From:	Taina Pankiewicz
To:	Kimberly Smith (kimberly_smith@fws.gov); Cynthia_Schulz@fws.gov
Cc:	Sumalee Hoskin (sumalee_hoskin@fws.gov); Troy Andersen (troy_andersen@fws.gov); Neylon, Megan (MNeylon@eqt.com)
Subject:	Response to MVP Comment Letter dated 8 March 2016
Date:	Wednesday, April 20, 2016 11:48:08 AM
Attachments:	Response to USFWS letter dated 8 March March 2016.pdf

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Kim et al,

Please see attached for ESI's response to USFWS letter dated 8 March 2016, in regards to threatened and endangered species on the proposed Mountain Valley Pipeline Project. Thank you for your time!

Taina

Taina Pankiewicz

President, COO

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ESI

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Pesi 593.01 20 April 2016

Ms. Cindy Schulz
Field Supervisor
Virginia Ecological Services
U.S. Fish and Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Dear Ms. Schultz:

RE: RTE Survey Comments on the Mountain Valley Pipeline, Virginia Segments, FERC Docket Number CP16-10

On behalf of Mountain Valley Pipeline (MVP), Environmental Solutions & Innovations, Inc., (ESI) submits the following responses based upon comments received from your office on March 8, 2016 regarding the above referenced project.

Roanoke Logperch Habitat Assessments

1. **Several sites were not assessed due to access issues. For future assessments, we recommend a change in methodology. If desktop review indicates that suitable habitat may be present, habitat assessments are typically conducted 200 meters upstream and 800 meters downstream of each site on any stream that may be affected by the proposed Project either directly or through sedimentation and erosion. Abbreviated surveys (100 meters upstream and 400 meters downstream) can be conducted on sites where suitable habitat is not anticipated such as first and second order streams. We will review results of those assessments and provide comments upon receipt.**

   ESI will adhere to the recommended stream-reach distances for all streams that have yet to be assessed in 2016 for Roanoke logperch habitat. Subsequent to the habitat assessments, a report summarizing the 2016 results of the field

efforts will be drafted and submitted to the Service (and VDGIF) for review.

2. Provide the following information for streams with suitable or known habitat for Roanoke logperch

a. An alternatives analysis that evaluates avoiding the proposed stream crossings.

During a phone conversation with the Virginia Field Office on March 16, 2016, ESI requested clarification in regards to the type of alternative analysis that the Agency is referring to and the contents of such an analysis. The requested alternatives analysis would include a desktop evaluation that investigates the necessity to cross a stream with federally endangered species, the crossing method, justifications for locations and methods, avoidance, minimization, and mitigation measures, as well as potential downstream impacts. The Service expressed it has a sequential preference for proposed projects to 1) avoid, 2) minimize, and lastly 3) mitigate for any potentially damaged resources.

The following text is an excerpt from MVP's Resource Report 10 (Section 10.6) that describes the process and rationale during the early project development phase.

…MVP conducted an extensive review of potential pipeline routes to identify potential pipeline corridors, and then further refined the review to determine the most feasible route within the most favorable corridor. One of MVP's primary objectives with respect to pipeline routing was to avoid (if possible) or minimize crossings of major population centers and significant natural resources, especially crossings of National Forests, National Parks, the Appalachian National Scenic Trail, and the Blue Ridge Parkway."

Analysis began with the identification of a study area which encompassed the Project interconnect points to the north (beginning) in the Mobley area and the south (end) at Transco Station 165 and was wide enough to cover a reasonable range of corridor locations. The review encompassed enough area to be able to avoid exclusion areas (e.g. cities and towns), as necessary. Using publicly available data from state, Federal, and private entities, a geodatabase was developed within which data was categorized based on the character of the resources relative to its compatibility with pipeline construction and operation. Resources were classified as being either a compatible use or one of two types of constraints – sensitive area or exclusion area. A combination of spatial data, existing information, published reports, local knowledge, and prior experience was used to review the study area and identify individual corridor segments, with an emphasis on use of existing utility and transportation corridors. It should be noted that there are no existing natural gas transmission pipelines in the general area and direction of the Proposed Route of the Project (i.e. north to south); nor

are there existing major highways suitable for collocation. Therefore, the primary opportunities for use of existing linear corridors were overhead electric transmission lines.

Although a straight line between the Project's start and end point would result in the shortest route and lowest possible acreage of disturbance, a straight line route does not allow for consideration of constructability or avoidance of sensitive areas, both primary criteria for MVP. MVP also evaluated existing highways and linear utilities in the region to determine if these existing rights-of-way would provide opportunities for collocation with the Project (Figure 10.5). Existing major pipelines in the region traverse generally from the southwest-to-northeast and do not provide a north-south option for collocation. Major highways in the region generally traverse either southwest-northeast, or east-west, providing limited opportunities for significant collocation. Similarly, major electric transmission lines traverse primarily east-west, although some sections of electric transmission lines were identified for possible collocation, as discussed below.

During corridor identification, special consideration was given to avoiding population centers (i.e. cities and towns) and, where possible, National Forests, National Parks, the Appalachian National Scenic Trail, and the Blue Ridge Parkway (and if avoidance was not possible finding an optimal location for the crossings). This refined analysis resulted in a network of 94 corridor segments, consisting of approximately 2,362 miles of potential pipeline routes, which could be pieced together to create end-to end routes between the Project's beginning and end points. Based on a review of desktop constructability, prior easement agreements, use of existing rights-of-way, and length, a set of corridor segments that together created an end-to-end route was identified as the highest ranking corridor and was initially selected for further study.

A more detailed analysis of site-specific data was then applied to the selected corridor to identify the most logical pipeline route (centerline) within that corridor. Analysis at this level included identification of ridge lines, and topography at road and waterbody crossings. Special consideration was also given to residential areas, which were avoided whenever possible. The potential route was sited to minimize or avoid potential impacts on known sensitive biological and cultural resources, protected lands, wetlands and waterbodies, and floodplains.

MVP has considered the feasibility of numerous alternative alignments for the proposed Pipeline and the current alignment is the result of the elimination of these alternatives and the conflicts with sensitive resources such as karst features, wetlands, cultural resources, and endangered species occurrences. Previous alignments (such as Alternatives 100, 110J, and 110R) considered traversal of Monroe County, West Virginia, and Craig County, Virginia. These alignments were eliminated because of the presence of sensitive resources. Those alignments proposed to intersect with streams that support populations of federally endangered

James spinymussel. The only known population of James spinymussel in West Virginia occurs in South Fork Potts Creek (Monroe County, West Virginia). One of the largest known populations of James spinymussel occurs in Little Oregon Creek, Dicks Creek, and Johns Creek. Impacts to these populations of James spinymussel are now avoided with the currently proposed alignment.

MVP traverses the distributional ranges of two populations of federally endangered Roanoke logperch (including the Upper Roanoke River and Pigg River populations) and waterbodies known to support the species. MVP has attempted to minimize the total number of stream crossings, stream crossings known to support or with potential to support populations of Roanoke logperch, and stream crossings of suitable size to support populations of Roanoke logperch. The Project proposes to traverse the majority of streams in headwater reaches thereby limiting the amount of species impact via direct instream construction activities. Roanoke logperch is a species that occupies streams that range 2nd to 6th Strahler stream orders (1:100,000 scale) but are relatively more common in 4th and 5th stream orders (Lahey and Angermeier 2007). The number of streams that are 1st, 2nd, and 3rd order comprise 66 percent, 18 percent, and 8 percent of the total centerline stream crossings (*n*= 65 stream crossings) in the Roanoke and Pigg river basins. The number of streams that are 4th and 5th order, comprise 5 percent and 3 percent, respectively, of the total stream crossings in the Roanoke and Pigg river basins. Of the 65 streams traversed by the pipeline in the Roanoke and Pigg river basins, three (North Fork Roanoke River, Roanoke River, and Pigg River) are known to support populations of Roanoke logperch. In addition, 7 stream crossings (or 11 percent) have been identified with potentially suitable habitats for Roanoke logperch. (Note: Eight stream crossings in the Roanoke and Pigg basins will be assessed during the 2016 field survey season). Any other major or minor alternative alignments will likely encounter suitable habitats or known occurrences and potentially conflict with other sensitive resources and/or features.

References

Lahey, A. M. and P. L. Angermeier. 2007. Range-wide assessment of habitat suitability for Roanoke logperch (*Percina rex*) Final report VTRC 07-CR8 prepared for Virginia Transportation Research Council, in Cooperation with the U.S. Department of Transportation, Federal Highway Administration, Charlottesville, Virginia. 58 pp.

b. The analysis that supports the conclusion that open-cut/conventional lay of dry ditch crossings will have the least amount of impact.

