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March 24, 2016

Jennie Geiger
Apex Clean Energy
310 4th ST NE, STE 200,
Charlottesville, VA 22902

Re: Rocky Forge Wind Project

Dear Ms. Geiger:

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 project footprint identified in the submitted shapefile. 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 currently in our files, the North Mountain-Sandbank Mountain Conservation Site is intersected by the project area (see Map 1). 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 North Mountain-Sandbank Mountain Conservation Site has been given a biodiversity significance ranking of B4, which represents a site of moderate significance. The natural heritage resource associated with the conservation site is:

Central Appalachian Pine – Oak / Heath Woodland G4/S4/NL/NL

The significant occurrence of Central Appalachian Pine – Oak / Heath Woodland [1] covers approximately 200 acres on very steep, west- to southwest- facing slopes on a northeast to southwest trending ridge, with elevations ranging from 1440 to 3200 feet. Dirt roads cross parts of this significant natural community and, in the northern portion of the stand, there are at least two cleared openings, each one to two acres in size. The natural structure of Central Appalachian Pine – Oak / Heath Woodland can vary from open to very open tree cover with local areas of shrub thickets and steep rock outcroppings. The most intact and mature part of this example of Central Appalachian Pine – Oak / Heath Woodland appears to be south of the southernmost clearing, an area coincident with recommended area for Pirate bush survey. Recommendations include avoidance of the Central Appalachian Pine – Oak / Heath Woodland where possible, keeping impacts to existing dirt roads and clearings, concentrating the project north of the southern-most clearing, in an attempt to avoid further fragmentation and disturbance in the

most mature portion of the natural community. Other recommendations include working with Natural Heritage Staff to find and protect a suitable nearby example of Central Appalachian Pine – Oak / Heath Woodland.

In addition, DCR botanist visited the property on October 22, 23 and 24 of 2014. The fairly extensive Pitch Pine (Pinus rigida) – dominated stands on the middle and southern portions of the property hold potential for Piratebush (*Buckleya distichophylla*, G3/S2/NL/NL).[2] These habitats were mostly seen from the car and briefly visited on foot. Dominance by pitch pines, oaks, and heaths indicate fertile ground for this species but also a daunting task for those doing surveys since these vegetation types can be very difficult to penetrate, particularly if fire has been excluded for long periods of time. Bolstering the plausibility of piratebush being located on site, a large population of Buckleya exists less than a kilometer south of the project boundary in a similar habitat. Surveys for this species should be conducted from May to October. This is the period when the plant is potentially flowering or fruiting, but in addition sterile plants encountered during this period are also readily identifiable from the opposite leaves arranged densely along the stem and appearing like a compound leaf (Virginia Tech 2010).

Due to the potential for this site to support populations of Piratebush, DCR recommends an inventory in the area identified on Map 2 for Piratebush. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

DCR-Division of Natural Heritage biologists are qualified and available to conduct inventories for rare, threatened, and endangered species. Please contact J. Christopher Ludwig, Natural Heritage Inventory Manager, at chris.ludwig@dcr.virginia.gov or 804-371-6206 to discuss arrangements for field work.

To minimize adverse impacts to the aquatic ecosystems on site 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 during construction and storage of materials.

DCR recommends continued coordination with the USFWS and VDGIF regarding potential impacts to the federally listed Northern Long-eared bat (*Myotis septentrionalis*, G1G3/S3/LT/NL) and the federally and state listed Indiana bat (*Myotis sodalis*, G2/S1/LE/LE) associated with tree removal and hibernacula [3]. DCR recommends coordination with VDGIF due to the future listing of the tri-colored bat (*Perimyotis subflavus)* and the little brown bat (*Myotis lucifugus)* and to avoid and minimize impacts to avian species.

Mines; Rock Outcrops; Cliffs and Wetlands

According to the aerial photographs, there are outcrops within the project footprint. DCR does not track or maintain information on these features in our database. Please contact the Department of Mines, Minerals and Energy for information on mines and the Virginia Department of Environmental Quality for information on wetlands.

Invasive Species

Apex plans to present the invasive species inventory information collected during the ecological surveys in the PBR application with completion of the PBR-required invasive species surveys next year prior to construction. The invasive surveys will be conducted in the spring/summer of 2016. DCR recommends referencing the Invasive Species List located on DCR's website http://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2014.pdf for mapping any invasive species within the disturbance zone.

