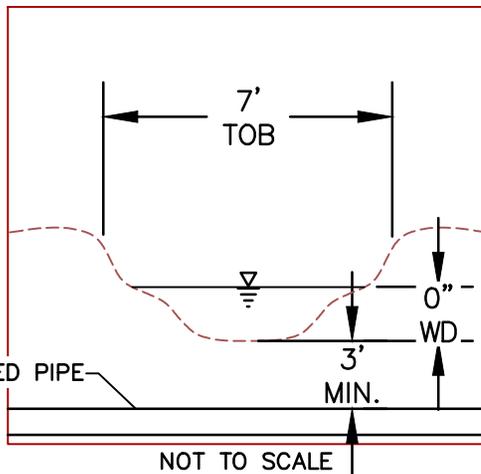
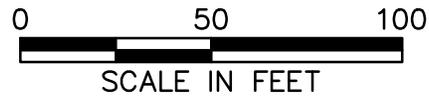
STREAM CROSSING EXHIBIT

STREAM NAME: S-RR14
STATION: 11522+07
COUNTY: MONTGOMERY

DATE:	2/7/17
PROJECT NO.:	112IC07157
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NOTE:
MINIMUM 3' OF COVER BETWEEN STREAM AND BOTTOM OF PIPELINE



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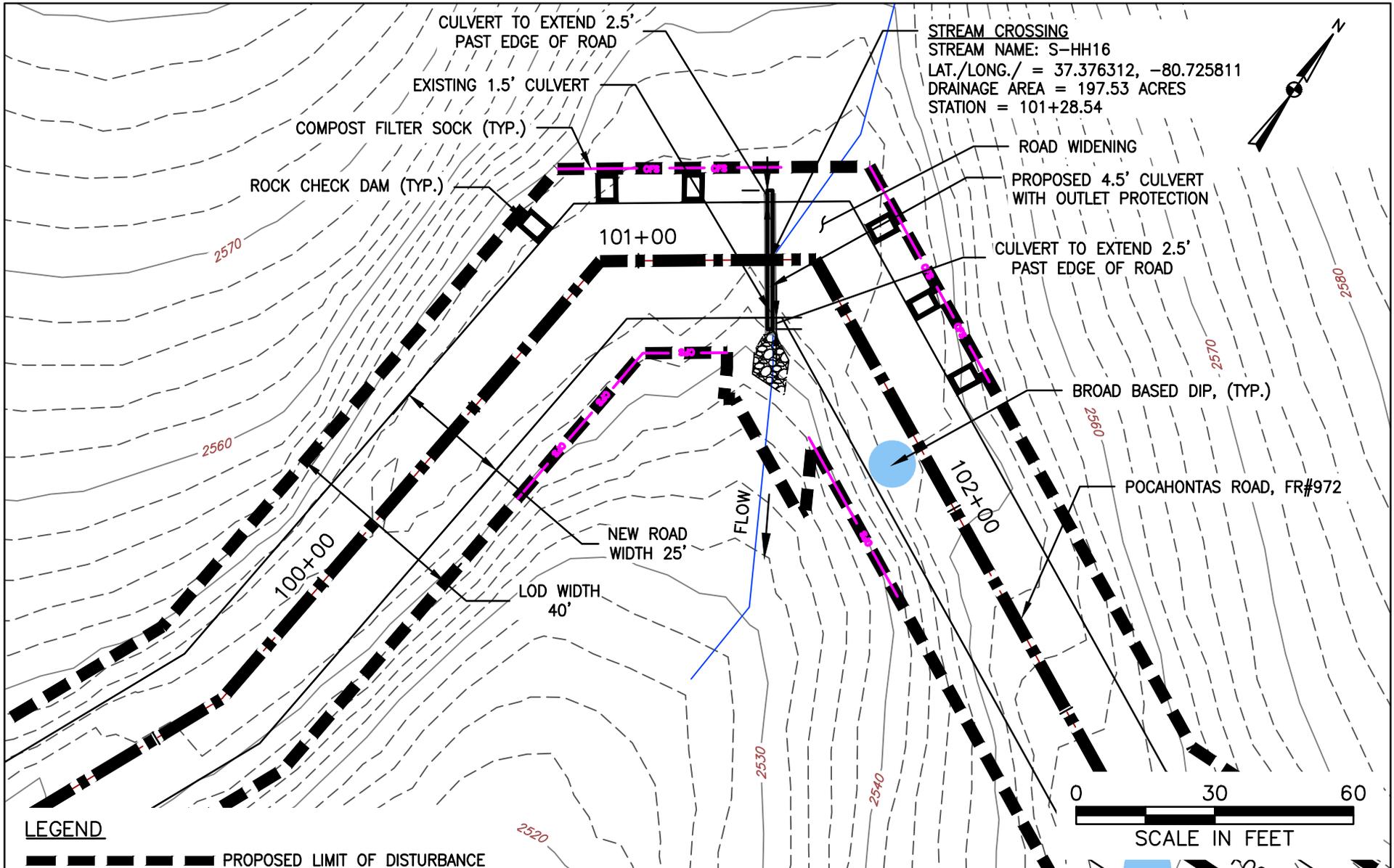
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STREAM CROSSING EXHIBIT

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STATION: 11522+07
COUNTY: MONTGOMERY

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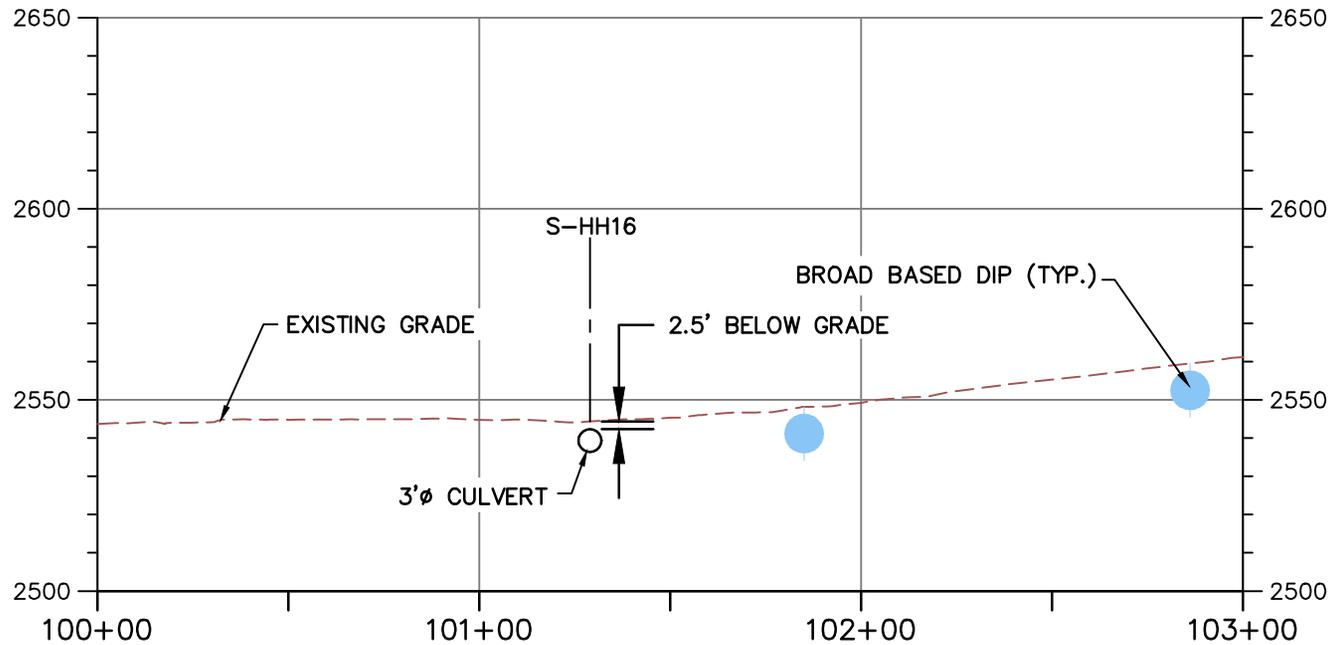
LEGEND

-  PROPOSED LIMIT OF DISTURBANCE
-  PROPOSED EDGE OF ROAD
-  PROPOSED ROAD CENTERLINE
-  PROPOSED COMPOST FILTER SOCK
-  PROPOSED CULVERT WITH OUTLET PROTECTION
-  EXISTING CULVERT

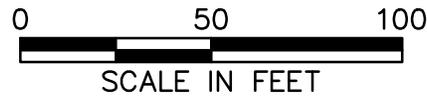
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Mountain Valley PIPELINE
MOUNTAIN VALLEY PIPELINE PROJECT
STREAM CROSSING EXHIBIT
 STREAM NAME: S-HH16
 STATION: 101+28.54
 COUNTY: GILES

DATE:	2/21/17
PROJECT NO.:	112IC07157
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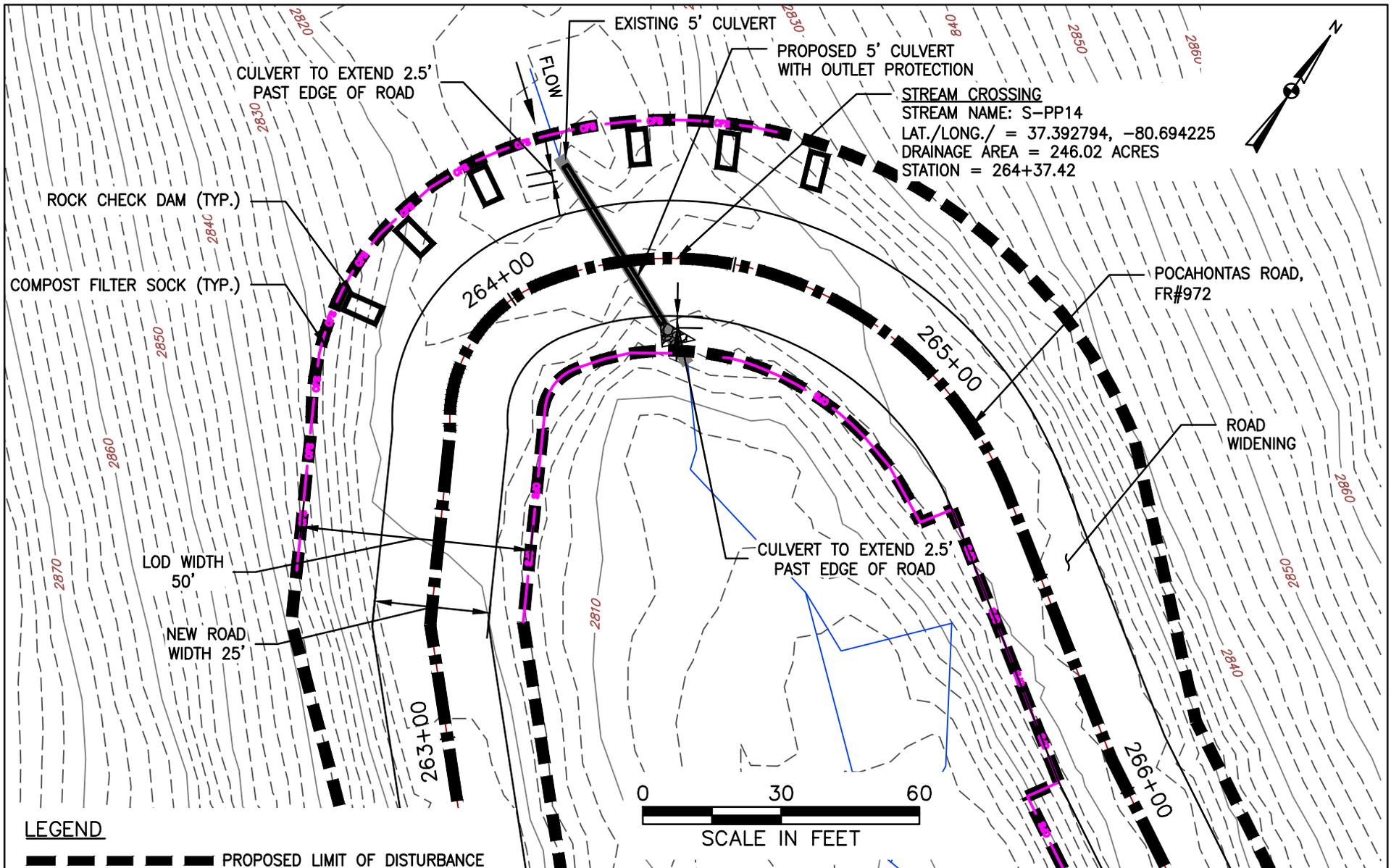
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MOUNTAIN VALLEY PIPELINE PROJECT
STREAM CROSSING EXHIBIT

STREAM NAME: S-HH16
 STATION: 101+28.54
 COUNTY: GILES

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LEGEND

-  PROPOSED LIMIT OF DISTURBANCE
-  PROPOSED EDGE OF ROAD
-  PROPOSED ROAD CENTERLINE
-  PROPOSED COMPOST FILTER SOCK
-  PROPOSED CULVERT WITH OUTLET PROTECTION
-  EXISTING CULVERT



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MOUNTAIN VALLEY PIPELINE PROJECT

STREAM CROSSING EXHIBIT

STREAM NAME: S-PP14
 STATION: 264+37.42
 COUNTY: GILES

DATE: 2/21/17

PROJECT NO.: 112IC07157

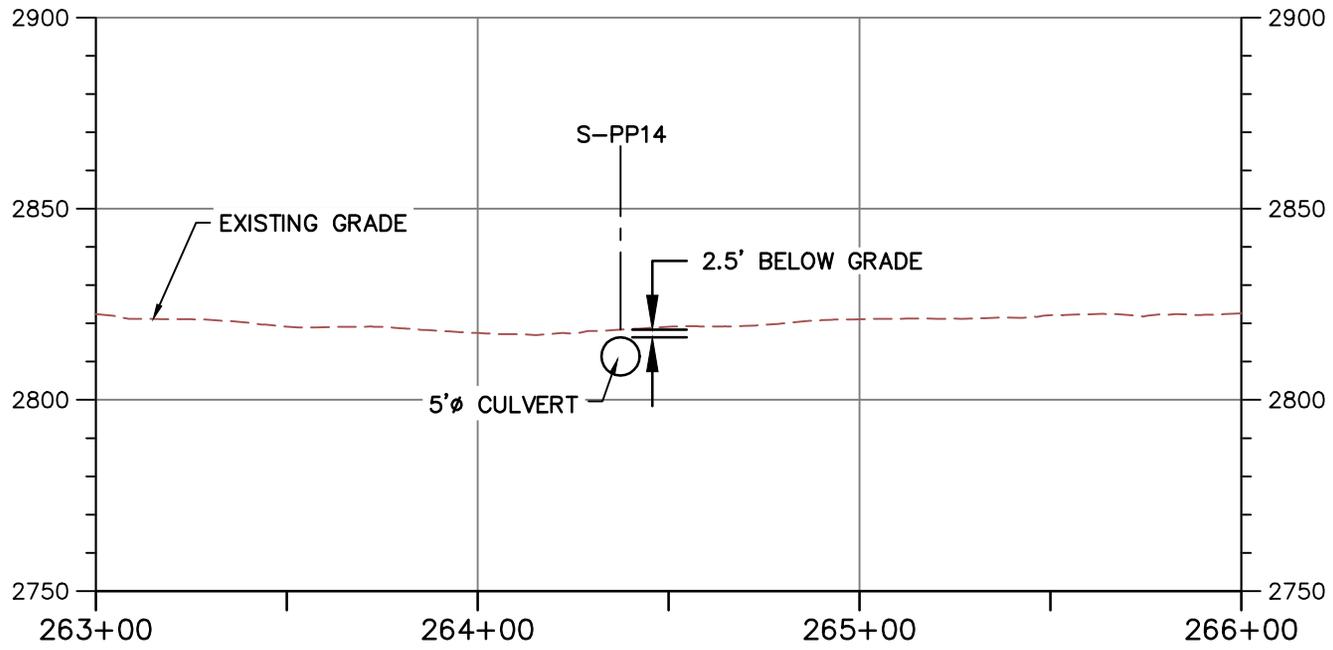
DESIGNED BY: DW

DRAWN BY: JK

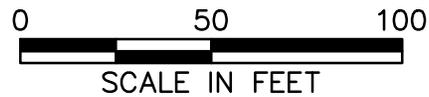
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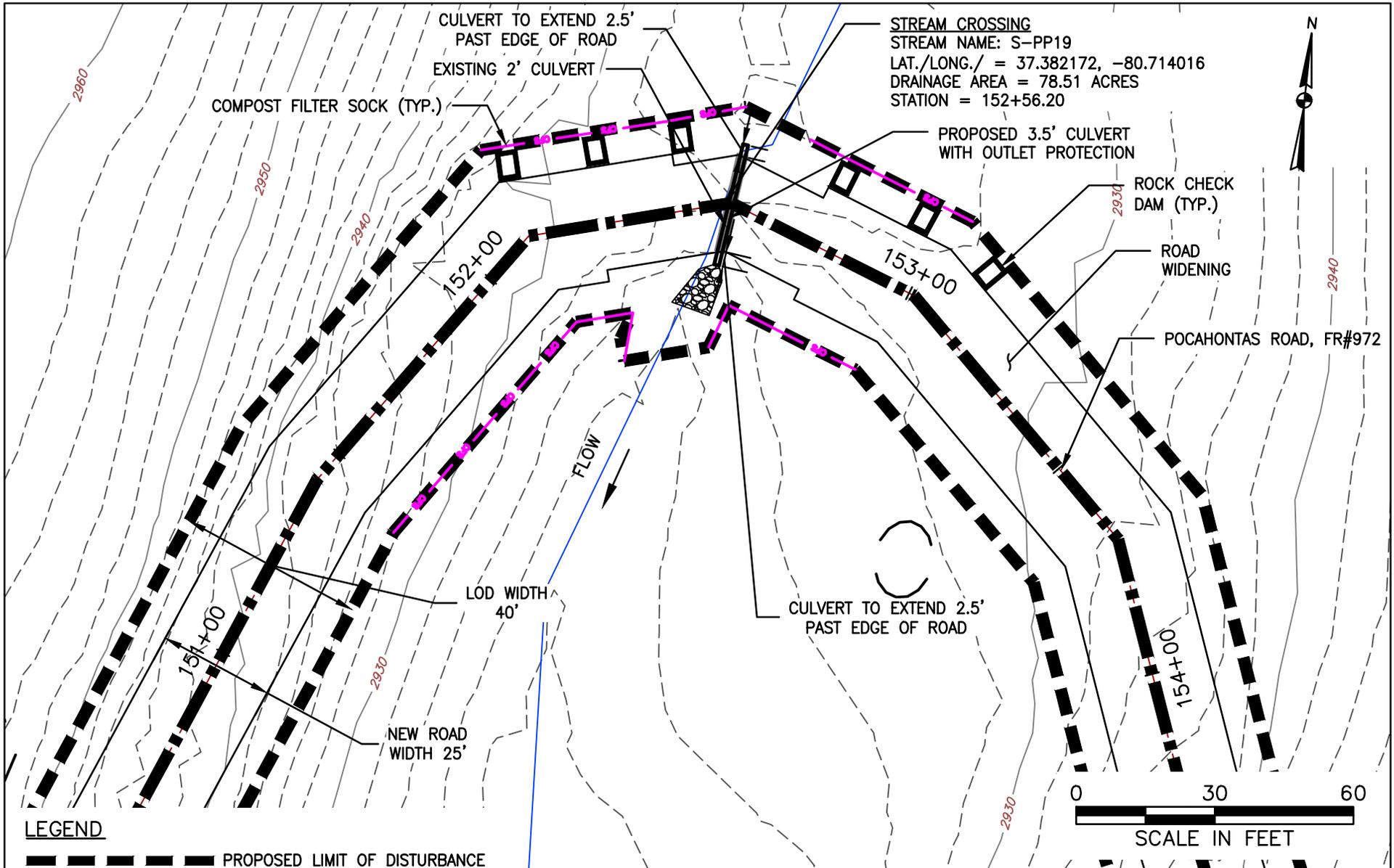
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MOUNTAIN VALLEY PIPELINE PROJECT
STREAM CROSSING EXHIBIT

STREAM NAME: S-PP14
STATION: 264+37.42
COUNTY: GILES

DATE:	2/21/17
PROJECT NO.:	112IC07157
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LEGEND

-  PROPOSED LIMIT OF DISTURBANCE
-  PROPOSED EDGE OF ROAD
-  PROPOSED ROAD CENTERLINE
-  CFS PROPOSED COMPOST FILTER SOCK
-  PROPOSED CULVERT WITH OUTLET PROTECTION
-  EXISTING CULVERT



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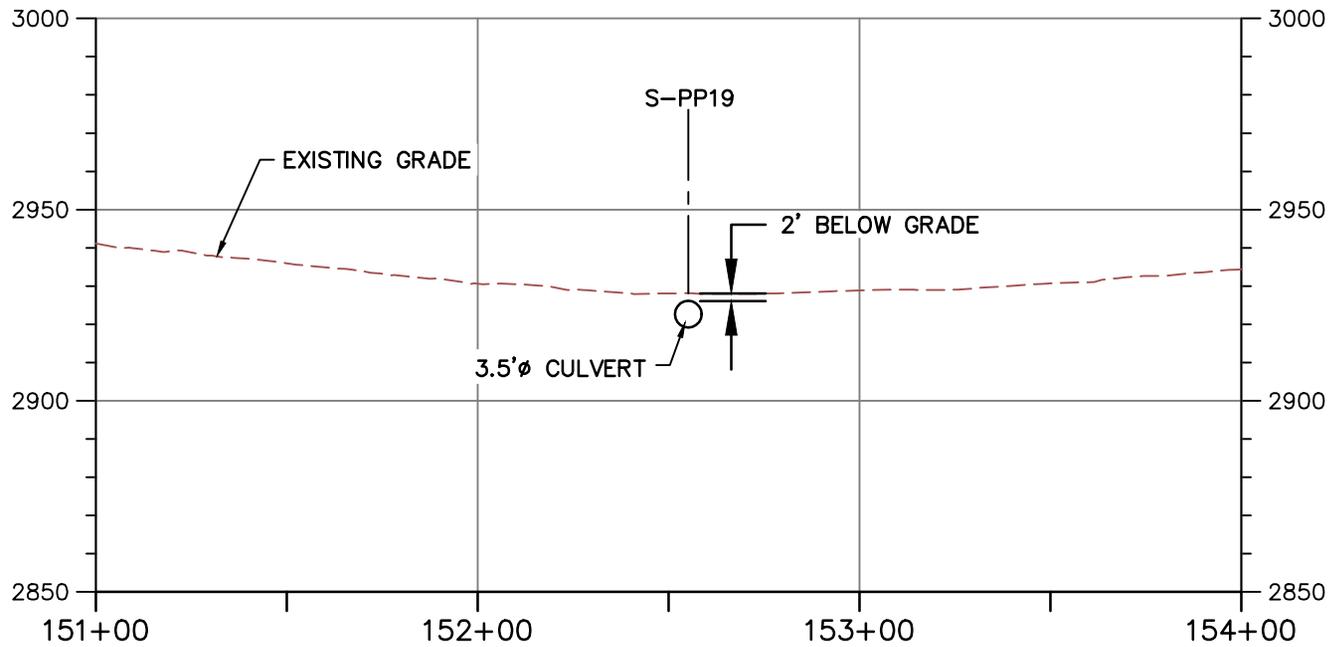


MOUNTAIN VALLEY PIPELINE PROJECT

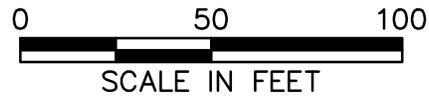
STREAM CROSSING EXHIBIT

STREAM NAME: S-PP19
 STATION: 152+56.20
 COUNTY: GILES

DATE:	2/21/17
PROJECT NO.:	112IC07157
DESIGNED BY:	DW
DRAWN BY:	JK
CHECKED BY:	RE
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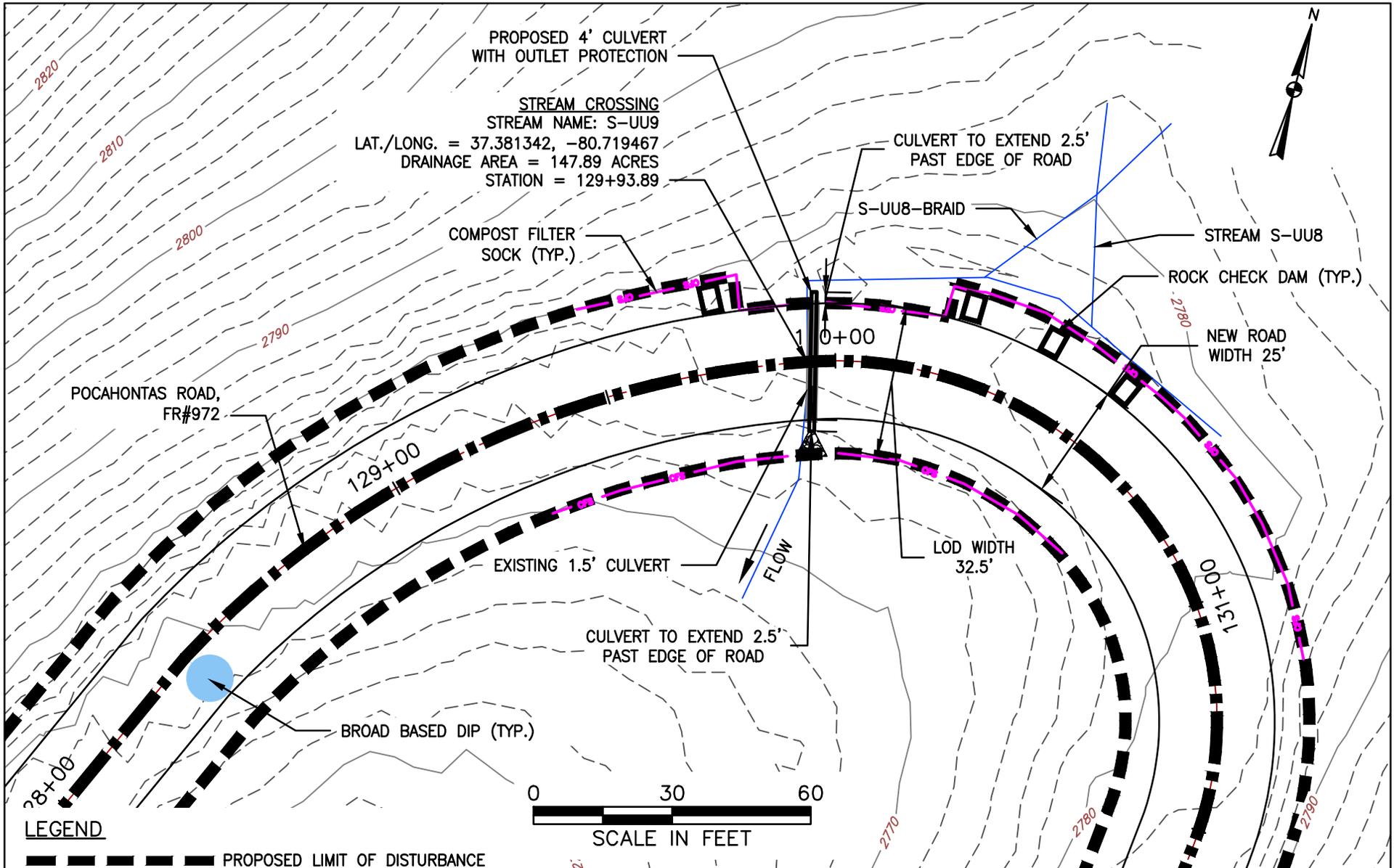
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MOUNTAIN VALLEY PIPELINE PROJECT
STREAM CROSSING EXHIBIT

STREAM NAME: S-PP19
 STATION: 152+56.20
 COUNTY: GILES

DATE:	2/21/17
PROJECT NO.:	112IC07157
DESIGNED BY:	DW
DRAWN BY:	JK
CHECKED BY:	RE
SHEET:	2 OF 2
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PROPOSED 4' CULVERT
 WITH OUTLET PROTECTION

 STREAM CROSSING
 STREAM NAME: S-UU9
 LAT./LONG. = 37.381342, -80.719467
 DRAINAGE AREA = 147.89 ACRES
 STATION = 129+93.89

COMPOST FILTER SOCK (TYP.)

CULVERT TO EXTEND 2.5' PAST EDGE OF ROAD

S-UU8-BRAID

STREAM S-UU8

ROCK CHECK DAM (TYP.)

NEW ROAD WIDTH 25'

POCAHONTAS ROAD, FR#972

129+00

EXISTING 1.5' CULVERT

FLOW

LOD WIDTH 32.5'

CULVERT TO EXTEND 2.5' PAST EDGE OF ROAD

BROAD BASED DIP (TYP.)



LEGEND

- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED EDGE OF ROAD
- PROPOSED ROAD CENTERLINE
- PROPOSED COMPOST FILTER SOCK
- PROPOSED CULVERT WITH OUTLET PROTECTION
- EXISTING CULVERT

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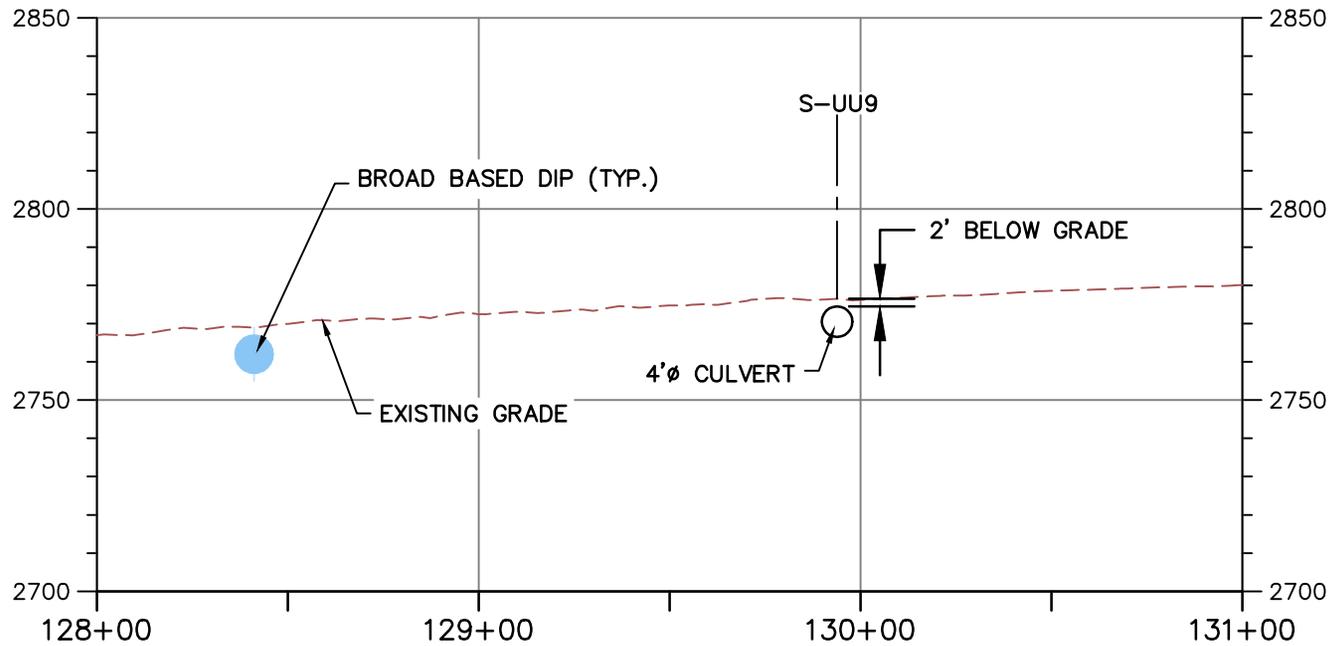
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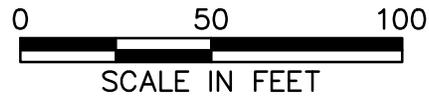
MOUNTAIN VALLEY PIPELINE PROJECT
 STREAM CROSSING EXHIBIT

STREAM NAME: S-UU9
 STATION: 129+93.89
 COUNTY: GILES

DATE:	2/21/17
PROJECT NO.:	112IC07157
DESIGNED BY:	DW
DRAWN BY:	JK
CHECKED BY:	RE
SHEET:	1 OF 2
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PROFILE VIEW



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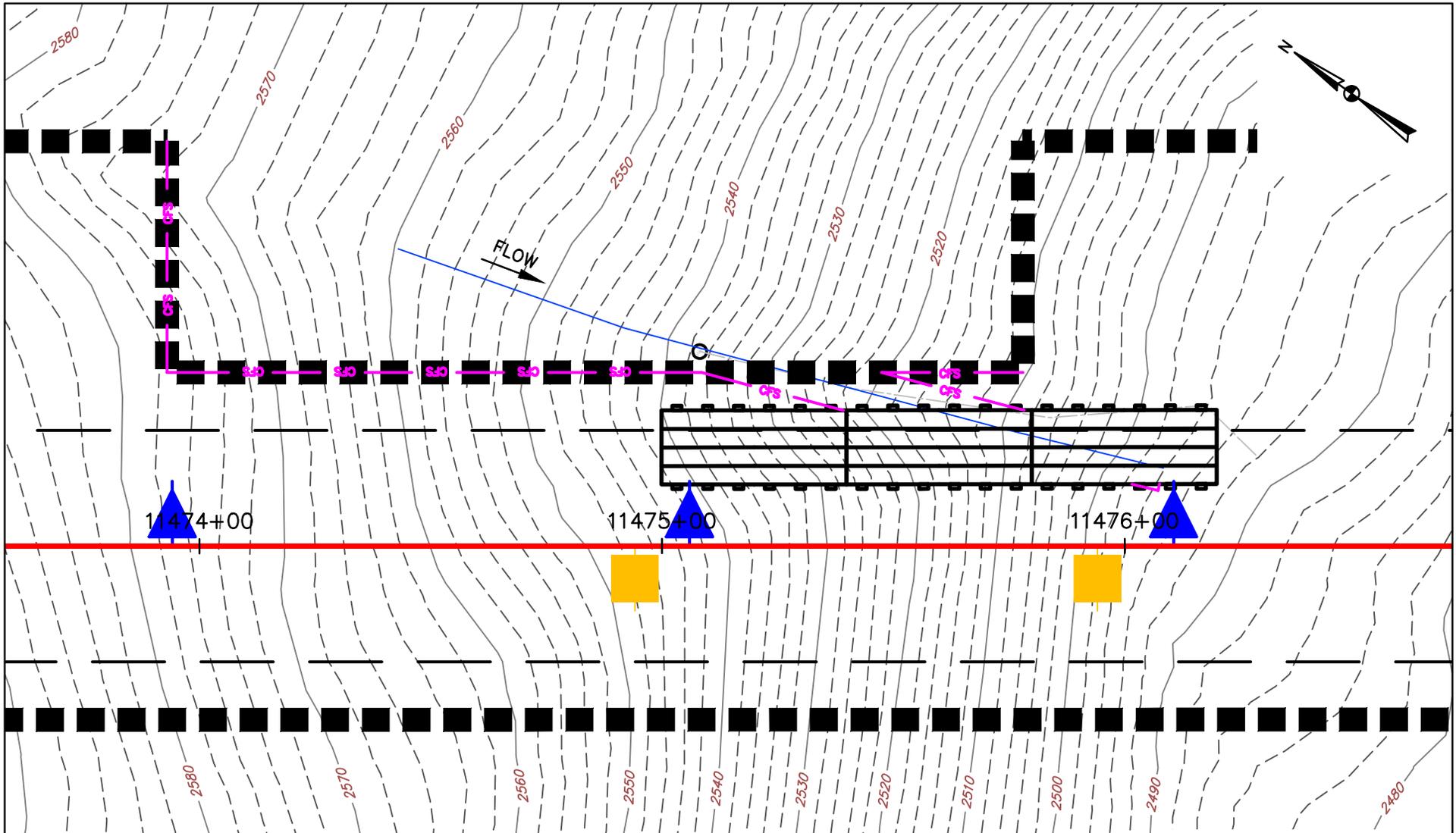
661 ANDERSEN DRIVE - FOSTER PLAZA 7
PITTSBURGH, PA 15220
T: (412) 921-7090 | F: (412) 921-4040



MOUNTAIN VALLEY PIPELINE PROJECT
STREAM CROSSING EXHIBIT

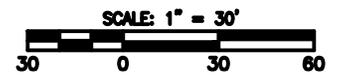
STREAM NAME: S-UU9
STATION: 129+93.89
COUNTY: GILES

DATE:	2/21/17
PROJECT NO.:	112IC07157
DESIGNED BY:	DW
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LEGEND

-  PROPOSED LIMIT OF DISTURBANCE
-  PROPOSED R.O.W.
-  PROPOSED PIPELINE
-  PROPOSED COMPOST FILTER SOCK
-  TIMBER MAT
-  PROPOSED TRENCH BREAKER



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Mountain Valley PIPELINE
MOUNTAIN VALLEY PIPELINE PROJECT
STREAM CROSSING EXHIBIT
 STREAM NAME: S-PP22
 STATION: 11475+50
 COUNTY: MONTGOMERY

DATE:	12/13/16
PROJECT NO.:	112IC07157
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APPENDIX L
Winter Construction Plan

Appendix L

Draft Winter Construction Plan Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1

2 **1.0 INTRODUCTION..... L-1**

3 **2.0 STABILIZATION/WINTERIZATION L-2**

4 **3.0 EROSION AND SEDIMENT CONTROL MEASURES L-3**

5 **4.0 ACCESS ROAD USAGE..... L-4**

6 **5.0 RIGHT-OF-WAY SNOW REMOVAL L-4**

7 **6.0 SOIL HANDLING..... L-5**

8 **7.0 INSPECTION AND MAINTENANCE..... L-5**

9 **8.0 SPRING AND SUMMER RESTORATION L-6**

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
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26
27
28
29
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Draft
Mountain Valley Pipeline Project
Winter Construction Plan

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on National Forest System lands will occur in 2018.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in Braxton County, West Virginia, which is administered by the U.S. Army Corps of Engineers (USACE). Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this plan

1 focuses on the JNF, noting any additional or different requirements that are specific to the
2 crossing of the Weston and Gauley Turnpike.

3 The USFS will be responsible for enforcement of the terms and conditions of the BLM's
4 right-of-way Grant on National Forest System lands during the term of the right-of-way
5 Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF
6 portion of this project by the USFS Project Manager and the Authorized Officer's
7 designated compliance monitors. USFS will have stop work authority per terms outlined
8 in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work
9 conditions are encountered during construction.

10 The Project has potential to impact sensitive environmental resources and, as a result,
11 environmental protection measures have been developed to minimize potential impacts
12 on these resources and will be applied, as applicable, to the Project.

13 Based on the Project construction schedule, MVP anticipates that standard construction
14 will occur through the 2017-2018 winter season and restoration continuing into and
15 through the 2018–2019 winter season. All winter work will be conducted in accordance
16 with the FERC's Plan and Procedures, as well as the Project Erosion and Sedimentation
17 Control Plan and Construction Stormwater Permit (VA). MVP has developed this Winter
18 Construction Plan (WCP) to outline the special procedures and best management
19 practices (BMPs) that will be implemented during the winter season construction period
20 for installation of the Project facilities. These special procedures and BMPs should be
21 considered additions to the other plans as described above, procedures, and BMPs MVP
22 has specified for use on the Project and will be used in conjunction with those plans,
23 procedures, and BMPs, as applicable. Final restoration and reseeded will occur the
24 following spring.

25 This WCP will be considered to be in effect when any of the following conditions occur:

- 26 • The ground is frozen and plating of topsoil occurs;
- 27 • Equipment slippage occurs from operating on frozen ground or vehicles risk sliding
28 outside established right-of-way clearing limits;
- 29 • Road crossings cannot be adequately compacted;
- 30 • Backfill material freezes to the extent that adequate compaction becomes difficult;
31 and/or
- 32 • Topsoil stockpiles are frozen and cannot be uniformly redistributed across
33 disturbed areas or separated from the sub-grade material.

34 Final restoration and reseeded will occur the following spring.

35 **2.0 Stabilization/Winterization**

- 36 • The trench will be backfilled to the extent possible using subsoil.
- 37 • Slope stabilization and stability of cuts and fills will be restored to the extent
38 possible, and water bars will be installed crossing the right-of-way to divert surface
39 run-off away from the construction area.

- 1 • Equipment mats will be removed from stream areas where destabilization of
2 installed matting could potentially occur due to any unexpected increase in stream
3 water flow caused by increased snow run-off or other natural factors.
- 4 • Breaks will be cut into spoil piles and through the berm across the ditch line to
5 allow proper drainage across the right-of-way.
- 6 • Wetland areas where mats are removed will be restored to the extent possible.
- 7 • Disturbed soils adjacent to streams and wetlands will be mulched, where needed.
- 8 • Water bars, berms and erosion/sediment control measures will be installed to
9 minimize erosion along the right-of-way and disposition of sediments beyond the
10 boundaries of the right-of-way.
- 11 • In areas where final restoration has not been achieved, the right-of-way will be
12 mulched and left in a roughened condition to reduce potential of erosion during
13 times of snow thaw and/or significant rain accumulation.

14 **3.0 Erosion and Sediment Control Measures**

- 15 • Temporary water bars will be constructed on slopes greater than 5 percent where
16 final clean-up and permanent erosion and sediment control devices have not been
17 installed.
- 18 • Mulching will be applied to all slopes (actively cultivated cropland exempt)
19 concurrent with or immediately after seeding, where necessary to stabilize the soil
20 surface and to reduce wind and water erosion. Mulch will be uniformly dispersed
21 over the area to cover 100 percent of the ground surface at a rate of 2 tons per
22 acre of straw or its accepted equivalent, unless the local soil conservation
23 authority, landowner, or land managing agency approval make formal request of
24 any alternative action to be taken by MVP in writing.
- 25 • Temporary mulch will be applied to the right-of-way at a rate of 3 tons per acre on
26 slopes greater than 5 percent and within 100 feet of waterbodies and wetlands
27 where final restoration has not been established to the satisfaction of the
28 Environmental Inspector.
- 29 • If right-of-way is snow covered, the snow will serve as suitable ground cover. If
30 snow cover recedes, exposed right-of-way will be stabilized utilizing the measures
31 detailed in this plan.
- 32 • The Environmental Inspector (EI) will suspend final clean-up activities and topsoil
33 placement if topsoil cannot be evenly distributed. If the topsoil is frozen, spreading
34 the topsoil and allowing it to thaw in the sun before spreading may occur. Frozen
35 topsoil will not be returned to the right-of-way if it cannot be graded evenly.
- 36 • If topsoil placement is suspended due to frozen conditions, normal temporary right-
37 of-way stabilization procedures will be applied as ground conditions permit. The
38 final clean-up schedule will vary, depending on ground conditions and time of
39 construction. Where final clean-up and restoration have not been completed, the
40 right-of-way will be left in a roughened condition to reduce potential for erosion

1 during snowmelt. In upland areas, a slight crown may be left over the pipeline to
2 account for settling as backfilled soils thaw.

- 3 • Topsoil piles will be left in a stabilized condition and replaced when weather
4 conditions permit proper de-compaction of the areas.
- 5 • Temporary seeding will be applied as necessary to areas where topsoil has not
6 been restored.
- 7 • Sediment barriers (i.e., silt fence, straw bales, earthen berms) will be installed and
8 maintained throughout the right-of-way at designated waterbodies, wetlands, and
9 paved road crossings. These structures will be inspected per the permit conditions
10 and adequately maintained during the winter construction season to ensure there
11 are zero control failures. Erosion and sedimentation control measures will be
12 installed and repaired as determined by the on-site environmental inspector.
13 Equipment will be utilized as needed to assist with installations in frozen
14 conditions.

15 **4.0 Access Road Usage**

- 16 • Access roads will be graded where needed. All access roads approved for this
17 Project will remain in use during winter construction. All roads will be monitored
18 and maintained in accordance with applicable permit and landowner requirements.
- 19 • Snow removal by equipment will not be performed beyond the road surface to
20 prevent mixing soil with snow.

21 **5.0 Right-of-Way Snow Removal**

22 If a snow event is followed immediately by a period of melting and runoff, the typical
23 erosion and sedimentation control BMPs specified in MVP's Erosion and Sedimentation
24 Control Plans (E&CPs) for stormwater management will apply, and no special measures
25 will be necessary. If a significant (greater than 6 inches) snowfall event occurs and is
26 followed by an extended period of freeze, the following procedures will be implemented:

- 27 • All snow removed from the right-of-way will be in compliance with the footprint laid
28 out for the MVP Project. No equipment will be permitted beyond the limits of
29 disturbance for the Project.
- 30 • MVP's contractor will work with the MVP's Environmental Inspectors to designate
31 stockpile areas within the 125-foot construction right-of-way. Breaks in windrowed
32 snow will be placed at drainage crossings and as requested by the affected
33 landowner.
- 34 • Snow will be removed from topsoil or spoil storage areas prior to using.
- 35 • The use of snow removal equipment will be restricted to use within the limits of
36 disturbance and approved access roads.
- 37 • Snow will only be removed from active work areas at the direction of MVP's
38 Environmental Inspector.
- 39 • All snow and ice will be removed from pipe joints prior to being mobilized to position
40 for alignment and welding. Plowing equipment used for snow removal operations

1 will be equipped with 6-inch shoes to ensure blades do not remove topsoil or
2 vegetation.

- 3 • Snow removal equipment will consist mainly of plowing equipment, such as
4 bulldozers, loaders, utility trucks, dump trucks, or any construction vehicle that can
5 be equipped with a plow and 6-inch shoes, and may include but is not limited to
6 other equipment, such as snow blowers and hand shovels.
- 7 • Rather than blade as low as possible, snow removal operators will blade no lower
8 than a height sufficient for construction vehicles to safely navigate the right-of-way.
- 9 • Snow removal operators will adjust blade height in areas of slope changes to
10 ensure that contact with the ground is minimized to the greatest extent practical.
- 11 • Pickup trucks with front mounted blades will plow all access roads. Intersections,
12 driveways and other private roads will not be blocked by plowed or stockpiled
13 snow. Removed snow will not mix with sidecast stored soils. No additional
14 temporary work space has been identified for snow storage.

15 **6.0 Soil Handling**

- 16 • Frozen topsoil stripping activities will be limited to the equipment capable of
17 accurately stripping variable depths of topsoil; rippers mounted on a machine may
18 be necessary to achieve depth penetration. If segregation of subsoil and topsoil
19 cannot be accomplished without mixing, the topsoil salvage operation will cease
20 until soil conditions improve and segregation requirements can be met.
- 21 • MVP will minimize the amount of open trench to reduce the amount of snow that
22 will have to be removed.
- 23 • MVP will install highly visible construction fence around any open trenches in areas
24 where the pipeline intersects known paths used for snowmobiling, hiking or other
25 such activities.
- 26 • The trench may be crowned to allow for more compaction and settling issues to
27 occur in freezing and thawing conditions.

