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BIOLOGICAL ASSESSMENT TO ADDRESS  
POTENTIAL EFFECTS ON FEDERALLY LISTED SPECIES FOR THE  
MOUNTAIN VALLEY PIPELINE PROJECT  
IN WEST VIRGINIA AND VIRGINIA

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**CONTAINS PRIVILEGED INFORMATION – NOT FOR RELEASE**



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## Executive Summary

The purpose of this Biological Assessment (BA) is to evaluate the effects to the Indiana (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*), Roanoke logperch (*Percina rex*), James spinymussel (*Pleurobema collina*), clubshell (*Pleurobema clava*), snuffbox (*Epioblasma triquetra*), northeastern bulrush (*Scirpus ancistrochaetus*), running buffalo clover (*Trifolium stoloniferum*), shale barren rock cress (*Arabis serotina*), small whorled pogonia (*Isotria medeoloides*), smooth coneflower (*Echinaceae laevigata*), and Virginia spiraea (*Spiraea virginiana*) resulting from development of the Mountain Valley Pipeline Project (Project) in 17 counties through West Virginia and Virginia. This BA has been prepared by Environmental Solutions & Innovations (ESI) on behalf of the Project proponent (Mountain Valley Pipeline, LLC [MVP]) at the direction of the Federal Energy Regulatory Commission (FERC) and will be submitted to the U.S. Fish and Wildlife Service (USFWS) in compliance with requirements of Section 7 of the Endangered Species Act of 1973 (ESA; 16 USC 1536[c], 50 CFR 402.12[f] and 402.14[c]), and in conjunction with requests for authorization from the FERC to grant a Certificate of Public Convenience and Necessity pursuant to Section 7(c) of the Natural Gas Act of 1938(NGA).

MVP proposes to develop an approximately 488.3-kilometer (303.4-mi), 106.7-centimeter (42-in) diameter natural gas pipeline. It will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to the existing Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. The Project is being proposed 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. This BA includes information regarding the construction, operation, and maintenance of the Project.

The Project location is within the range of the federally endangered Indiana bat and federally threatened northern long-eared bat. Furthermore, the Project traverses multiple protective capture, roost, and hibernacula buffers associated with both species. Because the Project is in a forested landscape, impacts to woodlands during construction are unavoidable. As currently designed, the Project will permanently remove approximately 646.8 hectares (1,598.3 ac) of forested habitat with potential to contain trees  $\geq 7.6$  centimeters (3 in) in diameter at breast height (dbh) from the Project Area during construction. Consultation with the USFWS further specified that clearing of any trees  $\geq 7.6$  centimeters (3 in) dbh between April 1 and November 15 would require formal consultation under Section 7 of the ESA between the USFWS and FERC due to the known occurrences of Indiana bats. Furthermore, removing known northern long-eared bat maternity roosts and any trees within 45.7 meters (150 ft) of those roosts is prohibited between June 1 and July 31 according to the final 4(d) rule published January 14, 2016.

The proposed Project traverses a large portion of the Roanoke River basin within the geographic distribution of the federally endangered Roanoke logperch. Within the basin, the Project crosses a total of 38 perennial streams with potential to support populations of Roanoke logperch. Of these, USFWS requested assumed presence of Roanoke logperch at any crossing of the North Fork Roanoke, Roanoke, and Pigg rivers (n=5), as the streams are known to currently support populations of this species. The remaining 33 stream crossings were assessed to determine habitat suitability or potential presence for Roanoke logperch populations.

The proposed Project also crosses numerous perennial streams that support populations of state and federally protected freshwater mussels. In West Virginia, the Project traverses Leading Creek and Little Kanawha River that potentially support federally endangered clubshell and snuffbox mussels. However, given the lack of critical habitat, lack of known occurrences, and probable absence in the vicinity of the Project, clubshell and snuffbox mussels were excluded from further analysis. In Virginia, the Project will cross Craig Creek which supports known populations of the federally endangered James spiny mussel.

