Natural Resources Protection Act Individual Permit Application – RoxWind LLC – Proposed Roxbury Wind Project

Roxbury, Maine

Prepared for:
RoxWind LLC
13 Elm Street
Cohasset, MA 02025

Prepared by:
Stantec Consulting Services, Inc.
30 Park Drive
Topsham, ME 04086

May 2018

ATTACHMENT 1 – PROJECT DESCRIPTION

RoxWind LLC (RoxWind), managed by Palmer Management Corporation and developed in partnership with Horseshoe Valley Wind LLC, is proposing to construct the Roxbury Wind Project (project), a small-scale wind project, on North Twin Mountain, in Roxbury, Maine (see Attachment 3). The site is approximately 89 acres, located southwest of State Route 120 and northeast of Horseshoe Valley Road. The wind turbines will be located on the North Twin Mountain ridgeline with proposed access via an existing aggregate timber management road extending northeast from Horseshoe Valley Road. The project will connect directly to an existing Central Maine Power (CMP) transmission line, which parallels the northern project boundary. The proposed project plan will include construction of four wind turbines, turbine pads, interior access roads/crane paths, and interior collector line. RoxWind also has applied for a Small-Scale Wind Development Certification under 35-A MRSA§3456 and a Stormwater Permit under 38 MRSA§480-D. The project also will include an upgrade of the existing aggregate road that will be utilized for construction and operational access. The total length of access and crane roads will be approximately 2.7 kilometers (km; 1.7 miles [mi]).

Certificates of Good Standing for RoxWind and Horseshoe Valley Wind LLC are provided in Exhibit 1. In addition, a Memorandum of Lease demonstrating that RoxWind has an agreement to use the property where the project will be located.

ATTACHMENT 2 – ALTERNATVIES ANALYSIS

When constructed, the project will occupy approximately 7 hectares (ha; 16.9 acres [ac]) along the ridgeline. Approximately 2.5 ha (6.3 ac) of impervious area will be created during construction. Following construction, approximately 1.4 ha (3.5 ac) of the constructed impervious area (gravel roads and turbine construction pads) will be permanently revegetated for the operational phase of the project. Remaining new impervious area will consist of approximately 2,743 m (9,000 ft) of 4 m (12 ft) wide gravel access road and cleared pads around each turbine. At construction, wind turbine pads will have clearing limits of 0.4 to 0.9 ha (1 to 2 ac), but much of this area will be allowed to revegetate following the construction phase.

The project has been designed to avoid and minimize natural resource impacts to the extent practicable. The project will use the existing aggregate timber management road for construction and operational access with a new road segment constructed on the ridgeline to connect the turbines. When compared to a new "greenfield" road, upgrading the existing access road reduces the project footprint and limits impacts to resources that were previously altered by road construction. However, this road will need to be upgraded and, in some locations, relocated to accommodate delivery of turbine components, to provide safe access for construction vehicles, and to maintain proper site drainage. The upgraded road has been designed to avoid or minimize resource impacts where possible. For example, rather than culvert approximately 61 m (200 ft) of a roadside stream, the road was moved north and the length of stream to be placed in a culvert was reduced to approximately 53 m (16 ft).

Due to steep topography leading up to the ridgeline, complete avoidance of natural resource impacts is not possible, but resources impacts have been minimized. Wetland crossings generally will occur at the narrowest point of the wetland or along the edge of the wetland. Where possible, the ridgeline road and turbines have been sited to include existing cleared areas to minimize additional vegetation clearing. Once the project is operational, portions of the road and turbine clearings will be revegetated to provide additional stormwater treatment. Along the ridgeline the collector lines and communication lines will be installed underground within the footprint of the ridgeline road, which will further avoid natural resource impacts. In addition, connecting to the existing CMP transmission line on the ridgeline avoids additional resource impacts potentially associated with an overland collection line. The alternative connection would have involved following the existing CMP transmission line approximately 1.52 km (0.95 mi) east and connecting to this line at State Route 120. No wetland or stream impacts will occur specifically to construct the project turbines.

