EXHIBIT
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STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION
AUGUSTA, ME 04333

DEPARTMENT ORDER

IN THE MATTER OF

RECORD HILL WIND, LLC.	) SITE LOCATION OF DEVELOPMENT ACT
Roxbury, Oxford County	) NATURAL RESOURCES PROTECTION ACT
RECORD HILL WIND PROJECT	) WATER QUALITY CERTIFICATION
L-24441-24-A-N (approval)	)
L-24441-TF-B-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S. Sections 481 et seq. and 480-A et seq., 35-A M.R.S. § 3401, et seq., and Section 401 of the Federal Water Pollution Control Act, the Department of Environmental Protection has considered the application of RECORD HILL WIND, LLC with the supportive data, agency review comments, public comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. Summary: The applicant proposes to construct a 50.6-megawatt (MW) wind energy development, known as the Record Hill Wind Project, in the Town of Roxbury in Oxford County, Maine. The proposed development consists of 22 wind turbines and associated turbine pads, electrical collection infrastructure (below-ground power line and above-ground down mountain transmission corridor), an electrical collector substation, and an Operations & Maintenance (O&M) building for a total of 18.4 acres of new impervious area and 18.8 acres of new developed area. Prior to construction, the applicant will construct two permanent 80 meter meteorological towers within the project site in order to monitor wind turbine performance during operation. The proposed Record Hill Wind Project meets the definition of an expedited wind energy development set forth in 35-A M.R.S. §3451 (A).

1.) Wind Turbines. The applicant proposes to construct 22 Siemens SWT-2.3-93 wind turbines, each of which is capable of generating 2.3MW. The turbines will be constructed in a north-south orientation along the ridgelines of Record Hill, Flathead Mountain, and Partridge Peak. Each turbine is approximately 262 feet (80 meters) in height from the ground to the center of the hub; the total height from the ground to the tip of a fully extended turbine blade is approximately 415 feet (126.5 meters).

2.) Turbine Pads. The turbines will be constructed on 22 turbine pads. The total area of each turbine pad is approximately 1.6 acres; each turbine pad is comprised of a crane

pad, turbine foundation, and circular construction laydown area. Each crane pad will measure 70 feet by 83 feet and require a graded laydown area that will measure 315 feet in diameter. The crane pads will be constructed with approximately 16 inches of compacted gravel or processed rock. Impervious area associated with each crane pad is 6,170 square feet. The total amount of impervious area of the (22) crane pads is 3.2 acres. Each construction laydown area will be allowed to re-vegetate; however, the crane pads and turbine foundations will remain as impervious area.

3.) Access Roads and Crane Path. The applicant proposes to construct approximately 6.1 miles of new access roads and crane path. The primary access to the ridgeline for component delivery, operations, and maintenance will be Mine Notch Road. Approximately 0.5 linear miles of Mine Notch Road will be upgraded to 16 feet wide; and the road will be extended by 1.1 miles to fully access the ridgeline. Portions of this access road will be widened to 29 feet for component delivery vehicles to negotiate sharp turns and to act as pull-off areas. Portions of a nearby road, Bunker Pond Road may be used for construction access; however, the applicant does not propose to upgrade this road. There is approximately 12.7 acres of impervious area associated with the access road and crane path.

The applicant proposes to construct a road specifically for an assembly crane to access and assemble components of the wind turbine. This road is known as a crane path. The crane path will be located along the ridgeline and will connect all of the turbine pads. This path will measure 32 feet wide and will total 5.0 miles in length. The crane used to assemble the turbines will be delivered via Mine Notch Road and assembled at the top of the ridge. The crane path will be allowed to re-vegetate back to a 16 foot wide road following usage and removal of the crane.

4.) Electrical Transmission Lines. Power from the 22 turbines will be collected in two 34.5-kilovolt (kV) collector line totaling 19,500 linear feet each. Approximately 4,500 linear feet of this line will travel underground along the ridgeline and then move aboveground while traveling down Flathead Mountain. The approximately 15,000 linear feet, 34.5 kV down mountain collector lines will consist of fiber optic conductor lines on single pole, double circuit structures. Pole structures will vary in height from 50-55 feet depending on the grade and the need to span particular features and resources. A clearing width of 80 feet will be required for the length of the down mountain corridor. Once the collector lines reach the existing Central Maine Power Company (CMP)-owned transmission line corridor at the base of the ridgeline, the collector line (generator lead) will travel approximately 9,000 linear feet south to a collector substation. The collector substation is located on Route 120/Roxbury Notch Road east of the proposed wind turbine location.