28 **7.0 Inspection and Maintenance**

- 29 • MVP will monitor and maintain erosion and sedimentation controls as specified in
30 the FERC Plan and State E&SCP Permit Approvals. Erosion and sedimentation
31 controls will be monitored daily in active construction areas and weekly in areas
32 with no construction or equipment operation during the winter period.
- 33 • When snow melts or the ground thaws, the frequency of inspections will increase
34 as determined necessary by the environmental inspector to an extent necessary
35 to confirm the integrity and effectiveness of all erosion and sediment control
36 devices.
- 37 • The contractor and MVP will continuously evaluate the condition of construction
38 areas in an effort to determine if a need exists for additional temporary erosion and
39 sediment control measures, and, as conditions allow, where these corrective
40 measures should be taken.

- 1 • The contractor shall have the proper equipment available at all times to allow
2 access to the right-of-way under soft soil conditions.

3 **8.0 Spring and Summer Restoration**

- 4 • MVP and its contractor will identify any storm or winter damage that may have
5 occurred on the right-of-way.
- 6 • The contractor and MVP will evaluate the condition of the right-of-way and will
7 determine if a need exists for additional temporary erosion and sediment control
8 measures.
- 9 • Trench compaction will be facilitated by back dragging, walking in backfill material
10 with heavy equipment, and obtaining optimum moisture for the backfill material.
- 11 • The Contractor will continue final restoration, which may require disking or tilling
12 of the right-of-way to create a seed bed for germination.
- 13 • Restoration of topsoil will occur, where practicable, after both the stockpiled topsoil
14 and-exposed subsoil have thawed, and the ground has dried following the spring
15 melt.

APPENDIX M
Environmental Compliance Management Plan

Appendix M

Draft Environmental Compliance Management Plan

Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1

2 **1.0 INTRODUCTION.....M-1**

3 **2.0 ENVIRONMENTAL COMPLIANCE MANAGEMENT PLAN ELEMENTS AND**

4 **AUTHORITYM-2**

5 **3.0 ROLES AND RESPONSIBILITIES.....M-3**

6 3.1.1 MVP’s Project Manager.....M-4

7 3.1.2 MVP’s Construction Manager.....M-4

8 3.1.4 MVP’s Environmental InspectorM-5

9 3.2 BLM Authorized OfficerM-6

10 3.3 USFS.....M-6

11 3.3.1 USFS Authorized OfficerM-6

12 3.3.2 USFS Project Manager.....M-6

13 3.3.3 USFS Compliance MonitorM-7

14 3.4 FERC.....M-8

15 3.4.1 Compliance Inspection Contractor Field Monitors.....M-8

16 3.5 Construction ContractorM-8

17 3.5.1 Construction Contractor’s Project Manager.....M-9

18 3.5.2 Construction Contractor’s Chief Inspector.....M-10

19 3.5.3 Construction Contractor’s Environmental InspectorM-11

20 3.5.4 Construction Contractor’s Superintendent(s)M-12

21 3.5.5 Construction Contractor’s Civil Survey Supervisor.....M-12

22 3.5.6 MVP’s and Construction Contractor’s Field Safety

23 Officer.....M14

24 **4.0 PROCEDURES.....M-13**

25 4.1 Compliance Levels.....M-13

26 4.1.1 Acceptable.....M-14

27 4.1.2 Problem Area.....M-14

28 4.1.3 Non-Compliance.....M-14

29 4.1.4 Response to Non-Compliant ActivitiesM-15

30 4.2 Variance Procedures (Unforeseen Circumstances).....M-16

31 4.2.1 Level 1 Variance – Variances Accomplished through Field ResolutionM-17

32 4.2.2 Level 2 Variance – Variances Beyond Field Resolution, Not Requiring an

33 Amendment to the Right-of-Way GrantM-18

34 4.2.3 Level 3 Variance – Variances Requiring an Amendment to the ROW

35 Grant.....M-19

36 **5.0 COMMUNICATIONSM-19**

37 **6.0 TRAINING.....M-20**

38 6.1 PreconstructionM-20

39 6.2 During Construction.....M-20

40 **7.0 REPORTING AND DOCUMENTATIONM-20**

41 **8.0 PROJECT CLOSEOUTM-21**

42 8.1 Reclamation and Post Construction.....M-21

43 8.2 End of Construction Project Report.....M-21

44 8.3 Construction Closeout MeetingM-22

LIST OF TABLES

45

46 **Table 4-1. Summary of Variance Procedures on Federal LandsM-17**

Draft

Mountain Valley Pipeline Project Environmental Compliance Management Plan

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on National Forest System lands will occur in 2018.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in Braxton County, West Virginia, which is administered by the U.S. Army Corps of Engineers (USACE). Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this plan focuses on the JNF, noting any additional or different requirements that are specific to the crossing of the Weston and Gauley Turnpike.

The USFS will be responsible for enforcement of the terms and conditions of the BLM's right-of-way Grant on National Forest System lands during the term of the right-of-way Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF portion of this project by the USFS Project Manager and the Authorized Officer's

designated compliance monitors. USFS will have stop work authority per terms outlined in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work conditions are encountered during construction.

The 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.

2.0 ENVIRONMENTAL COMPLIANCE MANAGEMENT PLAN ELEMENTS AND AUTHORITY

This Environmental Compliance Management Plan (ECMP) is the primary guidance document that states how MVP will uphold, document, and manage compliance with the Right-of-Way Grant, the Plan of Development (POD), (which is incorporated into and part of the Right-of-Way Grant), and all federal, state, and local permits. It is a centralized Project environmental compliance reference and is intended to facilitate environmental compliance. It describes the following essential elements:

- Roles and responsibilities of the participants;
- Comprehensive inspection and monitoring program;
- Corrective procedures in the event of non-compliance;
- Standard protocol for variance requests, exceptions, and other deviations;
- Communication plan;
- Reporting process; and
- Comprehensive Project-specific environmental compliance training program.

The ECMP is intended to be revised as needed throughout the construction process.

The construction contractor will contract with MVP. As part of MVP's environmental compliance commitment, the construction contractor will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods set forth in the POD. Project-specific permitting documents must be reviewed prior to any construction activities to identify and determine application of all Project-wide and site-specific requirements. These Project-specific permitting documents will be distributed by the Compliance Inspection Contractor (CIC) to the appropriate parties.

A third-party CIC will act on the FERC's behalf to ensure adequate oversight during the preconstruction, construction, and post-construction phases. The CIC will be brought on early enough to allow for an adequate amount of time for the CIC to review documents and develop on-the-ground familiarity with the Project. The CIC will coordinate with the USFS to ensure that the NHPA and ESA requirements are met and Project activities on federal lands are consistent with the applicable Project authorizations. The USFS Compliance Monitor shall work under the direct supervision and control of the USFS. No direction shall be taken from MVP or the construction contractor. However, it is understood the compliance monitor and MVP will work together to support the Project's timely and effective construction.

Environmental Inspectors will be retained by the construction contractor. The Environmental Inspectors' primary focus will be to ensure that all construction activities are performed in accordance with the environmental commitments set forth in the BLM Right-of-Way Grant (including the POD), all Project-specific permitting documents, and any individual agreements.

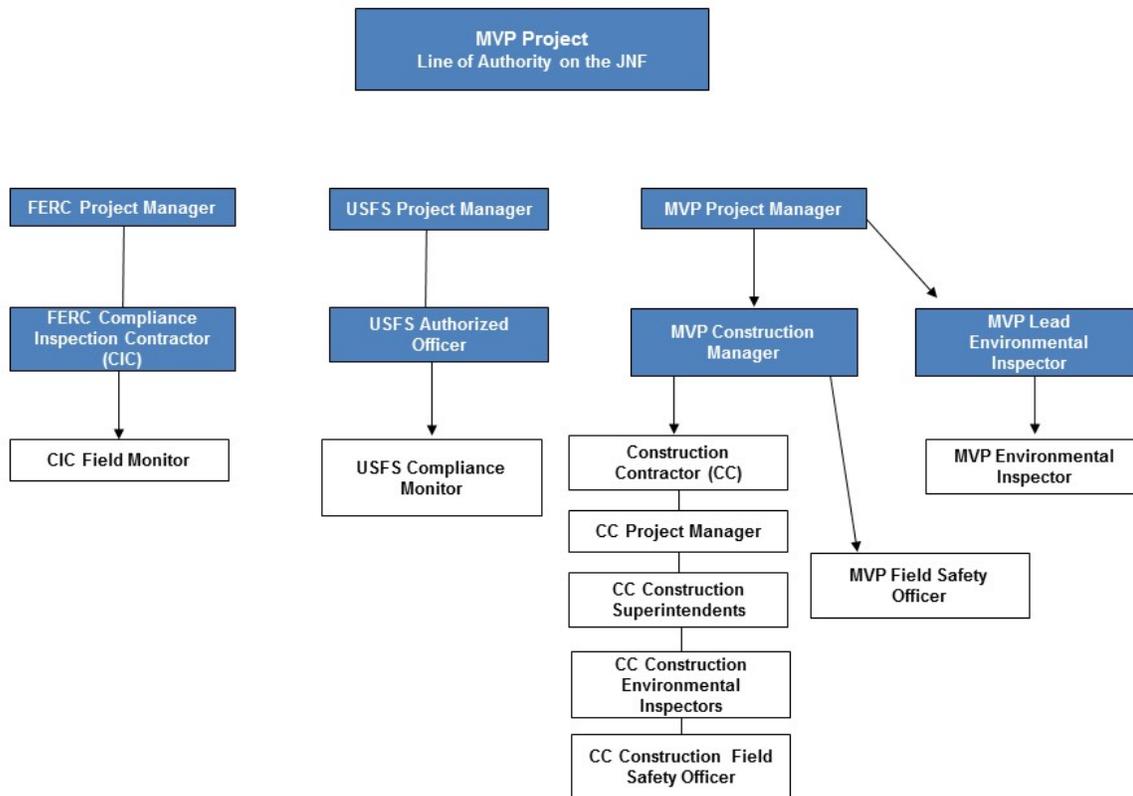
The USFS, with the assistance of the CIC and MVP, will provide direct oversight of the construction contractor's environmental compliance performance. However, should changes need to be made to erosion and sedimentation controls or other non-emergency issues arise on USFS property, the USFS should relay that information to MVP. An MVP representative will then provide direction to the construction contractor. Additional information about the construction contractor's role in this ECMP is explained below in Section 3 - Roles and Responsibilities.

If any additional environmental compliance oversight is required by agencies other than the USFS, their responsibilities would be consistent with those outlined for the USFS and the CIC as described in this ECMP, although their authority and enforcement would be solely applicable in their respective agency's area of jurisdiction.

3.0 ROLES AND RESPONSIBILITIES

The following section describes the roles and responsibilities of the primary entities involved with the Project, and their reporting relationships and roles in implementing the ECMP. If other parties become engaged in this ECMP as additional participants, they would be responsible to function and abide by the protocols, terms, and conditions outlined in this ECMP, and their reporting relationships would be case-specific according to their jurisdiction, expertise, and/or nature of their input. The roles identified below, as well as the corresponding responsibilities, are intended to be representative and not an exhaustive listing of either roles or subsequent responsibilities for those roles.

This section briefly discusses the variance process. However, a more detailed variance discussion is located in Section 4.2 - Variance Procedures (Unforeseen Circumstances).



3.1 Mountain Valley Pipeline

MVP will act as holder of the Certificate, Right-of-Way Grant, and other permits and authorizations. As such, MVP is ultimately accountable for adherence to the environmental requirements specified in the terms of the Project authorizations, including the POD. To facilitate this goal, MVP will maintain regular and consistent communication with the BLM and the USFS, the CIC, the construction contractor, and any other pertinent Project entities prior to, during, and following construction.

3.1.1 MVP's Project Manager

- Responsible for Project delivery. Ensures effective coordination occurs between MVP's Project Manager and Environmental Manager with the USFS's Project Manager and CIC and the construction contractor's Project Manager.
- Informs the construction contractor they are contractually bound to comply with all of the Project's environmental requirements, including the implementation of the ECOMP.

3.1.2 MVP's Construction Manager

- Responsible for all aspects of Project construction execution and completion.
- Enforces construction contractor compliance with all applicable environmental laws and regulations and, all Project-specific authorizations, during the construction of the Project.

- Manages MVP's Construction Inspector and Environmental Manager.

Reporting

- Reviews and evaluates weekly reports.
- Reports compliance and violations to MVP's Project Sponsor as needed.

Variances

- Reviews and approves construction contractor's written variance requests for submittal to the CIC.

3.1.3 MVP's Environmental Manager

- Facilitates oversight and coordination of construction contractor's compliance with all applicable environmental laws and regulations and, all Project-specific authorizations during the construction of the Project.
- Coordinates with MVP's Construction Manager and Construction Inspector (see Section 3.1.4–MVP's Construction Inspector), the construction contractor's environmental inspection/compliance personnel and the CIC on a regular basis to evaluate environmental compliance with the Project.
- Monitors completion of all preconstruction and post-construction commitments.
- Serves as MVP's primary contact regarding environmental issues.
- Communicates environmental compliance issues to the USFS Project Manager and CIC and tracks resolution of issues to completion.
- Maintains coordination with MVP's environmental departments throughout the Project.
- Develops training program to facilitate compliance with all environmental laws and regulations, including all Project-specific permitting documents, during the construction of the Project.
- Maintains records of training for all construction personnel and submits to MVP on a weekly basis.

Reporting

- Provides environmental updates to MVP's Project Manager.
- Reviews all construction-contractor-derived environmental documentation including, but not limited to, site-specific environmental plans, environmental plans, variance requests, daily reports, and weekly reports.

Variances

- Provides review and comments of written variance requests from the Construction Contractor.
- Submits completed variances to MVP's Project Manager for review, approval, and submission to the CIC or applicable agencies.

3.1.4 MVP's Environmental Inspectors

- Observes, witnesses, and monitors the construction activities of the construction contractor for compliance to the engineering contract documents, plans, standards, and specifications to ensure construction quality.

- Coordinates with MVP's Environmental Manager regarding specific work activities scheduled to occur in environmentally sensitive areas that may require additional environmental oversight.

3.2 BLM Authorized Officer

- Responsible for enforcing conditions and requirements specified in the BLM Right-of-Way Grant.
- Works with the USFS Officials to ensure that Project work is being conducted in accordance with the Right-of-Way Grant and agreed upon conditions.
- BLM will have stop work authority per terms outlined in the BLM right-of-way grant. BLM will also have stop work authority if unsafe work conditions are encountered during construction.

3.3 USFS

The Authorized USFS Officer will designate a project manager and compliance monitors to oversee all Project activities on the JNF during the preconstruction, construction, and post-construction (including reclamation) phases to ensure compliance with the Right-of-Way Grant including the POD.

3.3.1 USFS Authorized Officer

- The USFS Authorized Officer shall work under the direct supervision and control of the USFS. USFS will have stop work authority per terms outlined in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work conditions are encountered during construction.
- Determines, in coordination with FERC CIC and the BLM Authorized Officer, if any environmental non-compliance events, for which MVP is accountable, qualify as violations to the terms and conditions of them Right-of-Way Grant.

3.3.2 USFS Project Manager

- Enforces compliance with USFS environmental laws and regulations during construction of the Project.
- Manages USFS compliance monitors.
- Coordinates with USFS compliance monitors and resource specialists for their technical expertise and input.
- Informs MVP of any Right-of-Way Grant violations due to environmental non-compliance and ensures any non-compliance is rectified.
- Reports major environmental compliance violations to USFS Authorized Officer.

Reporting

- Responsible for ensuring that the Project Administrative Record is maintained accurately.

Variations

- If delegated by the USFS Authorized Officer, authorizes approval of Level 2 Variations (see Section 4.2.2 for a description of Level 2 variations).

3.3.3 USFS Compliance Monitors

- Represent the USFS in the field for compliance activities and reports directly to the USFS Project Manager (or designees).
- Coordinate with the CIC Field Monitors
- Verify and report construction contractor's compliance with all environmental requirements and tracks all reported non-compliance events and their resolution.
- Verify construction occurs as outlined in the Record of Decision and Right-of-Way Grant, which includes the POD.
- Track all Project construction disturbance for verification in the MVP prepared End of Construction Project Report.
- Perform compliance monitoring work. At a minimum, the compliance monitors are required to be on the right-of-way when activities involving the use of construction equipment have the potential for significant surface disturbance or harm to sensitive resources. Exceptions can be made should the USFS Project Manager determine, using professional judgment, that reductions in the compliance monitors would not adversely impact compliance oversight.
- Coordinate variance requests with the USFS Project Manager, the FERC, and MVP's Project Manager and Environmental Manager.
- Discuss any potential compliance issues with the construction contractor's environmental inspection staff as soon as possible.
- Communicate and coordinate regularly with MVP's Project Manager and Environmental Manager and the CIC.
- At a minimum, meets weekly with the USFS Project Manager, in person or by telephone, to review construction activities and the status of compliance.
- Provide recommendations to the USFS Project Manager on ways to resolve or prevent non-compliance issues prior to the commencement of work.
- Conduct the final route review and develops final report documenting the status of the right-of-way and the final amount of construction disturbance.
- Coordinate post-construction reclamation monitoring protocols developed by the construction contractor, to be approved by the USFS Authorized Officer or his/her designated representative, per the procedures and requirements identified in Restoration Plan of the POD (Appendix H).
- Perform post-construction reclamation monitoring as described in the Restoration Plan in the POD (potentially conducted by a separate third-party contractor as determined by the USFS and MVP).

Reporting

- Document all instances of non-compliance, or other problems that would reasonably be expected to result in environmental impacts.
- Provide weekly summary reports of compliance inspection to the USFS and MVP via a secure, but mutually exclusive, website. Weekly reports shall summarize the prior week's activities and include a brief description of construction activities, compliance issues, any additional acreage disturbed resulting from variances and corrective actions taken and any foreseeable issues.

- Participate in all meetings that involve environmental compliance aspects of the Project.
- Prepare and submit post-construction reclamation monitoring reports to the USFS, the FERC, and MVP throughout the post-construction.

Variations

- Coordinate with USFS Project Manager, the CIC, and construction contractor to review and approve variance requests.
- Authorize level 1 variations (see Section 4.2.1 for a description of level 1 variations).

3.4 The FERC

The FERC will utilize a third-party Compliance Inspection Contractor (CIC) contracted to MVP 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 (NHPA), the Endangered Species Act (ESA), and other applicable laws and regulations. The Project will adhere to all federal, state, and local permits.

The CIC shall work under the direct supervision and control of the FERC. No direction shall be taken from MVP or Construction Contractor. However, it is understood the CIC and MVP will work together to support the Project's timely and effective construction.

3.4.1 Compliance Inspection Contractor Field Monitors

- Provides Project-wide construction oversight and monitors compliance through regular and consistent field observations.
- Document field finding
- Process and facilitate variance level 1 requests
- Represents the FERC in the field for compliance activities.
- Verifies construction occurs as outlined in the POD, Final EIS, and Right-of-Way Grant.
- Inspects and monitors preconstruction and construction activities and enforce requirements related to the NHPA, the ESA, and other applicable laws and regulations.
- Tracks all Project construction disturbances for verification of the End of Construction Project Report, which will be written by MVP's contractor.
- Conducts daily compliance inspection activities and develop daily reports.
- Coordinates with MVP's Environmental Inspectors as their primary point of contact.
- Discusses any potential compliance issues with the MVP's Environmental Inspectors as soon as possible.
- Coordinates solutions for corrective action on non-compliance activities with MVP and the Construction Contractor.
- Verifies corrective action is performed for non-compliance activities.
- May temporarily stop activities for non-compliance.

- Performs the same duties as the USFS Compliance Monitor in the event that the USFS Compliance Monitor is not available.
- Has the authority to issue an immediate temporary suspension or work-stoppage order (WSO) if a specific work activity or activities are in violation. However, all efforts shall be made to coordinate closely with MVP and construction contractor to report and document compliance concerns, providing an opportunity to resolve the concerns. Every effort shall be made to limit any work stoppage to situations involving immediate threats to sensitive resources or emergency situations. The CIC is not, at any time or way, otherwise authorized to direct work undertaken by the construction contractor, with the exception of a WSO.

Reporting

- Submits reports to the FERC to document compliance or non-compliance with the Project's environmental requirements.

3.5 Construction Contractor

The construction contractor will be contractually bound to comply with all applicable environmental laws and regulations and all Project-specific permitting authorizations, throughout all phases of the Project.

3.5.1 Construction Contractor's Project Manager

- Responsible for all aspects of Project execution and completion.
- Responsible for Project completion in accordance with all environmental laws and regulations, including all Project-specific permitting.
- Manages construction contractor Project Manager to ensure adequate responses to any environmental issues.
- Ensures effective coordination between construction contractor's Project Manager with MVP's Project Manager, Environmental Manager, the USFS Project Manager and the CIC
- Requires all construction contractor and subcontractor staff to adhere to compliance with all applicable environmental laws and regulations and, including all Project-specific authorizations, during the construction of the Project.
- Coordinates with construction contractor Superintendent(s), as well as MVP's Project Manager and Environmental Manager, on a regular basis to stay updated regarding the Project's compliance with environmental laws and regulations.
- Manages construction contractor's senior level personnel.
- Requires all Superintendents and Foremen follow directions of the construction contractor's environmental compliance staff regarding maintaining compliance with all applicable environmental laws and regulations and Project-specific authorizations.
- Ensures Superintendents and Foremen implement measures identified to resolve non-compliance issues in a timely manner.
- Develops and distributes weekly schedules of construction activities.

- Immediately informs MVP's Environmental Manager of any noncompliance. Responsible for resolving non-compliance situations. (note: MVP's Environmental Manager will be responsible for informing the USFS Project Manager and the CIC of any non-compliances).
- Responsible for developing a document-control system to manage distribution of all documents and revisions.

Reporting

- Responsible for making sure MVP is provided with reports in a timely fashion.

Variations

- Reviews and approves written variance requests for submittal to MVP, CIC, and USFS.
- Can delegate authority to submit written variance request to others.

3.5.2 Construction Contractor's Chief Inspector

- Assists in tracking Project compliance with all applicable environmental laws and regulations and all Project-specific authorizations, during the construction of the Project.
- Coordinates with internal construction contractor personnel, MVP's staff, CIC, and other field inspection personnel on a regular basis to manage and track Project activities and ensure consistent communications Project-wide.
- Manages construction contractor's environmental staff.
- Coordinates daily with Environmental Inspectors to discuss upcoming construction activities, potential problem areas, and areas of concern
- Coordinates with Environmental Inspectors and construction personnel to provide information and facilitate regular communication among all parties.
- Determines the need for variations and works with internal construction contractor personnel to develop a formal request.
- Receives and reviews daily environmental compliance inspection reports from internal construction contractor environmental personnel.

Reporting

- Responsible for tracking and coordinating environmental issue areas and non-compliance reports and ensuring follow-up and resolution reports are filed.

Variations

- Tracks variations and communicates variance status with construction contractor's Project Manager and Superintendent(s).
- Coordinates processing and archiving of variations.
- Ensures completion of any required field surveys (biology, archaeology, etc.) and technical reports to support variations.
- Ensures variance requests are complete and accurate prior to submitting to the USFS.

- Communicates variance status to the Construction Contractor's Environmental Inspectors and construction personnel.

3.5.3 Construction Contractor's Environmental Inspector

- Regularly inspects or coordinates the inspection of all applicable environmental laws and regulations and all Project-specific authorizations, during the construction life of the Project.
- Conduct and documents daily inspections of construction activities
- Has the authority to stop work when construction activities violate environmental laws and regulations or Project-specific authorizations.
- Coordinates identification of sensitive resources and areas of concern prior to upcoming construction activities and coordinates appropriate measures with construction personnel accordingly.
- Follow up on the repair and maintenance of erosion control devices/measures.
- Supervises environmental crew in daily installation and maintenance of erosion control devices/measures and all other design features of the Project for environmental protection.
- Ensures all areas of the right-of-way are in compliance with all applicable environmental requirements and authorizations held by the construction contractor(s).
- Ensure any Project disturbance is approved to proceed.
- Identify sensitive resources and areas of concern prior to upcoming construction activities and coordinates with construction personnel to discuss.
- Identifies, documents, coordinates, and oversees corrective actions to resolve non-compliance issues.
- Acts as a resource and technical lead to Environmental Inspectors and construction personnel.
- Conducts post-construction reclamation monitoring in coordination with the CIC as described in the Restoration Plan of the POD Appendix H, and as directed by the USFS and MVP.

Reporting

- Receives and reviews daily reports from construction contractor Environmental Inspectors and ensures completeness and accuracy and communicates action items or follow-up items to appropriate parties.
- Compiles daily reports into weekly summary report.
- Maintains centralized storage of daily/weekly Environmental Inspection reports and makes reports available at the request of the USFS Project Manager.
- Submits weekly summary documenting construction activities and compliance issues to the USFS Project Manager and FERC.
- Submit daily reports to the Construction Contractor's Chief Inspector that document construction activities and associated compliance status for that day.

- Document the resolution of any compliance issues in daily reports.

3.5.4 Construction Contractor's Superintendent(s)

- Manages construction activities.
- Requires all personnel follow direction provided by the construction contractor's environmental staff regarding maintaining compliance with all applicable environmental laws and regulations and all Project-specific authorizations during the construction of the Project.
- Coordinates with the Construction Contractor's and MVP's Environmental Inspectors, and the construction contractor's Chief Inspector and the construction contractor's Environmental Inspectors, to ensure all construction personnel for which he/she is responsible abide by all applicable laws, authorizations, and agreements.
- Conducts regular meetings and training with construction personnel to review safety and environmental compliance practices.
- Ensures measures identified to resolve non-compliance issues are communicated to construction personnel and implemented in a timely manner.
- Immediately informs construction contractor's Project Manager of any non-compliance.
- Evaluates all compliance issues and ensures all supervisees involved with any construction activities complete the environmental training program.

Variances

- Provides data and/or supports development of written variance requests for submittal to MVP, CIC, and USFS.

3.5.5 Construction Contractor's Civil Survey Supervisor

- Sets and maintains right-of-way and easement boundary stakes and flagging with agreed-on Project flagging scheme.
- Delegates survey crews when necessary to work with Environmental Inspectors to adjust work areas to comply with environmental constraints.
- Communicates with MVP's Construction Inspector and Environmental Manager regarding changes to right-of-way boundaries.

Reports and Variances

- Provides data and/or supports development of maps and legal descriptions for Project reports, variance requests, and documentation in the Project Record.

3.5.6 MVP's and Construction Contractor's 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

4.0 PROCEDURES

4.1 Compliance Levels

Each separate activity that is inspected and documented in a daily report will be assigned a compliance level: acceptable, problem area, and non-compliance (defined below). The construction contractor’s Environmental Inspectors will assess potential non-compliant activities based on the extent and nature of actual impacts on a resource, the potential

for additional impacts on a resource, the intent behind the action, and the history of the occurrence.

4.1.1 Acceptable

All activities that are in compliance with the Project's environmental requirements will be documented as acceptable.

4.1.2 Problem Area

A problem area is a location or activity that does not meet the definition of acceptable but is not non-compliant (see Section 4.1.3 – Non-Compliance).

If a problem area is corrected in a timely manner, it will not be considered a non-compliance. The construction contractor's Environmental Inspectors will document problem areas and their resolutions in daily reports. Problem areas documented by the CIC Field Monitors or USFS Compliance Monitors will be reported and discussed with the construction contractor's Environmental Inspectors. If the problem area is not corrected in the agreed-on timeframe, resource damage occurs, or similar activities occur repeatedly, a non-compliance report may be issued by the CIC or the USFS compliance Monitor.

4.1.3 Non-Compliance

A non-compliance report will be prepared and issued by the CIC when construction activities violate environmental laws, regulations, or Project-specific authorizations; result in damage to a protected resource, or place sensitive resources at unnecessary risk.

If the USFS Project Manager, a USFS compliance monitor, or the CIC observes a non-compliant activity, MVP's Environmental Manager and the construction contractor's Environmental Inspector will be notified immediately to discuss the situation prior to issuing a non-compliance report. If a non-compliance report is issued, it will include the name(s) of the construction contractor personnel contacted and the time of the notification. In addition, a follow-up report will be filed documenting the resolution of the non-compliance. If the construction contractor's Environmental Inspector is not immediately available or the severity of the situation requires immediate action, the CIC or USFS compliance monitor will contact the construction contractor's Chief Inspector.

If the construction contractor's Environmental Inspectors observe a non-compliance, the Construction Manager and MVP Environmental Inspector will be notified on site immediately. The MVP Environmental manager will notify the CIC and USFS compliance monitor. The non-compliance will be resolved immediately or within an agreed-on timeframe that has been established by MVP's Environmental Inspector and the Superintendent or Foreman. MVP's Environmental Inspector will document the non-compliance in a daily report. The CIC will submit all non-compliance reports to FERC, the USFS Project Manager, MVP, and construction contractor. The construction contractor's Environmental Inspectors, MVP's Environmental Manager, the CIC, and the USFS compliance monitor will work together to establish the appropriate corrective actions and timeframes for the resolution of a non-compliance. The construction contractor's LEI and Environmental Inspectors will be responsible for communicating the corrective actions to the on-site Superintendent or Foreman. The CIC and USFS compliance monitor will

submit all reports documenting a non-compliance resolution to FERC, the USFS Project Manager, MVP, and the construction contractor.

4.1.4 Response to Non-Compliant Activities

If the resolution of a non-compliance is not achieved through the process identified above, the following responses may be implemented:

4.1.4.1 Temporary Suspension

For incidents of non-compliance by MVP or the construction contractor that remain unresolved after the notifications described under Section 4.1.3 – Non-Compliance, the CIC or USFS Project Manager may issue a temporary suspension to halt specific activities or all activities in a localized work area. The temporary suspension shall be issued orally and in writing to MVP's Project Manager, and MVP shall immediately provide notice of the temporary suspension to the construction contractor's Project Manager.

4.1.4.2 Work Stoppage Order

If necessary, a WSO to temporarily suspend all activities in a localized work area or all construction activities across the Project may be issued orally or in writing by the CIC or USFS Authorized Officer to MVP's Project Manager. A WSO would be appropriate in the event of serious non-compliance that could reasonably be expected to result in a risk of death or harm to persons or repeated violations of environmental requirements that have a detrimental effect to sensitive resources.

A conference call will be held with the CIC, USFS Project Manager, MVP, and the construction contractor within 24 hours to discuss the WSO incident and to schedule a face-to-face meeting, if necessary. The face-to-face meeting will be held with all pertinent parties to discuss the WSO resolution within 24 hours of the initial conference call (excluding weekends and federal holidays).

After conclusion of the conference call, or meeting if necessary, MVP and the construction contractor will resolve the issue(s) identified by the CIC or USFS. Once the issue(s) has been resolved and documented, MVP will provide a request, either verbal or in writing, to the CIC or USFS to resume construction activities within the non-compliance area. No construction activities shall be undertaken (except emergency or safety-related) until approval is provided by the CIC or USFS. The CIC and the USFS shall review and the USFS should respond to the MVP request to resume construction activities within 24 hours after receipt on USFS managed lands. On USACE managed lands, the CIC will be requested to respond within 24 hours of receipt of the request. The USFS response shall either approve the request or provide additional criteria that must be met prior to resuming construction activities. Any additional criteria must not be arbitrary and cite applicable law(s), agreement (s), and/or project authorizations.

4.1.4.3 Grant Suspension or Termination

In accordance with 43 CFR § 2886.17(a), the BLM may suspend or terminate the Right-of-Way Grant if MVP and/or its construction contractor does not comply with applicable laws and regulations or any terms, conditions, or stipulations of the Right-of-Way Grant. Prior to suspension or termination, MVP will be notified in writing and allowed a

reasonable opportunity to correct any non-compliance pursuant to 43 CFR § 2886.18(a), and, if applicable, provided a hearing pursuant to 43 CFR § 2886.18(a)(1).

4.2 Variance Procedures (Unforeseen Circumstances)

It is understood by the USFS and MVP that unforeseen circumstances will occur during construction. The need for realignments to the proposed route, access roads, and/or work areas not within the permitted Project Right-of-Way Grant may arise. In addition, the need to make changes to construction procedures, schedule, and/or approved mitigation measures and other specific stipulations and methods may be required. Under these or similar circumstances, for activities within the JNF, a variance will need to be filed and approved by the USFS to stay in compliance.

Variance requests will be generated by the construction contractor and provided in writing to MVP, who will then review the request. MVP will evaluate the variance request and, if deemed appropriate by MVP, submit the variance request and supporting documentation to the CIC and USFS to be processed according to the process outlined herein.

The CIC is responsible for providing the variance request, supporting documentation, and an on-the-ground perspective of the requested variance to the FERC and the USFS. A CIC can approve or deny Level 1 variance requests in the field with concurrence from the USFS Project Manager or designated compliance monitor (see Section 4.2.1 – Level 1 Variance – Variances Accomplished through Field Resolution). The CIC is responsible for providing Level 1 Variance request approval on USACE managed lands. If a Level 1 variance request is approved in the field, follow-up documentation will be provided by the construction contractor to the CIC and MVP.

On a case-by-case basis, the USFS and CIC may approve a Level 2 variance request (Section 4.2.2 – Level 2 Variance – Variances Beyond Field Resolution, Not Requiring an Amendment to the Right-of-Way Grant).

The authority to approve or deny Level 3 variances requests (Section 4.2.3 – Level 3 Variance – Variances Requiring an Amendment to the Right-of-Way Grant) is provided solely to the appropriate USFS, USACE and BLM Project Managers. The variance request process, as described below, will be implemented.

A variance request form will be developed by the construction contractor, reviewed and approved by MVP and the CIC, and then reviewed and approved by the USFS prior to the start of construction. The variance request form will describe the variance request in detail, provide justification and documentation for the variance (including maps and photos), and calculate the proposed permanent or temporary acreage affected relative to the original disturbance acreage analyzed in the EIS. It will also describe any potentially impacted resources and identify if additional resource surveys will be required.

The variance request may be implemented in the field as soon as the approved variance is received by the construction contractor. The CIC is responsible for communicating with MVP regarding variance request status, and MVP is responsible for communicating with the construction contractor prior to modifications being made on the ground.

Table 4-1 – Summary of Variance Procedures on Federal Lands summarize the different variance levels, potential uses, and approvals required in order to obtain Project variances.

Table 4-1. Summary of Variance Procedures on Federal Lands

Variance Level	Potential Use	Approval
Level 1	Minor field adjustments	CIC and USFS
Level 2	Modify POD	CIC and USFS
Level 3	Amend Right-of-Way Grant	BLM, USFS, USACE, and CIC

4.2.1 Level 1 Variance – Variances Accomplished through Field Resolution

A Level 1 variance is a minor field adjustment within the approved Right-of-Way Grant. A Level 1 variance must meet the following criteria:

- The area of activity or change lies within the approved Right-of-Way area, including temporary use areas.
- The area of activity or change was previously identified and analyzed in the EIS.
- The area of activity or change does not result in an increase in disturbed area relative to the EIS.
- The variance request creates equal to or less impact on resource values than the original location and activity.

A Level 1 variance request will be initiated by the construction contractor and submitted to MVP for review, in the form of a variance request form. The variance request form will include all attached supporting documentation. Upon MVP's review and approval, MVP's Environmental Manager will submit the variance request package to the CIC for their review.

4.2.1.1 Level 1 Variance Approval or Denial

A CIC can approve or deny Level 1 variance requests in the field with concurrence from the USFS Project Manager or designated compliance monitor. Level 1 variance requests may be approved if the results of implementing the changes are not significant and will occur within the granted right-of-way. A Level 1 variance request can be implemented in the field as soon as it is approved and signed by the CIC and USFS. In cases where safety or environmental impacts are of concerns, a verbal approval can be given, and followed up with a written, signed variance document by either the CIC or USFS. The CIC will document the approved variance in the daily report.

If a Level 1 variance is denied, the CIC will inform MVP's Project Manager within 24 hours. MVP's Project Manager may choose to resubmit the request as a Level 2 variance or to discontinue pursuit of the request.

4.2.1.2 Level 1 Variance Distribution

The CIC will send the approved Level 1 variance request to MVP and the construction contractor. The CIC will generate a report at the end of each week identifying all Level 1 variance requests approved during the previous week.

4.2.2 Level 2 Variance – Variances Beyond Field Resolution, Not Requiring an Amendment to the Right-of-Way Grant

On a case-by-case basis, the USFS and CIC may approve a Level 2 variance request. Level 2 variance requests generally involve Project changes that would affect an area outside of the approved work area, but within the area previously surveyed for resources and/or analyzed within the EIS. Such variance requests typically require review of supplemental documents, correspondence, and records to be provided with the request.

Level 2 variance requests may also be submitted for minor changes that would extend beyond the previously surveyed work area and corridor for sensitive resources. In these situations, additional surveys would be required. Documentation of the surveys and other applicable correspondence would need to be submitted with the variance request. If sensitive biological resources are encountered during the additional surveys, documentation of consultation with applicable agencies must be provided with the variance request. All BLM approved Right-of-Way Grant conditions, and the Terms and Conditions of the U.S. Fish and Wildlife Service's Biological Opinion must be adhered to for the variance to be approved.

A Level 2 variance request will be initiated by the construction contractor and submitted to MVP for review. The variance request form will include all attached supporting documentation. After MVP's review and approval, MVP's Environmental Manager will submit the variance request package to the CIC and USFS for review. Following review, the CIC and USFS will approve the requested change.

4.2.2.1 Exceptions

Requests for an exception from a seasonal restriction or protective buffer will be submitted via the same process as a Level 2 variance request to the CIC and USFS. However, should the seasonal restriction be state or federally required, MVP will also submit the request to the applicable state and federal agencies. The construction contractor will follow the limited operating periods enforced by the USFS and described in Appendix H – Plant and Wildlife Conservation Measures unless an exception is granted.

Exception requests on USFS-managed lands will proceed as follows. The USFS, the CIC, or a contractor approved by MVP will conduct the appropriate surveys and coordinate with any other agencies as necessary. A variance request with the survey results incorporated will be submitted in writing to the CIC and USFS no more than two weeks prior to the proposed commencement of the construction activity, to ensure that conditions during construction are consistent with those evaluated.

The USFS Authorized Officer, or designated representative, in consultation with the CIC, on a case-by-case basis, may grant exceptions to USFS seasonal stipulations or buffers only and has the authority to cancel this exception at any time.

A good faith effort will be made to act on exceptions within five business days of receiving a request to allow for orderly construction mobilization. The CIC will conduct any required site visit and report status to USFS for consideration of the decision to accept or deny the request. Attachment H-2 – Seasonal and Spatial Restrictions of Appendix H lists land

management plan seasonal stipulations that are applicable to the extent such species are present.

4.2.2.2 Level 2 Variance Approval or Denial

The USFS, after consulting with USFS resource staff and the CIC as necessary, will provide MVP written approval or denial of the variance request.

The USFS may request additional information, or a modification of the variance request, before deciding whether to approve the variance request. If a Level 2 variance request is denied, the USFS will provide MVP a written denial, including a justification.

The USFS will make a good faith effort to act on Level 2 variance requests within five business days from receipt of a complete variance request.

MVP or construction contractor may choose to re-submit a denied variance request as a Level 3 variance request.

4.2.2.3 Level 2 Variance Distribution

The CIC will send the approved Level 2 variance request to MVP and the construction contractor. The CIC will generate a report at the end of each week identifying all Level 2 variance requests approved during the previous week.

4.2.3 Level 3 Variance – Variances Requiring an Amendment to the Right-of-Way Grant

The USFS will assist the CIC and MVP in determining whether a significant proposed change, typically a change outside of the approved Right-of-Way Grant, will necessitate submittal of a Right-of-Way Grant amendment, or whether the change can be handled with a Level 2 variance request.

Any proposed construction modification the USFS Project Manager has determined to involve substantial deviations from the Right-of-Way Grant will require a grant amendment in accordance with 43 CFR § 2887.10. A change requiring an amendment to the Right-of-Way Grant requires completion of an application on a Standard Form (SF) 299 and a decision by the BLM Authorized Officer. MVP will prepare the SF-299 with supporting documentation including, but not limited to, a POD and map of the variance area (1:24,000 scale), and will provide to the appropriate BLM and USFS office. The BLM will process the amendment application pursuant to 43 CFR § 2887.10. The BLM may request additional information, or a modification, before the amendment can be approved.

The Right-of-Way Grant amendment will be reviewed by BLM and USFS staff, who may consult with other federal, state, and local agencies, as needed. The Right-of-Way Grant amendment approval or denial will come directly from the BLM. Approval of the Right-of-Way Grant amendment also could require issuance of a Notice to Proceed (NTP) allowing the implementation of the Right-of-Way Grant amendment. The approval will then be sent to FERC for approval and issuance of a NTP.

5.0 COMMUNICATIONS

Communication between all parties will be critical to maintain environmental compliance throughout the Project. Communication will help maintain a consistent understanding of

the Project's environmental requirements throughout construction. It is anticipated that the construction contractor, the USFS Project Manager, the CIC, and all compliance monitors will maintain a communications network that consists of one or both of the following devices: two-way radios or cellular phones. This will allow for real-time coordination between all parties, which will facilitate resolution of any questions and/or monitoring requirements prior to construction activities.

The construction contractor will conduct daily morning meetings to review the location and extent of each day's construction activities. Discussion should highlight safety and environmental issues, including a summary of activities that require monitoring by Environmental Inspectors and coordination with the USFS Project manager and the CIC. Evidence of proper approvals must be furnished for any activities scheduled to occur outside designated areas. Attendees should include the USFS Project Manager or designated USFS compliance monitors, the CIC; the construction contractor's LEI or Environmental Inspectors, Superintendent(s), and Foreman(s); and MVP's Construction Inspector.

6.0 TRAINING

6.1 Preconstruction

All personnel, regardless of affiliation, will receive environmental training prior to accessing the Project right-of-way. Training will emphasize compliance with all applicable environmental laws and regulations and all Project-specific authorizations. Roles and responsibilities of all pertinent parties, flagging methodology, specific landowner issues, biological and cultural resources, and disturbance limits will be some of the major topics covered in the training. The environmental training will be developed by the construction contractor and reviewed and approved by MVP, the CIC, and USFS. Training will include environmental and cultural resource training.

The construction contractor will maintain a master list of all Project personnel who have completed the training and provide an updated list as part of weekly reporting to MVP or CIC. Hardhat stickers demonstrating attendance of the training will be issued to attendees.

6.2 During Construction

All contractor personnel who arrive after construction has begun will attend environmental training.

Remedial training will be given to individuals and crews who are involved in non-compliant activities. These trainings will focus on the requirements pertaining to the non-compliance as well as measures to follow to prevent further non-compliance situations. These may be performed in the field or in a more formal setting to be determined by the construction contractor, the CIC, and the USFS.

Training for visitors will be held as the need arises.

7.0 REPORTING AND DOCUMENTATION

There will be multiple forms and reports completed on a regular basis during the course of construction. The reports and forms will include:

- **Daily Inspection Reports.** USFS compliance monitors, Environmental Inspectors and CIC Field Monitors will fill out daily reports to record site visits. The reports will document construction activities observed with respect to environmental compliance. The daily reports will also include a section to address problem areas and non-compliance issues, in which photo documentation will be required. A separate resolved non-compliance report may be required if the non-compliance is not resolved on the same day.

Environmental Inspector reports will be submitted to MVP and the CIC and will be available to the USFS on request. CIC Monitor reports will be submitted to the USFS.

- **Weekly Reports.** The construction contractor will produce a weekly report documenting the week's activities and compliance issues to be submitted to MVP and the CIC. MVP will prepare the weekly compliance report and submit it to the FERC and to the USFS.
- **Variance Request Forms.** Variance requests will be produced by the Construction Contractor, reviewed by MVP, and submitted to the CIC and USFS for review and approval. The construction contractor will track, distribute, and archive all approved and denied variances. Section 4.2 – Variance Procedures (Unforeseen Circumstances) provides more detailed information.
- **Weekly Training Log.** The construction contractor will maintain a master list of all Project personnel who have completed the training and provide it as part of weekly reporting to MVP and the CIC.

Forms and reports should be submitted with appropriate supporting documentation, as necessary.

8.0 PROJECT CLOSEOUT

8.1 Reclamation and Post Construction

On notification of completion of work by MVP and the construction contractor, the CIC will coordinate with the USFS and appropriate resource staff to conduct final on-the-ground inspections. Inspections will take place within 30 days to assure work was completed in accordance with the Right-of-Way Grant and the right-of-way reclamation activities as described in the Restoration Plan. The CIC will be retained until reclamation and initial re-vegetation efforts are complete.

After construction reclamation activities are complete, the USFS will meet with the CIC to determine if there is any further work required. If no further work is required, the post-construction reclamation monitoring period will begin, as described in the Restoration. MVP will retain the third-party CIC for post-construction reclamation monitoring activities described in Restoration Plan and continue to work closely with the USFS and CIC during restoration activities.

8.2 End-of-Construction Project Report

Within 60 days of construction completion, the CIC will submit an End-of-Construction Project Report to document all environmental non-compliances during the construction of the Project. It is anticipated that the CIC will solicit assistance from the BLM, USACE, and the USFS to complete sections of the report that are applicable to each agency. The End-

of-Construction Project Report will include the amount of actual temporary and permanent acreage disturbed compared with the original temporary and permanent disturbance acreage analyzed in the EIS and found in the POD. The End-of-Construction Project Report will also include electronic and hardcopy compilation of all daily compliance reports (including digital pictures), variance requests, temporary suspensions, and WSOs (including documentation of resolution).

MVP will coordinate with the CIC to provide all applicable documentation for inclusion in the End-of-Construction Project Report. Completeness of the End-of-Construction Project Report will be verified by the CIC.

8.3 Construction Closeout Meeting

At the request of the BLM and USFS, MVP will coordinate a construction closeout meeting with the BLM, the USFS, construction contractor, and any other pertinent parties to document all agency requirements have been met, determine areas of improvement, and ensure all issues have been satisfactorily resolved.

APPENDIX N
Unanticipated Discovery Plan

MOUNTAIN VALLEY PIPELINE PROJECT
Plan for Unanticipated Historic Properties and Human Remains
West Virginia and Virginia

Prepared for



Prepared by



Revised December 2015

Table of Contents

1.0 INTRODUCTION..... 1

2.0 GUIDELINES, REGULATIONS AND LEGISLATION FOR UNANTICIPATED CULTURAL RESOURCES AND HUMAN REMAINS..... 1

 2.1 FEDERAL..... 1

 2.2 WEST VIRGINIA..... 1

 2.3 VIRGINIA..... 2

3.0 CONSULTATION WITH SHPOs AND NATIVE AMERICAN TRIBES 2

4.0 UNANTICIPATED DISCOVERY PROTOCOL..... 2

 4.1 TRAINING 2

 4.2 NOTIFICATION AND ASSESSMENT PROCEDURES (NOT INCLUDING HUMAN REMAINS)..... 2

 4.3 NOTIFICATION AND ASSESSMENT PROCEDURES (HUMAN REMAINS)..... 4

5.0 CONTACTS TABLE 6

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC (MVP), a joint venture between affiliates of EQT Corporation, NextEra, WGL Midstream, and Vega Energy partners, Ltd., plans to construct an approximately 300-mile long natural gas pipeline in West Virginia and Virginia (Project). MVP recognizes that despite the extensive archaeological field investigations that are conducted prior to Project construction, it is nonetheless possible that potentially significant cultural resources could be discovered during Project construction, especially during excavation activities. MVP recognizes its role to protect and preserve cultural resources that might be found during construction activities, in accordance with federal and state legislation. Cultural resources in this context are defined as archaeological sites, objects, and features, and include human remains and associated grave goods.