MVP conducted site specific crossing method investigations at many sensitive resources and has provided supporting documentation that open-cut/conventional lay of dry ditch crossings are the proposed crossing methods of least impact in MVP's Resource Report 2 (Section 2.2.1.4), as well as MVP's Waterbody Crossing Review Report (included in the response to Data Request 2, ATTACHMENT DR2 RR2 -21d).

Horizontal directional drilling (HDD) has been precluded from consideration of crossing sensitive streams for several reasons. HDD is not feasible crossing method within the current alignment of many sensitive resources due to the lack of space necessary to accommodate the required depth and bend radius of the pipe. The workspace and pullback areas in many locations are restricted by topography, cultural resources, and residences. The preliminary geotechnical data for some locations indicates the possibility of gravel and cobbles in this area. This geology may cause a high potential for drilling fluid losses and/or release of drilling fluids in the resources. drill bit steering problems and contribute to poor borehole stability..

c. Details on any instream blasting or water withdrawals planned in these streams.

MVP is still evaluating areas where blasting will be necessary to facilitate trenching. Many locations will not be known until trenching begins. MVP will utilize all available mechanical methods before blasting in streams. . A preliminary blasting plan has been developed for the Project. Site-specific blasting plans will be developed prior to blasting occurring in any given area. Those plans will address avoidance and minimization of impacts to houses, the public and sensitive resources. An updated copy of the blasting plan is included in the response to Data Request 2, ATTACHMENT DR2 RR6 -13.

Details about water uses for hydrostatic testing and dust control measures are provided in Section 2.2.3 and 2.2.4, respectively of Resource Report 2 and various Data Request Responses. Waterbodies from which water withdrawals are proposed for hydrostatic testing are provided in Table 2.2-10, attached, and excerpts are included below.

The pipeline will be hydrostatically tested to ensure that it is capable of safely operating at the design pressure. Test segments of the pipeline will be capped and filled with water. Surface water used for testing will be drawn through a screened intake. The water in the pipe will be pressurized and held for a minimum of 8 hours in accordance with the USDOT Pipeline and Hazardous Materials Safety Administration Office of Pipeline Safety (OPS) requirements identified in 49 CFR Part 192 prior to being placed in service. Any loss of pressure that cannot be attributed to other factors, such as temperature changes, will be investigated. Leaks detected will be repaired and the segment will be retested.

The test water will be discharged through an energy-dissipating device in compliance with NPDES permit conditions. Table 2.2-10 provides anticipated hydrostatic test water information for each pipeline segment. Hydrostatic test water surface sources are listed on Table 2.2-10, which includes the names and locations of proposed water withdrawal sources, approximate water volumes to be withdrawn from each source and discharge locations. Additional potential sources for hydrostatic test water include local Public Service District (PSD) systems.

In the event that a stream is not capable of supplying the requisite volume of water at the time of the test, Mountain Valley Pipeline will purchase water from a municipal source to make up the deficit. Mountain Valley Pipeline has contacted all municipal water suppliers located along the route with general information about the project and plans to discuss purchasing surplus water with them.

Currently, hydrostatic tests are anticipated to take place in October or November of 2017 and 2018, and should be discharged within those time frames, as well. MVP will discharge within the same watershed from which water was withdrawn as much as practicable, and will avoid discharging near perennial streams.

Test water will contact only new pipe, and no chemicals will be added to the test water. An exception would be that if a municipal water source with chlorinated water is used for testing, addition of a dechlorinating agent may be required prior to discharge depending on the discharge location.

MVP will comply with conditions of NPDES permits if necessary and conditions for hydrostatic test water discharge in West Virginia and Virginia, as summarized below. MVP has not applied for agency approval for the discharge of hydrostatic test water at this time, but anticipates submitting these applications in the near future.

***West Virginia**: MVP will follow the regulations outlined in NPDES General Permit WV0113069 (Hydrostatic Testing General Permit) (WVDEP 2012b). Coverage*

under this permit includes effluent limitations, monitoring requirements, and other standard conditions.

***Virginia**: MVP will follow the regulations outlined in VPDES General Permit 9VAC25-120 (VAG83) (Petroleum Contaminated Sites and Hydrostatic Tests). Coverage under this permit includes effluent limitations, monitoring requirements, and other standard conditions.*

While it is not possible to know how much water would be needed for dust suppression on the pipeline construction right-of-way, during dry seasons, MVP estimates that there would be approximately five 1,000-gallon water trucks per construction spread on a given day. Watering trucks would spray only enough water to control the dust or to reach the optimum soil moisture content to create a surface crust. Runoff should not be generated during this procedure. Water may be obtained through municipal sources or withdrawn from surface water or groundwater sources. The locations and amount of disbursement of water will be decided by the spread lead environmental inspector.

A Fugitive Dust Control Plan was included as Attachment General 1-g in Data Request response 1.

d. An alternatives analysis that evaluates relocating any facility associated with the Project (staging areas, temporary work spaces, access roads, etc.) that is currently proposed adjacent to these streams. Any facilities near these streams should provide an adequate buffer to avoid impacts.

Details regarding the rationale for temporary work spaces within the vicinity of streams are provided in Resource Report 2 (section 2.2.5) and excerpts are included below.

ATWS will be located at least 50 feet away from the water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land or as noted with a site specific explanation of the conditions. MVP will limit the amount of vegetation cleared between the waterbody and the ATWS.

In addition, ATWS may be proposed near waterbodies during the construction phase to facilitate responsible and safe construction to accommodate instream construction timelines at waterbody crossings. Excavated materials during trenching must be temporarily stored during construction in the general vicinity of the Project crossing so it can be back-filled in a timely manner. ATWS is also necessary to prepare the pipe string for insertion into the stream trench in a timely and safe manner.

Freshwater Mussel Site Assessments

3. **Regarding James spinymussel, we have concerns about the proposed alignment across this creek and recommend that alternatives be evaluated to minimize impacts. The pipeline should cross the creek at a perpendicular angle, cross it once, and not parallel it. We recommend that blasting or water withdrawals from this waterbody be avoided and that any associated facilities proposed adjacent to this stream be relocated and an adequate buffer be provided to avoid impacts.**

   The proposed alignment in the vicinity of Craig Creek has been revised since the generation of the Freshwater Mussel Survey Report submitted November 13, 2015. The number of proposed pipeline crossings has been reduced to a single perpendicular crossing and use of the existing access road crossing.

   Areas where blasting is planned to facilitate trenching are still under evaluation. See the response to blasting in streams above. There are no water withdraws planned from Craig Creek.

Rare Plant Surveys

4. **No comments**

Bat Surveys

5. **The proposed Project route intersects a NLEB hibernaculum, Canoe Cave, which was not in our database when we first consulted. Based on the survey results and the additional information about the hibernaculum, we recommend the following.**

   a. **Continue coordination with the Service and with Wil Orndorff, Virginia Department of Conservation and Recreation Karst Protection Coordinator, to identify a route that will not cause incidental take in Canoe Cave.**

      MVP and Draper Aden are assessing potential route modifications in the area of Canoe Cave to avoid all direct impacts to this system. Furthermore, representatives from Draper Aden are and will continue to coordinate with Wil Orndorff concerning this area and all other sensitive karst features.

   b. **In addition to the avoidance measures you develop and agree to implement with Wil Orndorff around Canoe Cave, we encourage you to implement any applicable voluntary conservation measures, which can be found on our website http://www.fws.gov/northeast/virginiafield/endangered/projectreviews_step7b.html.**

Of the voluntary conservation measures outlined in Step 7b on the provided website that apply to the proposed Project, MVP will strive to fulfill the following:

- *Perform NLEB surveys according to the most recent summer survey guidelines.*

  Summer maternity netting surveys were completed along the majority of the project route during May – August 2015.

- *Conduct tree removal activities outside of the NLEB pup season (June 1 – July 31) and/or the active season (April 15-September 15).*

- *Avoid clearing suitable spring staging and fall swarming habitat within a 5-mile radius of known or assumed NLEB hibernacula during the spring staging and fall swarming season (April 1 – May 14 and August 16 – November 15).*

  MVP is making all attempts to restrict tree clearing activities to the months outside the summer season of reproduction. However, the final project clearing schedule is dependent upon when MVP receives notice to proceed from FERC and may result in some clearing during the beginning or end of the active season. With the exception of a contingency plan associated with minor clearing for unexpected events, no clearing is anticipated within the NLEB pup season. MVP will continue to coordinate with the Service on this matter.

- *Manage forests to ensure a continual supply of snags and other suitable maternity roosts.*

  MVP will only remove snags on the edge of the right-of-way if asked by the landowner or if snags pose a safety concern.

