



Molly J. Ward
Secretary of Natural Resources

COMMONWEALTH of VIRGINIA
Department of Game and Inland Fisheries

Robert W. Duncan
Executive Director

June 1, 2016

William A. Scarpinato
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, VA 23060

RE: Atlantic Coast Pipeline
Rev 10a Corridor Review
ESSLog# 34825

Mr. Scarpinato,

We have reviewed the proposed Atlantic Coast Pipeline project corridor (Rev10a, dated May 2016) and offer the following comments and recommendations. Atlantic Coast Pipeline, LLC proposes to construct and operate a natural gas transmission pipeline, and associated lateral pipelines, in Virginia. As proposed, the project crosses three of VDGIF's four administrative regions, crosses one of our Wildlife Management Areas (James River WMA), and borders another WMA (Horsepen).

The Virginia Department of Game and Inland Fisheries (VDGIF), as the Commonwealth's wildlife and freshwater fish management agency, exercises enforcement and regulatory jurisdiction over those resources, inclusive of state or federally endangered or threatened species, but excluding listed insects. We are a consulting agency under the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and we provide environmental analysis of projects or permit applications coordinated through the Virginia Department of Environmental Quality (DEQ), the Virginia Marine Resources Commission (MRC), the Virginia Department of Transportation (DOT), the Army Corps of Engineers (ACOE), the Federal Energy Regulatory Commission (FERC), and other state or federal agencies. Our role in these procedures is to determine likely impacts upon fish and wildlife resources and habitat, and to recommend appropriate measures to avoid, reduce or compensate for those impacts.

We offer the following comments regarding wildlife species and resources under our jurisdiction known from within 2 miles of the proposed pipeline, access roads, compressor stations, and contractor yards (project area).

Listed Species:

The following listed species have been documented from the project area in Virginia:

- Federally Endangered/State Endangered (FESE)
 - Red-cockaded woodpeckers
 - Virginia big-eared bats
 - Indiana bats
 - James spinymussels
 - Roanoke logperch

- Federally Threatened/State Threatened (FTST)
 - Northern long-eared bats

- Federal Species of Concern (FS)
 - Yellow lance mussels
 - Blueback herring
 - Alewife
 - Chowanoke crayfish
 - Roughead shiners

- State Endangered (SE)
 - Eastern tiger salamanders
 - Rafinesque's eastern big-eared bats
 - Rock voles
 - Canebrake rattlesnakes

- State Threatened (ST)
 - Loggerhead shrikes
 - Peregrine falcons
 - Atlantic pigtoe mussels
 - Bachman's sparrows

We understand that a number of species surveys and assessment activities are currently underway and planned for the near future. We are coordinating these activities closely with the applicant's environmental agents and are making additional recommendations regarding protection of listed species, as necessary, during this coordination. We recommend the applicant perform habitat assessments and/or species surveys, with permits as needed, for any species listed above for which we have not provided specific guidance to determine whether suitable habitat for these species exists within the proposed disturbance corridors and/or whether these species may be present on site. Upon review of such assessments or surveys, we will make final determinations regarding the protection and management of these species related to the construction and operation of the pipeline. For all other species, we recommend continued coordination with us and the U.S. Fish and Wildlife Service, as necessary, to ensure avoidance and minimization of impacts upon listed species and their habitats during project construction and long-term operation.

Designated Threatened and Endangered Species Waters:

The following streams are located within the project area and have been designated “Threatened and Endangered Species Waters” due to the presence of one or more listed species, as noted in parentheses below.

Fish:

- Butterwood Creek (Roanoke logperch)
- Nottoway River (Roanoke logperch)
- White Oak Creek (Roanoke logperch)
- Waqua Creek (Roanoke logperch)

Mussels:

- Nottoway River (Atlantic pigtoe mussels, FESE dwarf wedgemussels)
- Sturgeon Creek (Atlantic pigtoe mussels)
- Three Creek (Atlantic pigtoe mussels)
- Meherrin River (ST green floater mussels, Atlantic pigtoe mussels)
- Appomattox River (Atlantic pigtoe mussels)
- James River (green floater mussels)
- Cowpasture River (James spinymussels)

As previously recommended, we recommend that any instream work in waters known to support Roanoke logperch or their tributaries adhere to a time of year restriction from March 15 through June 30 of any year. In addition, we recommend coordination with the U.S. Fish and Wildlife Service.