This Plan for Unanticipated Historic Properties and Human Remains (Plan) was developed on behalf of MVP and in consultation with the West Virginia Division of Culture and History (WVDCH), the Virginia Department of Historic Resources (VDHR), the National Park Service (NPS), and the United States Forest Service (USFS). The WVDCH and VDHR represent the State Historic Preservation Officers (SHPOs) in West Virginia and Virginia, respectively. Their offices are referred to generally as SHPO in this Plan. This Plan summarizes the approach MVP will follow to address the discovery of archaeological finds during construction activities within the Project's Area of Potential Effects (APE).

2.0 GUIDELINES, REGULATIONS AND LEGISLATION FOR UNANTICIPATED CULTURAL RESOURCES AND HUMAN REMAINS

This Plan will be followed in the event that cultural resources and/or human remains are encountered during construction of the MVP Project. The stipulations of the Plan as set forth below are in accordance with the current guidelines detailed in the following federal and state guidelines, regulations and legislation:

2.1 FEDERAL

- Sections 106 and 110 of the National Historic Preservation Act (NHPA), as amended (54 United States Code (USC) 306108 and 306101 et seq.)
- Section 6 of the Archaeological Resources Protection Act, as amended (16 USC 470ee)
- Secretary of the Interior's Standards for Archaeology and Historic Preservation (48 FR 44716-42)
- Advisory Council for Historic Preservation (ACHP): *Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects* (ACHP February 23, 2007)
- Federal Energy Regulatory Agency (FERC) Office of Pipeline Regulation: *Guidelines for Reporting on Cultural Resources Investigations* (FERC 2002)

2.2 WEST VIRGINIA

- West Virginia SHPO's *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Report Preparation*
- West Virginia State Code 29-1-8, and its implementing regulations, Title 82, Series 2: "Standards and Procedures for Administering State Historic Preservation Programs"

West Virginia State Code 29-1-8a, “Protection of human skeletal remains, grave artifacts and grave markers,” and its implementing regulations, Title 82, Series 3: “Standards and Procedures for Granting Permits to Excavate Archaeological Sites and Unmarked Graves”

2.3 VIRGINIA

- VDHR’s *Guidelines for Conducting Historic Resources Survey in Virginia* (October 2011)
- Virginia Antiquities Act, (§ 10.1-2305 Code of Virginia), “Permit required for the archaeological excavation of human remains;” Section 2305 of the Virginia Antiquities Act provides a permit process for archaeological field investigations involving the removal of human remains and artifacts from graves. These permits are issued through the VDHR’s Office of Review and Compliance.

3.0 CONSULTATION WITH SHPOs AND NATIVE AMERICAN TRIBES

On October 13, 2014, MVP initiated consultation with WVDCH and VDHR. On December 2, 2014, MVP reached out to federally recognized Native American Tribes, to inquire about their concerns regarding potential Project effects on historic properties and human remains. Contact information for the WVDCH, VDHR, and tribes who expressed an interest in ongoing communication is included in Section 5 -Contacts Table in this Plan. In the event that cultural resources and/or human remains are encountered during construction, MVP will contact the state offices and interested Tribes to inform and elicit responses.

4.0 UNANTICIPATED DISCOVERY PROTOCOL

4.1 TRAINING

MVP will be responsible for advising construction personnel on the procedures to follow in the event that historic properties or human remains (an unanticipated discovery) are discovered during construction activities. Training will occur as part of the pre-construction on-site training program for all construction personnel.

Copies of this Plan will be incorporated into all relevant construction documents, and will be available in hard copy format on-site during construction. The training will emphasize the procedures to follow in the event that an unanticipated discovery is encountered during Project construction.

4.2 NOTIFICATION AND ASSESSMENT PROCEDURES (NOT INCLUDING HUMAN REMAINS)

The following steps outline the protocols to be taken in the event an unanticipated discovery is made during Project construction:

- (1) Work in the immediate vicinity of the discovery should cease once an unanticipated discovery has been revealed;

- (2) Notify the Environmental Inspector (EI) as soon as possible of the unanticipated discovery;
- (3) Flag or fence off the discovery location and take measures to ensure the security and integrity of the discovery without delay. Work in the area of the discovery will not resume until the EI grants clearance;
- (4) The EI will quickly contact the MVP Project Manager (PM) and the Project Environmental Coordinator (EC);
- (5) The EC will contact the Project Archaeologist (PA) within 24 hours of the discovery;
- (6) The PA will, within 48 hours of notification, conduct a preliminary assessment of the discovery to determine whether it is potentially a significant archaeological site;
- (7) If the PA determines that the find is not an archaeological site, the PA will report the information to the EI and the EC. The EI will then grant clearance to the construction crews for work to resume;
- (8) If the PA determines that the find may be an archaeological site and potentially NRHP-eligible, the PA will inform the EI and EC of this determination;
 - (a) The EC will, within 24 hours of the determination that the site may be NRHP-eligible, notify the FERC, the relevant SHPO, and Interested Tribes, and the NPS and USFS if appropriate, of the determination. Work will not resume until authorized by the FERC and other appropriate agencies;
 - (b) Following consultation with the relevant SHPO and the FERC, (and Interested Tribes, NPS, and USFS if appropriate), the PA will evaluate the discovery and assess its horizontal and vertical extent, cultural association(s), and degree of disturbance. MVP will ensure that the PA has full access to the discovery;
 - (c) The PA will inform the EI, EC, the FERC, and the relevant SHPO of the findings and recommendations. If the finds are determined to not be significant, the EI and EC, after consultation with the FERC, the relevant SHPO, and Interested Tribes, and when appropriate the USFS and NPS, will grant clearance to the construction team to resume work. If a determination of potential NRHP-eligibility is made, EC will authorize the archaeological investigators to develop an archaeological treatment plan which will be submitted to the FERC, the relevant SHPO, and Interested Tribes, and when appropriate the USFS and NPS, for review;
 - (d) If the NRHP-eligible discovery cannot be avoided by Project construction, MVP, in consultation with the FERC, the relevant SHPO, Interested Tribes, and when appropriate

the USFS and NPS, will authorize the archaeological investigators to implement the mitigation plan;

- (e) At the conclusion of archaeological fieldwork, the PA will submit a report of the treatment results and recommendations to MVP. MVP will provide the report for review to the FERC, the relevant SHPO, Interested Tribes, and to NPS and USFS if appropriate;
- (f) Upon receiving written acceptance of the results of the implemented treatment from the FERC, the EC and EI will grant clearance to the construction team to resume work.

4.3 NOTIFICATION AND ASSESSMENT PROCEDURES (HUMAN REMAINS)

Human remains are physical remains of a human body or bodies including, but not limited to, bones, teeth, hair, and preserved soft tissues (mummified or otherwise preserved) of an individual. Remains may be articulated or disarticulated bones or teeth. Disturbance of human remains, burial places and or burial offerings and other grave furnishings without appropriate permits is a felony in West Virginia and Virginia.

The following steps outline the protocols to be taken in the event an unanticipated discovery of human remains is made during Project construction.

- (1) Cease work in the immediate vicinity of the discovery once an unanticipated discovery has been made;
- (2) Ensure that all human remains and/or grave items are left in place and treated with dignity and respect. Do not collect, disturb, or remove materials determined to be human remains or associated grave objects. All efforts will be made to exclude the general public from viewing any gravesites and/or funerary objects and no photographs of any gravesites and/or funerary objects will be released to or taken by the press;
- (3) Immediately notify the EI of the discovery that appears to be associated with human remains or an unmarked grave;
- (4) Flag or fence off the discovery location within the same day as the discovery, and take measures to ensure the security and integrity of the discovery. Work will not resume in the area of the find until the EI grants clearance to recommence;
- (5) The EI will contact the PM and the EC on the day of the discovery;
- (6) The EC will notify the PA on the day of the discovery;
- (7) The PA will examine the discovery within 48 hours of receipt of notification of the discovery. If the PA determines that the finds are human remains or funerary grave items, the PA will

immediately notify the EI and EC. The PM will notify the appropriate law enforcement agency. The EC will notify the FERC, the relevant SHPO, and Interested Tribes. The NPS and USFS will be notified if the discovery is located on property managed by their agency;

- a. West Virginia Code requires communication of finds to the county sheriff within 48 hours (§29-1-8a (d)), although as a matter of practice the sheriff should be notified on the day of the discovery.
- b. The Virginia Department of Historic Resources recommends that the finder of unmarked human remains contact local or state police immediately (http://www.dhr.virginia.gov/homepage_general/faq_cem_presv.htm#A).

If, upon inspection by the appropriate legal authorities, the remains are determined to be forensic and not archaeological (i.e., of a criminal nature), then MVP must await action by the authorities before construction may resume;

- (8) If the remains are determined to be archaeological in nature, MVP will determine whether a Project modification can avoid disturbing the remains. If Project actions cannot avoid the remains, MVP, in consultation with the FERC, the relevant SHPO, Interested Tribes, and NPS and USFS as appropriate, will evaluate the remains and any associated sites, artifacts or features for their eligibility for listing on the National Register. While the process to determine NRHP eligibility may vary depending upon the nature of the particular discovery. In general the condition and number of remains, the identification of possible associated diagnostic artifacts (i.e. artifacts of known cultural and time association), and the presence of observable and definable features would be characteristics that may be indicative of the NRHP-eligibility of the discovery. There may prove to be other characteristics that could also contribute to the potential NRHP-eligibility of the discovery.
- (9) If the remains are determined to be not eligible for listing on the National Register, the MVP in consultation with the FERC, the relevant SHPO, Interested Tribes, and NPS and USFS as appropriate, will direct the PA to develop a disinterment/re-interment treatment plan;
 - (a) Once the treatment plan is approved by FERC, the relevant SHPO, Interested Tribes, and NPS and USFS as appropriate, the EC will authorize the PA to implement the treatment plan;
 - (b) **In Virginia**, if the human skeletal remains must be removed, MVP shall obtain a Permit for Archaeological Removal of Human Burials from the VDHR and consultation would be done with Interested Tribes. **In West Virginia**, any removal of human remains would be done in or guided by consultation with the WVDCH and Interested Tribes;
 - (c) The treatment plan will address the curation of any artifacts recovered in the process of excavation and provide for appropriate final disposition of the remains in accordance

with applicable laws. MVP will be responsible for all costs associated with the discovery, evaluation and agency consultation, excavation, investigation and study, disinterment, re-interment, reporting, and curation of any human remains and associated funerary items encountered during Project construction; and,

- (d) Project construction may resume only after successful implementation of the treatment plan (which may entail excavation of all identifiable human remains and associated features and artifacts, disinterment or removal of human remains and associated grave goods), and after MVP receives written approval by the FERC, the relevant SHPO, and Interested Tribes, and from NPS and USFS if appropriate.

5.0 CONTACTS TABLE	
5.1 MOUNTAIN VALLEY PIPELINE	
<p>Project Environmental Coordinator (EC) Megan Neylon EQT – Sr. Environmental Coordinator 555 Southpointe Boulevard, Suite 200 Cannonsburg, PA 15317 Tel: (724) 873-3645 (office) (304) 841-2086 (cell) mneylon@eqt.com</p>	<p>Project Construction Manager (PM) John Uhrin EQT 555 Southpointe Boulevard, Suite 200 Cannonsburg, PA 15317 Tel: (304) 543-2078 (cell) Juhrin@eqt.com</p>
<p>Environmental Inspector (EI) To Be Determined Prior to Construction</p>	<p>Project Archaeologist (PA) Sydne Marshall. Ph.D. Tetra Tech 1000 The American Road Morris Plains, NJ 07950 Tel: (973) 630-8104 Email: sydne.marshall@tetratech.com</p>
<p>PA – West Virginia James T. Marine. M.S., West Virginia Cultural Resources Tetra Tech 661 Andersen Drive, Foster Plaza 7 Pittsburgh, PA 15220 Tel: (484) 680-9997 Email: james.marine@tetratech.com</p>	<p>PA – Virginia Rob Jacoby, M.A., Virginia Cultural Resources Tetra Tech 1000 The American Road Morris Plains, NJ 07950 Tel: (973) 630-8371 Email: rob.jacoby@tetratech.com</p>
5.2 FEDERAL AGENCY CONTACTS	
<p>FEDERAL ENERGY REGULATORY COMMISSION Paul Friedman Federal Energy Regulatory Commission Office of Energy Projects 888 First Street, NE Washington, D.C. 20426 Tel: (202) 502-8059 paul.friedman@ferc.gov</p>	
<p>U.S. FOREST SERVICE JoBeth Brown Public Affairs Officer George Washington and Jefferson National Forests 5162 Valleypoint Parkway Roanoke, VA 24019 Tel: (540) 265-5102 jobethbrown@fs.fed.us</p>	<p>Mike Madden Archaeologist George Washington and Jefferson National Forests 5162 Valleypoint Parkway Roanoke, VA 24019 Tel: (540) 265-5211 mjmadden@fs.fed.us</p>
<p>NATIONAL PARK SERVICE Sam Osborne US National Park Service Blue Ridge Parkway 199 Hemphill Knob Road Asheville, NC 28803-8686 Tel: (828) 348-3441 sam_osborne@NPS.gov</p>	<p>Wendy Janssen US National Park Service Appalachian National Scenic Trail P.O. Box 50 Harpers Ferry, WV 25425 Tel: (303) 535-6279 Wendy_Janssen@nps.gov</p>
<p>Steven Kidd</p>	

<p>Cultural Resources Specialist US National Park Service 199 Hemphill Knob Road Asheville, NC 28803-8686 Tel: 823-348-3438 steven_kidd@nps.gov</p>	
5.3 STATE HISTORIC PRESERVATION OFFICE CONTACTS	
<p>WEST VIRGINIA Susan Pierce Director/Deputy State Historic Preservation Officer West Virginia Division of Culture and History The Culture Center, Capitol Complex 1900 Kanawha Boulevard East Charleston, WV 25305-0300 Tel: (304) 558-0240 ext. 158 Email: susan.m.pierce@wv.gov</p>	<p>Lora A. Lamarre-DeMott Senior Archaeologist West Virginia Division of Culture and History The Culture Center, Capitol Complex 1900 Kanawha Boulevard East Charleston, WV 25305-0300 Tel: (304) 558-0240 ext. 711 Email: lora.a.lamarre@wv.gov</p>
<p>VIRGINIA Roger W. Kirchen, Director, Division of Review and Compliance Virginia Department of Historic Resources 2801 Kensington Avenue Richmond, VA 23221 Tel: (804) 482-6091 Email: roger.kirchen@dhr.virginia.gov</p>	
5.4 INTERESTED TRIBES	
<p>Ms. Lisa C. Baker Acting THPO United Keetoowah Band of Cherokee Indians in Oklahoma PO Box 746 Tahlequah, OK 74465 Tel: (918) 822-1952 ukbthpo-larue@yahoo.com</p>	<p>Ms. Cynthia Stacy NAGPRA Special Projects Manager for Tribe Peoria Tribe of Indians of Oklahoma P.O. Box 1527 Miami, OK 74355 Tel: (918) 540-2535 cstacy@peoriatribe.com</p>
<p>Chief Leo Henry, Clerk Haudenosaunee Tuscarora Nation 2006 Mt. Hope Road Lewiston, NY 14092 Phone: (716) 601-4737 Fax: (880) 990-3310</p>	<p>Ms. Nekole Alligood Delaware Nation Cultural Preservation Director P.O. Box 825 Anadarko, OK 73005 Tel: (405) 247-2448, Ext. 1403 NAlligood@delawarenation.com</p>
5.5 LAW ENFORCEMENT CONTACTS	
WEST VIRGINIA	
<p>Braxton County 300 Main Street Sutton, WV 26601 (304) 765-2838</p>	<p>Lewis County 117 Court Avenue Weston, WV 26452 (304) 269-8251</p>
<p>Doddridge County 118 East Court Street #102 West Union, WV 26456 (304) 873-2631</p>	<p>Monroe County 216 Main Street Union, WV 24983 (304) 772-3018</p>

Fayette County 100 North Court Street Fayetteville, WV 25840 (304) 574-4216	Nicholas County 700 Main Street, Suite 3 Summersville, WV 26651 (304) 872-7880
Greenbrier County Lewisburg: (304) 647-6634 Rupert: (304) 392-6320	Webster County 2 Court Square #G3 Webster Springs, WV 26288 (304) 847-2006
Harrison County 301 West Main Street Clarksburg, WV 26301 (304) 624-8550	Wetzel County 210 Main Street New Martinsville, WV 26155 (304) 455-8218
Summers County 123 Temple Street Hinton, WV 25951 (304) 466-7111	
VIRGINIA	
Craig County 182 Main Street – Suite 1 New Castle, VA 24127 (540) 864-5127	Montgomery County 16 South Franklin Street Christiansburg, VA 24073 (540) 382-2951
Franklin County 70 East Court Street #101 Rocky Mount, VA 24151 (540) 483-3000	Pittsylvania County 21 North Main Street Chatham, VA 24531 (434) 432-7800
Giles County 503 Wenonah Avenue Pearisburg, VA 24134 (540) 921-3842	Roanoke County 401 East Main Street Salem, VA 24153 (540) 283-3102

APPENDIX O
Unanticipated Discovery of Paleontologist Resources Plan

MOUNTAIN VALLEY PIPELINE PROJECT
Plan for Unanticipated Discovery of Paleontological Resources
West Virginia and Virginia

Prepared for



Prepared by



January 2017

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC, a joint venture between affiliates of EQT Midstream Partners, LP, NextEra Energy, Inc., WGL Holdings, Inc., and RGC Midstream, LLC. MVP is seeking a Certificate of Public Convenience and Necessity from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Project located in 17 counties in West Virginia and Virginia. MVP LLC. plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to natural gas for use by local distribution companies industrial users and power generation in the Appalachian, Mid-Atlantic, and southeastern markets.

The 303-mile Project traverses several physiographic provinces and sub-provinces in the Appalachian Basin of West Virginia and Virginia and the Virginia Piedmont. In West Virginia the majority of the proposed route lies within the Western Allegheny Plateau section of the Appalachian Plateaus Province before crossing into the Ridge and Valley Province of Virginia on the southern flank of Peters Mountain (WVGES, 1996). The route turns to the southeast crossing the Great Valley and northern Blue Ridge sub-provinces of Virginia, before descending into the Piedmont Foothills and terminating in the Outer Piedmont sub-province in Pittsylvania County Virginia (Bailey 1999).

1.1 Paleontological Setting (Appalachian Basin West Virginia, Virginia)

The sediments of the Appalachian Basin were originally deposited in a shallow tropical sea that existed throughout the Paleozoic Era, from about 570 million to 240 million years ago. This shallow sea received sediments throughout the Paleozoic Era from adjacent lands to the west and east and subsided under the accumulated weight of these sediments forming the Appalachian Basin (ref). With time and the tremendous pressures from the burial of the thousands of feet of these sediments became sedimentary rock. The current topographic expression within the ancient basin-area is the result of compressional forces (folding and thrust faults) from continental collisions of the North American and European-African plates.

Marine invertebrates flourished in the shallow tropical Paleozoic sea. After dying and falling to the bottoms of these seas, some organisms became fossilized in the sedimentary rock that later formed. Other fossils were also deposited by streams. Terrestrial and plant vertebrate fossils have been found throughout the Project area in scattered locations. More recent Quaternary and Tertiary floral and faunal remains may also be encountered in anaerobic environments such as bogs, or in other buried context if the chemical and physical conditions for preservation are favorable.

Neither the West Virginia Geological and Economic Survey, or the Virginia Division of Geology Minerals and Mines does tracks or regulates paleontological finds or the collection of fossils, and overall, it is unlikely that the segments of the pipeline in the Appalachian Basin would cause a material impact to recorded or undiscovered significant paleontological resources. The Pennsylvanian to Permian age cycles of marine to non-marine deposits of shale, siltstone and sandstone contain marine invertebrate fossils (trilobites, brachiopods, gastropods and crinoids)

with occasional disseminated terrestrial plant fossils and some fragmented and rare vertebrate remains of fish and amphibians.

1.2 Paleontological Setting (Blue Ridge and Piedmont)

The Blue Ridge and Piedmont are composed largely of metamorphic and igneous rocks that have been deformed by stress, strain and heat associated with Mesozoic rifting as the super-continent of Pangea broke apart. Though many of these rocks were initially sedimentary and may have contained fossils from Palaeozoic continental seas, the fossils like the surrounding rock in which they are preserved have also been deformed by compressional and extensional forces.

Fossils of Mesozoic freshwater and land animals and plants can be found in a narrow band of rocks in the Piedmont in Mesozoic rift basins paralleling the eastern coast of the United States

The Virginia Division of Geology and Mines does not track or regulate paleontological finds or the collection of fossils, and overall, it is unlikely that the segments of the pipeline in Virginia would cause a material impact to recorded or undiscovered significant paleontological finds. Fossil remains found in Mesozoic rift basins may include ray-finned fish (semionotids, coelacanths) bony fish (palaeoniscids), dinosaur footprints and in rare cases dinosaur bone and skeletal fragments.

2.0 UNANTICIPATED DISCOVERIES OF PALEONTOLOGICAL RESOURCES

If any unanticipated paleontological resources are discovered, they will most likely be isolated bones, teeth, or jaws, which would not cause delays in construction activities. There is a slight chance that substantial and scientifically significant articulated remains of vertebrate fossils of marine reptiles may be encountered in excavations in areas underlain by fossil bearing formations. It is also possible that the silicified remains of Quaternary and Tertiary fauna may be present. If that occurs, work in the immediate vicinity of the find will cease and the following people will be contacted in each respective state to assess the significance of the find.

West Virginia West Virginia Geologic and Economic Survey, Mitch Blake, Geologist for Michael Ed. Hohn, Director and State Geologist. (304)-594-2331 blake@geosrv.wvnet.edu

Virginia Virginia Department of Mines Minerals and Energy, David Spears, State Geologist (434) 951-6350 david.spears@dmme.virginia.gov

3.0 PRECONSTRUCTION TRAINING

Mountain Valley will provide training to all Environmental Inspectors regarding the presence, type, and identification of fossil resources and the procedures to be followed when an unanticipated paleontological resource is discovered during construction activities.

APPENDIX P
Framework Construction Emergency Preparedness and
Response Plan

Appendix P

Draft

Framework Construction Emergency Preparedness and Response Plan

Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1
2
3 **1.0 INTRODUCTION.....P-1**
4 **2.0 PURPOSE.....P-2**
5 **3.0 REGULATORY COMPLIANCEP-2**
6 **4.0 RESPONSIBILITIESP-3**
7 **5.0 RESPONSE COORDINATIONP-3**
8 **6.0 EMERGENCY COMMUNICATIONSP-3**
9 6.1 Emergency Contact ListP-3
10 **7.0 HAZARD IDENTIFICATIONS AND KEY RESPONSE CRITERIAP-6**

LIST OF TABLES

11
12
13
14
15
16 **Table 6-1. Emergency Contact ListP-5**
17

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on National Forest System lands will occur in 2018.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in Braxton County, West Virginia, which is administered by the U.S. Army Corps of Engineers (USACE). Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this plan focuses on the JNF, noting any additional or different requirements that are specific to the crossing of the Weston and Gauley Turnpike.

The USFS will be responsible for enforcement of the terms and conditions of the BLM's right-of-way Grant on National Forest System lands during the term of the right-of-way Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF portion of this project by the USFS Project Manager and the Authorized Officer's designated compliance monitors. USFS will have stop work authority per terms outlined in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work conditions are encountered during construction.

1 The purpose of this Plan is to provide measures in emergency situations to be utilized by
2 the FERC, USFS, USACE, MVP, the Compliance Inspection Contractor (CIC), the
3 construction contractor, and any other party that may be present in the construction work
4 area.

5 **2.0 PURPOSE**

6 The purpose of this Plan is to provide an overview of methods to be implemented if the
7 need for emergency management is imminent. This document discusses the existing
8 support structure, chain of command, and emergency communication protocols to be
9 used as a guide for development of the Final Construction Emergency Preparedness and
10 Response Plan to be completed by the construction contractor and approved by the
11 USFS.

12 Emergency response procedures will be implemented for the following potential events
13 or similar events:

- 14 • Pipeline breach, damage to structures, or equipment failure;
- 15 • Explosions;
- 16 • Fires;
- 17 • Natural disasters; and/or
- 18 • Serious personal injury.;

19
20 Construction contractors are required to develop and submit to MVP Site Specific
21 Emergency Action Plans (SSEAP) prior to the start of construction activities. The SSEAP
22 will identify and outline any and all potential hazards including detailed plans to prevent,
23 mitigate and/or eliminate the hazards as well as emergency response procedures for the
24 above potential events as well as any and all identified potential hazard scenarios.
25 Construction contractors will be responsible for training all employees and the CIC.
26 SSEAP's will be thoroughly vetted by MVP and disseminated to the CIC, and the USFS
27 Project manager.

28
29 The Construction Emergency Preparedness and Response Plan provides procedures
30 and information to enable MVP, the construction contractor, the CIC, and USFS Project
31 Manager to prepare for and effectively respond to emergency situations. The primary
32 objective of this Plan is to prevent adverse impacts to human health and safety, property,
33 and the environment that could potentially occur as a result of the construction of the
34 Project. More specific emergency procedures for blasting, fire, and hazardous materials
35 are included in Appendices J – Draft Blasting Plan, W – Draft Fire Prevention and
36 Suppression Plan, and X – Framework Hazardous Materials Management Plan of the
37 POD, respectively.

38 **3.0 REGULATORY COMPLIANCE**

39 The U.S. Department of Transportation (USDOT) “Minimum Federal Safety Standards”
40 (49 Code of Federal Regulations [CFR] Part 192) provide the standards pursuant to which
41 the Project will be designed, constructed, operated, and maintained. The proposed
42 Project facilities will be designed, constructed, operated, and maintained to meet or

1 exceed the safety requirements set forth in 49 CFR Part 192. The intent of the USDOT
2 regulations for pipeline facilities is to provide the public with adequate protection from
3 pipeline failures. Included in 49 CFR Part 192 are specifications for material selection and
4 qualification, minimum design and construction requirements, and protection from
5 internal, external, and atmospheric corrosion.

6 **4.0 RESPONSIBILITIES**

7 MVP and the construction contractor are responsible for the effective response to any
8 emergency situation or event related to the construction of the Project. Each construction
9 contractor will develop a detailed and thorough SSEAP in conjunction with MVP
10 requirements that will be thoroughly vetted prior to the start of construction activities.
11 Additionally, to ensure a coordinated and effective response, a chain of command will be
12 developed during construction activities and as part of the Final Construction Emergency
13 Preparedness and Response Plan to be followed in the event of an emergency.

14 The following are factors for the establishment of a chain of command:

- 15 • Type of event (natural, environmental, pipeline leak, external forces);
- 16 • Severity and geographic area (multiple or combination of events);
- 17 • Anticipated duration;
- 18 • Multi-division/discipline response required; and
- 19 • External agency coordination.

20 **5.0 RESPONSE COORDINATION**

21 The amount of resources and coordination required for response to a specific hazard or
22 emergency is determined by type, severity, location, and duration of the event. Most
23 events during construction activities will be managed at the field operations level by the
24 construction contractor and may require increasing resource requirements to match the
25 severity and duration of the event. Additional response coordination plans will be
26 developed and included as part of the Final Construction Emergency Preparedness and
27 Response Plan and will provide increasing levels of resources and coordination
28 necessary to support immediate or escalating emergency events.

29 **6.0 EMERGENCY COMMUNICATIONS**

30 Effective communication and exchange of information is essential in every emergency
31 response. Misdirected, incorrect, or untimely information can be detrimental and even
32 increase the threat to life or property. As an emergency event escalates, the rapid
33 increase of information creates chaos and confusion. Simple communication diagrams
34 can help to alleviate this situation. Communication chain diagrams will be developed for
35 reference during construction activities as part of the construction contractors' SSEAP
36 and additionally will be developed as part of the Final Construction Emergency
37 Preparedness and Response Plan. All contractor employees, MVP personnel as well as
38 local emergency responders will be provided and trained on the appropriate
39 communication chain diagrams to follow in the event of an emergency.

40

41 **6.1 Emergency Contact List**

1 **In case of emergency, call 911 first.** Additional potential emergency contacts will be
2 included in the Final Construction Emergency Preparedness and Response Plan and
3 should be contacted as appropriate, depending on the situation (e.g., fire, injury) as
4 outlined in the communication chain diagrams. Further guidance on emergency response,
5 notification, and reporting protocols are included in Appendices J – General Blasting Plan,
6 W – Draft Fire Prevention and Suppression Plan, and X – Framework Hazardous
7 Materials Management Plan.

8

1 **Table 6-1. Emergency Contact List^{1/}**

In Case of Emergency - Call 911		
Fire – Call 911 First		
Federal, State and County Government Representatives		
NF Divide Ranger District:	Giles County, VA:	Monroe, WV:
	Montgomery County, VA:	
Weston and Gauley Turnpike	Braxton County, WV:	
State and Police and County Sheriffs		
Giles County, VA:	Montgomery County, VA:	Craig County, VA:
Braxton County, WV:		
Virginia State Police: (540) 375-9500	West Virginia State Police (304) 436-2101	
Poison Control		
National Poison Control: (800) 222-1222 Provides connection to counties		
Hospitals And Clinics		
Giles County, VA: Carilion Giles Community Hospital (540) 921-6000	Montgomery County, VA: LewisGale Hospital Montgomery (540) 951-1111	Craig County, VA: Catawba Hospital (540) 375-4200
Raleigh County, WV: Raleigh General Hospital (304) 256-4100		
Hazardous Spill Response And Notification – Call 911		
Directly after 911 notification, the following mandatory notifications will be made by the Compliance Inspection Contractor. Select and notify the appropriate government agency(ies) based on geographic location of the spill site. Also refer to Appendix X – Hazardous Materials Management Plan Framework.		
Giles County, VA:	Montgomery County, VA:	Craig County, VA:
Braxton County, WV:		
Virginia Secretary of Safety and Homeland Security: (804) 786-5351	West Virginia Division of Homeland Security and Emergency Management:	Virginia Department of Environmental Quality: (804) 698-4000
West Virginia Department of Environmental Protection: (304) 926-0440	National Response Center: (800) 424-8802	
Other Relevant Contact Information		
Forest Access Authorized Officer or Designated Representative:	USACE Authorized Officer or Designated Representative:	

2 1/ To be completed by construction contractor prior to operation and maintenance activities.

3 This Emergency Contact List shall be verified at the beginning of construction and
 4 updated throughout the Project by the construction contractor to ensure accurate contact
 5 information. This information will be provided to the Construction Contractors so that it
 6 can be included in the SSEAPs. MVP will be responsible for providing updated
 7 information to the contractors in a timely manner. The contractors will update the SSEAP
 8 accordingly and provide training to reflect any changes.

1 **7.0 HAZARD IDENTIFICATIONS AND KEY RESPONSE CRITERIA**

2 The right-of-way corridor for the Project can pose potential hazards or threats in
3 association with construction activities. The most effective response to any situation is
4 awareness of the hazard, its potential effects and consequences, and an understanding
5 of the resources and actions necessary to respond. While it would be unreasonable to list
6 all the potential hazards and detail each response, the construction contractors' SSEAPs
7 is designed to identify any and all potential hazards including detailed plans to prevent,
8 mitigate and/or eliminate the hazards as well as emergency response procedures that
9 would be effective in any given potential hazard scenario. All employees will be trained
10 accordingly. Additionally, response methods and responsibilities will be identified,
11 outlined and determined by MVP in the Final Construction Emergency Preparedness and
12 Response Plan for post construction operation.

13

APPENDIX Q
Framework for Operations, Maintenance, and
Emergency Response Plan

Appendix Q

Draft

Framework for Operations, Maintenance, and Emergency Response Plan

Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1

2

3 **1.0 INTRODUCTION..... Q-1**

4 1.1 Purpose..... Q-2

5 **2.0 REGULATORY COMPLIANCE Q-2**

6 **3.0 OPERATION AND MAINTENANCE..... Q-4**

7 3.1 Operations and Maintenance Q-5

8 3.2 Corrective Maintenance Q-6

9 3.3 Emergency Maintenance.....**Q-Error! Bookmark not defined.**

10 **4.0 EMERGENCY SITUATIONS Q-7**

11 4.1 Response Coordination..... Q-7

12 4.2 Emergency Communications Q-7

13 4.3 Hazard Identifications and Key Response Criteria Q-9

14 **5.0 ENVIRONMENTAL PROTECTION Q-10**

15 5.1 Access Management..... Q-10

16 5.2 Vegetation Management Q-11

17 5.3 Noxious Weed Control Q-11

18 5.4 Protection of Soils and Water Quality..... Q-12

19 5.5 Protection Measures for Aquatic Resources Q-12

20 5.6 Protection of Wildlife Species..... Q-13

21 5.7 Protection of Threatened, Endangered, and Sensitive Plant and Wildlife

22 Species Q-13

23 5.8 Reclamation Q-13

24 5.9 Protection Measures for Cultural Resources..... Q-13

25 5.10 Protection for Paleontological Resources Q-14

26 5.11 Fire Protection..... Q-14

27 **6.0 O&M PLAN HISTORY Q-15**

LIST OF TABLES

28

29

30

31

32 **Table 2-1.** MVP Pipeline Class locations by State and Milepost..... Q-3

33 **Table 3-1.** Schedule for Major Components of the Project Q-5

34 **Table 4-1.** Emergency Contact List Q-8

35

Draft**Framework for Mountain Valley Pipeline Project
Operations, Maintenance, and Emergency Response
Plan****1.0 INTRODUCTION**

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on National Forest System lands will occur in 2018.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in Braxton County, West Virginia, which is administered by the U.S. Army Corps of Engineers (USACE). Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this plan focuses on the JNF, noting any additional or different requirements that are specific to the crossing of the Weston and Gauley Turnpike.

The USFS will be responsible for enforcement of the terms and conditions of the BLM's right-of-way Grant on National Forest System lands during the term of the right-of-way

1 Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF
2 portion of this project by the USFS Project Manager and the Authorized Officer's
3 designated compliance monitors. USFS will have stop work authority per terms outlined
4 in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work
5 conditions are encountered during construction.

6 **1.1 Purpose**

7 This Appendix Q is a detailed framework for Operations and Maintenance once the
8 pipeline is loaded and fully operational. Detailed and specific emergency response plans
9 will be developed and implemented prior to the pipeline becoming in-service. These plans
10 will be developed across the entire line once it has been constructed. This purpose of this
11 plan is to ensure the following:

- 12 • Operations and maintenance (O&M) activities comply with applicable state and
13 federal laws and policies;
- 14 • The Project is implemented consistently within the JNF;
- 15 • MVP or its designated contractor is able to access the pipeline and ancillary
16 facilities and implement the necessary O&M activities in a timely, cost-effective,
17 and safe manner;
- 18 • Impacts to the environment are avoided where practicable or are minimized; and
- 19 • MVP complies with applicable regulations as defined in Department of
20 Transportation, 49 CFR Code of Federal Regulations (CFR), Subtitle B, Chapter
21 1, Subchapter D "Pipeline Safety". (49 CFR Parts 190 to 199), and other applicable
22 U.S. Department of Transportation (USDOT) minimum Pipeline and Hazardous
23 Materials Safety Administration (PHMSA) regulations.

24

25 **2.0 REGULATORY COMPLIANCE**

26 The Project facilities will be designed, constructed, operated, and maintained to meet or
27 exceed the safety requirements set forth in the USDOT "Minimum Federal Safety
28 Standards," 49 CFR Part 192. The intent of the USDOT regulations for pipeline facilities
29 is to provide the public with adequate protection from pipeline failures. Included in 49 CFR
30 Part 192 are specifications for material selection and qualification, minimum design and
31 construction requirements, and protection from internal, external, and atmospheric
32 corrosion.

33 Areas near a pipeline are defined in 49 CFR § 192.5 based on population densities, with
34 the most stringent requirements coinciding with the areas with the highest concentration
35 of people. The definition for "class location unit" is the area that extends 220 yards
36 (660 feet) on either side of the centerline of any continuous one-mile length of pipeline
37 (sliding mile). Areas are broken down into four classifications:

- 38 • Class 1 – Class location unit with 10 or fewer buildings intended for human
39 occupancy.
- 40 • Class 2 – Class location unit with more than 10 but fewer than 46 buildings
41 intended for human occupancy.

- 1 • Class 3 – Class location unit with 46 or more buildings intended for human
2 occupancy, or where the pipeline lies within 100 yards of any building, or small,
3 well-defined outside area (such as a playground or recreation area) occupied by
4 20 or more people on at least five days a week for 10 weeks in any 12-month
5 period (the days and weeks need not be consecutive).
- 6 • Class 4 – Class location unit where buildings with four or more stories
7 aboveground are prevalent.

8 More stringent pipeline design, wall thickness, testing, and operation characteristics are
9 required in more populated areas. Specifically, for a Class 1 location, pipelines must be
10 installed at a minimum depth of 30 inches in normal soil and 18 inches in rock, whereas
11 Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroads,
12 require a minimum cover of 36 inches in normal soil and 24 inches of coverage in
13 consolidated rock (49 CFR § 192.327). Design pressures, wall thickness, maximum
14 allowable operating pressures (MAOPs), hydrostatic test pressures, weld testing and
15 inspection, as well as frequency of leak surveys and patrols of the pipeline, are required
16 to conform to higher standards in areas of greater population density. The Project
17 incorporates these requirements. Table 2-1 provides the class locations at the Weston
18 and Gauley Turnpike and the crossing of the JNF. Mountain Valley will install Class 2 pipe
19 buried at least 36 inches below the ground surface within the Jefferson National Forest, there
20 would be no restrictions on the use of heavy firefighting equipment by the FS.

21 **Table 2-1. MVP Pipeline Class locations by State and Milepost**

Location	Class Location	Beginning Milepost	Ending Milepost
Weston and Gauley Turnpike	2	67.4	67.4
JNF	2	196.25	197.9
JNF	2	218.65	219.5
JNF	2	219.9	220.88

22

23 If population densities near the pipeline increase after construction resulting in a change
24 in class location, 49 CFR §§ 192.609 and 192.611 require confirmation or revision to the
25 MAOP to match the new class. If revisions are needed, they may be achieved by reducing
26 the operating pressure, by pressure testing the segment of pipe using the applicable class
27 location multiplier, or by replacing the segment of pipe for the class change, if required,
28 with one that complies with the USDOT minimum PHMSA code for that class location.

29 Additionally, 49 CFR Part 192 provides the minimum standards for operation and
30 maintenance of pipeline facilities, which includes a requirement for a written plan to
31 govern these activities. The pipeline operator must also establish an Emergency Plan
32 with written procedures to minimize the hazards from a natural gas pipeline emergency.

33 MVP will maintain frequent contact with PHMSA. PHMSA routinely exercises its oversight
34 authority to ensure that facilities under its jurisdiction are safely designed, constructed,
35 and operated. With regard to its role in public safety for natural gas pipelines PHMSA
36 develops regulations and other approaches to risk management to assure safety in
37 design, construction, testing, operation, maintenance, and emergency response of

1 pipeline facilities. It also administers a national regulatory program to assure the safe
2 transportation of natural gas, petroleum, and other hazardous materials by pipeline.
3 PHMSA will routinely inspect MVP's pipeline facilities and records for compliance with
4 design, construction, testing, operations, maintenance, and integrity regulations.

5 MVP's procedures and practices will meet or exceed the pipeline safety regulations and
6 related risk-management requirements administered by PHMSA.

7 **3.0 OPERATION AND MAINTENANCE**

8 Personnel operating and maintaining the pipeline will meet the qualification requirements
9 outlined in Subpart N of Part 192 (49 CFR §§ 192.801 – 192.809). The training program
10 will ensure all personnel possess the knowledge and competency necessary to efficiently
11 operate and maintain the pipeline in a manner that protects the environment, the public,
12 and the health and safety of all employees. More specifically, personnel are trained to
13 execute normal operating and maintenance procedures, recognize abnormal conditions
14 and take appropriate corrective actions, predict consequences of malfunctions or failures,
15 recognize conditions likely to cause emergencies, respond to emergency situations,
16 control accidental releases of gas, and recognize characteristics and hazards of natural
17 gas.

18 MVP and/or its designated contractor perform a number of activities to keep pipelines
19 operational and in good repair. Most of these activities, such as those for routine patrols,
20 inspections, and scheduled maintenance, are planned in advance. However, there could
21 be an occasional need for emergency response in cases where public safety and property
22 are threatened, to prevent imminent damage to the pipeline and ancillary facilities.

23 The safety and reliability of the proposed Project will be based on safe design, appropriate
24 equipment selection, code compliance, thorough review, careful construction, post-
25 construction testing, and competent maintenance and operation. Measures will be
26 incorporated according to approved design practices and standards that have been
27 developed through industry-wide experience of pipeline construction projects. Measures
28 to protect the public from inadvertent natural gas releases due to accidents or natural
29 catastrophes can be grouped into three categories: passive protection, active controls,
30 and procedural controls.

31 Routine, corrective, and emergency response activities will be conducted in accordance
32 with this O&M Plan with previous notification to the BLM, USFS, or USACE, as applicable.
33 Maintenance activities that are outside of the right-of-way, established access roads, or
34 other Project-related ancillary facilities or that are not identified in this plan will not be
35 conducted until approved by BLM, USFS, or USACE, as applicable. An exception to this
36 would be when emergency action/maintenance is needed that requires outside right-of-
37 way work to be completed to ensure safety and reliable delivery to customers.

38 Required inspection schedules for the O&M activities are provided below in Table 3-1.
39 Equipment use could include light trucks, sport utility vehicles, all-terrain vehicles (ATVs),
40 utility task vehicles, and earth-moving equipment; however, additional vehicles and
41 equipment may be necessary depending on the terrain, site access, and necessary
42 maintenance work. Work may also be conducted outside of the typical schedule; schedule

1 changes may occur as a result of weather, manpower, equipment availability, budgets,
2 and other factors.

3 **Table 3-1. Schedule for Major Components of the Project ^{a/}**

Pipe Class	Inspection/Patrol Interval
Highway and Railroad Crossings	
Class 1 and 2	7.5 months but at least twice each calendar year
Class 3	4.5 months but at least four times each calendar year
All Other Locations	
Class 1 and 2	15 months but at least once each calendar year
Class 3	7.5 months but at least twice each calendar year

^{a/} Intervals comply with 49 CFR § 192.705. Regulations include intervals for Class 4 pipe; however, because there will be no Class 4 pipe locations on the MVP Project, they were not included.

4 **3.1 Routine Operations and Maintenance**

5 The pipeline control center for the Project will be staffed continuously by qualified pipeline
6 operators. Operators will monitor key aspects of the pipeline including system pressures,
7 temperatures, flows, and valve positions (open or closed). In case of an emergency at the
8 pipeline control center, a secondary pipeline control center will be available at a second
9 location.

10 The pipeline will be monitored for leaks continuously using the data acquisition system.
11 Operators will use pressure, flow, and rate-of-change alarms to monitor for leaks or other
12 abnormal operating conditions. In the unlikely case that a shutdown of the pipeline system
13 is needed, the MVP pipeline system will be equipped with remotely controlled
14 sectionalizing block valves to isolate the affected pipeline segment.

15 USDOT PHMSA 49 CFR Part 192 prescribes the minimum standards for operating and
16 maintaining pipeline facilities, including the establishment of a written plan governing
17 these activities. MVP will develop an O&M Manual for the facility during the construction
18 phase, and this O&M Manual will be in effect prior to initial filling of the pipeline system
19 with natural gas. The O&M Manual will include contingency plans for maintaining service
20 or reducing downtime.

21 MVP will have field services crews to perform USDOT PHMSA 49 CFR Part 192 required
22 operations, maintenance, and inspection tasks along the pipeline. All personnel will have
23 the proper training and qualifications as required by Part 192.

24 Routine maintenance activities are conducted on a regular basis to identify and repair any
25 deficiencies. These activities do not damage vegetation or disturb soil outside of the right-
26 of-way, do not adversely impact sensitive resources (including known federal- and state-
27 listed species, waters of the United States, and cultural resources), and do not require
28 land manager approval. Personnel are generally present in any given area for less than
29 one day. The following are examples of routine maintenance, which include both
30 inspection and corrective activities:

- 31 • Procedures for testing, start-up, operation, purging, and training of operations and
32 maintenance staff on operational procedures;

- 1 • Regularly scheduled preventative maintenance programs to meet government
2 regulations for pipeline segments and metering stations;
- 3 • Launchers and receivers will be installed during construction at each of the
4 compressor stations to facilitate the use of inline inspection tools (smart pigs)
5 during operations and maintenance and used at intervals that meet or exceed the
6 requirements in the pipeline safety regulations to monitor for corrosion and third-
7 party damage that the system may encounter;
- 8 • Aerial surveillance flights, on-ground leak detection surveys, internal pipeline
9 inspection with smart pigging equipment, and cathodic protection system
10 inspection and maintenance;
- 11 • Routine ground patrols to inspect structural components. Such inspections
12 generally require either an ATV or pickup and possibly additional support vehicles
13 traveling on access roads and may rely on either direct line-of-sight or binoculars.
14 In some cases, the inspector may walk the right-of-way. Patrols are typically
15 conducted in the spring and fall. Follow-up maintenance is scheduled depending
16 on the severity of the problem—either as soon as possible or as part of routine
17 scheduled maintenance;
- 18 • Removal of individual trees or snags that pose a risk of falling into facilities or
19 pipeline structure. Such trees or snags may be located off of the right-of-way.
20 Personnel generally access hazard trees by truck, by ATV, or on foot from an
21 access road and cut them with a chainsaw or similar tool. Any felled trees or snags
22 are left in place as sources of large woody debris or as previously directed by the
23 land-management agency. Felled green trees are limbed to reduce fire hazard;
- 24 • Vegetation removal may be required on access roads to allow the necessary
25 clearance for access and provide for worker safety. Field crews access the access
26 roads by pickup or ATV and use chainsaws and hand tools to clear the vegetation.
27 Where practicable and feasible, mechanical methods may be used; and
- 28 • Noxious weed control and vegetation management activities that include the use
29 of herbicides. Herbicide use has been requested by USFS and is outlined in the
30 Project's *Herbicide Use Plan* (Appendix W).

31 A Public Awareness Plan will be prepared and implemented to enable customers, the
32 public, government officials, and those engaged in excavation to recognize a natural gas
33 pipeline emergency and report it to appropriate public officials and the company. Since
34 April 1982, operators have been required to participate in “One-Call” public utility
35 programs in populated areas to minimize unauthorized excavation activities near
36 pipelines.