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 project information and 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 VDGIF 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 Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

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

Sincerely,

S. René Hypes
Project Review Coordinator

CC: Troy Anderson, USFWS
Ernie Aschenbach, VDGIF

Endnotes

[1] The Appalachian Pine-Oak/ Heath Woodland community contains species-poor, fire-influenced, mixed woodlands of xeric, exposed montane habitats. Communities in this group occur in the Appalachians from New York south to northern Georgia. Sites are typically located on convex, south to west facets of steep spur ridges, narrow rocky crests, and cliff tops. Pine - Oak / Heath woodlands are widespread throughout both the Ridge and Valley and Blue Ridge provinces in western Virginia. They occur at elevations from below 300 m (1,000 ft) to more than 1,200 m (4,000 ft) on various substrates, but most commonly on acidic, sedimentary and metasedimentary substrates, *e.g.*, sandstone, quartzite, and shale. A few stands occur on Piedmont monadnocks and foothills. Soils are very infertile, shallow, and droughty. Thick, poorly decomposed duff layers, along with dead wood and inflammable shrubs, contribute to a strongly fire-prone habitat. Short-statured table-mountain pine (*Pinus pungens*) and pitch pine (*Pinus rigida*) are usually the dominants forming an open overstory, often with co-dominant chestnut oak (*Quercus montana*, = *Quercus prinus*). Less important tree associates include scarlet oak (*Quercus coccinea*), Virginia pine (*Pinus virginiana*), and sassafras (*Sassafras albidum*). Except in the Piedmont stands, bear oak (*Quercus ilicifolia*) is characteristically abundant in the shrub layer, along with various ericaceous species. Colonial shrubs usually pre-empt available microhabitats for most herbaceous species, but eastern bracken fern (*Pteridium aquilinum* ssp. *latiusculum*) and turkeybeard (*Xerophyllum asphodeloides*) are often competitive enough to achieve significant cover.

Periodic fire is an important ecological process that provides opportunities for regeneration of both pines and less competitive herbaceous species, while setting back successional encroachment of potential overstory oaks (especially chestnut oak). On cliffs and other very rocky sites, the vegetation is self-perpetuating due to extreme edaphic conditions. Fire reduction and the native insect pest, southern pine beetle (*Dendroctonus frontalis*) are the most serious threats to communities of this group, although historically, pine beetle-induced mortality followed by stand-replacing fire was a principal mechanism for pine regeneration (Fleming et al. 2016).

[2] Piratebush is a shrub species that inhabits shaly, often very steep, xeric slopes with a southerly or westerly exposure. This species is a root parasite, meaning it taps into the root systems of neighboring plants for nutritional purposes. Found at only a few locations in Virginia, Tennessee and North Carolina, piratebush is considered one of the rarest shrubs in eastern North America. Threats to this species include fire suppression, habitat destruction, over collecting, and browsing, presumably by deer (Musselman, 1991). Please note that piratebush is currently tracked as a species of concern by the USFWS; however this designation has no official legal status.

[3] The Northern Long-eared bat is a small insect-eating bat characterized by its long-rounded ears that when folded forward extend beyond the tip of the nose. Hibernation occurs in caves, mines and tunnels from late fall through early spring and bats occupy summer roosts comprised of older trees including single and multiple tree-fall gaps, standing snags and woody debris. Threats include white nose syndrome and loss of hibernacula, maternity roosts and foraging habitat (NatureServe, 2014). Due to the decline in population numbers, the Northern Long-eared bat has been federally listed as “threatened” by the USFWS.

The Indiana bat ranges from the western Ozarks north and east to Michigan and New England, and south to Alabama and Arkansas (NatureServe, 2009). In Virginia, there are records in mountainous regions of the western part of the state. Male and female Indiana bats congregate in the fall to hibernate in caves and mine tunnels in dense clusters. While many males continue to use these underground roosts in the summer, females form maternity colonies under the loose bark of trees such as shagbark hickory, oaks and maples. These bats emerge in the evenings to feed on moths, flies and other insects over tree-lined streams and upland woods.