We also continue to recommend that if any instream work is proposed in streams known to support listed mussels or their perennial tributaries, a mussel survey and relocation be performed from 100 meters upstream through 400 meters downstream of impact areas. This survey should be performed by a qualified, permitted biologist, preferably no more than six months prior to the start of construction. All survey and relocation activities should adhere to the enclosed draft guidance. Any relocations should be coordinated with Brian Watson, VDGIF Region II Aquatic Resources Biologist (434-525-7522), and no federally listed species should be relocated without first coordinating with the U.S. Fish and Wildlife Service [USFWS (804-693-6694)]. In addition, we recommend a time of year restriction on all instream work from May 15 through July 31 of any year in waters known to or anticipated to support Atlantic pigtoes, from March 15 through May 31 and August 15 through October 15 of any year for waters known to or anticipated to support dwarf wedgemussels, and from April 15 through June 15 and August 15 through September 30 of any year for waters known to or anticipate to support green floaters. Survey results should be made available to Amy Ewing in VDGIF's Richmond office and Brian Watson in VDGIF's Forest Office. Upon review of the results, we will make final recommendations regarding the protection of listed species known from the area.

If the applicant prefers, they may provide us with good, representative photographs of the impact area(s) for our review. The photos should clearly depict the size of the stream, the

substrate type, and the banks up and downstream of the site. Upon review of the photos, we may be able to rule out the need for a mussel survey based on the habitat available on site.

Designated Trout Streams:

The following streams are located within the project area and have been designated as either “stockable” trout streams, indicating inclusion within our trout stocking program, or as a “wild” trout stream, those which naturally support trout (species indicated in parenthesis below). Trout, and the streams that support them, are both ecologically and economically significant resources in Virginia.

Wild:

- East Fork Back Creek (brook trout)
- North Fork Back Creek (brook trout)
- South Fork Back Creek (brook trout)
- Jennings Branch (brook trout)
- Mills Creek and its tributary (brook trout)
- Orebank Creek (brook trout)
- White Oak Draft (brook trout)
- Bolar Run (brook trout)
- Campbell Creek (brook trout)
- Cub Creek (brook trout and brown trout)
- Chestnut Lick Hollow (brook trout)
- Clayton Mill Creek (brook trout)
- Dry Run (brook trout)
- Hodges Draft (brook trout)
- Jerkemtight Branch (brook trout)
- Jackson River (rainbow trout, possibly brook trout)
- Laurel Run (brook trout)
- Little Mill Creek (brook trout)
- Little Stony Creek (brook trout)
- Pheasanty Run (rainbow trout)
- Ramsey’s Draft (brook trout)
- Reuben’s Draft (brook trout)
- South Fork Rockfish River (brook trout)
- Stony Run (brook trout)
- Spruce Creek (brook trout)
- Still Run (brook trout)
- Stony Creek (brook trout)
- Little Valley Run (brook trout)

To best protect these valuable wild trout resources, we recommend that all instream work within these waters and/or their tributaries adhere to a time of year restriction from October 1

through March 31 of any year in waters known to support brook trout and/or brown trout and from March 15 through May 15 of any year in waters known to support rainbow trout.

Stockable:

- Barterbrook Branch
- Back Creek
- North Fork Back Creek
- Folly Mills Creek
- Mills Creek
- Tributary to Tom's Branch
- Tributary to Mills Creek
- Mill Creek
- South Fork Rockfish River
- Stony Creek
- Bolshers Run

To ensure avoidance of stocking and/or angling activities during project construction and long-term operation, we recommend coordination with Paul Bugas, VDGIF Region IV Aquatics Resources Manager, at 540-248-9360 or Paul.Bugas@dgif.virginia.gov.

Anadromous Fish Use Areas:

The following streams are located within the project area and have been designated as confirmed or potential Anadromous Fish Use Areas. Anadromous Fishes and the waters that support them are both ecologically and economically significant resources in Virginia.

Confirmed:

- Elizabeth River
- Fountains Creek
- Meherrin River
- Nottoway River
- Blackwater River

Potential:

- Nansemond River
- Western Branch Elizabeth River
- James River
- Burnett's Mill Creek

To best protect these important fisheries, we recommend that all instream work in the above-listed confirmed Anadromous Fish Use Areas and their tributaries and/or within the above-listed potential Anadromous Fish Use Areas adhere to a time of year restriction from February 15 through June 30 of any year.

Other Significant Species and Resources:

- **State endangered bats (tri-colored bats and little brown bats):** Although hibernacula and roosts supporting these species have not been documented from within 2 miles of the proposed pipeline and associated facilities, we recommend consideration of impacts upon these species that may result from construction activities. We recommend close coordination with us if ongoing bat survey efforts indicate that these species may be roosting along the proposed pipeline corridor.
- **Back Creek and Jackson River:** Although we have not designated these streams as Threatened and Endangered Species Waters, our Malacologist, Brian Watson, has reason to believe that James spiny mussels may occupy these streams based on their adjacency to occupied sub-watersheds (Bullpasture River/Cowpasture River). We recommend consideration of impacts upon James spiny mussels that may result from construction activities within Back Creek and the Jackson River.
- **Colonial Waterbird Colonies:** We document colonial waterbird colonies containing great blue herons and great egrets from the project area. We recommend that all colonial waterbird colonies located within the project area be identified and mapped and that the colony and a 500-foot, naturally vegetated buffer be around the colony be left undisturbed. Further, we recommend that any construction activities within 0.25 mile of a colony adhere to a time of year restriction from April 1 through August 15 of any year.
- **Bald eagles:** We document bald eagle nests from the project area and golden eagles from some of the counties through which the project traverses. We recommend continued coordination with us and the U.S. Fish and Wildlife Service regarding protection of these species during project construction and long-term operation.
- **Wildlife Action Plan Species of Greatest Conservation Need:** In addition to the listed species and wildlife resources mentioned above, a number of species included as Species of Greatest Conservation Need in Virginia's Wildlife Action Plan are likely to occur, if suitable habitat exists, in and around the project area. We recommend that the Virginia Wildlife Action Plan (available through www.bewildvirginia.org) be reviewed to determine what threats are known to these species, what constitutes suitable habitat for these species, and how to best protect them and their habitats from harm. In particular, we have discussed with Atlantic and their agents the need to consider impacts upon the following WAP tiered species: golden-winged warblers, cerulean warblers, Bachman's sparrows, and Henslow's sparrows. In addition to those species, we recommend consideration of saw-whet owls, black-billed cuckoos, and Wayne's warblers.
- **Scarlet kingsnakes:** This species has only recently been determined to occupy mature mixed hardwood/pine forests Virginia. Previously, this snake was thought to be a banded phase of our native milksnake. Genetic testing has determined that this banded phase is actually a kingsnake, the scarlet kingsnake. We recently documented Virginia's second and most northern population of scarlet kingsnakes from Nelson

County. Therefore, we recommend consideration of possible impacts upon this rare native snake resulting from construction of the Atlantic Coast Pipeline.

- **Timber rattlesnakes:** Timber rattlesnakes occupy forests and rocky ridge tops in Virginia's mountainous regions. The most recent pipeline alignment, Rev 10a, appears to traverse suitable and likely occupied timber rattlesnake habitat in the Blue Ridge Mountains of Augusta and Nelson counties. Therefore, we recommend consideration of possible impacts upon this native snake and its habitats resulting from construction of the Atlantic Coast Pipeline. In addition, we recommend that construction workers be educated about this snake, how to avoid encounters with it, and how to address accidental encounters when they occur. These snakes should not purposefully be harmed during any encounters. We recommend coordination with John (JD) Kleopfer, VDGIF Herpetologist, at 804-829-6703 or John.Kleopfer@dgif.virginia.gov regarding such education.
- **Bradley Pond, Augusta County:** Bradley Pond is a stocked trout pond that receives quite a bit of visitation by the angling community. According to Paul Bugas, our Regional Aquatics Resources Manager, this is an important recreational fishing resource. It appears the pipeline route crosses the only entrance road to this pond. We recommend avoidance or minimization of impacts upon public access to Bradley Pond, particularly during fishing season.

Pipeline Crossing of James River Wildlife Management Area:

The currently proposed route (Rev10a) in Nelson and Buckingham counties continues to depict a crossing of our James River Wildlife Management Area (WMA). The most recent version of proposed access roads located on the WMA depicts an increase in the length and number of roads since the last version, including a proposed road located within our waterfowl/shorebird management unit. We note that this section of the WMA is managed for wetland habitats and may be more vulnerable to adverse impacts associated with road improvement and high-level use as proposed. It also appears that the proposed access road now continues past the waterfowl management unit to our boat ramp on the James River. Assuming Atlantic plans to use our boat ramps and/or the associated parking lot during construction and maintenance of the pipeline, we must consider the adverse impacts this will have upon recreational and emergency access to the James River from this boat ramp.

The most recent alignment also depicts the James River HDD exit pit as being located within the James River floodplain, to the east of the CSX railroad, rather than on higher elevations to the west of the railroad where it previously had been located. We note that this new HDD exit pit location is within areas that have been known to flood and that are more sensitive to human activities than the previous HDD exit pit location.

Location of the pipeline corridor in the southern section of the WMA, where most of our habitat management and recreational activities occur is likely to result in a significant interruption of those activities. This may, therefore, result in a determination by the U.S.

Fish and Wildlife Service that a diversion of the federal funds used to purchase, maintain, and operate the WMA has occurred. A federal determination that diversion had occurred would jeopardize VDGIF's ability to receive federal funds, and therefore would be of very serious concern. We recommend that Atlantic Coast Pipeline, LLC work closely with us to avoid adverse impacts upon programs and activities currently occurring on James River WMA, including public access for hunting, fishing, wildlife watching, and boating, as well as wildlife and vegetation management activities conducted on the WMA. The current proposal also passes through or very near to a mausoleum and graveyard located on the WMA; we continue to recommend avoidance of this area. As such, we continue to recommend that the current pipeline corridor be re-routed along the northeast boundary of the WMA, similar to that depicted in the attached map.