- *Minimize use of herbicides and pesticides. If necessary, spot treatment is preferred over aerial application.*

  MVP proposes to avoid use of pesticides and herbicides within the Project's right-of-way unless a federal/state agency requests their use in a specific area. MVP agrees to avoid using aerial application.

- *Evaluate the use of outdoor lighting during the active season and seek to minimize light pollution by angling lights downward or via other light minimization measures.*

  Outdoor lighting will be photocell controlled to only be on at night. (Night time lighting will be necessary to allow for the station surveillance systems to operate. It will also allow for a safer working environment for MVP staff conducting any necessary operational activities at night.) Outdoor lighting will be located on each station perimeter and pointed inward toward the station. MVP will utilize fully shielded, "full cut-off" type lighting fixtures to minimize objectionable light from each station. Stations are only proposed to be located in West Virginia.

- *Participate in actions to manage and reduce the impacts of WNS on NLEBs.*
  MVP and its contractors follow the latest WNS decontamination protocols when sampling for bat species during summer mist net and spring/fall harp trap surveys. Known and potentially suitable hibernacula are not entered by MVP contracted bat biologists.

6. **The proposed Project re-route may impact Tawney's Cave, a documented Indiana bat (*Myotis sodalis*) hibernacula. Therefore, we recommend the following.**

   a. **Continue coordination with the Service and with Wil Orndorff to ensure the alternative route will not impact the hibernaculum and cause incidental take of Indiana bats.**

      Direct impacts are not anticipated to Tawney's Cave at this time, but MVP and Draper Aden will continue to work with the Service and Wil Orndorff to ensure avoidance of the hibernaculum.

   b. **In addition to the conservation measures you develop and agree to implement with Wil Orndorff for Tawney's Cave, we recommend a time-of-year restriction for tree clearing within 5 miles of Tawney's Cave from April 1 – November 15 of any year.**

      As discussed above, MVP is making all attempts to restrict tree clearing activities to the months outside the summer season of reproduction. However, the final project clearing schedule is dependent upon when MVP receives notice to proceed from FERC and may result in some clearing during the beginning or end of the active season. With the exception of a contingency plan associated with minor clearing for unexpected events, no clearing is anticipated in June or July. MVP will continue to coordinate with the Service on this matter.

Karst Resources

7. **The proposed Project route crosses karst areas containing surface and subsurface features. The location and extent of subsurface karst features are not well known and it is difficult to determine connectivity. Therefore, we recommend the following.**

   a. **Protect recharge areas of cave streams and other karst features by following relevant environmental maintenance and construction standards for stream and wetland crossings and spill prevention containment and control.**

      MVP will implement the terms of a Project-specific Erosion and Sediment Control (ESC) plan and Spill Prevention, Control and Countermeasures (SPCC) plan as well as the FERC Plan and Procedures to protect recharge areas of karst features and water resources. Refer to MVP's

Karst Mitigation Plan located within the attached Resource Report 6 for more detailed discussion on karst area protections to be implemented during all phases of the construction process.

b. Avoid all construction activities, including excavating, filling, or altering the hydrology of any existing sinkholes, fissures, or cave entrances.

Refer to MVP's Karst Mitigation Plan located within the Resource Report 6 for more detailed discussion on karst feature avoidance and mitigation measures to be followed during all phases of construction in karst areas. As noted in the Karst Mitigation Plan, a Karst Specialist Team will be on-site during construction activities in karst areas to evaluate karst features and provide recommendations to MVP during construction for avoidance and/or mitigation if necessary.

c. If new sinkholes form use an inverted filter to bridge the karst feature above the water table rather than filling it below.

Refer to MVP's Karst Mitigation Plan located within the attached Resource Report 6 for more detailed discussion on karst feature mitigation measures to be implemented if a new karst feature is observed during construction. As noted in the Karst Mitigation Plan, a Karst Specialist Team will be on-site during construction activities in karst areas to evaluate any newly observed karst feature and provide recommendations to MVP during construction for avoidance and/or mitigation if necessary, including sinkhole mitigation techniques.

d. Implement sediment and erosion control measures such as silt fence and straw bales or other control measures that will provide equivalent level of protection, or better, around all karst features. Monitor and maintain all sediment and erosion control measures periodically and after precipitation events, as identified in an approved erosion and sedimentation control plan. Clean, repair, and replace structures as necessary.

MVP will implement the terms of a Project-specific ESC plan and SPCC plan as well as the FERC Plan and Procedures to protect karst features and water resources in karst areas. Also, refer to MVP's Karst Mitigation Plan included in the attached Resource Report 6 for more detailed discussion on karst area protections to be implemented during all phases of the construction process. BMPs utilized as part of ESC and SPCC will be inspected daily during construction by MVP and maintained in proper working order.

e. Maintain a 100-foot buffer or greater around all surface karst features when blasting, drilling, digging, or trenching. If a subsurface karst feature is located and cannot be avoided, contact the Service for specific guidance or alternatives.

Refer to MVP's Karst Mitigation Plan included in the attached Resource Report 6 for details regarding buffers to be maintained between construction and karst features. The Karst Mitigation Plan also specifies that a specific representative from the West Virginia DEP (if a feature is encountered in West Virginia) and the Virginia DCR will be notified if karst features are uncovered. A local representative from U.S. Fish and Wildlife will be contacted along with WVDEP and VDCR (specified in the Karst Mitigation Plan).

Migratory Birds and Bald and Golden Eagles

8. **Resource Report 3 also indicates that field surveys for eagle nests in areas of suitable habitat traversed by the Project are scheduled for October 2015. Please provide us with the results of this field survey.**

   ESI conducted field surveys in West Virginia during late 2015 and provided survey results to the West Virginia Field Office in January 2016. Based on prior correspondence with VDGIF and the Virginia Field Office, field surveys for bald eagles were not conducted in Virginia prior to the date of this letter. Based on the phone call between ESI and The Service on March 16, as well as subsequent email correspondence, ground surveys and a "fly over" were conducted along the Virginia portion of the route during late March and early April 2016. No active eagle nests were documented during these field surveys; a complete report of findings is forthcoming.

9. **The MBHCP should address the following.**

   a. **Avoid vegetation clearing during the nesting season of native birds from March 1 through July 31 of any year.**

      A draft MBHCP was originally submitted to both Service Field Offices on January 22, 2016. That document was also subsequently provided to the Virginia Field Office via email on March 16, 2016. This document detailed the clearing sequence proposed for the project, by geography and proposed clearing schedule that avoided clearing from May through July of each year. However, the final project clearing schedule is dependent upon when MVP receives notice to proceed from FERC and may result in some clearing during the beginning or end of the active season. An updated plan, including proposed clearing schedule, will be submitted to the Service as soon as MVP is able to accurately ascertain the necessary information to do so.

   b. **Avoid fragmentation of large contiguous blocks of habitat and ecologically important habitat areas.**

      On March 24, 2016, ESI received email correspondence from the Service with a preliminary review of the MVP draft MBHCP plan. The comments

were primarily related to bald and golden eagles. This document contained an analysis of habitat fragmentation. MVP looks forward to meeting with the Service to discuss feedback on the adequacy of this analysis as well as any suggestions for refinement.

c. Locate attendant facilities (access roads, staging areas, etc.) in or adjacent to already disturbed areas.

MVPs plans to utilize existing access roads where possible. Additional ancillary facilities are located in or adjacent to already disturbed areas whenever feasible.

d. Avoid impacts to wintering golden eagles.

On March 24, 2016, the Service provided email correspondence on the MVP draft MBHCP which included a request for field surveys related to wintering golden eagles. On March 31, 2016 ground surveys for the species began. In a follow up conversation with Sarah Nystrom on April 4, 2016, ESI was able to confirm various details for these surveys. Surveys are now complete with only a few individuals sighted; full results will be provided in a written report and referenced in the MBHCP.

e. Avoid removal of raptor nests.

MVP will avoid raptor nests during construction to the greatest extent practicable.

MVP looks forward to continuing consultation with the Service regarding the MBHCP and impacts to wintering golden eagles and raptors.

Thank you for your assistance in reviewing this project. Should you have additional questions or comments, please do not hesitate to contact me at you earliest convenience.

Sincerely,

Taina Pankieiwcz
Tpankiewicz@envsi.com
Environmental Solutions & Innovations, Inc.