37 **3.2 Corrective Maintenance**

38 Corrective maintenance could include any of the following activities:

- 39 • Non-cyclical vegetation clearing to remove saplings or larger trees in the right-of-
40 way;
- 41 • Structural maintenance in which earth must be moved, such as the creation of a
42 landing pad for construction or maintenance equipment;

- 1 • Road maintenance involving erosion control, water drainage installation or repair
2 (such as culverts or rock crossings), road rehabilitation after major disturbances
3 (such as slumping or a storm event), or other road maintenance requiring heavy
4 equipment (not including routine blading or grading);
- 5 • Activities to address slip repairs, which may require heavy duty equipment and
6 placement of materials to repair damage and stabilize slopes to prevent further
7 slope failures;
- 8 • Follow-up restoration activities, such as seeding, noxious weed control, and
9 erosion control; and
- 10 • Pipeline component repair or replacement, which requires the use of several types
11 of trucks and equipment and grading to create a safe work area.

12 Personnel are generally present in any given location or area for a prolonged time,
13 generally more than one day.

14 **4.0 EMERGENCY SITUATIONS**

15 MVP will follow 49 CFR Part 192, as applicable, and develop Emergency Plans in
16 compliance with 49 CFR § 192.615. In the case of an emergency where life or substantial
17 property is at risk or there is a potential or actual interruption in service, MVP or its
18 designated contractor will promptly respond to the emergency and conduct any and all
19 activities, including emergency repair requiring heavy equipment access to the pipeline
20 or other ancillary facilities, needed to remedy the emergency and will implement feasible
21 and practicable measures for environmental protection. Key features involved in
22 emergency response planning include:

- 23 • Receiving, identifying, verifying, and classifying emergency events – leaks, fires,
24 explosions, or natural disasters;
- 25 • Managing communications with emergency responders and public officials to
26 establish incident command and coordinate response efforts;
- 27 • Making personnel, equipment, tools, and materials available for emergencies;
- 28 • Ensuring that response efforts focus on public safety first; and
- 29 • Ensuring emergency shutdown actions are taken in a timely manner.

30 **4.1 Response Coordination**

31 The amount of resources and coordination required for response to a specific hazard or
32 emergency is determined by type, severity, location, and duration of the event. Most
33 events require managing at the field operations level and will require increasing resource
34 requirements to match the severity and duration of the event. Should the need arise, MVP
35 will have field service personnel and repair contractors available that are capable of
36 completing emergency repairs and restoration.

37 **4.2 Emergency Communications**

38 MVP's personnel involved with public awareness will ensure that appropriate liaisons and
39 public education programs are established and maintained in the communities within
40 which MVP operates. MVP will establish open relationships with local fire, police, and

1 other governmental leaders in order to efficiently respond in a cooperative manner to
 2 pipeline emergencies. To accomplish this, MVP, as appropriate and in compliance with
 3 §§ 192.615 and 192.616, will:

- 4 • At the request of local fire departments, police departments, and/or other
 5 government agencies, MVP will conduct informational meetings and training
 6 sessions;
- 7 • Ensure appropriate operating personnel are knowledgeable and trained on
 8 emergency procedures; and
- 9 • The Operations, Maintenance, and Emergency Response Plan listing emergency
 10 contact phone numbers and other pertinent information will be provided to the
 11 BLM, USFS, and USACE.

12 In addition to maintaining contact with local governmental and emergency response
 13 agencies along the pipeline, MVP’s liaison efforts will allow MVP to:

- 14 • Determine how local officials may be able to assist MVP during an emergency with
 15 the determination of jurisdiction and resources that may be involved in responding
 16 to an emergency;
- 17 • Familiarize local officials with how MVP responds to an emergency on its pipeline
 18 system;
- 19 • Verify notification preferences for pipeline emergencies; and
- 20 • Review with local officials the use of incident command system techniques and
 21 assist with response to an emergency.

22 Outreach to emergency responders will be conducted by MVP on a periodic basis. MVP’s
 23 focus with these organizations is to review firefighting methods and techniques for natural
 24 gas fires and to conduct periodic emergency drills and exercises.

25 Effective communication and exchange of information is essential in every emergency
 26 response. Misdirected, incorrect, or untimely information can be detrimental and even
 27 increase the threat to life or property.

28 As an emergency event escalates, the rapid increase of information creates chaos and
 29 confusion. Simple communication diagrams can help to alleviate this situation.

30 **In case of emergency, call 911 first.** Additional potential emergency contacts are listed
 31 in Table 4-1 – Emergency Contact List, and should be contacted as appropriate,
 32 depending on the situation (e.g., fire, injury).

33 **Table 4-1. Emergency Contact List ^{a/}**

In Case of Emergency - Call 911		
Fire – Call 911 First		
Federal, State and County Government Representatives		
NF Divide Ranger District:	Giles County, VA:	Monroe County, WV:
	Montgomery County, VA:	
Weston and Gauley Turnpike	Braxton County, WV:	

In Case of Emergency - Call 911		
Fire – Call 911 First		
State and Police and County Sheriffs		
Giles County, VA:	Montgomery County, VA:	Monroe County, WV:
Braxton County, WV:		
Virginia State Police: (540) 375-9500	West Virginia State Police (304) 436-2101	
Poison Control		
National Poison Control: (800) 222-1222 Provides connection to counties		
Hospitals And Clinics		
Giles County, VA: Carilion Giles Community Hospital (540) 921-6000	Montgomery County, VA: LewisGale Hospital Montgomery (540) 951-1111	Craig County, VA: Catawba Hospital (540) 375-4200
Raleigh County, WV: Raleigh General Hospital (304) 256-4100		
Hazardous Spill Response And Notification – Call 911		
Directly after 911 notification, the following mandatory notifications will be made by the Compliance Inspection Contractor. Select and notify the appropriate government agency(ies) based on geographic location of the spill site. Also refer to Appendix X – Hazardous Materials Management Plan Framework.		
Giles County, VA:	Montgomery County, VA:	Monroe County, WV:
Braxton County, WV:		
Virginia Secretary of Safety and Homeland Security: (804) 786-5351	West Virginia Division of Homeland Security and Emergency Management:	Virginia Department of Environmental Quality: (804) 698-4000
West Virginia Department of Environmental Protection: (304) 926-0440	National Response Center: (800) 424-8802	
Other Relevant Contact Information		
Forest Access Authorized Officer or Designated Representative:	USACE Authorized Officer or Designated Representative:	

1 ^{a/} To be completed by construction contractor prior to operation and maintenance activities.

2 This Emergency Contact List shall be verified at the beginning of the O&M activity and
 3 updated throughout the Project by the contractor or MVP to ensure accurate contact
 4 information.

5 **4.3 Hazard Identifications and Key Response Criteria**

6 The right-of-way for the Project can pose potential hazards or threats in association with
 7 O&M activities. The most effective response to any situation is awareness of the hazard,

1 its potential effects and consequences, and an understanding of the resources and
2 actions necessary to respond. It would be unreasonable to list all the potential hazards
3 and detail each response. MVP will develop a Public Awareness Program as outlined in
4 49 CFR § 192.616, which will provide outreach measures to the affected public,
5 emergency responders, public officials, and excavation businesses. This program will use
6 multi-media channels (direct mail, e-mail, social networking, public service
7 announcements, print advertisement, and public meetings, etc.) to engage these core
8 audiences.

9 MVP's objective is to educate the public on how to recognize the presence of pipelines;
10 understand the potential hazards and safe actions they should take; recognize and report
11 abnormal conditions; and encourage the safe behavior of calling for buried facility location
12 before digging. When MVP receives notification from a one-call center that someone
13 intends to dig near its pipeline facilities, personnel will be dispatched to mark the location
14 of the facilities in the vicinity of proposed digging or other earth disturbance activities and,
15 if necessary, company employees will be on site when the excavation occurs.

16 Responses to different events may vary as the event evolves, but response methods and
17 responsibilities will be essential for any possible situation. Effective Emergency Response
18 training is based on plausible scenarios and then developing the understanding,
19 elements, and actions necessary to respond. Scenarios to consider are electrocution,
20 fatality, massive equipment failure, structure failure, weather/environment, etc.

21 **5.0 ENVIRONMENTAL PROTECTION**

22 Environmental protection as described below will be implemented by MVP or its
23 designated contractor during routine and corrective O&M activities and, to the extent
24 possible, during emergency situations. Environmental Protection Measures applicable to
25 access and transportation, vegetation management, noxious weeds, soil and water
26 quality, aquatic resources, wildlife, sensitive species, reclamation, and cultural resources
27 will avoid or reduce impacts associated with O&M activities.

28 **5.1 Access Management**

29 Access roads are necessary for access to, and maintenance of, pipelines, structures, or
30 ancillary facilities. MVP will utilize existing roads to the extent practicable. However, some
31 of these roads may need maintenance prior to construction, and some new access roads
32 may be needed in certain locations. No new access roads will be required on the JNF.

33 During routine operations, vehicular access may be needed to reach areas of the pipeline
34 for periodic inspections and maintenance and to areas along the right-of-way where trees
35 or shrubs may need removal for safe operation of the pipeline.

36 For non-routine maintenance requiring access by larger vehicles, greater disturbance to
37 the access road footprint may result. Roads will be repaired, as necessary, but will not be
38 routinely graded. In order to preserve the ability to enter rapidly, the road structure (cuts
39 and fills) will be left in place. In an emergency (i.e., in the event of pipeline damage or
40 failure), full emergency access, including cranes and other heavy equipment, will be
41 needed.

1 Other roads may be travelled over by MVP during operations. However, these roads will
2 not be maintained by MVP except as noted. These include:

- 3 • **Public roads, including state highways and county roads**—these roads are for
4 public use, and the appropriate state or county entity maintains them.
- 5 • **Open roads on federal land**—the appropriate federal agency maintains these
6 roads, which are open to the public. These roads, including drainage features,
7 cuts, and fill slopes, will be repaired by MVP, if damaged during O&M activities,
8 but will not be maintained on a routine basis.
- 9 • **Closed federal-land roads**—these roads are still needed for administrative or
10 emergency functions, but they have been closed to the public because of
11 management policies to protect natural resources or reduce maintenance costs. If
12 utilized during O&M activities, MVP will assume some maintenance responsibilities
13 proportionate to their use for O&M purposes.

14 MVP will follow the seasonal and spatial restrictions by time and location for wildlife and
15 aquatic species (POD Appendix H – Plant and Wildlife Conservation Measures Plan) for
16 O&M activities; however, emergency response activities may require activities outside of
17 these restrictions.

18 **5.2 Vegetation Management**

19 MVP manages vegetation within its rights-of-way and along access roads to minimize
20 interference with pipeline integrity, address safety issues, and facilitate O&M activities.
21 MVP will adhere to the guidelines for vegetation management along the right-of-way as
22 described in the FERC's *Upland Erosion Control, Revegetation and Maintenance Plan*
23 and *Wetland and Waterbody Construction and Mitigation Procedures*.

24 Objectives of vegetation management for the right-of-way will be to provide stable, low-
25 growing plant ecotypes that reduce fire risk and maintain safe access to the pipeline and
26 associated facilities. In general, this involves removing tall-growing/deep-rooting tree
27 species. Establishment of vegetation will also reduce the potential for noxious weeds to
28 become established in the right-of-way.

29 **5.3 Noxious Weed Control**

30 Noxious weeds and invasive plants will be monitored and controlled during operation of
31 the Project. MVP will eradicate any new population that is demonstrated to be the result
32 of Project operation or maintenance. If operation of the Project causes an existing noxious
33 weed infestation to exceed the extent identified and delineated within the right-of-way
34 during preconstruction surveys, MVP will monitor and control the noxious weed
35 infestation. However, MVP will not be responsible for the eradication of pre-existing
36 noxious weed and invasive plant populations outside of Project-related areas of
37 disturbance. In addition, MVP will not be responsible for noxious weeds and invasive
38 plants introduced into the Project area by activities other than Project operations (e.g.,
39 recreational use, grazing, other construction projects, etc.); natural occurrences (e.g.,
40 fire); noxious weeds and invasive plants outside the Project right-of-way; or noxious
41 weeds and invasive plants along existing access roads not improved by the Project.

1 Maintenance vehicles, ATVs, and equipment have the potential to transport weed seeds
2 from one area to another via dirt and debris that inadvertently collects on the equipment.
3 MVP will implement appropriate weed prevention measures prior to beginning O&M
4 projects on federal or state land, establish vegetation promptly after disturbance, and
5 monitor and control noxious weed and invasive plants.

6 **5.4 Protection of Soils and Water Quality**

7 Soil and water quality are crucial to a healthy environment and protected by numerous
8 local, state, and federal laws and regulations. MVP is committed to protecting soil and
9 water quality during O&M of the Project and will implement measures consistent with
10 Appendix H – Restoration Plan and Appendix D – Spill Prevention, Containment, and
11 Countermeasures (SPCC) Plan of the POD.

12 No impacts to water supply or quality are expected due to the limited depth of excavation,
13 the short duration of open trench, and typical depths to groundwater supplies,

14 **5.5 Protection Measures for Aquatic Resources**

15 Streams or watercourses with definable streambeds or stream banks, regardless of
16 whether there is flowing water, are important because they provide habitat for a variety of
17 animal and plant species. Of critical importance is the protection of habitat for sensitive
18 plant and animal species, including aquatic species. Waterbodies considered fisheries of
19 special concern are anticipated to be crossed by the Project.

20 Timing restrictions and best management practices (BMPs) will be followed for routine
21 operation and maintenance activities. Restrictions may not be followed in an emergency
22 response situation. In West Virginia, the West Virginia Department of Environmental
23 Protection (WVDEP) requires that no in-stream work should occur in warmwater streams
24 from April 1 to June 30 or in coldwater streams from September 15 to March 31, unless
25 a waiver is obtained. These date ranges are based on WVDEP's Section 401 Water
26 Quality Certification for the USACE's 2012 Nationwide Permit program. Should the
27 WVDEP make any changes to these date ranges in the revised 2017 401 certification
28 program, MVP will comply with those timing restrictions.

29 In Virginia, the Virginia Department of Game and Inland Fisheries (VDGIF) recommends
30 that no in-stream work occur in warmwater streams from April 15 to July 15 or in coldwater
31 streams from March 1 to June 30. The VDGIF also recommends that no in-stream work
32 occur in streams containing wild trout (brown and brook trout) from October 1 to March
33 31 and in streams stocked with trout (rainbow trout) from March 15 to May 15. In addition,
34 the VDGIF recommends that no in-stream work occur in streams containing freshwater
35 mussels classified as long-term brooders (i.e., yellow lampmussel and green floater) from
36 April 15 to June 15 (release of glochidia) or August 15 to September 30 (spawning). The
37 VDGIF also recommends that no in-stream work should occur in streams containing
38 freshwater mussels classified as short-term brooders (i.e., James spiny mussel and
39 Atlantic pigtoe) from May 15 to July 31.

40 MVP will take measures to protect aquatic habitats, such as coordinating with appropriate
41 local, state, and federal resource agencies throughout the permitting process, as well as
42 during implementation and maintenance. MVP will also adhere to timing restrictions for
43 construction and O&M activities, select the most appropriate crossing methods, and

1 restore disturbed areas according to FERC requirements and other federal and state
2 permitting requirements.

3 **5.6 Protection of Wildlife Species**

4 MVP will take measures to protect wildlife species and to prevent accidental disruption or
5 loss of wildlife resources along the right-of-way. MVP will coordinate with the USFS to
6 determine BMPs and avoidance and minimization of disturbance to wildlife and special
7 biological areas. Temporary and permanent work areas will be revegetated with native
8 seed mixes in consultation with the USFS. Timing restrictions will be followed for
9 construction and operation and maintenance activities to the extent practicable.
10 Appendix U – Plant and Wildlife Conservation Measures Plan presents measures
11 proposed by the MVP for avoidance and minimization of impacts to plant and wildlife
12 species.

13 **5.7 Protection of Threatened, Endangered, and Sensitive Plant and Wildlife** 14 **Species**

15 MVP has taken a thorough, systematic approach in providing protection for threatened,
16 endangered, and sensitive plant and animal species during the siting and routing of the
17 Project. Additional O&M measures will apply throughout the life of the Project to prevent
18 negative impacts to threatened, endangered, and sensitive species, including adherence
19 to seasonal and spatial restrictions. Appendix U – Plant and Wildlife Conservation
20 Measures Plan provides measures, including protection of sensitive wildlife or plant
21 species if they are encountered during O&M activities, notification requirements, and
22 education of O&M personnel with regard to federal and state protected species.

23 If an emergency occurs and access is immediately needed, the federal agency will be
24 notified as soon as possible. Depending on the urgency, the agency may not have
25 responded until after the repair work has begun. Timing restrictions may not be adhered
26 to, but the other applicable measures listed in Appendix U will be followed to the extent
27 possible.

28 **5.8 Reclamation**

29 Appendix H – Restoration Plan includes reclamation measures, agency-approved seed
30 mixes, and methods for monitoring progress toward reclamation success standards once
31 ground-disturbing activities are complete and an area to be reclaimed has been seeded.
32 It combines MVP's BMPs with mitigation developed in consultation with the agencies.
33 After ground-disturbing maintenance activities, MVP will adhere to erosion, revegetation,
34 and sediment control measures identified in the WV and VA state approved erosion and
35 sedimentation control plans to ensure that appropriate reclamation is implemented and
36 to prevent accidental introduction or transport of noxious weeds along the right-of-way.

37 **5.9 Protection Measures for Cultural Resources**

38 Prior to any ground-disturbing O&M activities, the location will be reviewed against
39 previous 100 percent cultural resource surveys of the right-of-way and access roads.
40 Maps that show all avoidance areas will be provided to maintenance crews to protect
41 resources. If a previously unsurveyed area is to be disturbed, the area will have cultural
42 resource surveys conducted on it prior to ground-disturbing activities. All cultural
43 resources and historic or prehistoric sites or objects discovered by MVP or its designated

1 contractor will be immediately reported. Additional surveys will not be conducted for O&M
2 activities if the work area was previously surveyed prior to construction of the line and
3 ancillary facilities.

4 If new probable historic or cultural resources are discovered during routine or corrective
5 O&M activities, potentially destructive work within 200 feet of the find will be halted and
6 the appropriate federal or state agency notified as described in the Unanticipated Historic
7 Properties and Human Remains Plan (POD Appendix N).

8 All human interments will be treated with the respect accorded them by state and federal
9 laws applying to human remains. If human remains are discovered during O&M activities,
10 MVP will stop all work in the immediate area to protect the integrity of the find and notify
11 the appropriate law enforcement agency and the landowner or land-management agency
12 as soon as possible. In addition, the location of the find will be flagged or fenced off to
13 protect it from further impacts. The law enforcement agency or coroner will determine the
14 age of the human remains. If the remains are not modern, then MVP will work with the
15 federal or state agency to determine what mitigation is necessary and, once the mitigation
16 is complete, resume work in the area.

17 **5.10 Protection for Paleontological Resources**

18 If significant fossil materials are discovered during O&M activities on the JNF, all surface-
19 disturbing activities in the vicinity of the find will cease until notification to proceed is given
20 by the USFS authorized officer. The site will be protected to reduce the risk of damage to
21 fossils and context. MVP will follow the applicable measures in Appendix O – Plan for
22 Unanticipated Discovery of Paleontological Resources to protect paleontological
23 resources on the JNF.

24 **5.11 Fire Protection**

25 O&M activities will follow the requirements and procedures specified by the appropriate
26 federal or state agency when conducted on federal or state lands and implement BMPs
27 for fire prevention and suppression on all Project lands (refer to Appendix W – Fire
28 Prevention and Suppression Plan, for BMPs and methods to prevent and suppress fires).
29 Mountain Valley will install Class 2 pipe buried at least 36 inches below the ground surface
30 within the Jefferson National Forest, there would be no restrictions on the use of heavy
31 firefighting equipment by the FS

32 MVP and the federal or state land manager will work cooperatively to evaluate requests
33 for Industrial Fire Precaution Level Waivers that would allow MVP and/or its contractors
34 to continue working when certain fire restrictions are in place. If the federal or state land-
35 management agency determines that it must use fire suppression techniques or
36 prescribed burns, it will notify MVP of any and all fire suppression efforts or prescribed
37 burns that could come into close proximity with the pipeline or associated structures prior
38 to initiating those efforts.

39 If MVP becomes aware of an emergency situation caused by a fire that is on or
40 threatening federal or state land that could damage the pipeline or its operation, it will
41 notify the appropriate land-management agency contact. Likewise, if the federal or state
42 land-management agency becomes aware of an emergency situation caused by a fire

1 that is on or threatening federal or state land and that could damage the pipeline or its
2 operation, it will notify MVP.

3 **6.0 O&M PLAN Amendments**

4 The O&M Plan is a living document, and changes are anticipated after the plan's
5 acceptance. Amendments will include the date on which changes were made, a brief
6 description of those changes, and the signatures of authorized representatives of MVP
7 and the agency accepting the changes.

8 This plan and its updates will be distributed to the relevant USFS and USACE district and
9 other agencies as applicable. Additionally, the plan will be made available, as appropriate,
10 to MVP personnel and its contractors. MVP will be responsible for distributing updates
11 when they are made. If the federal agencies identify additional parties that require a copy
12 of the plan, they are responsible for distribution and ensuring that those parties have the
13 current plan.

14 In addition, the following items will become part of this section of the O&M Plan:

- 15 • List of road closures and gate locations;
- 16 • Maps containing known locations of sensitive plant and animal species mapped as
17 "sensitive areas" without specifying the resource; and
- 18 • Maps containing known locations of cultural features included on, or eligible for
19 inclusion on, the National Register of Historic Places, mapped as "sensitive areas"
20 without specifying the resource.

21

APPENDIX R
Exotic and Invasive Species Control Plan

Appendix R

Draft

Exotic and Invasive Species Control Plan

Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1

2 **1.0 INTRODUCTION..... R-1**

3 **2.0 USFS GUIDANCE R-2**

4 **3.0 POTENTIAL EXOTIC AND INVASIVE SPECIES ALONG THE PROJECT RIGHT-**

5 **OF-WAY..... R-2**

6 **4.0 STRATEGIES AND CONTROL MEASURES R-6**

7 4.1 Strategies R-6

8 4.2 Control Measures R-7

9 4.3 Use of Pesticides and Herbicides..... R-8

10 **5.0 REFERENCES..... R-8**

LIST OF TABLES

11

12

13

14

15 **Table 3-1.** Exotic and Invasive Species with the Potential to Occur Along the Project

16 Right-of-Way..... R-2

17

Draft

Mountain Valley Pipeline Project Exotic and Invasive Species Control Plan

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on National Forest System lands will occur in 2018.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in Braxton County, West Virginia, which is administered by the U.S. Army Corps of Engineers (USACE). Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this plan focuses on the JNF, noting any additional or different requirements that are specific to the crossing of the Weston and Gauley Turnpike.

The USFS will be responsible for enforcement of the terms and conditions of the BLM's right-of-way Grant on National Forest System lands during the term of the right-of-way

1 Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF
 2 portion of this project by the USFS Project Manager and the Authorized Officer's
 3 designated compliance monitors. USFS will have stop work authority per terms outlined
 4 in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work
 5 conditions are encountered during construction.

6 The Project has potential to impact sensitive environmental resources and, as a result,
 7 environmental protection measures have been developed to minimize potential impacts
 8 on these resources and will be applied, as applicable, to the Project.

9 **2.0 USFS GUIDANCE**

10 The USFS developed a National Strategic Framework for Invasive Species Management
 11 in 2013 to guide the USFS in responding to the invasive species problem in the United
 12 States. This guidance document identifies the most significant strategic actions that
 13 should be undertaken to reduce the threat of invasive species (USFS 2013). The USFS's
 14 national strategy encompasses four program elements:

- 15 • Prevention
- 16 • Detection
- 17 • Control and management
- 18 • Restoration and rehabilitation

19 This Plan is based on the 2013 USFS guidance document as well as the procedures and
 20 measures identified in the FERC's *Upland Erosion Control, Revegetation and*
 21 *Maintenance Plan* (FERC Plan) and was prepared with the support of the Wildlife Habitat
 22 Council (WHC).

23 **3.0 POTENTIAL EXOTIC AND INVASIVE SPECIES ALONG THE** 24 **PROJECT RIGHT-OF-WAY**

25 Table 3-1 lists the weeds that are known to occur or have the potential to occur along the
 26 proposed pipeline route as identified through agency consultations. This table includes
 27 weed species along the entire 303-mile long Project route; however, only the multiflora
 28 rose, Japanese honeysuckle, and garlic mustard have been observed along the portion
 29 of the Project's survey corridor on the JNF. These three weed species were observed
 30 scattered throughout the survey corridor and along the Project's proposed route though
 31 the JNF.

32 **Table 3-1. Exotic and Invasive Species with the Potential to Occur Along the**
 33 **Project Right-of-Way**

Common Name	Scientific Name	Growth Form	Typical Habitat(s)
Amur Honeysuckle	<i>Lonicera maackii</i>	Shrub	Pastures, fields, forest, forest edges, roadsides
Autumn Olive	<i>Elaeagnus umbellata</i>	Shrub	Pastures, fields, roadsides
Asian Bittersweet	<i>Celastrus orbiculata</i>	Vine	Fields, forest edges, roadsides, grasslands
Beefsteak Plant	<i>Perilla frutescens</i>	Herb	Roadsides

Common Name	Scientific Name	Growth Form	Typical Habitat(s)
Bell's Honeysuckle	<i>Lonicera bella</i>	Shrub	Fields, pastures, forest edge, roadsides
Bishop's Goutweed	<i>Aegopodium podagraria</i>	Herb	Forests
Border Privet	<i>Ligustrum obtusifolium</i>	Shrub	Old fields, forest gaps
Bradford Pear	<i>Pyrus calleryana</i>	Tree	Full sun, orchards, parks, roadsides, yards, forest edge
Brittle Naiad	<i>Najas minor</i>	Herb	Ponds, streams, lakes, wetlands
Bull Thistle	<i>Cirsium vulgare</i>	Herb	Pastures, fields
Bush Honeysuckles	<i>Lonicera</i> spp.	Shrub	Pastures, fields, forest edges, roadsides
Butter-and-Eggs	<i>Linaria vulgaris</i>	Herb	Fields, pastures, roadsides, disturbed areas
Canada Bluegrass	<i>Poa compressa</i>	Grass	Fields, pastures, forest edge, wet sites, forest openings, waste areas
Canada Thistle	<i>Cirsium arvense</i>	Herb	Pastures, fields
Celandine	<i>Chelidonium majus</i> var. <i>majus</i>	Herb	Fields, roadsides, waste areas, dry to moist woodlands
Cheatgrass	<i>Bromus tectorum</i>	Grass	Pastures, fields
Chinese Bushclover	<i>Lespedeza cuneata</i>	Herb	Roadsides, rights-of-way, old fields, pasture, woodlands
Chinese Privet	<i>Ligustrum sinense</i>	Shrub	Pastures, fields, forest, forest edges, roadsides
Chinese Wisteria	<i>Wisteria sinensis</i>	Woody Vine	Forest, forest edges, roadsides, disturbed areas
Chinese Yam	<i>Dioscorea oppositifolia</i>	Vine	Streambanks, floodplain forests
Cinnamon Vine	<i>Dioscorea polystachya</i>	Vine	Forests, woodlands, thickets
Colonial Bent-grass	<i>Agrostis capillaris</i>	Grass	Pastures, fields
Common Buckthorn	<i>Rhamnus catharticus</i>	Shrub	Wetlands, old fields
Common Chickweed	<i>Stellaria media</i>	Herb	Fields, floodplain forests, disturbed areas, waste areas
Common Privet	<i>Ligustrum vulgare</i>	Shrub	Forests, fields, rights-of-way
Common Reed	<i>Phragmites australis</i>	Grass	Wetlands
Common Sheep Sorrel	<i>Rumex acetosella</i>	Herb	Fields, roadsides, disturbed areas, waste areas
Common Velvetgrass	<i>Holcus lanatus</i>	Grass	Meadows, wetlands, riparian areas
Cork Tree	<i>Phellodendron japonicum</i>	Tree	Residential, parks, open woodlands, roadsides
Crown Vetch	<i>Coronilla varia</i>	Herb	Pastures, fields
Curled Thistle	<i>Carduus crispus</i>	Herb	Pastures, fields
Curlyleaf Pondweed	<i>Potamogeton crispus</i>	Herb	Wetlands, ponds, lakes
Cut-leaf Teasel	<i>Dipsacus laciniatus</i>	Herb	Fields, pastures, roadsides, waste areas
Dame's Rocket	<i>Hesperis matronalis</i>	Herb	Fields, forest edges
Drooping Star of Bethlehem	<i>Ornithogalum nutans</i>	Herb	Fields, floodplains, waste areas
English Ivy	<i>Hedera helix</i>	Vine	Forests, disturbed areas
Eurasian Water-milfoil	<i>Myriophyllum spicatum</i>	Herb	Aquatic ponds, ditches, wetlands
European Barberry	<i>Berberis vulgaris</i>	Shrub	Forests, wetlands, pastures
European Privet	<i>Ligustrum vulgare</i>	Shrub	Pastures, fields, forests, forest edges, roadsides, streams
European Stinging Nettle	<i>Urtica dioica</i>	Herb	Stream edges, marsh, meadows, moist woodlands

Common Name	Scientific Name	Growth Form	Typical Habitat(s)
Field Hawkweed	<i>Hieracium caespitosum</i>	Herb	Fields, pastures, prairies, waste areas, disturbed areas
Fiveleaf Akebia	<i>Akebia quinata</i>	Vine	Forests
Fuller's Teasel	<i>Dipsacus fullonum</i>	Herb	Riparian areas, meadows, fields, forest openings, disturbed areas
Garden Yellow-rocket	<i>Barbarea vulgaris</i>	Herb	Pastures, fields, roadsides, moist meadows
Garlic Mustard	<i>Alliaria petiolata</i>	Herb	Forests
Giant Hogweed	<i>Heracleum mantegazzianum</i>	Herb	Right-of-ways, riverbanks, ditches
Glossy Buckthorn	<i>Frangula alnus</i>	Shrub	Wetlands, old fields
Goatsrue	<i>Galaga officinalis</i>	Herb	Pastures, streambanks
Golden Bamboo	<i>Phyllostachys aurea</i>	Grass	Roadsides, disturbed areas, forest openings, forest edge
Great Mullein	<i>Verbascum thapsus</i>	Herb	Fields, meadows, forests, roadsides, disturbed areas
Ground Ivy	<i>Glechoma hederacea</i>	Herb	Open forests, disturbed areas, waste areas, lawn
Guelder Rose	<i>Viburnum opulus</i>	Shrub	Forests, wetlands, fields
Gypsy-flower	<i>Cynoglossum officinale</i>	Herb	Fields, pastures, forest edge, roadsides, disturbed areas
Hairy Cat's Ear	<i>Hypochaeris radicata</i>	Herb	Fields, pastures, grasslands, roadsides, disturbed areas
Hydrilla	<i>Hydrilla verticillata</i>	Herb	Wetlands, ponds
Indian-strawberry	<i>Duchesnea indica</i>	Herb	Fields, prairies, open woodlands, disturbed areas
Ivy-leaved Speedwell	<i>Veronica hederifolia</i>	Herb	Fields, forest edge, roadsides, disturbed areas
Japanese Barberry	<i>Berberis thunbergii</i>	Shrub	Forests, wetlands, pastures
Japanese Bromegrass	<i>Bromus japonicus</i>	Grass	Pastures, fields
Japanese Honeysuckle	<i>Lonicera japonica</i>	Vine	Forests, wetlands, fields
Japanese Hops	<i>Humulus japonicus</i>	Vine	Roadsides, streambanks, drainage ditch, meadows, disturbed areas, waste areas
Japanese Knotweed	<i>Polygonum cuspidatum</i>	Shrubby herb	Wetlands, streambanks, roadsides
Japanese Spiraea	<i>Spiraea japonica</i>	Shrub	Fields, forest openings
Japanese Stilt Grass	<i>Microstegium vimineum</i>	Grass	Pastures, fields, forests, wetlands
Jetbead	<i>Rhodotypos scandens</i>	Shrub	Forests, forest edge, roadsides
Jimsonweed	<i>Datura stramonium</i>	Herb	Pastures, fields
Johnson Grass	<i>Sorghum halepense</i>	Grass	Fields, wetlands, open forests
Kentucky Bluegrass	<i>Poa pratensis</i> ssp. <i>pratensis</i>	Grass	Fields, grasslands, forest edge
Kudzu	<i>Pueraria lobata</i>	Vine	Forests
Lesser Burdock	<i>Arctium minus</i>	Herb	Fields, meadows, disturbed areas
Lesser Celandine	<i>Ranunculus ficaria</i> var. <i>bulbifera</i>	Herb	Forests
Lesser Periwinkle	<i>Vinca minor</i>	Vine	Fields, forest edge, forest openings
Linden Arrowwood	<i>Viburnum dilatatum</i>	Shrub	Forests, wetlands, disturbed areas
Long-bristled Smartweed	<i>Persicaria longiseta</i>	Herb	Lawns, roadsides, wet meadows, waste areas

Common Name	Scientific Name	Growth Form	Typical Habitat(s)
Maiden Grass	<i>Miscanthus sinensis</i>	Grass	Pastures, fields
Marsh Dewflower	<i>Murdannia keisak</i>	Herb	Wetlands
Meadow Brome	<i>Bromus commutatus</i>	Grass	Pastures, fields
Meadow Fescue	<i>Schedonorus pratensis</i>	Grass	Pastures, fields
Mile-a-minute Vine	<i>Polygonum perfoliatum</i>	Vine	Fields, forest edges, roadsides, ditches
Mimosa	<i>Albizia julibrissin</i>	Tree	Forest edges, residential areas, roadsides
Moneywort	<i>Lysimachia nummularia</i>	Herb	Moist forests, streambanks, wet meadows, wetlands, roadsides, fields
Multiflora Rose	<i>Rosa multiflora</i>	Shrub	Pastures, fields, forest edges
Musk Thistle	<i>Carduus nutans</i>	Herb	Pastures, fields
Nodding Plumeless-thistle	<i>Carduus nutans ssp. marcolepis</i>	Herb	Disturbed sites, waste areas, roadsides
Norway Maple	<i>Acer platanoides</i>	Tree	Forests
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	Vine	Forest edges, old fields
Oriental Lady's Thumb	<i>Polygonum caespitosum var. longisetum</i>	Herb	Wetlands, floodplain forests, upland forests
Oxeye Daisy	<i>Leucanthemum vulgare</i>	Herb	Fields, pastures, grasslands, roadsides, disturbed areas
Parrot Feather	<i>Myriophyllum aquaticum</i>	Herb	Wetlands, ponds
Perennial Ryegrass	<i>Lolium perenne ssp. multiflorum</i>	Grass	Pastures, fields
Plumeless Thistle	<i>Carduus acanthoides</i>	Herb	Pastures, fields, roadsides
Poison-hemlock	<i>Conium maculatum</i>	Herb	Fields, pastures, roadsides, forest edge, degraded wetlands and prairies
Porcelain Berry	<i>Ampelopsis brevipedunculata</i>	Vine	Forests, stream banks, old fields
Poverty Brome	<i>Bromus sterilis</i>	Grass	Pastures, fields
Princess Tree	<i>Paulownia tomentosa</i>	Tree	Forests
Purple Crown-vetch	<i>Coronilla varia</i>	Herb	Pastures, fields, roadsides, utility right-of-ways
Purple Loosestrife	<i>Lythrum salicaria</i>	Herb	Aquatic ponds, ditches, wetlands
Reed Canary Grass	<i>Phalaris arundinacea</i>	Grass	Wetlands
Rough Bluegrass	<i>Poa trivialis</i>	Grass	Pastures, fields, roadsides,
Russian Olive	<i>Elaeagnus angustifolia</i>	Shrub	Pastures, fields, roadsides
Rye Brome	<i>Bromus secalinus</i>	Grass	Pastures, fields
Shattercane	<i>Sorghum bicolor</i>	Grass	Pastures, fields
Shrubby Bushclover	<i>Lespedeza bicolor</i>	Shrub	Forest edges, field edges, forest openings
Siberian Elm	<i>Ulmus pumila</i>	Tree	Forests
Small Carpgrass	<i>Arthraxon hispidus</i>	Grass	Wetlands, ponds, streams, river floodplains
Smooth Brome	<i>Bromus inermis ssp. inermis var. inermis</i>	Grass	Fields, Pastures
Spotted Knapweed	<i>Centaurea stoebe ssp. micranthos</i>	Herb	Pastures, fields, roadsides
Star of Bethlehem	<i>Ornithogallum umbellatum</i>	Herb	Forests, fields
Standish's Honeysuckle	<i>Lonicera standishii</i>	Shrub	Fields, pastures, forest edge, roadsides, disturbed areas
St. John's-Wort	<i>Hypericum perforatum</i>	Herb	Fields, pastures, disturbed areas
Stoncrop	<i>Sedum sarmentosum</i>	Herb	Forest, forest edge

Common Name	Scientific Name	Growth Form	Typical Habitat(s)
Sweetclover	<i>Melilotus officinalis</i>	Herb	Fields, pastures, roadsides, waste areas
Sycamore Maple	<i>Acer Pseudoplatanus</i>	Tree	Forests
Tall Fescue	<i>Schedonorus phoenix</i>	Grass	Pastures, fields
Tartarian Honeysuckle	<i>Lonicera tatarica</i>	Shrub	Pastures, fields, roadsides, utility right-of-ways, forest edge
Tree of Heaven	<i>Ailanthus altissima</i>	Tree	Forests
Viper's Bugloss	<i>Echium vulgare</i>	Herb	Pastures, fields, roadsides, waste areas
Water Chestnut	<i>Trapa natans</i>	Herb	Wetlands
Watercress	<i>Rorippa nasturtium-aquaticum</i>	Herb	Wetlands, streams, springs
Water Shield	<i>Brasenia schreberi</i>	Herb	Ponds, lakes
Wild Carrot	<i>Daucus carota</i>	Herb	Fields, pastures, roadsides, degraded prairie, forest edge
Wild Parsnip	<i>Pastinaca sativa</i>	Herb	Roadsides
Wine Berry	<i>Rubus phoenicolasius</i>	Shrub	Forests, fields
Winged Euonymus	<i>Euonymus alatus</i>	Shrub	Forests
Winter Creeper	<i>Euonymus fortunei</i>	Vine	Forests, fields
Wocheiner Knapweed	<i>Centaurea nigrescens</i>	Herb	Fields, pastures, grasslands, field edge, open forests
Yellow Flag	<i>Iris pseudocorus</i>	Herb	Wetlands

Sources: USDA 2015; VDCR-DNH 2015; WVDNR 2009, 2010

1

2 4.0 STRATEGIES AND CONTROL MEASURES

3 4.1 Strategies

4 MVP has identified the following four principal strategies for exotic, noxious, and invasive
5 plant species control:

- 6 1. The first strategy that will be implemented is to minimize the extent and scope of
7 invasive plant infestations that will have to be managed during the construction of
8 the Project. This will be accomplished by first identifying the exotic, noxious, and
9 moderately to highly invasive plant species that occur along the Project's right-of-
10 way through pre-construction surveys (see Section 3.0 and Table 3-1) and then
11 working with the USFS to identify the existing infestations that should be treated
12 before construction begins. Only those infestations identified by the USFS
13 authorized representative would be treated prior to construction, while the
14 remaining infestations would be treated during construction (as described below
15 for the third strategy).
- 16 2. The second strategy that will be used is the avoidance of exotic and invasive
17 species in materials brought on site during construction. For example, certified
18 weed-free mulch and hay bales will be used to construct sediment control devices
19 during construction, and equipment will be thoroughly cleaned prior to mobilization
20 to the Project area (see section 4.2 for more details). In addition, MVP does not
21 intend to use imported topsoil for agricultural or residential lands. All additional

1 topsoil for agricultural or residential lands will be locally sourced to prevent the
2 introduction of foreign species.

3 3. The third strategy to be used involves the monitoring and selective spot
4 treatment/eradication of any exotic or invasive species encountered during
5 construction and post-construction. MVP will monitor the right-of-way annually
6 after the first and second growing seasons following construction to allow for early
7 detection of exotic or invasive species infestations or outbreaks. MVP will conduct
8 selective spot eradications of invasive species infestations or outbreaks that are
9 identified along the right-of-way. Eradication measures will include hand cutting
10 and the use herbicides. An Herbicide Use Plan is included in the POD as Appendix
11 S. All herbicides will be applied by applicators appropriately licensed or certified by
12 the state in which the work is conducted. In addition, all label instructions from the
13 manufacturer will be followed while using herbicides.

14 4. The fourth strategy to be used in this plan involves MVP's commitment to using
15 seed mixes during restoration that do not contain any invasive plant species and
16 which have been approved by the USFS for use on the JNF. Along with
17 implementing restoration measures contained in the FERC Plan and *Wetland and*
18 *Waterbody Construction and Mitigation Procedures*, MVP is partnering with the
19 WHC, a nonprofit organization dedicated to assisting organizations and individuals
20 with the restoration and enhancement of wildlife habitat. The WHC is working with
21 MVP on its commitment toward native restoration of the pipeline right-of-way using
22 seed mixes tailored to meet construction specifications, budgetary targets, and
23 stakeholder desires while also providing local wildlife with native habitat. Working
24 with the WHC, MVP will also incorporate principles of Integrated Vegetation
25 Management into MVP's right-of-way maintenance. Integrated Vegetation
26 Management incorporates seed-mix selection, vegetation maintenance
27 scheduling, and selection of mechanical vegetation maintenance techniques to
28 encourage a low ground cover of native species that flower for a long duration of
29 the growing season. However, the successful stabilization of slopes and disturbed
30 areas will be the primary goal of restoration efforts, and all seed mixed used on the
31 JNF will be approved by the USFS prior to their use.

32 4.2 Control Measures

33 In addition to the strategies described above, the following control measures will be used
34 to further minimize introduction and/or spread of these species:

- 35 • The contractor will adhere to erosion control measures in the FERC Plan and
36 Procedures and the Project-specific erosion and sedimentation control plans to
37 ensure that sediment movement and the associated movement of non-native
38 seeds into newly disturbed soils are minimized.
- 39 • Prior to mobilization to the Project area, contractors shall thoroughly clean all
40 construction equipment with high-pressure washing equipment in order to limit the
41 potential for the spread of noxious weeds, insects, or other soil-borne pests.
- 42 • Equipment cleaning stations will be established along the pipeline to ensure
43 equipment is free of debris before being transported to a new construction spread.

1 During construction, the environmental inspector will ensure all contractors clean
2 the tracks, tires, and blades of equipment to remove any excess soil prior to
3 movement of equipment out of known weed or soil-borne pest infested areas, or
4 utilize designated cleaning stations to remove vegetative materials using high-
5 pressure washing equipment. No equipment will be allowed to enter the JNF until
6 it has been inspected and approved by the USFS Project Manager or an
7 Authorized Officer.

- 8 • The contractor will use construction techniques along the pipeline route that
9 minimize the time that bare soil is exposed and, therefore, minimize the opportunity
10 for exotic species to become established.
- 11 • All disturbed areas will be reseeded promptly after final grading, weather and soil
12 conditions permitting. Prompt reseeding will ensure that bare soil is not available
13 for exotic or invasive species for an extended period of time. Reseeding will be
14 done in compliance with USFS Standards and Guidelines in the JNF Land and
15 Resource Management Plan (e.g., USFS Standards and Guidelines FW-86, FW-
16 87, and FW-88).
- 17 • As described in the FERC Plan, mulch will be applied if final grading and
18 installation of permanent erosion control measures are not completed within 20
19 days after the trench is backfilled or seeding cannot be completed properly due to
20 scheduling outside of recommended seeding dates.

21 **4.3 Use of Pesticides and Herbicides**

22 MVP has committed to not using pesticides or herbicides during routine right-of-way
23 maintenance along portions of the Project located outside of the JNF; however, the USFS
24 has requested that pesticides or herbicides be incorporated into the management plan
25 for maintenance of the right-of-way and treatment of invasive species on the JNF.
26 Therefore, MVP will use pesticides and herbicides for the control of non-native invasive
27 plants and for the treatment of insect infestations along the right-of-way on the JNF.
28 Pesticides and herbicides would be applied in compliance with the USFS Standards and
29 Guidelines (e.g., USFS Standards and Guidelines FW-89 through FW-110) and will
30 comply with all label instructions as well as applicable state and federal regulations. The
31 Project's *Herbicide Use Plan* (Appendix S) identifies how herbicide used to control
32 noxious weed and invasive species will be implemented on the JNF.

33 **5.0 REFERENCES**

- 34 USDA (United States Department of Agriculture). 2015. Natural Resources Conservation
35 Service. Invasive and Noxious Weeds. Available online at:
36 <http://plants.usda.gov/java/noxiousDriver>. Accessed October 6, 2015.
- 37 USFS (United States Forest Service). 2013. National Strategic Framework for Invasive
38 Species Management. Available online at: [http://www.fs.fed.us/foresthealth/
39 publications/Framework_for_Invasive_Species_FS-1017.pdf](http://www.fs.fed.us/foresthealth/publications/Framework_for_Invasive_Species_FS-1017.pdf). Accessed May 10,
40 2016.

- 1 VDCR-DNH (Virginia Department of Conservation and Recreation, Division of Natural
2 Heritage). 2015. Virginia Invasive Plant Species List. Available online at:
3 http://www.dcr.virginia.gov/natural_heritage/invspdflist.shtml. Accessed October
4 6, 2015.
- 5 WVDNR (West Virginia Department of Natural Resources), Division of Natural Heritage.
6 2009. Invasive Plants Species of West Virginia. Available online at:
7 [http://www.wvdnr.gov/wildlife/Handout Invasive Plants of WV 2009.pdf](http://www.wvdnr.gov/wildlife/Handout%20Invasive%20Plants%20of%20WV%202009.pdf). Accessed
8 October 6, 2015.
- 9 WVDNR. 2010. Invasive Plants: Dirty Dozen. Available online at:
10 <http://www.wvdnr.gov/Wildlife/DirtyDozen.shtml>. Accessed October 6, 2015.

APPENDIX S
Herbicide Use Plan

Draft Herbicide Use Plan

Mountain Valley Pipeline Project

Prepared by:



December 2016

TABLE OF CONTENTS

1.0 INTRODUCTION	W-1
1.1 Plan Purpose.....	W-2
1.2 Objectives.....	W-3
2.0 WEED INVENTORY	W-3
3.0 WEED MANAGEMENT	W-8
3.1 Preventative Measures.....	W-11
3.2 Treatment Methods.....	W-11
3.3 Education.....	W-12
4.0 MONITORING	W-12
5.0 HERBICIDE APPLICATION, HANDLING, SPILLS, AND CLEANUP	W-12
5.1 Herbicide Application and Handling.....	W-12

LIST OF TABLES

Table 2-1. Exotic and Invasive Species with the Potential to Occur Along the Project Right-of-Way.....	W-4
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Draft Mountain Valley Pipeline Project Herbicide Use Plan

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc., Con Edison Gas Midstream LLC, WGL Holdings, Inc., Vega Energy Partners, Ltd., and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies (LDCs), industrial users and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter 2018. Construction on National Forest System lands will occur in 2018.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

A 3.4-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery Counties in southwestern Virginia. The JNF is managed by the Forest Service of the U.S. Department of Agriculture (USFS). Another 60-foot segment, (i.e., the Weston Gauley Bridge Turnpike Trail [Weston Gauley Turnpike] in Braxton County, West Virginia, administered by the U.S. Army Corps of Engineers [USACE]), will be crossed by the pipeline. Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this Plan focuses on the JNF. Where USACE measures would substantively differ for the crossing of the Weston Gauley Turnpike, they are pointed out. If BLM requirements differ, they are pointed out.