Indiana bats are sensitive to flooding, pesticide poisoning, and disturbance by human beings, such as vandalism, spelunkers, cave commercialization, and research (Dalton & Handley, 1991; Harvey, 1992). Please note that this species is currently classified as endangered by the United States Fish and Wildlife Service (USFWS) and the Virginia Department of Game and Inland Fisheries (VDGIF).

Literature Cited

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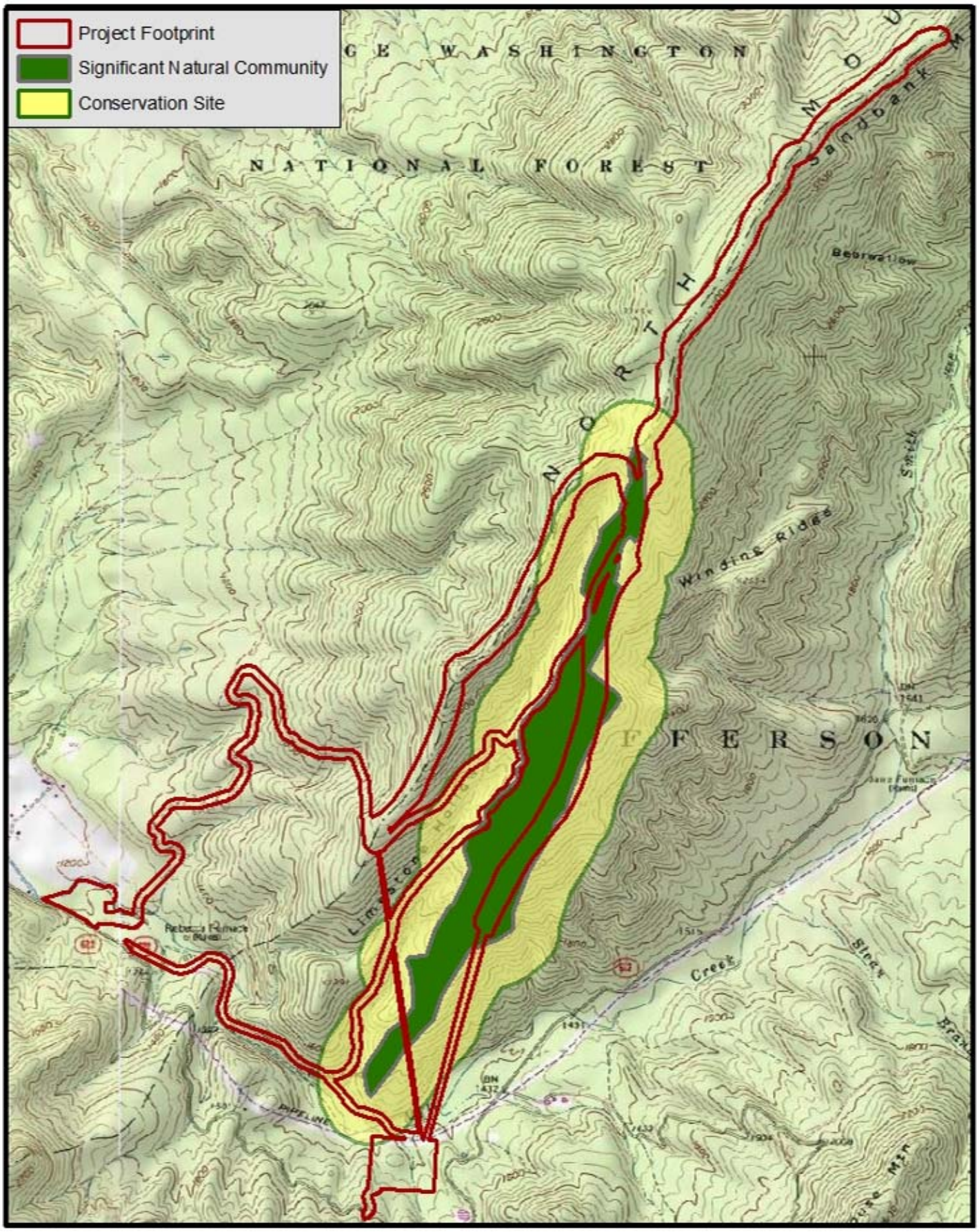
Rocky Forge Wind Project



