

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

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

1.1 Purpose and Objective

The purpose of this Plan is to assist the BLM, FS, and MVP in meeting their obligations to protect biological resources during the construction, operation, and maintenance of the Project. The objective of this Plan is to present a comprehensive, Project-specific plant, fish, and wildlife conservation plan that does the following:

- Provides consistency across jurisdictions;
- Meets the intent of the current BLM and FS Management guidance for federal lands; and
- Balances cost, practicality, and feasibility of Project implementation with avoiding or minimizing environmental impacts.

1.2 Content

The Plan includes information on (1) regulatory requirements and agency concerns pertaining to biological resources, (2) avoidance and minimization conducted during siting and routing of the Project to avoid impacts to biological resources, and (3) specific environmental protection measures (EPMs) to be implemented if state- or federally listed species, BLM sensitive species, or FS sensitive species (collectively referred to as special-status species) or their habitats are identified within, or adjacent to, the Project right-of-way. In addition to special-status species, EPMs also address general wildlife including big game, raptors, and migratory birds.

1.3 Project Description

Section 4.0 of the Plan of Development (POD), of which this plan is a part, provides information on construction methods, construction schedule, and operation and maintenance. Appendices A and B of the POD provide maps and drawing details.

2.0 REGULATORY FRAMEWORK

The following provides a brief overview of federal and state legislation and regulatory compliance applicable to biological resources in the Project area that have been considered in the development of this plan.

2.1 Federal Endangered Species Act

Pursuant to the federal Endangered Species Act (ESA) of 1973, the U.S. Fish and Wildlife Service (USFWS) has authority over actions that may affect the continued existence of a species federally listed as threatened or endangered. Take of federally listed species is

prohibited without specific exceptions or permits issued under Sections 7 or 10 of the ESA. Under the ESA, the definition of “take” includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. The USFWS has further defined harm to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Federal agencies must consult with the USFWS under Section 7 of the ESA on actions they authorize, fund, or carry out to insure these actions are not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

The FERC is the National Environmental Policy Act (NEPA) lead for this Project and developed an Environmental Impact Statement (EIS) that contains stipulations and mitigation measures that address the potential effects of the Project on federally listed species (FERC 2017). Additionally, a biological assessment was prepared to assess the effects of the Project on threatened and endangered wildlife, fish, and plant species identified by the USFWS. The USFWS issued a Biological Opinion on November 22, 2017 (see discussion in Section 3.1.2).

2.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 United States Code [U.S.C.] §§ 668-668d) applies primarily to taking, hunting, and trading activities that involve bald eagles (*Haliaeetus leucocephalus*) or golden eagles (*Aquila chrysaetos*). The act prohibits the taking of any individuals of these two species, as well as any part, nest, or egg. The term “take” as used in the act includes pursuing, shooting, shooting at, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing such species (16 U.S.C. § 668).

2.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712) makes it unlawful to pursue, hunt, take, capture, kill, or possess any migratory bird, part, nest, or egg of such bird listed in wildlife protection treaties among the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former USSR. This act also contains a clause that prohibits baiting or poisoning of these bird species. A list of species covered by MBTA can be found in Title 50, Code of Federal Regulations (CFR), Section 10.13. The MBTA applies to many bird species, including raptors, and protects them from prohibited activities during construction, operation, and maintenance of the Project.

2.4 Land and Resource Management Plans

Land and resource management plans provide management guidance and desired population and habitat conditions for biological resources on FS-managed lands. The Revised Jefferson National Forest Land and Resource Management Plan (Forest Plan) was completed in 2004 and directs the management of JNF with respect to legislative requirements and local, regional, and national issues and concerns.

This Plan represents the current understanding of how specific biological resource temporal and spatial restrictions will be applied. However, the construction contractor will

be responsible for confirming with the applicable agencies prior to implementation that the application of temporal and spatial restrictions is consistent with agency expectations.

2.5 Executive Order 13112 – Invasive Species

Executive Order (EO) 13112 (Invasive Species) requires federal agencies to prevent the introduction and spread of invasive species and not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species.

2.6 Executive Order 11990 – Wetlands

EO 11990 (Wetlands) requires federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities.

2.7 Executive Order 13186 – Migratory Birds

EO 13186 (Migratory Birds) requires federal agencies to protect migratory birds and to consider impacts on migratory bird species during Project planning.