Cc: Megan Neylon, Mountain Valley Pipeline
Sean Sparks, Tetra Tech

Table 2.2-10, Revised

Proposed Hydrostatic Test Water Use Summary

Anticipated Year of Construction	Construction Spread	Segment Name	Beginning MP	Ending MP	Length of Section	Required Water (gal)	Maximum Anticipated Withdrawal Rate (gpm)	Percentage of Daily Average Flow	Proposed Water Source					Proposed Test Water Discharge Location								Proposed Withdrawal/Discharge Month
									MP	Proposed Water Source	Sub-Basin	Watershed	Anticipated Flow (Sep - Dec)	MP	Volume	Explanation	Sub-Basin	Watershed	Nearest Stream	Nearest Perennial Stream	Anticipated Flow (Sep - Dec)	
2017	1	01A	0.0	12.2	12.2 mi	4,367,359 gal			25.9	Salem Fork Creek	West Fork	Tenmile Creek	2,547 gpm	25.9	4,904,330 gal	Discharge Test Section 1 in upland area near Salem Fork Creek @ 26.0	West Fork	Tenmile Creek	Salem Fork (NHD-005) @ 26.0	Salem Fork (NHD-005) @ 26.0	2,547 gpm	Oct-Nov 2017
		01B	12.2	25.9	13.7 mi	**4,904,330 gal**	255 gpm	10.00%		Section 1A + Salem Fork Creek	West Fork	Tenmile Creek										
2017	2	02A	25.9	41.3	15.4 mi	**5,512,896 gal**	255 gpm	10.00%	25.9	Section 2B + Salem Fork Creek	West Fork	Tenmile Creek	2,547 gpm	25.9	5,512,896 gal	Discharge Test Section 1 in upland area near Salem Fork Creek @ 26.0	West Fork	Tenmile Creek	Salem Fork (NHD-005) @ 26.0	Salem Fork (NHD-005) @ 26.0	2,547 gpm	Oct-Nov 2017
		02B	41.3	48.0	6.7 mi	2,398,468 gal				Salem Fork Creek	West Fork	Tennile Creek										
2017	3	03A	48.0	65.5	17.5 mi	**6,264,655 gal**	1,500 gpm	2.04%	74.9	Little Kanawha River	Little Kanawha	Upper Little Kanawha	73,491 gpm	65.5	1,933,094 gal	Discharge difference between Test Sections 3A and 3B in upland area @ 65.5	Little Kanawha	Upper Little Kanawha River	Clover Fork (NHD-027) @ 65.6	Clover Fork (NHD-027) @ 65.6	No public data available	Oct-Nov 2017
		03B	65.5	77.6	12.1 mi	4,331,561 gal				Reuse from Test Section 3A	Little Kanawha	Upper Little Kanawha		77.3	4,331,561 gal	Discharge Test Section 3B in upland area near Little Kanawha River @ 77.3	Little Kanawha	Upper Little Kanawha River	UNT/Laurel Run (S-AA15) @ 77.4	Stonecoal Run (S-H117)@ 76.83	No public data available	
2017	4	04A	77.6	87.4	9.8 mi	3,508,207 gal			87.4	Reuse from Test Section 4B	Elk	Middle Elk River	234,947 gpm	87.4	6,193,059 gal	Discharge Test Section 4 in upland area near Elk River @ 87.4	Elk	Middle Elk River	Elk River (S-E68) @ 87.4	Elk River (S-E68) @ 87.4	234,947 gpm	Oct-Nov 2017
		04B	87.4	104.7	17.3 mi	**6,193,059 gal**	1,500 gpm	0.64%		Elk River	Elk	Middle Elk River										
2017	5	05A	104.7	120.1	15.4 mi	**5,512,896 gal**	1,500 gpm	0.30%	118.6	Gauley River	Gauley	Outlet Gauley River	504,900 gpm	120.1	5,512,896 gal	Discharge Test Section 5 in upland area near Gauley River @ 120.1	Gauley	Outlet Gauley River	Little Laurel Creek (S-R8) @ 120.3	Little Laurel Creek (S-R8) @ 120.3	No public data available	Oct-Nov 2017
		05B	120.1	127.8	7.7 mi	2,756,448 gal				Reuse from Test Section 5A	Gauley	Outlet Gauley River										
2018	6	06A	127.8	143.7	15.9 mi	**5,691,886 gal**	1,500 gpm	1.11%	143.7	Meadow River	Gauley	Meadow River	135,201 gpm	143.7	5,691,886 gal	Discharge Test Section 6 in upland area near Meadow River @ 143.7	Gauley	Meadow River	Meadow River (S-I28) @ 143.7	Meadow River (S-I28) @ 143.7	135,201 gpm	Oct-Nov 2018
		06B	143.7	154.5	10.8 mi	3,866,187 gal				Reuse from Test Section 6A	Gauley	Meadow River										
2018	7	07A	154.5	170.6	16.1 mi	**5,763,483 gal**	1,500 gpm	0.28%	170.6	Greenbrier River	Greenbrier	Wolf Creek-Greenbrier River	533,062 gpm	170.6	5,763,483 gal	Discharge Test Section 7 in upland area near Greenbrier River @ 170.6	Greenbrier	Wolf Creek-Greenbrier River	Greenbrier River (S-I8) @ 170.6	Greenbrier River (S-I8) @ 170.6	533,062 gpm	Oct-Nov 2018
		07B	170.6	181.8	11.2 mi	4,009,379 gal				Reuse from Test Section 7A	Greenbrier	Wolf Creek-Greenbrier River										
2018	8	08A	181.8	191.0	9.2 mi	3,293,419 gal			181.9	Reuse from Test Section 8B	Middle New	Indian Creek	25,469 gpm	181.8	4,904,330 gal	Discharge Test Section 8 in upland area near Indian Creek @ 181.9	Middle New	Indian Creek	Indian Creek (S-D31) @ 181.89	Indian Creek (S-D31) @ 181.89	25,469 gpm	Oct-Nov 2018
		08B	191.0	204.7	13.7 mi	**4,904,330 gal**	1,500 gpm	5.89%		Indian Creek	Middle New	Indian Creek										
2018	9	09A	204.7	218.1	13.4 mi	4,796,936 gal			233.8	Roanoke River	Upper Roanoke	Mason Creek-Roanoke River	72,593 gpm	234.0	5,691,886 gal	Discharge Test Section 9 in upland area near Roanoke River @ 234.0	Upper Roanoke	Mason Creek-Roanoke River	UNT/Roanoke River (S-I1) @ 234.0	Roanoake River (NHD-124) @ 233.8	72,593 gpm	Oct-Nov 2018
		09B	218.1	234.0	15.9 mi	**5,691,886 gal**	1,500 gpm	2.07%		Section 9A + Roanoke River	Upper Roanoke	Mason Creek-Roanoke River										
2018	10	10A	234.0	247.1	13.1 mi	**4,689,542 gal**	1,500 gpm	3.18%	262.8	Blackwater River	Banister	Upper Blackwater River	47,124 gpm	262.7	4,689,542 gal	Discharge Test Section 10 in upland area near Blackwater River @ 262.7	Banister	Upper Blackwater River	Blackwater River (NHD-162) @ 262.8	Blackwate River (NHD-162) @ 262.8	47,124 gpm	Oct-Nov 2018
		10B	247.1	256.9	9.8 mi	3,508,207 gal				Reuse from Test Section 10A	Banister	Upper Blackwater River										
		10C	256.9	262.7	5.8 mi	2,076,286 gal				Reuse from Test Section 10B	Banister	Upper Blackwater River										
2018	11	11A	262.7	267.3	4.6 mi	**1,646,709 gal**	1,500 gpm	3.18%	262.8	Section 11B + Blackwater River	Banister	Upper Blackwater River	47,124 gpm	262.7	1,646,709 gal	Discharge Test Sections 11A and 11B in upland area near Blackwater River @ 262.7	Banister	Upper Blackwater River	Blackwater River (NHD-162) @ 262.8	Blackwate River (NHD-162) @ 262.8	47,124 gpm	Oct-Nov 2018
		11B	267.3	270.0	2.7 mi	966,547 gal				Blackwater River	Banister	Upper Blackwater River										
		11C	270.0	286.2	16.2 mi	**5,799,281 gal**	1,500 gpm	1.06%	286.3	Section 11D + Pigg River	Banister	Lower Pigg River	141,709 gpm	286.2	5,799,281 gal	Discharge Test Sections 11C, 11D, and 11E in upland area near Pigg River @ 286.2	Banister	Lower Pigg River	Pigg River (S-E11) @ 286.3	Pigg River (S-E11) @ 286.3	141,709 gpm	
		11D	286.2	295.1	8.9 mi	3,186,025 gal				Section 11E + Pigg River	Banister	Lower Pigg River										
		11E	295.1	301.0	5.87 mi	2,101,344 gal				Pigg River	Banister	Lower Pigg River										
Proposed Water Usage for 2017 (only highlighted quantities from 2017)						28,387,836 gal																
Proposed Water Usage for 2018 (only highlighted quantities from 2018)						34,187,117 gal																
Actual Water Required (all highlighted quantities)						62,574,953 gal																
Gross Water Required (add all required water)						107,741,326 gal																

*Daily average flow for streams obtained by calculating the average daily output of the above streams for the months of September through December over their entire recording history as made available by USGS.

