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Pesi 593.15

15 November 2016

Mr. Troy Andersen
U.S. Fish & Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

RE: Bog Turtle (*Glyptemys muhlenbergii*) Phase I Habitat Assessments along portions of the Mountain Valley Pipeline Project in Roanoke County, Virginia.

Dear Mr. Andersen,

Please find enclosed one compact disc containing the report text, figures, and appendices of the *Bog Turtle (Glyptemys muhlenbergii) Phase I Habitat Assessments along portions of the Mountain Valley Pipeline Project in Roanoke County, Virginia*.

If you have any questions or comments, please do not hesitate to contact Daniel Judy (DJudy@envsi.com; 513-591-4339), Valerie Clarkston (VClarkston@envsi.com; 513-591-4315), or Taina Pankiewicz (TPankiewicz@envsi.com; 513-591-4311).

Sincerely,

Daniel Judy
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Enclosures

www.ENVSI.com

BOG TURTLE (*GLYPTHEMYS MUHLENBERGII*)
PHASE I HABITAT ASSESSMENTS ALONG PORTIONS OF
THE MOUNTAIN VALLEY PIPELINE PROJECT
IN ROANOKE COUNTY, VIRGINIA

15 November 2016

Submitted to:

Mr. Troy Andersen
U.S. Fish & Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

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Prepared for:



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TABLE OF CONTENTS

	<u>Page</u>
1.0 PROJECT DESCRIPTION	1
2.0 REGULATORY SETTING.....	3
2.1 Federal Laws, Regulations and Policies Protecting Bog Turtles	3
2.2 Agency Coordination.....	3
3.0 ECOLOGICAL SETTING	4
3.1 Description	4
3.2 Status and Distribution	4
3.3 Natural History	4
4.0 METHODS	5
5.0 RESULTS	6
5.1 Segment A-1	6
5.2 Segment A-2	6
5.3 Segment B-1A.....	11
5.4 Segment B-1B.....	11
5.5 Segment C-1.....	11
5.6 Segment D-1A	11
5.7 Segment D-1B	11
5.8 Segment E-1	12
5.9 Segment F-1	12
5.10 Segment G-1A	12
5.11 Segment G-1B	12
5.12 Segment H-1.....	13
5.13 Segment H-2.....	13
5.14 Segment H-3.....	13
5.15 Segment H-4.....	13
5.16 Segment H-5.....	13
5.17 Segment H-6.....	13
5.18 Segment H-7	14
5.19 Segment H-8A	14
5.20 Segment H-8B	14
5.21 Segment I-1	14
5.22 Segment I-2	15
5.23 Segment J-1A	15
5.24 Segment J-1B	15
5.25 Segment J-2.....	15
5.26 Segment K-1	15
5.27 Segment L-1A	15
5.28 Segment L-1B	16
5.29 Segment L-1C.....	16
5.30 Segment L-2A	16

5.31	Segment L-2B	16
5.32	Segments M-1A and M-1B.....	17
6.0	CONCLUSIONS.....	17
7.0	LITERATURE CITED.....	17

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
Figure 1. Location of the proposed Mountain Valley Pipeline Project in West Virginia and Virginia.	2
Figure 2. Bog turtle survey areas along the Mountain Valley Pipeline Project in Virginia.	7

LIST OF TABLES

<u>Table</u>	<u>Page</u>
Table 1. Phase I Habitat Assessments completed along the Project in Roanoke County, Virginia.....	9

Appendices

Appendix A: Agency Correspondence

Appendix B: Representative Site Photographs

Appendix C: Phase I Habitat Assessment Data Sheets

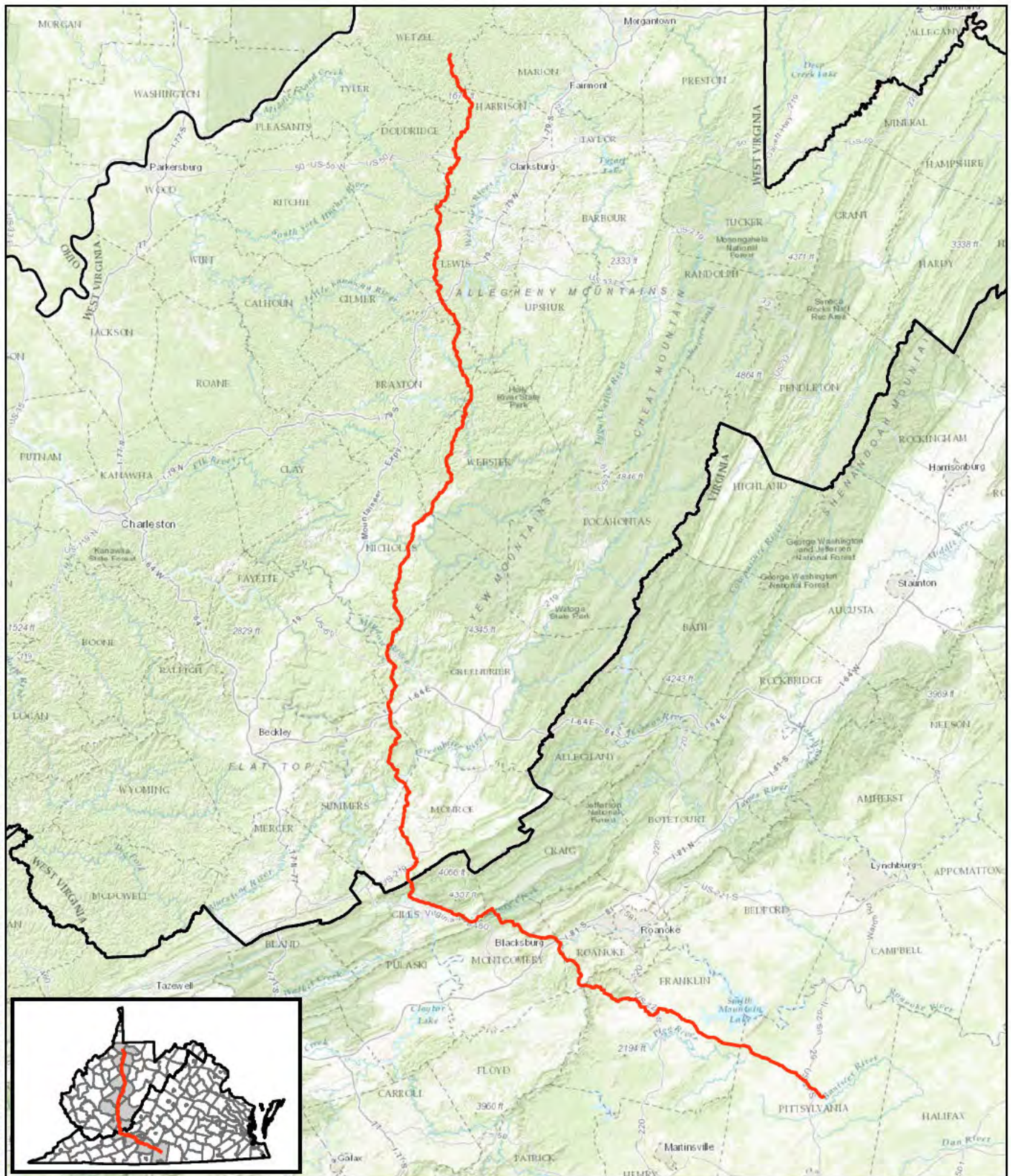
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1.0 Project Description

Mountain Valley Pipeline, LLC (MVP), a joint venture of 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 Project 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 Pipeline 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.

The current route as proposed includes a permanent right-of-way (ROW) with a width of 50 feet. This encompasses a total of 481.57 hectares (1,190.0 ac) in West Virginia and 264.70 hectares (654.1 ac) in Virginia. The width of the construction ROW is 125 feet at its widest, which will temporarily impact an additional 687.88 hectares (1,699.8 ac) in West Virginia and 370.04 hectares (914.40 ac) in Virginia. The Project will require construction of three compressor stations (Bradshaw, Harris, and Stallworth Stations) and four meter (interconnect) stations to receive and move gas from the beginning of the pipeline at the existing Equitrans transmission system in Wetzel County, West Virginia to the terminus at the Transco Station 165 in Pittsylvania County, Virginia. Additional ancillary aboveground facilities include pig launcher and receiver sites at the compressor stations, meter stations, and beginning and end of the pipeline, along with mainline block valve sites within the pipeline ROW. Temporary and permanent access roads will be used to assist in the safe construction and operation of the Project.



— October 2016 Proposed Route

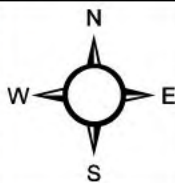
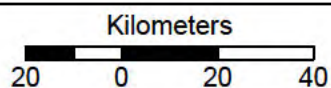


Figure 1. Location of the proposed Mountain Valley Pipeline Project in West Virginia and Virginia.

Project No.
593.15



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2.0 Regulatory Setting

2.1 Federal Laws, Regulations and Policies Protecting Bog Turtles

The Project is regulated by the FERC, an independent agency that regulates the interstate transmission of natural gas and also reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines. The FERC coordinates with the U.S. Fish and Wildlife Service (USFWS) and other federal and state agencies in its evaluation of the Project.

The Federal Endangered Species Act of 1973 (ESA) [16 U.S.C. 1531 et seq.] provides for the listing, conservation, and recovery of endangered and threatened species of plants and wildlife. Under the ESA, the USFWS is mandated to monitor and protect listed species. Many states enacted similar laws.

The Virginia Endangered Species Act (29.1-563 - 29.1-570) provides that Virginia Department of Game and Inland Fisheries (VDGIF) is the state regulatory authority over federally or state listed endangered or threatened fish and wildlife in the Commonwealth, defining fish or wildlife as “. . . any member of the animal kingdom, vertebrate or invertebrate, except for the class Insecta, and includes any part, products, egg, or the dead body or parts thereof.” It prohibits the taking, transportation, processing, sale, or offer for sale within the Commonwealth of any fish or wildlife listed as a federally endangered or threatened species, except as permitted by the Board of Game and Inland Fisheries for zoological, educational, scientific, or captive propagation for preservation purposes. State-listed species are provided the same protection per VDGIF Regulation 4 VAC 15-20-130.

The law further authorizes the Board of the VDGIF to adopt the federal list of endangered and threatened species, to declare by regulation that species not listed by the federal government are endangered or threatened in Virginia, and to prohibit by regulation the taking, transportation, processing, sale, or offer for sale of those species. Implementing regulations pursuant to this authority (4 VAC 15-20-130 through 140) further define “take” and other terms similarly to the federal ESA.

2.2 Agency Coordination

Coordination with the VDGIF indicated the bog turtle (*Glyptemys muhlenbergii*) and potentially suitable habitat for the species may occur along 7.9 kilometers (4.9 mi) of the Project near the Bent Mountain area of Roanoke County, Virginia (Appendix A). The bog turtle is federally threatened (due to similarity of appearance) and a Virginia state endangered species. A detailed description of the species status and distribution is provided in Section 3.2 below.

On behalf of MVP, Environmental Solutions & Innovations, Inc. (ESI) proposed to conduct Phase I Habitat Assessments in accordance with USFWS and VDGIF guidelines to determine whether the bog turtle or suitable habitat occur within the Project area. A study plan detailing methods for habitat assessments and subsequent presence/probable absence surveys was submitted to USFWS and VDGIF on May 8, 2015. Concurrence with the plan was received on May 11, 2015. Agency correspondence is provided in Appendix A.

3.0 Ecological Setting

3.1 Description

The bog turtle is a small emydid turtle with a maximum carapace length of 11 centimeters (4.33 in). Coloration is typically dark gray or brown, but may occasionally display a dull orange sunburst pattern (Kiviat 1993). Some individuals have yellow or orange markings radiating from the center of each carapace shield. The head and neck are brown with large and conspicuous red, orange, or yellow blotches behind the eyes. Adult males have a thicker tail and more concaved plastron than females (Kiviat 1993).

3.2 Status and Distribution

The species occurs in two disjunct populations that span thirteen states from Georgia to Massachusetts (Kiviat 1993). The bog turtle is considered federally threatened in the species northern range which includes western Massachusetts, western Connecticut, southeastern New York, southeastern Pennsylvania, New Jersey, northern Maryland and northern Delaware. Individuals within the species southern range are considered federally threatened due to similarity of appearance and are not subject to Section 7 consultation under ESA. The species southern range includes the Appalachian Mountain region of southern Virginia to northern Georgia.

In Virginia, the bog turtle is considered state endangered and populations are verified in 6 counties: Carroll, Floyd, Franklin, Grayson, Patrick, and Roanoke (Virginia Herpetological Society 2016).

3.3 Natural History

Bog turtles are an elusive species, spending much of their lives in hibernation. Bog turtles excavate hibernacula by burrowing into soft mud, where they will hibernate at depths of 5 to 55 centimeters (2 to 22 in) (Ernst et al. 1989). On average, bog turtles emerge from hibernation and become active in April. Individuals frequent open, low vegetation of wet meadows, and as temperatures rise, relocate to shaded areas. On

hot, sunny days, bog turtles prefer to burrow in cool, soft sediments, where they feed on a variety of invertebrates (Kiviat 1993).

Mating occurs in spring, either within the hibernaculum or shortly after turtles emerge from hibernation. Females reach sexual maturity in their fifth year, and afterwards may not mate successfully each year. Eggs are deposited in wetland areas during June, and hatchlings emerge in approximately 50 days. The young occasionally overwinter near the nest (Ernst et al. 1989).

Bog turtles are a semiaquatic species, preferring habitat with cool, shallow, slow-moving water, deep soft muck soils, and tussock-forming herbaceous vegetation. The bog turtle is generally found in open, early successional habitat types such as wet meadows or open calcareous boggy areas dominated by sedges (*Carex sp.*) or sphagnum moss. Characteristics of wetlands considered suitable for bog turtles include herbaceous vegetation, sparse to moderate shrub growth, a reliable source of water providing permanent saturation and some inundated areas, a mosaic of wetter and dryer areas, and a soft mud and/or stony substrate (Chase et al. 1989). Like many ectothermic species, bog turtles require habitats with solar exposure for basking and nesting.