5.) Electrical Collector Substation. At the collector substation, power will be converted to 115 kV for transmission to the regional market through transmission lines owned and operated by CMP. CMP has agreed to upgrade these transmission lines prior to the start of operation of the proposed project. The collector substation will measure approximately 115 feet by 180 feet, and is located off Route 120. Electrical design

details can be seen on a sets of plans, prepared by Perkins Engineering, Inc. and SGC Engineering, LLC, and dated November 27, 2007 with the latest revision date on any of the plans being July 9, 2009.

6.) Operations & Maintenance (O &M) Building and Associated Structures. The proposed wind energy development will include an operations and maintenance building. The building will measure 52.5 feet by 105 feet and will be located adjacent to the collector substation off Route 120, east of the proposed wind turbines. The applicant also proposes to construct an associated gravel parking lot. The building and gravel parking lot will be constructed within the footprint of an existing developed area.

7.) Meteorological Towers. The proposed project will include the construction of two permanent 80 meter meteorological towers to monitor and assess wind conditions. One tower will be constructed on the west side of Turbine 4; the other tower will be erected west of Turbine 7. An underground electrical line and fiber optic line will be brought from the turbines out to each of the meteorological towers within the limits of the access roads. The towers will be constructed prior to the start of operation of the proposed project. The applicant submitted line drawings along with construction notes for the towers in Exhibit 1 of Section 30 in the application.

The applicant is also seeking approval under the Natural Resources Protection Act to permanently fill 13,364 square feet of forested, scrub shrub, and emergent freshwater wetlands and to clear 30,172 square feet of wetland vegetation for construction of the transmission lines. Approximately 12% of the proposed wetland fill is a result of expanding Mine Notch Road. In addition, the applicant proposes four new stream crossings. The generator lead crosses seven streams; however, no in-stream work is anticipated for these crossings. Details of proposed wetland impacts are discussed further in Finding #17.

The applicant submitted two Natural Resources Protection Act, Permit By Rule (PBR) applications, one under Section 10 and one under Section 19 of Chapter 305 of the Department's regulations (PBR #47468 and PBR #47469). These applications are for activities associated with the proposed project and request approval for proposed access road crossings over streams and construction activities within an upland portion of significant vernal pool habitat. The applicant proposes to utilize four culverts and one bridge as stream crossings. Details of the stream crossings and photographs of the streams were submitted as Exhibit 6 in the PBR application. The applicant proposes to alter upland critical terrestrial habitat associated with two significant vernal pools (SVP 03CF and SVP 18CF) as a result of clearing and grading. Existing development has impacted approximately 17% of critical terrestrial habitat within an identified significant vernal pool known as SVP 03CF. The proposed project will impact an additional 5% of critical terrestrial habitat by upgrading Mine Notch Road. The proposed project will also impact approximately 17% of critical terrestrial habitat within an identified significant vernal pool known as SVP 18CF. The Department approved PBR #47468 and PBR

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#47469 on January 5, 2009. Specific details about these significant vernal pools are discussed further in Finding 7.

The applicant submitted a Notice of Intent (NOI #47380) to comply with requirements of the Maine Construction General Permit. The Department approved NOI #47380 on December 22, 2008.

Details of the proposed wind energy development are shown on a set of plans, the first of which is entitled "Project Site Map," prepared by Stantec Consulting Services, Inc., and dated October 31, 2008, with a last revision date of July 9, 2009. The project site is located on the north side of Route 120/Roxbury Notch Road in the Town of Roxbury.

B. Current Use of Site: The proposed project site includes the ridgelines of Partridge Peak, Flathead Mountain, and Record Hill. Commercial timber management is common in this area and is currently ongoing on the site. There are a number of existing developed logging roads. A residential structure and gravel drive are located on the property in the area of the proposed location of the collector substation and O&M building.

Rural residential and seasonal properties are located to the east, south and west of the project area with the nearest residential property line on adjacent property approximately 2,800 feet to the east of the nearest proposed wind turbine on Partridge Peak. The approximate distance from the proposed wind turbines on Partridge Peak to the nearest residential property line to the southwest is 3,100 feet. The approximate distance from the proposed wind turbines on Partridge Peak to the nearest residential property line to the west is 3,500 feet. The approximate distance to the nearest residential property line in the Roxbury Village area and east of the nearest proposed wind turbine is 6,800 feet. All of the closest residential properties in the vicinity of the project are located in the Town of Roxbury.