ESI

ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

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Pesi 593.01 20 April 2016

Ms. Cindy Schulz
Field Supervisor
Virginia Ecological Services
U.S. Fish and Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Dear Ms. Schultz:

RE: RTE Survey Comments on the Mountain Valley Pipeline, Virginia Segments, FERC Docket Number CP16-10

On behalf of Mountain Valley Pipeline (MVP), Environmental Solutions & Innovations, Inc., (ESI) submits the following responses based upon comments received from your office on March 8, 2016 regarding the above referenced project.

Roanoke Logperch Habitat Assessments

1. **Several sites were not assessed due to access issues. For future assessments, we recommend a change in methodology. If desktop review indicates that suitable habitat may be present, habitat assessments are typically conducted 200 meters upstream and 800 meters downstream of each site on any stream that may be affected by the proposed Project either directly or through sedimentation and erosion. Abbreviated surveys (100 meters upstream and 400 meters downstream) can be conducted on sites where suitable habitat is not anticipated such as first and second order streams. We will review results of those assessments and provide comments upon receipt.**

   ESI will adhere to the recommended stream-reach distances for all streams that have yet to be assessed in 2016 for Roanoke logperch habitat. Subsequent to the habitat assessments, a report summarizing the 2016 results of the field

efforts will be drafted and submitted to the Service (and VDGIF) for review.

2. Provide the following information for streams with suitable or known habitat for Roanoke logperch

a. An alternatives analysis that evaluates avoiding the proposed stream crossings.

During a phone conversation with the Virginia Field Office on March 16, 2016, ESI requested clarification in regards to the type of alternative analysis that the Agency is referring to and the contents of such an analysis. The requested alternatives analysis would include a desktop evaluation that investigates the necessity to cross a stream with federally endangered species, the crossing method, justifications for locations and methods, avoidance, minimization, and mitigation measures, as well as potential downstream impacts. The Service expressed it has a sequential preference for proposed projects to 1) avoid, 2) minimize, and lastly 3) mitigate for any potentially damaged resources.

The following text is an excerpt from MVP's Resource Report 10 (Section 10.6) that describes the process and rationale during the early project development phase.

…MVP conducted an extensive review of potential pipeline routes to identify potential pipeline corridors, and then further refined the review to determine the most feasible route within the most favorable corridor. One of MVP's primary objectives with respect to pipeline routing was to avoid (if possible) or minimize crossings of major population centers and significant natural resources, especially crossings of National Forests, National Parks, the Appalachian National Scenic Trail, and the Blue Ridge Parkway."

Analysis began with the identification of a study area which encompassed the Project interconnect points to the north (beginning) in the Mobley area and the south (end) at Transco Station 165 and was wide enough to cover a reasonable range of corridor locations. The review encompassed enough area to be able to avoid exclusion areas (e.g. cities and towns), as necessary. Using publicly available data from state, Federal, and private entities, a geodatabase was developed within which data was categorized based on the character of the resources relative to its compatibility with pipeline construction and operation. Resources were classified as being either a compatible use or one of two types of constraints – sensitive area or exclusion area. A combination of spatial data, existing information, published reports, local knowledge, and prior experience was used to review the study area and identify individual corridor segments, with an emphasis on use of existing utility and transportation corridors. It should be noted that there are no existing natural gas transmission pipelines in the general area and direction of the Proposed Route of the Project (i.e. north to south); nor

are there existing major highways suitable for collocation. Therefore, the primary opportunities for use of existing linear corridors were overhead electric transmission lines.

Although a straight line between the Project's start and end point would result in the shortest route and lowest possible acreage of disturbance, a straight line route does not allow for consideration of constructability or avoidance of sensitive areas, both primary criteria for MVP. MVP also evaluated existing highways and linear utilities in the region to determine if these existing rights-of-way would provide opportunities for collocation with the Project (Figure 10.5). Existing major pipelines in the region traverse generally from the southwest-to-northeast and do not provide a north-south option for collocation. Major highways in the region generally traverse either southwest-northeast, or east-west, providing limited opportunities for significant collocation. Similarly, major electric transmission lines traverse primarily east-west, although some sections of electric transmission lines were identified for possible collocation, as discussed below.

During corridor identification, special consideration was given to avoiding population centers (i.e. cities and towns) and, where possible, National Forests, National Parks, the Appalachian National Scenic Trail, and the Blue Ridge Parkway (and if avoidance was not possible finding an optimal location for the crossings). This refined analysis resulted in a network of 94 corridor segments, consisting of approximately 2,362 miles of potential pipeline routes, which could be pieced together to create end-to end routes between the Project's beginning and end points. Based on a review of desktop constructability, prior easement agreements, use of existing rights-of-way, and length, a set of corridor segments that together created an end-to-end route was identified as the highest ranking corridor and was initially selected for further study.

A more detailed analysis of site-specific data was then applied to the selected corridor to identify the most logical pipeline route (centerline) within that corridor. Analysis at this level included identification of ridge lines, and topography at road and waterbody crossings. Special consideration was also given to residential areas, which were avoided whenever possible. The potential route was sited to minimize or avoid potential impacts on known sensitive biological and cultural resources, protected lands, wetlands and waterbodies, and floodplains.

MVP has considered the feasibility of numerous alternative alignments for the proposed Pipeline and the current alignment is the result of the elimination of these alternatives and the conflicts with sensitive resources such as karst features, wetlands, cultural resources, and endangered species occurrences. Previous alignments (such as Alternatives 100, 110J, and 110R) considered traversal of Monroe County, West Virginia, and Craig County, Virginia. These alignments were eliminated because of the presence of sensitive resources. Those alignments proposed to intersect with streams that support populations of federally endangered

James spinymussel. The only known population of James spinymussel in West Virginia occurs in South Fork Potts Creek (Monroe County, West Virginia). One of the largest known populations of James spinymussel occurs in Little Oregon Creek, Dicks Creek, and Johns Creek. Impacts to these populations of James spinymussel are now avoided with the currently proposed alignment.

MVP traverses the distributional ranges of two populations of federally endangered Roanoke logperch (including the Upper Roanoke River and Pigg River populations) and waterbodies known to support the species. MVP has attempted to minimize the total number of stream crossings, stream crossings known to support or with potential to support populations of Roanoke logperch, and stream crossings of suitable size to support populations of Roanoke logperch. The Project proposes to traverse the majority of streams in headwater reaches thereby limiting the amount of species impact via direct instream construction activities. Roanoke logperch is a species that occupies streams that range 2nd to 6th Strahler stream orders (1:100,000 scale) but are relatively more common in 4th and 5th stream orders (Lahey and Angermeier 2007). The number of streams that are 1st, 2nd, and 3rd order comprise 66 percent, 18 percent, and 8 percent of the total centerline stream crossings (*n*= 65 stream crossings) in the Roanoke and Pigg river basins. The number of streams that are 4th and 5th order, comprise 5 percent and 3 percent, respectively, of the total stream crossings in the Roanoke and Pigg river basins. Of the 65 streams traversed by the pipeline in the Roanoke and Pigg river basins, three (North Fork Roanoke River, Roanoke River, and Pigg River) are known to support populations of Roanoke logperch. In addition, 7 stream crossings (or 11 percent) have been identified with potentially suitable habitats for Roanoke logperch. (Note: Eight stream crossings in the Roanoke and Pigg basins will be assessed during the 2016 field survey season). Any other major or minor alternative alignments will likely encounter suitable habitats or known occurrences and potentially conflict with other sensitive resources and/or features.

References

Lahey, A. M. and P. L. Angermeier. 2007. Range-wide assessment of habitat suitability for Roanoke logperch (*Percina rex*) Final report VTRC 07-CR8 prepared for Virginia Transportation Research Council, in Cooperation with the U.S. Department of Transportation, Federal Highway Administration, Charlottesville, Virginia. 58 pp.

b. The analysis that supports the conclusion that open-cut/conventional lay of dry ditch crossings will have the least amount of impact.

MVP conducted site specific crossing method investigations at many sensitive resources and has provided supporting documentation that open-cut/conventional lay of dry ditch crossings are the proposed crossing methods of least impact in MVP's Resource Report 2 (Section 2.2.1.4), as well as MVP's Waterbody Crossing Review Report (included in the response to Data Request 2, ATTACHMENT DR2 RR2 -21d).