4.0 Methods

Phase I Habitat Assessments are completed by qualified, USFWS-recognized biologists via searches for wetland habitats within a 91.4-meter (300-ft) wide corridor centered on the Project's proposed pipeline and a 15.2-meter (50-ft) wide corridor centered on proposed access roads. Each wetland is assessed and subsequently ranked as suitable or unsuitable for bog turtles. Representative site photographs are taken and a *USFWS/PFBC Bog Turtle Habitat Evaluation Field Form* (revised June 1, 2006) is completed for wetlands or wetland complexes observed during pedestrian searches. Representative photographs are provided as Appendix B and completed data sheets are provided as Appendix C. Wetlands considered suitable habitat include:

1. Hydrology: Shallow, spring-fed surface water, perennial saturated soils, interspersed dry and wet pockets, subsurface water flow, presence of shallow [< 10 centimeters (4 in) deep] rivulets or pseudo-rivulets.
2. Soils: Substrate of permanently saturated organic or mineral soils, often peat or muck-like in nature. Depth of substrate should be 7.6-12.7 centimeters (3 – 5 in) in order to provide for a suitable wintering site.

3. Vegetation: Presence of low grasses and sedges, often with a scrub-shrub component are critical for suitable nesting habitats. Common emergent vegetation includes, but is not limited to: tussock sedge (*Carex stricta*), soft rush (*Juncus effusus*), rice cut grass (*Leersia oryzoides*), sensitive fern (*Onoclea sensibilis*), tearthumbs (*Polygonum* spp.), jewelweeds (*Impatiens* spp.), arrowheads (*Sagittaria* spp.), skunk cabbage (*Symplocarpus foetidus*), panic grasses (*Panicum* spp.), other sedges (*Carex* spp.), spike rushes (*Eleocharis* spp.), grass-of-Parnassus (*Parnassia glauca*), shrubby cinquefoil (*Dasiphora fruticosa*), sweet-flag (*Acorus calamus*), and in disturbed sites, reed canary grass (*Phalaris arundinacea*) or purple loosestrife (*Lythrum salicaria*). Common scrub-shrub species include alder (*Alnus* spp.), red maple (*Acer rubrum*), willow (*Salix* spp.), tamarack (*Larix laricina*), and in disturbed sites, multiflora rose (*Rosa multiflora*).

Suitable hydrology and soil primarily determine suitable bog turtle habitat; however, all three of the above criteria must be met to provide critical wintering sites for turtles in Virginia.

5.0 Results

Phase I Habitat Assessments were completed along approximately 8.0 kilometers (5.0 mi) of the Project's centerline and 5.6 kilometers (3.5 mi) of access roads near Bent Mountain in Roanoke County, Virginia (Figure 2). Search efforts within 31 survey segments from July 2015 through October 2016 resulted in bog turtle habitat assessments of 45 features (Table 1). None of the features identified were determined suitable for bog turtles, thus presence/probable absence surveys are not required at this time. Details regarding each survey segment and associated features are described below. Representative site photographs are provided in Appendix B. Field data sheets are provided in Appendix C.

5.1 Segment A-1

Segment A-1 was surveyed July 8, 2015 and included a small section of the pipeline workspace near Project milepost 243.0. The area was over 90 percent upland deciduous forest with little to no mucky soil available for bog turtle use. No bog turtles were observed during the habitat assessment.

5.2 Segment A-2

Segment A-2 was surveyed July 8, 2015 and included an approximate 70-meter (229.6-ft) area along temporary access road MVP-RO-288 near Project milepost 245.7. The area was predominately upland tall-grass pasture land with little to no mucky soil available for bog turtle use.

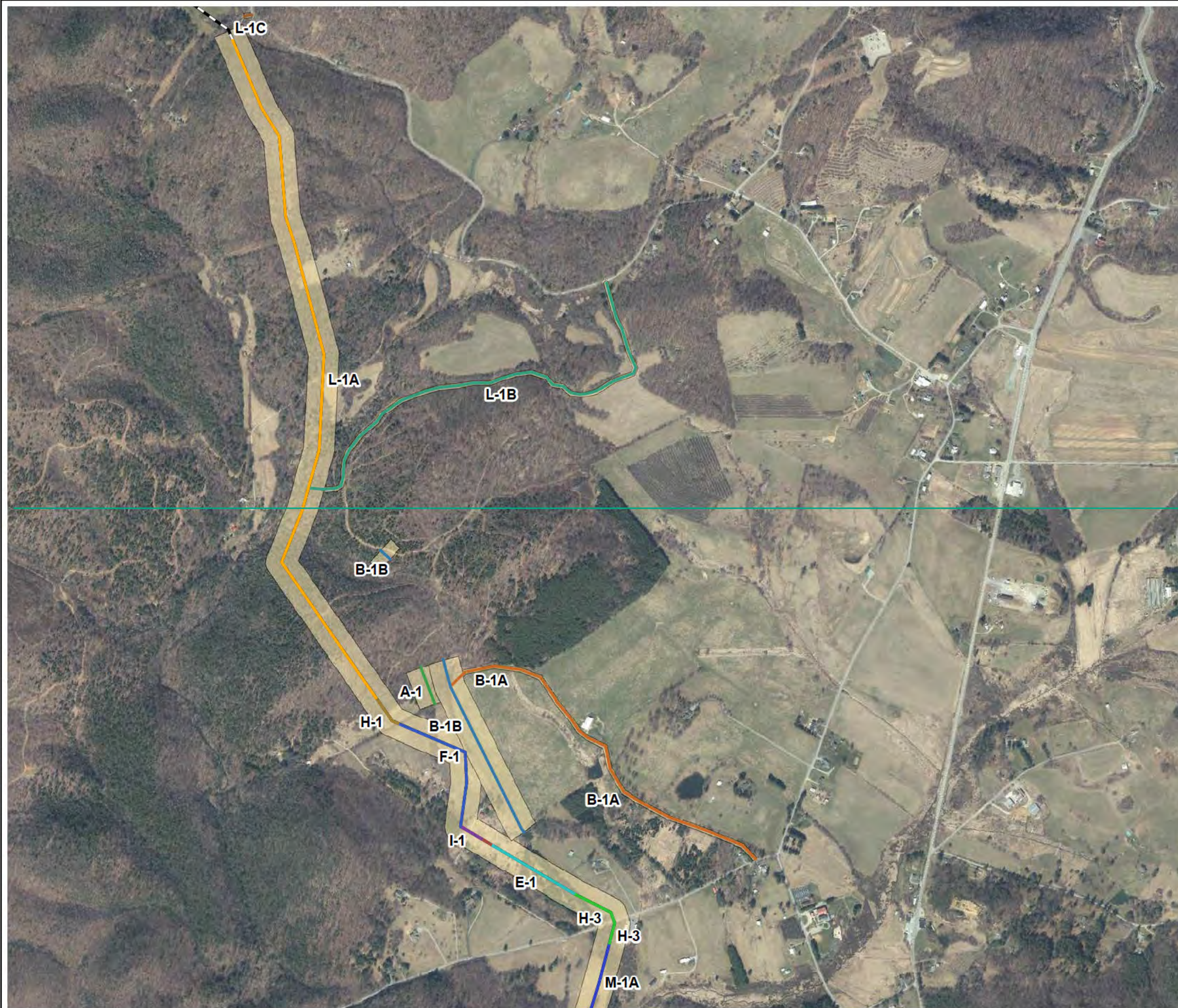
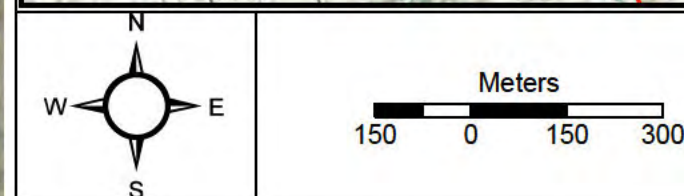


Figure 2. Bog turtle survey areas along the Mountain Valley Pipeline Project in Virginia.

Map 1 of 2

- October 2016 Proposed Route
Survey Corridor
- Bog Turtle Survey Segment**
- | | |
|--------------|--------------|
| Segment A-1 | Segment H-3 |
| Segment B-1A | Segment I-1 |
| Segment B-1B | Segment L-1A |
| Segment E-1 | Segment L-1B |
| Segment F-1 | Segment L-1C |
| Segment H-1 | Segment M-1A |
| Segment H-2 | |



Source: Portion of the ESRI ArcGIS Server Service named "World_Topo_Map"; accessed on 10/18/2015.



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Project No. 593.15

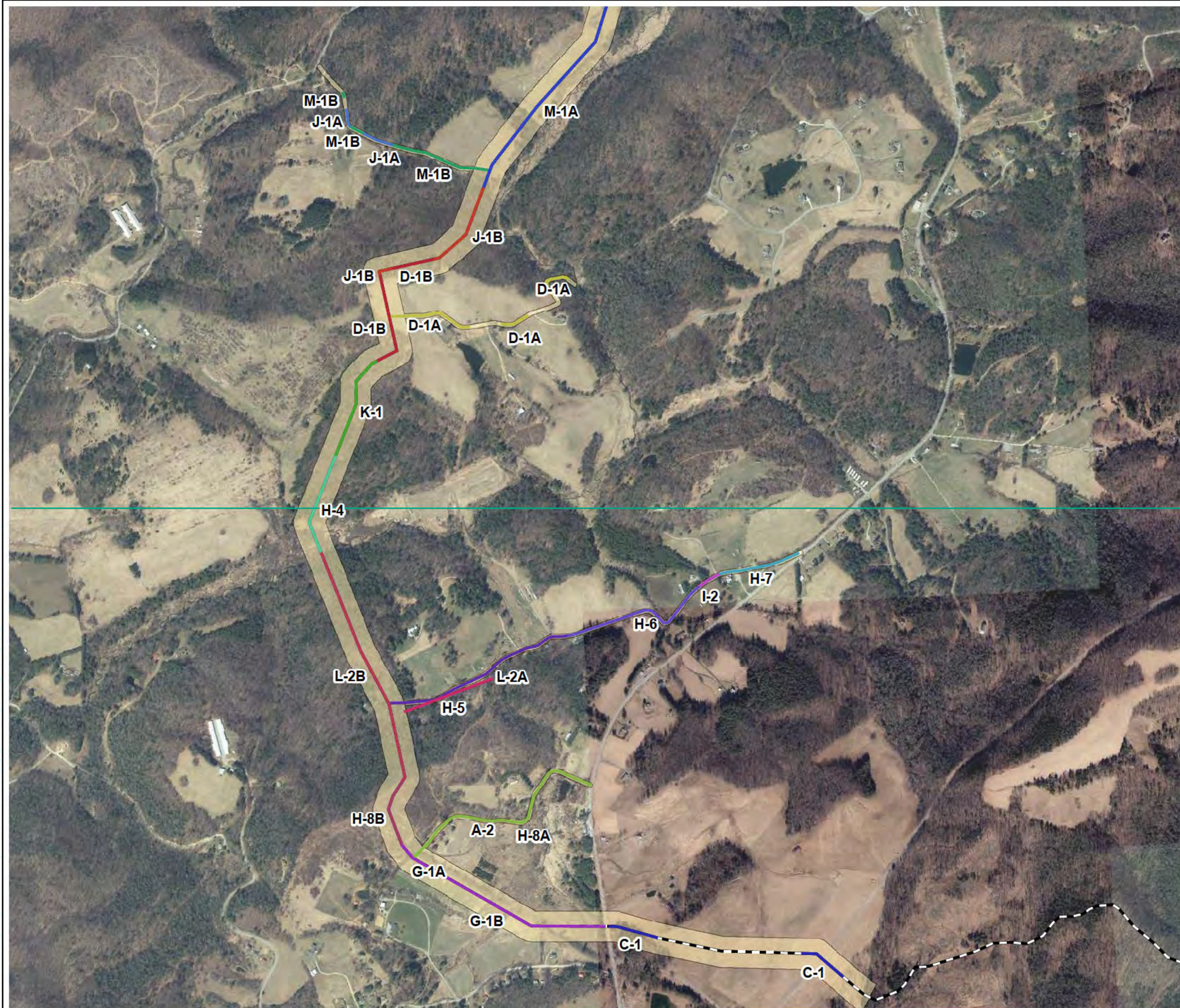
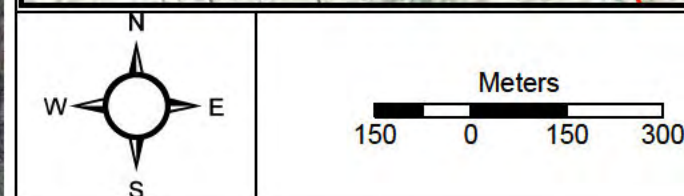


Figure 2. Bog turtle survey areas along the Mountain Valley Pipeline Project in Virginia.

Map 2 of 2

- October 2016 Proposed Route
Survey Corridor
- Bog Turtle Survey Segment**
- | | |
|--------------|--------------|
| Segment A-2 | Segment H-8A |
| Segment C-1 | Segment H-8B |
| Segment D-1A | Segment I-2 |
| Segment D-1B | Segment J-1A |
| Segment G-1A | Segment J-1B |
| Segment G-1B | Segment K-1 |
| Segment H-4 | Segment L-2A |
| Segment H-5 | Segment L-2B |
| Segment H-6 | Segment M-1A |
| Segment H-7 | Segment M-1B |



Source: Portion of the ESRI ArcGIS Server Service named "World_Topo_Map"; accessed on 10/18/2015.



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Project No. 593.15

Table 1. Phase I Habitat Assessments completed along the Project in Roanoke County, Virginia.

