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COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

November 7, 2022

USDA Forest Service
ATTN: Christopher Shaw, Project Leader
3714 Highway 16
Marion, VA, 24354

Re: USFS, Currin Glade Vegetation Project

Dear Mr. Shaw:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information in our files, the Quebec Site is located within the project area. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. The Quebec Site has been assigned a biodiversity rank of B4, which represents a site of moderate significance. The natural heritage resource associated with this site is:

Carex roanensis	Roan Mountain Sedge	G3/S2/NL/NL

Roan Mountain Sedge is a sedge that occurs in higher elevation of the Blue Ridge, Ridge and Valley, and Central Appalachian ecoregions. In Virginia it is found in dry-mesic, often rocky, oak, oak-hickory and mixed hardwood forest, this species is rare in the mountains (Digital Atlas of the Virginia Flora 2021). Despite a rather broad distribution (found from Pennsylvania to Georgia) this species is imperiled throughout its range, making it a conservation priority. Major threats to Roan Mountain Sedge include activities that destroy or degrade the forest including: logging, development, and non-native species (NatureServe 2021). Based on the review of the project by a DCR botantist, this rare plant species will ultimately benefit from the proposed treatment.

In addition, per a USFS contracted survey during the summer of 2022, DCR-DNH located several colonies of Dwarf Rattlesnake-plantain (*Goodyera repens*, G5/S1/NL/NL) embedded within the stands of white pines (Figure 1).

Dwarf Rattlesnake-plantain is a rare orchid that occurs in acidic forests with thick cover. This species occurs in hemlock forests, often rooted in moss, and has seen a sharp decline in areas where there has been hemlock

mortality for woolly adelgid outbreaks (Virginia Botanical Associates, 2022). As the hemlock trees die off there is increased light, forest litter, shurbs and herbaceous ground cover all of which appear to contribute to a decline in the Dwarf Rattlesnake-plantain. Recently this species has been found in white pine plantations, which provide the dense canopy needed to support Dward Rattlesnake-plantain populations (Virginia Botanial Associates, 2022). Direct impacts to this rare species should be avoided. DCR recommends field locating these colonies before harvesting and buffering each colony by 100 ft to maintain the densely shaded microhabitat that this state rare orchid needs to persist.

The Middle Fork Holston River - Sulphur Spring Creek-Bear Creek Stream Conservation Unit (SCU) and the South Fork Holston River - Thomas Bridge SCU are also located within the project area, including a 100 foot buffer. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain.

The Middle Fork Holston River - Sulphur Spring Creek-Bear Creek SCU has been assigned a biodiversity rank of B4, which represents a site of moderate significance. The natural heritage resources associated with this SCU are:

Chrosomus tennesseensis	Tennessee Dace	G3/S1/NL/LE
Cottus baileyi	Black Sculpin	G4Q/S2/NL/NL
Cryptobranchus alleganiensis	Hellbender	G3/S2/NL/NL
Lasmigona holstonia	Tennessee Heelsplitter	G3/S1/NL/LE
Notropis spectrunculus	Mirror Shiner	G4/S2/NL/NL

Please note that the Tennesse Dace and the Tennessee Heelsplitter are currently classified as endangered by the Virginia Department of Wildlife Resources (VDWR).

The South Fork Holston River - Thomas Bridge SCU has been assigned a biodiversity rank of B4, which represents a site of moderate significance. The natural heritage resources associated with this SCU are:

Cottus baileyi	Black Sculpin	G4Q/S2/NL/NL
Cryptobranchus alleganiensis	Hellbender	G3/S2/NL/NL
Notropis spectrunculus	Mirror Shiner	G4/S2/NL/NL

The Black Sculpin is endemic to the extreme upper Tennessee drainage in western Virginia and northeastern Tennessee (NatureServe, 2009). The Black sculpin occurs in rocky riffles of headwaters, creeks, and streams, preferring cool to cold water temperatures (Jenkins and Burkhead, 1993).