Horizontal directional drilling (HDD) has been precluded from consideration of crossing sensitive streams for several reasons. HDD is not feasible crossing method within the current alignment of many sensitive resources due to the lack of space necessary to accommodate the required depth and bend radius of the pipe. The workspace and pullback areas in many locations are restricted by topography, cultural resources, and residences. The preliminary geotechnical data for some locations indicates the possibility of gravel and cobbles in this area. This geology may cause a high potential for drilling fluid losses and/or release of drilling fluids in the resources. drill bit steering problems and contribute to poor borehole stability..

c. Details on any instream blasting or water withdrawals planned in these streams.

MVP is still evaluating areas where blasting will be necessary to facilitate trenching. Many locations will not be known until trenching begins. MVP will utilize all available mechanical methods before blasting in streams. . A preliminary blasting plan has been developed for the Project. Site-specific blasting plans will be developed prior to blasting occurring in any given area. Those plans will address avoidance and minimization of impacts to houses, the public and sensitive resources. An updated copy of the blasting plan is included in the response to Data Request 2, ATTACHMENT DR2 RR6 -13.

Details about water uses for hydrostatic testing and dust control measures are provided in Section 2.2.3 and 2.2.4, respectively of Resource Report 2 and various Data Request Responses. Waterbodies from which water withdrawals are proposed for hydrostatic testing are provided in Table 2.2-10, attached, and excerpts are included below.

The pipeline will be hydrostatically tested to ensure that it is capable of safely operating at the design pressure. Test segments of the pipeline will be capped and filled with water. Surface water used for testing will be drawn through a screened intake. The water in the pipe will be pressurized and held for a minimum of 8 hours in accordance with the USDOT Pipeline and Hazardous Materials Safety Administration Office of Pipeline Safety (OPS) requirements identified in 49 CFR Part 192 prior to being placed in service. Any loss of pressure that cannot be attributed to other factors, such as temperature changes, will be investigated. Leaks detected will be repaired and the segment will be retested.

The test water will be discharged through an energy-dissipating device in compliance with NPDES permit conditions. Table 2.2-10 provides anticipated hydrostatic test water information for each pipeline segment. Hydrostatic test water surface sources are listed on Table 2.2-10, which includes the names and locations of proposed water withdrawal sources, approximate water volumes to be withdrawn from each source and discharge locations. Additional potential sources for hydrostatic test water include local Public Service District (PSD) systems.

In the event that a stream is not capable of supplying the requisite volume of water at the time of the test, Mountain Valley Pipeline will purchase water from a municipal source to make up the deficit. Mountain Valley Pipeline has contacted all municipal water suppliers located along the route with general information about the project and plans to discuss purchasing surplus water with them.

Currently, hydrostatic tests are anticipated to take place in October or November of 2017 and 2018, and should be discharged within those time frames, as well. MVP will discharge within the same watershed from which water was withdrawn as much as practicable, and will avoid discharging near perennial streams.

Test water will contact only new pipe, and no chemicals will be added to the test water. An exception would be that if a municipal water source with chlorinated water is used for testing, addition of a dechlorinating agent may be required prior to discharge depending on the discharge location.

MVP will comply with conditions of NPDES permits if necessary and conditions for hydrostatic test water discharge in West Virginia and Virginia, as summarized below. MVP has not applied for agency approval for the discharge of hydrostatic test water at this time, but anticipates submitting these applications in the near future.

***West Virginia**: MVP will follow the regulations outlined in NPDES General Permit WV0113069 (Hydrostatic Testing General Permit) (WVDEP 2012b). Coverage*

under this permit includes effluent limitations, monitoring requirements, and other standard conditions.

***Virginia**: MVP will follow the regulations outlined in VPDES General Permit 9VAC25-120 (VAG83) (Petroleum Contaminated Sites and Hydrostatic Tests). Coverage under this permit includes effluent limitations, monitoring requirements, and other standard conditions.*

While it is not possible to know how much water would be needed for dust suppression on the pipeline construction right-of-way, during dry seasons, MVP estimates that there would be approximately five 1,000-gallon water trucks per construction spread on a given day. Watering trucks would spray only enough water to control the dust or to reach the optimum soil moisture content to create a surface crust. Runoff should not be generated during this procedure. Water may be obtained through municipal sources or withdrawn from surface water or groundwater sources. The locations and amount of disbursement of water will be decided by the spread lead environmental inspector.

A Fugitive Dust Control Plan was included as Attachment General 1-g in Data Request response 1.

d. An alternatives analysis that evaluates relocating any facility associated with the Project (staging areas, temporary work spaces, access roads, etc.) that is currently proposed adjacent to these streams. Any facilities near these streams should provide an adequate buffer to avoid impacts.

Details regarding the rationale for temporary work spaces within the vicinity of streams are provided in Resource Report 2 (section 2.2.5) and excerpts are included below.

ATWS will be located at least 50 feet away from the water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land or as noted with a site specific explanation of the conditions. MVP will limit the amount of vegetation cleared between the waterbody and the ATWS.

In addition, ATWS may be proposed near waterbodies during the construction phase to facilitate responsible and safe construction to accommodate instream construction timelines at waterbody crossings. Excavated materials during trenching must be temporarily stored during construction in the general vicinity of the Project crossing so it can be back-filled in a timely manner. ATWS is also necessary to prepare the pipe string for insertion into the stream trench in a timely and safe manner.

Freshwater Mussel Site Assessments

3. **Regarding James spinymussel, we have concerns about the proposed alignment across this creek and recommend that alternatives be evaluated to minimize impacts. The pipeline should cross the creek at a perpendicular angle, cross it once, and not parallel it. We recommend that blasting or water withdrawals from this waterbody be avoided and that any associated facilities proposed adjacent to this stream be relocated and an adequate buffer be provided to avoid impacts.**

   The proposed alignment in the vicinity of Craig Creek has been revised since the generation of the Freshwater Mussel Survey Report submitted November 13, 2015. The number of proposed pipeline crossings has been reduced to a single perpendicular crossing and use of the existing access road crossing.

   Areas where blasting is planned to facilitate trenching are still under evaluation. See the response to blasting in streams above. There are no water withdraws planned from Craig Creek.

Rare Plant Surveys

4. **No comments**

Bat Surveys

5. **The proposed Project route intersects a NLEB hibernaculum, Canoe Cave, which was not in our database when we first consulted. Based on the survey results and the additional information about the hibernaculum, we recommend the following.**

   a. **Continue coordination with the Service and with Wil Orndorff, Virginia Department of Conservation and Recreation Karst Protection Coordinator, to identify a route that will not cause incidental take in Canoe Cave.**

      MVP and Draper Aden are assessing potential route modifications in the area of Canoe Cave to avoid all direct impacts to this system. Furthermore, representatives from Draper Aden are and will continue to coordinate with Wil Orndorff concerning this area and all other sensitive karst features.

   b. **In addition to the avoidance measures you develop and agree to implement with Wil Orndorff around Canoe Cave, we encourage you to implement any applicable voluntary conservation measures, which can be found on our website http://www.fws.gov/northeast/virginiafield/endangered/projectreviews_step7b.html.**

Of the voluntary conservation measures outlined in Step 7b on the provided website that apply to the proposed Project, MVP will strive to fulfill the following:

- *Perform NLEB surveys according to the most recent summer survey guidelines.*

  Summer maternity netting surveys were completed along the majority of the project route during May – August 2015.

- *Conduct tree removal activities outside of the NLEB pup season (June 1 – July 31) and/or the active season (April 15-September 15).*

- *Avoid clearing suitable spring staging and fall swarming habitat within a 5-mile radius of known or assumed NLEB hibernacula during the spring staging and fall swarming season (April 1 – May 14 and August 16 – November 15).*

  MVP is making all attempts to restrict tree clearing activities to the months outside the summer season of reproduction. However, the final project clearing schedule is dependent upon when MVP receives notice to proceed from FERC and may result in some clearing during the beginning or end of the active season. With the exception of a contingency plan associated with minor clearing for unexpected events, no clearing is anticipated within the NLEB pup season. MVP will continue to coordinate with the Service on this matter.

- *Manage forests to ensure a continual supply of snags and other suitable maternity roosts.*

  MVP will only remove snags on the edge of the right-of-way if asked by the landowner or if snags pose a safety concern.

- *Minimize use of herbicides and pesticides. If necessary, spot treatment is preferred over aerial application.*

  MVP proposes to avoid use of pesticides and herbicides within the Project's right-of-way unless a federal/state agency requests their use in a specific area. MVP agrees to avoid using aerial application.