Entire project area:

This project is located within 2 miles of a documented occurrence of a state or federal threatened or endangered plant or insect species and/or other Natural Heritage coordination species. Therefore, we recommend coordination with VDCR-DNH regarding protection of these resources. Further, we recommend coordination with the U.S. Fish and Wildlife to ensure protection of federally-listed species known from the project area.

We recommend conducting any in-stream activities, whether resulting in permanent or temporary impacts, during low or no-flow conditions, using non-erodible cofferdams or turbidity curtains to isolate the construction area, blocking no more than 50% of the streamflow at any given time, stockpiling excavated material in a manner that prevents reentry into the stream, restoring original streambed and streambank contours, revegetating barren areas with native vegetation, and implementing strict erosion and sediment control measures. To minimize harm to the aquatic environment and its residents resulting from use of the Tremie method to install concrete, installation of grout bags, and traditional pouring of concrete, we recommend that such activities occur only in the dry, allowing all concrete to harden and cure prior to contact with open water. Due to future maintenance costs associated with culverts, and the loss of riparian and aquatic habitat, we prefer stream crossings be constructed via clear-span bridges. However, if this is not possible, we recommend countersinking any culverts below the streambed at least 6 inches, or the use of bottomless culverts, to allow passage of aquatic organisms. We also recommend the installation of floodplain culverts to carry bankfull discharges.

In many instances, we support use of directional drilling, aerial crossing, or other methods that avoid impacts upon streams, wetlands, and other unique natural resources. We understand, however, that such methods are not practicable in every situation. Due to recent examples of frac-outs leading to bentonite mud spills resulting from the directional drill method, we recommend that geotechnical analysis of all proposed sites for directional drills be performed and carefully reviewed to ensure that the sites are suited for such a crossing method. Depending on the sensitivity of any given stream, we may prefer trenched crossings that adhere to our instream work recommendations or any recommendations made for the protection of listed species and/or designated wildlife resources. If a directional drill is the chosen method, we recommend that a contingency/clean-up plan be developed to address accidental frac-outs and/or spills that may occur.

William Scarpinato

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To minimize the adverse impacts of linear utility project development on wildlife resources, we offer the following general recommendations: avoid and minimize impacts to undisturbed forest, wetlands, and streams to the fullest extent practicable; maintain naturally vegetated buffers of at least 100 feet in width around wetlands and on both sides of perennial and intermittent streams, where practicable; conduct significant tree removal and ground clearing activities outside of the primary songbird nesting season of March 15 through August 15; and, implement and maintain appropriate erosion and sediment controls throughout project construction and site restoration, noting that maintaining effective erosion and sediment controls during construction and achieving soil stability after construction will be particularly difficult in areas along the route that have steep slopes and significant topography. We recommend that appropriate environmental protections be maintained along the entire pipeline, including along slopes and within steep terrain. We are happy to work with the applicant to develop project-specific measures as necessary to minimize project impacts upon the Commonwealth's wildlife resources.

It is clear, simply based on the project scope, that a significant acreage of forested habitat will be lost through conversion to early successional habitat. Although such conversion from forested habitat to early successional habitat is not necessarily harmful to wildlife, it does require perpetual maintenance and is likely to result in significant forest fragmentation across the Commonwealth. Forest fragmentation results in loss of interior forested habitat, allows invasive species to colonize, and introduces new predator/prey relationships along the corridor and within adjacent habitats. We urge the applicant to consider these long-term impacts and to minimize them to the greatest extent possible by collocating the pipeline within already-disturbed utility corridors and early successional habitats. We also recommend that the applicant work with the Virginia Department of Forestry to evaluate forest loss along the project corridor and how best to avoid, minimize, and mitigate that loss, as appropriate.

Thank you for the opportunity to provide input on the proposed natural gas pipeline project. We look forward to receiving updated project maps, project documents, and permit applications, when available. Upon receipt of such information, we will provide additional comments and recommendations, as needed. Please contact me or Amy Ewing at 804-367-0909 if you have any questions or need additional information.

Sincerely,



Raymond T. Fernald, Manager
Environmental Programs

AME/RTF

CC: Angela Navarro, Deputy Secretary of Natural Resources
Kimberly Bose, Secretary, FERC