In addition to these animal species, the Project is also within the distribution range of six federally-listed plant species. These include plants adapted to wetlands and streams (northeastern bulrush and Virginia spiraea), open forests (small whorled pogonia), upland open habitats (running buffalo clover and smooth coneflower), and shale barrens (shale barren rock cress).

To address potential effects of the Project on federally listed species, ESI was contracted by Tetra Tech on behalf of MVP to complete mist net, winter hibernacula, and detailed summer habitat assessment surveys for the Indiana and northern long-eared bat within the Project Area, qualitative stream assessments for the Roanoke logperch and presence/absence stream surveys for mussels, as well as habitat assessments and surveys for plants.

ESI conducted mist net surveys for bats at 338 net sites (1,953 complete and 426 partial net nights) from May 15 to August 15, 2015 and 3 net sites (6 complete and 6 partial net nights) from May 15 to May 26, 2016. A total of 1,476 bats representing nine species was captured: 763 big brown bats (*Eptesicus fuscus*), 538 eastern red bats (*Lasiurus borealis*), 74 northern long-eared bats, 38 silver-haired bats (*Lasionycteris noctivagans*), 24 eastern small-footed bats (*Myotis leibii*), 16 tri-colored bats (*Perimyotis subflavus*), 10 eastern hoary bats (*Lasiurus cinereus*), 10 evening bats (*Nycticeius humeralis*), and 3 little brown bats (*Myotis lucifugus*). No federally endangered Indiana bats were captured.

Radio transmitters were attached to 56 (six lactating, eight post-lactating, and four non-reproductive adult females, twenty-two adult males, nine juvenile females, and seven juvenile males) northern long-eared bats. Forty-three radio-tagged northern long-eared bats were tracked to 69 diurnal roosts. One tagged bat was never tracked due to

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transmitter failure on the first day, and 12 tagged bats were never located during telemetry studies. Emergence counts were conducted at all roosts for a minimum of two counts per tree. Two hundred sixty-seven emerging bats were recorded over 145 observation-nights. The greatest number of bats emerging from a single roost on a single night consisted of 40 individuals.

Searches for underground voids to identify suitable winter habitat for the Indiana and northern long-eared bat in the Project Area occurred from November 2014 to October 2016. Forty-one previously undocumented voids and seven known caves were observed during field efforts. Of these, 20 were determined potentially suitable for hibernating bats. Four potentially suitable portals found in West Virginia were sampled using harp traps between September 25 and October 22, 2015. One northern long-eared bat was captured at a portal in Braxton County during these efforts. No bats were captured at the other three portals sampled in West Virginia. One suitable portal in Virginia was sampled using a harp trap on September 29 and October 20, 2015, but no bats were captured during this effort. One known cave in Virginia, Overlooked Cave, and two unknown caves were sampled using a harp trap on April 17-21, 2016 and September 27 to October 4, 2016, respectively. No bats were captured during these efforts. Presence has been assumed in the remaining potentially suitable, known, and previously undocumented portals in West Virginia and Virginia as land access prevented sampling in Virginia and spring sampling efforts are not accepted in West Virginia.

In addition, an evaluation of summer habitat suitability for the Indiana and northern long-eared bat in the Project Area [was completed](#) from February 10 to November 22, 2015. Over one-third of the delineated summer habitat patches identified had no roosting potential for Indiana bat (n= 343) and northern long-eared bat (n= 314). Fifty-five habitat patches were ranked as having high roosting potential for the Indiana bat and 137 patches were ranked as high roosting potential for the northern long-eared bat. The majority of potential roost trees ranked as low for Indiana (n= 5,084) and moderate for northern long-eared bats (n= 5,344). Of the 10,978 potential roost trees, 986 (9.0%) ranked as high potential for the Indiana bat and 3,203 for the northern long-eared bat (29.2%). Approximately one-third (n= 265) of habitat patches identified had high foraging potential for northern long-eared bats and 21.8 percent (n = 200) of patches had high foraging for Indiana bats.

