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Public Service of New Hampshire
Seacoast Reliability Project

Strafford and Rockingham Counties, NH

Biological Assessment for the Northern Long-eared Bat

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1.0 Introduction

This Biological Assessment ("BA") documents potential effects of the Seacoast Reliability Project ("Proposed Action") on the Northern Long-eared bat ("NLEB", *Myotis septrionalis*). The Seacoast Reliability Project ("SRP") is a new 115 kilovolt ("kV") transmission line proposed to be located in the Towns of Madbury, Durham and Newington as well as the City of Portsmouth, in Strafford and Rockingham Counties, New Hampshire. The SRP will be built within an existing power line corridor, but will require some additional tree clearing within the corridor limits to accommodate the new line.

The federal nexus for this BA is the 404 permit required under the Clean Water Act for the Proposed Action. The applicant is Public Service of New Hampshire d/b/a Eversource Energy ("PSNH"), which engages in electric delivery to businesses and residences throughout New Hampshire. PSNH has extensive experience constructing and operating transmission lines and operates New England's largest utility system, which serves more than 3.6 million electric and natural gas customers in Connecticut, Massachusetts, and New Hampshire.

2.0 Project Description

2.1 Construction

The SRP will be approximately 12.9 miles long and include a combination of overhead, underground, and underwater components. It will travel through existing electric utility corridors,[1] including a submarine cable crossing from Durham to Newington under Little Bay (Figure 1). The Project will not change existing land uses within or along the corridor. Most of the project's route is within or along the edge of forested areas. The entire line will be constructed within existing electric corridors, with minor adjustments to the corridor widths in several locations. The corridor ranges from 50-300 feet wide, but is predominantly 100 feet wide. For most of the length of the corridor, a cleared area approximately 60 feet in width is currently maintained by PSNH by periodic mowing in support of the existing electric distribution line. Construction will require expanding this cleared area by up to 40 feet, to a maximum width of 100 feet in some locations. This expansion will result in the removal of approximately 31 acres of forest cover.

The majority of the SRP will be constructed aboveground on overhead structures between 85 and 120 feet in height. It will cross under Little Bay by being buried 3.5-8 feet in the substrate using a combination of jetplow and hand-jet technology. In most locations, the existing distribution line will be co-located on the new structures and the existing distribution structures will be removed. In several locations, the existing distribution line

[1] The Project corridor is defined as the combination of the existing PSNH owned utility easements, PSNH fee owned property, and any and all other easements, licenses or the PanAm railway right-of-way, in which the Project facilities will be located.