The USFS will be responsible for enforcement of the terms and conditions of the BLM's Right-of-Way Grant and the USFS Special Use Authorization (SUA) on National Forest

System lands during the term of the Right-of-Way Grant/SUA, respectively. On the JNF, compliance will be monitored by the USFS Project Manager and compliance monitors designated by the Authorized Officer.

The FERC will utilize a third-party Compliance Inspection Contractor (CIC) contracted to MVP to act on behalf of the agency to provide Project-wide construction oversight and monitor compliance. The CIC will inspect and monitor preconstruction activities and enforce requirements related to the National Historic Preservation Act (NHPA), the Endangered Species Act (ESA), and other applicable laws and regulations. The Project will adhere to all federal, state, and local permits. The CIC will coordinate with the USFS Project Manager and designated compliance monitors.

1.1 Plan Purpose

The Project has the 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 (see the Plan of Development [POD]). The purpose of this Plan is to provide measures to be utilized by the FERC, USFS, and other applicable management agencies, the CIC, and the construction contractor to ensure protection of the environment.

Prior to the start of tree clearing and construction of the pipeline, all equipment will be examined for cleanliness and approved for use on the ROW by an individual designated by the JNF¹; these inspections would occur at locations selected by the USFS outside of the JNF (see the *Exotic and Invasive Species Control Plan* for more details). Excavation for pipeline placement exposes the topsoil surface to potential entrance of exotic, noxious, and/or invasive plant species. This can occur either by physical transport onto the exposed soil site by way of equipment, machinery or vehicles, through windborne dissemination of seeds of exotic or invasive species from the surrounding area, or by introduction of seeds or plant parts contained in mulch or straw bales. In addition, storing top soil can spread an existing weed population to other areas in the right-of-way. To avoid and minimize the potential for the introduction of these seeds to the Project corridor, MVP will apply the management strategies outlined in this Plan to control exotic, noxious, and invasive plant species.

This Plan was developed to identify how herbicide used to control noxious weed and invasive species will be implemented for the MVP Project on the JNF. Federal and State policies require that measures be taken to control the spread of noxious weeds. Noxious weeds have the potential to invade areas disturbed by construction and may spread along the cleared areas of the pipeline right-of-way. Soil disturbance may also allow weed seed already present to germinate and grow.

Several laws, regulations, and policies govern the management of noxious weeds on public lands. Under the Noxious Weed Act of 1974 (7 U.S.C. §§ 2801-2814, January 3, 1975, as amended 1988 and 1994.), federal agencies are charged with the responsibility

¹ Jefferson National Forest refers to the southern portion of the current George Washington & Jefferson National Forests throughout this document. Originally two separate national forests, the JNF and the George Washington National Forest were administratively combined in 1995 and are administered as a single national forest unit.

to identify and control invasive plant species that are harmful to public health, land, or other resources. This Plan is consistent with the 2004 Land and Resource Management Plan for the JNF and USDA Forest Service stipulations regarding herbicide use.

The purpose of this Plan is to prescribe methods to prevent and control the spread of noxious weeds and invasive species (hereinafter referred to as weeds) during and following construction of the MVP Project on the JNF. MVP and its contractors will be responsible for carrying out the methods described in this Plan.

This Plan is applicable to the installation of the pipeline and ancillary facilities within the temporary construction right-of-way, permanent operational right-of-way, staging areas, access roads, and any other disturbed areas associated with the MVP Project on the JNF.

1.2 Objectives

The objectives of this Herbicide Use Plan include:

1. Conduct all herbicide-use activities using an integrated pest management approach to improve overall treatment effectiveness and to reduce health risks for both humans and the environment.
2. Conduct all herbicide-use activities in full compliance with applicable Federal laws, regulations, and policies. Relevant State and local laws pertaining to the use of herbicides will be followed when not in conflict with Forest Service management authorities and objectives.
3. Require that all herbicide-use activities conducted by MVP personnel and their contractors on National Forest System lands, or other areas administered by the Forest Service, be in compliance with applicable EPA pesticide label restrictions and other applicable Federal and State laws and regulations including the Federal and State laws and regulations that apply to personnel training and licensing.
4. Require that all personnel who use any herbicide in terrestrial or aquatic areas of the National Forest System be trained in the proper, safe, and effective use of the respective pesticides being applied for the management activity. Herbicide-use training and certification will be accomplished through an appropriate EPA-approved State program.
5. Incorporate pertinent herbicide-use policy and related handbook guidance into all management activities on the National Forest System lands, waters, or facilities administered by the Forest Service.

2.0 WEED INVENTORY

MVP has conducted field studies, file searches, and weed consultations to identify existing weed infestations along the pipeline right-of-way and adjacent extra workspaces, along new or improved access roads, and within ancillary facility locations where clearing will be required on federal land crossed by the Project. To identify weeds that potentially

occur within the proposed Project area and known locations of weed infestations crossed by the proposed project, MVP consulted with the Forest Service, and county weed control departments. Early identification of existing infestations is intended to help minimize the spread of weeds by identifying sites where preventative measures could be implemented prior to the start of construction. Information resulting from identification before, during, and after construction, including species identified within or adjacent to the project area, locations of infestations, and extent of infestations, will be coordinated with the JNF.

Table 2-1 lists the weeds that are known to occur or have the potential to occur along the proposed pipeline route as identified through agency consultations.

Table 2-1. Exotic and Invasive Species with the Potential to Occur Along the Project Right-of-Way

Common Name	Scientific Name	Growth Form	Typical Habitat(s)
Amur Honeysuckle	<i>Lonicera maackii</i>	Shrub	Pastures, fields, forest, forest edges, roadsides
Autumn Olive	<i>Elaeagnus umbellata</i>	Shrub	Pastures, fields, roadsides
Asian Bittersweet	<i>Celastrus orbiculata</i>	Vine	Fields, forest edges, roadsides, grasslands
Beefsteak Plant	<i>Perilla frutescens</i>	Herb	Roadsides
Bell's Honeysuckle	<i>Lonicera bella</i>	Shrub	Fields, pastures, forest edge, roadsides
Bishop's Goutweed	<i>Aegopodium podagraria</i>	Herb	Forests
Border Privet	<i>Ligustrum obtusifolium</i>	Shrub	Old fields, forest gaps
Bradford Pear	<i>Pyrus calleryana</i>	Tree	Full sun, orchards, parks, roadsides, yards, forest edge
Brittle Naiad	<i>Najas minor</i>	Herb	Ponds, streams, lakes, wetlands
Bull Thistle	<i>Cirsium vulgare</i>	Herb	Pastures, fields
Bush Honeysuckles	<i>Lonicera spp.</i>	Shrub	Pastures, fields, forest edges, roadsides
Butter-and-Eggs	<i>Linaria vulgaris</i>	Herb	Fields, pastures, roadsides, disturbed areas
Canada Bluegrass	<i>Poa compressa</i>	Grass	Fields, pastures, forest edge, wet sites, forest openings, waste areas
Canada Thistle	<i>Cirsium arvense</i>	Herb	Pastures, fields
Celandine	<i>Chelidonium majus var. majus</i>	Herb	Fields, roadsides, waste areas, dry to moist woodlands
Cheatgrass	<i>Bromus tectorum</i>	Grass	Pastures, fields
Chinese Bushclover	<i>Lespedeza cuneata</i>	Herb	Roadsides, rights-of-way, old fields, pasture, woodlands
Chinese Privet	<i>Ligustrum sinense</i>	Shrub	Pastures, fields, forest, forest edges, roadsides
Chinese Wisteria	<i>Wisteria sinensis</i>	Woody Vine	Forest, forest edges, roadsides, disturbed areas
Chinese Yam	<i>Dioscorea oppositifolia</i>	Vine	Streambanks, floodplain forests
Cinnamon Vine	<i>Dioscorea polystachya</i>	Vine	Forests, woodlands, thickets
Colonial Bent-grass	<i>Agrostis capillaris</i>	Grass	Pastures, fields
Common Buckthorn	<i>Rhamnus catharticus</i>	Shrub	Wetlands, old fields
Common Chickweed	<i>Stellaria media</i>	Herb	Fields, floodplain forests, disturbed areas, waste areas
Common Privet	<i>Ligustrum vulgare</i>	Shrub	Forests, fields, rights-of-way

Table 2-1. Exotic and Invasive Species with the Potential to Occur Along the Project Right-of-Way (continued)

Common Name	Scientific Name	Growth Form	Typical Habitat(s)
Common Reed	<i>Phragmites australis</i>	Grass	Wetlands
Common Sheep Sorrel	<i>Rumex acetosella</i>	Herb	Fields, roadsides, disturbed areas, waste areas
Common Velvetgrass	<i>Holcus lanatus</i>	Grass	Meadows, wetlands, riparian areas
Cork Tree	<i>Phellodendron japonicum</i>	Tree	Residential, parks, open woodlands, roadsides
Crown Vetch	<i>Coronilla varia</i>	Herb	Pastures, fields
Curled Thistle	<i>Carduus crispus</i>	Herb	Pastures, fields
Curlyleaf Pondweed	<i>Potamogeton crispus</i>	Herb	Wetlands, ponds, lakes
Cut-leaf Teasel	<i>Dipsacus laciniatus</i>	Herb	Fields, pastures, roadsides, waste areas
Dame's Rocket	<i>Hesperis matronalis</i>	Herb	Fields, forest edges
Drooping Star of Bethlehem	<i>Ornithogalum nutans</i>	Herb	Fields, floodplains, waste areas
English Ivy	<i>Hedera helix</i>	Vine	Forests, disturbed areas
Eurasian Water-milfoil	<i>Myriophyllum spicatum</i>	Herb	Aquatic ponds, ditches, wetlands
European Barberry	<i>Berberis vulgaris</i>	Shrub	Forests, wetlands, pastures
European Privet	<i>Ligustrum vulgare</i>	Shrub	Pastures, fields, forests, forest edges, roadsides, streams
European Stinging Nettle	<i>Urtica dioica</i>	Herb	Stream edges, marsh, meadows, moist woodlands
Field Hawkweed	<i>Hieracium caespitosum</i>	Herb	Fields, pastures, prairies, waste areas, disturbed areas
Fiveleaf Akebia	<i>Akebia quinata</i>	Vine	Forests
Fuller's Teasel	<i>Dipsacus fullonum</i>	Herb	Riparian areas, meadows, fields, forest openings, disturbed areas
Garden Yellow-rocket	<i>Barbarea vulgaris</i>	Herb	Pastures, fields, roadsides, moist meadows
Garlic Mustard	<i>Alliaria petiolata</i>	Herb	Forests
Giant Hogweed	<i>Heracleum mantegazzianum</i>	Herb	Right-of-ways, riverbanks, ditches
Glossy Buckthorn	<i>Frangula alnus</i>	Shrub	Wetlands, old fields
Goatsrue	<i>Galaga officinalis</i>	Herb	Pastures, streambanks
Goldern Bamboo	<i>Phyllostachys aurea</i>	Grass	Roadsides, disturbed areas, forest openings, forest edge
Great Mullein	<i>Verbascum thapsus</i>	Herb	Fields, meadows, forests, roadsides, disturbed areas
Ground Ivy	<i>Glechoma hederacea</i>	Herb	Open forests, disturbed areas, waste areas, lawn
Guelder Rose	<i>Viburnum opulus</i>	Shrub	Forests, wetlands, fields
Gypsy-flower	<i>Cynoglossum officinale</i>	Herb	Fields, pastures, forest edge, roadsides, disturbed areas
Hairy Cat's Ear	<i>Hypochaeris radicata</i>	Herb	Fields, pastures, grasslands, roadsides, disturbed areas
Hydrilla	<i>Hydrilla verticulata</i>	Herb	Wetlands, ponds
Indian-strawberry	<i>Duchesnea indica</i>	Herb	Fields, prairies, open woodlands, disturbed areas
Ivy-leaved Speedwell	<i>Veronica hederifolia</i>	Herb	Fields, forest edge, roadsides, disturbed areas
Japanese Barberry	<i>Berberis thunbergii</i>	Shrub	Forests, wetlands, pastures

Table 2-1. Exotic and Invasive Species with the Potential to Occur Along the Project Right-of-Way (continued)

Common Name	Scientific Name	Growth Form	Typical Habitat(s)
Japanese Bromegrass	<i>Bromus japonicus</i>	Grass	Pastures, fields
Japanese Honeysuckle	<i>Lonicera japonica</i>	Vine	Forests, wetlands, fields
Japanese Hops	<i>Humulus japonicus</i>	Vine	Roadsides, streambanks, drainage ditch, meadows, disturbed areas, waste areas
Japanese Knotweed	<i>Polygonum cuspidatum</i>	Shrubby herb	Wetlands, streambanks, roadsides
Japanese Spiraea	<i>Spiraea japonica</i>	Shrub	Fields, forest openings
Japanese Stilt Grass	<i>Microstegium vimineum</i>	Grass	Pastures, fields, forests, wetlands
Jetbead	<i>Rhodotypos scandens</i>	Shrub	Forests, forest edge, roadsides
Jimsonweed	<i>Datura stramonium</i>	Herb	Pastures, fields
Johnson Grass	<i>Sorghum halepense</i>	Grass	Fields, wetlands, open forests
Kentucky Bluegrass	<i>Poa pratensis</i> ssp. <i>pratensis</i>	Grass	Fields, grasslands, forest edge
Kudzu	<i>Pueraria lobata</i>	Vine	Forests
Lesser Burdock	<i>Arctium minus</i>	Herb	Fields, meadows, disturbed areas
Lesser Celandine	<i>Ranunculus ficaria</i> var. <i>bulbifera</i>	Herb	Forests
Lesser Periwinkle	<i>Vinca minor</i>	Vine	Fields, forest edge, forest openings
Linden Arrowwood	<i>Viburnum dilatatum</i>	Shrub	Forests, wetlands, disturbed areas
Long-bristled Smartweed	<i>Persicaria longisetata</i>	Herb	Lawns, roadsides, wet meadows, waste areas
Maiden Grass	<i>Miscanthus sinensis</i>	Grass	Pastures, fields
Marsh Dewflower	<i>Murdannia keisak</i>	Herb	Wetlands
Meadow Brome	<i>Bromus commutatus</i>	Grass	Pastures, fields
Meadow Fescue	<i>Schedonorus pratensis</i>	Grass	Pastures, fields
Mile-a-minute Vine	<i>Polygonum perfoliatum</i>	Vine	Fields, forest edges, roadsides, ditches
Mimosa	<i>Albizia julibrissin</i>	Tree	Forest edges, residential areas, roadsides
Moneywort	<i>Lysimachia nummularia</i>	Herb	Moist forests, streambanks, wet meadows, wetlands, roadsides, fields
Multiflora Rose	<i>Rosa multiflora</i>	Shrub	Pastures, fields, forest edges
Musk Thistle	<i>Carduus nutans</i>	Herb	Pastures, fields
Nodding Plumeless-thistle	<i>Carduus nutans</i> ssp. <i>marcolepis</i>	Herb	Disturbed sites, waste areas, roadsides
Norway Maple	<i>Acer platanoides</i>	Tree	Forests
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	Vine	Forest edges, old fields
Oriental Lady's Thumb	<i>Polygonum caespitosum</i> var. <i>longisetum</i>	Herb	Wetlands, floodplain forests, upland forests
Oxeye Daisy	<i>Leucanthemum vulgare</i>	Herb	Fields, pastures, grasslands, roadsides, disturbed areas
Parrot Feather	<i>Myriophyllum aquaticum</i>	Herb	Wetlands, ponds
Perennial Ryegrass	<i>Lolium perenne</i> ssp. <i>multiflorum</i>	Grass	Pastures, fields
Plumeless Thistle	<i>Carduus acanthoides</i>	Herb	Pastures, fields, roadsides
Poison-hemlock	<i>Conium maculatum</i>	Herb	Fields, pastures, roadsides, forest edge, degraded wetlands and prairies
Porcelain Berry	<i>Ampelopsis brevipedunculata</i>	Vine	Forests, stream banks, old fields

Table 2-1. Exotic and Invasive Species with the Potential to Occur Along the Project Right-of-Way (continued)

Common Name	Scientific Name	Growth Form	Typical Habitat(s)
Poverty Brome	<i>Bromus sterilis</i>	Grass	Pastures, fields
Princess Tree	<i>Paulownia tomentosa</i>	Tree	Forests
Purple Crown-vetch	<i>Coronilla varia</i>	Herb	Pastures, fields, roadsides, utility right-of-ways
Purple Loosestrife	<i>Lythrum salicaria</i>	Herb	Aquatic ponds, ditches, wetlands
Reed Canary Grass	<i>Phalaris arundinacea</i>	Grass	Wetlands
Rough Bluegrass	<i>Poa trivialis</i>	Grass	Pastures, fields, roadsides,
Russian Olive	<i>Elaeagnus angustifolia</i>	Shrub	Pastures, fields, roadsides
Rye Brome	<i>Bromus secalinus</i>	Grass	Pastures, fields
Shattercane	<i>Sorghum bicolor</i>	Grass	Pastures, fields
Shrubby Bushclover	<i>Lespedeza bicolor</i>	Shrub	Forest edges, field edges, forest openings
Siberian Elm	<i>Ulmus pumila</i>	Tree	Forests
Small Carpgrass	<i>Arthraxon hispidus</i>	Grass	Wetlands, ponds, streams, river floodplains
Smooth Brome	<i>Bromus inermis</i> ssp. <i>inermis</i> var. <i>inermis</i>	Grass	Fields, Pastures
Spotted Knapweed	<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	Herb	Pastures, fields, roadsides
Star of Bethlehem	<i>Ornithogallum umbellatum</i>	Herb	Forests, fields
Standish's Honeysuckle	<i>Lonicera standishii</i>	Shrub	Fields, pastures, forest edge, roadsides, disturbed areas
St. John's-Wort	<i>Hypericum perforatum</i>	Herb	Fields, pastures, disturbed areas
Stonecrop	<i>Sedum sarmentosum</i>	Herb	Forest, forest edge
Sweetclover	<i>Melilotus officinalis</i>	Herb	Fields, pastures, roadsides, waste areas
Sycamore Maple	<i>Acer Pseudoplatanus</i>	Tree	Forests
Tall Fescue	<i>Schedonorus phoenix</i>	Grass	Pastures, fields
Tartarian Honeysuckle	<i>Lonicera tatarica</i>	Shrub	Pastures, fields, roadsides, utility right-of-ways, forest edge
Tree of Heaven	<i>Ailanthus altissima</i>	Tree	Forests
Viper's Bugloss	<i>Echium vulgare</i>	Herb	Pastures, fields, roadsides, waste areas
Water Chestnut	<i>Trapa natans</i>	Herb	Wetlands
Watercress	<i>Rorippa nasturtium-aquaticum</i>	Herb	Wetlands, streams, springs
Water Shield	<i>Brasenia schreberi</i>	Herb	Ponds, lakes
Wild Carrot	<i>Daucus carota</i>	Herb	Fields, pastures, roadsides, degraded prairie, forest edge
Wild Parsnip	<i>Pastinaca sativa</i>	Herb	Roadsides
Wine Berry	<i>Rubus phoenicolasius</i>	Shrub	Forests, fields
Winged Euonymus	<i>Euonymus alatus</i>	Shrub	Forests
Winter Creeper	<i>Euonymus fortunei</i>	Vine	Forests, fields
Wocheiner knapweed	<i>Centaurea nigrescens</i>	Herb	Fields, pastures, grasslands, field edge, open forests
Yellow Flag	<i>Iris pseudocorus</i>	Herb	Wetlands

Sources: USDA 2015; VDCR-DNH 2015; WVDNR 2009, 2010

3.0 WEED MANAGEMENT

Weeds are spread by a variety of means including pedestrian vectors (e.g., hiking, recreation, etc.), construction equipment, construction and reclamation materials, livestock, and wildlife. Implementation of preventative measures to control the spread of weeds is the most cost effective management approach. The MVP Project will implement weed control management measures that are consistent with the standards and guidelines included in the Land and Resource Management Plan for the JNF regarding noxious weeds and invasive species. MVP will coordinate site-specific treatment measures with the Forest Service when an invasive species is located. Forest-wide Standards for herbicide use are listed below:

FW-94: Method and timing of application are chosen to achieve Project objectives while minimizing effects on non-target vegetation and other environmental elements. Selective treatment is preferred over broadcast treatment.

Application methods from most to least selective are:

- Cut surface treatments;
- Basal stem treatments;
- Directed foliar treatments;
- Soil spot (spot around) treatments;
- Soil spot (spot grid) treatments;
- Manual granular treatments;
- Manual/mechanical broadcast treatments;
- Helicopter treatments.

FW-95: Herbicides and application methods are chosen to minimize risk to human and wildlife health and the environment. No class B, C, or D chemical (See Table 2-6) may be used on any Project without the approval of the Regional Forester. Vegetable oil is used as the herbicide carrier when available and compatible with the proposed application.

JNF Land and Resource Management Plan Table 2-6. Classification of chemical/method combinations when used at typical rates and exposures*

Application Method	Class			
	A	B	C	D
Manual Ground: Cut Surface	Dicamba Glyphosate Imazpyr	Picloram Triclopyr Amine	2, 4-D Amine	
Basal Stem	Diesel Kerosene Limonene	Triclopyr Ester 2, 4-DP	2, 4-D Ester	
Soil Spot	Hexazionone			
Foliar Spray	Fosamine Glyphosate Hexazionone Imazpyr Kerosene	Limonene Picloram Sulfometuron Methyl Triclopyr Amine Triclopyr Ester	2, 4-D Amine 2, 4-D Ester 2, 4-DP	Tebuthiuron
Mechanical ground	Diesel Dicamba Fosamine Glyphosate Hexazionone Imazpyr	Picloram Sulfometuron Methyl Triclopyr Amine Triclopyr Ester 2, 4-DP	2, 4-D Amine 2, 4-D Ester Tebuthiuron	
Aerial	Diesel Fosamine Glyphosate Hexazionone Imazpyr Kerosene	Limonene Picloram Sulfometuron Methyl Triclopyr Amine Triclopyr Ester 2, 4-DP	2, 4-D Amine 2, 4-D Ester Tebuthiuron	

*Reproduced from Table 2-6 of the JNF Land and Resource Management Plan, page 2-28.

FW-96: Areas do not undergo prescribed burning for at least 30 days after herbicide treatment.

FW-97: Aerial application with herbicides is allowed only in utility corridors. Each aerial herbicide application must have an operations plan to ensure that:

- Adequate precautions are taken to protect the crew, including equipment certification and hazard identification;
- Areas to be aerially treated are clearly marked; and
- Methods used to avoid buffers and other sensitive areas are safe and effective.

FW-98: No herbicide is aerially applied within 200 horizontal feet of an open road or designated trail. Buffers are clearly marked before treatment so applicators can easily see and avoid them.

FW-99: No herbicide is aerially applied within 300 feet, nor ground-applied within 60 feet, of any known threatened, endangered, proposed, or sensitive plant, except where its use is necessary to control non-native invasive species

affecting federally listed or sensitive species. Buffers are clearly marked before treatment so applicators can easily see and avoid them.

FW-100: No herbicide is aerially applied within 200 horizontal feet, nor ground-applied within 30 horizontal feet, of lakes, wetlands, perennial or intermittent springs and streams. No herbicide is applied within 100 horizontal feet of any public or domestic water source. Selective treatments (which require added site-specific analysis and use of aquatic labeled pesticides) may occur within these buffers only to prevent significant environmental damage such as nonnative invasive plant infestations. Buffers are clearly marked before treatment, so applicators can easily see and avoid them.

FW-101: With the exception of utility corridor and road rights-of-way, no herbicide is broadcast within 100 feet of private land or 300 feet of a private residence, unless agreed to by the landowner. Buffers are clearly marked so applicators can easily see and avoid them.

FW-102: No soil-active herbicide is applied within 30 feet of the drip line of reserved vegetation (e.g. den trees of hardwood inclusions) or within 30 feet of the drip line of vegetation adjacent to the treated area.

FW-103: Aquifers and public water sources are identified and protected.

FW-104: Application equipment, empty herbicide containers, clothes worn during treatment, and skin are not cleaned in open water or wells. Mixing and cleaning water must come from a public water supply and be transported in separate labeled containers.

FW-105: Herbicide mixing, loading, or cleaning areas in the field are not located within 200 feet of private land, riparian corridors, open water or wells, or other sensitive areas.

FW-106: No herbicide is broadcast on rock outcrops or sinkholes. No soil-active herbicide with a half-life longer than 3 months is broadcast on slopes over 45%, erodible soils, or aquifer recharge zones. Such areas are clearly marked before treatment so applicators can easily see and avoid them.

FW-107: Weather is monitored and the Project is suspended if temperature, humidity, or wind becomes unfavorable as shown in Table 2-7.

JNF Land and Resource Management Plan Table 2-7. Unacceptable Weather Conditions for Herbicide Application*

	Temps Higher Than	Humidity Less Than	Wind (at Target) Greater Than
Ground: Hand (cut surface)	N.A.	N.A.	N.A.
Hand (other)	98F	20%	15 mph
Mechanical (liquid)	95F	30%	10 mph
Mechanical (granular)	N.A.	N.A.	10 mph
Aerial: Granular	N.A.	N.A.	N.A.

*Reproduced from Table 2-7 of the JNF Land and Resource Management Plan, page 2-30.

FW-107: Weather is monitored and the Project is suspended if temperature, humidity, or wind becomes unfavorable as shown in Table 2-7.

MVP will utilize Krenite and Glyphosate herbicides to control invasive species on the MVP right-of-way.

3.1 Preventative Measures

The preventative measures that will be used to prevent the spread of weeds along the MVP Project right-of-way and within ancillary facilities on the JNF are discussed in the Project's *Restoration Plan*. These include:

- The CIC will ensure that equipment is free of soil and debris capable of transporting weed seeds, roots, or rhizomes. An inspector will place a sticker on equipment determined to be free of weeds.
- All Contractor equipment will arrive at the work site clean and weed-free. Prior to inspection, all equipment will be power or high-pressure air washed. In addition, all equipment leaving an area infested with noxious weeds will first be cleaned to limit the spread of noxious weed seeds and propagules.
- The pipeline right-of-way and ancillary facility sites will be examined and treated for invasive prior to the clearing.
- In the construction right-of-way topsoil would be segregated and would not be mixed with spoil material before or during replacement. Once the disturbed areas have been de-compacted as needed, topsoil would be re-distributed over the entire disturbed area from which it was salvaged and re-contoured. Final revegetation would occur within the approved seeding window.
- The contractor will implement reclamation of disturbed lands following construction as outlined in MVP project-specific *Restoration Plan* and the *Exotic and Invasive Species Control Plan*. Continuing revegetation efforts will ensure adequate vegetative cover to prevent the invasion of weeds.
- The contractor will ensure that straw bales, used on the project for sediment barrier installations, or mulch are certified weed-free.
- Equipment will not be sprayed with pre-emergent chemicals as a preventative measure, as these chemicals target a wide range of vegetation. As a result, the use of such chemicals could affect the success of revegetation efforts.

3.2 Treatment Methods

If noxious or invasive species are found in numbers that are significantly different from existing nearby off right-of-way locations, appropriate control measures will be implemented in an attempt to eradicate the identified weed infestations along the right-of-way and to reduce the spread or proliferation of weeds. If a location is discovered, MVP will provide a treatment plan to the USFS that will include a map and any mechanical or herbicides intended for use at that location. The plan will also include a monitoring plan for that area to ensure that the invasive species has been removed and new vegetation has begun to establish. Post-construction control measures may include one or more of the following methods:

- Mechanical methods reliant on the use of equipment to disk or excavate weed populations. If this method is used, subsequent seeding will be conducted to re-establish a desirable vegetative cover, which will stabilize the soils and slow the potential re-invasion of weeds. Seed selection will be based on site-specific conditions, and the appropriate seed mix identified for those conditions, as presented in the Project's *Restoration Plan*.
- Herbicide application is an effective means of reducing the size of weed populations. Herbicide application and handling methods are described in section 5.0 below.

3.3 Education

MVP will provide training to contractors and information regarding weed identification, management, and impacts on agriculture, livestock, and wildlife to their appropriate employees. The critical importance of preventing the spread of weeds in areas not infested and controlling the proliferation of weeds already present will be explained. The importance of adhering to measures to prevent the spread of weeds (e.g., not driving off the cleared right-of-way, cleaning equipment that collect soil and plant seeds, and quickly identifying new infestations of weeds) will be stressed.

4.0 MONITORING

MVP will annually monitor the right-of-way and ancillary facilities that occur on federal land for weeds following construction and reclamation of the Project for a period of two years. Locations of infestations on federal land crossed by the Project, and extent of infestations, will be submitted to the USFS. If species or colonies of species are found, MVP will conduct spot eradication of those species.

5.0 HERBICIDE APPLICATION, HANDLING, SPILLS, AND CLEANUP

Herbicide selection will be consistent with the USFS' stipulations for herbicide use as found in Table 2.6 of the JNF Land and Resource Management Plan (see Section 3 above).

5.1 Herbicide Application and Handling

MVP or its contractor would submit a Pesticide Use Proposal to document their use of herbicide on federally administered lands, as well as a pesticide application report within 24 hours following application. The chemical application will be done by a licensed contractor in accordance with all applicable laws and regulations.

Herbicide label instructions and manufacture guidelines will be strictly adhered to. For example, manufacturer's guidelines recommend that herbicides only be applied under appropriate weather conditions (i.e., periods of low wind speeds, when precipitation is not imminent, etc.), that application sprayers be mounted low to the ground, and that sprayer booms incorporate specialized nozzles designed to produce large droplet sizes with limited drift potential. Adherence to these specifications and manufacturer label directions would minimize the potential for drift or transport of herbicides to off right-of-way areas.

Vehicle-mounted sprayers (e.g., handgun, boom, and injector) will be used primarily in open areas that are readily accessible by vehicle. Hand application methods (e.g., backpack spraying) that target individual plants will be used to treat small scattered weed populations in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically thereafter to ensure proper application rates are being achieved.

Herbicides will be transported daily to the Project site with the following provisions:

- Herbicides will be premixed and delivered in returnable/refillable containers and transferred by closed system to application tanks to limit worker and environmental exposure and eliminate the need for disposal of herbicide containers in area landfills.
- Herbicides will be transported in a manner that will prevent tipping or spilling;
- Mixing of surfactants or other additives with water or other carriers and refilling of containers will typically be conducted at road crossings, and no mixing or filling will occur within 200 feet of open or flowing water, wetlands, or other sensitive resources; and
- Mixing and application procedures will be supervised by a licensed commercial applicator, and monitoring will be conducted to ensure that proper mixing, application, cleanup, personal protection and safety procedures are followed;
- All herbicide equipment and containers will be inspected daily for leaks.

APPENDIX T
Virginia Stormwater Pollution Prevention Plan

Appendix T

Draft Stormwater Pollution Prevention Plan

Mountain Valley Pipeline Project

Prepared by:



February 2017

CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

Mountain Valley is preparing a Project Specific Standards and Specifications (PS&S) for the Virginia portion of the Project that will be reviewed and approved by the Virginia Department of Environmental Quality (VADEQ). The PS&S will serve as the guidance document used during development of site-specific erosion and sedimentation control (ESC) plans and stormwater management (SWM) plans that meet all applicable requirements of the following:

- Virginia Erosion and Sediment Control Program (VESCP) Regulations (9VAC25-840);
- Virginia ESC and Stormwater Management (SWM) Certification Regulations (9VAC25-850);
- Virginia Stormwater Management Act (SWMA) (Va. Code § 62.1-44.15:24 et seq.);
- Virginia Stormwater Management Program (VSMP) Regulation (9VAC25-870);
- Federal Energy Regulatory Commission (FERC) Upland Erosion Revegetation and Maintenance Plan (PLAN); and
- FERC Wetland and Waterbody Construction and Mitigation Procedures (PROCEDURES).

These plans will be reviewed and approved by the VADEQ prior to implementation. MVP will provide a copy of the approved PS&S, ESC and SWM plans for the portions of the project that are located within the JNF.

APPENDIX U
Plant and Wildlife Conservation Measures Plan

Appendix U

Draft

Plant and Wildlife Conservation Measures Plan

Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1

2 **1.0 INTRODUCTION..... U-1**

3 1.1 Purpose and Objective U-2

4 1.2 Content..... U-2

5 1.3 Project Description U-2

6 **2.0 REGULATORY FRAMEWORK..... U-2**

7 2.1 Federal Endangered Species Act..... U-2

8 2.2 Bald and Golden Eagle Protection Act..... U-3

9 2.3 Migratory Bird Treaty Act..... U-3

10 2.4 Land-Management Plans U-3

11 2.5 Executive Order 13112 – Invasive Species..... U-4

12 2.6 Executive Order 11990 – Wetlands..... U-4

13 2.7 Executive Order 13186 – Migratory Birds U-4

14 2.8 Executive Order 13443 – Hunting Heritage..... U-4

15 2.9 Sections 401 and 404 of the Clean Water Act U-4

16 2.10 Federal Land Policy Management Act of 1976 U-4

17 2.11 National Forest Management Act of 1976..... U-4

18 2.12 U.S. Forest Service Manual 2670 U-5

19 2.13 State Comprehensive Wildlife Conservation Strategies..... U-5

20 **3.0 FISHERIES, VEGETATION, AND WILDLIFE U-5**

21 3.1.1 Vegetative Resources U-6

22 3.1.2 Federally Listed Species U-6

23 3.1.3 USFS Sensitive Species U-7

24 3.1.4 USFS Management Indicator Species U-8

25 3.1.5 USFS Locally Rare Species..... U-8

26 3.1.6 Stream Crossings within National Forest System Land U-8

27 **4.0 PLANT, FISH, AND WILDLIFE CONCERNS AND ISSUES..... U-9**

28 4.1 General Project Impacts and Plan Priorities..... U-9

29 4.1.1 Disturbance and Displacement U-10

30 4.1.2 Habitat Loss and Fragmentation U-10

31 4.1.3 Plant, Fish, and Wildlife Mortality U-10

32 4.2 Avoidance and Minimization during Siting and Routing U-10

33 4.3 Development of Conservation Measures U-11

34 **5.0 BIOLOGICAL RESOURCE ENVIRONMENTAL PROTECTION MEASURES..... U-11**

35 5.1 Biological Monitoring U-12

36 5.2 General EPMs for Plants, Fish, and Wildlife U-13

37 5.2.1 Background..... U-13

38 5.2.2 Environmental Protection Measures U-13

39 5.3 Migratory Birds U-14

40 5.3.1 Background..... U-14

41 5.3.2 Environmental Protection Measures U-15

42 **6.0 LITERATURE CITED..... U-15**

43

44

1 1.0 INTRODUCTION

2 Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners,
3 LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL
4 Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a
5 Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy
6 Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act
7 authorizing it to construct and operate the proposed Mountain Valley Pipeline Project
8 (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an
9 approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-
10 effective access to the growing demand for natural gas for use by local distribution
11 companies, industrial users, and power generation in the Mid-Atlantic and southeastern
12 markets, as well as potential markets in the Appalachian region. Construction is
13 anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on
14 National Forest System lands will occur in 2018.

15 The proposed pipeline will extend from the existing Equitrans, L.P. transmission system
16 and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas
17 Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania
18 County, Virginia. In addition to the pipeline, the Project will include approximately 171,600
19 horsepower of compression at three compressor stations currently planned along the
20 route, as well as measurement, regulation, and other ancillary facilities required for the
21 safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0
22 million dekatherms per day of natural gas.

23 A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest
24 (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery
25 counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service
26 (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will
27 cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in
28 Braxton County, West Virginia, which is administered by the U.S. Army Corps of
29 Engineers (USACE). Approval to cross land managed by two or more federal agencies is
30 the responsibility of the U.S. Department of the Interior, Bureau of Land Management
31 (BLM) through issuance of a Right-of-Way Grant. Project-wide construction
32 environmental compliance will be the responsibility of the FERC. The USFS and USACE
33 will also ensure compliance across lands managed or administered by those agencies.
34 Because the majority of federal lands crossed are managed by the USFS, this plan
35 focuses on the JNF, noting any additional or different requirements that are specific to the
36 crossing of the Weston and Gauley Turnpike.

37 The USFS will be responsible for enforcement of the terms and conditions of the BLM's
38 right-of-way Grant on National Forest System lands during the term of the right-of-way
39 Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF
40 portion of this project by the USFS Project Manager and the Authorized Officer's
41 designated compliance monitors. USFS will have stop work authority per terms outlined
42 in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work
43 conditions are encountered during construction.

1 The Project has potential to impact sensitive environmental resources and, as a result,
2 environmental protection measures have been developed to minimize potential impacts
3 on these resources and will be applied, as applicable, to the Project.

4 **1.1 Purpose and Objective**

5 The purpose of this Plan is to assist the BLM, USFS, and MVP in meeting their obligations
6 to protect biological resources during the construction, operation, and maintenance of the
7 Project. The objective of this Plan is to present a comprehensive, Project-specific plant,
8 fish, and wildlife conservation plan that does the following:

- 9 • Provides consistency across jurisdictions;
- 10 • Meets the intent of the current BLM and USFS Management guidance for federal
11 lands; and
- 12 • Balances cost, practicality, and feasibility of Project implementation with avoiding
13 or minimizing environmental impacts.

14 **1.2 Content**

15 The Plan includes information on (1) regulatory requirements and agency concerns
16 pertaining to biological resources, (2) avoidance and minimization conducted during siting
17 and routing of the Project to avoid impacts to biological resources, and (3) specific
18 environmental protection measures (EPMs) to be implemented if state- or federally listed
19 species, BLM sensitive species, or USFS sensitive species (collectively referred to as
20 special-status species) or their habitats are identified within, or adjacent to, the Project
21 right-of-way. In addition to special-status species, EPMs also address general wildlife
22 including big game, raptors, and migratory birds.

23 **1.3 Project Description**

24 Section 4.0 of the POD, of which this plan is a part, provides information on construction
25 methods, construction schedule, and operation and maintenance. Appendices A and B
26 provide maps and drawing details.

27 **2.0 REGULATORY FRAMEWORK**

28 The following provides a brief overview of federal and state legislation and regulatory
29 compliance applicable to biological resources in the Project area that have been
30 considered in the development of this plan.

31 **2.1 Federal Endangered Species Act**

32 Pursuant to the federal ESA of 1973, the U.S. Fish and Wildlife Service (USFWS) has
33 authority over actions that may affect the continued existence of a species federally listed
34 as threatened or endangered. Take of federally listed species is prohibited without
35 specific exceptions or permits issued under Sections 7 or 10 of the ESA. Under the ESA,
36 the definition of “take” includes to harass, harm, pursue, hunt, shoot, wound, kill, trap,
37 capture, or collect or attempt to engage in any such conduct. The USFWS has further
38 defined harm to include significant habitat modification or degradation that results in death

1 or injury to listed species by significantly impairing behavioral patterns such as breeding,
2 feeding, or sheltering. Federal agencies must consult with the USFWS under Section 7
3 of the ESA on actions they authorize, fund, or carry out to insure these actions are not
4 likely to jeopardize the continued existence of a listed species or result in the destruction
5 or adverse modification of designated critical habitat.

6 The FERC is the National Environmental Policy Act (NEPA) lead for this Project and is
7 developing an Environmental Impact Statement (EIS) that will contain stipulations and
8 mitigation measures that address the potential effects of the Project on federally listed
9 species. Additionally, a biological assessment was prepared to assess the effects of the
10 Project on threatened and endangered wildlife, fish, and plant species identified by the
11 USFWS.

12 **2.2 Bald and Golden Eagle Protection Act**

13 The Bald and Golden Eagle Protection Act (16 United States Code [U.S.C.] §§ 668-668d)
14 applies primarily to taking, hunting, and trading activities that involve bald eagles
15 (*Haliaeetus leucocephalus*) or golden eagles (*Aquila chrysaetos*). The act prohibits the
16 taking of any individuals of these two species, as well as any part, nest, or egg. The term
17 “take” as used in the act includes pursuing, shooting, shooting at, poisoning, wounding,
18 killing, capturing, trapping, collecting, molesting, or disturbing such species (16 U.S.C. §
19 668).

20 **2.3 Migratory Bird Treaty Act**

21 The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712) makes it unlawful to
22 pursue, hunt, take, capture, kill, or possess any migratory bird, part, nest, or egg of such
23 bird listed in wildlife protection treaties among the United States and Great Britain (on
24 behalf of Canada), Mexico, Japan, and the former USSR. This act also contains a clause
25 that prohibits baiting or poisoning of these bird species. A list of species covered by MBTA
26 can be found in Title 50, Code of Federal Regulations (CFR), Section 10.13. The MBTA
27 applies to many bird species, including raptors, and protects them from prohibited
28 activities during construction, operation, and maintenance of the Project.

29 **2.4 Land and Resource Management Plans**

30 Land and resource management plans (LRMPs) provide management guidance and
31 desired population and habitat conditions for biological resources on USFS-managed
32 lands. The Revised Jefferson National Forest Land and Resource Management Plan
33 (Forest Plan) was completed in 2004 and directs the management of JNF with respect to
34 legislative requirements and local, regional, and national issues and concerns.

35 This Plan represents the current understanding of how specific biological resource
36 temporal and spatial restrictions will be applied. However, the construction contractor will
37 be responsible for confirming with the applicable agencies prior to implementation that
38 the application of temporal and spatial restrictions is consistent with agency expectations.

1 **2.5 Executive Order 13112 – Invasive Species**

2 Executive Order (EO) 13112 (Invasive Species) requires federal agencies to prevent the
3 introduction and spread of invasive species and not authorize, fund, or carry out actions
4 that it believes are likely to cause or promote the introduction or spread of invasive
5 species.

6 **2.6 Executive Order 11990 – Wetlands**

7 EO 11990 (Wetlands) requires federal agencies to minimize the destruction, loss, or
8 degradation of wetlands and to preserve and enhance the natural and beneficial values
9 of wetlands in carrying out the agency's responsibilities.

10 **2.7 Executive Order 13186 – Migratory Birds**

11 EO 13186 (Migratory Birds) requires federal agencies to protect migratory birds and to
12 consider impacts on migratory bird species during Project planning.

13 **2.8 Executive Order 13443 – Hunting Heritage**

14 EO 13443 (Facilitation of Hunting Heritage and Wildlife Conservation) requires federal
15 agencies to facilitate the expansion and enhancement of hunting opportunities and the
16 management of game species and their habitat.

17 **2.9 Sections 401 and 404 of the Clean Water Act**

18 Sections 401 and 404 of the Clean Water Act regulate drainage and discharge of
19 pollutants and dredged or fill materials into waters of the United States, including
20 wetlands.

21 **2.10 Federal Land Policy Management Act of 1976**

22 In accordance with the Federal Land Policy Management Act, the USFS and BLM must
23 make land use decisions based on principles of multiple use and sustained yield, i.e.,
24 combination of balanced and diverse resource uses that takes into account the long-term
25 needs of future generations for renewable and nonrenewable resources, including, but
26 not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural
27 scenic, scientific and historical values.

28 **2.11 National Forest Management Act of 1976**

29 The National Forest Management Act of 1976, as amended, and its implementing
30 regulations under 36 CFR Part 219, consolidate and articulate the USFS's management
31 responsibilities for lands and resources of the National Forest System. The National
32 Forest Management Act of 1976 requires each national forest to develop a management
33 program and identify Management Indicator Species. The Management Indicator Species
34 are used to establish forest plan objectives for wildlife and fish habitats and to estimate
35 the effects of forest plans and projects on overall forest health.

2.12 U.S. Forest Service Manual 2670

USFS Manual 2600, Chapter 2670 (USFS 2005) directs each Regional Forester to designate sensitive species on public lands administered by the USFS. Per the manual, sensitive species are defined “as plant or animal species identified by a Regional Forester for which population viability is a concern, as evidenced by a significant current or predicted downward trend in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce an existing distribution of the species.”

USFS Manual 2670 also establishes the following management direction and objectives for USFS sensitive species:

- Maintain viable populations of all native and desired non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on USFS-administered lands.
- Review programs and activities as part of the NEPA process, through a biological evaluation, to determine their potential effect on sensitive species.
- Analyze, if impacts cannot be avoided, the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole.

The EPMs described in this Plan will ensure that the Project is constructed, operated, and maintained in compliance with USFS Manual 2670.

2.13 State Comprehensive Wildlife Conservation Strategies

The Virginia Department of Game and Inland Fisheries (VDGIF) and West Virginia Division of Natural Resources (WVDNR) have published Comprehensive Wildlife Conservation Strategies aimed at encouraging land-management activities that conserve and enhance wildlife habitat (VDGIF 2005; WVDNR 2015). These State Conservation Strategies/Plans were established to create a conservation plan to conserve the states’ Species of Greatest Conservation Need and to provide a common framework that would enable conservation partners (federal, state, and private) to jointly implement a long-term approach for the benefit of those species.

3.0 FISHERIES, VEGETATION, AND WILDLIFE

MVP has coordinated with the USFS to determine existing resources in the JNF and to what extent those resources will be impacted by the construction and operation of the Project. These impacts and proposed mitigation are addressed in the biological evaluation for the JNF. Fishery, vegetation, and wildlife resources that would be affected at the Weston and Gauley Turnpike are limited to minor clearing of vegetation to set up for and bore the crossing. This clearing will occur in the construction right-of-way, outside of the limits of USACE-owned property, resulting in no additional clearing on federal lands.

1 **3.1.1 Vegetative Resources**

2 The West Virginia portion of the Project lies in the Allegheny Plateau, Allegheny
3 Mountains, and Valley and Ridge Physiographic regions. In Virginia, the Project lies in
4 the Valley and Ridge, Blue Ridge, and Piedmont Physiographic regions. All JNF areas
5 crossed by the Project are within the Valley and Ridge Province (Fenneman, 1938).

6 The West Virginia/Virginia border approximately forms the western edge of the Valley and
7 Ridge Province, which extends from southeast Tennessee northeast to eastern
8 Pennsylvania in a fairly narrow band. The Valley and Ridge Province is part of the Oak-
9 Chestnut forest described by Braun (1950). The region was traditionally dominated by
10 oak and chestnut, but chestnut has been replaced in the canopy by oaks and hickories
11 (Braun 1950).