WETLAND AND STREAM IMPACTS

As currently designed, the project will involve 10,809 square feet (sq. ft.) of fill within freshwater wetlands and an additional 275 sq. ft. of clearing within freshwater wetlands. Fill will be placed within eight wet meadows wetlands that have been previously altered by timber harvesting

activities or construction/maintenance of the CMP transmission line and within one forested wetland. Vegetation clearing will occur within one forested wetland, and one forested/wet meadow wetland that has been partially altered by previous timber harvesting. Table 1 provides a summary of wetland impacts. Figures detailing wetland and stream impacts are provided in Attachment 5.

Table 1. Summary of wetlands impacts.

Wetland ID	Cowardin Classification[1]	Area of Delineated Wetland (sq. ft.)[2]	Wetland Associated with a Stream	Fill (square feet)	Clearing (square feet)
W-B	PFO	1,030	Yes	41	214
W-J	PEM	867	No	314	
W-G	PEM	5,697	No	4,998	
W-H	PEM	1,248	No	747	
W-I	PEM	3,925	No	176	
W-DD	PEM	7,764	Yes	617	
W-EE	PEM	1,243	No	364	
W-FF	PEM	14,668	No	1,676	
W-GG	PFO/PEM	80,868	Yes		61
W01RKA[3]	PEM	2,008	No	1,876	
			Total	10,809	275

[1] Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31, 131p.
[2] Areas of delineated wetlands were derived from the *Roxbury Wind Development Natural Resource Inventory* report (Kleinschmidt Associated 2018) provided in Exhibit 2.
[3] Wetland delineated by Stantec Consulting Services Inc.

The project will involve new or upgraded culvert crossings of three intermittent streams and one perennial stream along the access road. In addition, two intermittent stream segments will be filled. Filling of Stream S-01 was discussed during the pre-submission meeting with the Maine Department of Environmental Protection. Stream S-01 currently flows over the road near the access road entrance at Horseshoe Valley Road (see Site Photo 1). It was suggested that this area be drained by a created, non-culverted channel through the existing log yard to maintain flow on the south side of the access road and eliminate the need for culverting at this location. In addition, one of the intermittent streams, S-B, has a braided channel and will require two crossings. The longer channel will be placed in a culvert, but the shorter channel will be filled. The project also will involve vegetation clearing along the banks of five streams crossed by the project access road. Table 2 provides a summary of stream impacts. In addition, upgrades to the access road will require soil disturbance within 25 feet of Stream S-02, which triggers an Individual permit. At this location, Stream S-02 is in a ditch adjacent to the existing access road (Site Photos 2 and 3).

Table 2. Summary of stream impacts.

Stream ID	Flow Regime	Culverting (linear feet)	Direct Fill (linear feet)	Clearing (linear feet)
S-01	Intermittent		50	5
S-B	Intermittent		19	6
S-B	Intermittent	59		17
S-D	Intermittent	37		23
S-F[1]	Intermittent	9		5
S-E	Perennial	42		15
Total		147	69	71

[1] Note that Stream S-F originates at the outlet of an existing culvert under the gravel access road.

Site Photo 1. Stream S-01 flowing over existing road.
Stantec Consulting Services Inc. April 28, 2018.

Site Photo 2. Stream S-02 within roadside ditch. Stantec Consulting Services Inc. March 26, 2018.

Site Photo 3. Stream S-02 roadside ditch. Stantec Consulting Services Inc. April 28, 2018.

ATTACHMENT 3 – TOPOGRAPHIC MAP

Figure 1. Roxbury Wind Project Location Map.

ATTACHMENT 4 – RESOURCE PHOTOS

ATTACHMENTS 5 AND 6 – PLAN AND CROSS-SECTIONAL DRAWINGS

ATTACHMENT 7 – CONSTRUCTION PLAN

The following activities, erosion control measures, or other items are required for the construction of this project or they require that specific measures or schedules of activities occur or be restricted during the various construction seasons. It is expected that the project will be constructed within one construction season, likely starting in early summer and proceeding through to late fall.

Clearing – Ground conditions permitting, clearing may occur at any time of the year.