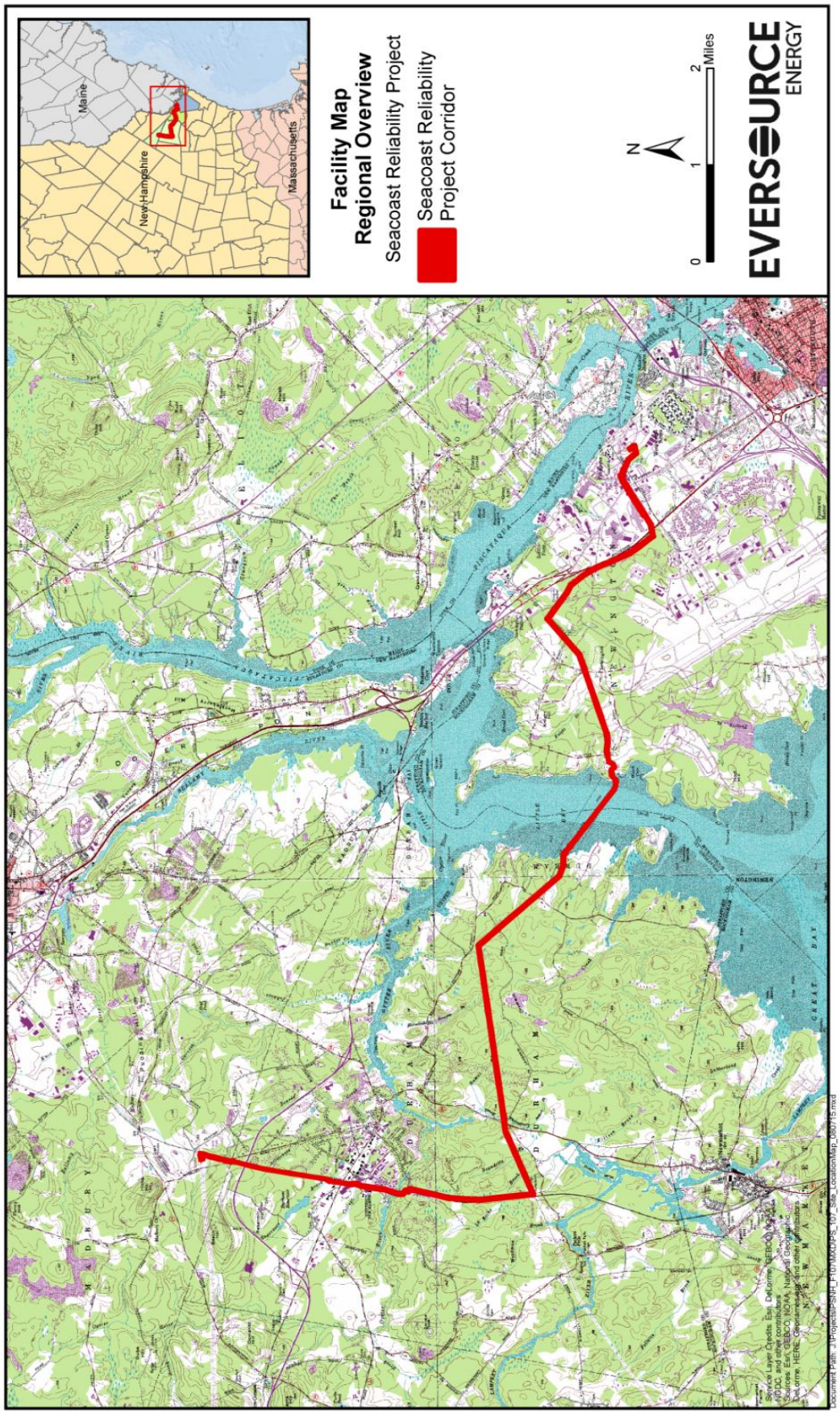

Figure 1. Seacoast Reliability Project Location Map.

will be relocated to the side of the project corridor and the new structures will carry the new transmission cables only. A short portion of an existing transmission line will need to be relocated to accommodate the new SRP alignment at The Crossings at Fox Run Mall in Newington. Substation improvements in Madbury and Portsmouth will be confined to the existing substation footprints. No other substation modifications are proposed.

The SRP is a reliability project, providing a parallel path to enhance the existing 115 kV loop between the Deerfield and Scobie Pond Substations. It is designed to address reliability concerns in the New Hampshire Seacoast Region, which have previously been identified by the Independent System Operator – New England ("ISO-NE"). PSNH, working with ISO-NE, conducted a needs assessment study which concluded that the New Hampshire Seacoast Region requires additional transmission capacity to support the reliable delivery of electric power to meet the Region's current demand and future increased demand.

2.2 Operations

After construction of the Project is complete, periodic mowing of the cleared right-of-way ("ROW") will be required to maintain grassy and/or shrubby vegetation conditions. Tree trimming and removal of hazard trees may also be required to protect the transmission line from encroaching branches and tree fall. Repairs to the structures/line will be performed as needed.