12 Based on geospatial data provided by the USFS, the Project crosses several major forest
13 community types, including mixed mesophytic forest; conifer-northern hardwood forest;
14 dry-mesic oak forest; dry and dry-mesic oak-pine forest; dry and xeric oak forest,
15 woodland, and savanna; and xeric pine and pine-oak forest and woodland. Common
16 dominant canopy species observed within the major forest community types during field
17 surveys included white pine, chestnut oak, black oak, scarlet oak, red oak, white oak, tulip
18 poplar, mockernut hickory, and pignut hickory. Impacts to areas prescribed as old growth
19 forest during construction of the Project on NFS land are approximately 7.4 acre. In
20 upland areas, trees or deep-rooted shrubs will be removed from the construction right-of-
21 way and will not be permitted to grow within the 50-foot-wide permanent right-of-way. The
22 USFS has requested that consideration be given to providing shrub vegetation on the
23 outer edges of the permanently maintained pipeline right-of-way to reduce the sharp edge
24 effect of the maintained pipeline right-of-way and provide as much escape cover as
25 possible for species like small mammals, reptiles, and amphibians needing to cross the
26 maintained right-of-way. This effect will result naturally on one side of the right-of-way
27 because shrub-like vegetation will be permitted to grow between the maintained
28 permanent right-of-way and the naturally regenerating temporary workspaces used along
29 the edge of the construction right-of-way. MVP has agreed to utilize the USFS
30 recommended seed mixes on JNF lands. In addition, MVP will feather the right-of-way to
31 ensure that vegetative openings appear more natural and conform with the natural form,
32 line, color, and texture of the existing landscape. Temporary work spaces within forested
33 areas would be revegetated per the Restoration Plan (Appendix H). MVP intends to
34 include woody seed mixes within temporary areas where forest regeneration is desired.

35 MVP conducted a tree-stand analysis that documents stand age and height and species
36 by two-inch-diameter class for all areas potentially impacted by the pipeline right-of-way
37 and construction access roads. The USFS also recommended that site index should be
38 measured to be used for estimates of volume and value of potential commercial timber
39 products. The tree stand analysis was submitted to the JNF on April 6, 2016.

40 **3.1.2 Federally Listed Species**

41 The USFS coordinates with the USFWS to avoid negative effects and to assist with
42 recovery of federally listed species found within the JNF. The JNF contains, or may
43 influence, suitable habitat with the potential to support 50 federally listed species including

1 24 mussels, 10 plants, six fish, five mammals, 1 amphibian, 1 spider, 1 isopod, 1 crayfish,
2 and 1 bumble bee. MVP continues to coordinate with the USFWS and the USFS
3 regarding the potential for presence of federally listed species within the Project area.

4 Preliminary desktop analyses for the and correspondence with the USFS, Eastern Divide
5 Ranger District, indicated three federally listed plants (shale barren rock cress [*Arabis*
6 *serotina*], small whorled pogonia [*Isotria medeoloides*], and smooth coneflower
7 [*Echinacea laevigata*]) as potentially occur in areas where the Proposed Route crosses
8 the JNF. Field habitat assessments and seven surveys for plants began in May 2015 and
9 concluded in August 2016 along the proposed Project route and abandoned alternative
10 routes within JNF. No federally listed plant species were observed within the JNF during
11 these field surveys.

12 The current range of four federally listed bats (Indiana bat [*Myotis sodalis*], northern long-
13 eared bat [*Myotis septentrionalis*], gray bat [*Myotis grisescens*], and Virginia big-eared
14 bat [*Corynorhinus townsendii virginianus*]) overlaps with the JNF. Mist-net surveys for
15 federally listed bats began in May 2015 and concluded in May 2016. Additional mist net
16 surveys were conducted in May 2016. No federally listed bats were captured within the
17 JNF during these surveys. Searches for suitable bat hibernacula (caves and mines) on
18 the JNF were conducted concurrent with mist-net surveys. No hibernacula were
19 discovered during these searches.

20 The James spiny mussel (*Pleurobema collina*) and Roanoke logperch (*Percina rex*) are
21 aquatic species known or suspected downstream of the Project area, but outside
22 identified geographic bounds of the water resource cumulative effects analysis area on
23 JNF.

24 **3.1.3 USFS Sensitive Species**

25 USFS Sensitive Species are those with rangewide viability concerns that are designated
26 by the Regional Forester, with the goal of preventing them from becoming federally listed
27 under the ESA. Fifty-seven USFS Sensitive Species have the potential to occur within the
28 proposed Project area based on a desktop habitat assessment. Field habitat
29 assessments and surveys began in May 2015 and concluded in August 2016. Two USFS
30 Sensitive Species were found along the proposed Project route during the survey efforts:
31 the eastern small footed bat (*Myotis leibii*) and rock skullcap (*Scutellaria saxatilis*). A third
32 USFS Sensitive Species, American barberry (*Berberis canadensis*), was found along an
33 abandoned alternate route.

34 Four eastern small-footed bats (three adult males and one pregnant female) were
35 captured during mist net surveys on the JNF (Pocahontas Road) in Giles County, Virginia.
36 All individuals were healthy and released at their capture sites.

37 A single population of rock skullcap was identified during plant surveys on JNF. The
38 population spans approximately 1.45 hectares (3.58 ac); however, only an approximate
39 0.78 hectare (1.94 ac) is within the proposed construction ROW. Seeds from these plants
40 will be collected prior to construction and replanted in locations identified in consultation
41 with the USFS. Two additional populations of rock skullcap were identified along
42 abandoned alternate routes on JNF. These two populations will not be impacted during
43 construction activities.

1 Several locations of American barberry were observed during plant surveys along an
2 abandoned alternate route in the JNF in Craig County, Virginia. These plants are located
3 more than eight miles from the proposed construction ROW, and these plants will not be
4 impacted by the Project.

5 These species, proposed survey methods, and results are discussed in further detail in a
6 biological evaluation that has been prepared for the portions of the Project that cross the
7 JNF.

8 **3.1.4 USFS Management Indicator Species**

9 The USFS designates Management Indicator Species to aid in setting objectives,
10 analyzing effects of alternatives, and monitoring activities implemented under the USFS
11 Forest Plan for the JNF. Management Indicator Species are chosen because changes in
12 their populations are believed to indicate the effects of USFS management on selected
13 biological components including threatened and endangered species, species with
14 special habitat needs, game or demand species, and non-game species of special
15 interest. Thirteen Management Indicator Species are designated for the JNF, and 11 were
16 observed in the Project area during field surveys conducted on national forest land.

17 **3.1.5 USFS Locally Rare Species**

18 Locally rare species, a term used by the USFS, are species for which representation on
19 a particular forest is a concern although the species is secure range-wide. These species
20 are not afforded federal protection under ESA, but the USFS recognizes the need to
21 properly prescribe management activities on National Forest System land that serve to
22 benefit, rather than severely impact, these species. The USFS has identified over 350
23 locally rare species with potential to occur within or near the George Washington and JNF
24 complex. Through coordination with USFS biologists, it was determined that 151 locally
25 rare species with suitable habitat may potentially occur within portions of the JNF that
26 would be crossed by the Project. No locally rare species have been observed, however,
27 recent Allegheny woodrat (*Neotoma magister*) activity (midden and latrine) within a
28 boulder field was documented 1,600 feet west of the proposed Project's construction
29 right-of-way.

30 **3.1.6 Stream Crossings within National Forest System Land**

31 The Project proposes to cross nine streams on USFS managed lands, including Craig
32 Creek and two unnamed tributaries to Craig Creek in the JNF within the Upper James
33 River watershed management area. In December 2016, MVP modified the pipeline route
34 to avoid three crossings of Craig Creek. The modified route crosses Craig Creek only
35 once, and that crossing is outside of USFS managed lands. The federally endangered
36 James spiny mussel and state threatened Atlantic pigtoe (*Fusconaia masnoi*) are known
37 from Craig Creek. The proposed crossing method for Craig Creek and its tributaries is
38 dry-ditch open-cut, and MVP will adhere to time-of-year restrictions on in-stream
39 construction as set forth by the Virginia Department of Game and Inland Fisheries. No
40 live mussels or fish are found during field surveys, mussel/fish removal and relocations
41 will occur immediately prior to in-stream construction activities. The Project also crosses
42 the New River watershed management area, but no additional streams within the JNF
43 are crossed.

1 **4.0 PLANT, FISH, AND WILDLIFE CONCERNS AND ISSUES**

2 Biological resource concerns and issues were identified throughout the planning stages
3 of the Project. Geographic information system (GIS) data and qualitative input from the
4 USFWS, USFS, Virginia Department of Conservation and Recreation (VDCR), VDGIF,
5 and WVDNR regarding known and potential locations of special-status species and their
6 habitats in the Project area were acquired and reviewed. Several biological resources of
7 concern that potentially occur within the Project area were identified, including:

- 8 • Federally listed species;
- 9 • Wildlife, fish, and plant species managed by the agencies as sensitive or special
10 status;
- 11 • Raptors and their nesting habitats;
- 12 • Migratory birds; and
- 13 • Noxious weeds.

14 The following steps were taken by MVP to determine which species and habitats to
15 consider for avoidance, minimization, and conservation measures:

- 16 • Identified potential habitats and special-status species that may occur along the
17 proposed corridor using available data from the appropriate federal and state
18 agencies;
- 19 • Discussed habitat types and special-status species at kickoff meetings with agency
20 resource specialists to identify which species are of greatest concern in the Project
21 area;
- 22 • Refined the list of species and habitats to be addressed in Project plans through
23 several subsequent meetings with state and federal agency resource specialists;
24 and
- 25 • Performed focused surveys along portions of the route for species identified by the
26 respective agencies.

27 These efforts identified the known or potential presence of USFS and state sensitive
28 plant, fish, and wildlife species; federally listed and candidate species; and active raptor
29 nests within the Project area. Federal agencies have required EPMs for some impacts
30 identified to ensure the Project is consistent with management objectives for these
31 resources.

32 **4.1 General Project Impacts and Plan Priorities**

33 EPMs for the Project were designed to reduce three basic types of Project-related impacts
34 on plant, fish, and wildlife resources: (1) disturbance and displacement, (2) habitat loss
35 and fragmentation, and (3) plant, fish, and wildlife mortality. This section describes the
36 impact types evaluated for each resource, thereby identifying Plan priorities used to
37 develop and apply EPMs.

1 **4.1.1 Disturbance and Displacement**

2 The Project will result in disturbance and displacement of plants, fish, and wildlife within
3 and adjacent to the Project area. Disturbance and displacement of wildlife includes
4 temporary changes in habitat use related to construction activities and potential for long-
5 term changes related to the presence of Project features and increased human activity
6 (annual inspections) associated with operation and maintenance of the Project and
7 potential for increased public access. Disturbance and displacement of fish species
8 includes temporary changes in habitat use related to increased turbidity associated with
9 stream crossings. Disturbance and displacement of plant species includes effects related
10 to increases in erosion and dust associated with the Project, the creation of temporary
11 work areas during construction, operation, maintenance, and physical disturbance
12 associated with new public access.

13 **4.1.2 Habitat Loss and Fragmentation**

14 The Project will result in the permanent loss and fragmentation of plant and wildlife habitat
15 due to clearing and grading for access roads, work areas, and compressor stations as
16 well as vegetation management within the right-of-way. These actions will remove or alter
17 plant and wildlife habitat within the right-of-way to accommodate Project features.
18 Habitats outside of the right-of-way could experience reduced suitability for plant and
19 wildlife species as the linear Project may fragment previously connected populations. The
20 Project may also impact plant and wildlife habitat by increasing the potential for the
21 establishment and spread of noxious weeds. The Project may impact fish habitat by
22 potentially introducing aquatic invasive species and reducing cover and organic input
23 where riparian vegetation is removed.

24 **4.1.3 Plant, Fish, and Wildlife Mortality**

25 Implementation of the Project may result in mortality of plants, fish, and wildlife in the
26 Project area. Plant species and wildlife species with limited mobility will experience
27 mortality during vegetation management, clearing, and grading operations associated
28 with construction, operations, and maintenance of the Project. Wildlife species that
29 occupy burrows may experience mortality if burrows are damaged by heavy machinery.
30 Use of pesticides for vegetation management within the right-of-way will result in plant
31 mortality. High levels of suspended sediment and associated high turbidity resulting from
32 construction activities, as well as potential introduction of hazardous materials into
33 surface waters, can cause mortality of aquatic organisms, including fish and their prey.
34 Increased public accessibility may also increase fish mortality from fishing.

35 **4.2 Avoidance and Minimization during Siting and Routing**

36 MVP approached avoidance and minimization of impacts through data collection, careful
37 routing and siting of the proposed facilities, field surveys, habitat mapping, and
38 construction scheduling. As discussed above, GIS data and qualitative input from the
39 USFWS, USFS, VDCR, VDGIF, and WVDNR regarding known and potential locations of
40 special-status species and their habitats in the Project area were acquired and reviewed.
41 These data were used to develop the list of special-status species of concern in the
42 Project area.

1 At the request of the agencies, focused surveys were conducted along portions of the
2 Project where suitable or potential habitat was identified for species identified by the
3 respective agencies. A comprehensive Project-wide habitat mapping effort, which
4 included aerial photography acquisition, identified habitats in the Project area for selected
5 special-status species. Based on the results of the habitat mapping, MVP identified areas
6 within the corridor where species-specific surveys may be necessary to either inform
7 right-of-way refinement or specify where and when conservation measures apply. Other
8 plant and wildlife resources (such as seasonality regarding migratory birds), as well as
9 temporal avoidance of sensitive resources, were also taken into consideration during
10 design of the Project.

11 **4.3 Development of Conservation Measures**

12 After taking into consideration Project impacts to wildlife, fish, and plant resources, MVP
13 recognized the need for additional measures to minimize the impact from construction,
14 operation, and maintenance of the Project. MVP used the following steps to develop the
15 measures found in Section 5 of this Plan:

- 16 • Identified and reviewed the JNF Forest Plan;
- 17 • Reviewed the Forest Plan's surface-use stipulations specific to each species of
18 concern;
- 19 • Determined exception or waiver criteria, if applicable;
- 20 • Used USFWS avoidance recommendations when applicable;
- 21 • Incorporated VDCR, VDGIF, and WVDNR species-specific management
22 recommendations; and
- 23 • Evaluated the stipulations on a resource-by-resource basis, developed the
24 proposed Project-wide temporal and spatial restrictions, and identified where and
25 when exceptions may need to be requested.

26 This Plan identifies EPMs that will be implemented to protect biological resources in the
27 Project area. Other measures may be developed based on public review of the EIS being
28 prepared by the FERC.

29 **5.0 BIOLOGICAL RESOURCE ENVIRONMENTAL PROTECTION** 30 **MEASURES**

31 This section of the Plan includes (1) responsibilities of biological monitors, (2) a
32 discussion of how EPMs will be applied based on land ownership and associated
33 geographical distribution, (3) EPMs designed to avoid or minimize Project impacts to
34 plant, fish, and wildlife resources previously identified in Section 3.1 – General Project
35 Impacts and Plan Priorities, and (4) a description of the process for making requests for
36 exceptions to seasonal and spatial restrictions.

37 General EPMs applicable to many or all species groups are presented first, followed by
38 EPMs tailored to species groups. Each section includes (1) an overview of each
39 resource's presence in the Project area, (2) resource-specific agency concerns and

1 impacts for which EPMs were identified, and (3) EPMs to address concerns and reduce
2 resource impacts during the design, construction, operation, and maintenance of the
3 Project.

4 **5.1 Biological Monitoring**

5 A third-party Compliance Inspection Contractor (CIC) will represent the FERC and
6 USACE, unless other agency representatives are designated during the construction and
7 restoration phases of the Project, to ensure (1) compliance with permit requirements and
8 (2) environmental impacts associated with the Project do not exceed those approved by
9 the FERC and BLM in their authorizing documents. The USFS Project Manager will
10 identify an Authorized Officer to work with the CIC on USFS managed lands.

11 The CIC shall work under the direct supervision and control of the FERC. The FERC will
12 coordinate with other agencies with jurisdiction, where appropriate. The CIC shall not take
13 any direction with respect to the manner of conducting monitoring from MVP or its
14 construction contractor or environmental inspection contractor. The CIC's primary role is
15 to observe work activities; verify, document, and monitor compliance; and bring non-
16 compliant situations to the attention of the appropriate party and offer recommendations
17 on how to prevent non-compliance prior to commencement of work.

18 At a minimum, the CIC monitors are required to be on the right-of-way when construction
19 activities have the potential for significant surface disturbance or harm to sensitive
20 resources (see Appendix M – Environmental Compliance Management Plan of the POD,
21 Section 3.2.3). Exceptions can be made should the CIC, using professional judgment and
22 in consultation with the FERC, determine that reductions in presence would not adversely
23 impact compliance oversight.

24 The construction contractor will employ Environmental Inspectors (see Appendix M –
25 Environmental Compliance Management Plan of the POD), who will be present on each
26 active construction segment to ensure compliance with all environmental laws and
27 regulations, Project-specific authorizations, and landowner agreements during Project
28 construction. The number of Environmental Inspectors at a given construction spread
29 may vary depending on the construction activity, size of the area subject to disturbance,
30 and location.

31 The responsibilities of the Environmental Inspectors during construction would include,
32 but not be limited to, the following:

- 33 • Identification of resource presence/absence in biologically sensitive areas;
- 34 • Daily briefing of construction crews outlining restrictions associated with
35 biologically sensitive areas;
- 36 • Verification that construction work areas, access roads, and features such as
37 wetlands or sensitive habitat are properly marked and flagged prior to ground
38 disturbance in a given area; and
- 39 • Authorization to stop work when construction activities violate environmental laws,
40 regulations, or Project-specific authorizations.

1 The construction contractor will be responsible for:

- 2 • Ensuring that EPMs that minimize impacts on plant and wildlife resources are
3 implemented;
- 4 • Conducting preconstruction botanical and wildlife surveys;
- 5 • Conducting surveys to support variance requests; and
- 6 • Conducting biological monitoring of construction activities in biologically sensitive
7 areas or during periods of heightened sensitivity.

8 The construction contractor will employ qualified biologists, approved by MVP and the
9 respective agencies, to conduct such tasks.

10 **5.2 General EPMs for Plants, Fish, and Wildlife**

11 **5.2.1 Background**

12 Many Project EPMs are applicable across species groups, including those that address
13 preconstruction surveys, restriction of public access, preservation of existing vegetation,
14 use of existing stream crossings, proper application of pesticides and invasive species
15 control, Project-personnel training, avoidance areas, reclamation best management
16 practices, minimization of ground disturbance, speed limits on Project roads, and
17 protection of wetlands and water quality.

18 Disturbance and displacement, habitat loss and fragmentation, and mortality are general
19 Project impacts that could apply to all plants, fish, and wildlife in the Project area.

20 **5.2.2 Environmental Protection Measures**

21 Sensitive, Rare, Threatened, or Endangered Species Habitat:

- 22 • Develop and implement a Project-specific Karst Management Plan to protect and
23 minimize impacts to karst, karst-like features, and caves;
- 24 • Commit to tree-clearing activity outside of June-July to minimize impacts to non-
25 volant, juvenile bats;
- 26 • Abide by all time-of-year restrictions for in-stream construction in waterbodies
27 containing rare, threatened, or endangered aquatic species;
- 28 • Co-locate pipeline with existing corridors to the extent practicable by paralleling
29 utility corridors, trails, and roads to avoid further fragmenting wildlife habitat;
- 30 • Use all existing roads or pathways to the pipeline before considering construction
31 of new access roads; and
- 32 • Design contractor yards to avoid streams, wetlands, and other sensitive wildlife
33 habitat.

34 Sediment and Erosion Control:

- 35 • Develop and implement a Project-specific *Erosion and Sediment Control Plan*;
- 36 • Maintain surface and ground water quality using appropriate erosion control
37 practices and best management practices;

- 1 • Comply with the FERC's *Upland Erosion Control, Revegetation, and Maintenance*
- 2 *Plan* (May 2013); and
- 3 • Install erosion control measures once prior to earth disturbance activity.

4 Exotic and Invasive Species:

- 5 • Implement the Project's *Exotic and Invasive Species Control Plan* during
- 6 construction, operation, and maintenance of the Project;
- 7 • Avoid introducing exotic/invasive species in organic materials brought onsite
- 8 during construction by thoroughly cleaning equipment prior to mobilization to
- 9 Project area;
- 10 • Establish equipment cleaning stations to thoroughly wash all equipment before
- 11 transporting it to the next construction spread;
- 12 • Use only certified weed-free mulch, straw, and hay bales for sediment control
- 13 devices;
- 14 • Selective spot treatment or eradication of exotic/invasive plant species
- 15 encountered during construction and operation of the Project. Herbicides will be
- 16 used, as requested by the USFS, as one of the tools implemented to treat
- 17 exotic/invasive plant species;
- 18 • Use only seed mixes approved by the USFS during all restoration efforts
- 19 conducted on the JNF. As requested by the USFS, the primary goal of seed mixes
- 20 used on the JNF will be to stabilize disturbed slopes, with a secondary goal (which
- 21 may involve a second seeding application) of developing high-priority wildlife
- 22 habitats; and
- 23 • Minimize time bare soil is exposed during construction to minimize opportunity for
- 24 exotic/invasive plants to become established.

25 Contaminants:

- 26 • Develop and implement a Project-specific *Spill Prevention, Control, and*
- 27 *Countermeasure Plan*;
- 28 • Institute preventative measures such as personnel training, equipment inspection,
- 29 and refueling procedures to reduce likelihood of spills; and
- 30 • Do not park, store, or service construction equipment, vehicles, hazardous
- 31 materials, fuels, chemicals, lubricating oils, and petroleum products within a 100-
- 32 foot radius of any waterbody.

33 **5.3 Migratory Birds**

34 **5.3.1 Background**

35 Migratory birds occur within the Project area and are protected under the MBTA. Direct
36 impacts on migratory birds could include collisions with construction, operation, and
37 maintenance vehicles, other equipment, or structures; direct removal of nesting habitat;
38 destruction of unoccupied nests; induced abandonment of nests due to disturbance;
39 fugitive dust; and visual disturbance.

1 **5.3.2 Environmental Protection Measures**

2 In addition to the general EPMs listed in Section 5.2 – General EPMs for Plants, Fish,
3 and Wildlife, the following EPMs will be implemented to avoid and minimize Project
4 impacts to migratory birds:

- 5 • Implement the Project's Migratory Bird Habitat Conservation Plan;
- 6 • Route Project facilities to avoid sensitive resources where possible;
- 7 • Reduce the right-of-way in sensitive wetland habitat;
- 8 • Co-locate Project facilities with existing pipeline or utility rights-of-way where
9 feasible, in order to minimize fragmentation of habitats to the maximum extent
10 possible;
- 11 • Conduct environmental training of MVP personnel and inspection of construction
12 and restoration activities;
- 13 • Follow the eagle guidelines set out in the United States Fish and Wildlife Service
14 Bald Eagle Management Guidelines and the Virginia Department of Game and
15 Inland Fisheries, such as not conduct any clearing or construction activities within
16 660 feet of active eagle nests, and avoid blasting or use of explosives within 0.5
17 mile of active nests or communal concentration areas;
- 18 • All clearing conducted within the JNF will be done at times outside of the breeding
19 season; and
- 20 • Restrict maintenance activities to outside of the breeding/nesting season.

21 **6.0 LITERATURE CITED**

- 22 Braun, E.L. 1950. *Deciduous Forests of Eastern North America*. The Blackiston
23 Company, Philadelphia, Pennsylvania. 596 pp.
- 24 Fenneman, N.M. 1938. *Physiography of the Eastern United States*. McGraw-Hill Book
25 Company, New York, New York.
- 26 USFS (U.S. Department of Agriculture, Forest Service). 2005. Chapter 2670 –
27 Threatened, Endangered and Sensitive Plants and Animals. *In: USFS Manual*
28 2600 – Wildlife, Fish, and Sensitive Plant Habitat Management. Available online
29 at: http://www.fs.fed.us/cgi-bin/Directives/get_dires/fsm?2600
- 30 VDGIF (Virginia Department of Game and Inland Fisheries). 2005. Virginia's
31 Comprehensive Wildlife Conservation Strategy. Virginia Department of Game and
32 Inland Fisheries, Richmond, Virginia.
- 33 WVDNR (West Virginia Division of Natural Resources). 2015. 2015 West Virginia State
34 Wildlife Action Plan. West Virginia Division of Natural Resources. September 1.

APPENDIX V
Fugitive Dust Control Plan

Appendix V

Draft

Fugitive Dust Control Plan

Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1

2 **1.0 INTRODUCTION..... V-1**

3 **2.0 BACKGROUND..... V-2**

4 **3.0 FUGITIVE DUST EMISSION SOURCES V-2**

5 **4.0 FUGITIVE DUST CONTROL METHODS..... V-3**

6 4.1 Pipeline Construction Activities and Other Earth Disturbances..... V-4

7 4.2 Unpaved Roads..... V-4

8 4.3 Paved Roads..... V-4

9 4.4 Track-out onto Roads..... V-4

10 4.5 Deposition on Other Premises V-4

11 **5.0 TACKIFIERS..... V-4**

12 **6.0 INSPECTION, MONITORING, AND RECORD KEEPING V-5**

13 **7.0 PLAN MAINTENANCE..... V-5**

14 **8.0 STAFF TRAINING V-5**

Draft**Mountain Valley Pipeline Project
Fugitive Dust Control Plan****1.0 INTRODUCTION**

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on National Forest System lands will occur in 2018.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in Braxton County, West Virginia, which is administered by the U.S. Army Corps of Engineers (USACE). Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this plan focuses on the JNF, noting any additional or different requirements that are specific to the crossing of the Weston and Gauley Turnpike.

The USFS will be responsible for enforcement of the terms and conditions of the BLM's right-of-way Grant on National Forest System lands during the term of the right-of-way

1 Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF
2 portion of this project by the USFS Project Manager and the Authorized Officer's
3 designated compliance monitors. USFS will have stop work authority per terms outlined
4 in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work
5 conditions are encountered during construction.

6 The Project has potential to impact sensitive environmental resources and, as a result,
7 environmental protection measures have been developed to minimize potential impacts
8 on these resources and will be applied, as applicable, to the Project.

9 **2.0 BACKGROUND**

10 Land disturbance from clearing and excavation activities has the potential to generate a
11 large amount of dust particles. Dust control measures are practices that help reduce
12 surface and air movement of dust from disturbed soil surfaces.

13 MVP has developed this Fugitive Dust Control Plan to minimize visible fugitive dust
14 emissions at or in proximity to the worksite. Fugitive dust is generated by the mechanical
15 disturbance of granular material exposed to air. Dust from open sources is termed
16 "fugitive" because it is not discharged to the atmosphere in a confined flow stream. This
17 plan outlines dust control methods that will be used on the Project to reduce fugitive dust
18 emissions and outlines the recommended records to be maintained on site during
19 construction.

20 MVP does not plan to divert or withdraw water from any waterbody within the JNF for dust
21 control.

22 **3.0 FUGITIVE DUST EMISSION SOURCES**

23 The following Project activities have the potential to generate fugitive dust:

- 24 • Vegetation removal;
- 25 • Clearing and grading;
- 26 • Topsoil removal;
- 27 • Cutting and filling;
- 28 • Trenching;
- 29 • Backfilling;
- 30 • Track-out onto roads;
- 31 • Bulk material loading, hauling and unloading;
- 32 • Vehicle and motorized equipment movement on unpaved access roads;
- 33 • Use of material storage piles; and
- 34 • Use of parking, staging, and storage area.

35 Strategic construction sequencing can greatly reduce problematic dust generation.

1 It is the responsibility of the Project contractor(s) and the designated Environmental
2 Inspector(s) (EIs) to ensure that contractor personnel are complying with all dust control
3 measures and have authority to enforce and require compliance with this plan. The
4 Project supervisors and EIs must ensure that:

- 5 1. sources of potential dust generation are identified;
- 6 2. specific areas of Project construction will be monitored for fugitive dust
7 generation; and
- 8 3. appropriate dust suppression techniques are implemented when dust plumes are
9 visible.

10 **4.0 FUGITIVE DUST CONTROL METHODS**

11 Implementation of construction and restoration best management practices and
12 operational controls will be used to mitigate fugitive dust emissions. The Project earth-
13 disturbance permit will outline specific practices that control fugitive dust, including a
14 construction sequence, use of rock construction entrances, and temporary soil
15 stabilization methods. MVP will also implement, operational controls, including the use of
16 a reduced speed limit on unpaved access roads as well as sweeping/vacuuming paved
17 roadways when Project-related soils are tracked out onto paved surfaces.

18 Wet suppression, using water, is the predominate method of suppressing fugitive dust on
19 unpaved roads and gravel pads as it causes finer materials to adhere into larger particles.
20 Increasing the moisture content of the finer materials may be accomplished either
21 naturally or mechanically. Moisture content of unpaved road surfaces can be naturally
22 increased through rainfall. Moisture content can also be increased mechanically through
23 the application of water. The amount of water required to sufficiently control fugitive dust
24 emissions is dependent on the characteristics of materials (e.g., surface moisture
25 content), ambient conditions (e.g., rainfall, humidity, temperature), activities occurring in
26 the area (e.g., vehicle traffic, vehicle weight, speeds), etc. The contractors will have one
27 or more water trucks available per spread that will load water from approved permitted
28 sources to spray areas for dust control. Disturbed and trafficable areas will be kept
29 sufficiently damp during working hours in dry conditions to minimize wind-blown or traffic-
30 generated dust emissions. Areas to be watered include, but are not limited to, the
31 following:

- 32 • the construction corridor for each pipeline, including additional temporary
33 workspace;
- 34 • access roads;
- 35 • aboveground facility sites;
- 36 • active grading areas;
- 37 • un-stabilized areas;
- 38 • soil stockpiles; and
- 39 • parking areas.

1 The frequency at which water trucks will spray construction areas will vary based on
2 weather and site conditions. More frequent applications will be required in dry conditions
3 and where dust generation is likely. The following actions are taken to reduce fugitive dust
4 from our operations.

5 **4.1 Pipeline Construction Activities and Other Earth Disturbances**

6 Fugitive dust emissions from vegetation removal, clearing and grading, cutting and filling,
7 topsoil removal, trenching, backfilling and stockpile storage will be controlled to a great
8 extent by following the construction sequencing and disturbing limited areas at a time. If
9 sustained visible dust plumes occur, dust suppression can be achieved by applying water
10 along the travel lane and disturbed land via water truck. In Virginia, spoil piles left
11 undisturbed for four or more days should be temporarily stabilized with seed and mulch
12 or tarped to prevent wind and water erosion. In West Virginia, areas at final grade should
13 be seeded and mulched or otherwise stabilized within 7 days and areas that will not be
14 worked again for 21 days or more must be seeded and mulched or otherwise stabilized
15 within 7 days.

16 **4.2 Unpaved Roads**

17 Fugitive dust emissions generated by motorized equipment and miscellaneous vehicle
18 traffic will be controlled by wet suppression as necessary. Fugitive dust emissions from
19 active access roads will be controlled by periodic wetting of surfaces using a water truck.
20 During periods of high truck traffic, road surfaces will be wetted more frequently to
21 minimize dust emissions. Watering will occur less frequently if weather conditions (e.g.,
22 rain, frozen surfaces, etc.) are adequate to suppress dust. In addition, MVP will reduce
23 the speed limit on the unpaved roads to control dust emissions

24 **4.3 Paved Roads**

25 Fugitive dust emissions from paved roads will be controlled with a combination of water
26 trucks, power washers, sweeping and/or vacuuming, as appropriate, to minimize the
27 amount of fugitive dust that is generated and built up on the road surfaces.

28 **4.4 Track-out onto Roads**

29 Track-out of loose materials will be controlled using rock construction entrances on
30 access roads that begin at a junction with paved roads. Also, the use of sweeping and/or
31 vacuuming will be used if any loose material goes beyond the rock construction
32 entrances.

33 **4.5 Deposition on Other Premises**

34 MVP will take all appropriate actions to prevent the deposition of solid or liquid materials
35 onto any other premises from the Project site and access roads that may cause or
36 contribute to visible dust emissions. Preventive actions may include, but are not limited
37 to, dust control, such as wet suppression; the operation of a sweeper truck on paved
38 roadways equipped with water suppression; and the operation of a vacuum truck.

39 **5.0 TACKIFIERS**

1 The construction contractor may propose the use of tackifiers to reduce fugitive dust
2 provided that the product to be utilized has been approved by the appropriate federal and
3 state agencies where its application will occur. The construction contractor will detail the
4 proposed use of any such substances in its dust control plan and provide copies of the
5 material safety data sheets and application procedures. Typically, tackifiers used are
6 DustFloc, RoadFloc, and Kodiak Super TACKMixes.

7 **6.0 INSPECTION, MONITORING, AND RECORD KEEPING**

8 The construction contractor will implement the dust control measures specified in this
9 plan. All construction personnel will be informed of the measures in this plan. EIs will have
10 primary responsibility for monitoring and enforcing the implementation of dust control
11 measures by the construction contractor. The inspectors will also be responsible for
12 ensuring that these measures are effective and proper documentation is maintained.
13 When environmental conditions are dry, inspection of dust control measures will be
14 conducted daily, and the EIs will be responsible for recording the following information on
15 a daily basis:

- 16 • Weather conditions, including temperature, wind speed, and wind direction;
- 17 • Number of water trucks in use;
- 18 • Incidents where dust concentration is such that special abatement measures must
19 be implemented;
- 20 • Condition of soils (damp, crusted, unstable, other) on the right-of-way and other
21 construction sites;
- 22 • Condition of soils (damp, crusted, unstable, other) on access roads;
- 23 • Condition of track-out pads; and
- 24 • Overall status of dust control compliance.

25 This information will be incorporated into the EI's daily report.

26 **7.0 PLAN MAINTENANCE**

27 A copy of this Fugitive Dust Control Plan will be retained at the spread's job site office
28 and will be made available to the federal and state agencies upon request.

29 **8.0 STAFF TRAINING**

30 Prior to the start of construction, MVP will conduct environmental and safety training for
31 MVP and contractor personnel. The training program will focus on the Federal Energy
32 Regulatory Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan*
33 (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures*
34 (Procedures); other construction, restoration, and mitigation plans, including this *Dust*
35 *Control Plan*; and applicable permit conditions. In addition, MVP will provide large-group
36 training sessions before each work crew begins construction with periodic follow-up
37 training for groups of newly assigned personnel.

APPENDIX W
Fire Prevention and Suppression Plan

Appendix W

Draft Fire Prevention and Suppression Plan

Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1

2 **1.0 INTRODUCTION..... W-1**

3 **2.0 PURPOSE..... W-2**

4 **3.0 BACKGROUND..... W-2**

5 **4.0 TRAINING..... W-4**

6 **5.0 COORDINATION W-5**

7 5.1 Responsibilities W-6

8 5.2 Construction Contractor’s Chief Inspector..... W-6

9 5.3 Construction Contractor’s Spread Superintendents W-6

10 5.4 Construction Contractor’s Field Safety Officers W-7

11 5.5 MVP’s and Construction Contractor’s Environmental Inspectors..... W-8

12 5.6 Agencies’ Authorized Officers (AO)..... W-8

13 **6.0 EMERGENCY NOTIFICATION W-8**

14 **7.0 FIRE DANGER RATINGS W-8**

15 **8.0 FIRE PREVENTION..... W-10**

16 8.1 Blasting..... W-10

17 8.2 Welding W-10

18 8.3 Equipment W-10

19 8.3.1 Fire Extinguishers..... W-11

20 8.3.2 Spark Arrestors..... W-11

21 8.3.3 Equipment Parking and Storage..... W-11

22 8.3.4 Power Saws..... W-12

23 8.4 Warning Devices W-12

24 8.5 Warming and Cooking Fires..... W-12

25 8.6 Smoking W-12

26 8.7 Refueling W-12

27 8.8 Burning..... W-12

28 **9.0 FIRE AND EMERGENCY RESPONSE EQUIPMENT W-13**

29 9.1 Construction Vehicles..... W-13

30 **9.1 FIRE FIGHTING TOOLS W-13**

31 **10.0 EVACUATION W-14**

32 **11.0 LITERATURE CITED..... W-14**

LIST OF ATTACHMENTS

- 33
- 34
- 35
- 36 Attachment W-1 Standards and Guidelines
- 37

Draft

Mountain Valley Pipeline Project Fire Prevention and Suppression Plan

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on National Forest System lands will occur in 2018.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in Braxton County, West Virginia, which is administered by the U.S. Army Corps of Engineers (USACE). Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this plan focuses on the JNF, noting any additional or different requirements that are specific to the crossing of the Weston and Gauley Turnpike.

The USFS will be responsible for enforcement of the terms and conditions of the BLM's right-of-way Grant on National Forest System lands during the term of the right-of-way

1 Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF
2 portion of this project by the USFS Project Manager and the Authorized Officer's
3 designated compliance monitors. USFS will have stop work authority per terms outlined
4 in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work
5 conditions are encountered during construction.

6 The Project has potential to impact sensitive environmental resources and, as a result,
7 environmental protection measures have been developed to minimize potential impacts
8 on these resources and will be applied, as applicable, to the Project.

9 **2.0 PURPOSE**

10 The purpose of this Fire Plan is to identify best management practices for preventing
11 fires and responding to inadvertent fires that could occur during construction of the
12 Project. The Fire Plan identifies responsibilities and procedures for suppressing fire
13 ignitions, responding to and reporting fire emergencies, and working with emergency
14 response agencies in the event of fire, regardless of cause. The Fire Plan is designed
15 to be consistent with applicable federal and state/commonwealth laws, regulations,
16 plans, and policies, including Chapter 14 of the 2003 International Fire Code
17 (Combustible Dust-Producing Operations) and Section A104 of the International
18 Wildland-Urban Interface Code (Ignition Source Control).

19 The Fire Plan provides an implementation strategy to ensure immediate and aggressive
20 action to suppress inadvertent fires that occur during construction of the Project and
21 establishes protocols and lines of communication for reporting fires that occur.
22 Implementation of the Fire Plan will ensure that proper types and quantities of safety
23 and fire extinguishing equipment are available in construction areas to suppress fires
24 and that construction workers are adequately trained for response to fires. The Fire Plan
25 will be used to familiarize MVP personnel with basic fire emergency planning, response,
26 and evacuation procedures and their individual roles in fire prevention and suppression.
27 Planning and training will help MVP personnel respond effectively in the event of a fire,
28 thereby avoiding or minimizing injuries and/or damage to property or the environment.

29 MVP will comply with all requirements of the Land and Resource Management Plan
30 (Forest Plan) in relation to fire prevention and suppression. Refer to Attachment W-1 for
31 a list of applicable fire management standards and guidelines.

32 **3.0 BACKGROUND**

33 Fire has played a major role in the landscape and ecosystems of the JNF. The Forest
34 Plan for the JNF indicates that fires typically occurred in this area every 9 to 11 years
35 throughout the nineteenth and early twentieth centuries (USFS 2004). Most of these fires
36 are thought to have occurred during the dormant vegetative seasons (typically in early
37 spring). The Forest Plan states that “[t]he ecosystems we know today [*within the Jefferson*
38 *National Forest*] developed within the influence of both climatic and human forces” and
39 that “[t]he result is a forest with a diversity and flexibility that is well adapted to fire
40 occurrence” (USFS 2004).

1 Prescribed fire is an important tool used by the USFS to achieve the Forest Plan's Desired
2 Conditions. The Forest Plan identifies the following USFS Goals and Objectives in regard
3 to prescribed fires:

4 GOAL 18: Fire regimes are restored within or near the historical range (Condition
5 Class 1) resulting in maintenance and restoration of ecosystem
6 components.

7 OBJECTIVE 18.01: Maintain a prescribed burn cycle of 3-8 years in fire-
8 maintained forest and grassland communities
9 containing threatened, endangered, sensitive, and
10 locally rare species. (For example: piratebush, box
11 huckleberry, smooth green snake, and sword-leaf
12 phlox).

13 OBJECTIVE 18.02: Maintain a prescribed burn cycle of 4-12 years in Dry
14 and Xeric Oak Forest, Woodlands, and Savannas
15 and in Xeric Pine and Pine-Oak Forest and Woodland
16 communities.

17 OBJECTIVE 18.03: Maintain a prescribed burn cycle of 8-20 years in Dry-
18 Mesic Oak Forest, and Dry and Dry-Mesic Oak-Pine
19 Forest communities.

20 OBJECTIVE 18.04: Reduce hazardous fuels across 4,200 acres per year
21 with priority given to areas where fire regimes have
22 been moderately (Condition Class 2) or significantly
23 (Condition Class 3) altered from their historic range;
24 and areas affected by insects, diseases, ice damage,
25 or along National Forest boundaries with high values
26 at risk.

27 It is expected that the USFS will continue to use prescribed fires as a tool to manage the
28 portions of the JNF crossed by the Project. MVP and its contractors will work closely with
29 affected emergency response and jurisdictional agencies regarding fire control and
30 management. For safety reasons, prescribed fires would not be recommended in the
31 general Project area during active construction periods unless they could be conducted
32 in a manner that would not pose a risk to workers' health and safety or the construction
33 area. However, no restrictions on prescribed fires are anticipated during the operational
34 phase of the Project because such fires would not be expected to adversely affect the
35 safety or reliability of the pipeline while in operation. This is because the heat generated
36 by a prescribed fire would not be intense enough to damage the portion of the Project
37 located on the JNF. All Project facilities located on the JNF would be buried, and soil has
38 been found to be an effective insulator against fire-generated heat. In one study, soil
39 temperature from intense slash pile burns reached a maximum of only about 50 degrees
40 Celsius (122 degrees Fahrenheit) at a depth of about 24 inches directly under the burn
41 pile (Massman et al. 2008), which is not intense enough to damage a buried natural-gas
42 pipeline.

43 Construction and operation of the Project could increase the risk of wildland fires on the
44 JNF, especially if Project-related activities (e.g., mowing, welding, refueling with

1 flammable liquids, and parking vehicles with hot mufflers or tailpipes on tall dry grass)
2 occur during the fire season. Even small fires created during these activities could have
3 far-reaching consequences. For example, large forest fires could occur if small/low-
4 intensity herbaceous/shrub ground fires, ignited within the herbaceous or shrub cover
5 maintained along the permanent right-of-way, utilize the dense vegetation located near
6 forest edges as a ladder, allowing access to the forest's canopy. This could trigger a high-
7 intensity crown fire in pine dominated forests that could spread to adjacent areas, away
8 from the pipeline's route. However, the pipeline's cleared right-of-way could also serve as
9 a potential fire break for large crown fires that were ignited in other areas, thereby
10 reducing the extent of a fire's spread. Also, firefighters and Forest Service employees
11 could use the cleared right-of-way to gain access to remote areas while conducting
12 prescribed fires or fire suppression activities. Therefore, the Project's right-of-way has the
13 potential to alter the frequency and extent of fires, as well as aid agencies in the
14 management of fires in the area.

15 **4.0 TRAINING**

16 Prior to the start of construction, MVP will conduct environmental and safety training for
17 MVP and contractor personnel. The training program will focus on the FERC's *Upland*
18 *Erosion Control, Revegetation, and Maintenance Plan and Wetland and Waterbody*
19 *Construction and Mitigation Procedures*; other construction, restoration, and mitigation
20 plans, including this Fire Plan; and applicable permit conditions. In addition, MVP will
21 provide large-group training sessions before each work crew begins construction with
22 periodic follow-up training for groups of newly assigned personnel.

23 Training for fire suppression and response will include:

- 24 • the chain of command and fire reporting process;
- 25 • emergency contacts and numbers;
- 26 • basic fire prevention behavior controls;
- 27 • basic uses of hand tools, water backpacks, and other fire suppression equipment;
- 28 • fire suppression procedures and precautions; and
- 29 • emergency response and evacuation procedures.

30 Contractor Safe Work Rules will also provide a general overview of specific MVP policies
31 and procedures and highlights of relevant Occupational Safety and Health Administration
32 (OSHA) standards for General Industry and Construction. This document does not
33 include all of the standards or procedures that may be applicable to a job or task, nor is it
34 inclusive of all of the information that may be necessary to be in compliance.

35 Fire prevention is extremely important at MVP. Aside from natural gas, there are
36 additional fire hazards posed by hydrocarbons, liquids, crude oil, and condensate. Also,
37 there may be flammable compressed gases and ordinary combustibles depending on the
38 work site and the jobs being performed. Contractors must comply with OSHA 29 Code of
39 Federal Regulations (CFR) § 1910.39, Fire Prevention and Suppression Plan, and
40 1926.151, Fire Prevention. Contractors must take appropriate steps and preventive

1 measures to minimize the potential for a fire. These steps include, but are not limited to,
2 the following:

- 3 • only smoke in designated areas;
- 4 • do not allow trash or flammable materials to accumulate;
- 5 • identify and protect or eliminate potential sources of fuel, if possible;
- 6 • recognize and eliminate potential ignition sources, including static electricity;
- 7 • keep flammable liquids in approved, self-closing containers;
- 8 • learn the location of firefighting equipment, emergency shutdowns, and alarms;
- 9 • equip each piece of construction equipment with a fire extinguisher; and
- 10 • ensure that all inspectors and managers on site have fire extinguishers with their
11 vehicles.

12 **5.0 COORDINATION**

13 All MVP personnel, including contractors, will be responsible for complying with applicable
14 laws and regulations for fire prevention and suppression as well as the measures
15 described in this Fire Plan. MVP and its contractors will be responsible for fire prevention
16 during construction. MVP, along with the appropriate emergency response or
17 jurisdictional agencies, will be responsible for fire suppression and investigation. USFS
18 personnel will assume responsibility for fire suppression on National Forest System (NFS)
19 lands as soon as they arrive on the scene of the incident.

20 Interagency coordination of wildfire management in the southeastern United States is
21 overseen by the Southern Area Coordination Group (SACG), which includes
22 representation from federal land-managing agencies and state/commonwealth forestry
23 agencies. The SACG and an adjunct organization, the Southern Area Coordination
24 Center (SACC), include Virginia. Virginia also has a center for coordination of wildfire
25 management. Interagency coordination of wildfire management in the northeastern
26 United States is overseen by the Eastern Area Coordination Group (EACG), which
27 includes representation from federal land-managing agencies and state/commonwealth
28 forestry agencies. The EACG and an adjunct organization, the Eastern Area
29 Coordination Center, encompass West Virginia. Virginia and West Virginia both have
30 fire prevention and suppression laws, regulations, and programs. Responsible
31 agencies include the West Virginia Division of Forestry and Virginia Department of
32 Forestry. Each of these agencies participates in the appropriate SACG and EACG for
33 coordination of wildfire management. When a fire is initially reported, local and partner
34 firefighting agencies initially respond to the emergency. A local agency can ask for
35 support from the appropriate state/commonwealth or a regional coordination center if a
36 fire could or does exceed the response capabilities of the local agency. The
37 state/commonwealth or regional coordination center may in turn request support from
38 the National Interagency Coordination Center if a regional center exhausts its fire
39 suppression resources. During a fire emergency, coordination is implemented through
40 the Incident Command System (ICS), which is part of the National Incident
41 Management System (NIMS). ICS is a standard incident management system used by

1 firefighters and emergency medical teams to establish an organizational structure for
2 management. A chain of command initially is established by the local response agencies
3 to direct the response. As an incident progresses, personnel with higher authority and
4 training assume responsibility for directing the response. ICS and NIMS provide a
5 framework that assists agencies, non-governmental organizations, and the private sector
6 in preventing, responding to, and mitigating the effects of incidents and ensuring an
7 appropriate response based on the capabilities of response agencies.