2.8 Executive Order 13443 – Hunting Heritage

EO 13443 (Facilitation of Hunting Heritage and Wildlife Conservation) requires federal agencies to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.

2.9 Sections 401 and 404 of the Clean Water Act

Sections 401 and 404 of the Clean Water Act regulate drainage and discharge of pollutants and dredged or fill materials into waters of the United States, including wetlands.

2.10 Federal Land Policy Management Act of 1976

In accordance with the Federal Land Policy Management Act, the FS and BLM must make land use decisions based on principles of multiple use and sustained yield, i.e., combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values.

2.11 National Forest Management Act of 1976

The National Forest Management Act of 1976, as amended, and its implementing regulations under 36 CFR Part 219, consolidate and articulate the FS's management responsibilities for lands and resources of the National Forest System. The National Forest Management Act of 1976 requires each national forest to develop a management program and identify Management Indicator Species. The Management Indicator Species are used to establish forest plan objectives for wildlife and fish habitats and to estimate the effects of forest plans and projects on overall forest health.

2.12 U.S. Forest Service Manual 2670

FS Manual 2600, Chapter 2670 (FS 2005) directs each Regional Forester to designate sensitive species on public lands administered by the FS. Per the manual, sensitive species are defined “as plant or animal species identified by a Regional Forester for which population viability is a concern, as evidenced by a significant current or predicted downward trend in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce an existing distribution of the species.”

FS Manual 2670 also establishes the following management direction and objectives for FS sensitive species:

- Maintain viable populations of all native and desired non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on FS-administered lands.
- Review programs and activities as part of the NEPA process, through a biological evaluation, to determine their potential effect on sensitive species.
- Analyze, if impacts cannot be avoided, the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole.

The EPMs described in this Plan will ensure that the Project is constructed, operated, and maintained in compliance with FS Manual 2670.

2.13 State Comprehensive Wildlife Conservation Strategies

The Virginia Department of Game and Inland Fisheries (VDGIF) and West Virginia Division of Natural Resources (WVDNR) have published Comprehensive Wildlife Conservation Strategies aimed at encouraging land-management activities that conserve and enhance wildlife habitat (VDGIF 2005; WVDNR 2015). These State Conservation Strategies/Plans were established to create a conservation plan to conserve the states’ Species of Greatest Conservation Need and to provide a common framework that would enable conservation partners (federal, state, and private) to jointly implement a long-term approach for the benefit of those species.

3.0 FISHERIES, VEGETATION, AND WILDLIFE

MVP has coordinated with the FS to identify Regional Forester Sensitive Species found within the JNF and to what extent those species will be impacted by the construction and operation of the Project. These impacts and proposed mitigation are addressed in the Biological Evaluation for the JNF. Impacts and proposed mitigation for federally listed species are addressed in the Biological Assessment for the Project. Several species addressed in the 2017 Biological Evaluation will be omitted from inclusion in the forthcoming Supplement. As several species have become federally listed in the interim period since the 2017 document are now addressed in the Supplement to the Biological Assessment. Fishery, vegetation, and wildlife resources affected at the Weston and Gauley Turnpike are limited to minor clearing of vegetation to set up for and bore the

crossing. This clearing occurred in the construction right-of-way, outside of the limits of USACE-owned property, resulting in no additional clearing on federal lands.

3.1.1 Vegetative Resources

The West Virginia portion of the Project lies in the Allegheny Plateau, Allegheny Mountains, and Valley and Ridge Physiographic regions. In Virginia, the Project lies in the Valley and Ridge, Blue Ridge, and Piedmont Physiographic regions. All JNF areas crossed by the Project are within the Valley and Ridge Province (Fenneman, 1938).

The West Virginia/Virginia border approximately forms the western edge of the Valley and Ridge Province, which extends from southeast Tennessee northeast to eastern Pennsylvania in a fairly narrow band. The Valley and Ridge Province is part of the Oak-Chestnut forest described by Braun (1950). The region was traditionally dominated by oak and chestnut, but chestnut has been replaced in the canopy by oaks and hickories (Braun 1950).