- *Evaluate the use of outdoor lighting during the active season and seek to minimize light pollution by angling lights downward or via other light minimization measures.*

  Outdoor lighting will be photocell controlled to only be on at night. (Night time lighting will be necessary to allow for the station surveillance systems to operate. It will also allow for a safer working environment for MVP staff conducting any necessary operational activities at night.) Outdoor lighting will be located on each station perimeter and pointed inward toward the station. MVP will utilize fully shielded, "full cut-off" type lighting fixtures to minimize objectionable light from each station. Stations are only proposed to be located in West Virginia.

- *Participate in actions to manage and reduce the impacts of WNS on NLEBs.*
  MVP and its contractors follow the latest WNS decontamination protocols when sampling for bat species during summer mist net and spring/fall harp trap surveys. Known and potentially suitable hibernacula are not entered by MVP contracted bat biologists.

6. **The proposed Project re-route may impact Tawney's Cave, a documented Indiana bat (*Myotis sodalis*) hibernacula. Therefore, we recommend the following.**

   a. **Continue coordination with the Service and with Wil Orndorff to ensure the alternative route will not impact the hibernaculum and cause incidental take of Indiana bats.**

      Direct impacts are not anticipated to Tawney's Cave at this time, but MVP and Draper Aden will continue to work with the Service and Wil Orndorff to ensure avoidance of the hibernaculum.

   b. **In addition to the conservation measures you develop and agree to implement with Wil Orndorff for Tawney's Cave, we recommend a time-of-year restriction for tree clearing within 5 miles of Tawney's Cave from April 1 – November 15 of any year.**

      As discussed above, MVP is making all attempts to restrict tree clearing activities to the months outside the summer season of reproduction. However, the final project clearing schedule is dependent upon when MVP receives notice to proceed from FERC and may result in some clearing during the beginning or end of the active season. With the exception of a contingency plan associated with minor clearing for unexpected events, no clearing is anticipated in June or July. MVP will continue to coordinate with the Service on this matter.

Karst Resources

7. **The proposed Project route crosses karst areas containing surface and subsurface features. The location and extent of subsurface karst features are not well known and it is difficult to determine connectivity. Therefore, we recommend the following.**

   a. **Protect recharge areas of cave streams and other karst features by following relevant environmental maintenance and construction standards for stream and wetland crossings and spill prevention containment and control.**

      MVP will implement the terms of a Project-specific Erosion and Sediment Control (ESC) plan and Spill Prevention, Control and Countermeasures (SPCC) plan as well as the FERC Plan and Procedures to protect recharge areas of karst features and water resources. Refer to MVP's

Karst Mitigation Plan located within the attached Resource Report 6 for more detailed discussion on karst area protections to be implemented during all phases of the construction process.

b. Avoid all construction activities, including excavating, filling, or altering the hydrology of any existing sinkholes, fissures, or cave entrances.

Refer to MVP's Karst Mitigation Plan located within the Resource Report 6 for more detailed discussion on karst feature avoidance and mitigation measures to be followed during all phases of construction in karst areas. As noted in the Karst Mitigation Plan, a Karst Specialist Team will be on-site during construction activities in karst areas to evaluate karst features and provide recommendations to MVP during construction for avoidance and/or mitigation if necessary.

c. If new sinkholes form use an inverted filter to bridge the karst feature above the water table rather than filling it below.

Refer to MVP's Karst Mitigation Plan located within the attached Resource Report 6 for more detailed discussion on karst feature mitigation measures to be implemented if a new karst feature is observed during construction. As noted in the Karst Mitigation Plan, a Karst Specialist Team will be on-site during construction activities in karst areas to evaluate any newly observed karst feature and provide recommendations to MVP during construction for avoidance and/or mitigation if necessary, including sinkhole mitigation techniques.

d. Implement sediment and erosion control measures such as silt fence and straw bales or other control measures that will provide equivalent level of protection, or better, around all karst features. Monitor and maintain all sediment and erosion control measures periodically and after precipitation events, as identified in an approved erosion and sedimentation control plan. Clean, repair, and replace structures as necessary.

MVP will implement the terms of a Project-specific ESC plan and SPCC plan as well as the FERC Plan and Procedures to protect karst features and water resources in karst areas. Also, refer to MVP's Karst Mitigation Plan included in the attached Resource Report 6 for more detailed discussion on karst area protections to be implemented during all phases of the construction process. BMPs utilized as part of ESC and SPCC will be inspected daily during construction by MVP and maintained in proper working order.

e. Maintain a 100-foot buffer or greater around all surface karst features when blasting, drilling, digging, or trenching. If a subsurface karst feature is located and cannot be avoided, contact the Service for specific guidance or alternatives.

Refer to MVP's Karst Mitigation Plan included in the attached Resource Report 6 for details regarding buffers to be maintained between construction and karst features. The Karst Mitigation Plan also specifies that a specific representative from the West Virginia DEP (if a feature is encountered in West Virginia) and the Virginia DCR will be notified if karst features are uncovered. A local representative from U.S. Fish and Wildlife will be contacted along with WVDEP and VDCR (specified in the Karst Mitigation Plan).

Migratory Birds and Bald and Golden Eagles

8. **Resource Report 3 also indicates that field surveys for eagle nests in areas of suitable habitat traversed by the Project are scheduled for October 2015. Please provide us with the results of this field survey.**

   ESI conducted field surveys in West Virginia during late 2015 and provided survey results to the West Virginia Field Office in January 2016. Based on prior correspondence with VDGIF and the Virginia Field Office, field surveys for bald eagles were not conducted in Virginia prior to the date of this letter. Based on the phone call between ESI and The Service on March 16, as well as subsequent email correspondence, ground surveys and a "fly over" were conducted along the Virginia portion of the route during late March and early April 2016. No active eagle nests were documented during these field surveys; a complete report of findings is forthcoming.

9. **The MBHCP should address the following.**

   a. **Avoid vegetation clearing during the nesting season of native birds from March 1 through July 31 of any year.**

      A draft MBHCP was originally submitted to both Service Field Offices on January 22, 2016. That document was also subsequently provided to the Virginia Field Office via email on March 16, 2016. This document detailed the clearing sequence proposed for the project, by geography and proposed clearing schedule that avoided clearing from May through July of each year. However, the final project clearing schedule is dependent upon when MVP receives notice to proceed from FERC and may result in some clearing during the beginning or end of the active season. An updated plan, including proposed clearing schedule, will be submitted to the Service as soon as MVP is able to accurately ascertain the necessary information to do so.

   b. **Avoid fragmentation of large contiguous blocks of habitat and ecologically important habitat areas.**

      On March 24, 2016, ESI received email correspondence from the Service with a preliminary review of the MVP draft MBHCP plan. The comments

were primarily related to bald and golden eagles. This document contained an analysis of habitat fragmentation. MVP looks forward to meeting with the Service to discuss feedback on the adequacy of this analysis as well as any suggestions for refinement.

c. Locate attendant facilities (access roads, staging areas, etc.) in or adjacent to already disturbed areas.

MVPs plans to utilize existing access roads where possible. Additional ancillary facilities are located in or adjacent to already disturbed areas whenever feasible.

d. Avoid impacts to wintering golden eagles.

On March 24, 2016, the Service provided email correspondence on the MVP draft MBHCP which included a request for field surveys related to wintering golden eagles. On March 31, 2016 ground surveys for the species began. In a follow up conversation with Sarah Nystrom on April 4, 2016, ESI was able to confirm various details for these surveys. Surveys are now complete with only a few individuals sighted; full results will be provided in a written report and referenced in the MBHCP.

e. Avoid removal of raptor nests.

MVP will avoid raptor nests during construction to the greatest extent practicable.

MVP looks forward to continuing consultation with the Service regarding the MBHCP and impacts to wintering golden eagles and raptors.

Thank you for your assistance in reviewing this project. Should you have additional questions or comments, please do not hesitate to contact me at you earliest convenience.

Sincerely,

Taina Pankieiwcz
Tpankiewicz@envsi.com
Environmental Solutions & Innovations, Inc.