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David Whitehurst, VDGIF

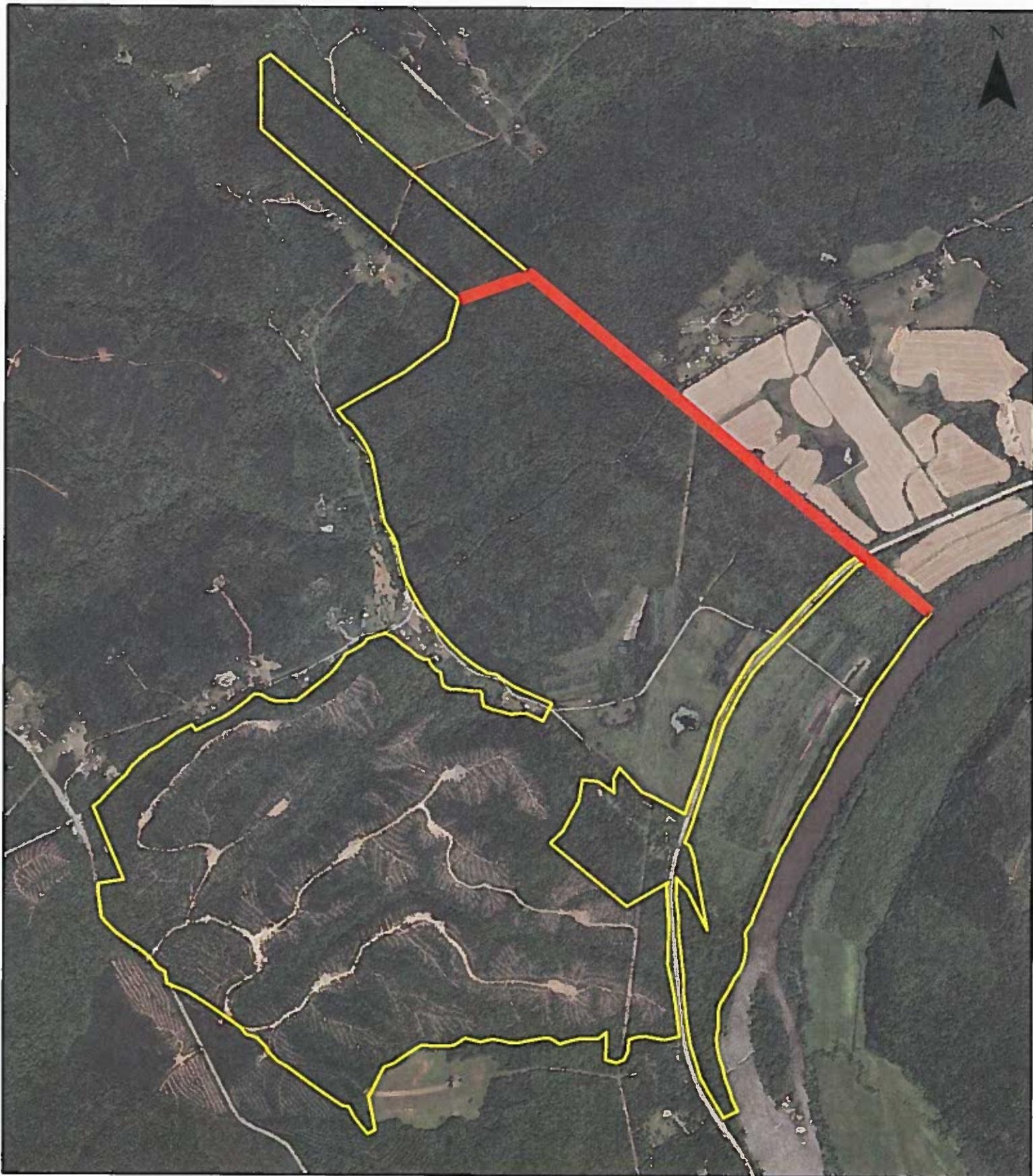
Greg Evans, VDOF

S. René Hypes, VDCR-DNH

Nikki Rovner, The Nature Conservancy

Sara Thronson, Natural Resources Group

DGIF Proposed Pipeline Alternative



0 187.5 375 750 1,125 1,500
Yards

 DGIF Proposed Pipeline



FRESHWATER MUSSEL GUIDELINES FOR VIRGINIA

Virginia Field Office
U.S. Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061
804-693-6694

Virginia Dept. of Game and Inland Fisheries
4010 West Broad Street
P.O. Box 11104
Richmond, VA 23230
804-367-1000

Last Updated: 6-22-15

DRAFT

LIST OF ENCLOSURES

- 1 - Federal and State-Listed Species in Virginia
- 2 - Mussel Survey and Relocation Guidelines in Virginia
- 3 - Surveyor List for Atlantic Slope Mussels in Virginia
- 4 - Surveyor List for Upper Tennessee River Basin Mussels in Virginia
- 5 - Time of Year Restrictions (See Freshwater Mollusks)
- 6 - Map of Federally-Designated Critical Habitat for Mussels in Virginia

INTRODUCTION

These guidelines are for project applicants and consultants planning certain activities that will impact rivers, streams, creeks, or other waterways in Virginia. The guidelines provide recommendations for conducting freshwater mussel surveys and relocations for small construction projects of short duration involving non-point pollution sources and affecting no more than 100 linear feet of waterway. Larger projects that impact waters containing State or federally listed mussels may require additional coordination or permits from the Virginia Department of Game and Inland Fisheries (VDGIF) and/or the U.S. Fish and Wildlife Service (FWS). Coordination with these agencies should always be initiated to ensure compliance with Federal and State laws.