Based on geospatial data provided by the FS, the Project crosses several major forest community types, including mixed mesophytic forest; conifer-northern hardwood forest; dry-mesic oak forest; dry and dry-mesic oak-pine forest; dry and xeric oak forest, woodland, and savanna; and xeric pine and pine-oak forest and woodland. Common dominant canopy species observed within the major forest community types during field surveys included white pine, chestnut oak, black oak, scarlet oak, red oak, white oak, tulip poplar, mockernut hickory, and pignut hickory. Impacts to areas prescribed as old growth forest during construction of the Project on National Forest System land are approximately 7.4 acre (ac). In upland areas, trees or deep-rooted shrubs will be removed from the construction right-of-way and will not be permitted to grow within the 50-foot-wide permanent right-of-way. The FS has requested that consideration be given to providing shrub vegetation on the outer edges of the permanently maintained pipeline right-of-way to reduce the sharp edge effect of the maintained pipeline right-of-way and provide as much escape cover as possible for species like small mammals, reptiles, and amphibians needing to cross the maintained right-of-way. This effect will result naturally on one side of the right-of-way because shrub-like vegetation will be permitted to grow between the maintained permanent right-of-way and the naturally regenerating temporary workspaces used along the edge of the construction right-of-way. MVP will reseed with a mix containing species recommended by FS on JNF lands (Restoration Plan, Appendix H of the POD). In addition, MVP will feather the right-of-way to ensure that vegetative openings appear more natural and conform with the natural form, line, color, and texture of the existing landscape. Temporary work spaces within forested areas would be revegetated per the Restoration Plan (Appendix H of the POD).

MVP conducted a tree-stand analysis that documents stand age and height and species by two-inch-diameter class for all areas potentially impacted by the pipeline right-of-way and construction access roads. The FS also recommended that site index should be measured to be used for estimates of volume and value of potential commercial timber products. The tree stand analysis was submitted to the JNF on April 6, 2016.

3.1.2 Federally Listed Species

The FS coordinates with the USFWS to avoid negative effects and to assist with recovery of federally listed species found within the JNF. The JNF contains, or may influence, suitable habitat with the potential to support 50 federally listed species including 24 mussels, 10 plants, seven fish, five mammals, one amphibian, one spider, one isopod, one crayfish, and one bumble bee. MVP continues to coordinate with the USFWS and the FS regarding the potential for presence of federally listed species within the Project area.

Preliminary desktop analyses and correspondence with the FS, Eastern Divide Ranger District, indicated three federally listed plants (shale barren rock cress [*Arabis serotina*], small whorled pogonia [*Isotria medeoloides*], and smooth coneflower [*Echinacea laevigata*]) as potentially occurring in areas where the Proposed route crosses the JNF. Field habitat assessments and seven surveys for plants began in May 2015 and concluded in August 2016 along the proposed Project route and abandoned alternative routes within JNF. No federally listed plant species were observed within the JNF during these field surveys.

The current range of four federally listed bats (Indiana bat [*Myotis sodalis*], northern long-eared bat [*Myotis septentrionalis*], gray bat [*Myotis grisescens*], and Virginia big-eared bat [*Corynorhinus townsendii virginianus*]) overlaps with the JNF. Mist-net surveys for federally listed bats began in May 2015 and concluded in May 2016. No federally listed bats were captured within the JNF during these surveys. Searches for suitable bat hibernacula (caves and mines) on the JNF were conducted concurrent with mist-net surveys. No hibernacula were discovered during these searches.

The Biological Opinion issued November 22, 2017 contained the following non-negotiable terms and condition for Indiana bats. Prior to initiation of on-site work, notify all prospective employees, operators, and contractors about the presence and biology of the Indiana bat, special provisions necessary to protect the Indiana bat, and ways to avoid and minimize these effects. Refer to the Biological Opinion for Indiana bat information. The James spinymussel (*Pleurobema collina*), yellow lance (*Elliptio lanceolata*), and Roanoke logperch (*Percina rex*) are aquatic species known or suspected downstream of the Project area, but outside identified geographic bounds of the water resource cumulative effects analysis area on JNF.

The rusty patched bumble bee was listed as federally endangered during the course of MVP's consultation with USFWS for this Project. Upon listing, the Project was considered to be within the known range of the species. Given this, OAR Code 6 was the most appropriate. However, based on subsequent consultation with USFWS, there are no recent records of the species in the Project vicinity. There are records of prior known occurrences in Montgomery and Giles counties, Virginia and Braxton, Fayette, Lewis, and Nicholas counties, West Virginia, but they are considered to be historical, and the species is not considered present. Therefore, OAR Code 1 is now most appropriate.