8 **5.1 Responsibilities**

9 The construction contractors working on the Project will be required to implement the
10 provisions of this Fire Plan. Additionally, each contractor will be required to prepare and
11 implement an individual fire control plan, which will identify responsibilities and describe
12 actions to be implemented by the contractor in the event of an inadvertent fire. Copies
13 of each fire control plan will be appended to this Fire Plan and provided to the USFS for
14 its review. The key persons responsible for fire prevention and suppression during
15 construction of the Project are Chief Inspectors, Spread Superintendents, Field Safety
16 Officers (FSOs), Facility Superintendents, Environmental Inspectors (EIs), and
17 Authorized Officers (AOs). Contact information for these persons will be appended to
18 the “issued-for-construction” Fire Plan prior to the start of construction. At a minimum,
19 each construction spread for the pipeline and each aboveground facility site will have one
20 FSO trained in accordance with National Fire Protection Standards 1521, Chapter 4,
21 Responsibilities for a Health and Safety Officer.

22 **5.2 Construction Contractor’s Chief Inspector**

23 The Chief Inspector will be responsible for oversight of all activities along the pipeline,
24 including fire prevention and suppression.

25 **5.3 Construction Contractor’s Spread Superintendents**

26 Spread Superintendents will be responsible for general construction operations
27 associated with their individual spreads including compliance with this Fire Plan. Spread
28 Superintendents will be in communication with Chief Inspectors, FSOs, EIs, AOs, and
29 local emergency response, as necessary, to ensure that construction personnel are
30 aware of fire hazards and prevention methods. Spread Superintendents will coordinate
31 with Federal, State/Commonwealth, and local emergency responders during periods
32 of high or severe fire conditions to ensure that appropriate preventive measures are
33 in place during construction. Spread Superintendents also will be responsible for:

- 34 • monitoring construction areas to identify fire hazards and risks;
- 35 • developing and implementing fire protection strategies;
- 36 • ensuring adequate firefighting equipment is deployed to high-risk areas and that
37 equipment is visible and accessible;
- 38 • ensuring that all firefighting equipment is inspected on a regular basis and
39 maintained in good condition; and
- 40 • reporting all fire starts within or near the vicinity of the construction area, regardless
41 of the source, to the Duty Office via the Virginia Interagency Coordination Center.

1 **5.4 Construction Contractor's Field Safety Officers**

2 The FSOs will be responsible for managing on-site fire suppression documentation,
3 ensuring that fire suppression equipment is available and maintained, ensuring that
4 construction personnel are trained to use equipment properly, and communicating fire
5 hazards and threat levels to construction personnel. Additional responsibilities of the
6 FSOs include:

- 7 • reporting all uncontrolled fires within or in the vicinity of the construction area,
8 regardless of source, to the Spread Superintendent, emergency responders, and
9 nearest fire dispatch;
- 10 • conducting weekly inspection of tools, equipment, personal protective equipment,
11 and first aid kits;
- 12 • developing and maintaining a register of emergency equipment;
- 13 • conducting weekly inspections of flammable materials;
- 14 • posting "No Smoking" and "Designated Smoking Area" signs and fire rules at
15 appropriate locations within the construction area;
- 16 • providing initial response support in the event of a fire and supervising fire
17 suppression activities until relieved;
- 18 • providing and gaining approval of site-specific burn and smoke management
19 plans for pre-planned controlled fires that will be implemented in accordance with
20 federal, state/commonwealth, and local requirements;
- 21 • providing written burning and blasting schedules, as required, to the appropriate
22 federal, state/commonwealth, and local fire control jurisdiction;
- 23 • monitoring construction areas where activities may present safety issues, such as
24 blasting;
- 25 • complying with regulatory requirements in the storage and handling of flammable
26 substances and maintaining a registry of flammable substances;
- 27 • establishing facilities for on-site chemical management and maintaining Safety
28 Data Sheets (formally known as Material Safety Data Sheets) for flammable
29 materials;
- 30 • establishing controls that minimize exposure to flammable materials;
- 31 • ensuring that flammable substances are removed from the construction area
32 when not in use or when the location is unattended;
- 33 • training and instructing workers in the use, handling, and storage of flammable
34 materials;
- 35 • ensuring that construction personnel have been trained in the requirements of this
36 Fire Plan; and
- 37 • monitoring compliance with applicable federal, state/commonwealth, and local
38 laws, ordinances, and regulations regarding fire prevention and suppression.

5.5 MVP's and Construction Contractor's 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.

5.6 Agencies' Authorized Officers (AO)

AOs are representatives from federal land-managing or other agencies who supply information or provide direction regarding potential hazard conditions or changes in prevention methods. AOs may include Interagency Dispatch Centers or staff from land-managing agencies; for the USFS, this will be the Duty Officer for the USFS. AOs 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 at the request of the Spread Superintendent. 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.

6.0 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. 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.

7.0 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

1 authority may modify or change requirements based on changes in fire restriction
2 notices or localized hazards or risks. Standard practice Industrial Fire Protection Levels
3 are:

- 4 • Closed Season, when fire season requirements are in effect;
- 5 • Partial Shutdown, which prohibits activities except as indicated by the
6 State/Commonwealth; and
- 7 • General Shutdown, when all operations are prohibited.

8 For federal Lands, fire danger ratings and associated precautions relevant to the Project
9 include:

- 10 • No Fire Restrictions – normal fire precautions.
- 11 • “Planning Levels 2 or 3” Fire Restrictions – normal fire precautions, except that
12 designated smoking areas and permits for burning are required.
- 13 • “Planning Level 4 or 5” Red Flag Warning – special fire precautions including:
 - 14 – Extra precautions are required such as designating a fire watch, using a spark
15 shield, or wetting work areas down prior to active construction.
 - 16 – Machine treatment of slash, skidding, yarding, blasting, welding, metal
17 cutting, and offloading are subject to land-managing agency requirements.
 - 18 – No slash burning is allowed.
 - 19 – Power saws must be shut down from 1:00 p.m. to 8:00 p.m. local time.
 - 20 – Hauling trucking must stay on the right-of-way or surfaced roads after
21 6:00 p.m. local time.
 - 22 – Additional personnel, equipment, and prevention measures are required.
- 23 • “Planning Level 5” Fire Restrictions – special fire precautions including:
 - 24 – All restrictions listed above.
 - 25 – Shutdown of all construction activities except operations on soil or graded
26 areas, watering, grading, trench excavation, padding, backfilling, and clean-
27 up.
 - 28 – Activities such as blasting and welding require an exemption from the AO
29 unless these activities are completed on the graded portions of the
30 right-of-way.

31 State/Commonwealth and local fire agencies may authorize their own restrictions within
32 jurisdictions for private lands. Requirements identified in agency-issued fire restrictions
33 will be followed at all times.

34 The FSOs will contact the appropriate federal, state/commonwealth, or local fire
35 management office to obtain information on fire danger ratings. Contacts will be daily
36 when conditions are favorable for fires and weekly at other times. The FSOs will
37 communicate the fire danger ratings to the Chief Inspector, Spread Superintendents,
38 Facility Superintendents, Els, and construction crews.

1 **8.0 FIRE PREVENTION**

2 **8.1 Blasting**

3 Procedures for blasting are discussed in MVP's *Blasting Plan*. Additional measures to be
4 implemented in blasting areas are described below. When fire danger is high, a two-
5 person fire watch will patrol the blast area for a period of one hour after the completion
6 of blasting. If blasting occurs when the fire danger rating is "Planning Level 2 or 3," an
7 FSO will be on site during the operation and remain on site for one hour after the
8 completion of blasting. At least one Size 0 or larger shovel and one water-filled backpack
9 pump or fire extinguisher will be on site. In addition, a fire watch will be assigned to
10 each crew utilizing blasting equipment. When the fire danger rating is "Planning Level 4
11 or 5" or "Planning Level 5," blasting will be prohibited unless an exemption is granted by
12 the local fire authority. If an exemption is granted, additional fire prevention equipment
13 and personnel will be on site prior to blasting. Equipment may include water trucks,
14 fire tankers, shovels, backpack pumps, bulldozers, etc. A fire watch will remain on
15 site for at least two hours after the completion of blasting activities.

16 **8.2 Welding**

17 During closed season, when fire season requirements are in effect, welding, cutting, or
18 drilling of metal components of the Project will require the approval of the Spread
19 Superintendent and the Chief Inspector. In areas where approval has been granted,
20 vegetation will be cleared at a minimum diameter of 30 feet around the center of the work
21 area unless the area has been watered to eliminate the fire danger. Each welding crew
22 will be outfitted with at least one Size 0 or larger shovel, one water-filled backpack
23 pump, and one five-pound dry powder ABC fire extinguisher.

24 When the fire danger rating is "Planning Level 2 or 3," a fire watch will be assigned to
25 each crew utilizing cutting and welding equipment. The fire watch will remain on site
26 for one hour after the completion of welding activities.

27 When the fire danger rating is "Planning Level 4 or 5," an exemption by the AO will
28 be required prior to welding activities unless the activities are performed within the
29 graded portions of the right-of-way or other work areas. If an exemption is granted, all
30 "Planning Level 2 or 3" measures will be implemented. In addition, a water tanker and
31 bulldozer will be required to be on site during welding operations, and a fire watch will
32 remain on site for at least two hours after the completion of welding activities.

33 When the fire danger rating is "Planning Level 5," welding activities will require
34 approval from the AO. If an approval is granted, all "Planning Level 2 or 3" and "Planning
35 Level 4 or 5" measures will be implemented. Fire restriction measures also apply to
36 welding operations performed for equipment maintenance. All welding activities require a
37 permit from the jurisdictional agency as per 29 CFR Part 1910 Subpart Q (welding) and
38 29 CFR Part 1910 Subpart I (personal protective equipment).

39 **8.3 Equipment**

40 The construction contractor will develop a list of equipment to be used during construction.
41 Equipment used in the construction area may be inspected by the AO or other third-party

1 compliance monitor prior to use on the Project. The equipment may be used only while in
2 good operating order.

3 **8.3.1 Fire Extinguishers**

4 The FSAs will inspect fire extinguishers on a monthly basis to verify that:

- 5 • each extinguisher is in its designated place, clearly visible, and not blocked by
6 equipment or other objects that could interfere with access to the fire extinguisher
7 during an emergency;
- 8 • the nameplate with operating instructions is legible and facing outwards;
- 9 • the pressure gauge is showing that the extinguisher is fully charged;
- 10 • the pin and tamper seal are intact; and
- 11 • the extinguisher is in good condition, showing no signs of physical damage,
12 corrosion or leakage.

13 The FSO performing the monthly inspection will initial and date each extinguisher
14 inspection tag. Defective units will be taken out of service and replaced immediately.
15 Fire extinguishers will be used in accordance with 29 CFR § 1910.157. Use of fire
16 extinguishers by construction personnel to suppress fires will only be undertaken if:

- 17 • the fire is small and is not spreading to other areas;
- 18 • escaping the area is possible;
- 19 • the fire extinguisher is in working condition, and the individual understands how to
20 use it; and
- 21 • the fire extinguisher has been professionally inspected and tagged annually.

22 **8.3.2 Spark Arrestors**

23 Spark arresters used for portable equipment, such as chainsaws, will be in good working
24 condition. Light trucks and cars with factory-installed or equivalent mufflers, in good
25 condition, may be used on roads where the roadway is cleared of vegetation. Vehicles
26 equipped with catalytic converters, modern diesel engines with “regeneration systems,”
27 or diesel particulate filters are potential fire hazards. These vehicles will be inspected
28 and cleaned, as necessary, and parked on areas cleared of vegetation. All vehicles
29 operating in vegetation-covered areas will maintain clean and clear undercarriage and
30 exhaust systems, with no chaff, grass, or brush lodged in the exhaust system and skid
31 plates. Cross-country driving outside designated work areas will be prohibited.

32 **8.3.3 Equipment Parking and Storage**

33 Equipment parking areas and small stationary engine sites will be cleared of all
34 extraneous flammable materials. Gas and oil storage areas will be cleared of extraneous
35 flammable material, and “No Smoking” signs will be posted within these areas. All used
36 and discarded oil, oil filters, oily rags, or other waste will be disposed of in approved and
37 marked containers. Containers will be stored in approved locations and removed from
38 the site by licensed contractors or approved personnel and disposed of or recycled

1 at approved facilities. Glass containers will not be used to hold gasoline or other flammable
2 materials.

3 **8.3.4 Power Saws**

4 All gasoline-powered saws will be provided with approved spark arresters/mufflers and
5 maintained in good operating condition. Chainsaw operation will comply with the following:

- 6 • the arrester/muffler will contain a 0.023-inch mesh, stainless-steel screen;
- 7 • chainsaw operators will have available either (1) a fire extinguisher or (2) water
8 backpack and shovel;
- 9 • chainsaws will be moved at least 10 feet from the place of fueling before starting;
10 and
- 11 • chainsaw fuel and oil will be carried in safety cans designed for that purpose.

12 **8.4 Warning Devices**

13 Highway flares or other devices with open flames will not be allowed in the construction
14 area because of the danger for fire. Contractors will only use electric or battery-
15 operated warning devices within the construction area. These detectors will provide a
16 distinctive and recognizable signal to ensure timely evacuation from the area of fire or
17 to perform actions designated by this plan or by the FSO. The FSO will test smoke
18 detectors to ensure their safe operation.

19 **8.5 Warming and Cooking Fires**

20 Warming and cooking fires will be prohibited on the right-of-way.

21 **8.6 Smoking**

22 Smoking is allowed only in areas designated by the FSO. Smoking signs visible to all
23 personnel will be posted at designated areas. The supervisory personnel will be
24 responsible for enforcing smoking restrictions. "No Smoking" signs will be posted in all
25 refueling areas and in areas where flammable materials are used, stored, or discarded.

26 **8.7 Refueling**

27 All fuel trucks will be equipped with a 35-pound minimum ABC fire extinguisher. Storage
28 areas will be cleared of all extraneous flammable materials. All discarded oil, oil filters,
29 oily rags, or other potentially flammable wastes will be disposed of or as described in
30 Section 8.3.3 above. Only approved and properly maintained containers will be used to
31 store or transport flammable liquids.

32 **8.8 Burning**

33 MVP does not anticipate burning on the National Forest; however, if necessary or
34 requested by the JNF, prior to burning brush, MVP will complete a burn plan and submit
35 it to the Duty Officer for review and approval. In addition, MVP will apply for all applicable
36 permits from the proper agencies and adhere to all local ordinances. Notifications will be
37 given to local fire departments about the locations and durations that burning activities

1 will be taking place. All burning activities will be supervised by a qualified fire watch
2 and equipped with a fire extinguisher and other applicable suppression equipment and
3 materials such as sand or water. The fire watch will monitor all burning activities until all
4 fire or smoldering debris is extinguished. All debris will be extinguished prior to leaving
5 the work area each day. All brush that will be burned will be started using a propane
6 torch only. There will not be any additives used to enhance the start of the fire or to
7 maintain the fire.

8 **9.0 FIRE AND EMERGENCY RESPONSE EQUIPMENT**

9 **9.1 Construction Vehicles**

10 All foreman vehicles and crew buses assigned to the construction area will be
11 equipped with one 10-pound ABC fire extinguisher, one shovel, and an operable
12 backpack water pump of four-gallon capacity. One water truck per construction spread
13 during blasting “red flag warnings” and a fire danger rating of “Planning Level 4 or 5” will
14 be outfitted with a pressure pump, adjustable nozzle, threaded rubber-lined hose with
15 a minimum of 300 feet of 1½-inch cotton jacket, and have a minimum water storage
16 capacity of 1,500 gallons. Water trucks on the right-of-way will be able to help with
17 wildfire fighting in the vicinity of the Project. The construction companies use water trucks
18 that typically have a 4,000-gallon capacity and 150 feet of 1½-inch water hose that would
19 support fire suppression activities. Many of these vehicles have water cannons mounted
20 on the roof. All vehicles and auxiliary equipment will be equipped with properly
21 functioning and baffled exhaust systems.

22 **9.1 Fire-Fighting Tools**

23 At least three 10-person tool caches will be maintained per spread. One cache will be
24 placed in an EI’s vehicle. The second cache will be located with the Spread
25 Superintendent or Facility Superintendent. The third cache will be assigned to the FSO.
26 Toolboxes will be red in color, sealed with metal box-car-type seals, and labeled “For
27 Fire Fighting Only.” The tool caches will contain the following:

- 28 • 10 electric headlamps with batteries;
- 29 • one first aid kit, 10-person unit;
- 30 • two knapsacks;
- 31 • five pulaskis with sheaths;
- 32 • five long-handled, round-point, size 0 shovels;
- 33 • five fire rakes; and
- 34 • 10 one-gallon canteens, filled with water.

35 The Spread Superintendent will expedite delivery of the tool caches upon request of the
36 FSO or AO or when alerted to an emergency requiring the tools. In case a tool cache or
37 first aid kit has been used, it will be immediately replenished. All replenished tool caches
38 or first aid boxes will be inspected by the FSO. These will then be resealed before being
39 returned to the construction site.

1 **10.0 EVACUATION**

2 During an emergency evacuation, MVP will depend upon response teams, consisting of
3 trained personnel, to attend to injured and/or trapped victims. Construction workers
4 providing medical attention will not help beyond their capability. MVP will establish a
5 site-specific emergency communications system utilizing cell phones, hand-held
6 radios, and/or satellite phones to notify workers of emergencies and contact local law
7 enforcement and fire departments. If an immediate evacuation of a construction work
8 area is required, the Chief Inspector, Spread Supervisor, FSO, EI, or other supervisor
9 will direct the evacuation via the nearest escape route to a “safe area.” Otherwise,
10 evacuations will be directed by local emergency responders. Designated evacuation
11 wardens will be assigned to each spread or station to account for all personnel present
12 before, during, and after the evacuation. Construction workers will not return to an
13 evacuated work area until emergency responders have deemed it safe and the Chief
14 Inspector, Spread Supervisor, or Facility Superintendent has given an “all clear” signal.

15 **11.0 LITERATURE CITED**

- 16 Massman, W.J., J.M. Frank, and N.B. Reisch. 2008. Long-Term Impacts of Prescribed
17 Burns on Soil Thermal Conductivity and Soil Heating at a Colorado Rocky
18 Mountain Site: a data/model fusion study. *International Journal of Wildland Fire*
19 17:131–146.
- 20 USFS (U.S. Department of Agriculture, Forest Service). 2004. Land and Resource
21 Management Plan Jefferson National Forest. Management Bulletin R8-MB 1154.
22 January 2004.

**ATTACHMENT W-1
STANDARDS AND GUIDELINES**

1 The 2004 *Revised Land and Resource Management Plan* contains the following
2 applicable fire management standards and guidelines:

- 3 • FW-134: Ensure firefighter and public safety as the first priority. Secondly, protect
4 property and natural and cultural resources based on the relative values to be
5 protected.
- 6 • FW-135: Suppress human-caused wildland fires (either accidental or arson).
- 7 • FW-136: The full range of suppression tactics (from full suppression to monitoring)
8 may be used, consistent with forest and management prescription direction.
- 9 • FW-137: Suppress wildland fires at minimum cost, considering firefighter and
10 public safety, benefits, and values to be protected, consistent with resource
11 objectives.
- 12 • FW-138: Where needed to prevent erosion, firelines are revegetated and water-
13 barred promptly after the fire is controlled.
- 14 • FW-139: The management of lightning caused wildland fires is allowed when the
15 Fire Management Plan is completed and a Wildland Fire Implementation Plan is
16 approved for the specific wildland fire.
- 17 • FW-140: Lightning-caused fires are allowed to play their natural ecological role as
18 long as they occur within prescribed weather and fuel conditions and do not pose
19 unmitigated threats to life and/or private property, particularly to that property within
20 the wildland/urban interface zone.
- 21 • FW-141: Use existing barriers, e.g. streams, lakes, wetlands, roads, and trails,
22 whenever possible to reduce the need for fireline construction and to minimize
23 resource impacts.
- 24 • FW-142: Best available smoke management practices will be used to minimize the
25 adverse effects on public health, public safety, and visibility in Class I areas (James
26 River Face Wilderness and Shenandoah National Park) from prescribed fire.
- 27 • FW-143: Conduct prescribed burning only if meteorological conditions ensure that
28 smoke will be carried away from areas with a high forecasted Air Quality Index
29 (Orange or higher).
- 30 • FW-144: All managed burns will comply with Smoke Management Programs for
31 Virginia and West Virginia, when these are implemented. (Per EPA's "Interim Air
32 Quality Policy on Wildland and Prescribed Fires," which was developed with
33 involvement of the USFS).
- 34 • FW-145: Identify caves or abandoned mines that contain significant populations of
35 bats as smoke-sensitive targets. Avoid smoke entering these caves or mines when
36 bats are present.
- 37 • FW-146: Do not conduct prescribed fires when the Keetch-Byram Drought Code
38 (Cumulative Severity Index) is 200 points above the average for the relevant time
39 of the year.
- 40 • FW-150: Only mowing, chopping, or shearing treatments are used on sustained
41 slopes over 15 percent. No heavy equipment is used for mechanical fuels

- 1 treatments on sustained slopes over 35 percent. Mechanical fuels treatments are
- 2 prohibited on sustained slopes over 20 percent when soils have a high erosion
- 3 hazard or are failure-prone.

APPENDIX X
Hazardous Materials Management Plan

Appendix X

Draft

Hazardous Materials Management Plan

Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1

2 **1.0 INTRODUCTION..... X-1**

3 **2.0 PLAN OUTLINE..... X-2**

4 **3.0 REGULATORY FRAMEWORK..... X-3**

5 3.1 Occupational Safety and Health Administration (OSHA) (29 CFR 1900-1910) X-3

6 3.2 Clean Water Act (40 CFR 100-149) X-3

7 3.3 Clean Air Act (40 CFR 50-99) X-3

8 3.4 Toxic Substances Control Act (TSCA) (40 CFR 700-799) X-4

9 3.5 CERCLA/Superfund Amendments and Reauthorization Act (40 CFR 300-399)

10 X-4

11 3.6 Solid and Hazardous Wastes (40 CFR 239-299) X-4

12 3.7 Hazardous Materials Transportation Act (49 CFR 100-199) X-4

13 3.8 West Virginia–Specific Regulations (for Weston Gauley Turnpike) X-4

14 3.9 Virginia-Specific Regulations..... X-5

15 **4.0 FINAL HAZARDOUS MATERIALS MANAGEMENT PLAN DEVELOPMENT AND**

16 **IMPLEMENTATION..... X-6**

17 4.1 Certifications, Amendments, and Designation of Coordinator/ Responsible

18 Person X-6

19 4.1.1 Certifications X-6

20 4.1.2 Amendments X-6

21 4.1.3 Coordinator/Responsible Person X-7

22 4.2 Facilities Description and Inventory of Materials X-7

23 4.2.1 Site Maps X-7

24 4.2.2 Inventory X-7

25 **5.0 HAZARDOUS MATERIAL AND WASTE MANAGEMENT..... X-8**

26 5.1 Overview of Hazardous Materials Proposed for Use X-8

27 5.2 Refueling and Servicing X-8

28 5.3 Transportation of Hazardous Materials X-9

29 5.4 Storage of Hazardous Materials..... X-9

30 5.4.1 Physical Storage Requirements..... X-9

31 5.4.2 Container Labeling Requirements..... X-10

32 5.5 Disposal of Hazardous Wastes X-11

33 5.5.1 Contaminated Containers X-11

34 5.5.2 Waste Oil Filters..... X-12

35 5.5.3 Used Lubricating Oil..... X-12

LIST OF FIGURES

36

37

38 **Figure 5-1. Sample Hazardous Waste Label for On-Site Storage..... X-11**

39

LIST OF ATTACHMENTS

40

41 **Attachment X-1 Sample Hazardous Materials Management Forms**

1 **Draft**

2 **Mountain Valley Pipeline Project**

3 **Hazardous Materials Management Plan**

4 **1.0 INTRODUCTION**

5 Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners,
6 LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL
7 Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a
8 Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy
9 Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act
10 authorizing it to construct and operate the proposed Mountain Valley Pipeline Project
11 (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an
12 approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-
13 effective access to the growing demand for natural gas for use by local distribution
14 companies, industrial users, and power generation in the Mid-Atlantic and southeastern
15 markets, as well as potential markets in the Appalachian region. Construction is
16 anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on
17 National Forest System lands will occur in 2018.

18 The proposed pipeline will extend from the existing Equitrans, L.P. transmission system
19 and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas
20 Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania
21 County, Virginia. In addition to the pipeline, the Project will include approximately 171,600
22 horsepower of compression at three compressor stations currently planned along the
23 route, as well as measurement, regulation, and other ancillary facilities required for the
24 safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0
25 million dekatherms per day of natural gas.

26 A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest
27 (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery
28 counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service
29 (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will
30 cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in
31 Braxton County, West Virginia, which is administered by the U.S. Army Corps of
32 Engineers (USACE). Approval to cross land managed by two or more federal agencies is
33 the responsibility of the U.S. Department of the Interior, Bureau of Land Management
34 (BLM) through issuance of a Right-of-Way Grant. Project-wide construction
35 environmental compliance will be the responsibility of the FERC. The USFS and USACE
36 will also ensure compliance across lands managed or administered by those agencies.
37 Because the majority of federal lands crossed are managed by the USFS, this plan
38 focuses on the JNF, noting any additional or different requirements that are specific to the
39 crossing of the Weston and Gauley Turnpike.

40 The USFS will be responsible for enforcement of the terms and conditions of the BLM's
41 right-of-way Grant on National Forest System lands during the term of the right-of-way
42 Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF

1 portion of this project by the USFS Project Manager and the Authorized Officer's
2 designated compliance monitors. USFS will have stop work authority per terms outlined
3 in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work
4 conditions are encountered during construction.

5 The Project has potential to impact sensitive environmental resources and, as a result,
6 environmental protection measures have been developed to minimize potential impacts
7 on these resources and will be applied, as applicable, to the Project.

8 **2.0 PLAN OUTLINE**

9 Implementation of the measures outlined in this plan will reduce the risks associated with
10 the use, storage, transportation, production, and disposal of hazardous materials
11 (including hazardous substances and wastes) on the JNF. This document provides a
12 template for the development of a detailed Final Hazardous Materials Management Plan
13 to be developed by the construction contractor for the portion of the Project that crosses
14 the JNF.

15 In conjunction with the Hazardous Materials Management Plan, a Final Spill Prevention,
16 Containment, and Countermeasures (SPCC) Plan will be developed to identify specific
17 legal requirements and practices to achieve identified goals. Refer to Appendix D of the
18 POD (i.e., the Draft SPCC Plan) for more information.

19 The term "hazardous material," as presented in this plan, will refer to hazardous
20 substances, hazardous wastes, marine pollutants, elevated temperature materials, and
21 materials designated as hazardous for transportation as defined in 49 Code of Federal
22 Regulations (CFR) § 171.8.

23 The Final Hazardous Materials Management Plan will clearly identify which legal
24 requirements apply to specific types of hazardous materials and will identify best
25 management practices (BMPs) that, although not legally required, will be followed to
26 reduce risks associated with hazardous materials. Nothing in this draft Plan or in the Final
27 Hazardous Materials Management Plan (to be developed by the construction contractor)
28 shall be construed as an admission regarding the legal applicability of requirements or
29 practices to any particular class of hazardous material.

30 The objectives of this plan are to: 1) minimize the potential for a spill of fuel or other
31 hazardous material to occur on the JNF; 2) contain any spill to the smallest possible area;
32 3) protect environmentally sensitive areas; and 4) provide a template for the development
33 of a detailed Final Hazardous Materials Management Plan (to be developed by the
34 construction contractor). This draft plan includes the following components:

- 35 • A list of relevant regulations;
- 36 • A framework for developing the Final Hazardous Materials Management Plan;
- 37 • Spill control, response, and cleanup methods;
- 38 • An overview of the notification and documentation procedures to be followed in
39 the event of a spill; and
- 40 • Operation and maintenance considerations.

1 In addition, sample hazardous materials management forms (which may be used as
2 examples by the construction contractor) are provided in Attachment L-1 of this draft plan.

3 In general, hazardous materials, hazardous wastes, and cleanup equipment will be stored
4 in approved containers until they can be properly transported and disposed of at an
5 approved treatment, storage, and disposal facility. Persons responsible for handling or
6 transporting hazardous materials for the Project will be trained in the proper
7 use/management of the materials and should be familiar with all applicable laws, policies,
8 and procedures, as well as BMPs and Project-specific Environmental Protection
9 Measures (EPMs) related to such handling or transportation.

10 It is the responsibility of the construction contractor to maintain records of proper
11 training/certification for any individual(s) who may potentially handle hazardous materials
12 for the Project. MVP reserves the right to audit any contractors and/or subcontractors to
13 ensure compliance with these requirements.

14 **3.0 REGULATORY FRAMEWORK**

15 Major legislation pertaining to hazardous materials includes the Comprehensive
16 Environmental Response, Compensation, and Liability Act (CERCLA), Resource
17 Conservation and Recovery Act, Clean Air Act, and Clean Water Act.

18 Numerous other federal, state, and local regulations also govern the use, storage,
19 transportation, production, and disposal of hazardous materials. Some of the key
20 requirements of these laws are found in the following regulations.

21 **3.1 Occupational Safety and Health Administration (OSHA) Regulations**

- 22 • 29 CFR Parts 1900-1910 OSHA Regulations
- 23 • 29 CFR Part 1904 Recording and Reporting Occupational Injuries and Illness
- 24 • 29 CFR § 1910.120 Hazard Communication
- 25 • 29 CFR Part 1926 Safety and Health Regulations for Construction

26 **3.2 Clean Water Act and Safe Drinking Water Act Regulations**

- 27 • 40 CFR Part 110 Discharges of Oil
- 28 • 40 CFR Part 112 Oil Pollution Prevention
- 29 • 40 CFR Part 116 Designation of Hazardous Substances
- 30 • 40 CFR Part 117 Determination of Reportable Quantities for Hazardous
31 Substances
- 32 • 40 CFR Part 129 Toxic Pollutant Effluent Standards
- 33 • 40 CFR Part 131 Water Quality Standards
- 34 • 40 CFR Parts 141-149 Safe Drinking Water Act Regulations

35 **3.3 Clean Air Act Regulations**

- 36 • 40 CFR Part 50 National Ambient Air Quality Standards

- 1 • 40 CFR Parts 61-63 National Emissions Standards for Hazardous Air Pollutants
- 2 **3.4 Toxic Substances Control Act (TSCA) Regulations**
- 3 • 40 CFR Part 710 TSCA Chemical Inventory Regulations
- 4 • 40 CFR Part 761 PCBs Manufacturing, Processing, Distribution in Commerce, and
- 5 Use Prohibitions
- 6 **3.5 CERCLA/Superfund Amendments and Reauthorization Act**
- 7 **Regulations**
- 8 • 40 CFR Part 300 National Oil and Hazardous Substances Pollution Contingency
- 9 Plan
- 10 • 40 CFR Part 302 Designation, Reportable Quantities, and Notification
- 11 • 40 CFR Part 355 Emergency Planning and Notification
- 12 • 40 CFR Part 370 Hazardous Chemical Reporting: Community Right-to-Know
- 13 • 40 CFR Part 372 Toxic Chemical Release Reporting: Community Right-to-Know
- 14 **3.6 Solid and Hazardous Wastes Regulations**
- 15 • 40 CFR Part 243 Guidelines for the Storage and Collection of Residential,
- 16 Commercial, and Institutional Solid Waste
- 17 • 40 CFR Part 260 Hazardous Waste Management System: General
- 18 • 40 CFR Part 261 Identification and Listing of Hazardous Waste
- 19 • 40 CFR Part 262 Standards Applicable to Generators of Hazardous Waste
- 20 • 40 CFR Part 263 Standards Applicable to Transporters of Hazardous Waste
- 21 • 40 CFR Part 273 Standards for Universal Waste Management
- 22 • 40 CFR Part 279 Standards for the Management of Used Oil
- 23 **3.7 Hazardous Materials Transportation Act Regulations**
- 24 • 49 CFR Part 130 Oil Spill Prevention and Response Plans
- 25 • 49 CFR Part 171 General Information, Regulations, and Definitions
- 26 • 49 CFR Part 172 Hazardous Materials Table, Special Provisions, Hazardous
- 27 Materials Communications, Emergency Response Information, Training
- 28 Requirements, and Security Plans
- 29 • 49 CFR Part 177 Carriage by Public Highway
- 30 • 157 CSR Part 7 Transportation of Hazardous Wastes upon the Roads and
- 31 Highways
- 32 **3.8 West Virginia–Specific Regulations (for Weston and Gauley Turnpike)**
- 33 • West Virginia Division of Environmental Protection; Office of Waste
- 34 Management; Hazardous Waste Management Act (HWM) Regulations 33 CSR
- 35 20.1 Scope and Authority

- 1 • HWM 33 CSR 20.2: Scope and Authority Hazardous Waste Management System:
2 General.
- 3 • HWM 33 CSR 20.3: Identification & Listing of Hazardous Waste.
- 4 • HWM 33 CSR 20.4: Notification of Hazardous Waste Activity Regulations.
- 5 • HWM 33 CSR 20.5: Standards Applicable to Generators of Hazardous Waste.
- 6 • HWM 33 CSR 20.6: Standards Applicable to Transporters of Hazardous Waste.
- 7 • HWM 33 CSR 20.7: Standards for Owners & Operators of Hazardous Waste
8 Treatment, Storage, & Disposal Facilities.
- 9 • HWM Title 33 CSR 20.8: Interim Status Standards for Owners & Operators of
10 Hazardous Waste Treatment, Storage, & Disposal Facilities.
- 11 • HWM 33 CSR 20.9: Standards for the Management of Specific Hazardous Waste
12 & Specific types of Waste Management Facilities.
- 13 • HWM 33 CSR 20.10: Land Disposal Restrictions.
- 14 • HWM 33 CSR 20.11: Hazardous Waste Permit Program.
- 15 • HWM 33 CSR 20.12: Deed & Lease Disclosure; Notice in Deed to Property.
- 16 • HWM 33 CSR 20.13: Universal Waste Rule.
- 17 • HWM 33 CSR 20.14: Standards for the Management of Used Oil.
- 18 • HWM 33 CSR 20.15: Appeal Rights.

19 **3.9 Virginia-Specific Regulations**

- 20 • Virginia Administrative Code, under the Virginia Waste Management Board and
21 the Virginia Department of Environmental Quality, Virginia Hazardous Waste
22 Management Regulations (VHWMR): Chapter 11: Public Participation Guidelines
- 23 • VHWMR Chapter 15: Regulation For Dispute Resolution
- 24 • VHWMR Chapter 20: Schedule Of Fees For Hazardous Waste Facility Site
25 Certification
- 26 • VHWMR Chapter 30: Technical Assistance Fund Administrative Procedures
- 27 • VHWMR Chapter 40: Administrative Procedures For Hazardous Waste Facility
28 Site Certification
- 29 • VHWMR Chapter 50: Hazardous Waste Facility Siting Criteria
- 30 • VHWMR Chapter 60: Virginia Hazardous Waste Management Regulations
- 31 • VHWMR Chapter 81: Solid Waste Management Regulations
- 32 • VHWMR Chapter 90: Solid Waste Management Permit Action Fees And Annual
33 Fees
- 34 • VHWMR Chapter 110: Regulations Governing The Transportation Of Hazardous
35 Materials
- 36 • VHWMR Chapter 130: Solid Waste Planning And Recycling Regulations
- 37 • VHWMR Chapter 160: Voluntary Remediation Regulations

- VHWMR Chapter 190: Litter Receptacle Regulations

4.0 FINAL HAZARDOUS MATERIALS MANAGEMENT PLAN DEVELOPMENT AND IMPLEMENTATION

The following sections provide information regarding the required content of the Final Hazardous Materials Management Plan and the SPCC Plan (refer to Appendix D of the POD for more information on the SPCC Plan) per 40 CFR Part 112. The construction contractor shall provide MVP with all information requested in the forms included as Attachment X-1. In addition, the construction contractor shall complete any other required county, state, or federal forms.

4.1 Certifications, Amendments, and Designation of Coordinator/ Responsible Person

4.1.1 Certifications

The construction contractor shall certify that all of the information provided in the Hazardous Materials Management Plan is accurate and complete to the best of its knowledge. The construction contractor will also certify that it is committed to implementing the Final Hazardous Materials Management Plan as written. If an SPCC Plan is required, per 40 CFR Part 112, the construction contractor may be required to have the SPCC Plan reviewed and certified by a registered professional engineer.

4.1.2 Amendments

The construction contractor shall agree to make all necessary and appropriate amendments to the Final Hazardous Materials Management Plan and submit any and all such amendments to MVP, FERC, and the USFS within seven days of finding that an amendment is necessary.

Amendments to the Hazardous Materials Management Plan shall be necessary under any of the following circumstances:

- Applicable laws or regulations are revised.
- A 100 percent or more increase of a previously disclosed hazardous material.
- Any handling of a previously undisclosed hazardous material subject to inventory requirements.
- A change in properties of a previously disclosed hazardous material (e.g., solid to liquid).
- A change of business address, name, or ownership.
- A change in the list of emergency coordinators.
- A change in the list of emergency equipment.

The construction contractor may also be required to amend the applicable SPCC Plan, as required by the applicable regulations.

4.1.3 Coordinator/Responsible Person

The construction contractor shall identify an emergency coordinator/responsible person for hazardous materials management and emergency response. Two alternates shall also be identified. Business, residential, and mobile phone or pager numbers shall be provided for all three persons to allow for contact on a 24-hour basis. Primary and alternate emergency response coordinators shall be knowledgeable of the chemicals and processes involved in construction of the Project and will have the authority to commit construction contractor resources to implement the Hazardous Materials Management Plan. They also shall have stop-work authority in case of non-compliance or danger to human health or the environment.

4.2 Facilities Description and Inventory of Materials

4.2.1 Site Maps

The construction contractor will provide site maps or facility maps in the Final Hazardous Materials Management Plan that contain storage and safety precautions for each location containing hazardous materials and hazardous wastes. Maps shall, at a minimum, include the following information:

- Orientation and scale;
- Total land area in square feet;
- Access and egress points;
- Buildings and/or temporary trailers;
- Parking areas;
- Adjacent land uses (if business, indicate business name);
- Surrounding roads, storm drains, and waterways (including streams and wetlands);
- Locations of hazardous materials and hazardous waste storage areas;
- Underground and above-ground storage tanks;
- Containment or diversion structures (dikes, berms, retention ponds);
- Shutoff valves;
- Location of emergency response materials and equipment;
- Location of material safety data sheets (MSDS), the Hazardous Materials Management Plan, and the SPCC Plan; and
- Location of emergency assembly area.

4.2.2 Inventory

The construction contractor shall provide a complete inventory of all hazardous materials. The construction contractor shall be responsible for consulting with the relevant agencies if it handles extremely hazardous substances. All inventory forms shall be provided to MVP by the construction contractor as a part of the Final Hazardous Materials Management Plan.

1 **5.0 HAZARDOUS MATERIAL AND WASTE MANAGEMENT**

2 Construction, operation, and maintenance of the Project will require the use of certain
3 potentially hazardous materials, such as fuels, oils, explosives, and pesticides. By
4 definition, hazardous materials have the potential to pose a significant threat to human
5 health and the environment based upon their quantity, concentration, or chemical
6 composition. When stored, used, transported, and disposed of properly, as described
7 below, the risks associated with these materials can be reduced substantially.

8 **5.1 Overview of Hazardous Materials Proposed for Use**

9 Hazardous materials used during Project construction may include petroleum products
10 such as gasoline, diesel fuel, and hydraulic fluid; lubricating oils and solvents; cleansers;
11 explosives; and other substances. Some of these materials will be used in relatively large
12 quantities at material yards and, in rare instances, on the right-of-way to operate and
13 maintain equipment during construction. Explosives may be used for blasting rock where
14 needed to install the pipeline towers (refer to Appendix J, the Draft Blasting Plan).

15 Smaller quantities of other materials such as pesticides and fertilizers, paints, and
16 chemicals (e.g., sulfur hexafluoride) may be used during Project operation and
17 maintenance. Pesticides are hazardous materials and will be used according to labeling
18 (see also Appendix R, the Exotic and Invasive Species Control Plan). The construction
19 contractor will maintain an inventory of all hazardous materials used. The construction
20 contractor shall maintain copies of the required MSDS for each hazardous chemical and
21 shall ensure that copies are readily accessible during each work shift to all employees
22 when they are in their work area(s). The MSDS will provide basic emergency response
23 information for small and large releases of hazardous materials. In the case that bulk
24 hazardous materials are used, the Emergency Response Guidebook, produced by the
25 U.S. Department of Transportation (USDOT), is an acceptable reference. The
26 construction contractor should have a well-developed hazardous material program in
27 place and work to use non-hazardous substances in routine construction and
28 maintenance activities to the extent possible.

29 **5.2 Refueling and Servicing**

30 Construction vehicles (trucks, bulldozers, etc.), helicopters, and equipment (pumps,
31 generators, etc.) will be fueled and serviced in designated areas at least 100 feet from
32 the bed and bank of streams (including intermittent and perennial) and wetlands
33 (including dry or seasonal wetlands) as required by the FERC's *Wetland and Waterbody*
34 *Construction and Mitigation Procedures* (Procedures). In addition, dispersed campsites
35 and trails on the JNF will not be used to store hazardous materials or to refuel equipment.
36 Refueling locations should generally be flat to minimize the chance of a spilled substance
37 reaching a stream. In most cases, smaller rubber-tired vehicles will be refueled and
38 serviced at local gas stations or material yards. Tracked vehicles will typically be refueled
39 and serviced on site. In some cases, pickup trucks or tankers will be used to refuel and
40 service construction vehicles on the right-of-way. Every effort will be made to minimize
41 the threat of a fuel spill during refueling and servicing. Fuel/service vehicles will carry a
42 suitable absorbent material to collect approximately 20 gallons of spilled materials. In

1 addition, all vehicles will be inspected for leaks prior to being brought on site and regularly
2 throughout the construction period.

3 Washing of construction vehicles, such as concrete trucks, will be allowed only in
4 designated areas at least 100 feet from streams and wetlands (as defined above and
5 required by the FERC Procedures). Washing areas will be contained with berms/barriers
6 to prevent migration of wastewater and/or sediments into streams and waterways. Waste
7 concrete material will be removed and properly disposed of once it has hardened.
8 Additionally, all preventive measures identified in Appendix R (the Exotic and Invasive
9 Species Control Plan) will be followed.

10 **5.3 Transportation of Hazardous Materials**

11 Procedures for loading and transporting fuels and other hazardous materials will meet the
12 minimum requirements established by the USDOT, West Virginia Division of Highways
13 (under the "Transportation of Hazardous Wastes upon the Roads and Highways,"
14 157 CSR Part 7) for the Weston and Gauley Turnpike, the Virginia Department of
15 Transportation, and other pertinent regulations. Prior to transporting hazardous materials,
16 appropriate shipping papers shall be completed by the hauling company. Transportation
17 of hazardous materials will be performed by a hazardous-materials-transport firm and
18 must be conducted in accordance with applicable regulations. In addition, the construction
19 contractor will ensure all handling or packaging of hazardous materials and all paperwork
20 for transport of hazardous materials is performed by properly trained personnel in
21 accordance with USDOT and applicable state regulations. Shipping containers for
22 hazardous materials will be secured to prevent damage, vandalism, or theft during
23 shipping. All shipping containers will remain sealed during transport.

24 At all times, all hazardous materials used for the Project will be properly stored in
25 approved containers and labeled, including during transportation. Smaller containers will
26 be used on site to transport needed amounts of hazardous materials to a specific location.
27 Transfer of materials from large to small containers will be performed using appropriate
28 equipment, including pumps, hoses, and safety equipment (hand-pouring techniques will
29 not be utilized). These smaller (service) containers also will be clearly labeled. Note that
30 special provisions apply to the transportation of explosives (refer to Appendix J, the Draft
31 Blasting Plan).

32 **5.4 Storage of Hazardous Materials**

33 Hazardous materials will be stored only in designated material yards. Material yards will
34 be located away from perennial and intermittent streams and wetlands (including dry or
35 seasonal wetlands), public wells, and private wells as required by the FERC's
36 Procedures. Cleanup materials, including absorbent spill pads and plastic bags, will also
37 be stored in these areas. The construction contractor will specify the appropriate spill kit
38 containing these materials in the Final Hazardous Materials Management Plan.
39 Hazardous materials will not be stored in areas subject to flooding or inundation.

40 **5.4.1 Physical Storage Requirements**

41 **Storage Containers:** Containers holding hazardous waste or materials will be compatible
42 with the wastes or materials stored. If the container is damaged or leaks, the waste must
43 be transferred to a container in good condition. The construction contractor shall inspect

1 containers weekly at a minimum to verify the integrity of the containers and any
2 containment systems. Containers used for transportation must comply with USDOT and
3 applicable state transportation requirements.

4 **Incompatible Materials:** Materials, including hazardous wastes, will not be placed in
5 containers that previously held an incompatible waste or material.

6 **Ignitable or Reactive Materials:** Containers holding hazardous wastes or materials that
7 are reactive or may ignite must be located at least 50 feet from the material yard's property
8 line. "NO SMOKING" signs shall be conspicuously placed wherever there is a hazard from
9 ignitable or reactive material.

10 **Container Management:** Containers holding hazardous wastes will be kept closed at all
11 times, except when it is necessary to add or remove contents. Before the handling and/or
12 transportation of containers carrying hazardous wastes, the containers should be
13 inspected to ensure they are sealed such that no material spillage occurs.

14 **Secondary Containment:** Secondary containment will consist of bermed or diked areas
15 that are lined and capable of holding 110 percent of the volume of the stored material and
16 will be provided for liquid hazardous materials stored on site.

17 **Record Keeping:** The construction contractor will maintain records of stored hazardous
18 waste or materials through the reclamation period. The construction contractor will be
19 required to provide MVP with copies of sample results, shipping manifests, chain-of-
20 custody, and bills-of-lading for wastes transported for disposal upon request. The
21 documentation will also describe the type and quantity of stored waste material.

22 **Security:** Hazardous wastes and materials will be stored in secure areas to prevent
23 damage, vandalism, or theft. All storage containers will remain sealed when not in use
24 and storage areas shall be secured (gated, locked, and/or guarded) at night and/or during
25 non-construction periods.

26 **Explosives:** Storage of explosives is discussed in Appendix J (the Draft Blasting Plan).

27 **5.4.2 Container Labeling Requirements**

28 The construction contractor shall comply with the following labeling requirements for any
29 container (including tanks) used on site to store accumulated hazardous wastes. Figure
30 5-1 shows an example of a hazardous waste label for on-site storage. The containers
31 shall be labeled with the information below and as required in 40 CFR Part 262:

- 32 • The accumulation start date and/or the date the 90-day storage period began;
- 33 • The words: "Hazardous Waste";
- 34 • The composition and physical state of the waste;
- 35 • Warning words indicating the particular hazards of the waste, such as flammable,
36 corrosive, reactive or toxic; and
- 37 • The name and address of the facility that generated the waste.