Segment ID	Date	Segment Start (DD)		Segment Stop (DD)		Surveyed Parcel(s)	Features Assessed	Conclusions
		Latitude	Longitude	Latitude	Longitude			
A-1	7/08/2015	██████	██████	██████	██████	VA-RO-049 VA-RO-037.01	0	No wetland or waterbody features observed
A-2	7/08/2015	██████	██████	██████	██████	BVA-RO-007 Corridor 12	0	Area was mostly upland, tall grass pasture; no suitable bog turtle habitat
B-1A	7/12/2015	██████	██████	██████	██████	VA-RO-047 VA-RO-036, VA-RO-048, RO-AR-14	0	No wetland or waterbody features observed
B-1B	7/12/2015	██████	██████	██████	██████	VA-RO-047 VA-RO-036, VA-RO-048, RO-AR-14	0	No wetland or waterbody features observed
C-1	4/29/2016	██████	██████	██████	██████	VA-RO-068, VA-RO-069	2	Hard-bottomed stream and wetland; soil depth <0.5" and superficially wet; did not meet all criteria for suitable bog turtle habitat
D-1A	5/23/2016	██████	██████	██████	██████	VA-RO-056	0	No wetland or waterbody features observed
D-1B	5/23/2016	██████	██████	██████	██████	VA-RO-056	3	Shallow spring and streams; did not meet all criteria for suitable bog turtle habitat
E-1	6/16/2016	██████	██████	██████	██████	VA-RO-052	4	Large wetland complex; mostly upland and superficially moist; did not meet all criteria for suitable bog turtle habitat
F-1	7/08/2015	██████	██████	██████	██████	BVRO-04	4	Springs, seeps, and surface water present; did not meet all criteria for suitable bog turtle habitat
G-1A	7/21/2016	██████	██████	██████	██████	VA-RO-064, VA-RO-067, BV-RO-0062	0	No wetland or waterbody features observed
G-1B	7/21/2016	██████	██████	██████	██████	VA-RO-064, VA-RO-067, BV-RO-0062	5	Shallow hard-bottomed streams filled with emergent vegetation; saturated soil in wetland not deep enough for year-round habitat; did not meet all criteria for suitable bog turtle habitat
H-1	7/22/2016	██████	██████	██████	██████	VA-RO-1150.02, VA-RO-1150.03	0	No wetland or waterbody features observed
H-2	7/22/2016	██████	██████	██████	██████	VA-RO-50	0	No wetland or waterbody features observed
H-3	7/22/2016	██████	██████	██████	██████	VA-RO-051, VA-RO-053	1	Wetland did not meet all criteria for suitable bog turtle habitat
H-4	7/22/2016	██████	██████	██████	██████	VA-RO-058, VA-RO-059	2	Hard-bottomed stream and wetland; soil not deep enough; area did not meet all criteria for suitable bog turtle habitat

Segment ID	Date	Segment Start (DD)		Segment Stop (DD)		Surveyed Parcel(s)	Features Assessed	Conclusions
		Latitude	Longitude	Latitude	Longitude			
H-5	7/22/2016					BVRO-11 (AR RO-287), VA-RO-5230 (AR RO-287)	0	No wetland or waterbody features observed
H-6	7/22/2016					VA-RO-5627, VA-RO-5219 (AR RO-287), VA-RO-5231 (AR RO-287), VA-RO-4123 (AR RO-287)	2	Area did not meet minimum criteria for suitable bog turtle habitat
H-7	7/22/2016					VA-RO-5216 (AR RO-287), VA-RO-5217 (AR RO-287)	0	No wetland or waterbody features observed
H-8	7/22/2016					VA-RO-4124; VA-RO-4125, BVRO-12, VA-RO-062, VA-RO-063, VA-RO-065, VA-RO-066, VA-RO-5383	8	Small, mucky stream surrounded by wetlands; 6" muck; potential way station for turtles but not considered as permanent, year-round habitat
I-1	8/1/2016					BVRO-05	2	Few wet areas; surface water only temporary; few areas have 3" – 4" of muck; could serve as an overnight area but not permanent habitat
I-2	8/1/2016					VA-RO-5218 (AR RO-287), VA-RO-5220 (AR RO-287)	0	Dry upland area at base of private driveway; nothing met criteria for suitable bog turtle habitat
J-1A	8/22/2016					VA-RO-055	1	Hard-bottomed stream within forested area; did not meet all criteria for suitable bog turtle habitat
J-1B	8/22/2016					VA-RO-055	0	No wetland or waterbody features observed
J-2	8/22/2016					VA-RO-5229 (AR RO-287)	0	No wetland or waterbody features observed
K-1	8/23/2016					VA-RO-057	1	Hard-bottomed stream; area not suitable for bog turtles
L-1A	10/10/2016					VA-RO-045, VA-RO-046	5	Portions of hard panned stream following project corridor; no suitable habitat for bog turtles
L-1B	10/10/2016					VA-RO-045, VA-RO-046; VA-RO-4118 (AR RO-283);	1	Hard-bottomed stream; not suitable for bog turtle
L-2A	10/10/2016					VA-RO-060; VA-RO-061	2	Hard panned seep; not suitable
L-2B	10/10/2016					VA-RO-060; VA-RO-061	2	Hard-bottomed streams; not suitable

Springs and saturated soil were present, but the area lacked the minimal vegetation structure required for use by bog turtles year-round. No bog turtles were observed during the habitat assessment.

5.3 Segment B-1A

Segment B-1A was surveyed July 12, 2015 and included an approximate 1.1-kilometer (0.7-mi) section along proposed access road MVP-RO-284 near Project milepost 243.2 (Figure 2). No wetlands, water bodies, or bog turtles were noted within the survey corridor of this segment.

5.4 Segment B-1B

Segment B-1B was surveyed July 12, 2015 and included an approximate 600-meter (1,968-ft) section along the proposed pipeline near Project milepost 243.2 (Figure 2). The area was primarily upland pasture and lacked potential bog turtle habitat. No wetlands, water bodies, or bog turtles were noted within the survey corridor of this segment.

5.5 Segment C-1

Segment C-1 was surveyed April 29, 2016 and included an approximate 283-meter (928-ft) section along the proposed pipeline near Project milepost 246.3 (Figure 2). One stream and associated wetland (Wetland ID W-ST1) were assessed for potential bog turtle habitat. The stream contained a hard, impermeable bottom with a less than 1.2-centimeter (0.5-in) saturated soil depth. Soil within the wetland was superficially wet and not capable of supporting bog turtles year-round. Dominant vegetation consisted of skunk cabbage, alder, dogwood (*Cornus* spp.), red maple, and green ash (*Fraxinus pennsylvanica*). The wetland and stream could serve as a potential stopover or provide a temporary way station for migrating individuals, but overall did not meet the hydrological, soil, and vegetative characteristics required for suitable year-round bog turtle habitat. Bog turtles were not observed during the habitat assessment.

5.6 Segment D-1A

Segment D-1A was surveyed May 23, 2016 and included an approximate 397-meter (1,302-ft) section along access road MVP-RO-286 near Project milepost 244.6 (Figure 2). No wetlands or water bodies were observed within the survey corridor along the proposed access road. Surrounding land use comprised an existing road, private driveway, and hay/pasture land. Bog turtles were not observed during the habitat assessment.

5.7 Segment D-1B

Segment D-1B was surveyed May 23, 2016 and included an approximate 443-meter (1,453-ft) section along the proposed pipeline near Project milepost 244.6 (Figure 2). Two streams and a palustrine emergent wetland were assessed for potential bog turtle habitat. The wetland, a small, shallow seep, lacked mucky soil, and dominant

vegetation included sedges, rushes, and rough bluegrass (*Poa trivialis*). Surrounding land use was predominately hay/pasture land. Overall, streams and wetlands within Segment D-1B provide potential water sources for migrating individuals, but the area is not considered viable long-term habitat for bog turtles. Bog turtles were not observed during the habitat assessment

5.8 Segment E-1

Segment E-1 was surveyed June 16, 2016 and included an approximate 292-meter (958-ft) section along the proposed pipeline near Project milepost 243.5 (Figure 2). Four wetlands exhibiting palustrine emergent, shrub, and forested characteristics were assessed for potential bog turtle habitat. The wetlands occurred in a low-lying area containing clay-heavy soils, causing precipitation to puddle on the surface. Dominant vegetation within the wetlands consisted of skunk cabbage, jewelweed, dogwood, rough bluegrass, rushes, sensitive fern, red maple, and giant goldenrod (*Solidago gigantea*). Overall, wetlands within Segment E-1 provide potential water sources for migrating individuals, but the area is not considered viable as long-term or over-wintering habitat for bog turtles. No bog turtles were observed during the habitat assessment

5.9 Segment F-1

Segment F-1 was surveyed July 8, 2016 and included an approximate 444-meter (1,456.6-ft) section along the proposed pipeline near Project milepost 243.2 (Figure 2). Springs, seeps, and surface water were observed during the assessment, but these features are unlikely present year-round. The area did not meet the minimum hydrology, soil, and vegetation characteristics considered suitable for bog turtle use. No bog turtles were observed during the habitat assessment

5.10 Segment G-1A

Segment G-1A was surveyed July 21, 2016 and included an approximate 24-meter (78.7-ft) section of the proposed access road MVP-RO-288 near Project milepost 245.7 (Figure 2). Surrounding land use was predominantly shrub-scrub and hay field. No wetlands or water bodies were observed within the survey corridor along this section of the proposed access road. No bog turtles were observed during the habitat assessment.

5.11 Segment G-1B

Segment G-1B was surveyed July 21, 2016 and included an approximate 674-meter (2,211-ft) section of the proposed pipeline from Project milepost 245.7 to 246.0 (Figure 2). The shallow, hard-bottomed streams within Segment G-1B provide a water source and potential travel corridor for bog turtles. Palustrine emergent and scrub-shrub wetlands observed within the segment have an average mucky soil depth of 2.5 – 7.6 centimeters (1 – 3 in) and an herbaceous layer dominated by skunk cabbage and rushes. Collectively, soil criterion was met, but the area lacked

suitable hydrological and vegetative components for year-round bog turtle habitat. No bog turtles were observed during the habitat assessment.

5.12 Segment H-1

Segment H-1 was surveyed July 22, 2016 and included an approximate 102.5-meter (336-ft) section of the proposed pipeline near Project milepost 243.0 (Figure 2). No wetlands, water bodies, or bog turtles were noted within the survey corridor.

5.13 Segment H-2

Segment H-2 was surveyed July 22, 2016 and included an approximate 33-meter (108-ft) section of the proposed pipeline near Project milepost 243.4 (Figure 2). No wetlands, water bodies, or bog turtles were noted within the segment survey corridor.

5.14 Segment H-3

Segment H-3 was surveyed July 22, 2016 and included an approximate 201-meter (659-ft) section of the proposed pipeline near Project milepost 243.6 (Figure 2). The area contained a small, hard bottomed creek with mucky soil depth averaging 2.5 – 7.6 centimeters (1 – 3 in). Skunk cabbage and cattails (*Typha* spp.) were the predominant vegetation. The creek was likely ephemeral and will not provide a long-term water source for bog turtles. However, bog turtles may use the area as a resting location during migration events. Collectively, the soil criterion was met, but the area lacked suitable hydrological and vegetative components for year-round bog turtle habitat. No bog turtles were observed at the time of survey.

5.15 Segment H-4

Segment H-4 was surveyed July 22, 2016 and included an approximate 316-meter (1,036.7-ft) section of the proposed pipeline near Project milepost 245.0 (Figure 2). A hard-bottomed stream and associated wetland were assessed for bog turtle habitat. The features lacked saturated, mucky soil and suitable vegetation. The stream could serve as a potential travel corridor and water source for bog turtles, but did not meet the criteria for hydrology, soil, and vegetation required for year-round bog turtle habitat. Bog turtles were not observed within the segment during the habitat assessment.

5.16 Segment H-5

Segment H-5 was surveyed July 22, 2016 and included an approximate 265-meter (869-ft) section of proposed access road MVP-RO-287 near Project milepost 245.4 (Figure 2). No wetlands, water bodies, or bog turtles were noted within the segment survey corridor.

5.17 Segment H-6

Segment H-6 was surveyed July 22, 2016 and included an approximate 485-meter (1,591-ft) section of the proposed access road MVP-RO-287 Project milepost 245.4 (Figure 2). A perennial stream and palustrine forested wetland within a small riparian

strip were assessed for bog turtle habitat. The surrounding landscape was predominately open grassland and hay fields. Dominant trees species along the stream included red oak (*Quercus rubra*), eastern hemlock (*Tsuga canadensis*), black cherry (*Prunus serotina*), and apple (*Malus* sp.). The herbaceous vegetation layer primarily consisted of skunk cabbage, New York fern (*Parathelypteris noveboracensis*), reed canary grass (*Phalaris arundinacea*), and Japanese stiltgrass (*Microstegium vimineum*). The stream could serve as a potential travel corridor and water source for bog turtles, but did not meet the criteria for hydrology, soil, and vegetation required for year-round bog turtle habitat. Bog turtles were not observed during the habitat assessment.

5.18 Segment H-7

Segment H-5 was surveyed July 22, 2016 and included an approximate 245-meter (804-ft) section of proposed access road MVP-RO-287 near the intersection of Bent Mountain Road (US 221) and Green Hollow Drive (Figure 2). No wetlands, water bodies, or bog turtles were noted within the segment survey corridor.

5.19 Segment H-8A

Segment H-8A was surveyed July 22, 2016 and included an approximate 654-meter (2,145.6-ft) section of proposed access road [REDACTED] near Project milepost [REDACTED] (Figure 2). Eight features (two streams and six wetlands) were assessed for potential bog turtle habitat. An intermittent stream with 15-centimeter (6-in) deep, mucky soil was determined potentially suitable for short-term use by migrating turtles, but not suitable for long-term use by resident turtles. Similarly, the 1.2-meter (4-ft) wide perennial stream within the surveyed segment would provide a suitable travel corridor for bog turtles, but would not provide long-term habitat as the feature lacked suitable soil, hydrological, and vegetative characteristics. The wetlands flanking the two streams lacked mucky soil and suitable vegetation to provide over-wintering habitat for bog turtles. Bog turtles were not observed during the habitat assessment.

5.20 Segment H-8B

Segment H-8B was surveyed July 22, 2016 and included an approximate 202-meter (662.7-ft) section of the proposed pipeline near Project milepost 245.6 (Figure 2). No wetlands, water bodies, or bog turtles were noted within the segment survey corridor.

5.21 Segment I-1

Segment I-1 was surveyed August 1, 2016 and included an approximate 62-meter (203-ft) section of the proposed pipeline near Project milepost [REDACTED] (Figure 2). The area consisted of a private driveway surrounded by shrub-scrub vegetation. Two wet areas exhibiting 10-centimeter (4-in) deep saturated soil were assessed. Dominant herbaceous plant species included sedges, rushes, jewelweed, and skunk cabbage. These features could potentially provide short-term (i.e., overnight) habitat for migrating bog turtles, but lack of surface water prevents the site from providing

long-term habitat for the species. Bog turtles were not observed during the habitat assessment.

5.22 Segment I-2

Segment I-2 was surveyed August 1, 2016 and included an approximate 51-meter (167-ft) section of the proposed access road MVP-RO-287 near the intersection of Bent Mountain Road (US 221) and Green Hollow Drive (Figure 2). The area was predominately a dry upland portion of a private driveway. No wetlands, water bodies, or bog turtles were noted within the segment survey corridor.