3.1.3 FS Sensitive Species

FS Sensitive Species are those with rangewide viability concerns that are designated by the Regional Forester, with the goal of preventing them from becoming federally listed

under the ESA. During the initial review of the Project alignment, twenty-seven FS Sensitive Species were determined to have potential to occur within the proposed Project area based on a desktop habitat assessment. Field habitat assessments and surveys began in May 2015 and concluded in August 2016. Two FS Sensitive Species were found along the proposed Project route during the survey efforts: the eastern small-footed bat (*Myotis leibii*) and rock skullcap (*Scutellaria saxatilis*). A third FS Sensitive Species, American barberry (*Berberis canadensis*), was found along an abandoned alternate route.

Four eastern small-footed bats (three adult males and one pregnant female) were captured during mist net surveys on the JNF (Pocahontas Road) in Giles County, Virginia. All individuals were healthy and released at their capture sites.

A single population of rock skullcap was identified during plant surveys on JNF. The population spans approximately 1.45 hectares (3.58 ac); however, only an approximate 0.78 hectare (1.94 ac) is within the proposed construction right-of-way (ROW). Seeds from these plants were collected during September 2018. The original intent was to replant these seeds at 3 locations, identified in consultation with the FS, post-construction. Due to construction delays replanting activities have not occurred yet and consultation regarding final planting date and location is ongoing. Two additional populations of rock skullcap were identified along abandoned alternate routes on JNF. These two populations will not be impacted during construction activities.

Several locations of American barberry were observed during plant surveys along an abandoned alternate route in the JNF in Craig County, Virginia. These plants are located more than eight miles from the proposed construction ROW, and these plants will not be impacted by the Project.

These species, proposed survey methods, and results are discussed in further detail in a biological evaluation that was prepared for the portions of the Project that cross the JNF.

Since submission of the Biological Evaluation, an additional 20 species were added to the FS Sensitive Species list. Ten species (A Liverwort [*Plagiochilia virginica*], Appalachian shield lichen [*Heterodermia appalachensis*], Arogos skipper [*Atrytone arogos*], delicate vertigo [*Vertigo bollesiana*], early hairstreak [*Erora laeta*], monarch [*Danaus plexippus*], mottled duskywing [*Erynnis martalis*], northern metalmark [*Calephelis borealis*], tri-colored bat [*Perimyotis subflavus*], and quill fameflower [*Talinum teretifolium*]) have a potential to occur within the project's footprint; coordination with USFS regarding appropriate survey, avoidance and minimization and or mitigation measures is ongoing. The remaining ten species do not require further consideration. Surveys were previously conducted for five species (hellbender [*Cryptobranchus alleganiensis*], a Liverwort [*Radula tenax*], Carolina hemlock [*Tsuga caroliniana*], largeleaf grass-of-Parnassus [*Parnassia grandifolia*], and box huckleberry [*Gaylussacia brachycera*]). All surveys were negative. Four species (Weller's salamander [*Plethodon welleri*], marbled underwing [*Catocala marmorata*], cupped vertigo [*Vertigo clappi*], and Culberson's black-parmelia [*Melanelia culbersonii*]) are not within the range of the Project. No suitable habitat is present for green salamander (*Aneides aeneus*).

3.1.4 FS Management Indicator Species

The FS designates Management Indicator Species to aid in setting objectives, analyzing effects of alternatives, and monitoring activities implemented under the FS Forest Plan for the JNF. Management Indicator Species are chosen because changes in their populations are believed to indicate the effects of FS management on selected biological components including threatened and endangered species, species with special habitat needs, game or demand species, and non-game species of special interest. Thirteen Management Indicator Species are designated for the JNF, and 11 were observed in the Project area during field surveys conducted on the JNF. A report detailing ecology, occurrence and potential impacts to these species from the Project was submitted on May 24, 2017.

Table 1 Time of Year Restrictions on Jefferson National Forest lands crossed by the Mountain Valley Pipeline.