2.3 Conservation Measures

PSNH has designed the SRP to avoid environmental impacts where possible. Extensive environmental surveys were conducted by an experienced team of consultants and in consultation with the regulatory agencies. The results of these studies were incorporated into the siting, design and construction aspects of the Project, resulting in a final design that avoids and minimizes environmental impacts to the greatest extent possible, while still achieving the goals of the Project. Specific to avoiding impacts to NLEBs, the tree clearing standards put forth in the final 4(d)rule pertaining to this species, which are in effect as of February 16, 2016 will be followed (81 FR 1900, 2016). Based on this directive, no trees will be cleared within ¼ mile of known, occupied hibernacula at any time of the year, or within 150 feet of a known, occupied maternity roost during the June 1 – July 31 pup season. Note that there are no known, occupied hibernacula or maternity roost trees within the applicable radii of the Project.

3.0 Action Area

3.1 Location and Extent of the Action Area

The Action Area is the footprint of the Project where construction will occur, as well as a buffer of the footprint which encompasses an area equal to the known summer range of an NLEB at any point on the ROW centerline. The U.S. Fish and Wildlife Service ("USFWS" 2014) indicated that a three mile buffer drawn around any point will encompass the expected home range of an NLEB. The Action Area encompasses approximately 62,323 acres, and is the area where cumulative impacts may occur. As described above, the SRP transmission line will be approximately 12.9 miles long, including a 1 mile crossing under Little Bay (Figure 1). The entire line will be constructed within existing electric corridors, with minor adjustments to the corridor widths in several locations. This Project area encompasses 149.7 acres, which is less than 0.01 percent of the Action Area. The Action area consists of a wide variety of developed and undeveloped lands, including forested and unforested natural habitats, the town centers of Durham, Newington, and Portsmouth, suburban development, the University of New Hampshire, and the Pease Tradeport.

3.2 Existing Conditions within the Action Area

The Project corridor is located within the Coastal Plain ecological region of New Hampshire. The highest elevation along the project corridor is approximately 130 feet above sea level near the Madbury Substation. The corridor ranges from 40-130 feet wide, but is predominantly 100 feet wide. For most of the length of the corridor, a cleared area approximately 60 feet in width is currently maintained by PSNH by periodic mowing in support of the existing electric distribution line. The vegetation in the maintained area consists of grasses, herbaceous plants and shrubs (described in detail below). The edges of the corridor are unmaintained and frequently support forest, and it is these trees which will need to be cleared for the SRP. The lands surrounding the SRP corridor have a low to moderate amount of development, including some protected conservation lands, substantial areas of low density residential development, and some areas of higher intensity development associated with Durham and Newington/Portsmouth. The undeveloped areas and low density residential areas are primarily forested while the vegetation maintenance practices conducted in the existing cleared corridor create grass and/or shrubby habitat types.

Based on the New Hampshire Fish and Game Department ("NHFG") 2015 Wildlife Action Plan ("WAP") cover type map and field observations, habitat cover types which the Project passes through consist mostly of Appalachian oak-pine forest, with smaller areas of marshes, floodplain forest and grasslands. The Appalachian oak-pine forests are found across the subtle ridges and rises within the landscape, with the depressions and low areas consisting mostly of larger wetland complexes. These forests have a mix of canopy species including white, black, scarlet and red oaks (*Quercus* spp.), shagbark hickory (*Carya ovata*), white ash (*Fraxinus americana*), white pine (*Pinus strobus*), and other species common in more northern portions of New Hampshire such as birches (*Betula* spp.), maples (*Acer* spp.) and beech (*Fagus grandifola*) (Sperduto and Kimball, 2011). The Project also passes through residential and open areas (generally hayfields) are also present within the Action Area. The

residential areas are planted with common landscaping species and lawn grasses and escaped ornamental species are common in close proximity to residential areas.