FWS is responsible for the conservation and management of *federally* listed freshwater mussel species. VDGIF is responsible for the conservation and management of *all* freshwater mussel species throughout Virginia. If it is known that federally listed species or critical habitat (Enclosure 6) are not present within a two-mile radius of a given site, coordination with VDGIF, but not FWS, is still necessary.

GENERAL LIFE HISTORY

Freshwater mussels are often prominent in benthic stream communities where, for the most part, they are sedentary filter-feeders consuming a major portion of the suspended particulate matter. Therefore, mussel beds act as biological filters by removing inorganic and organic material from

the water column while improving water quality downstream. Individuals are typically long-lived, with particular species living for more than 50 years, while some individuals may live for more than 130 years. Because these mussels are long-lived, sedentary filter-feeders, they are prominent indicators of water quality. Freshwater mussels also serve as an important dietary component to a variety of animals, including muskrats, otters, raccoons, and some fishes.

During spawning, male mussels release sperm into the water column that females take in through their gills. The resulting larvae (known as glochidia) may be released by the female into the water column or packaged to attract fish. These larvae must attach to a fish host to survive. While attached to the gills of the fish host, development of the glochidia begins. Once metamorphosis is complete, the juvenile mussel drops off the fish host and continues to develop on the stream bottom.

Freshwater mussels are generally divided into two reproductive categories known as short-term (tachytictic) or long-term brooders (bradytictic). Short-term brooders usually spawn and release glochidia during May through July in Virginia. Long-term brooders usually spawn from August through September and release glochidia the following April through June.

SURVEYS AND RELOCATIONS

Enclosure 1 is a list of federally endangered, threatened, and candidate mussels and State endangered and threatened mussels. If a project occurs in an area that may contain suitable habitat for one of these species, FWS and/or VDGIF may recommend a survey. To determine which waterways may contain suitable habitat for State or federally-listed species, contact VDGIF for guidance (804-367-2211 or 2733). Applicants should contact FWS and VDGIF early in the planning process to determine whether federally or State-listed species or critical habitat may be impacted by the project. The effects of a project may include direct impacts from construction activities as well as downstream impacts from sedimentation and effluent discharges. If mussels were found during any previous survey/s, however old, coordination with VDGIF and FWS (where applicable) will be required. Surveys where mussels are not found (negative surveys) are typically valid for two years, after which another survey should be performed. Guidelines for freshwater mussel surveys and relocations are found in Enclosure 2. Surveyor lists are included in Enclosures 3 and 4. If listed mussels are found in or downstream of a project area, VDGIF and/or FWS are likely to recommend time of year or other restrictions to reduce impact to the mussels. Time of year restrictions are listed in Enclosure 5. If FWS determines that the project "may affect" a federally listed species or critical habitat, consultation with FWS will be required.

LAWS AND REGULATIONS PROTECTING MUSSELS

Federal Endangered Species Act (ESA) (87 Stat. 884; 16 U.S.C. 1531 et seq.; 50 CFR Part 17) Section 7(a)(2) requires Federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any federally listed threatened or endangered species, or result in the destruction or adverse modification of critical habitat. The regulations implementing this Act (50 CFR 402) require the Federal agency to review its actions

at the earliest possible time to determine whether its actions may affect listed species or critical habitat. If a Federal agency determines that its action “may affect” a listed threatened or endangered species or critical habitat, the agency is required to consult with FWS regarding the degree of impact and measures available to avoid or minimize the adverse effects.

Section 9 of the ESA makes it illegal for any person subject to the jurisdiction of the United States to “take” any federally listed endangered or threatened species of fish or wildlife without a special exemption. “Person” is defined under the ESA to include individuals, corporations, partnerships, trusts, associations, or any other private entity; local, State, and Federal agencies; or any other entity subject to the jurisdiction of the United States. Under the ESA, “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering.

Section 10 establishes an incidental take permit provision for private entities that includes the development of habitat conservation plans. This provision authorizes FWS, under some circumstances, to permit the taking of federally listed fish and wildlife if such taking is “incidental to, and not the purpose of carrying out otherwise lawful activities.” This process is also intended to be used to reduce conflicts between listed species and private development and to provide a framework that would encourage “creative partnerships” between the private sector and local, state, and Federal agencies in the interest of endangered and threatened species and habitat conservation. When approved by FWS, this regulatory procedure results in the issuance of a permit authorizing incidental take, provided such take is mitigated by appropriate conservation measures for habitat maintenance, enhancement, and protection, coincident with development.

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

The law further authorizes the Board of the Virginia Department of Game and Inland Fisheries to adopt the Federal list of endangered and threatened species, to declare by regulation that species not listed by the Federal government are endangered or threatened in Virginia, and to prohibit by regulation the taking, transportation, processing, sale, or offer for sale of those species. Implementing regulations pursuant to this authority (4 VAC 15-20-130 through 140) further

define “take” and other terms similarly to the Federal ESA.