Species	Time of Year Restriction <u>a/</u>
Migratory Birds	April 1 – July 31
Indiana bat and Northern long-eared bat	June 1 – July 31
Northern long-eared bat (within 0.25-mile radius around entrance to Tawney’s Cave)	April 1 – November 14
UNT to Craig Creek, S-PP20 <u>b/</u>	March 1 – July 31
UNT to Craig Creek, S-PP21 <u>b/</u>	March 1 – July 31
UNT to Craig Creek, S-PP22 <u>b/</u>	March 1 – July 31
UNT to Craig Creek, S-HH18 <u>b/</u>	March 1 – July 31
Kimballton Branch, S-PP14 <u>c/</u>	October 1 – June 30

Notes:

a/ Time of year restrictions as specified by the U.S. Fish and Wildlife Service and the Virginia Department of Game and Inland Fisheries.

b/ Time of year restriction due to James spiny mussel and Atlantic pigtoe.

c/ Time of year restriction due to cold-water and wild trout concerns.

3.1.5 FS Locally Rare Species

Locally rare species, a term used by the FS, are species for which representation on a particular forest is a concern although the species is secure range-wide or do not qualify for the Regional Forester’s Sensitive Species list. These species are not afforded federal protection under ESA, but the FS recognizes the need to properly prescribe management activities on National Forest System land that serve to benefit, rather than severely impact, these species. The FS has identified over 350 locally rare species with potential to occur within or near the George Washington and Jefferson National Forests. Through coordination with FS biologists, it was determined that 151 locally rare species with suitable habitat may potentially occur within portions of the JNF that would be crossed by the Project. No locally rare species have been observed; however, recent Allegheny woodrat (*Neotoma magister*) activity (midden and latrine) within a boulder field was documented 1,600 feet west of the proposed Project’s construction right-of-way. A report detailing ecology, occurrence, and potential impacts to these species from the Project was submitted on May 24, 2017.

3.1.6 Stream Crossings within National Forest System Land

The Project crosses streams on-FS managed lands, including four unnamed tributaries to Craig Creek in the JNF within the Upper James River watershed management area. In December 2016, MVP modified the pipeline route to avoid three crossings of Craig Creek and that route modification is included in the Project as authorized by FERC. The authorized pipeline route contains only one ROW crossing of Craig Creek and that crossing is outside of FS-managed lands. The federally endangered James spiny mussel and state-threatened Atlantic pigtoe (*Fusconaia masoni*) are known from Craig Creek, although downstream from the project area. The proposed pipeline crossing method for Craig Creek and its tributaries is conventional bore which will avoid in-stream construction or any direct impact on the streams. If any in-stream activity is required to install or remove temporary equipment crossing bridges, MVP will adhere to time-of-year restrictions on in-stream construction as set forth by the Virginia Department of Game and Inland Fisheries. No listed mussels were found during field surveys; if required, mussel relocations and fish removals will occur immediately prior to in-stream activities. The Project also crosses the New River watershed management area, but no additional streams within the JNF are crossed.

4.0 PLANT, FISH, AND WILDLIFE CONCERNS AND ISSUES

Biological resource concerns and issues were identified throughout the planning stages of the Project. Geographic information system (GIS) data and qualitative input from the USFWS, FS, Virginia Department of Conservation and Recreation (VDNR), VDGIF, and WVDNR regarding known and potential locations of special-status species and their habitats in the Project area were acquired and reviewed. Several biological resources of concern that potentially occur within the Project area were identified, including:

- Federally listed species;
- Wildlife, fish, and plant species managed by the agencies as sensitive or special status;
- Raptors and their nesting habitats;
- Migratory birds; and
- Noxious weeds.

The following steps were taken by MVP to determine which species and habitats to consider for avoidance, minimization, and conservation measures:

- Identified potential habitats and special-status species that may occur along the proposed corridor using available data from the appropriate federal and state agencies;
- Discussed habitat types and special-status species at kickoff meetings with agency resource specialists to identify which species are of greatest concern in the Project area;

- Refined the list of species and habitats to be addressed in Project plans through several subsequent meetings with state and federal agency resource specialists; and
- Performed focused surveys along portions of the route for species identified by the respective agencies.

These efforts identified the known or potential presence of FS and state sensitive plant, fish, and wildlife species; federally listed and candidate species; and active raptor nests within the Project area. Federal agencies have required EPMs for some impacts identified to ensure the Project is consistent with management objectives for these resources.