Potential threats for the Black Sculpin include pollution, impoundment of the river, or other habitat alteration such as dredging or channelization (NatureServe, 2009).

The Hellbender is a large, completely aquatic salamander, prefers larger, clear, and fast-flowing streams of the Mississippi drainage (Martof, et. al, 1980). In Virginia, it is documented from the Holston, Clinch, Powell and New River drainages (Pague, 1991). The Hellbender depends on cool, flowing, well-oxygenated water, and it needs a coarse (rocky) substrate (NatureServe, 2009).

Threats to this species include habitat alteration from impoundments or channelization, and water pollution (Pague, 1991). In agricultural areas, siltation may bury the rocky substrates it requires (NatureServe, 2009). In addition, Hellbenders do not tolerate human recreational use of their habitat (NatureServe, 2009).

The Mirror Shiner is a fish of the Upper Tennessee River drainage including Georgia, Tennessee, North Carolina, and Virginia. In Virginia, it is know from four southwestern counties in the Holston, Powell and Clinch River drainages (NatureServe, 2009). The Mirror shiner is typically found in cool to cold, clear, upland creeks and

small rivers with moderate to high gradient (Jenkins and Burkhead, 1993). The substrates of these waterways are typically comprised of rubble, boulders, or bedrock. Adults occupy the heads and relatively slow parts of pools, backwaters near strongly moving currents, slow runs, and occasionally riffles (Burkhead and Jenkins 1991). It may also be found in muddy pools (Page and Burr 1991). Little is known about the life history of this species, though spawning is thought to occur in late spring and early summer in Virginia (Burkhead and Jenkins, 1991).

Threats to the Mirror shiner include any impacts which may increase the temperature of the stream, or alter the substrate. For example, deforestation, especially the loss of riparian cover may result in stream warming, and siltation. Siltation from coal mining already may have extirpated the Powell River population in Virginia (Burkhead and Jenkins 1991).

Please note the South Fork Holston River, has been designated as a scenic river in the state of Virginia. To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. DCR recommends taking measures to ensure that extra sediment and debris do not enter the water ways.

This project is also situated on karst-forming carbonate rock and can be characterized by sinkholes, caves, disappearing streams, and large springs. The Virginia DCR, Division of Natural Heritage karst staff screened this project against the Virginia Speleological Survey (VSS) database, the Virginia Department of Energy (VDE) sinkhole coverage, and other karst layers for documented sensitive karst features.

There are three caves in close proximity to the project, Nelson Cave is within the boundary while Tissue Box Cave and Cave Rock Cave are reported to be close to the boundary. DCR reccomends field verifying the location of all three caves as the coordinates below are estimates and not extact locations. It is possible that all three caves are within the submitted project boundary. Once field verified, DCR recommends avoiding the cave entrances and activities that could directly impact the entrances such as filling or allowing sediment to flow into them.

The entrance for Nelson Cave is reported at the following GPS coordinates: *Latitude: 36.767889, Longitude: -81.488696*. Nelson Cave is approximately 146 feet long and 47 feet deep. The entrance is described as a hole on the side of the road that is a small opening behind a large boulder inside what appears to be a shelter cave. The cave is described as mostly containing joint controlled fissures with some small pits and canyons. The cave is reported to have blowing slots that indicate that the cave is likely longer than the reported length. In 1992 a caver reported to the Virginia Speleological Survey that he saw 100 + Tri-colored Bats, ~60 clumped Gray Bats, and ~70 Little Brown Bats in this cave. While this caver is not a bat biologist, this report should not be completely discredited. Similar reports have often lead to the discovery of previously unknown populations of bats using caves. The DCR Natural Heritage Karst Program intends to investigate this cave over the winter to see if bats are still present and if so determine what species are using the cave as a hibernaculum. It is possible that Gray Bats are using this cave during the summer months, generally caves in use will have guano piles visible year round. DCR reccomends that Nelson Cave is treated as a possible bat cave.