Critical Areas – Work proposed in the defined critical areas may be conducted all year, ground conditions permitting. Some problem areas may become "critical areas" during construction. As directed by the Engineer or Third-Party Inspector, areas observed to be experiencing significant erosion problems will be identified as critical areas and will be immediately stabilized with appropriate erosion control measures before work continues in these areas.

Erosion and Sedimentation Controls Installation – Erosion control installation and maintenance will occur year-round, except that such measures will be installed prior to the start of ground disturbance activities. See design plans for details and installation procedures.

Road and Turbine Construction – This construction is expected to occur in the spring, summer, and fall seasons. The work will involve heavy earthwork activity consisting of onsite sourced aggregate production, mainly from ledge blasting and processing. As aggregate material is produced it will be transported to road and turbine pad fill zones or as basic road base in the cut zones. Roadway surface and embankment shaping will occur concurrently with all culvert installation and ditch shaping. Upon rough grading of the pad sites and the availability of vehicles to deliver reinforcement steel and concrete, the turbine pads will be constructed. Once road conditions allow for turbine equipment delivery, the turbine components will be delivered for assembly and erection. Within these timeframes other activities including crane assembly, slope stabilization, electrical collection line work, and related activities may be occurring.

In the unlikely event that winter activity is required, the winter construction schedule must be followed (see General Construction Phase below). The project objective is to complete most of work over a single summer/fall period based on the project size and scale. To prevent erosion during winter construction of the access road, the entire road system may be cleared in one effort, but the road will be constructed in short segment of 152 m (500 ft) or less. Each segment will be grubbed, constructed and protected prior to earthwork on the next segment. Moving to the next segment will require approval by the project Engineer. This construction sequence is intended to prevent exposure of large areas to erosion during major rain events without temporary stabilization. Multiple segments in different areas of the project may be constructed concurrently.

The sequence of work also will require that the contractor have ready a supply of processed aggregate (i.e., processed blast rock) material for road construction prior to the onset of full scale road clearing and earthwork activity. In this way, the length of time that road segments are exposed and vulnerable to erosion may be minimized. Time of year and weather conditions may influence this approach. However, the ultimate objective and requirements of the project's erosion control program are to avoid significant erosion and sediment transport out of the work zone. A careful construction sequence and use of the existing access road and ridgeline logging trails will help achieve these results.

Temporary Timber Mat Bridge – As necessary, temporary timber mat bridges will be used throughout the year for clearing and construction activities near resources such as tributary crossings or wetlands. Following construction, approximately 1.4 ha (3.5 ac) of the 2.5 ha (6.3 ac) of impervious area temporarily created for gravel construction surfaces will be restored to permanent vegetative cover, resulting in approximately 1.1 ha (2.8 ac) of new, permanent impervious areas (4-m [12-ft] wide gravel roads, wind turbine foundations, and crane pads).

Road Restoration – Upon completion of the turbine erection activities and all collection line installation, the contractor will complete road restoration and construction of the treatment swale measures along the roadside edges. Road restoration work will involve road grading to achieve proper cross slope development, construction of the treatment swale and soil filter media placement, and final coverage of organic material and seeding across all road areas and embankments beyond the 12-ft-wide maintenance road and maintenance pads at turbine sites.

ATTACHMENT 8 – EROSION CONTROL PLAN

Stabilization methods will be designed, constructed, and maintained in accordance with the project's Erosion and Sedimentation Control Plan (E&S Plan), which is consistent with *the Maine Erosion and Sedimentation Control Best Management Practices*. Refer to the erosion control notes sheet in Attachment 5 of the project plans for a detailed description of the site-specific erosion control measures and practices to be utilized during construction.

The E&S Plan incorporates the applicable methods and materials presented in the Maine Erosion and Sediment Control BMPs, dated March 2003. The E&S Plan contains the details and specifications for general stabilization of the site. These measures will be used to protect exposed soils during construction and during the service life of the project. The primary erosion control measure to be used during construction will be the use of Erosion Control Mix that will be placed over much of the project's disturbed surfaces. The use of Erosion Control Mix has been found to be most effective for the type of soil disturbance activity proposed.