C. Public Interest: While the application was being reviewed, the Department received numerous comments from the general public throughout a broad geographic area from within the state of Maine; these persons are "interested parties", as defined in Department Rules, Chapter 2(1)(I), for the purposes of this application review.

The Department received two requests, one verbal and one written, from interested parties for a public hearing on the proposed project. The requests for a public hearing were denied because there was insufficient credible conflicting technical information submitted regarding the licensing criteria.

In consideration of the large amount of public interest that was conveyed to the Department regarding the proposed project throughout the review process, the Department held a public meeting pursuant to 38 M.R.S. §345-A(5). The purpose of this meeting was to provide all interested parties with an opportunity to present their concerns to the Department and submit information into the Department's record. The Department held a public meeting on February 18, 2009 in the auditorium of the Mountain Valley

High School in the Town of Rumford, Maine. Approximately 70 people were in attendance at the meeting, 25 of whom presented oral comments. The Department accepted all information that was presented into the record and subsequently received additional letters and supplemental documents, raising questions and concerns regarding specific aspects of the proposed project. Overall, a total of 132 people submitted letters or information into the public record.

2. TITLE, RIGHT, OR INTEREST:

The applicant demonstrated title, right, or interest in the property proposed for development by submitting a redacted copy of a wind energy facility ground lease between the applicant and the property owner for the proposed project site. The applicant also submitted a quitclaim deed which shows that the property owner has ownership over the parcel on which development or use is proposed. A warranty deed was submitted by the applicant for the property containing the proposed O&M building and collector substation. The lease, quitclaim deed, and warranty deed were submitted by the applicant as Appendix 2-1 to the application. Further, the applicant submitted an executed option agreement to allow the generator lead to cross the northeastern corner of the property abutting the O&M building parcel.

Interested parties contend that the applicant does not have sufficient title, right, or interest, because the applicant does not have the necessary transmission infrastructure to connect with the grid nor allow the grid to safely absorb the project's output.

The applicant stated that safety, reliability, and scheduling of electrical resources in Maine are coordinated by the Independent System Operator of New England (ISO-NE). Interconnection approval requires an engineering study on project feasibility and system impact. The Record Hill Wind Project will require an upgrade of the Central Maine Power Company's grid, and the applicant will be required by the Federal Energy Regulatory Commission to reimburse Central Maine Power Company for some portion of the cost of such an upgrade. However, the projects will be owned by, and the work will be supervised by the two separate entities.

The Department reviewed the concerns stated by interested parties and concludes that while the upgrade to the grid system is a related project without which the proposed wind energy development would not be built; it is a separate project and the applications for permits may be processed separately.

The Department finds that the lease and deeds submitted by the applicant demonstrate a right to the reasonable use of the property and adequate duration and terms for the proposed project and its associated uses sufficient for the processing of this application. Therefore, the Department finds that the applicant demonstrated sufficient title, right, or interest in all of the property which is proposed for development or use.

3. FINANCIAL CAPACITY:

The total cost of the project is estimated to be $120,000,000.00. The applicant will raise non-recourse debt financing through a third party for the proposed project. The applicant submitted a letter of support from CoBank, dated October 2, 2008 and referenced as Appendix 3-1 in the application. In the letter, CoBank indicated that it intends to provide financing for this project. The applicant also submitted a 2008 Certificate of Good Standing from the Delaware Secretary of State and Maine Secretary of State as Appendices 3-2 and 3-3, respectively, as part of the application. Prior to the start of construction, the applicant must submit evidence for review and approval that it has been granted a line of credit or a loan by a financial institution authorized to do business in this State, or evidence of another form of financial assurance determined by the Department to be adequate pursuant to Chapter 373(1).

Interested parties assert that the applicant did not provide an estimate of costs of an upgrade of Central Maine Power Company's transmission lines that run from the town of Rumford to the town of Roxbury. Interested parties contend that this transmission line upgrade is connected with the proposed project; thus, the applicant should provide an estimate of costs.