The approximate coordinates for Tissue Box Cave are: *Latitude: 36.76780, Longitude: -81.488584*. Tissue Box Cave is estimated to be 9 feet long and 3 feet deep. The entrance is described as a small opening at the side of the road approximately 50-60 feet west of Nelson Cave. There is a possibility that this cave could have an air connection to Nelson Cave and may explain why Nelson Cave blows significant volumes of air at times.

The approximate coordinates for Cave Rock Cave are: *Latitude: 36.768804, Longitude: -81.485452*.
Cave Rock Cave is reported to be approximately 40 feet long. The entrance is described as being 4 foot by 3 foot. The cave is described as being basically a single tube passage that appears to pinch out.

Additionally, this project has intersected the karst bedrock and VDE sinkhole screening layers. Sinkholes mapped by the Virginia Department Energy are within the project site (see Sinkhole layer on the Natural Heritage Data Explorer at vanhde.org). Typically, additional, smaller unmapped sinkholes can also be present in the vicinity.

Sinkholes are areas where surface material has collapsed into the subsurface and into underground watercourses. Sinkhole areas are places where surface water directly affects groundwater quality and flow. What goes into sinkholes comes out in wells and springs, and can degrade drinking water, springs and spring-fed surface waters, and the habitat of subterranean creatures. Discharge of untreated stormwater runoff to sinkholes is discouraged, and sinkholes to which stormwater is diverted or which have been modified to accept stormwater are required by law to be registered as Class 5 Injection Wells with the US Environmental Protection Agency. Filling or alteration of natural (pre-existing) sinkholes is discouraged, and designation of natural buffers around sinkholes is desirable. If the project involves filling or "improvement" of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for storm water discharge, copies of VDOT Form EQ-120 will suffice.

During every phase of the project, DCR recommends the stabilization of the soil around the site. Minimizing surface disturbance, strict use of E&S control measures appropriate for the location and adherence to best management practices appropriate for karst will help to reduce any potential impact to the karst, groundwater and surface water resources as well as any associated fauna and flora.

If additional karst features such as additional undocumented sinkholes, caves, disappearing streams, and large springs are encountered during the project, please coordinate with Wil Orndorff (540-230-5960, Wil.Orndorff@dcr.virginia.gov) the Virginia DCR, Division of Natural Heritage Karst Protection Coordinator, to document and minimize adverse impacts. Activities such as discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to environmental impacts including surface collapse, flooding, erosion and sedimentation, contamination of groundwater and springs, and degradation of subterranean habitat for natural heritage resources (e.g. cave adapted invertebrates, bats). These potential impacts are not necessarily limited to the immediate project area, as karst systems can transport water and associated contaminants rapidly over relatively long distances, depending on the nature of the local karst system.

Furthermore, if any portion of a harvested area is not allowed to re-grow to forest, the proposed project will fragment Ecological Cores **(C1, C2, C3, and C4)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provides habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Interior core areas begin 100 meters inside the nearest core edges and continue to the deepest parts of cores. Cores also provide natural and economic benefits of open space, recreation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including carbon sequestration and oxygen production). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development results in changes that reduce ecosystem processes, biodiversity, population viability and habitat quality due to limited recolonization, increased predation, and increased introduction and establishment of invasive species.

Therefore, avoiding or minimizing core impacts is a key mitigation measure that will reduce deleterious effects and preserve the area and connectivity of habitats that are key components of biodiversity. DCR recommends efforts to minimize edge in remaining habitat fragments, retain natural corridors that allow movement between fragments and design the intervening landscape to support native wildlife (natural cover versus lawns).