The stabilization measures for the site will include temporary and permanent E&S controls; appropriate design of swales, culverts, and erosion protection for earthen cut and fill slopes; and provisions for future maintenance of the site.

The drainage design for this project will consist of naturally vegetated buffers, vegetated and stone-lined conveyance swales, culverts, ditch turnouts, level spreaders and plunge pools. Vegetated and stone-lined swales will collect and direct runoff from a portion of the access road, crane road, turbine pads. The swales may discharge to level spreaders and or plunge pools to convert shallow concentrated flows to sheet flow prior to the runoff leaving the Project area.

A professional engineer or qualified representative will inspect the construction site periodically to verify that the stormwater culverts, conveyance swales, level spreaders, and plunge pools, are constructed in accordance with the plans and specifications shown on the permit plan set, and that these structures are functioning properly. These inspections will begin with the initial earth moving activities on the site and will continue, as needed, during any period when construction activity affecting the stormwater management system occurs, until the site is permanently stabilized.

ATTACHMENT 9 – SITE CONDITIONS

North Twin Mountain has a general north-south orientation and slopes steeply east and west from the ridgeline. Slopes range from approximately 5 to 25 percent and elevation at the top of the ridgeline is 655 m (2,150 ft). Except for the existing aggregate timber management road and a temporary meteorological tower constructed for the project, the project area is undeveloped and has been heavily harvested for timber production (Site Photo 3). There is an existing network of timber management trails located primarily within the northern portion of the project area. An existing CMP transmission line also runs west to east along the northern border of the project area. The project area consists of a mixed-growth forest composed of multiple-aged stands as a result of past timber harvesting. Dominant tree species are red maple (*Acer rubrum*), American beech (*Fagus grandifolia*), paper birch (*Betula papyrifera*), red spruce (*Picea rubens*), and balsam fir, (*Abies balsamea*). Several small and typically isolated wetlands occur in scatter locations along the ridgeline. The ridgeline also includes numerous small streams, most of which are intermittent.

Site Photo 4. Typical site conditions showing previous timber harvesting. Stantec Consulting Services Inc. March 26, 2018.

WETLAND AND STREAM DELINEATION AND VERNAL POOL SURVEY

Kleinschmidt Associates (KA) performed a wetland and stream delineation and vernal pool survey for the project. KA identified 29 wetlands and 26 streams. During supplemental

delineations completed in April 2018, Stantec Consulting Services Inc. (Stantec) identified two additional wetlands within the project area.

Delineated wetlands are either forested, emergent wet meadows, or a combination of these two community types. Many of the wetlands have been impacted by timber harvesting activities or the construction/maintenance of the existing CMP ROW. Of the 31 wetlands, 13 were identified as including a Wetland of Special Significance as defined in the Maine Natural Resource Protection Act (NRPA) because they occurred within 25 feet of a stream.

Of the 26 streams, only 2 were identified as having perennial flow, and 1 of these is located outside of the current project area. Perennial stream E is located along the existing timber management road on the ridgeline and its channel has a cobble, boulder, and bedrock substrate. The intermittent streams were described as conveying flows from seeps and surface water run-off and their channel substrates are dominated by sand, gravel, and occasional cobble.

No Significant Vernal Pools (SVP) as defined under the Maine NRPA were identified within the project area. A single man-made pool was identified with the existing CMP ROW. KA submitted a Maine State Vernal Pool Assessment Form to the Maine Department of Inland Fisheries and Wildlife (MDIFW). MDIFW determined that is vernal pool was not significant. Although not regulated as an SVP, impacts to this pool may be regulated by the US Army Corps of Engineers.

The *Roxbury Wind Development Natural Resource Inventory* (Kleinschmidt Associates December 2017 and revised February 2018) is provided in Exhibit 2 of this application.