5.23 Segment J-1A

Segment J-1A was surveyed on August 22, 2016 and included an approximate 134-meter (440-ft) section of the proposed access road MVP-RO-285 near Project milepost 244.2 (Figure 2). A forested, perennial stream was assessed and determined a potential water source for migrating individuals, but overall the site lacked suitable soil and vegetation needed for long-term bog turtle habitat. Bog turtles were not observed during the habitat assessment.

5.24 Segment J-1B

Segment J-1B was surveyed August 22, 2016 and included an approximate 300-meter (984-ft) section of the proposed pipeline near Project milepost 244.2 (Figure 2). No wetlands, water bodies, or bog turtles were noted within the segment survey corridor.

5.25 Segment J-2

Segment J-2 was surveyed August 22, 2016 and included an approximate 110-meter (361-ft) section of proposed access road MVP-RO-287 near the intersection of Bent Mountain Road (US 221) and Green Hollow Drive (Figure 2). No wetlands, water bodies, or bog turtles were noted within the segment survey corridor.

5.26 Segment K-1

Segment K-1 was surveyed August 23, 2016 and included an approximate 309-meter (1,014-ft) section of the proposed pipeline near Project milepost 244.8 (Figure 2). A forested, hard-bottomed intermittent stream was determined not suitable for long-term bog turtle habitat, but could provide a water source for migrating individuals. Bog turtles were not observed during the habitat assessment.

5.27 Segment L-1A

Segment L-1A was surveyed October 10, 2016 and included an approximate 2-kilometer (1.2-mile) section of the proposed pipeline from Project milepost 241.7 to 242.9 (Figure 2). Five features, comprising a single perennial stream that entered and exited the survey segment multiple times, were assessed for potential bog turtle habitat. The stream was approximately 3 meters (10 ft) wide with a hard-panned bottom. The assessment determined the stream did not offer year-round, long-term

habitat for bog turtles but could provide a water source for migrating individuals. Bog turtles were not observed during the habitat assessment.

5.28 Segment L-1B

Segment L-1B was surveyed October 10, 2016 and included an approximate 1.4-kilometer (0.9-mi) section of proposed access road MVP-RO-283 near Project milepost 242.5 (Figure 2). A small, hard-bottomed stream was observed within the survey segment, but biologists determined it did not meet the minimum soil, hydrology, and vegetation criteria for suitable bog turtle habitat. No other wetlands or water bodies were noted. Bog turtles were not observed during the habitat assessment.

5.29 Segment L-1C

Segment K-1 was surveyed October 10, 2016 and included an approximate 20-meter (65.6-ft) section of the proposed access road MVP-RO-282 near Project milepost 241.7 (Figure 2). No wetlands, water bodies, or bog turtles were noted within the segment survey corridor.

5.30 Segment L-2A

Segment L-2A was surveyed October 10, 2016 and included an approximate 719-meter (2,359-ft) section of the proposed pipeline between Project milepost 245.1 and 245.5 (Figure 2). Two palustrine emergent wetlands (seeps) abutting perennial and intermittent streams were assessed for potential bog turtle habitat. Soil within the wetlands was saturated, but not considered mucky. Dominant herbaceous vegetation consisted of New York fern, lady fern (*Athyrium filix-femina*), cinnamon fern (*Osmundastrum cinnamomea*), skunk cabbage, jewelweed, and manna grass (*Glyceria* sp.). The shrub layer was predominantly spicebush (*Lindera benzoin*). Overall, the area did not meet soil and vegetation criterion for suitable bog turtle habitat, but the two streams could provide a water source and travel corridor for migrating turtles. Bog turtles were not observed during the habitat assessment.

5.31 Segment L-2B

Segment L-2B was surveyed October 10, 2016 and included an approximate 573-meter (1,880-ft) section of the proposed access road MVP-RO-287 near Project milepost 245.4 (Figure 2). Two palustrine forested wetlands were assessed for potential bog turtle habitat. Soil within the wetlands was saturated, but not considered mucky. Dominant herbaceous vegetation consisted of sedges, skunk cabbage, jewelweed, deertongue (*Dichanthelium clandestinum*), reed canary grass, and bindweed (*Convolvulus* sp.). Canopy trees included red oak (*Quercus rubra*), pin oak (*Quercus palustris*), and river birch (*Betula nigra*). Wetlands did not meet soil, hydrology, or vegetation criterion for suitable long-term bog turtle habitat, but the adjacent perennial stream could provide a hydration source for migrating turtles. Bog turtles were not observed during the habitat assessment.

5.32 Segments M-1A and M-1B

Segment M-1A includes an approximate 854.6-meter (2,803.8-ft) section of the proposed pipeline and Segment M-1B includes an approximate 362.7-meter (1,190-ft) section of the proposed access road MVP-RO-285). These segments were not surveyed due to restricted land access, but results will be submitted to the agencies in an addendum report when access is granted.

6.0 Conclusions

Thirty-one areas and over 40 wetland features were assessed for potential bog turtle habitat along 8.0 kilometers (5.0 mi) of the Project's centerline and 5.6 kilometers (3.5 mi) of access roads near Bent Mountain in Roanoke County, Virginia (Figure 2). Bog turtles were not observed during the Phase I habitat assessments. All features were determined unsuitable to support bog turtle populations, and Phase II presence/probable absence walk-through surveys are not required at this time. Due to the lack of land access, approximately 1.2 kilometers (0.7 mi) of the Project survey corridor require a Phase I habitat assessment. Once access is granted, the results of the outstanding survey will be submitted in an addendum report.

7.0 Literature Cited

- Chase, J. D., K. R. Dixon, J. E. Gates, D. Jacobs, and G. J. Taylor. 1989. Habitat characteristics, population size and home range of the bog turtle, *Clemmys muhlenbergi*, in Maryland. *Journal of Herpetology* 23:356-362.
- Ernst, C. H., R. T. Zappalorti, and J. E. Lovich. 1989. Overwintering sites and thermal relations of hibernating bog turtles, *Clemmys muhlenbergii*. *Copeia* 1989:761-764.
- Kiviat, E. 1993. Tale of two turtles: conservation of the Blanding's turtle and bog turtle. *News from Hudsonia* 9:1-7.
- Virginia Herpetological Society. 2016. Bog turtle *Glyptemys muhlenbergii*.

APPENDIX A
AGENCY CORRESPONDENCE

Valerie Clarkston

From: Kleopfer, John (DGIF) <John.Kleopfer@dgif.virginia.gov>
Sent: Friday, April 03, 2015 11:57 AM
To: Valerie Clarkston
Cc: ProjectReview (DGIF)
Subject: RE: ESSLog 35246; Mountain Valley Pipeline Project extending from Wetzel County, West Virginia to Pittsylvania County, VA

Sine it is the northern extreme of the known range of bog turtles in Virginia, that sounds good to me. But as I stated before, this area has been poorly surveyed and there is a possibility additional suitable habitat maybe encountered outside of the zone you are suggesting for survey. No need to send me a study plan for a habitat assessment. But you will need to apply for a Scientific Collection permit to conduct surveys. At that time, you will need to submit a project proposal.

John (J.D.) Kleopfer - Herpetologist, Virginia Department of Game and Inland Fisheries, 3801 John Tyler Hwy, Charles City, Virginia 23030, Office: 804-829-6703 Fax: 804-829-6788

From: Valerie Clarkston [<mailto:VClarkston@envsi.com>]
Sent: Friday, April 03, 2015 11:11 AM
To: Kleopfer, John (DGIF)
Cc: ProjectReview (DGIF)
Subject: RE: ESSLog 35246; Mountain Valley Pipeline Project extending from Wetzel County, West Virginia to Pittsylvania County, VA

Okay. We will tentatively plan to survey for bog turtles near the Bottom Creek area (~MP 235) down to right before US-221 (~MP 239). This sound reasonable? Our proposed survey corridor is 300 feet, with 150 feet each side of centerline – is that adequate for this survey? We may not be able to obtain land access beyond the survey corridor. Do you require a study plan for Phase I habitat assessments?

I am still waiting on formal comments from the USFWS Gloucester Field Office regarding T/E species, but I hope to receive them by next week. If they add any new areas of concern for herps, I will let you know!

Thanks,

Valerie

Valerie Clarkston
Scientist
Environmental Solutions & Innovations, Inc.
4525 Este Avenue
Cincinnati, OH 45232
Office 513.451.1777
Mobile 513.382.0925

From: Kleopfer, John (DGIF) [<mailto:John.Kleopfer@dgif.virginia.gov>]
Sent: Friday, April 03, 2015 10:30 AM
To: Valerie Clarkston

Cc: ProjectReview (DGIF)

Subject: RE: ESSLog 35246; Mountain Valley Pipeline Project extending from Wetzel County, West Virginia to Pittsylvania County, VA

No problem. I suspect we would request bog turtle surveys to be conducted in that area. It has been poorly surveyed, if at all, for bog turtles.

John (J.D.) Kleopfer - Herpetologist, Virginia Department of Game and Inland Fisheries, 3801 John Tyler Hwy, Charles City, Virginia 23030, Office: 804-829-6703 Fax: 804-829-6788

From: Valerie Clarkston [<mailto:VClarkston@envsi.com>]

Sent: Thursday, April 02, 2015 3:32 PM

To: Kleopfer, John (DGIF)

Cc: ProjectReview (DGIF)

Subject: ESSLog 35246; Mountain Valley Pipeline Project extending from Wetzel County, West Virginia to Pittsylvania County, VA

Hi JD,

Thanks for the earlier conversation – it really helped to clear things up!

I apologize, but I misspoke on the phone when I thought the bog turtle occurrence within 2 miles of the MVP project was in Giles County – it is actually in Roanoke County as you suspected. Attached are the WERMS map I created; please refer to **Map 4 (yellow hatching)**. Here are the approximate coordinates of the buffer center:

[REDACTED]

The observation date of the turtle was on 7/29/2008 and the notes within the shapefile state:

“Sighted on (b) (6) [REDACTED]. Surrounding land uses: road, fallow field, mixed forest, open water, private residential land. Site vegetation: pasture grasses, other herbaceous plants, mature forest. Soil”

Please advise on how to proceed with this particular occurrence and if habitat and/or presence absence surveys for the species in this area of the project will be required.

Thanks,

Valerie

Valerie Clarkston

Scientist

Environmental Solutions & Innovations, Inc.

4525 Este Avenue

Cincinnati, OH 45232

Office 513.451.1777

Mobile 513.382.0925



TELEPHONE / PERSONAL CONVERSATION REPORT

PROJECT NAME:	Mountain Valley Pipeline Project
MVP TEAM CALLER:	Valerie Clarkston
CONVERSATION WITH:	JD Kleopfer
AGENCY:	Virginia Department of Game and Inland Fisheries
EMAIL ADDRESS:	John.Kleopfer@dgif.virginia.gov
PHONE NUMBER:	757-592-8438
SUBJECT:	Reptile and Amphibian Surveys
DATE AND TIME:	4/2/2015 at 130 PM

SUMMARY OF CONVERSATION:

Valerie called John (JD) Kleopfer to follow up regarding the output of the WERMS database and to ask if VDGIF intend to require surveys for any reptile or amphibians (herps).

Timber Rattlesnake:

- Valerie mentioned the WERMS database indicated a few occurrences within 2 miles of the project
- JD indicated that this western population of timber rattlesnakes has some level of protection in the sense that individuals are not permitted to collect these snakes.
- JD stated VDGIF **would not require** surveys, but ask that MVP and contractors do their best to avoid the rattlesnakes if encountered and please do not encourage people to harass/kill the rattlesnakes.
- JD suggested that implementing drift fencing around open trench areas of the pipeline would help to keep rattlesnakes (and other ground dwelling animals) out of the trench.

Bog Turtle:

- Valerie mentioned the WERMS database indicated one occurrence of bog turtles within 2 miles of the MVP project
- JD could not recall any positive occurrences that far west, but asked Valerie to send him the WERMS shapefile and coordinates of the occurrence in a follow-up email.

Other herps:

- Valerie asked if any salamanders were of concern
- JD indicated not likely since nothing popped up during the WERMS database search for listed species

Valerie Clarkston

Subject: FW: ESSLog 35246; Mountain Valley Pipeline - Bog Turtle Study Plan

From: Aschenbach, Ernie (DGIF) [<mailto:Ernie.Aschenbach@dgif.virginia.gov>]
Sent: Monday, May 11, 2015 1:24 PM
To: Valerie Clarkston
Cc: ProjectReview (DGIF); 'troy_andersen@fws.gov'; Pinder, Mike (DGIF); Kleopfer, John (DGIF)
Subject: FW: ESSLog 35246; Mountain Valley Pipeline - Bog Turtle Study Plan



Valerie Clarkston

Scientist

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fax: 513.451.3321 **cell:** 513.382.0925
vclarkston@envsi.com |

JD Kleopfer provided the following comments in response to the Draft Bog turtle study plan.

Call JD if you have further questions and CC: ProjectReview on relevant email correspondence...

Thanks.

p.s. DGIF is in the process of moving our Headquarters the next few weeks. Our phone and computer service may be intermittent during this time. Thank you for your patience.