Under the existing electric lines, the vegetation is shrub and grasses as a result of periodic mowing in contrast with the adjacent forested communities. Common upland forest species found along the edge of the corridor include white pine, red and white oak (*Q. rubra* and *Q. alba*), quaking aspen (*Populus tremuloides*) and gray birch (*B. populifolia*). The sizes of trees vary from mature to early successional depending on the adjacent land use. Common shrub species within upland areas include glossy and common buckthorn (*Rhamnus frangula* and *R. cathartica*), multi-flora rose (*Rosa multiflora*), sumacs (*Rhus* spp.), barberries (*Berberis* spp.), honeysuckles (*Lonicera* spp.) and dogwoods (*Cornus* spp.). Many of these species are non-native invasives in New Hampshire. Clovers (*Trifolium* sp.), hayscented fern (*Dennstaedtia punctilobula*), sweet fern (*Comptonia peregrina*), goldenrods (*Solidago* spp.), common juniper (*Juniperus communis*), raspberries and blackberries (*Rubus* spp.), little bluestem (*Schizachyrium scoparium*), and plantain species (*Plantago* sp.) were frequently noted upland herbaceous plants in the maintained portion of the corridor.

Wetlands identified within the project corridor were generally dominated by both scrub-shrub and emergent (herbaceous) plant species. Common woody species include red maple, glossy buckthorn, silky dogwood (*Cornus amomum*), speckled alder (*Alnus incana*) and several meadowsweet (*Spiraea* sp.) species. Herbaceous species include sedges (*Carex* sp.), cattails (*Typha* sp.), several hydrophytic fern species including sensitive (*Onoclea sensibilis*), cinnamon and interrupted varieties (*Osmunda cinnamomea* and *O. claytoniana*), rushes (*Scirpus* sp.), and other species such as tearthumb (*Polygonum* sp.), asters (*Symphyotrichum* sp.), and purple loosestrife (*Lythrum salicaria*), which is an invasive species. Trees were observed within the wetland along the edges of the corridor, including red maple (*Acer rubrum*), swamp white oak (*Quercus bicolor*), and cedar (*Thuja* sp.).

The SRP corridor crosses though some areas designated as Highest Priority Habitat by the 2015 WAP (Map 5). The remainder of the corridor passes primarily though areas that are designated as Supporting Landscapes or that have no designation at all. The relative proportion of these habitat types in the corridor reflects their wider distribution in the surrounding landscape.

4.0 Northern Long-eared Bat

This section summarizes existing information about the NLEB. In Section 5.0, this information is applied to information about known existing and proposed conditions in the Project Area to determine the potential impact of the Project.

4.1 Species Biology

Range: The known range of the NLEB includes the entire Northeastern United States and extends northward into central Quebec Province, making this species almost certainly resident throughout New Hampshire. Additionally, recent survey data indicates that NLEBs may be more abundant/prevalent in coastal New England, including all towns on the coast of New Hampshire (USFWS 2015a), including the four municipalities crossed by the SRP.

Life History: NLEBs are a non-migratory forest bat, adapted to flying in cluttered environments. As described by the USFWS (USFWS 2014, 2015c), NLEBs emerge at dusk to forage in upland and lowland woodlots and tree-lined corridors, feeding on insects, which they catch while in flight using echolocation. This species also feeds by gleaning insects from vegetation and water surfaces. NLEBs overwinter in caves or mines and spend the summer in local forests. A single pup is born in June or July in the Northeast, and volant (capable of flying) young have been observed as early as three weeks following birth. During the maternity period, the sexes separate, with females roosting in small (commonly 30-60 individuals) maternity colonies and males roosting singly. Lactating females switch roost trees every two to five days. In New Hampshire, volant sub-adults were captured as early as July (Sasse and Pekins 1996).

Winter Habitat: As described in the USFWS (USFWS 2014, 2015c), suitable winter habitat (hibernacula) for the NLEB includes underground caves and cave-like structures (e.g. abandoned or active mines, railroad tunnels). These hibernacula typically have large passages with significant cracks and crevices for roosting; relatively constant, cool temperatures (32-48°F) and with high humidity and minimal air currents. Bats in New Hampshire use mines or talus caves to hibernate, but there are few places humid enough for them and most New Hampshire cave bats fly to Vermont, Massachusetts or New York to hibernate (NHFG 2015).

Spring Staging and Fall Swarming Habitat: As described by the USFWS (USFWS 2014, 2015c), spring staging and fall swarming habitat consist of forested habitats within five miles of a hibernaculum entrance. Forested areas with suitable roost trees would likely provide the best habitat.