Cc: Megan Neylon, Mountain Valley Pipeline
Sean Sparks, Tetra Tech

Table 2.2-10, Revised

Proposed Hydrostatic Test Water Use Summary

Anticipated Year of Construction	Construction Spread	Segment Name	Beginning MP	Ending MP	Length of Section	Required Water (gal)	Maximum Anticipated Withdrawal Rate (gpm)	Percentage of Daily Average Flow	Proposed Water Source					Proposed Test Water Discharge Location								Proposed Withdrawal/Discharge Month
									MP	Proposed Water Source	Sub-Basin	Watershed	Anticipated Flow (Sep - Dec)	MP	Volume	Explanation	Sub-Basin	Watershed	Nearest Stream	Nearest Perennial Stream	Anticipated Flow (Sep - Dec)	
2017	1	01A	0.0	12.2	12.2 mi	4,367,359 gal			25.9	Salem Fork Creek	West Fork	Tenmile Creek	2,547 gpm	25.9	4,904,330 gal	Discharge Test Section 1 in upland area near Salem Fork Creek @ 26.0	West Fork	Tenmile Creek	Salem Fork (NHD-005) @ 26.0	Salem Fork (NHD-005) @ 26.0	2,547 gpm	Oct-Nov 2017
		01B	12.2	25.9	13.7 mi	**4,904,330 gal**	255 gpm	10.00%		Section 1A + Salem Fork Creek	West Fork	Tenmile Creek										
2017	2	02A	25.9	41.3	15.4 mi	**5,512,896 gal**	255 gpm	10.00%	25.9	Section 2B + Salem Fork Creek	West Fork	Tenmile Creek	2,547 gpm	25.9	5,512,896 gal	Discharge Test Section 1 in upland area near Salem Fork Creek @ 26.0	West Fork	Tenmile Creek	Salem Fork (NHD-005) @ 26.0	Salem Fork (NHD-005) @ 26.0	2,547 gpm	Oct-Nov 2017
		02B	41.3	48.0	6.7 mi	2,398,468 gal				Salem Fork Creek	West Fork	Tennile Creek										
2017	3	03A	48.0	65.5	17.5 mi	**6,264,655 gal**	1,500 gpm	2.04%	74.9	Little Kanawha River	Little Kanawha	Upper Little Kanawha	73,491 gpm	65.5	1,933,094 gal	Discharge difference between Test Sections 3A and 3B in upland area @ 65.5	Little Kanawha	Upper Little Kanawha River	Clover Fork (NHD-027) @ 65.6	Clover Fork (NHD-027) @ 65.6	No public data available	Oct-Nov 2017
		03B	65.5	77.6	12.1 mi	4,331,561 gal				Reuse from Test Section 3A	Little Kanawha	Upper Little Kanawha		77.3	4,331,561 gal	Discharge Test Section 3B in upland area near Little Kanawha River @ 77.3	Little Kanawha	Upper Little Kanawha River	UNT/Laurel Run (S-AA15) @ 77.4	Stonecoal Run (S-H117)@ 76.83	No public data available	
2017	4	04A	77.6	87.4	9.8 mi	3,508,207 gal			87.4	Reuse from Test Section 4B	Elk	Middle Elk River	234,947 gpm	87.4	6,193,059 gal	Discharge Test Section 4 in upland area near Elk River @ 87.4	Elk	Middle Elk River	Elk River (S-E68) @ 87.4	Elk River (S-E68) @ 87.4	234,947 gpm	Oct-Nov 2017
		04B	87.4	104.7	17.3 mi	**6,193,059 gal**	1,500 gpm	0.64%		Elk River	Elk	Middle Elk River										
2017	5	05A	104.7	120.1	15.4 mi	**5,512,896 gal**	1,500 gpm	0.30%	118.6	Gauley River	Gauley	Outlet Gauley River	504,900 gpm	120.1	5,512,896 gal	Discharge Test Section 5 in upland area near Gauley River @ 120.1	Gauley	Outlet Gauley River	Little Laurel Creek (S-R8) @ 120.3	Little Laurel Creek (S-R8) @ 120.3	No public data available	Oct-Nov 2017
		05B	120.1	127.8	7.7 mi	2,756,448 gal				Reuse from Test Section 5A	Gauley	Outlet Gauley River										
2018	6	06A	127.8	143.7	15.9 mi	**5,691,886 gal**	1,500 gpm	1.11%	143.7	Meadow River	Gauley	Meadow River	135,201 gpm	143.7	5,691,886 gal	Discharge Test Section 6 in upland area near Meadow River @ 143.7	Gauley	Meadow River	Meadow River (S-I28) @ 143.7	Meadow River (S-I28) @ 143.7	135,201 gpm	Oct-Nov 2018
		06B	143.7	154.5	10.8 mi	3,866,187 gal				Reuse from Test Section 6A	Gauley	Meadow River										
2018	7	07A	154.5	170.6	16.1 mi	**5,763,483 gal**	1,500 gpm	0.28%	170.6	Greenbrier River	Greenbrier	Wolf Creek-Greenbrier River	533,062 gpm	170.6	5,763,483 gal	Discharge Test Section 7 in upland area near Greenbrier River @ 170.6	Greenbrier	Wolf Creek-Greenbrier River	Greenbrier River (S-I8) @ 170.6	Greenbrier River (S-I8) @ 170.6	533,062 gpm	Oct-Nov 2018
		07B	170.6	181.8	11.2 mi	4,009,379 gal				Reuse from Test Section 7A	Greenbrier	Wolf Creek-Greenbrier River										
2018	8	08A	181.8	191.0	9.2 mi	3,293,419 gal			181.9	Reuse from Test Section 8B	Middle New	Indian Creek	25,469 gpm	181.8	4,904,330 gal	Discharge Test Section 8 in upland area near Indian Creek @ 181.9	Middle New	Indian Creek	Indian Creek (S-D31) @ 181.89	Indian Creek (S-D31) @ 181.89	25,469 gpm	Oct-Nov 2018
		08B	191.0	204.7	13.7 mi	**4,904,330 gal**	1,500 gpm	5.89%		Indian Creek	Middle New	Indian Creek										
2018	9	09A	204.7	218.1	13.4 mi	4,796,936 gal			233.8	Roanoke River	Upper Roanoke	Mason Creek-Roanoke River	72,593 gpm	234.0	5,691,886 gal	Discharge Test Section 9 in upland area near Roanoke River @ 234.0	Upper Roanoke	Mason Creek-Roanoke River	UNT/Roanoke River (S-I1) @ 234.0	Roanoake River (NHD-124) @ 233.8	72,593 gpm	Oct-Nov 2018
		09B	218.1	234.0	15.9 mi	**5,691,886 gal**	1,500 gpm	2.07%		Section 9A + Roanoke River	Upper Roanoke	Mason Creek-Roanoke River										
2018	10	10A	234.0	247.1	13.1 mi	**4,689,542 gal**	1,500 gpm	3.18%	262.8	Blackwater River	Banister	Upper Blackwater River	47,124 gpm	262.7	4,689,542 gal	Discharge Test Section 10 in upland area near Blackwater River @ 262.7	Banister	Upper Blackwater River	Blackwater River (NHD-162) @ 262.8	Blackwate River (NHD-162) @ 262.8	47,124 gpm	Oct-Nov 2018
		10B	247.1	256.9	9.8 mi	3,508,207 gal				Reuse from Test Section 10A	Banister	Upper Blackwater River										
		10C	256.9	262.7	5.8 mi	2,076,286 gal				Reuse from Test Section 10B	Banister	Upper Blackwater River										
2018	11	11A	262.7	267.3	4.6 mi	**1,646,709 gal**	1,500 gpm	3.18%	262.8	Section 11B + Blackwater River	Banister	Upper Blackwater River	47,124 gpm	262.7	1,646,709 gal	Discharge Test Sections 11A and 11B in upland area near Blackwater River @ 262.7	Banister	Upper Blackwater River	Blackwater River (NHD-162) @ 262.8	Blackwate River (NHD-162) @ 262.8	47,124 gpm	Oct-Nov 2018
		11B	267.3	270.0	2.7 mi	966,547 gal				Blackwater River	Banister	Upper Blackwater River										
		11C	270.0	286.2	16.2 mi	**5,799,281 gal**	1,500 gpm	1.06%	286.3	Section 11D + Pigg River	Banister	Lower Pigg River	141,709 gpm	286.2	5,799,281 gal	Discharge Test Sections 11C, 11D, and 11E in upland area near Pigg River @ 286.2	Banister	Lower Pigg River	Pigg River (S-E11) @ 286.3	Pigg River (S-E11) @ 286.3	141,709 gpm	
		11D	286.2	295.1	8.9 mi	3,186,025 gal				Section 11E + Pigg River	Banister	Lower Pigg River										
		11E	295.1	301.0	5.87 mi	2,101,344 gal				Pigg River	Banister	Lower Pigg River										
Proposed Water Usage for 2017 (only highlighted quantities from 2017)						28,387,836 gal																
Proposed Water Usage for 2018 (only highlighted quantities from 2018)						34,187,117 gal																
Actual Water Required (all highlighted quantities)						62,574,953 gal																
Gross Water Required (add all required water)						107,741,326 gal																

*Daily average flow for streams obtained by calculating the average daily output of the above streams for the months of September through December over their entire recording history as made available by USGS.