4.1 General Project Impacts and Plan Priorities

EPMs for the Project were designed to reduce three basic types of Project-related impacts on plant, fish, and wildlife resources: (1) disturbance and displacement, (2) habitat loss and fragmentation, and (3) plant, fish, and wildlife mortality. This section describes the impact types evaluated for each resource, thereby identifying Plan priorities used to develop and apply EPMs.

4.1.1 Disturbance and Displacement

The Project will result in disturbance and displacement of plants, fish, and wildlife within and adjacent to the Project area. Disturbance and displacement of wildlife includes temporary changes in habitat use or direct impact and potential mortality related to construction activities and potential for long-term changes related to the presence of Project features and increased human activity (annual inspections) associated with operation and maintenance of the Project and potential for increased public access. Disturbance and displacement of fish species is not anticipated because stream crossings will be accomplished by conventional bore which will avoid in-stream construction and any direct impact on streams. Disturbance and displacement of plant species includes effects related to increases in erosion and dust associated with the Project, the creation of temporary work areas during construction, operation, maintenance, and physical disturbance associated with new public access.

4.1.2 Habitat Loss and Fragmentation

The Project will result in the permanent loss and fragmentation of plant and wildlife habitat due to clearing and grading for access roads, work areas, and compressor stations as well as vegetation management within the right-of-way. These actions will remove or alter plant and wildlife habitat to accommodate Project features. Habitats outside of the right-of-way could experience reduced suitability for plant and wildlife species as the linear Project may fragment previously connected populations. The Project may also impact plant and wildlife habitat by increasing the potential for the establishment and spread of noxious weeds. The Project may impact fish habitat by potentially introducing aquatic invasive species and reducing cover and organic input where riparian vegetation is removed.

4.1.3 Plant and Wildlife Mortality

Implementation of the Project may result in mortality of plants and wildlife in the Project area. Plant species and wildlife species with limited mobility and those who travel across the construction area could experience injury or mortality during vegetation management, clearing, and grading operations associated with construction, operations, and maintenance of the Project. Wildlife species that occupy burrows may experience mortality if burrows are damaged by heavy machinery. Use of pesticides for vegetation management within the right-of-way will result in plant mortality.

4.2 Avoidance and Minimization during Siting and Routing

MVP approached avoidance and minimization of impacts through data collection, careful routing and siting of the proposed facilities, field surveys, habitat mapping, and construction scheduling. As discussed above, GIS data and qualitative input from the USFWS, FS, VDCR, VDGIF, and WVDNR regarding known and potential locations of special-status species and their habitats in the Project area were acquired and reviewed. These data were used to develop the list of special-status species of concern in the Project area.

At the request of the agencies, focused surveys were conducted along portions of the Project where suitable or potential habitat was identified for species identified by the respective agencies. A comprehensive Project-wide habitat mapping effort, which included aerial photography acquisition, identified habitats in the Project area for selected special-status species. Based on the results of the habitat mapping, MVP identified areas within the corridor where species-specific surveys may be necessary to either inform right-of-way refinement or specify where and when conservation measures apply. Other plant and wildlife resources (such as seasonality regarding migratory birds), as well as temporal avoidance of sensitive resources, were also taken into consideration during design of the Project.

4.3 Development of Conservation Measures

After taking into consideration Project impacts to wildlife, fish, and plant resources, MVP recognized the need for additional measures to minimize the impact from construction, operation, and maintenance of the Project. MVP used the following steps to develop the measures found in Section 5 of this Plan:

- Identified and reviewed the JNF Forest Plan;
- Reviewed the Forest Plan's surface-use stipulations specific to each species of concern;
- Determined exception or waiver criteria, if applicable;
- Used USFWS avoidance recommendations when applicable;
- Incorporated VDCR, VDGIF, and WVDNR species-specific management recommendations; and

- Evaluated the stipulations on a resource-by-resource basis, developed the proposed Project-wide temporal and spatial restrictions, and identified where and when exceptions may need to be requested.

This Plan identifies EPMs that will be implemented to protect biological resources in the Project area. Other measures may be developed based on public review of the EIS being prepared by the FERC.

5.0 BIOLOGICAL RESOURCE ENVIRONMENTAL PROTECTION MEASURES

This section of the Plan includes (1) responsibilities of biological monitors, (2) a discussion of how EPMs will be applied based on land ownership and associated geographical distribution, (3) EPMs designed to avoid or minimize Project impacts to plant, fish, and wildlife resources previously identified in Section 3.1 – General Project Impacts and Plan Priorities, and (4) a description of the process for making requests for exceptions to seasonal and spatial restrictions.