The applicant stated that the Federal Energy Regulation Commission (FERC) requires that any project which proposes to interconnect with the regional grid undergo a system impact study of the impact the new power will have on the regional electrical grid system. If the study shows that an upgrade is required, the project has to agree to reimburse some portion of those costs. In the case of the Record Hill Wind Project, its impact will require some upgrade to the Central Maine Power Company's grid, and the parties will be entering into a FERC dictated standard interconnection agreement. The applicant states that it acknowledges that Central Maine Power Company's transmission line upgrade is accelerated by the proposed project; however, the upgrade is of its own independent origin. Further, the applicant states that the proposed project and Central Maine Power Company's transmission line upgrade are two separate and distinct projects because they will be owned, maintained, and supervised by separate entities with different interests; will contract for equipment and labor separately; and will be financed by separate methodologies.

The Department finds that the applicant has demonstrated adequate financial capacity to comply with Department standards provided that the applicant submits final evidence of financial capacity prior to the start of construction as referenced above.

4. TECHNICAL ABILITY:

The applicant provided resume information for key persons involved with the project and a list of projects successfully constructed by the applicant. The applicant also retained the services of several consulting firms to assist in the design and engineering of the project. These firms and their involvement in the proposed project are as follows:

- Independence Wind, LLC and Wagner Forest Management, Ltd. – project design
- Stantec Consulting – natural resource assessment, permitting
- James W. Sewall Company – civil engineering design
- SGC Engineering, LLC – civil and electrical engineering design
- Perkins Engineering, Inc. – electrical engineering design, property research and acquisition
- Terrence J. DeWan and Associates – visual impact analysis
- Resource Systems Engineering (RSE) – sound assessment
- TRC/Northeast Cultural Resources – prehistoric archaeological resources
- Independent Archaeological Consulting – historic archaeological resources
- Public Archaeology Lab – historic architectural resources
- Albert Frick Associates, Inc. – soils assessment

The Department finds that the applicant has demonstrated adequate technical ability to comply with Department standards.

5. NOISE:

The applicant submitted a sound level study entitled "Sound Level Assessment", completed by Resource Systems Engineering (RSE) and dated December 1, 2008 with a last revision date of January 20, 2009. The applicant submitted a supplement to the sound level study, dated June 16, 2009, which analyzed potential noise implications of a change from originally proposed Clipper turbines to Siemens turbines. The sound level study was conducted to model expected sound levels from the proposed Record Hill Wind Project and to compare the model results to operational standards pursuant Chapter 375 (10), the Site Location of Development Rules.

Chapter 375 §10 applies hourly sound pressure level limits ($L_{Aeq\text{-}Hr}$) at facility property boundaries and at nearby protected locations. Chapter 375 §10 (G) (16) defines protected locations as "any location accessible by foot, on a parcel of land containing a residence or approved subdivision...." In addition to residential parcels, protected locations include but are not limited to schools, state parks, and designated wilderness areas.

The hourly equivalent level resulting from routine operation of a development is limited to 75 dba at any development property boundary as outlined in Chapter 375 § 10 C (1) (a) (i). The hourly equivalent sound level limits at any protected location varies depending on local zoning or surrounding land uses and existing (pre-development) ambient sound levels. At protected locations within commercially or industrially zoned areas, or where the predominant surrounding land use is non-residential, the hourly sound level limits for routine operation are 70 dba daytime (7:00 a.m. to 7:00 p.m.) and 60 dba nighttime (7:00 p.m. to 7:00 a.m.). At protected locations within residentially zoned areas or where the predominant surrounding land use is residential, the hourly sound level limits for routine operation are 60 dba daytime (7:00 a.m. to 7:00 p.m.) and 50 dba nighttime (7:00 p.m. to 7:00 a.m.). In addition, where the daytime pre-development ambient hourly sound level is equal to or less than 45 dba and/or nighttime ambient hourly sound level is equal to or

less than 35 dba, quiet location limits apply. For such "Quiet Locations", the hourly sound level limits for routine operation are 55 dba daytime (7:00 a.m. to 7:00 p.m.) and 45 dba nighttime (7:00 p.m. to 7:00 a.m.). In all cases, nighttime limits at a protected location apply at the property line of a protected location or up to 500 feet from sleeping quarters when the property line is greater that 500 feet from a dwelling.

The Record Hill Wind Project must be in compliance with Department regulations applicable to construction, routine operation and routine maintenance. The applicant submitted a Vicinity Site Plan that shows residential parcels in relation to the project area and parcels where the most restrictive sound level limits apply. The plan also shows the parcels' approximate distance from the nearest proposed wind turbine.