Summer Habitat: As described by the (USFWS 2014, 2015c), suitable summer habitat for NLEB consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (described below), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit characteristics of suitable roost trees and are within 1,000 feet of other forested/wooded habitat. NLEB has also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses.

Roost Trees: As described in the (USFWS 2014, 2015c), suitable NLEB roosts are trees (live, dying, dead, or snag) with a diameter at breast height ("dbh") of 3 inches or greater that exhibits any of the following characteristics: exfoliating bark, crevices, cavity, or cracks. Isolated trees are considered suitable habitat when they exhibit the characteristics of a suitable roost tree and are less than 1,000 feet from the next nearest suitable roost tree within

a woodlot, or wooded fencerow. NLEBs do not appear to prefer a certain species of tree, instead choosing trees based on structural suitability for roosting.

4.2 White-nose Syndrome

As described in in the USFWS's July 2015 Fact Sheet (USFWS 2015b), white-nose syndrome ("WNS") is a disease affecting hibernating bats, including NLEBs. Named for a white fungus that appears on the muzzle and other parts of bats, WNS is associated with extensive mortality of these animals in eastern and mid-western North America. First documented in New York in the winter of 2006-2007, WNS has spread rapidly across the eastern and Midwestern United States and eastern Canada. Evidence of WNS has been documented in most New Hampshire hibernacula (NHFG 2015).

WNS is deadly to bats for a variety of reasons. In winter, bats with WNS may fly outside their hibernacula during the day and/or cluster near the entrances of caves and other hibernation areas. These behaviors lead to starvation and death due to exposure. Additionally, WNS is documented to create an immune response in bats that can be lethal, and damage to wing membranes due to WNS can make bats unable to fly, precluding them from foraging. Bats have been found sick and dying in unprecedented numbers in and around caves and mines. WNS is estimated to have killed more than 5.5 million bats in the Northeast and Canada. In some areas, 90 to 100 percent of cave hibernating bats have died. WNS is the number one threat to NLEBs (USFWS 2015a, 2015c) and if this disease had not emerged, it is unlikely that this species would be experiencing such dramatic declines. Since symptoms were first observed in New York in 2006, white-nose syndrome has spread rapidly across the core of the NLEB's range. Based on hibernacula counts, NLEBs have declined by up to 99 percent in the Northeast (USFWS 2015c).

4.3 Status within the Action Area

The forested habitats within the Action Area almost certainly provide suitable habitat for NLEBs. No assessment of the level of suitability or the distribution of most suitable habitat has been conducted, and there are no known roost trees within the Action Area. However, given the relatively general habitat requirements of this species (describe in Section 4.1), and the extensive amount of forested habitat available within the Action Area, areas of suitable habitat are almost certainly present to varying degrees throughout the Action Area. There are no known hibernacula in the Action Area.

A comprehensive assessment of the NLEB population within the Action Area has also not been conducted. However, given the known distribution of this species discussed in Section 4.1, it is assumed to be present, and limited acoustic survey conducted at the Great Bay National Wildlife refuge in 2014 did document the presence of NLEBs (Svedlow 2015). Given the known status and spread of WNS throughout the Northeast, numbers of NLEBs within the Project area are expected to be low.

5.0 Effects Analysis

Based on the known range, habitat preference and life history of the NLEB, as described in Section 4.0, and the existing conditions within the Action Area, described in Section 3.0, NLEBs are potentially present within the Action Area and have the potential to be affected by the Proposed Action. The primary effect of the Proposed Action is the removal of trees to widen the existing, cleared corridor during construction.