Federal Endangered Species Act Cooperative Agreement - Federally listed species are also protected under VDGIF jurisdiction via a cooperative agreement signed in 1976 with FWS pursuant to Section 6 of the ESA. This Cooperative Agreement recognizes VDGIF as the Virginia agency with regulatory and management authority in Virginia over federally listed or threatened animals, excluding insects, and provides for Federal/State cooperation regarding the protection and management of those species.

Enclosure 1: Federal and State Listed Mussel Species in Virginia

U.S. Fish and Wildlife Service: Environmental Conservation Online System (ECOS)
(<http://ecos.fws.gov/ecp/>)

Virginia Department of Game and Inland Fisheries: Special Legal Status Faunal Species in Virginia
(<http://www.dgif.virginia.gov/wildlife/virginiatescspecies.pdf>)

Enclosure 2: Mussel Survey and Relocation Guidelines in Virginia

There are four general assessment/survey types including:

- A. **Land-based review** - land-based site visit used to determine whether a water-based survey (site assessment, abbreviated, or full survey) is warranted. During a land-based review, the surveyor should look for obvious signs that would negate the need for additional, water-based surveys. For example, if it can be determined that the water body is non-perennial and/or contains no potential mussel habitat, it is unlikely that additional surveys would be needed or recommended by VDGIF or FWS. If it is determined that suitable habitat is present, the appropriate survey will be recommended. Photographs of the project site clearly showing instream habitat conditions, as well as a thorough site description, should be sent to VDGIF and FWS for review in lieu of the site assessment. If it is determined that suitable habitat is present, the appropriate survey will be recommended.
- B. **Site assessment** - 20 m upstream / 80 m downstream. A site assessment is recommended to determine if suitable habitat is present at a project location and may be recommended if the presence of a listed species is questionable. If suitable habitat is present, the appropriate survey will be recommended even in the absence of mussels, since the site assessment does not serve as a substitute for a mussel survey; however, the presence of freshwater mussels should be documented during the assessment.
- C. **Abbreviated survey** - 100 m upstream / 400 m downstream of project footprint.
- D. **Full survey** - 200 m upstream / 800 m downstream of project footprint.

The assessment/survey type is based on the scope of the project, potential impacts, and known species distributions. Survey lengths are measured from the project footprint. *Survey distances have primarily been developed for projects where physical alteration/disturbance of the stream is the primary impact (e.g., bridge repair/replacement, utility line crossings, etc.). Potential impacts from projects involving activities such as point and non-point source discharges, water intakes, and mining may require greater survey lengths and different methods.*

Project applicants should contract with a qualified mussel surveyor. Enclosures 3 and 4 provide a list of pre-approved mussel surveyors. If a pre-approved surveyor is not selected, please provide the proposed surveyor's qualifications and proposed survey design to FWS and VDGIF a minimum of 30 days prior to survey initiation. Individuals who take federally listed threatened

and endangered animals must obtain a permit from VDGIF, prior to surveying. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Contact information follows:

Ms. Shirl Dressler
Virginia Department of Game and Inland Fisheries
4010 W. Broad Street
P.O. Box 11104
Richmond, Virginia 23230-1104
Phone: (804) 367-6913
CollectionPermits@dgif.virginia.gov

A plan for mussel relocations, including initial surveys, must be presented to VDGIF and FWS (where applicable) for comment and approval prior to initiation of construction. Failure to provide a mussel relocation and/or survey plan may affect review and permitting of the project by VDGIF and FWS.

The recommended time of year to conduct mussel surveys and relocations is April 1 through October 31. Surveying during the cooler months is discouraged because mussels tend to be located deeper in the substrate and a greater percentage of the population is subsurface, therefore making them more difficult to find, particularly rare species. A more specific time frame may be recommended depending on the target species. A survey conducted outside this time frame requires VDGIF and Service (where applicable) approval.

Guidelines if federally-listed mussels are not present

During the initial survey, mussel species within the direct project footprint or within imminent danger from project impacts may be relocated to suitable habitat unless otherwise directed by VDGIF. Suitable habitat typically includes an area upstream of project impacts and which also harbors freshwater mussels. If such an area cannot be found, the surveyor should determine the location of most suitable habitat. The direct project footprint shall be defined as the area of potentially disturbed substrate, any zone of heavy equipment operation, plus the distance downstream that may experience significant sedimentation from construction. If not determined prior to the relocation, the surveyor is responsible for determining the most suitable relocation area. All relocated mussels must be at least partially placed in the substrate, anterior end down. Project applicants may be required to monitor relocated mussels to determine relocation success/failure.

Standard mussel relocation protocols are outlined below. These protocols may vary based on factors such as the scope of the project and the results of the initial mussel survey. If the relocation protocols vary, VDGIF will clearly outline the appropriate protocols with the project applicant. It is the project applicant's responsibility to ensure that the proper relocation protocols are used and that the contracted mussel surveyor is aware of any modifications to the standard protocols.