Indiana bats were not captured during mist-net surveys, but it is assumed the species occupies summer habitat from Project milepost 0 to 10.3 in association with the capture of a pregnant female on an unrelated project in 2010. In addition to this area, the species is also assumed in [62 portals](#) and forested habitat where sampling was not completed due to land access permissions (e.g., portals outside the limits of disturbance [LOD] but within the Action Area for the Project) or incomplete sampling events. Based on the results from the effects analysis, it is expected that 177 and 4 individuals will be harassed and harm, respectively, during construction and operation of the Project. Thus, the Project **May Effect – Is Likely to Ad-versely Affect** the

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Indiana bat. This determination constitutes a take under ESA and will thus require an Incidental Take Statement (ITS) from USFWS.

Results of summer mist net and harp trap surveys confirm presence of northern long-eared bats within the Project Area. MVP will avoid take of adults and non-volant young by suspending tree clearing activities during June 1 through July 31. However, individuals present during hibernation, spring staging, and autumn swarming may be harmed or harassed during Project development. Results from the effects analysis demonstrated the potential to harass and harm 225 and 3 northern long-eared bats, respectively, during Project construction or operations. Thus, the Project **May Affect – Is Likely to Adversely Affect** the northern long-eared bat, which constitutes a take under ESA and will thus require an ITS from USFWS.

In accordance with the recommendations from the USFWS, ESI completed a desktop review and analysis as well as in situ qualitative habitat assessments to determine habitat suitability or potential presence of Roanoke logperch populations. Thirty-eight stream crossings were identified and assessed for potentially suitable habitat and presumed presence. Five stream were determined suitable with assumed presence based on agency correspondence. Two stream crossings were deemed unsuitable based on geographic features prohibiting colonization or desktop analyses. In situ habitat assessments were completed at the remaining 33 stream crossings from April 2015 to May 2016. Based on in situ assessments and USFWS correspondence, 9 of 33 streams had potential habitat capable of supporting Roanoke logperch. Thus, combined with the areas identified by the USFWS, 14 stream crossings were designated as having the potential to host Roanoke logperch.

Collectively throughout the Roanoke River basin, it is estimated that Project activities could potentially harass 10,182 Roanoke logperch individuals and harm 27 individuals of all age classes. The majority of individuals (99 %) are harassed via temporary augmented sediment loading rates that enter into waterways as a result of construction activities. Harm estimates are from 12 stream crossings, with harm estimates for Young of Year (YOY) and Age 1+ of one individual for each age category at each crossing with the exception of the Roanoke River where four Age-1+ individuals are expected to be harmed. Harm estimates are derived from individuals that may be inadvertently injured or killed during depletion fish surveys. Because take of individuals is predicted, the Project **May Affect – Is Likely to Adversely Affect** Roanoke logperch. This determination constitutes a take under ESA and will thus require an ITS from USFWS.

Surveys for the presence of freshwater mussels were completed within acceptable mussel survey field seasons from July 2015 to September 2016 in West Virginia and Virginia. Streams traversed in West Virginia, identified within the West Virginia Mussel Survey Protocol (WVMSP), and with upstream drainages greater than 25.9 square kilometers (10 mi<sup>2</sup>) were surveyed for the presence of freshwater mussels. Mussel surveys were successfully completed at nine Group 1 stream crossings and three

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Group 2 stream crossings. No federally endangered mussels were encountered during these survey efforts, but live, non-listed mussel species were observed in Sand Fork, Little Kanawha River (access road), and Greenbrier River. One stream crossing, Gauley River, was not fully assessed because of high stream velocities (i.e., whitewater rapids) and unsafe diving conditions. In Virginia, stream crossings with upstream drainages greater than 13 square kilometers (5 mi<sup>2</sup>) were surveyed for the presence of freshwater mussels or potentially suitable habitat from April to October 2015 and April to September 2016. Of the 23 stream crossings identified during the desktop analyses and traversed by the Project, four crossings yielded live mussels and two crossings yielded deadshell mussels only. Mussels are assumed present at one additional stream crossing (i.e., North Fork Roanoke River AR2) based on agency correspondence. The remaining 16 stream crossings assessed or surveyed did not yield live mussels or exhibit suitable habitat.