General EPMs applicable to many or all species groups are presented first, followed by EPMs tailored to species groups. Each section includes (1) an overview of each resource's presence in the Project area, (2) resource-specific agency concerns and impacts for which EPMs were identified, and (3) EPMs to address concerns and reduce resource impacts during the design, construction, operation, and maintenance of the Project.

5.1 Biological Monitoring

A third-party Compliance Inspection Contractor (CIC) will represent the FERC and USACE, unless other agency representatives are designated during the construction and restoration phases of the Project, to ensure (1) compliance with permit requirements and (2) environmental impacts associated with the Project do not exceed those approved by the FERC and BLM in their authorizing documents. The FS Project Manager will identify an Authorized Officer to work with the CIC on FS managed lands.

The CIC shall work under the direct supervision and control of the FERC. The FERC will coordinate with other agencies with jurisdiction, where appropriate. The CIC shall not take any direction with respect to the manner of conducting monitoring from MVP or its construction contractor or environmental inspection contractor. The CIC's primary role is to observe work activities; verify, document, and monitor compliance; and bring non-compliant situations to the attention of the appropriate party and offer recommendations on how to prevent non-compliance prior to commencement of work.

At a minimum, the CIC monitors are required to be on the right-of-way when construction activities have the potential for significant surface disturbance or harm to sensitive resources (see Appendix M – Environmental Compliance Management Plan of the POD, Section 3.2.3). Exceptions can be made should the CIC, using professional judgment and in consultation with the FERC, determine that reductions in presence would not adversely impact compliance oversight.

The construction contractor will employ Environmental Inspectors (see Appendix M – Environmental Compliance Management Plan of the POD), who will be present on each active construction segment to ensure compliance with all environmental laws and regulations, Project-specific authorizations, and landowner agreements during Project construction. The number of Environmental Inspectors at a given construction spread may vary depending on the construction activity, size of the area subject to disturbance, and location.

The responsibilities of the Environmental Inspectors during construction would include, but not be limited to, the following:

- Identification of resource presence/absence in biologically sensitive areas;
- Daily briefing of construction crews outlining restrictions associated with biologically sensitive areas;
- Maintaining erosion and sediment control structures;
- Verification that construction work areas, access roads, and features such as wetlands or sensitive habitat are properly marked and flagged prior to ground disturbance in a given area; and
- Authorization to stop work when construction activities violate environmental laws, regulations, or Project-specific authorizations.

The construction contractor will be responsible for:

- Ensuring that EPMs that minimize impacts on plant and wildlife resources are implemented;
- Conducting preconstruction botanical and wildlife surveys;
- Conducting surveys to support any variance requests; and
- Conducting biological monitoring in biologically sensitive areas or during periods of heightened sensitivity.

The construction contractor will employ qualified biologists, approved by MVP and the respective agencies, to conduct such tasks.

5.2 General EPMs for Plants, Fish, and Wildlife

5.2.1 Background

Many Project EPMs are applicable across species groups, including those that address preconstruction surveys, restriction of public access, preservation of existing vegetation, use of existing stream crossings, proper application of pesticides and invasive species control, Project-personnel training, avoidance areas, reclamation best management practices, minimization of ground disturbance, speed limits on Project roads, and protection of wetlands and water quality.

Disturbance and displacement, habitat loss and fragmentation, and mortality are general Project impacts that could apply to all plants and wildlife in the Project area.

5.2.2 Environmental Protection Measures

Sensitive, Rare, Threatened, or Endangered Species Habitat:

- Develop and implement a Project-specific Karst Mitigation Plan (Appendix L of the POD) to protect and minimize impacts to karst, karst-like features, and caves;
- Commit to tree-clearing activity outside of June-July to minimize impacts to non-volant, juvenile bats;
- Abide by all time-of-year restrictions for in-stream activities, if required, in waterbodies included in Table 1;
- Co-locate pipeline with existing corridors to the extent practicable by paralleling utility corridors, trails, and roads to avoid further fragmenting wildlife habitat;
- Use all existing roads or pathways to the pipeline before considering construction of new access roads;
- Design contractor yards to avoid streams, wetlands, and other sensitive wildlife habitat; and
- Follow recommendations in the General Blasting Plan (Appendix J of the POD) should blasting occur on FS lands.