Map 1

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES
Virginia Natural Heritage Program

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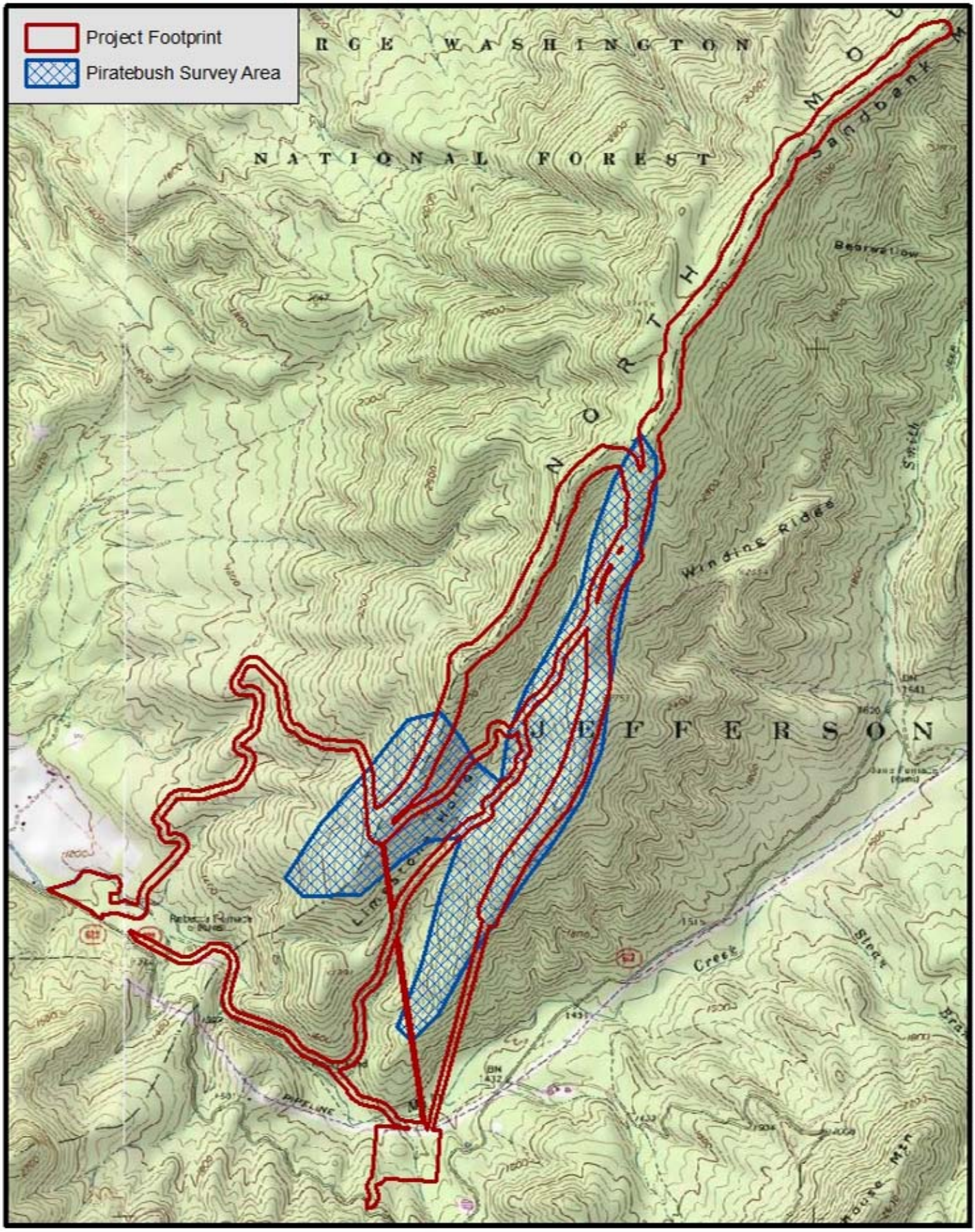
Map created by DCR-DNH, March 2016; Basemap-National Geographic 2002 Quads 100K

Rocky Forge Wind Project



Map 2

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES
Virginia Natural Heritage Program

0 0.25 0.5 1 Miles

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Map created by DCR-DNH, March 2016; Basemap-National Geographic 2002 Quads 100K