Ernie Aschenbach
Environmental Services Biologist
Virginia Dept. of Game and Inland Fisheries
~~P.O. Box 11104~~
~~4010 West Broad Street~~
~~Richmond, VA 23230~~
~~FAX: (804) 367-2427~~
Phone: (804) 367-2733
Email: Ernie.Aschenbach@dgif.virginia.gov

We're moving! Our new address as of May 5, 2015

Physical
7870 Villa Park Dr, Suite 400
Henrico, VA 23233-6510

Mailing
P O Box 90778
Henrico, VA 23228-0778

From: Kleopfer, John (DGIF)
Sent: Monday, May 11, 2015 1:01 PM
To: Aschenbach, Ernie (DGIF); ProjectReview (DGIF); Pinder, Mike (DGIF)
Subject: RE: ESSLog 35246; Mountain Valley Pipeline - Bog Turtle Study Plan

Ok with me

John (J.D.) Kleopfer - Herpetologist, Virginia Department of Game and Inland Fisheries, 3801 John Tyler Hwy, Charles City, Virginia 23030, Office: 804-829-6703 Fax: 804-829-6788

From: Aschenbach, Ernie (DGIF)
Sent: Monday, May 11, 2015 8:37 AM
To: Kleopfer, John (DGIF); ProjectReview (DGIF); Pinder, Mike (DGIF)
Subject: FW: ESSLog 35246; Mountain Valley Pipeline - Bog Turtle Study Plan

JD:

Please advise and CC: ProjectReview (me) on guidance to consultant. Thanks.
E

Ernie Aschenbach
Environmental Services Biologist
Virginia Dept. of Game and Inland Fisheries
~~P.O. Box 11104~~
~~4010 West Broad Street~~
~~Richmond, VA 23230~~
~~FAX: (804) 367-2427~~
Phone: (804) 367-2733
Email: Ernie.Aschenbach@dgif.virginia.gov

We're moving! Our new address as of May 5, 2015

Physical
7870 Villa Park Dr, Suite 400
Henrico, VA 23233-6510

Mailing
P O Box 90778
Henrico, VA 23228-0778

APPENDIX B
REPRESENTATIVE SITE PHOTOGRAPHS





Survey Segment C-1



Survey Segment C-1



Survey Segment D-1B



Survey Segment D-1B



Survey Segment E-1



Survey Segment E-1



Survey Segment G-1



Survey Segment G-1



Survey Segment G-1



Survey Segment G-1



Survey Segment H-3



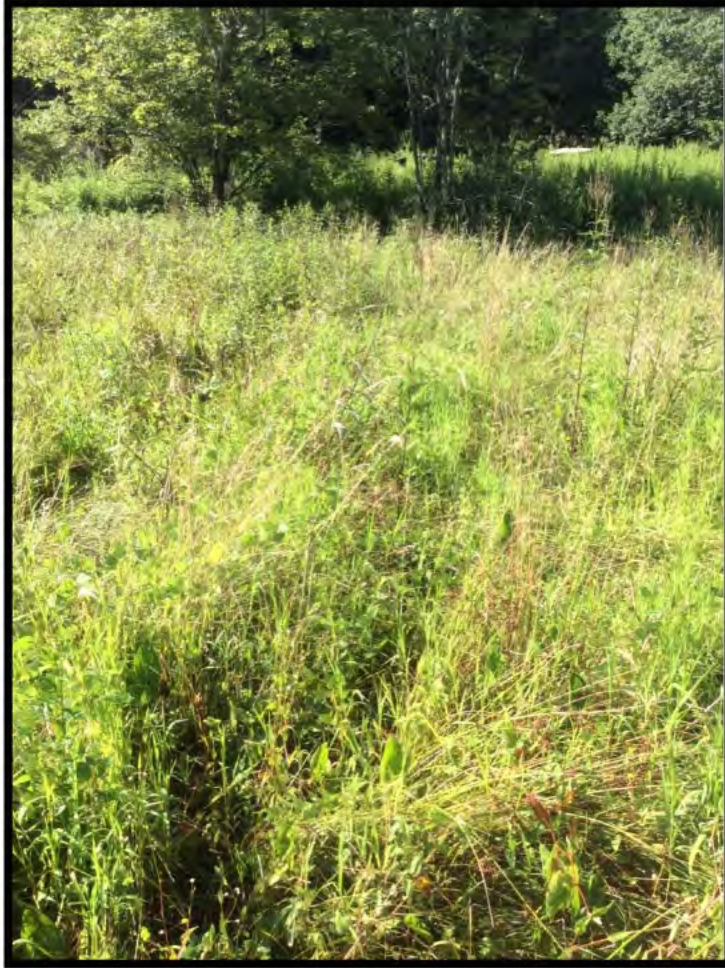
Survey Segment H-3



Survey Segment H-4



Survey Segment H-8



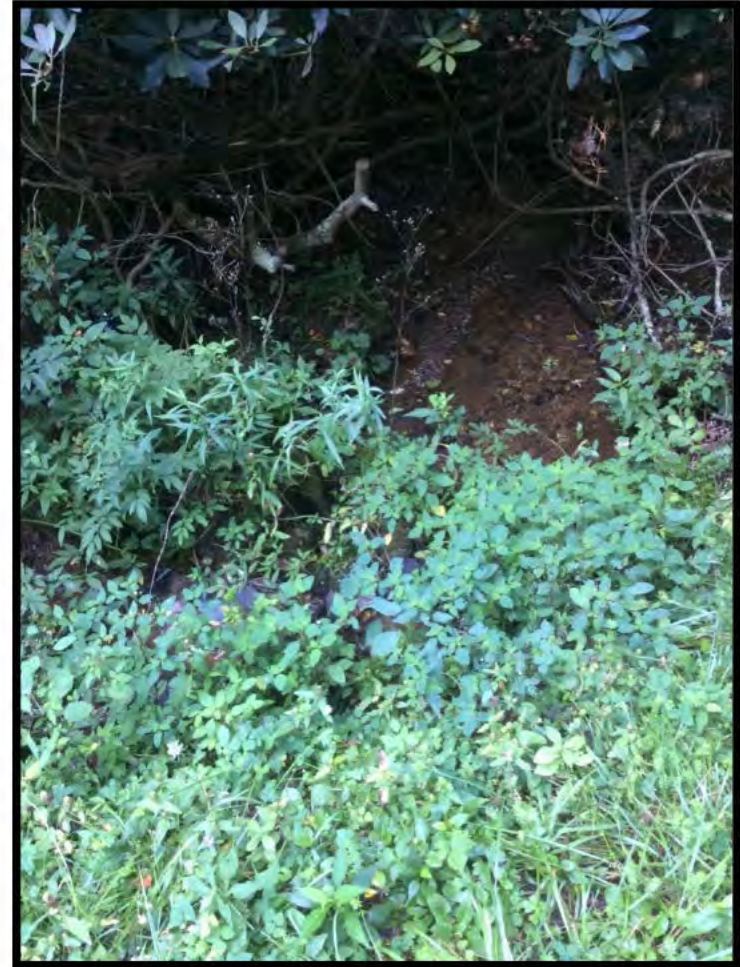
Survey Segment I-1



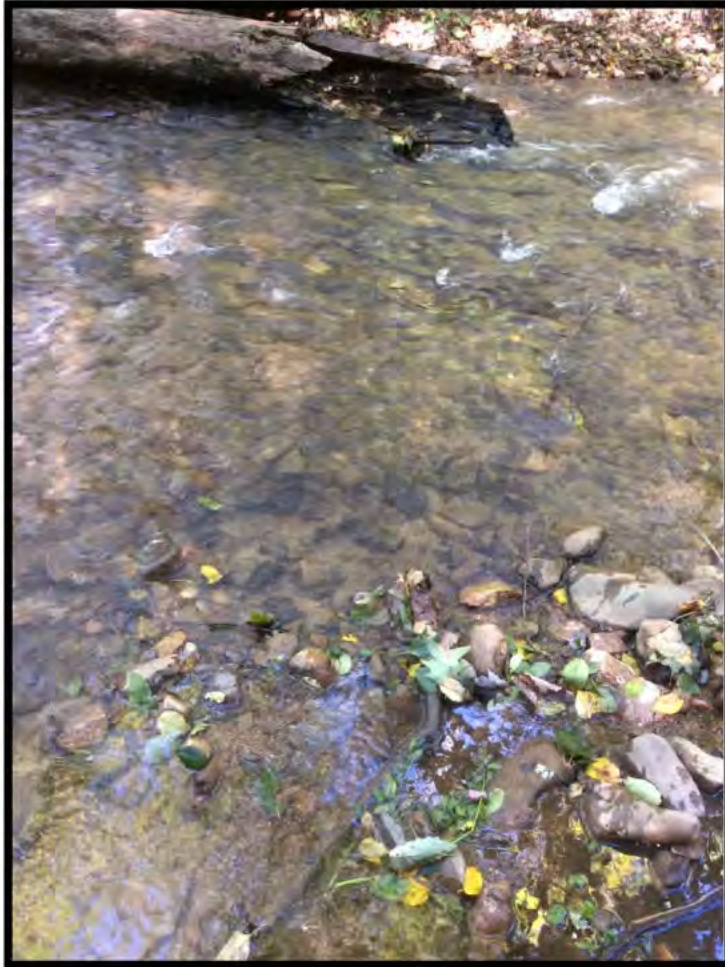
Survey Segment I-2



Survey Segment J-1A



Survey Segment J-1A



Survey Segment L-1A



Survey Segment L-1A



Survey Segment L-1B



Survey Segment L-2A



Survey Segment L-2B



Survey Segment L-2B

APPENDIX C
PHASE I HABITAT ASSESSMENT DATA SHEETS



USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley Pipeline
Project type: Gas pipeline
Applicant/Landowner Name: MVP
County: Roanoke, VA Quad: _____ Township/Municipality: Bent Mountain
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☐ N³

WETLAND ID: _____ PHOTOS TAKEN: ☐ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: July 8 2015 Time In: _____ Time Out: _____
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☒ Unknown

If yes, could they be potential bog turtle habitat? ☐ Y ☐ N ☒ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Track was 98% upland w/ tall grass & weeds

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name _____

Wetland _____ (con't)

Hydrology

- ☒ Y ☐ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☒ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☒ Unlikely ☐ Unknown
☒ Y ☐ N Water visible on surface? Check all that apply: ☒ small puddles/depressions (3" deep)
☐ rivulets (____" deep) ☐ larger pools/ponds (____" deep)
☐ Y ☐ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): _____Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: 0 to 3"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☒ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ____ to ____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations:** (use additional sheets if necessary)

See Additional Comments

INVESTIGATOR'S OPINION

- ☐ YES ☐ NO ☒ UNSURE The hydrology criterion⁸ for bog turtle habitat is met. could use as consider
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met. no good mud depth
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp

Investigator's Name (print)

Investigator's Signature

9/19/15

Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley Pipeline / Estate Martha C. Jones
Project type: Nat. Gas Pipeline
Applicant/Landowner Name: MVP
County: Roanoke, VA Quad: _____ Township/Municipality: Best Mountain
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☒ Y ☐ N³

WETLAND ID: _____ PHOTOS TAKEN: ☐ Yes ☒ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☒ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☒ NAD 27 ☐ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: July 8 2015 Time In: _____ Time Out: _____
Last precipitation: ☒ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☒ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

TRACK WAS 98% Field w/ TALL GRASSES and Weeds
see additional comments

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☒ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

Pond At end
☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name _____

Wetland _____ (con't)

Hydrology

- ☒ Y ☐ N Springs or seeps ☐ visible or ☒ likely? Watercress present? ☐ Yes ☒ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☒ Unknown ^{2'-6"}
☐ Y ☐ N Water visible on surface? Check all that apply: ☒ small puddles/depressions (^{2'-6"} deep)
☐ rivulets (____" deep) ☐ larger pools/ponds (____" deep)
☒ Y ☐ N Evidence of flooding? If yes, describe indicators AREAS OUTSIDE creek
hard mud that was NOT ALL WET

Soils Mapping Unit (optional): _____Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown**Soils – PEM Portion of Wetland**

Mucky⁴? ☒ YES ☐ NO	How much of it (PEM) is mucky ? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: <u>2</u> to <u>6</u> "	Most of the mucky part(s) of the wetland can be probed ⁵ : ☒ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky⁶? ☒ YES ☐ NO	How much of it (PEM) is non-mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland

Mucky⁴? ☐ YES ☐ NO	How much of it is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ____ to ____ "	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
---	--	--	---

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations:** (use additional sheets if necessary)See Attached Comments**INVESTIGATOR'S OPINION**

- ☐ YES ☐ NO ☒ UNSURE The hydrology criterion⁸ for bog turtle habitat is met. MARGINAL AT BEST
☐ YES ☐ NO ☒ UNSURE The soils criterion⁸ for bog turtle habitat is met. MARGINAL AT BEST
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp
 Investigator's Name (print)

[Signature]
 Investigator's Signature

9/10/15
 Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹

(revised 06/01/2006)

Project/Property Name: Mountain Valley / VA-20-68, 69

Project type: GAS

Applicant/Landowner Name: MUP

County: Roanoke Quad: MA Township/Municipality: N/A

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: 1/2 Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☐ N³

WETLAND ID: N-ST1 PHOTOS TAKEN: ☒ Yes ☒ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☒ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 4/29/2016 Time In: 11:30 AM Time Out: 12:00 PM

Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☒ some of it – _____ acres or 30 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☒ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☒ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☒ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Forested strip along major road

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☒ PSS 100 ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MUP; 1A-PO-068, 069Wetland W-ST1 (con't)**Hydrology**

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☒ No
- ☐ Y ☒ N Spring houses in or adjacent to wetland?
- ☒ Y ☐ N Saturated soils present? If yes, year-round? ☒ Likely ☐ Unlikely ☐ Unknown
- ☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
- ☐ Y ☒ N ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
- ☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): 1A - Aicellelats silt loamField observations confirm mapped type? ☒ YES ☐ NO ☐ Unknown

Soils - PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☐ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils - PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☒ YES ☐ NO	How much of it is mucky? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: <u>0</u> to <u>0.5</u> "	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
- ☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
- ☒ alder ☒ dogwood ☒ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: Fraxinus pennsylvanica**Herptiles**Were any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations: (use additional sheets if necessary)**

Hard bottom stream. Surrounded by skunk cabbage. Mud depth is < 0.5"
mud is superficially wet; not suitable even for wading state

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

*My only turtle
could use this as a
stop over - no long
term usage*

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorne
Investigator's Name (print)

[Signature]
Investigator's Signature

4/29/16
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley - UA-RO-056 Vest
Project type: 800
Applicant/Landowner Name: MVP / Vest
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☐ N³

WETLAND ID: W-CDIO PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation - If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 5/23/2016 Time In: 11 AM Time Out: 12 PM

Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☒ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

- ☒ none of it - the entire wetland is within the property boundaries (skip next 2 questions)
☐ some of it - _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

- ☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

- ☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☒ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

pasture/hay or grassland

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☒ Y ☐ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

mowing / pasture land

Project Name MUP, UA-20-0576, West

Wetland WCD (cont)

Hydrology

- ☒ Y ☐ N Springs or seeps ☒ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
- ☐ Y ☒ N Spring houses in or adjacent to wetland?
- ☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
- ☒ Y ☐ N Water visible on surface? Check all that apply: ☒ small puddles/depressions (___" deep)
- ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
- ☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): 16E - Edneyville fine sandy loamField observations confirm mapped type? ☒ YES ☐ NO ☐ Unknown

Soils - PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils - PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☒ sedges ☒ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
- ☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
- ☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: bluegrass**Herptiles**Were any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations: (use additional sheets if necessary)**

No habitat for bog turtles in West property. One small shallow spring,
but fails to provide habitat