Sediment and Erosion Control:

- Develop and implement a Project-specific *Erosion and Sediment Control Plan*;
- Maintain surface and ground water quality using appropriate erosion control practices and best management practices;
- Comply with the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (May 2013);
- Install erosion control measures prior to earth disturbance activity; and
- Conduct post-construction in-stream sedimentation monitoring in streams with the potential to be occupied by federally-listed aquatic species.

Exotic and Invasive Species:

- Implement the Project's *Exotic and Invasive Species Control Plan* (Appendix S of the POD) prior to the start of construction;
- Avoid introducing exotic/invasive species in or on materials brought onsite during construction by thoroughly cleaning equipment prior to mobilization to Project area;
- Establish equipment cleaning stations to thoroughly wash all equipment before transporting it to the next construction spread. Wash stations will not be on FS lands unless provisions are made for the collection and proper disposal of the water, soil, and debris generated by the washing;
- Use only certified weed-free mulch and straw bales for sediment control devices;
- Selective spot treatment or eradication of exotic/invasive plant species encountered during construction and operation of the Project. Herbicides will be

used, as requested by the FS, as one of the tools implemented to treat exotic/invasive plant species;

- Use only seed mixes approved by the FS during all restoration efforts conducted on the JNF. As requested by the FS, the primary goal of seed mixes used on the JNF will be to stabilize disturbed slopes, with a secondary goal (which may involve a second seeding application) of developing high-priority wildlife habitats; and
- Minimize time bare soil is exposed during construction to minimize opportunity for exotic/invasive plants to become established.

Contaminants:

- Develop and implement a Project-specific *Spill Prevention, Control, and Countermeasure Plan* (Appendix D of the POD);
- Institute preventative measures such as personnel training, equipment inspection, and refueling procedures to reduce likelihood of spills; and
- Do not park, store, or service construction equipment, vehicles, hazardous materials, fuels, chemicals, lubricating oils, and petroleum products within a 100-foot radius of any waterbody. Herbicide mixing, loading, or cleaning areas should not be located within 200 feet of private land (unless agreed upon with the private landowner), riparian corridors, open water wells, or other sensitive areas.

Entrapment:

- Install wildlife escape ramps in the pipeline trench approximately every 50 feet during construction; and
- Wildlife fences will be used in coordination with escape ramps (approximately every 50 feet) as a deterrent on the edges of both sides of the ROW. MVP environmental inspectors will check the trench each morning prior to the start of work to ensure that any animals that are trapped in the trench are removed.

5.3 Migratory Birds

5.3.1 Background

Migratory birds occur within the Project area and are protected under the MBTA. Direct impacts on migratory birds could include collisions with construction, operation, and maintenance vehicles, other equipment, or structures; direct removal of nesting habitat; destruction of unoccupied nests; induced abandonment of nests due to disturbance; fugitive dust; and visual disturbance.

5.3.2 Environmental Protection Measures

In addition to the general EPMs listed in Section 5.2 – General EPMs for Plants, Fish, and Wildlife, the following EPMs will be implemented to avoid and minimize Project impacts to migratory birds:

- Implement the Project's Migratory Bird Habitat Conservation Plan;
- Route Project facilities to avoid sensitive resources where possible;

- Reduce the right-of-way in sensitive wetland habitat;
- Co-locate Project facilities with existing pipeline or utility rights-of-way where feasible, in order to minimize fragmentation of habitats to the maximum extent possible;
- Conduct environmental training of MVP personnel and inspection of construction and restoration activities;
- Follow the eagle guidelines set out in the USFWS Bald Eagle Management Guidelines and the Migratory Bird Conservation Plan, such as not conduct any clearing or construction activities within 660 feet of active eagle nests, and avoid blasting or use of explosives within 0.5 mile of active nests or communal concentration areas;
- Avoid harassing or injuring wintering bald and golden eagles during construction activities by surveying for wintering and roosting eagles during construction activities, including tree removal, by a FS-approved qualified biologist.
- All clearing conducted within the JNF will be done at times outside of the nesting season (April 1 to July 31); and
- Restrict vegetation maintenance activities to outside of the breeding/nesting season.

6.0 LITERATURE CITED

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