The proposed project will impact one or more cores with very high to outstanding ecological integrity. If any portion of a harvested area is not to be allowed to re-grow to forest (i.e. there is any development and thus permanent fragmentation of the core) further investigation of these impacts is recommended and DCR-DNH can conduct a formal impact analysis upon request. This analysis would estimate direct impacts to cores and habitat

fragments and indirect impacts to cores. The final products of this analysis would include an estimate of the total impact of the project in terms of acres. For more information about the analysis and service charges, please contact Joe Weber, DCR Chief of Biodiversity Information and Conservation Tools at Joseph.Weber@dcr.virginia.gov.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

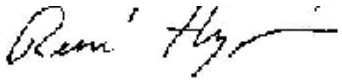
There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Amy Martin at 804-367-2211 or amy.martin@dwr.virginia.gov.

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

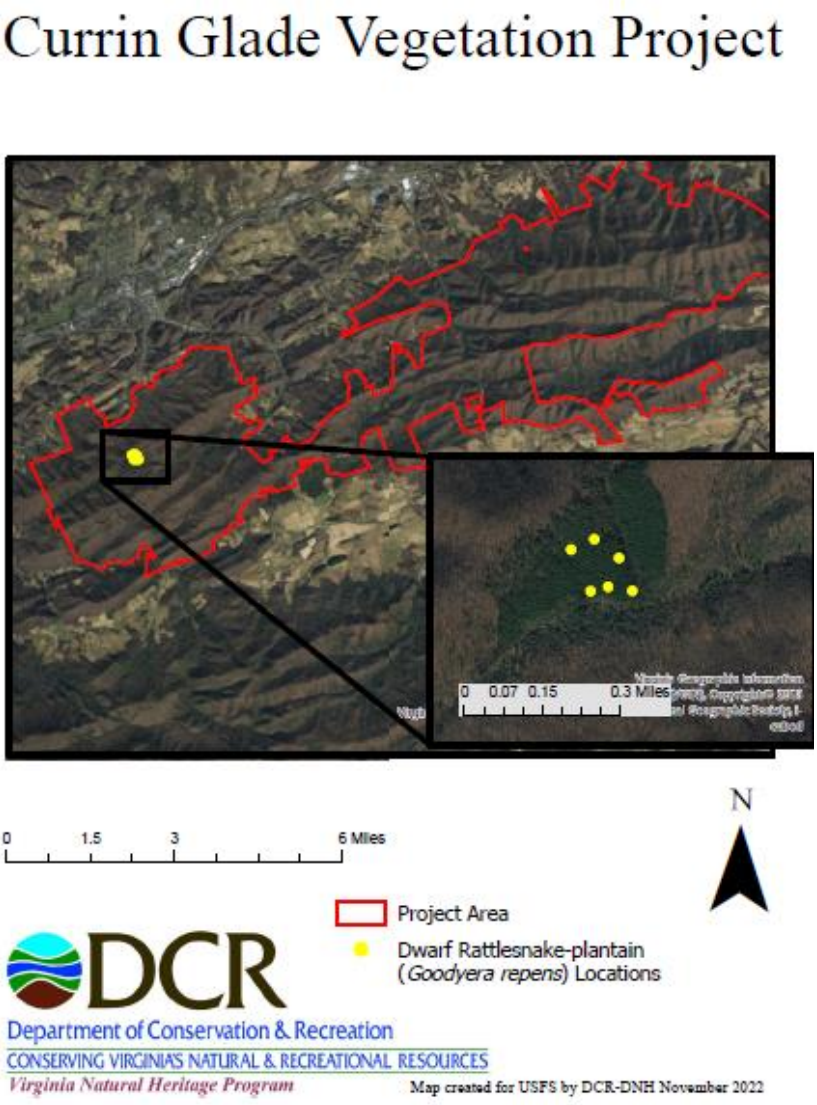
Sincerely,



S. René Hypes
Natural Heritage Project Review Coordinator

Cc: Amy Martin, VDWR

Figure 1. Locations of Dwarf Rattlesnake-plantain found during inventory conducted Summer 2022.



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