In recognition of the rural nature of the site, the applicant opted to apply quiet limits of 55 dba daytime and 45 dba nighttime at all nearby protected locations in accordance with Chapter 375 §10 (H) (3) (1), even though pre-development ambient sound levels under weather conditions suitable for wind turbine operation can exceed area thresholds of 45 dba daytime and 35 dba nighttime. Quiet limits of 55 dba daytime and 45 dba nighttime are consistent with Department standards.

Sound Level Modeling. The applicant's noise consultant, RSE, developed a sound level prediction model to estimate sound levels from operation of the proposed project. The acoustic model was developed using the CADNA/A software program performing calculations in accordance with the generally recognized standard for estimating the propagation of sound in the environment promulgated by the International Standards Organization (ISO) as Chapter 9613-2, *Attenuation of Sound During Propagation Outdoors*. CADNA/A uses three dimensional terrain, proposed wind turbine characteristics and locations plus environmental factors to calculate outdoor sound propagation from the wind turbines. Area topography and wind turbine locations, for entry into CADNA/A, were provided to RSE by Stantec Consulting based on USGS topographic information and project design.

RSE calculated sound levels for simultaneous operation of the Siemens SWT-2.3-9.3 wind turbines at all 22 prospective turbine locations. Calculations were based on the apparent sound power spectrum produced at full sound power provided by Siemens. The wind turbines were treated as point sources at the hub height of 80 meters above base/grade elevation using sound power levels provided by WINDTEST, Kaiser-Wilhelm-Koog GmbH, which is a report of acoustical emissions of a Siemens wind turbine generator system of the type SWT-2.3-9.3, September 2005. RSE computed sound power for whole octaves from the one-third octave spectrum provided by Siemens.

Sound levels from wind turbine operation were modeled in the area surrounding the proposed project site. Nine residential receiver points (PL1 to PL9) in the vicinity of the proposed project were selected by the applicant as being representative of the protected locations where the most stringent DEP nighttime limits apply. These receiver points are the locations closest to the wind turbines in various directions where sound levels have the greatest potential to exceed sound limits.

Table 5-2S in the application shows the estimated sound levels from the proposed wind turbine operation at each of the nine receiver points. The results presented in Table 5-2S indicate that sound levels at full sound power production of the proposed project will be from 5 to 11 dba below the nighttime sound level limit of 45 dba hourly equivalent sound level at the closest protected locations. Results also indicate that sound levels at full sound power production of the wind project will be from 12 to 20 dba below the 55 dba hourly equivalent limit. Results of the sound level modeling are as follows:

Receiver	Distance to Nearest Wind Turbine in Feet	Estimated Sound Level	Nighttime Sound Limit
PL1	6,000	35	55
PL2	6,800	38	55
PL3	2,800	43	55
PL4	3,100	40	45
PL5	3,100	40	45
PL6	3,500	43	55
PL7	8,100	37	45
PL8	11,500	37	45
PL9	11,000	34	45

Tonal Sound. According to Chapter 375 §10, a regulated tonal sound occurs when the sound level in a one-third octave band exceeds the arithmetic average of the sound levels in the two adjacent one-third octave bands by a specified dB amount based on octave center frequencies. The applicant stated that Siemens SWT-2.3-9.3 turbine performance specifications were analyzed for the potential to generate regulated tonal sounds. A-weighted, one-third-octave band sound power level specification data were converted to a linear scale and are shown in Figure 5-4S of the application. Based on the Siemens SWT-2.3-9.3, the applicant determined that tonal thresholds are not likely to be exceeded. Therefore, the applicant determined that the Siemens 2.3 SWT-2.3-9.3 wind turbines are not expected to generate regulated tonal sounds as set forth in DEP 375.10.

The Department retained a third party noise consultant, EnRad Consulting (EnRad), to review the sound level study that was submitted by the applicant. In comments dated April 30, 2009 and August 10, 2009, EnRad stated that the Record Hill Wind Project noise assessment is technically correct according to standard engineering practices and Department Regulations on Control of Noise (06-096 CMR 375.10). EnRad further stated that the wind project prediction model based on CADNA/A software with incorporation of an uncertainty factor of + 5 dba yielded an estimate that does not account for potential excessive amplitude modulation under stable atmospheric conditions, which would invoke a 5 dB penalty for short duration repetitive sounds, potentially resulting in borderline compliance at protected locations (within 2 dba of respective limits) receiving greater than predicted sound levels, even potentially in excess of 45 dba. For this reason, EnRad recommended a routine operation noise compliance assessment plan for the proposed project when it is operating that is based on selective meteorological conditions with low ambient background sound levels, carefully specified sound measurement parameters, and detailed reporting requirements. This monitoring

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would require compliance measurements under the most favorable conditions for sound propagation, during periods of significant maximum amplitude modulation and would utilize appropriate measurement parameters outlined by the Department.