The reach from which mussels are to be relocated will be at least 100 m long including the

project footprint. The standard protocol is as follows:

- The 1st relocation survey must occur within 30-45 days of instream construction activities and at least 7 days prior to the 2nd relocation survey.
- The 2nd relocation survey must occur within 30 days of instream construction activities and at least 7 days after the 1st relocation survey.
- All relocation surveys must include at a minimum, two passes. The target relocation percentage of the initial number of mussels collected is 80%. If on the 2nd pass, more than 20% of the initial number of mussels is collected, continued passes must be conducted until no more than 20% of the initial number of mussels is collected on the final pass. The target relocation percentage may be adjusted higher or lower depending on the species and numbers collected during the initial survey.
- If a state-listed species is found, continued passes must be conducted until no listed species are found on the final pass. If repeated passes result in continual collection of state-listed species, modification of the survey techniques may be required.

If relocation surveys are not possible due to natural conditions such as high water, contact VDGIF to arrange contingency plans.

The location of all relocated mussels must be accurately documented (preferably with geographic coordinates) and reported to VDGIF. All state-listed mussel species must be tagged and measured for potential future monitoring.

Project applicants may be required to adhere to time of year restrictions for mussel relocations as directed by VDGIF. If this is the case, for the long-term brooders, relocations can occur from June 16 through August 14 and October 1 through October 31. For short-term brooders, relocations can occur from April 1 through May 14 and August 1 through October 31.

All mussel survey and relocation results, including tag and measurement data, must be submitted to VDGIF for review, prior to instream construction activities. Reviews will be expedited due to the potential short timeframe between surveys and/or relocations and the start of instream work. Reports must contain, at a minimum, number of species found, number of individuals per species and their sizes, and number of individuals tagged.

Guidelines if federally-listed mussel species are present

Federally-listed mussels must *not* be relocated during the initial survey. If federally-listed mussels are found, they must remain exactly where found and all specimens should be photo documented, if possible. Coordination with FWS and VDGIF must occur to determine future actions.

If it is determined that a project may affect a federally-listed species, FWS will complete a consultation with the Federal action agency and prepare a biological opinion in accordance with the Federal Endangered Species Act. The relocation procedures for federally listed mussels will be specified in FWS's biological opinion and will be determined on a project-specific basis.

If relocation surveys are not possible due to conditions such as high water, contact FWS and VDGIF to arrange contingency plans. All listed mussels must be moved to suitable habitat upstream of any potential project impacts. Mussels may be relocated downstream if habitat upstream is determined unsuitable by VDGIF and FWS. If not determined prior to the relocation, the surveyor is responsible for determining the most suitable relocation area. All relocated mussels must be at least partially placed in the substrate, anterior end down. Project applicants may be required to monitor relocated mussels to determine relocation success/failure.

The location of all relocated federally-listed mussels must be accurately documented (preferably with geographic coordinates) and reported to FWS and VDGIF. All federally-listed mussel species also must be tagged and measured for potential future monitoring.

All mussel survey and relocation results must be submitted to FWS and VDGIF for review, prior to instream construction activities. Reviews will be expedited due to the potential short timeframe between surveys and/or relocations and the start of instream work. Reports must contain, at a minimum; number of species found, number of individuals per species and their sizes, number of individuals tagged, etc.

Project applicants may be required to adhere to time of year restrictions (Enclosure 5) for mussel relocations as recommended by FWS and VDGIF. Time of year restrictions will be specified in a letter or in FWS's biological opinion.

Enclosure 3: Surveyor List for Atlantic Slope Mussels in Virginia

Approved Surveyors in Virginia for Atlantic Slope Freshwater Mussels

(http://www.fws.gov/northeast/virginiafield/pdf/endspecies/Surveyor_Lists/PDF%20Format/SURVEYOR%20LIST%20-%20Atlantic%20Slope%20Mussels.pdf)

Enclosure 4: Surveyor List for Upper Tennessee River Basin Mussels in Virginia

Approved Surveyors in Virginia for Tennessee River Drainage Freshwater Mussels

(http://www.fws.gov/northeast/virginiafield/pdf/endspecies/Surveyor_Lists/PDF%20Format/SURVEYOR%20LIST%20-%20TN%20Drainage%20Mussels.pdf)

Enclosure 5: Time of Year Restrictions

Virginia Department of Game and Inland Fisheries Time of Year Restrictions (TOYR) Table

(<http://www.dgif.virginia.gov/environmental-programs/files/VDGIF-Time-of-Year-Restrictions-Table.pdf>)

Enclosure 6 - Federally-Designated Critical Habitat for Mussels in Virginia

Map of Federally-Designated Critical Habitat in Virginia

(<http://fws.maps.arcgis.com/apps/Viewer/index.html?appid=f6e84e675ba1461b8ae6a351adea1429>)

Document Content(s)

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