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

could be used as
a water source for
a migrating turtle
but it could not
be used for
any term

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thomp

Investigator's Name (print)

Investigator's Signature

5/23/2016
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: MVP U4-P0-052
Project type: 800
Applicant/Landowner Name: MVP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase I survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: W434 PHOTOS TAKEN: ☐ Yes ☒ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 6/16/2016 Time In: 8AM Time Out: 9AM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?
☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it – _____ acres or 10 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?
☐ none of it ☐ all of it ☒ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?
☐ all of it ☒ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown
If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

low area, shrubby

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name

UA-R0702

W-AB4
Wetland (con't)**Hydrology**

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☒ Unknown
☒ Y ☐ N Water visible on surface? Check all that apply: ☒ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): 14 BField observations confirm mapped type? ☒ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☒ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
☒ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ Phragmites ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations:** (use additional sheets if necessary)

dually about stream outside corridor

INVESTIGATOR'S OPINION

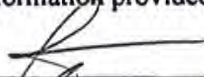
- ☐ YES ☐ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

might turtle come
are stream in date

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp

Investigator's Name (print)



Investigator's Signature

6/14/16

Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley UA-12052
Project type: gas
Applicant/Landowner Name: Mr P
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☐ N³

WETLAND ID: W-ABS PHOTOS TAKEN: ☐ Yes ☒ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 6/16/2010 Time In: 8 AM Time Out: 9 AM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ Unknown Drought conditions? ☐ Y ☐ N ☒ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Wetland in low lying area; precipitation has ponded,

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☒ PFO 100 ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name

MUP

UA-RO-052

Wetland W-ABS (con't)**Hydrology**

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☒ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (____" deep)
☐ rivulets (____" deep) ☐ larger pools/ponds (____" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): 16BField observations confirm mapped type? ☒ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ____ to ____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ____ to ____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☒ dogwood ☒ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____
 Additional dominant species: goldenrod

HerptilesWere any bog turtles observed? ☐ YES ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)

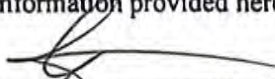
heavy clay soils**INVESTIGATOR'S OPINION**

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thery

Investigator's Name (print)



Investigator's Signature

6/16/2016
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley VA-RO-052 ; Luckii
Project type: MUP-RES
Applicant/Landowner Name: MUP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: W-AB6 PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation - If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☒ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) ☐ GCS datum (check one) ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 6/16/2016 Time In: 8am Time Out: 9am
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it - the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it - _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☒ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☒ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☒ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

overgrown shrub-scrub, flanked by cedars/pine

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM 10 ☒ PSS 10 ☒ PFO 20 ☐ POW _____

☐ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☐ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name

UA-120-052

Wetland ^{W-120} (con't)**Hydrology**☐ Y ☒ NSprings or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No☐ Y ☒ N

Spring houses in or adjacent to wetland?

☒ Y ☐ NSaturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☒ Unknown☒ Y ☐ NWater visible on surface? Check all that apply: ☒ small puddles/depressions (___" deep)☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)☐ Y ☒ N

Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): 1A 16BField observations confirm mapped type? ☒ YES ☐ NO ☐ Unknown**Soils – PEM Portion of Wetland**

Mucky ⁴ ?	How much of it (PEM) is mucky?	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
☐ YES ☒ NO	☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		
Non-mucky ⁶ ?	How much of it (PEM) is non-mucky?		
☒ YES ☐ NO	☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland

Mucky ⁴ ?	How much of it is mucky?	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
☐ YES ☒ NO	☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐ sedges ☒ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☒ dogwood ☒ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: bluegrass, ash,**Herptiles**Were any bog turtles observed? ☐ YES ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations:** (use additional sheets if necessary)

larger wetland complex; in low-lying area where precipitation has ponded for
extended periods of time

INVESTIGATOR'S OPINION☐ YES ☒ NO ☐ UNSUREThe hydrology criterion⁸ for bog turtle habitat is met.☐ YES ☒ NO ☐ UNSUREThe soils criterion⁸ for bog turtle habitat is met.☐ YES ☒ NO ☐ UNSUREThe vegetation criterion⁸ for bog turtle habitat is met.☐ YES ☒ NO ☐ UNSURE

This wetland is potential bog turtle habitat.

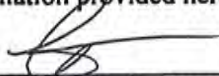
Mighty turtle
could use for
hydration - no
long term as rose

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Investigator's Name (print)

Tom Thorp

Investigator's Signature



Date

6/16/16

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: mvp UA-RO-052
Project type: 822
Applicant/Landowner Name: mvp
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: WAB3 PHOTOS TAKEN: ☐ Yes ☒ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 6/16/2016 Time In: 8 AM Time Out: 9 AM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?
☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it – _____ acres or 10 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?
☐ none of it ☒ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?
☒ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown
If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM 80 ☒ PSS 20 ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name

MVP

VA-PO-052

Wetland

W-AB 3
(con't)**Hydrology**☐ Y ☒ NSprings or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No☐ Y ☒ N

Spring houses in or adjacent to wetland?

☒ Y ☐ NSaturated soils present? If yes, year-round? ☒ Likely ☐ Unlikely ☐ Unknown☒ Y ☐ NWater visible on surface? Check all that apply: ☒ small puddles/depressions (___" deep)☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)☐ Y ☒ N

Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): 116BField observations confirm mapped type? ☒ YES ☐ NO ☐ Unknown**Soils – PEM Portion of Wetland**

Mucky⁴? ☐ YES ☒ NO	How much of it (PEM) is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky⁶? ☒ YES ☐ NO	How much of it (PEM) is non-mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland

Mucky⁴? ☐ YES ☐ NO	How much of it is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
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Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☒ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: blueberries**Herptiles**Were any bog turtles observed? ☐ YES ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations: (use additional sheets if necessary)**in low-lying area, precipitates are puddled; wetland about stream**INVESTIGATOR'S OPINION**

☐ YES ☒ NO ☐ UNSURE
☐ YES ☒ NO ☐ UNSURE
☐ YES ☒ NO ☐ UNSURE
☐ YES ☒ NO ☐ UNSURE

The hydrology criterion⁸ for bog turtle habitat is met.The soils criterion⁸ for bog turtle habitat is met.The vegetation criterion⁸ for bog turtle habitat is met.

This wetland is potential bog turtle habitat.

my notes: the cold use puddles for hydration.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp

Investigator's Name (print)

Investigator's Signature

6/16/2016
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley / VA-20-064, 067
Project type: GAS
Applicant/Landowner Name: MVP
County: Rockbridge, VA Quad: Township/Municipality:
PNDI # Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☐ N³

WETLAND ID: W-B24 PHOTOS TAKEN: ☐ Yes ☒ No WETLAND SIZE: acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☒ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat Long
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 7/21/2016 Time In: 8 AM Time Out: 9 AM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☐ N ☒ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☒ some of it – acres or 50 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☒ part of it (10 % or acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☒ part of it (at least 1.01 acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown

If yes, could they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

agricultural field split by major road; woods to north

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM 25 ☒ PSS 75 ☐ PFO ☐ POW

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name VA-20-064, 067Wetland W-24 (con't)**Hydrology**

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☒ N Saturated soils present? If yes, year-round? ☒ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ Y ☒ N ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): Alder flats silt loam, (PEM) Edneyville fine sandy loam (PSS)
 Field observations confirm mapped type? ☒ YES ☐ NO ☐ Unknown

Soils - PEM Portion of Wetland			
Mucky ⁴ ? ☒ YES ☐ NO	How much of it (PEM) is mucky? ☐ <10% ☒ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: <u>0</u> to <u>7</u> "	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☒ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils - PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___ "	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☒ sedges ☒ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☒ dogwood ☐ red maple ☒ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: giant golden rod, bluegrass, curly dock**Herptiles**Were any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)

Hard bottom stream**INVESTIGATOR'S OPINION**

- ☐ YES ☐ NO ☒ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

migrating turtle
could be AS A
water source
no very term usme

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Investigator's Name (print)

Tom Thorp

Investigator's Signature

Date

7/21/2016

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹

(revised 06/01/2006)

Project/Property Name: MVP Bog turtle
 Project type: Bog turtle survey
 Applicant/Landowner Name: Montuori, Laura VA-RO-064 VA-RO-067
 County: Bonnie Quad: _____ Township/Municipality: _____
 PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: _____ PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☒ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
 (approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 7/21/16 Time In: 9:10 Time Out: 10:00
 Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☒ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☒ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☒ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

open fields - some forest - small head bottom stream w/ trees around both sides

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name _____

Wetland _____ (con't)

Hydrology

- ☒ Y ☐ N ☐ ? Springs or seeps ☐ visible or ☒ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☐ N ☐ ? Spring houses in or adjacent to wetland?
☒ Y ☐ N ☐ ? Saturated soils present? If yes, year-round? ☐ Likely ☒ Unlikely ☐ Unknown - small stream
☒ Y ☐ N ☐ ? Water visible on surface? Check all that apply: ☐ small puddles/depressions (1-3" deep)
☐ rivulets (____" deep) ☐ larger pools/ponds (____" deep)
☒ Y ☐ N ☐ ? Evidence of flooding? If yes, describe indicators wet soil that was from a recent rain event - some dry mud present

Soils Mapping Unit (optional): _____Field observations confirm mapped type? ☐ YES ☒ NO ☐ Unknown

Soils - PEM Portion of Wetland			
Mucky ⁴ ? ☒ YES ☐ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70% <u>>100%</u>	Mucky soils range in depth from: <u>1</u> to <u>3</u> "	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70% <u>>100%</u>	muddy area was associated with a small stream - areas may have been created by rain event	

Soils - PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ____ to ____ "	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☒ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many?Other herptiles ☒ observed ☐ previously observed: one dead Rana**Additional Comments/Observations:** (use additional sheets if necessary)

Stream could be used as a movement corridor - one area had mud deep enough for a turtle to stay overnight - no suitable habitat for a big turtle to stay long term

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☒ YES ☐ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat. Low

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp
Investigator's Name (print)

Investigator's Signature

7/21/16
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley - VA-RO-67
Project type: g2s
Applicant/Landowner Name: MVP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: W-B25 PHOTOS TAKEN: ☐ Yes ☒ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☒ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 7/21/2016 Time In: 9AM Time Out: 9:30AM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☒ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☒ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☒ part of it (10 % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☒ part of it (at least 1 acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

pasture/grassland w/ small streams forming wetlands

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM 15 ☒ PSS 25 ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☒ Y ☐ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

hay field

Project Name MVP- UA-PO-67Wetland W-B25(con't)**Hydrology**

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): Alderflats silt loamField observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils - PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☐ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils - PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☒ sedges ☒ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: bluegrass, cottonwood, Virginia Pine**Herptiles**Were any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)

Wetland is part of larger complex; disturbed by recent clear-cutting
The area north outside 300ft corridor contains wetland mosaic

INVESTIGATOR'S OPINION

- ☐ YES ☐ NO ☒ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☐ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat.

might tank
 might use as
 with same - as
 no bog turtle
 unsure

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thong

Investigator's Name (print)

Investigator's Signature

7/21/2016

Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: MVP Bog Turtle
Project type: Bog Turtle Survey
Applicant/Landowner Name: VA-80-53
County: _____ Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☒ Y ☐ N³

WETLAND ID: _____ PHOTOS TAKEN: ☐ Yes ☐ No WETLAND SIZE: 1.4/0.55 acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☒ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 7/22/16 Time In: 915 Time Out: 925
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☒ Unknown

How much of this wetland is located off-site (i.e., outside the property boundaries or right-of-way)?

☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the off-site portion was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the off-site portion of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☒ Unknown

If yes, could they be potential bog turtle habitat? ☐ Y ☐ N ☒ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Small Hard bottom creek; mud in area 1'-3' inches deep cattails -
Bog turtles could use this as a way station if they were passing through
WETLAND CHARACTERISTICS looks like it has potential to dry up

Wetland type(s) present and % cover: ☒ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe

Project Name _____

Wetland _____ (con't)

Hydrology

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☒ Unknown
☐ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (____" deep)
☒ rivulets (1.5" deep) ☐ larger pools/ponds (____" deep) *Hard Pan bottom*
☐ Y ☐ N? Evidence of flooding? If yes, describe indicators
There is some mud outside of the creek that may be drying up

Soils Mapping Unit (optional): _____Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☒ YES ☐ NO	How much of it (PEM) is mucky? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: 1 to 3"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12" <i>1-3 inches</i>
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ____ to ____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: *no***Additional Comments/Observations:** (use additional sheets if necessary)

*Small creek that did not appear to be flowing - mud 1-3 deep -
 creek hard pan - small area that a migrating bog turtle could use as a
 way station but not enough size or composition for a turtle population to use*

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE
☒ YES ☐ NO ☐ UNSURE
☐ YES ☒ NO ☐ UNSURE
☐ YES ☐ NO ☐ UNSURE

The hydrology criterion⁸ for bog turtle habitat is met.The soils criterion⁸ for bog turtle habitat is met. *Somewhat*The vegetation criterion⁸ for bog turtle habitat is met.

This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thoup

Investigator's Name (print)

[Signature]

Investigator's Signature

7/22/16

Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹

(revised 06/01/2006)

Project/Property Name: 058 (059) 4123 5216 5217

Project type: _____

Applicant/Landowner Name: _____

County: _____ Quad: _____ Township/Municipality: _____

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☒ Y ☐ N³

WETLAND ID: STREAM PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: 3 acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☒ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 7/22/14 Time In: 10:00 Time Out: 11:30

Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☒ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

- ☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

- ☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

- ☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☒ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☒ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Fields, woods - small HAED Bottom Creek w/ no mud
Flood through the low area - Bog turtle could use ASP vegetation but
no mud or habitat to fly in

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name _____

Wetland _____ (con't)

Hydrology

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☒ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (____" deep)
☐ rivulets (____" deep) ☐ larger pools/ponds (____" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): _____Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: 0 to 6"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70% 100%		

Soils – PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ____ to ____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations:** (use additional sheets if necessary)

hard bottom stream - could be used for a corridor
 but no suitable habitat - no mud, no vegetated flats

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp
 Investigator's Name (print)

 Investigator's Signature

7/22/16
 Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: MVP = VA-RD-4125
Project type: gas
Applicant/Landowner Name: MVP
County: Roanoke, VA Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☒ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase I survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: W-KL5 PHOTOS TAKEN: ☐ Yes ☒ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat. _____ Long. _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 7/22/2016 Time In: 12:30 PM Time Out: 1:00 PM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☒ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?
☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it – _____ acres or 70 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?
☐ none of it ☐ all of it ☒ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?
☐ all of it ☒ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown
If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

drainage feature running directly into wetland which flows into larger complex off.