James spiny mussel were not present during mussel survey efforts that encompassed multiple proposed crossings of Craig Creek in Montgomery County, Virginia. The nearest known population of James spiny mussel in Craig Creek occurs downstream of its confluence with Johns Creek which is approximately 48.75 stream kilometers (30.3 mi) of the Project crossings. The Action Area in Craig Creek extends approximately 15.07 stream kilometers (9.36 mi) downstream of the downstream-most crossing. The Action Area is more than 33 kilometers (21.2 mi) upstream of the nearest James spiny mussel occurrence. Based on the location of known populations of this species relative to the crossings at Craig Creek, the Project **May Affect– Is Not Likely to Adversely Affect** James spiny mussel. No individuals are expected to be directly or indirectly harmed or harassed and no James spiny mussel designated critical habitat will be impacted by the Project. This determination does not constitute a take under ESA and will not require an ITS from USFWS.

Neither clubshell nor snuffbox [mussels](#) were present during mussel survey efforts at crossings of the Elk River and Little Kanawha River. Mussel survey efforts were not warranted at Leading Creek because the crossing location has an upstream drainage area less than 25.9 square kilometers (10 mi<sup>2</sup>) and is consequently unlikely to support freshwater mussels. The nearest known populations of clubshell and snuffbox in Elk River, Little Kanawha River, and Leading Creek in West Virginia occur outside of the Action Area therefore the Project **May Affect–Is Not Likely to Adversely Affect** clubshell or snuffbox mussels. The determinations for these species do not constitute a take under ESA and will not require an ITS from USFWS.

Plant surveys were performed between May 2015 and September 2016. All potential habitat defined during consultation and desktop analyses was surveyed, with the exception of 10 kilometers (6 mi) of right-of-way (ROW) with potential habitat for smooth cone flower, 0.95 kilometer (0.59 mi) of potential running buffalo clover habitat, 0.19 kilometer (0.12 mi) of potential shale barren rock cress habitat, 0.19 kilometer (0.12 mi) of potential small whorled pogonia habitat, and 0.14 kilometer (0.09 mi) of potential Virginia spiraea habitat due to denied land access. No individuals of federally

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endangered or threatened plants were detected during surveys; however, potential habitat was found for running buffalo clover, small whorled pogonia, smooth coneflower, and Virginia spiraea in the Project area. The nearest populations of these four species occur outside the Project area therefore the Project **May Affect-Is Not Likely to Adversely Affect** running buffalo clover, small whorled pogonia, smooth coneflower, or Virginia spiraea. No individuals are expected to be directly or indirectly harmed or harassed and no designated critical habitat will be impacted by the Project for these species. No potential habitat was found for northeastern bulrush or shale barren rock cress throughout the Project area; therefore, the Project will have **No Effect** on these species.