SOIL SURVEY

In November 2017, Stantec completed a soil survey for the project. The purpose of this survey was to describe the soil types identified within the project area and how these soils may affect development of the site. A Class L (linear) soil survey was conducted for the proposed turbine array, which includes the turbine pads, access roads and crane paths, and underground collector line. The turbine array area is dominated by the Turnbridge-Lyman-Rock Outcrop Complex with additional large areas of Lyman-Turbridge-Rock Outcrop Complex and Monadnock Fine Sandy Loam. The full soil survey report is attached as Exhibit 3.

RESPONSE FROM NATURAL RESOURCE AGENCIES

Correspondence from the Maine Natural Areas Program (MNAP; dated December 13, 2017) stated that no rare botanical features were documented specifically within the project area. The MNAP did provide a list of rare and exemplary botanical features documented in the vicinity of the project. The *Roxbury Wind Development Natural Resource Inventory* (Kleinschmidt Associates December 2017 and revised February 2018) stated that no rare species were observed during field work conducted in September and October 2017. A copy of the MNAP correspondence and other agency responses are included in Exhibit 4 of this application.

Correspondence from the Maine Department of Inland Fisheries and Wildlife (MDIFW) identified several state-listed endangered, threatened, or special concern species that could be present within the project area.

Common Name	Scientific Name	State Designation
little brown bat	*Myotis lucifugus*	Endangered
northern long-eared bat	*Myotis septentrionalis*	Endangered
eastern small-footed bat	*Myotis leibii*	Threatened
hoary bat	*Lasiurus cinereus*	Special Concern
red bat	*Lasiurus borealis*	Special Concern
silver-haired bat	*Lasionycteris noctivagans*	Special Concern
tri-colored bat	*Perimyotis subflavus*	Special Concern
northern bog lemming	*Synaptomys borealis*	Threatened
golden eagle	*Aquila chrysaetos*	Endangered
Bicknell's thrush	*Catharus bicknelli*	Special Concern
northern spring salamander	*Gyrinophilus porphyriticus*	Special Concern
Roaring Brook mayfly	*Epeorus frisoni*	Threatened

The official species list produced by the US Fish and Wildlife Service (USFWS) iPac review identified two federally listed species that could be present within the project area: northern long-eared bat and Atlantic salmon (*Salmo salar*). No critical habitat has been designated for the northern long-eared bat and the project area is outside the designated critical habitat for Atlantic salmon.

RARE SPECIES SURVEYS

On September 8, 2016, Stantec completed a field survey of the proposed project area to characterize the existing terrestrial and aquatic habitats and evaluate their potential to support populations of three state-listed rare wildlife species: the state-threatened northern bog lemming (*Synaptomys borealis*), state-threatened Roaring Brook mayfly (*Epeorus frisoni*), and state-species of special concern northern spring salamander (*Gyrinophilus porphyriticus*). The following provides a summary of the survey results and the full report is provided in Exhibit 5.

Stantec conducted targeted northern bog lemming survey at two locations (Wetland Area 1 and Wetland Area 2) within Wetland GG that most closely approximated habitat characteristically used by this species. Other wetlands within the project were not suitable northern bog lemming habitat. Green fecal pellets, characteristic of bog lemmings, were found only in Wetland Area 1. Genetic analyses of these eight fecal pellets determined that no samples were from northern bog lemming.

Only one stream, Stream EE, within the Project area was identified as potential spring salamander habitat. Other streams within the project area did not contain suitable habitat for this species. During Stantec's survey of Stream EE, no northern spring salamanders were observed.

No streams within the Project area were determined to be suitable potential habitat for the Roaring Brook mayfly. Stream EE, which was surveyed for northern spring salamanders, contained a predominance of moderately embedded substrate material, which is not suitable habitat for the Roaring Brook mayfly.

NORTHERN LONG-EARED BAT AND BICKNELL'S THRUSH SURVEY

In 2016 Stantec conduct field surveys to determine presence or probable absence of the northern long-eared bat (*Myotis septentrionalis*) and Bicknell's thrush (*Catharus bicknelli*) in areas of potentially suitable habitat associated with the project. The acoustic bat survey was conducted according to the *Range-wide Indiana Bat Summer Survey Guidelines* (USFWS 2016) and Bicknell's thrush surveys were conducted following *Curtailment Policy and Wind Power Preconstruction Study Recommendations* (MDIFW 2015). No northern long-eared bat calls were identified during the survey. Also, no preferred Bicknell's thrush habitat was observed, and no Bicknell's thrush responded to broadcasts or were observed visually or detected audibly. The full memo detailing these surveys is provided in Exhibit 6.