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☒ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe
drainage system
☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MVP- VA-R0-4/25

Wetland W-KLS (con't)

Hydrology

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
- ☐ Y ☒ N Spring houses in or adjacent to wetland?
- ☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
- ☒ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
- ☐ Y ☒ N ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
- ☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): Alder flats silt loam

Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☐ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☒ sedges ☒ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
- ☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
- ☐ alder ☒ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: golden rod, curly dock, clover

Herptiles

Were any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____

Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Tharp
Investigator's Name (print)

[Signature]
Investigator's Signature

7/22/16
Date

Project Name

4124 066 5383

Wetland (con't)

Hydrology

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No *Stream*
- ☐ Y ☒ N Spring houses in or adjacent to wetland?
- ☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
- ☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
- ☐ Y ☒ N ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
- ☐ Y ☒ N Evidence of flooding? If yes, describe indicators *NO deep mud stream Has hard pan bottom*

Soils Mapping Unit (optional):Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70% <i>100%</i>		

Soils – PSS and PFO Portions of Wetland

Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
--	--	--	---

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
- ☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
- ☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: *NO***Additional Comments/Observations: (use additional sheets if necessary)**

*Small stream crosses road 3-4 ft wide Hard pan bottom
could be used by BT as a corridor*

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
- ☒ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat. *See above*

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp

Investigator's Name (print)

[Signature]

Investigator's Signature

1/24/16

Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: _____

Project type: _____

Applicant/Landowner Name: _____

County: _____ Quad: _____ Township/Municipality: _____

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☐ N³

WETLAND ID: _____ **PHOTOS TAKEN:** ☒ Yes ☐ No **WETLAND SIZE:** _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 7/22/16 Time In: 12:40 Time Out: 12:50

Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

- ☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

- ☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

- ☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Small stream w/ hard bottom that crosses road
could be used by bog turtles as a corridor

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: 4125
Project type: _____
Applicant/Landowner Name: _____
County: _____ Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: 7.1 Does the Phase 1 survey include all wetlands in the action area? ☒ Y ☐ N³

WETLAND ID: _____ PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: 7.05 acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☒ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 7/22/16 Time In: 12:30 Time Out: 2:40
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☒ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?
☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?
☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?
☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☐ Unknown
If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☒ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Small swamp the opposite under ground - opposite to a wider area
with sk cabbage then gets smaller - goes under road - Dry old lake
bed is blue it

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☒ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe
old lake bed above it is dry - cattail present but no water mud
☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name

4124 066 5383

Wetland (con't)

Hydrology

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No *Stream*
☐ Y ☒ N Spring houses in or adjacent to wetland?
☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ Y ☒ N ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators *NO deep mud stream Has hard pan bottom*

Soils Mapping Unit (optional):Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70% <i>100%</i>		

Soils – PSS and PFO Portions of Wetland

Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
--	--	---	--

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: *NO***Additional Comments/Observations: (use additional sheets if necessary)**

*Small stream crosses road 3-4 ft wide Hard pan bottom
 could be used by BT as a corridor*

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☒ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat. *See above*

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp

Investigator's Name (print)

[Signature]

Investigator's Signature

1/24/16

Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: _____

Project type: _____

Applicant/Landowner Name: _____

County: _____ Quad: _____ Township/Municipality: _____

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☐ N³

WETLAND ID: _____ **PHOTOS TAKEN:** ☒ Yes ☐ No **WETLAND SIZE:** _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 7/22/16 Time In: 12:40 Time Out: 12:50

Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

- ☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

- ☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

- ☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Small stream w/ hard bottom that crosses road
could be used by bog turtles as a corridor

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: 4125
Project type: _____
Applicant/Landowner Name: _____
County: _____ Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: 7.1 Does the Phase 1 survey include all wetlands in the action area? ☒ Y ☐ N³

WETLAND ID: _____ PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: 7.05 acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☒ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 7/22/16 Time In: 12:30 Time Out: 2:40
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☒ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

- ☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

- ☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

- ☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☒ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Small swamp the opposite under ground - opposite to a wider area
with sk cabbage then gets smaller - goes under road - Dry old lake
bed is blue it

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☒ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

old lake bed above it is dry - cattail present but no water mud
☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name _____

Wetland _____ (con't)

Hydrology

- ☒ Y ☒ N Springs or seeps ☒ visible or ☒ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☒ Y ☐ N Water visible on surface? Check all that apply: ☒ small puddles/depressions (6" deep)
☒ rivulets (1-6" deep) ☐ larger pools/ponds (____" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): _____Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
<i>Mucky</i> ⁴ ? ☒ YES ☐ NO	How much of it (PEM) is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: 1 to 6"	Most of the mucky part(s) of the wetland can be probed ⁵ : 3-6" ☐ 6-8" ☐ 9-11" ☐ ≥12"
<i>Non-mucky</i> ⁶ ? ☐ YES ☒ NO	How much of it (PEM) is non-mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		5-6"

Soils – PSS and PFO Portions of Wetland			
<i>Mucky</i> ⁴ ? ☐ YES ☐ NO	How much of it is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ____ to ____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☒ skunk cabbage ☒ reattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: NO**Additional Comments/Observations:** (use additional sheets if necessary)

This small wet area could be used by a migrating Bog turtle AS a way station - Not enough habitat to associate to stay long term

INVESTIGATOR'S OPINION

- ☒ YES ☐ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met. *MARGINAL*
☒ YES ☐ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met. *MARGINAL*
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☒ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat. *AS way station only*

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thoy
Investigator's Name (print)

[Signature]
Investigator's Signature

7/22/16
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley BIRD-05; Coffey
Project type: 822
Applicant/Landowner Name: MVP
County: Roanoke, VA Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: W-EE42 PHOTOS TAKEN: ☐ Yes ☒ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 8/1/2016 Time In: 9AM Time Out: 10AM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☒ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?
☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?
☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?
☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown
If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

fallow, scrub-shrub field

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☒ Y ☐ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

mowing

Project Name

MCP

BUPD-05 Coffey

Wetland WEFU (con't)

Hydrology☐ Y ☒ NSprings or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No☐ Y ☒ N

Spring houses in or adjacent to wetland?

☒ Y ☒ NSaturated soils present? If yes, year-round? ☒ Likely ☐ Unlikely ☐ Unknown☐ Y ☒ NWater visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)☐ Y ☒ N

Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): 17C 1A

Field observations confirm mapped type? ☒ YES ☐ NO ☐ Unknown**Soils – PEM Portion of Wetland**

Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland

Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
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Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☒ sedges ☒ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
☐ sensitive fern ☒ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: ironweed hog peanut

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations:** (use additional sheets if necessary)**INVESTIGATOR'S OPINION**☐ YES ☒ NO ☐ UNSUREThe hydrology criterion⁸ for bog turtle habitat is met.☐ YES ☒ NO ☐ UNSUREThe soils criterion⁸ for bog turtle habitat is met.☐ YES ☒ NO ☐ UNSUREThe vegetation criterion⁸ for bog turtle habitat is met.☐ YES ☒ NO ☐ UNSURE

This wetland is potential bog turtle habitat.

no flow on surface water.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thap
Investigator's Name (print)

Investigator's Signature

8/1/2016
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain valley / BVR0-05
Project type: GOS
Applicant/Landowner Name: MVP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☒ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase I survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: ESI-46 PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation - If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat. [REDACTED] Long [REDACTED]
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 8/1/16 Time In: 9:49 AM Time Out: 10:00 AM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it - the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it - _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☒ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☒ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown

If yes, could they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

wetland meadow surrounded by pine forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM ☒ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☒ Y ☐ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe
Some mowing has occurred through it to make walkway trails

Project Name

MVP / BVR0-05

Wetland EST-W6 (con't)**Hydrology**☒ Y ☐ NSprings or seeps ☐ visible or ☒ likely? Watercress present? ☐ Yes ☐ No☐ Y ☒ N

Spring houses in or adjacent to wetland?

☒ Y ☐ NSaturated soils present? If yes, year-round? ☐ Likely ☒ Unlikely ☐ Unknown☐ Y ☒ NWater visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)☐ Y ☒ N

Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): _____Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown**Soils – PEM Portion of Wetland**

<i>Mucky</i> ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky ? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: 0 to <u>5</u> "	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
<i>Non-mucky</i> ⁶ ? ☐ YES ☒ NO	How much of it (PEM) is non-mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland

<i>Mucky</i> ⁴ ? ☐ YES ☐ NO	How much of it is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___ "	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
---	--	--	---

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☒ sedges ☒ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations: (use additional sheets if necessary)**

- some areas 3-4 inch deep mud. NO suitable surface water. Not suitable
 permanent Bog Turtle habitat

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tona Thorp
 Investigator's Name (print)

[Signature]
 Investigator's Signature

8/11/16
 Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹

(revised 06/01/2006)

Project/Property Name: Mountain Valley / VA-RO-5218 / 5219

Project type: GO3

Applicant/Landowner Name: MVP

County: Roanoke Quad: _____ Township/Municipality: _____

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: E51-W10 PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation - If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat Long

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 8/1/16 Time In: 10:40 AM Time Out: 10:45 AM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it - the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it - _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☒ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

no wetland or water. Dry upland, base of driveway

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☐ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

NO wetland

Project Name

MVP / VA-R0-5218/5219

Wetland

L3I-410
(con't)**Hydrology**

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (" deep)
☐ Y ☒ N rivulets (" deep) ☐ larger pools/ponds (" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators

Soils Mapping Unit (optional):Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown**Soils – PEM Portion of Wetland**

Mucky ⁴ ?	How much of it (PEM) is mucky?	Mucky soils range in depth from:	Most of the mucky part(s) of the wetland can be probed ⁵ :
☐ YES ☐ NO	☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	to "	3-5" 6-8" 9-11" ≥12"
Non-mucky ⁶ ?	How much of it (PEM) is non-mucky?		
☐ YES ☐ NO	☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland

Mucky ⁴ ?	How much of it is mucky?	Mucky soils range in depth from:	Most of the mucky part(s) of the wetland can be probed ⁵ :
☐ YES ☐ NO	☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	to "	3-5" 6-8" 9-11" ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____
 Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☐ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations:** (use additional sheets if necessary)

-NO water at all upland area, NO habitat

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp

Investigator's Name (print)

Investigator's Signature

8/11/16

Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹

(revised 06/01/2006)

Project/Property Name: Mountain valley / VA-RO-055
 Project type: GS
 Applicant/Landowner Name: MVP
 County: Roanoke Quad: _____ Township/Municipality: _____
 PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase I survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: EST-W8 PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation - If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat Long
 (approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 8/22/16 Time In: 9:10 AM Time Out: 9:15 AM
 Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it - the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it - _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☒ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☒ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown

If yes, could they be potential bog turtle habitat? ☐ Y ☒ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

- stream near access road surrounded by forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MVP / VA-RO-055Wetland E55-W8 (con't)**Hydrology**

- ☒ Y ☐ N Springs or seeps visible or ☒ likely? Watercress present? ☐ Yes ☐ No
- ☐ Y ☒ N Spring houses in or adjacent to wetland?
- ☐ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
- ☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
- ☐ Y ☒ N rivulets (___" deep) ☐ larger pools/ponds (___" deep)
- ☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional):Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
<i>Mucky</i> ⁴ ? ☐ YES ☐ NO	How much of it (PEM) is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
<i>Non-mucky</i> ⁶ ? ☐ YES ☐ NO	How much of it (PEM) is non-mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
<i>Mucky</i> ⁴ ? ☐ YES ☐ NO	How much of it is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
- ☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
- ☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations: (use additional sheets if necessary)**- hard bottom stream. no suitable habitat for Bog Turtles**INVESTIGATOR'S OPINION**

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

could only be used for Hydrology by migratory turtles

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp
Investigator's Name (print)[Signature]
Investigator's Signature8/22/16
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹

(revised 06/01/2006)

Project/Property Name: Mountain valley / VA - Ro - 054

Project type: Gas

Applicant/Landowner Name: MVP

County: Roanoke Quad: _____ Township/Municipality: _____

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase I survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: E5E-W7 PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat. _____ Long. _____

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 8/22/16 Time In: 9:15 AM Time Out: 9:30 AM

Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☒ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☒ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☒ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Muddy pool next to gravel road surrounded by forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MVP / VA-R0-054

Wetland EST-W7 (con't)

Hydrology

- ☒ Y ☐ N Springs or seeps ☐ visible or ☒ likely? Watercress present? ☐ Yes ☐ No
- ☐ Y ☒ N Spring houses in or adjacent to wetland?
- ☐ Y ☐ N Saturated soils present? If yes, year-round? ☒ Likely ☐ Unlikely ☐ Unknown
- ☒ Y ☐ N Water visible on surface? Check all that apply: ☒ small puddles/depressions (___" deep)
- ☐ Y ☒ N ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
- ☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional):

Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☒ YES ☐ NO	How much of it (PEM) is mucky? ☐ <10% ☒ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☒ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☒ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☒ Jewelweed ☐ sphagnum moss
- ☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
- ☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

Herptiles

Were any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____

Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)

tiny pond near road. Deep mud but very small, overnight
refuge at best, not suitable permanent habitat

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE
- ☐ YES ☒ NO ☐ UNSURE
- ☐ YES ☒ NO ☐ UNSURE
- ☐ YES ☒ NO ☐ UNSURE

The hydrology criterion⁸ for bog turtle habitat is met.

The soils criterion⁸ for bog turtle habitat is met.

The vegetation criterion⁸ for bog turtle habitat is met.

This wetland is potential bog turtle habitat.