HAZARDOUS WASTE
Contents: _____
Physical State (gas, liquid, solid): _____
Accumulation Start Date: _____
Hazards: _____
Name and Address of Generator: _____

Contact Person: _____
Telephone: _____
HANDLE WITH CARE!
CONTAINS HAZARDOUS OR TOXIC WASTES

1 **Figure 5-1. Sample Hazardous Waste Label for On-Site Storage**

2 **5.5 Disposal of Hazardous Wastes**

3 Hazardous wastes will be collected regularly and disposed of in accordance with all
4 applicable laws and regulations. The construction contractor shall determine details
5 regarding proper handling and disposal of hazardous waste and shall assign
6 responsibility to specific individuals prior to construction of the Project.

7 Every effort will be made to minimize the production of hazardous waste during the
8 Project, including, but not limited to, minimizing the amount of hazardous materials
9 needed for the Project; using alternative non-hazardous substances when available;
10 recycling usable material such as oils, paints, and batteries to the maximum extent; and
11 filtering and reusing solvents and thinners whenever possible.

12 Any generator of hazardous waste must apply for a U.S. Environmental Protection
13 Agency Identification (ID) Number. The ID number is needed to complete the Uniform
14 Hazardous Waste Manifest to ship wastes off site. A generator can accumulate
15 hazardous wastes on site for a period of up to 90 days without having to obtain a permit
16 as a storage facility.

17 **5.5.1 Contaminated Containers**

18 Containers that once held hazardous materials as products or held hazardous wastes
19 must be considered as potential hazardous wastes due to the possible presence of
20 residual hazardous material. Regulations specify certain requirements, listed below, for
21 the container to be handled as a non-hazardous waste.

- 22 • The containers must be empty, which means as much of the contents have been
23 removed as possible using the practices commonly employed to remove materials
24 from that type of container (e.g., pouring, pumping, and aspirating) so none will
25 pour out in any orientation.

- 1 • A container that held compressed gas is empty when the pressure in the container
2 approaches atmospheric.
- 3 • If empty containers are less than five gallons, they may be disposed of as a non-
4 hazardous solid waste or scrapped.
- 5 • If the empty containers are greater than five gallons, they must be handled in the
6 following manner: 1) returned to the vendor for reuse, 2) sent to a drum recycler
7 for reconditioning, or 3) used or recycled on site.
- 8 • All these actions must occur within one year of the container being emptied.

9 **5.5.2 Waste Oil Filters**

10 Used metal canister oil filters can be managed as non-hazardous wastes if:

- 11 • They are thoroughly drained of “free flowing” oil (oil exiting drop-by-drop is not
12 considered “free flowing”).
- 13 • The filters are accumulated, stored, and transferred in a closed, rainproof
14 container.
- 15 • The filters are transferred for the purposes of recycling.
- 16 • The filters are not terne-plated (i.e., an alloy of tin and lead).

17 Terne-plated oil filters are a hazardous waste, exhibiting the hazardous characteristic of
18 lead. Terne-plated oil filters not recycled must be managed as a hazardous waste.

19 **5.5.3 Used Lubricating Oil**

20 Lubrication oil is considered “used oil,” as defined below:

- 21 • Any oil that has been refined from crude oil and, as a result of use, has been
22 contaminated with physical or chemical impurities.
- 23 • Any oil that has been refined from crude oil and, as a consequence of extended
24 storage, spillage, or contamination with non-hazardous impurities such as dirt,
25 rags, and water, is no longer useful to the original purchaser.
- 26 • Spent lubricating fluids that have been removed from a truck, heavy equipment,
27 automobile, or bus.

28 Used oil may be a hazardous waste if:

- 29 • The concentrations of polychlorinated biphenyls exceed 50 parts per million (ppm);
- 30 • Total halogens exceed 1,000 ppm; or
- 31 • It is mixed with a hazardous waste.

32 Used oil not being burned or recycled must be managed as a hazardous waste unless it
33 is determined to be nonhazardous through laboratory analysis.

1
2
3

**ATTACHMENT X-1
SAMPLE HAZARDOUS MATERIALS
MANAGEMENT FORMS**

**CERTIFICATIONS, ACKNOWLEDGMENTS, AND DESIGNATION
OF EMERGENCY COORDINATOR**

The construction contractor responsible for managing the material yards shall complete and submit the following information:

GENERAL INFORMATION

Business Name

Facility Street Address

_____ City	_____ County	_____ Zip Code	_____ Phone
---------------	-----------------	-------------------	----------------

Mailing Address (if different)

_____ City	_____ County	_____ Zip Code	_____ Phone
---------------	-----------------	-------------------	----------------

EMERGENCY COORDINATOR

_____ Primary Emergency Coordinator	_____ Business Phone	_____ 24-hour Phone	_____ Pager/Cellular Phone
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_____ 1 st Alternate	_____ Business Phone	_____ 24-hour Phone	_____ Pager/Cellular Phone
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_____ 2 nd Alternate	_____ Business Phone	_____ 24-hour Phone	_____ Pager/Cellular Phone
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Note: Certification is only necessary if an SPCC Plan is required (see Appendix D of the Project's Plan of Development).

SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE

The construction contractor shall identify all sources of potential spills including tank overflow, rupture, or leakage. Spill Prevention, Containment, and Countermeasure information must be included for all containers with a capacity of 55 gallons or greater that contain oil including petroleum, fuel oil, sludge, oil refuse, and oil mixed with waste.

(1) Material: _____ Total Quantity: _____
Location of use: _____
Potential direction of flow: _____ Maximum rate of flow: _____
Structures of equipment to contain spills: _____

(2) Material: _____ Total Quantity: _____
Location of use: _____
Potential direction of flow: _____ Maximum rate of flow: _____
Structures of equipment to contain spills: _____

(3) Material: _____ Total Quantity: _____
Location of use: _____
Potential direction of flow: _____ Maximum rate of flow: _____
Structures of equipment to contain spills: _____

(4) Material: _____ Total Quantity: _____
Location of use: _____
Potential direction of flow: _____ Maximum rate of flow: _____
Structures of equipment to contain spills: _____

EMERGENCY CHECKLIST

**** DIAL 911 FOR EMERGENCY RESPONSE****

Emergency Coordinator:	_____ () _____ ()	
	(day phone)	(night phone)
First Alternate:	_____ () _____ ()	
	(day phone)	(night phone)
Second Alternate:	_____ () _____ ()	
	(day phone)	(night phone)

Contractor	_____	Telephone Number	_____
Address	_____		

EMERGENCY NUMBERS

Emergency Response (Ambulance, Fire, Police, Sheriff, State Highway Patrol) call 911

Poison Control Center (800) 456-7707

Nearest Hospitals (2) _____ Phone: _____
 _____ Phone: _____

Cleanup Contractor _____ Phone: _____

Other (specify) _____ Phone: _____

Other (specify) _____ Phone: _____

AGENCY NOTIFICATIONS (to be made by MVP's environmental manager or environmental field supervisor or emergency response coordinator)

USFS (540) 265-5100

West Virginia Department of Environmental Quality (304) 926-0499 or 1-800-642-3074

Virginia Department of Environmental Quality (804) 698-4201

National Response Center (800) 424-8802

Other (specify) _____ Phone #: _____

Other (specify) _____ Phone #: _____

Note: The Construction Contractor shall verify and update the emergency numbers on this page before and during Project construction.

WEEKLY HAZARDOUS MATERIALS/WASTE INSPECTION LOG

For each item listed below, the Construction Contractor shall indicate whether existing conditions are acceptable (A) or unacceptable (U). Resolution of all unacceptable conditions must be documented. The Construction Contractor shall inspect all storage facilities on a regular basis, but not less than weekly. The Construction Contractor shall keep records of all inspections on file.

I. STORAGE AREAS FOR FUELS, LUBRICANTS, AND CHEMICALS**General****A/U**

- _____ Material yard and storage areas secured
- _____ National Fire Protection Association 704 system symbol posted in storage area or at material yard entrance
- _____ Storage areas properly prepared and signed
- _____ No evidence of spilled 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
- _____ Material Safety Data Sheets available
- _____ Hazardous Materials Management and Spill Prevention Plans available

Secondary Containment Areas**A/U**

- _____ Containment berm intact and capable of holding 110 percent of material stored
- _____ 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 stream – 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, corrosion
- _____ No severe container damage or rust
- _____ Containers are compatible with waste (e.g., plastic liner for corrosives, metal liner for solvents)
- _____ “No smoking” and general danger/warning signs posted

Waste Container Labeling

A/U

- _____ Containers properly labeled
- _____ Name, address, and EPA ID number or ID Number of generator listed
- _____ Accumulation start date listed
- _____ Storage start date listed
- _____ Chemical and physical composition of waste listed
- _____ Hazardous properties listed

Nonhazardous Waste Areas

A/U

- _____ No litter in material yard
- _____ No hazardous wastes with trash (e.g., contaminated soil, oily rags, or other oily materials)
- _____ Empty oil and aerosol containers for disposal as non-hazardous waste are completely emptied

APPENDIX Y
Framework Flagging, Fencing, and Signage Plan

Appendix Y

Draft Framework Flagging, Fencing, and Signage Plan

Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1

2 **1.0 INTRODUCTION..... Y-1**

3 **2.0 PURPOSE..... Y-2**

4 **3.0 METHODS Y-2**

5 3.1 Demarcating Project Facilities..... Y-4

6 3.2 Environmental Exclusions Y-4

7 3.2.1 Signing..... Y-4

8 3.2.2 Flagging..... Y-4

9 3.2.3 Fencing..... Y-5

10 3.2.4 Marking Paint..... Y-5

11 **4.0 RESPONSIBILITY FOR INSTALLATION, MONITORING, AND MAINTENANCE..... Y-5**

LIST OF TABLES

12

13

14

15 **Table 3-1. Flagging Scheme Y-3**

16

LIST OF FIGURES

17

18

19 **Figure 3-1. Typical Sign – PROJECT ACCESS ROAD Y-7**

20 **Figure 3-2. Typical Sign – SENSITIVE RESOURCE AREA KEEP OUT Y-8**

21 **Figure 3-3. Typical Sign – RESTORATION IN PROGRESS – NO VEHICLE TRAFFIC**

22 **ALLOWED Y-9**

23 **Figure 3-4. Typical Sign – NO REFUELING Y-10**

24 **Figure 3-5. Typical Sign – DO NOT ENTER Y-11**

25 **Figure 3-6. Typical Sign – WEED CLEANING STATION..... Y-12**

26

Draft

Mountain Valley Pipeline Project Framework Flagging, Fencing, and Signage Plan

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on National Forest System lands will occur in 2018.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in Braxton County, West Virginia, which is administered by the U.S. Army Corps of Engineers (USACE). Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this plan focuses on the JNF, noting any additional or different requirements that are specific to the crossing of the Weston and Gauley Turnpike.

The USFS will be responsible for enforcement of the terms and conditions of the BLM's right-of-way Grant on National Forest System lands during the term of the right-of-way

1 Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF
2 portion of this project by the USFS Project Manager and the Authorized Officer's
3 designated compliance monitors. USFS will have stop work authority per terms outlined
4 in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work
5 conditions are encountered during construction.

6 The Project has potential to impact sensitive environmental resources and, as a result,
7 environmental protection measures have been developed to minimize potential impacts
8 on these resources and will be applied, as applicable, to the Project.

9 **2.0 PURPOSE**

10 The purpose of this Plan is to describe the methods that will be used in the field to
11 delineate the Project limits of disturbance and protect sensitive environmental and cultural
12 resources during Project construction. These methods are intended to ensure MVP
13 personnel, the construction contractor(s), the BLM, USFS, USACE, Compliance
14 Inspection Contractor (CIC), and other monitors and visitors to the Project construction
15 sites stay on approved access routes and within approved work areas. The measures
16 described in this Plan are an integral part of the environmental compliance program for
17 avoiding and minimizing impacts to sensitive resources. The objective of this plan is to
18 provide information on the field markings (i.e., flagging, fencing, and signage) that will be
19 used to identify approved Project travel and work areas, as well as sensitive resource
20 areas where construction or travel is to be excluded.

21 The crossing of the Weston Gauley Turnpike, owned by the USACE, will be via
22 conventional bore. Therefore, demarcations within USACE-owned property will not be
23 required and only the limits of USACE-owned property would be demarcated.

24 **3.0 METHODS**

25 Table 3-1 provides standards for marking Project features prior to and during Project
26 construction. Figures 3-1, 3-2, 3-3, 3-4, 3-5, and 3-6 (included at the end of this Appendix)
27 show the size and configuration of typical sign layouts. Signs for sensitive resource areas
28 will be oriented for visibility from both directions of likely travel.

29

1 **Table 3-1. Flagging Scheme**

Feature	Flagging or Sign Colors	Sign Text	What To Do
Project access road	To be decided by construction contractor(s)	Project Access Road – Road # (e.g., AR-WV-123) – Mountain Valley Pipeline Project	To be located at points of intersection, additional intermittent flagging may be required. Construction contractor(s) to verify that right of entry has been obtained before marking these areas.
Temporary work areas (pulling sites, multi-purpose areas, etc.)	To be decided by construction contractor(s)	<i>Not applicable</i>	Construction contractor(s) to verify that right of entry has been obtained before marking these areas.
Protected animals/plants or sensitive environmental areas	Yellow	Sensitive Resource Area Keep Out	Avoid these items/areas – do not drive vehicles or equipment near flagged items or within flagged areas.
Reclamation project areas	Brown	Restoration in Progress – No Vehicle Traffic Allowed	Avoid these items/areas – do not drive vehicles or equipment near flagged items or within flagged areas.
No refueling	Red	No Refueling Within 100 Feet of Wetlands and Stream	No refueling or equipment maintenance is allowed within 100 feet of wetlands, streams, or sensitive resource areas (SPCC Plan). Signs will be posted at the of the restricted work areas limits (100 feet back from the protected resource).
Invasive weed cleaning stations	Blue	Weed Cleaning Station	Signs will be posted at entry points into weed cleaning stations.
Proposed structure locations	To be decided by construction contractor(s)	<i>Not applicable</i>	Do not disturb survey stakes.
Structure offsets	To be decided by construction contractor(s)	<i>Not applicable</i>	Do not disturb survey stakes.
Outside edge of permitted right-of-way (ROW) or centerline	To be decided by construction contractor(s)	<i>Not applicable</i>	Do not drive vehicles or equipment outside of designated corridor.
Non-authorized access road	To be decided by construction contractor(s)	Do Not Enter Not an-Authorized Access Road	Do not drive vehicles or equipment on unauthorized roads.

NOTES:

- Staking and flagging will be done by construction contractor(s) and verified by CIC, including sensitive resource areas and exclusion zones.
- Construction contractor(s) shall use staking intervals appropriate to the conditions observed in the field. For example, areas of rough terrain or dense vegetation may require staking intervals less than 500 feet. In all cases, field staking intervals shall be done at a frequency such that each adjacent stake can be easily discernible.
- Maintain (refurbish as necessary) staking over time as conditions require.

3.1 Demarcating Project Facilities

Prior to commencement of construction activities, areas that require protection to sensitive resources along the right-of-way will be identified by a variety of methods, including flagging, marking paint, signs, rope, or staking. Where not otherwise specified, a suitable method will be selected by the CIC, which provides the highest visibility to construction workers and is practical to install.

Signs will be posted to identify approved access roads, the limits of restricted work areas, protected resource areas, and exclusion areas. In addition, flagging may be used to designate components of the working area and identify specific sensitive resource areas. In some instances fencing or protective barriers will be installed to ensure that construction activity does not enter highly sensitive resource areas.

3.2 Environmental Exclusions

Signs, flags, and/or fencing will be used to establish exclusion (avoidance) areas to protect sensitive environmental resources (e.g., biological, cultural, wetland, and paleontological resources) in the vicinity of construction activities. A system of standardized and simplified exclusion markings will be used to reduce potential confusion during construction and minimize the risk of highlighting types of sensitive resources that could be targeted by vandals (e.g., if exclusion areas protecting archaeological sites were marked differently than those protecting sensitive natural resource areas, the sites would be at a higher risk of unauthorized artifact collecting or other disturbances). Exclusion areas will be set up to protect these areas, but the construction contractor(s) will not know if it is for biological, cultural, or paleontological resources.

3.2.1 Signing

Areas along the Project right-of-way will be appropriately signed to designate restricted work areas and protected resources as well as features such as approved access roads and certain Project facilities such as "Weed Cleaning Stations." For areas where work restrictions or resource protection extends over large distances (>500 feet), signs will be installed at spacing of approximately 300 feet with double arrows indicating the extent of the protective measure or restriction. Fencing may be installed to provide further protection for site-specific resources.

Signs will be a minimum of 8.5 inches by 11 inches on laminated (7 millimeters or greater) color paper or metal. Signs will be installed on metal posts and wooden stakes or attached to exclusion fencing/roping, as appropriate. Background colors will vary to enhance sign recognition from a distance.

3.2.2 Flagging

Survey flagging (i.e., surveyor's ribbon tied to wooden stakes, metal posts, or vegetation) will be used to delineate the limits of work areas such as material yards, disturbance limits (i.e., boundaries of the right-of-way), wire stringing sites, access roads, etc., unless existing fencing or other features clearly indicate the limits of the area. Survey flagging may be used to demarcate sensitive resource locations situated a safe distance from planned construction activities but generally will not be used to define resource exclusion

1 areas close to planned construction activities due to concerns about the visibility and
2 stability of flagging during construction.

3 The USFS authorized officers or CIC, as needed, will determine whether flagging or
4 fencing (as described below) is the appropriate protective device for a given location.
5 Flagging color will conform to the requirements of Table 3-1.

6 **3.2.3 Fencing**

7 To delineate the limits of construction near sensitive resources requiring a high level of
8 protection from Project disturbance, a combination of one or more of the following fencing
9 materials will be installed by the construction contractor(s):

- 10 • Rope (¼ inch in diameter in yellow or orange coloring);
- 11 • Plastic or fabric tape; and/or
- 12 • Safety fencing (plastic orange or red mesh at least 24 inches-wide and at least 18
13 inches off the ground to allow for small animal passage).

14 Roping with periodic marking by exclusionary signs or lengths of tape is a highly visible
15 and effective exclusion device. Roping, tape, and safety fence will be installed using metal
16 posts for increased durability and in areas with compact or rocky soils. If construction
17 within a wetland is necessary, the boundaries of the approved disturbance area will be
18 demarcated so impacts are limited to the authorized area. In most cases, it is anticipated
19 that the exclusion device will be installed at the boundaries of the sensitive resource
20 (including any required buffers), rather than at the edge of the work area. If a buffer zone
21 encroaches into the work area, only the portions that overlap with the work area will be
22 delineated and signed as exclusionary zones.

23 **3.2.4 Marking Paint**

24 In some areas, it may not be feasible to install signs as described above to delineate
25 sensitive resource or restricted work areas. In these situations, marking paint may applied
26 to the pavement to identify protected areas, so long as it does not conflict with utility
27 locates, or permit requirements. Green fluorescent colored marking paint will typically be
28 used to designate environmental areas, but may vary according to location (if conflicts
29 occur with other utilities). If marking paint is used, methods of coding and colors will be
30 summarized by the Lead Environmental Inspector and issued as a POD update.

31 **4.0 RESPONSIBILITY FOR INSTALLATION, MONITORING, AND** 32 **MAINTENANCE**

33 Meeting the objectives of this Plan relies on the proper installation, monitoring, and
34 maintenance of protective devices. The construction contractor(s) will be responsible for
35 the installation and maintenance of field marking of construction features (e.g.,
36 compressor stations, mainline valve sites, additional temporary work spaces, etc.). These
37 markings will be installed in advance of construction activities in the area, maintained
38 during the course of construction (as necessary), and removed after Project cleanup and
39 reclamation activities. Environmental exclusion (e.g., signs, flags, and fencing) will be
40 installed by the construction contractor(s) in coordination with the CIC to denote

1 exclusionary zones along with the assistance of appropriate monitors (e.g., botanists,
2 biologists, archaeologists) as needed. These environmental exclusions will be installed
3 prior to the start of construction within a Project work area. The CIC will be consulted if
4 there is uncertainty as to the type or location of needed exclusionary devices for botanical,
5 wildlife, wetland, stream, or archaeological sensitive resource areas.

6 Routine Project monitoring by the CIC and construction contractor(s)'s environmental
7 monitors and inspectors will include an ongoing assessment of the need for replacement
8 or repair of exclusionary flagging or fencing. Maintenance needs related to exclusionary
9 devices will either be corrected at the time of observation by the CIC, or will be
10 documented as a future maintenance need. If maintenance of an exclusionary device is
11 needed within an active construction area, corrective action will be taken within one
12 workday. Maintenance of signs, flagging, and fencing within inactive work areas will be
13 implemented as necessary. All exclusionary devices (e.g., signs, flagging, and fencing)
14 will be removed after Project cleanup and reclamation activities by the construction
15 contractor(s).

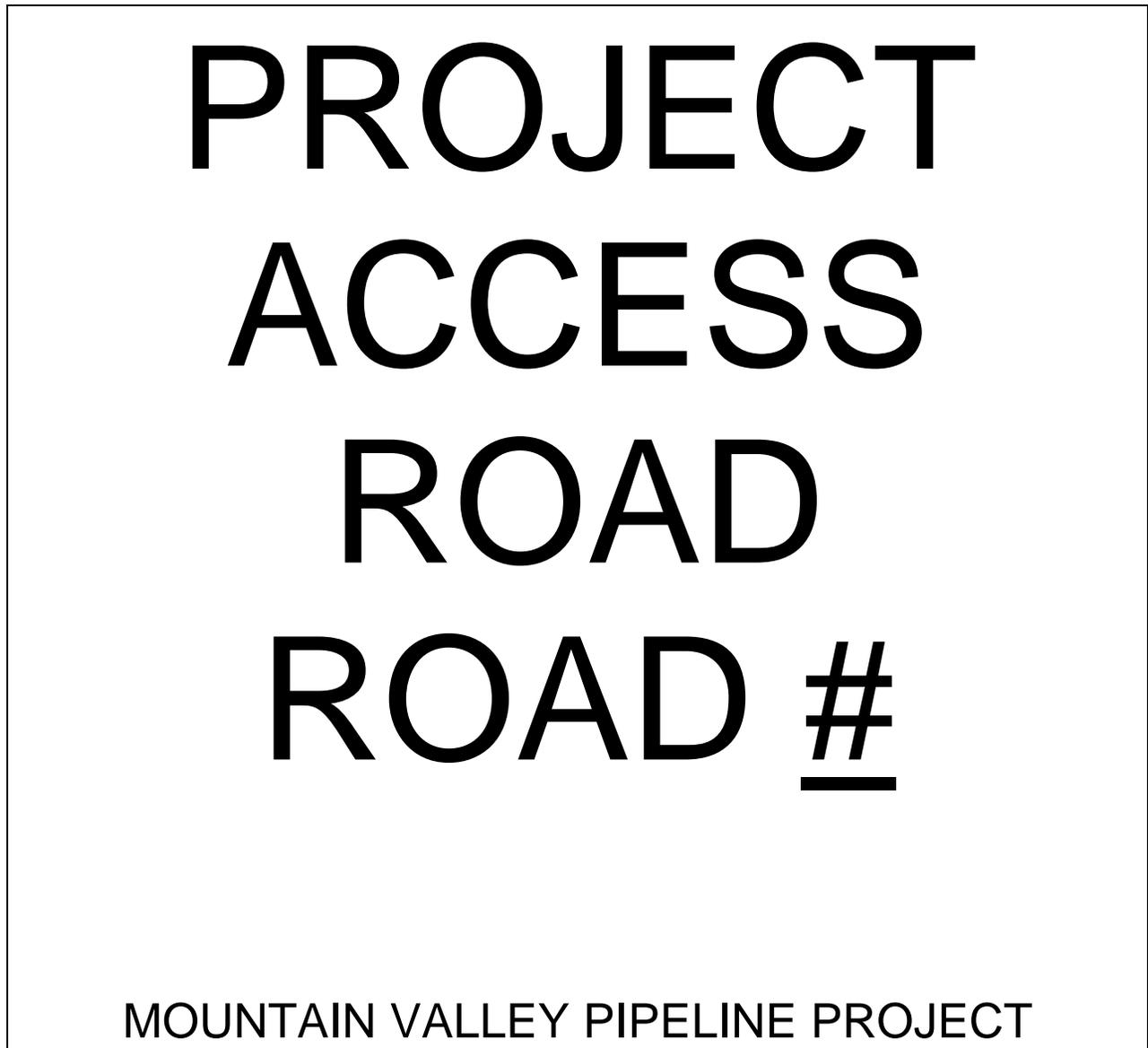


Figure 3-1. Typical Sign – PROJECT ACCESS ROAD



Figure 3-2. Typical Sign – SENSITIVE RESOURCE AREA KEEP OUT



Figure 3-3. Typical Sign – RESTORATION IN PROGRESS – NO VEHICLE TRAFFIC ALLOWED



Figure 3-4. Typical Sign – NO REFUELING

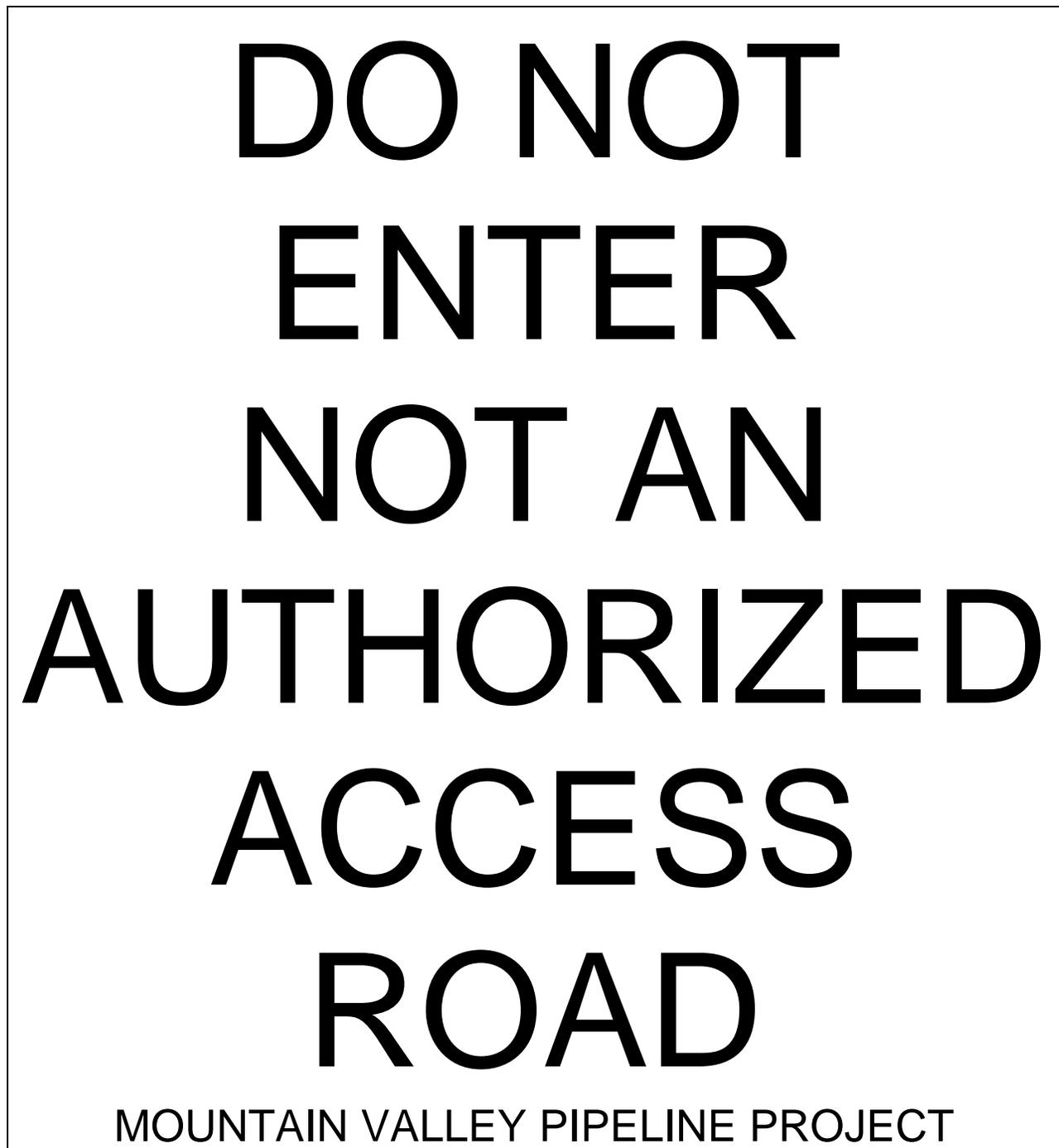


Figure 3-5. Typical Sign – DO NOT ENTER



Figure 3-6. Typical Sign – WEED CLEANING STATION

APPENDIX Z
Off-Highway Vehicle Management Plan

Appendix Z

Draft Off-Highway Vehicle Management Plan Mountain Valley Pipeline Project

Prepared by:



February 2017

TABLE OF CONTENTS

1.0 INTRODUCTION..... 1
2.0 OFF-HIGHWAY VEHICLE CONTROL AND RIGHT-OF-WAY ACCESS 2

LIST OF TABLES

Table 1. Forest Roads and Trails Crossed or Adjacent to the Right-of-Way..... 5

LIST OF FIGURES

Figure 1. Trails or Roads Impacted by Construction, North Portion of Jefferson National Forest..... 3
Figure 2. Trails or Roads Impacted by Construction, South Portion of Jefferson National Forest..... 4

LIST OF ATTACHMENTS

Attachment R-1 Typical Design Features for Restricting OHV Access to a New Pipeline Right-of-Way

Draft

Mountain Valley Pipeline Project Off-Highway Vehicle Management Plan

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc.; Con Edison Gas Midstream LLC; WGL Holdings, Inc.; and RGC Midstream, LLC (collectively referred to as MVP), is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region. Construction is anticipated to begin in 2017 and conclude in the fourth quarter of 2018. Construction on National Forest System lands will occur in 2018.

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A 3.5-mile long segment of the Project will cross portions of the Jefferson National Forest (JNF) in Monroe County in southern West Virginia and in Giles, Craig, and Montgomery counties in southwestern Virginia. The JNF is managed by the U.S. Forest Service (USFS) of the U.S. Department of Agriculture. Another 60-foot segment of the Project will cross the Weston and Gauley Bridge Turnpike Trail (Weston and Gauley Turnpike) in Braxton County, West Virginia, which is administered by the U.S. Army Corps of Engineers (USACE). Approval to cross land managed by two or more federal agencies is the responsibility of the U.S. Department of the Interior, Bureau of Land Management (BLM) through issuance of a Right-of-Way Grant. Project-wide construction environmental compliance will be the responsibility of the FERC. The USFS and USACE will also ensure compliance across lands managed or administered by those agencies. Because the majority of federal lands crossed are managed by the USFS, this plan focuses on the JNF, noting any additional or different requirements that are specific to the crossing of the Weston and Gauley Turnpike.

The USFS will be responsible for enforcement of the terms and conditions of the BLM's right-of-way Grant on National Forest System lands during the term of the right-of-way

Grant for the Mountain Valley Pipeline project. Compliance will be monitored on the JNF portion of this project by the USFS Project Manager and the Authorized Officer's designated compliance monitors. USFS will have stop work authority per terms outlined in the BLM right-of-way grant. USFS will also have stop work authority if unsafe work conditions are encountered during construction.

The 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.

2.0 OFF-HIGHWAY VEHICLE CONTROL AND RIGHT-OF-WAY ACCESS

Less than 1 percent of the JNF is open to OHV¹ use. The Forest Plan lists 47.7 miles of road in nine areas as open to OHV use. None of these roads are crossed by the Project. Approximately half of the proposed right-of-way is classified as Roded Natural (38.5 acres); the remainder is either Semi-primitive 2 (39.0 acres) or Semi-Primitive Non-motorized (2.9 acres). No new permanent access roads are proposed on the JNF.

MVP intends to limit OHV use within the right-of-way in order to avert user conflicts in adjacent areas, as well as to avoid problems with revegetation efforts and prevent potential erosion within the right-of-way. To minimize OHV access within the right-of-way, MVP will install barriers at appropriate locations in coordination with the JNF. The proposed OHV barriers will be designed and constructed in a manner that attempts to prevent unauthorized motor vehicle/OHV use of and along the right-of-way, but will still allow the passage of wheelchairs or any device that meets the legal definition of a wheelchair as required by the USFS.

The need for OHV control measures will be assessed primarily where the pipeline right-of-way intersects roads and trails (see Figures 1 and 2). These areas will be identified by the Project environmental inspector and/or authorized JNF representative. MVP will

¹ The term "OHV" in this document refers to all types of motorized off-highway vehicles, including both street-legal and non-street-legal full-sized vehicles, motorcycles, all-terrain vehicles (ATV), and utility terrain vehicles (UTV).

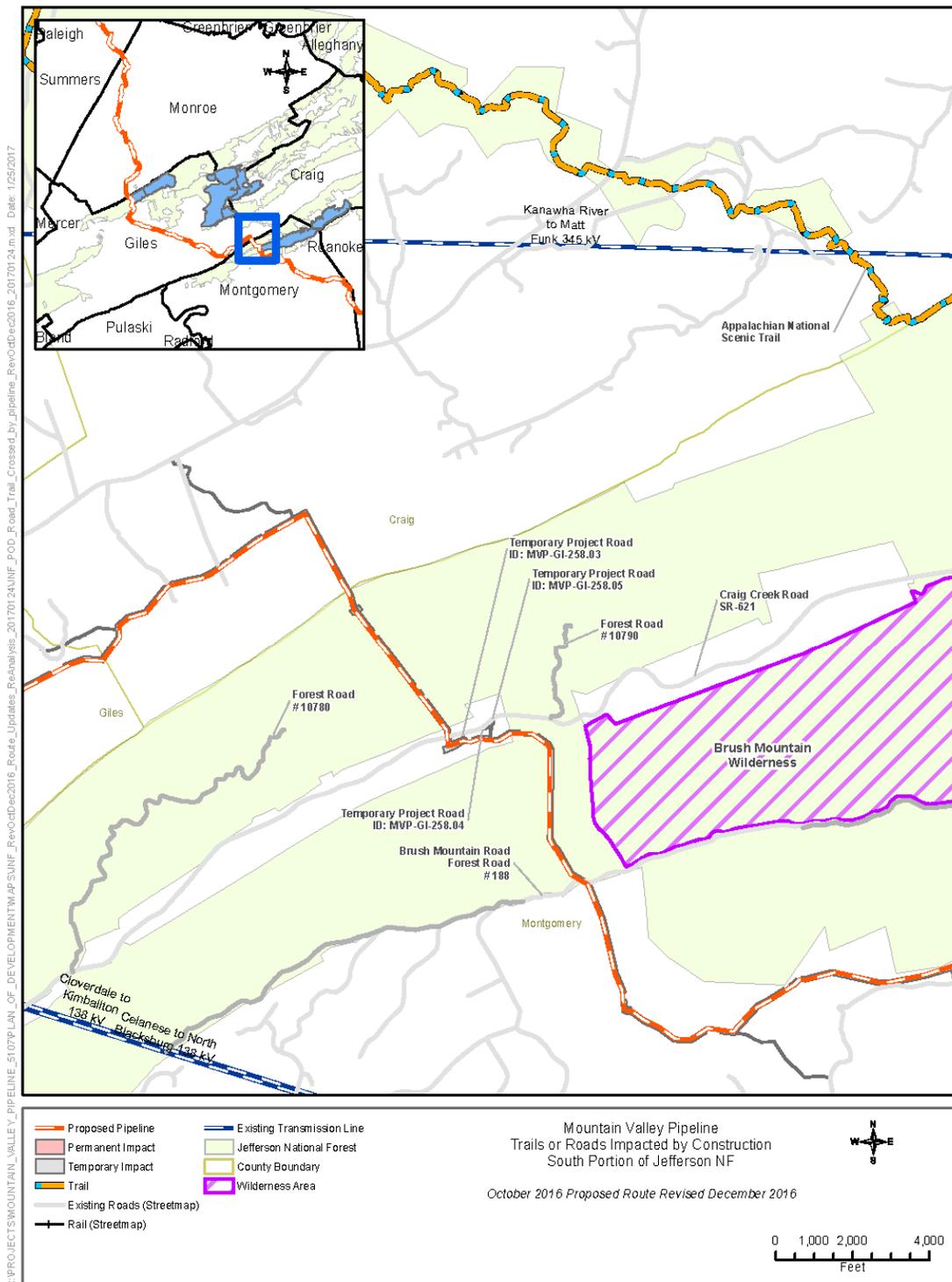


Figure 2. Trails or Roads Impacted by Construction, South Portion of Jefferson National Forest

consult with the JNF for review and approval of site-specific designs for OHV control. In addition, MVP will work with the USFS to identify any user created trails that are established during the operation of the Project along the right-of-way corridor, and will install barriers at these locations. All designs will meet agency standards, and, where applicable, will not conflict with visual resource management objectives or impact the area's visual resources.

To deter potential user conflicts and resource damage caused by unauthorized OHV use, MVP will provide various natural and constructed control measures at select intersections of the right-of-way with road and trail crossings as well as other locations identified by the USFS near the right-of-way (both at official roads and trails as well as user created roads and trails). Figures 1 and 2 in Attachment A display typical diagrams of OHV control measures that would be used. Below is a brief summary of the types of measures that would be employed:

- Dirt/rock berms placed across the right-of-way, sometimes coupling as part of erosion control measures;
- Non-merchantable logs, slash and/or stumps strategically placed along the construction right-of-way as prohibitive barriers (see Figure 1 in Attachment 1);
- Large rocks and boulders partially buried along the right-of-way and at road crossings to block access but also positioned in such a manner as to not form an attractive OHV "obstacle course" (see Figure 1 in Attachment 1);
- Trench/earthen barriers would be installed at the direction of or where approved by the agency (see Figure 2 in Attachment 1); and
- Signs and/or locked gates and fencing.

If required by the USFS, MVP will include clear passage for Wheelchairs within OHV barriers to meet requirements of the Forest Service Manual 2350.5, and the Americans with Disabilities Act (ADA) Title V, Section 508 (c).

The following Forest roads and trails on National Forest System lands may be affected by the Project (Table 1, also see Figures 1 and 2):

Table 1. Forest Roads and Trails Crossed or Adjacent to the Right-of-Way

Route Number	Seasonal Restriction	Dates Allowed
FR 188 (Brush Mountain Road)	Yes	10/1 to 01/10
SR-621* (Craig Creek Road)	Yes	03/24 to 01/10
FR 972* (Pocahontas Road)	No	N/A
FR #11080 (Mystery Ridge Road)	No	N/A
Appalachian National Scenic Trail FT #1	No	N/A

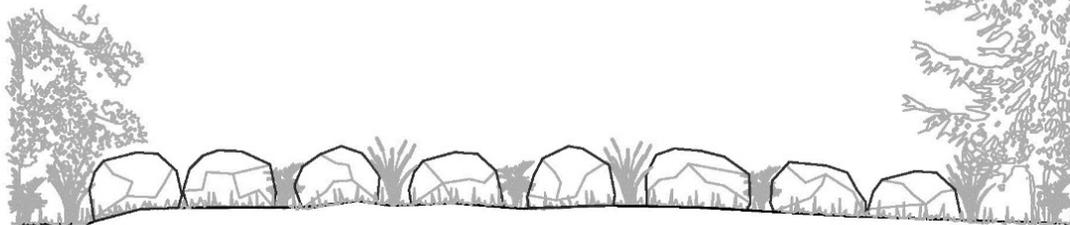
*The crossing occurs in an area where USFS has a ROW across private land on this road.

FR = Forest Road

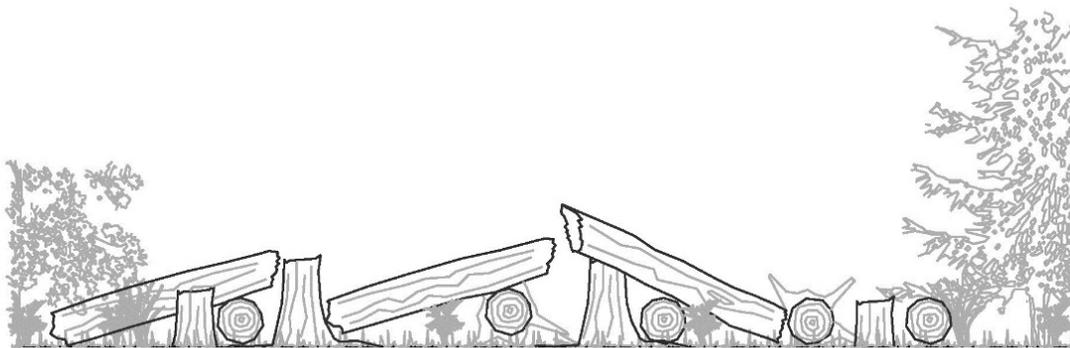
SR = State Route

FT = Forest Trail

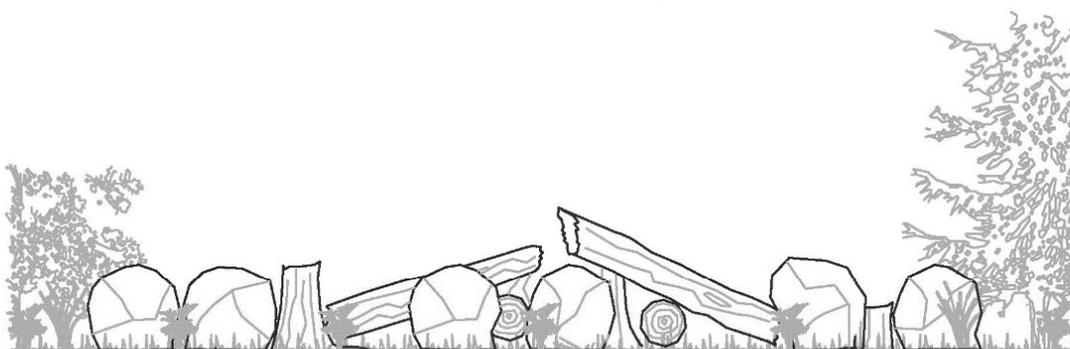
**ATTACHMENT Z-1
TYPICAL DESIGN FEATURES FOR RESTRICTING OHV ACCESS
TO A NEW PIPELINE RIGHT-OF-WAY**



OHV ROCK BARRIER



OHV SLASH BARRIER



OHV ROCK / SLASH BARRIER

NOTES:

1. Large rocks/boulders used to deter OHV traffic will be approximately 3 feet in diameter, partially buried and spaced to prevent OHV traffic including motorcycle use.
2. Slash, including stumps, logs and tree tops may be appropriate piled and stacked to create an effective OHV deterrence across the right-of-way at road intersections, trails and other appropriate locations.
3. Multiple methods and types of OHV barriers may be used to prevent/discourage OHV traffic.
4. Ensure OHV deterrence by extending barriers to existing vegetation or other natural barriers to discourage OHV traffic from accessing the pipeline corridor. Barriers may need to extend outside of the pipeline ROW in order to be effective.
5. Unnatural rows of barriers should be avoided. Barricade material should be more heavily concentrated directly adjacent to potential access points, roads trails and parking areas then decrease in density further away from the access point.
6. Include 36-inch-wide passage in barriers to allow for clear passage of wheelchairs.

**FIGURE 1
TYPICAL ROCK/SLASH OHV BARRIERS**

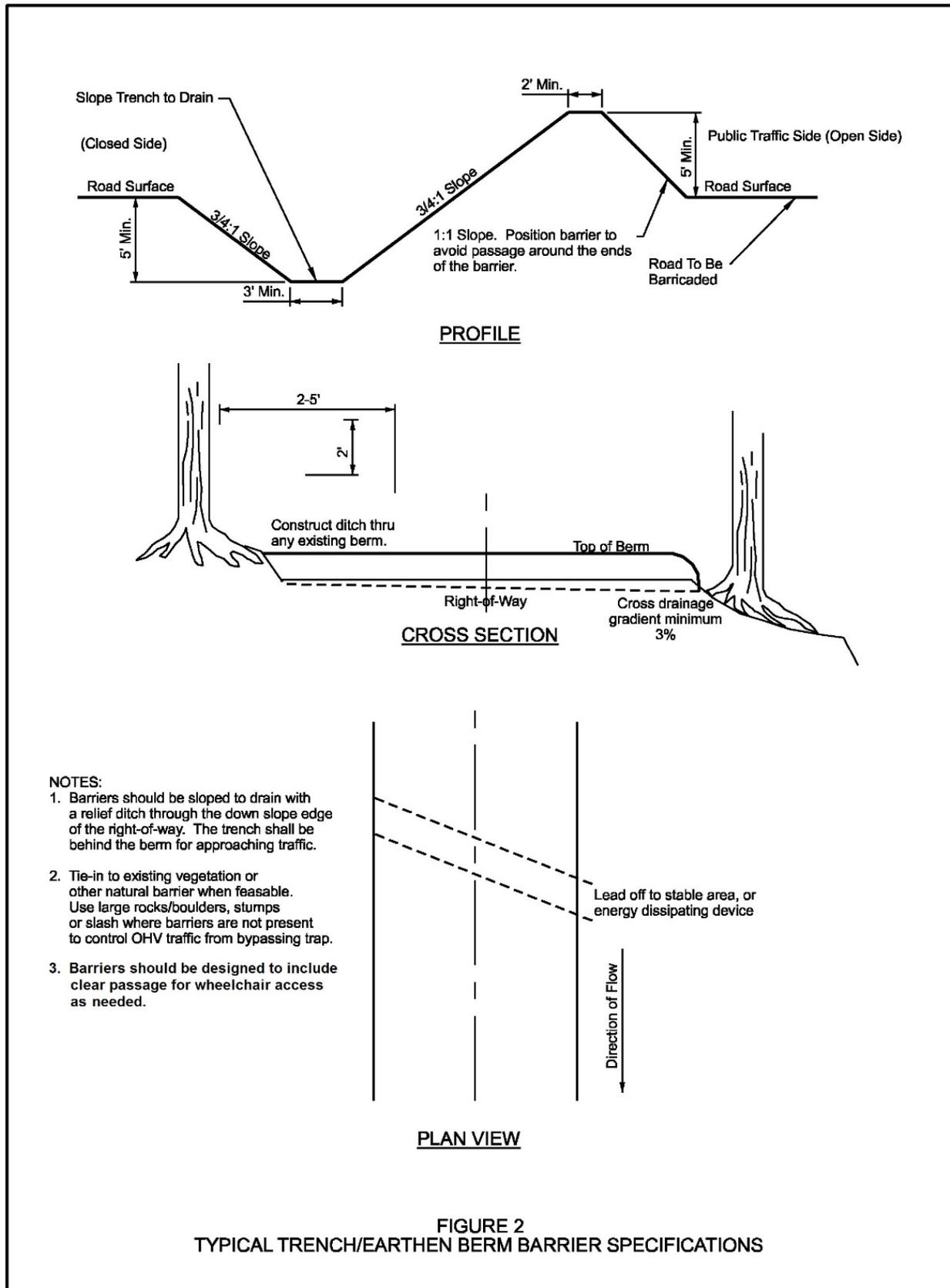


FIGURE 2
TYPICAL TRENCH/EARTHEN BERM BARRIER SPECIFICATIONS