ATTACHMENT 10 – NOTICE OF INTENT TO FILE

On May 2, 2018, RoxWind published a Notice of Intent to File permit applications under the NRPA and Maine Stormwater Law in the Sun Journal and the Rumford Falls Times. A copy of this Notice of Intent to File was sent via certified mail to abutters and to the Town of Roxbury. A copy of the notice and the list of abutters and interested parties that received a copy of this notice is provided in Exhibit 7 of this application. A public open house for the project will be held May 12, 2018, at the Roxbury Town Hall.

ATTACHMENT 11 – MAINE HISTORIC PRESERVATION COMMISSION AND NATIVE TRIBE CONSULTATION

On March 6, 2018, Stantec submitted a request to the Maine Historic Preservation Commission (MHPC) requesting information about significant cultural/historic resources know or potentially present near the project area. In their correspondence of April 4, 2018, the MHPC stated that no archaeological resources will be affected by the project. However, they did request a survey of all above ground properties within the Area of Potential Effect (APE) that were not surveyed previously by the Record Hill, Saddleback, or Spruce Mountain wind project. The MHPC also recommended that the Appalachian Trail, which is eligible for the National Register of Historic Places at the national level of significance, be taken into consideration for visual impacts even though it is located outside the APE. The initial letter of request and responses from both the MHPC and RoxWind are provided in Exhibit 8.

Stantec also sent request for information about significant cultural/historic resources to the Houlton Band of Maliseet Indians, Aroostook Band of Micmacs, Passamaquoddy Tribe of Indians, and the Penobscot Nation. As of the filing of this application, responses have been received from the Houlton Band of Maliseets, the Penobscot Nation, and the Passamaquoddy Tribe of Indians. None of the respondents had concerns related to the proposed project. Letters of request and responses received to date are provided in Exhibit 8.

ATTACHMENT 12 – WETLAND FUNCTIONAL ASSESSMENT

The *Roxbury Wind Development Natural Resource Inventory* (Kleinschmidt Associates December 2017 and revised February 2018) includes a discussion of wetland functions and services for the wetlands delineated in 2014 and 2017. Because many of the identified wetlands are small and affected by previous timber management activities, the functions that they provide are very limited. Similarly, because these wetland communities are common on the landscape and they are located on private property, they provide little if any wetland services. Of the wetlands that will be impacted by the project, only three were identified as providing a Principal function. Wetlands DD, FF, and GG each were identified as providing wildlife as a Principal function, and Wetland GG also was identified as providing Production Export as a Principal function.

Wetland W01RKA, which was identified by Stantec in 2018, offers no Principal functions. This small isolated wetland is located within the CMP transmission line ROW. Based on its size, level of disturbance, and landscape position, it has limited capacity to provide any functions or services.

APPENDIX A – MDEP VISUAL EVALUATION CHECKLIST

EXHIBIT 1 – CERTIFICATES OF GOOD STANDING & TRI

EXHIBIT 2 – KLEINSCHMIDT ASSOCIATES NATURAL RESOURCE INVENTORY REPORT

EXHIBIT 3 – SOIL SURVEY REPORT

EXHIBIT 4 – AGENCY RESPONSES AND USFWS IPAC DOCUMENTATION

EXHIBIT 5 – RARE SPECIES SURVEY REPORT

EXHIBIT 6 – NORTHERN LONG-EARED BAT AND BICKNELL'S THRUSH SURVEY MEMO

EXHIBIT 7 – PUBLIC NOTICE AND ABUTTERS LIST

EXHIBIT 8 – CORRESPONDENCE WITH MAINE HISTORIC PRESERVATION COMMISSION AND NATIVE TRIBES