*Turtle could
stay overnight
w/ long term*

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp
Investigator's Name (print)

[Signature]
Investigator's Signature

8/22/16
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain valley / VA-RO-057
Project type: Gas
Applicant/Landowner Name: MVP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: ESI-49 PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation - If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat Long
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 8/23/16 Time In: 10:00 AM Time Out: ~~10:15~~ 10:15 AM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?
☐ none of it - the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it - _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?
☒ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?
☐ all of it ☒ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown
If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Stream surrounded by forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name

MVP / VA-RO-057

Wetland ESI-W9 (con't)**Hydrology**

- ☒ Y ☐ N Springs or seeps ☐ visible or ☒ likely? Watercress present? ☐ Yes ☐ No
- ☐ Y ☒ N Spring houses in or adjacent to wetland?
- ☐ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
- ☒ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
- ☐ Y ☐ N rivulets (___" deep) ☐ larger pools/ponds (___" deep) *storm had better*
- ☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional):Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☐ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
- ☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
- ☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations: (use additional sheets if necessary)***- Shallow, had bottom stream, no habitat***INVESTIGATOR'S OPINION**

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

could only be used by migratory turtle for hydration

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp
Investigator's Name (print)

[Signature]
Investigator's Signature

8/23/16
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain valley / VA-RO-045
Project type: Gas
Applicant/Landowner Name: MVP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase I survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: ESI-WI PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation - If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat. [REDACTED] Long [REDACTED]
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 10/10/2016 Time In: 2:30 PM Time Out: 2:45 PM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?
☐ none of it - the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it - _____ acres or 90% % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?
☒ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?
☐ all of it ☐ part of it (at least _____ acres) ☒ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown
If yes, could they be potential bog turtle habitat? ☐ Y ☒ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

hard pan road stream bottom surrounded by forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MVP / VA-R0-045Wetland ESI-W1 (con't)**Hydrology**

- ☒ Y ☐ N Springs or seeps ☐ visible or ☒ likely? Watercress present? ☐ Yes ☐ No
- ☐ Y ☒ N Spring houses in or adjacent to wetland?
- ☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
- ☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
- ☐ Y ☒ N ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
- ☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): _____Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☒ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
- ☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
- ☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

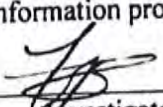
Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations: (use additional sheets if necessary)**Not suitable habitat**INVESTIGATOR'S OPINION**

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp
Investigator's Name (print)


Investigator's Signature

10/10/2016
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain valley / VA-RO-015
Project type: Gas
Applicant/Landowner Name: MRP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase I survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: ESI-WL PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation - If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat Long
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 10/10/2016 Time In: 2:50 PM Time Out: 3:00 PM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?
☐ none of it - the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it - _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?
☒ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?
☐ all of it ☐ part of it (at least _____ acres) ☒ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown
If yes, could they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Small, swampy stream, surrounded by forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MVP / VA-R0-045Wetland EST-W2 (con't)**Hydrology**

- ☒ Y ☐ N Springs or seeps ☐ visible or ☒ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): _____Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
<i>Mucky</i> ⁴ ? ☒ YES ☐ NO	How much of it (PEM) is mucky ? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: 1 to 2"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
<i>Non-mucky</i> ⁶ ? ☐ YES ☐ NO	How much of it (PEM) is non-mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
<i>Mucky</i> ⁴ ? ☐ YES ☐ NO	How much of it is mucky ? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: 1 to 2"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☒ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations: (use additional sheets if necessary)**

- Slow moving stream with some deep holes. Turtle could stop here for a night, but not suitable habitat for surveys.

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE
☐ YES ☒ NO ☐ UNSURE
☐ YES ☒ NO ☐ UNSURE
☐ YES ☒ NO ☐ UNSURE

The hydrology criterion⁸ for bog turtle habitat is met.
The soils criterion⁸ for bog turtle habitat is met.
The vegetation criterion⁸ for bog turtle habitat is met.
This wetland is potential bog turtle habitat.

could be used
for overnight
but not long
term

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp
Investigator's Name (print)

[Signature]
Investigator's Signature

10/10/16
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley / VA-RO-046
Project type: GS
Applicant/Landowner Name: MVP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: ESI-WY PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation - If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat. [REDACTED] Long [REDACTED]
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 10/10/16 Time In: 3:00 PM Time Out: 3:15 PM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it - the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it - _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☒ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☒ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Forested hillside

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MVP - VA - 20 - 046Wetland EJ-W1 (con't)**Hydrology**

- ☒ Y ☐ N Springs or seeps ☐ visible or ☒ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☒ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ Y ☒ N ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep) small seep
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional):Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils - PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils - PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations:** (use additional sheets if necessary)- very shallow seep. zero habitat**INVESTIGATOR'S OPINION**

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

*could be used
for Hydrobiol. only*

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp
Investigator's Name (print)[Signature]
Investigator's Signature10/10/16
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain valley / VA-R0-046
Project type: Gas
Applicant/Landowner Name: MVP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: ES-45 PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation - If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 10/10/16 Time In: 3:15 PM Time Out: 3:30 PM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it - the entire wetland is within the property boundaries (skip next 2 questions)

☒ some of it - _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☒ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☒ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

forested stream

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name

MVP / VA-R0-046

Wetland E52-W5 (con't)**Hydrology**

- ☒ Y ☐ N Springs or seeps ☐ visible or ☒ likely? Watercress present? ☐ Yes ☐ No
- ☐ Y ☒ N Spring houses in or adjacent to wetland?
- ☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
- ☒ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
- ☐ Y ☒ N ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep) *Hard bottom stream*
- ☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): _____Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown**Soils – PEM Portion of Wetland**

Mucky ⁴ ?	How much of it (PEM) is mucky?	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : □ 3-5" □ 6-8" □ 9-11" □ ≥12"
☐ YES ☒ NO	□ <10% □ 10-29% □ 30-49% □ 50-70% □ >70%		
Non-mucky ⁶ ?	How much of it (PEM) is non-mucky?		
☒ YES ☐ NO	□ <10% □ 10-29% □ 30-49% □ 50-70% □ >70%		

Soils – PSS and PFO Portions of Wetland

Mucky ⁴ ?	How much of it is mucky?	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : □ 3-5" □ 6-8" □ 9-11" □ ≥12"
☐ YES ☐ NO	□ <10% □ 10-29% □ 30-49% □ 50-70% □ >70%		

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
- ☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
- ☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)

*hard bottom stream, no permanent habitat***INVESTIGATOR'S OPINION**

- ☐ YES ☒ NO ☐ UNSURE
- ☐ YES ☒ NO ☐ UNSURE
- ☐ YES ☒ NO ☐ UNSURE
- ☐ YES ☒ NO ☐ UNSURE

The hydrology criterion⁸ for bog turtle habitat is met.The soils criterion⁸ for bog turtle habitat is met.The vegetation criterion⁸ for bog turtle habitat is met.

This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Investigator's Name (print)

Tom Thorp

Investigator's Signature

[Signature]

Date

*10/10/16**could be used for hydrology only*

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley / VA-RO-045
Project type: bas
Applicant/Landowner Name: MVP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☒ Y ☐ N³

WETLAND ID: S-EF32 PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 10/10/2016 Time In: 1:30PM Time Out: 2:00PM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?
☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it – _____ acres or 90 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?
☒ none of it ☐ all of it ☐ part of it (_____ % or bas acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?
☐ all of it ☒ part of it (at least 20.5 acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown
If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

stream surrounded by forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MUP / UA-RO-045

Wetland SEF32 (con't)

Hydrology

- ☒ Y ☐ N Springs or seeps ☐ visible or ☒ likely? Watercress present? ☐ Yes ☐ No
- ☐ Y ☒ N Spring houses in or adjacent to wetland?
- ☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
- ☒ Y ☐ N Water visible on surface? Check all that apply: small puddles/depressions (___" deep)
- ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep) Hard pond stream
- ☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional):

Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : 3-5" 6-8" 9-11" ≥12"
Non-mucky ⁶ ? ☐ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : 3-5" 6-8" 9-11" ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
- ☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
- ☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose _____

Additional dominant species: _____

Herptiles

Were any bog turtles observed? ☐ YES ☒ NO If yes, how many? _____

Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)

Hard Bottom Stream; not suitable habitat

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
- ☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

*migrating turtle
could use stream
to hydrate*

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thump
Investigator's Name (print)

[Signature]
Investigator's Signature

10/10/2016
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project Property Name: Mountain Valley / VA-PO-045
Project type: GFS
Applicant/Landowner Name: MVP
County: _____ Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase I survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: EST-W3 PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres
Wetland size estimation - If actual acreage is not known at time of investigation, check one:
☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat. [REDACTED] Long [REDACTED]
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 10/10/16 Time In: 4:00 PM Time Out: 4:15 PM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?
☐ none of it - the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it - _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?
☒ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?
☐ all of it ☒ part of it (at least 4.05 acres) ☒ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown
If yes, could they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Stream flowing under culvert, a Rural subdivision

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☒ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe
ditcher off road that collect rain water

☒ Y ☐ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe
acres nearby mowed

Project Name

MVP/ VA-R0-045

Wetland

EST-W3
(con't)**Hydrology**

- ☒ Y ☐ N Springs or seeps ☐ visible or ☒ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☐ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☒ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep) *Hard bottom stream*
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional):Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown**Soils – PEM Portion of Wetland**

Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland

Mucky ⁴ ? ☐ YES ☒ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
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Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: _____

HerptilesWere any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____**Additional Comments/Observations: (use additional sheets if necessary)***- Hard bottom stream. no habitat for Bog Turtles***INVESTIGATOR'S OPINION**

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

*migrating turtle could
use stream to
find mate*

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Investigator's Name (print)

Tom Therp

Investigator's Signature

[Signature]

Date

10/10/16

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley, VA-RO-061
Project type: 825
Applicant/Landowner Name: MVP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: W-Y1 PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 10/10/2016 Time In: 1230 PM Time Out: 1230 PM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ unknown Drought conditions? ☐ Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

- ☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

- ☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

- ☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☒ Y ☒ N ☐ Unknown
If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Mixed forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MUP. VA-RO-061Wetland W-YL (con't)**Hydrology**

- ☒ Y ☒ N Springs or seeps ☒ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ Y ☒ N ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): 16D, Edneyville fine sandy loamField observations confirm mapped type? ☒ YES ☐ NO ☐ Unknown**Soils – PEM Portion of Wetland**

Mucky⁴? ☒ YES ☐ NO	How much of it (PEM) is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: <u>3</u> to <u>4</u> "	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☒ 9-11" ☐ ≥12"
Non-mucky⁶? ☐ YES ☐ NO	How much of it (PEM) is non-mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland

Mucky⁴? ☐ YES ☐ NO	How much of it is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____ "	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
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Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: lady fern, New York fern, cinnamon fern**Herptiles**Were any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)

hard panned bottom seep**INVESTIGATOR'S OPINION**

- ☐ YES ☐ NO ☒ UNSURE
☐ YES ☒ NO ☐ UNSURE
☐ YES ☒ NO ☐ UNSURE
☐ YES ☒ NO ☐ UNSURE

The hydrology criterion⁸ for bog turtle habitat is met.The soils criterion⁸ for bog turtle habitat is met.The vegetation criterion⁸ for bog turtle habitat is met.

This wetland is potential bog turtle habitat.

could be used as a
water source for
a migrating turtle
no long term use

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thap
Investigator's Name (print)[Signature]
Investigator's Signature10/10/16
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley - VA-RO-061
Project type: GAS
Applicant/Landowner Name: MVP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☒ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: W-42 PHOTOS TAKEN: ☒ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation - If actual acreage is not known at time of investigation, check one:

☒ < 0.1 acre ☐ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 10/10/2016 Time In: 12 PM Time Out: 12:30 PM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☒ none of it - the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it - _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Abutting two streams; with mixed forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☒ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MVP - VA-PO-061Wetland W-Y2(con't)**Hydrology**

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): 16D; Edneyville fine sandy loamField observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils - PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☒ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils - PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: ___ to ___"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☐ sedges ☐ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: Spice bush, Manna grass**Herptiles**Were any bog turtles observed? ☐ YES ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)

next to shallow; hard bottom stream (S-Y7)**INVESTIGATOR'S OPINION**

- ☐ YES ☐ NO ☒ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

Migrating turtle stream
 might use same
 for water source -
 no long term usage

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jon Thorp
Investigator's Name (print)[Signature]
Investigator's Signature10/10/16
Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley / VA-20-060
Project type: gss
Applicant/Landowner Name: MUP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase 1 survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: W-29 PHOTOS TAKEN: ☐ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☒ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat _____ Long _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 10/10/2016 Time In: 12 PM Time Out: 12:30 PM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?
☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it – _____ acres or 80 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?
☐ none of it ☒ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?
☒ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☒ N ☐ Unknown
If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☒ PFO 100 ☐ POW _____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MVP VA-PO-060Wetland W-29 (con't)**Hydrology**

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): Alder flats Sil+loamField observations confirm mapped type? ☒ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☐ NO	How much of it (PEM) is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky ⁶ ? ☐ YES ☐ NO	How much of it (PEM) is non-mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it is mucky? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

- ☒ sedges ☐ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: pin oak, river birch, deertongue, bindweed**Herptiles**Were any bog turtles observed? ☐ YES⁷ ☒ NO If yes, how many? _____Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)

abouts had bottom stream - NO habitat**INVESTIGATOR'S OPINION**

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tom Thorp
 Investigator's Name (print)

[Signature]
 Investigator's Signature

10/10/16
 Date

Microtus turtle
 could use stream
 to hydrate

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form¹
(revised 06/01/2006)

Project/Property Name: Mountain Valley / VA-RD-060
Project type: CAS
Applicant/Landowner Name: MUP
County: Roanoke Quad: _____ Township/Municipality: _____
PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA²

Action area size: _____ Does the Phase I survey include all wetlands in the action area? ☐ Y ☒ N³

WETLAND ID: W-28 PHOTOS TAKEN: ☐ Yes ☐ No WETLAND SIZE: _____ acres

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☒ 0.1-0.5 acre ☐ > 0.5 to < 1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat. _____ Long. _____
(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 10/10/2016 Time In: 12 PM Time Out: 1230 PM
Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☒ Unknown Drought conditions? ☐ Y ☐ N ☒ Unknown

How much of this wetland is located *off-site* (i.e., outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)
☒ some of it – _____ acres or 50 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☒ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (e.g., from the subject property or from a public road)?

☒ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☒ Unknown

If yes, could they be potential bog turtle habitat? ☐ Y ☐ N ☒ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Mixed deciduous-coniferous forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM _____ ☐ PSS _____ ☒ PFO 100 ☐ POW _____

☒ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

drainage feature into wetland
☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name MVP; UA-R0-060 Wetland W-28 (con't)

Hydrology

- ☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☒ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): Alder flat Silt loam

Field observations confirm mapped type? ☒ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky ⁴ ? ☐ YES ☒ NO	How much of it (PEM) is mucky ? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	Mucky soils range in depth from: _____ to _____"	Most of the mucky part(s) of the wetland can be probed ⁵ : ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
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☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____

Additional dominant species: red oak, cherry, spice bush, NY fern, siltgrass

Herptiles

Were any bog turtles observed? ☐ YES ☒ NO If yes, how many? _____

Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)

INVESTIGATOR'S OPINION

- ☐ YES ☒ NO ☐ UNSURE The hydrology criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion⁸ for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Tam Thuy
Investigator's Name (print)

[Signature]
Investigator's Signature

10/10/16
Date