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#### Appendices

Appendix A: Agency Correspondence

Appendix B: Action Area Maps

Appendix C: Estimate of Take for Federally Listed Species



## LIST OF ACRONYMS AND ABBREVIATIONS

°F	Fahrenheit
ACGIH	American Conference of Government Industrial Hygienists
ADI	Area of Direct Impact
AEP	Appalachian Power Company
API	American Petroleum Institute
AR	access road
ATV	All-Terrain Vehicle
ATWS	additional temporary workspace
BA	Biological Assessment
BMPs	best management practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cm	centimeter(s)
dB	decibel
dBA	A-weighted decibels
dbh	diameter at breast height
DCH	designated critical habitat
DS	downstream
E&SC	Erosion and Sediment Control
ESA	Endangered Species Act
ESI	Environmental Solutions & Innovations, Inc.
FAA	Federal Aviation Administration
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FHWA	Federal Highway Administration
FR	Federal Register
FRRRP	Forest and Rangeland Renewable Resources Planning Act
ft	foot (feet)
HDD	horizontal directional drilling
hp	horsepower
HUC	hydrologic unit code
Hz	Hertz
IAQM	Institute of Air Quality Management
in	inch(es)
ITS	Incidental Take Statement
kHz	kilohertz
LDB	left descending bank
LDC	local distribution companies
Ldn	day/night average sound level
Leq	equivalent sound level
LOD	limits of disturbance
LRMP	Land and Resource Management Plan



m	meter(s)
m <sup>2</sup>	square meter(s)
MarkWest	MarkWest Liberty Midstream & Resources, LLC
mg/m <sup>3</sup>	micrograms per cubic meter
mi	mile(s)
mi <sup>2</sup>	square mile(s)
MLV	mainline block valve
MMDth/d	million dekatherms per day
MP	milepost
MVP	Mountain Valley Pipeline, LLC
n	sample size
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NGA	Natural Gas Act
NHRP	National Register of Historic Places
NIOSH	National Institute for Occupational Safety and Health
NLAA	May affect, not likely to adversely affect
NLCD	National Land Cover Database
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NSAs	noise sensitive areas
OSHA	Occupational Safety & Health Administration
PM	particulate matter
PM10	particulate matter under 10 microns
Project	Mountain Valley Pipeline Project
Project Area	Project's Limits of Disturbance
psig	Pounds Per Square Inch Gage
RCNM	Federal Highway Administration's Roadway Construction Noise Model
RDB	right descending bank
ROW	right-of-way
RUSLE	Revised Universal Soil Loss Equation
SSURGO	Soil Survey Geographic
STATSGO	State Soil Geographic
Transco	Transcontinental Gas Pipe Line Company, LLC
TSS	total suspended solids
U.S.	United States
US	upstream
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey



UV	ultraviolet
VA	Virginia
VAC	Virginia Annotated Coded
VDCR-DNH	Virginia Department of Conservation and Recreation's Division of Natural Heritage
VDGIF	Virginia Department of Game and Inland Fisheries
VDHR	Virginia Department of Historic Resources
VDMME	Virginia Department of Mines, Minerals, and Energy
VSS	Virginia Speleological Society
WERMS	Wildlife Environmental Review Map Service
WNS	White Nose Syndrome
WV	West Virginia
WVDEP	West Virginia Department of Environmental Protection
WVDNR	West Virginia Division of Natural Resources
WVDOT	West Virginia Department of Transportation
WVMSP	West Virginia Mussel Survey Protocol
WVNHP	West Virginia Natural Heritage Program
X-ray	radiography
YOY	Young of Year
µg/m3	micrograms per cubic meter

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## 1.0 Introduction

Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP, NextEra Energy, Inc., WGL Holdings, Inc., Vega Energy Partners, Ltd., Con Edison Gas Midstream, LLC, and RGC Midstream, LLC, 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 (NGA) 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 488.3-kilometer (303.4-mi), 106.7-centimeter (42-in) 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.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to the existing Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia (Figure 1). In addition to the pipeline, the Project will require approximately 171,600 horsepower (hp) of compression at three compressor stations currently planned along the route as well as measurement, regulation, and other ancillary facilities required for the safe operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day (MMDth/d) of natural gas.

### 1.1 Regulatory Compliance

As described below, MVP is working with multiple entities to assure compliance with state and federal environmental regulations. Efforts to address the following regulations have influenced Project design as it relates to federally and state-listed bats:

- Section 7 (c) of the Natural Gas Act
- The National Environmental Policy Act
- The Endangered Species Act (16 USC A-1535-1543, P.C. 93-205)
- The National Forest Management Act
- Virginia Annotated Code Title 29.1 Chapter 5, Article 6: Endangered Animal Species