5.1 Impacts Due to Construction

The primary effect of the Proposed Action on NLEBs is the removal of trees to widen the existing cleared corridor during construction, as described in Section 2.1. Approximately 31 acres of forest will be removed along the length of the SRP corridor, clearing an average of 20 feet on either side of the existing 60-foot wide (average) corridor. Tree clearing that occurs when NLEBs are present and using affected trees for roosting has the potential to impact NLEBs directly via disturbance of roosting adults and mortality of any young non-flying bats present, although no maternity roosts are known to occur in the Action Area. Indirect impacts are also possible due to tree clearing. Indirect effects consist of the loss of summer habitat, including foraging habitat and roost trees, due to the removal of trees. Due to the narrow corridor clearing, both direct and indirect impacts are anticipated to be minor. Tree removal will therefore not affect swarming habitat, and project construction does not have the potential to affect wintering habitat.

Direct permanent terrestrial wetland impacts are limited to the footprints of 27 structures totaling 792 square feet that were unavoidably located in wetlands. Approximately 317,800 square feet of indirect impacts will result from wetland conversion due to tree removal in forested wetlands and an additional 87,225 square feet of tree removal within upland stream buffers. Temporary wetland impacts will occur due to construction and have some small potential to impact NLEBs during their active season. Wetlands pools may provide water for drinking and may be a source of insects that NLEBs forage upon. However, the Project was designed to minimize temporary wetland impacts to the extent practicable, and best management practices, such as timber mats for access roads and work pads will be used where impacts are unavoidable. PSNH has developed a compensatory mitigation plan through participation in the Aquatic Resource Mitigation Fund (i.e. in-lieu fee) to compensate for permanent and indirect wetland impacts.

5.2 Impacts Due to Operations

Impacts due operations are secondary impacts. During operations maintenance of vegetation in the corridor and repair of the Project infrastructure, if needed, have some potential to affect NLEBs. Vegetation maintenance consists of periodically mowing the corridor to maintain it in a shrubby state, removal of tree limbs that protrude into the clear zone that must be maintained for the safe operation of power lines, and removal of hazard trees at the edge of the cleared corridor that have the potential to strike the lines if they fall due to natural causes. Mowing will have no effect on NLEBs as it removes woody

vegetation that is too small in height and diameter to provide foraging or roosting habitat for NLEBs. Tree trimming and hazard tree removal would have little to no impact on the amount of foraging habitat, but does have the potential to remove suitable roosting habitat. No new tree clearing will be required for any needed Project infrastructure repairs, and all repair activities will be conducted in a manner that minimizes environmental impacts, similar to initial construction of the Project.

5.3 Cumulative Impacts

Cumulative impacts within the Action Area will occur due to removal of forest cover for a variety of types of development, including home building, commercial development, and other infrastructure projects (e.g., roadways, power lines, pipelines). The removal of approximately 31 acres of forest cover due to Project construction will contribute to these cumulative impacts, but is unlikely to be a major contributor to forest removal in the Action Area, given the current density of development in it, and the high likelihood that development in the region will continue to expand. Additionally, the narrow, linear, incremental nature of the clearing for the Project minimizes the impact of this clearing at any given location.

6.0 Conclusion

The conclusion of the BA is that the effect of construction and operation of the SRP on this species is so small as to be inconsequential to the population that may be present in the Action Area based on PSNH's commitment to meet the USFWS final guidance and the limited tree removal proposed. This conclusion is based on the following rationale:

1. The tree clearing required for construction of the Proposed Action will be conducted in compliance with the final 4(d) rule which goes into effect on February 16, 2016.
2. Direct impacts associated with the felling of trees will be relatively minor due to the narrow corridor to be cleared (20 feet on either side of an existing 60-foot wide (average) corridor) and the reduction of forest cover in the Action Area will be negligible. In total, just less than 31 acres of forest cover will be removed. This is an insignificant amount of potentially suitable forest habitat, compared to the total amount of potentially suitable forest habitat for NLEBs available in the Action Area.
3. Secondary impacts will include maintenance removal of limbs and hazard trees during operations. The Interim 4(d) Rule published in conjunction with the formal listing of the NLEB categorizes the removal of hazard trees as an exempt activity that is not considered to impact this species.
4. The Project will contribute to the cumulative removal of forest within the Action Area, but this contribution is likely to be minimal, as compared to the existing and future development likely to occur in the Region.

7.0 References

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