In consideration of EnRad's comments, the applicant developed a compliance assessment plan, entitled "Record Hill Wind Project Wind Turbine Sound Compliance Assessment Plan", dated June 2, 2009 with the latest revision date being August 3, 2009. EnRad reviewed the compliance assessment plan and stated that the applicant's compliance assessment plan to measure routine operation sound levels at representative protected locations under a rigorous protocol and meteorological condition requirements is appropriate.

Interested parties stated several concerns regarding the issue of noise. Specifically, concerns were raised in regards to potential impacts to public health, the breadth of the Department's standards for noise, and whether the proposed project would generate SDR sound.

First, interested parties raised concerns regarding the human health effects linked to infrasound low frequency sound less than 250 Hz from wind turbines. Infrasound is sound that is generally considered to be less than 20 Hz, the normal limit of human hearing. In response to the interested parties' submissions, EnRad stated that infrasound has been widely accepted to be of no concern below the common human perception threshold for tonal sounds. The Department finds EnRad's comments to be credible, and that there is insufficient evidence to conclude otherwise. Numerous national infrasound standards limit industrial facilities, impact equipment and jet engines, but wind turbine infrasound levels fall below these standards.

The Maine Center for Disease Control (MCDC) within the Department of Health and Human Services (DHHS) reviewed the materials submitted by interested parties pertaining to potential health effects associated with wind turbines. MCDC stated that speech interference and noise-induced hearing loss is not an issue when studying the effects of noise from wind turbines because the exposure levels are too low. The MCDC found no evidence in peer-reviewed medical and public health literature of adverse health effects from the noise generated by wind turbines other than occasional reports of annoyances. Most studies on the health effects of low frequency noise and infrasound have been done using thresholds of 70 dba or higher outdoors, much higher than wind turbines typically generate.

Second, the interested parties stated that the applicant did not correctly predict the 45 dB nighttime limit at protected locations, and the noise modeling should have been performed by calculating line sources rather than point sources.

In response to this concern, EnRad stated that sound sources can vary widely in their arrangement and complexity, and that dB should not be confused with dba. By definition, a line source is a source of noise that emanates from a linear geometry and is comprised of multiple point sources. Roadway noise is an example of a linear source of noise. A point source is a single localized source. EnRad stated that at times a situation

may present itself to be convenient and sufficiently accurate to approximate a multiple source arrangement (line source) into a single simplified configuration (e.g. point source, infinite line source or infinite plane source); however, it is often tenuous or impossible to base calculations on each individual source of a particular configuration or array. When applied correctly, point source and line source measurements produce the same data. A difference in data may occur only in instances where topography is consistently level. In the case of known sound sources in a linear array, such as wind turbines along a ridge, calculations are the most accurate when based on each turbine as a point source. EnRad further stated that the applicant's sound level model provides sufficient accuracy for the given situation. Chapter 375 §10 standards are applied using the A-weighted scale, which is widely used in noise ordinances and sound control regulation. The Department finds that the applicant adequately applied the A-weighted scale when modeling estimated sound levels for the proposed project pursuant to Chapter 375 §10.

Short Duration Repetitive (SDR) Sounds. Interested parties stated with documentation that the applicant's noise analysis failed to make an allowance for SDR sound, specifically, the thumping noise produced by the turbine blades. Maine's noise regulations require a 5 dB penalty to be added to the predicted sound level to adjust for this type of repetitive sound. Interested parties stated a review of studies of wind turbine noise can produce SDR sounds of 5-6 dB commonly and 10-15 dB in some instances.

SDR sounds are a sequence of sound events, each clearly discernible, that cause an increase of 6 dba or more in the sound level observed before and after an event. SDR sound events are typically less than 10 seconds in duration and occur more than once within an hour. Published studies of noise from wind turbine operations indicate that sound levels can fluctuate over brief periods as noted by the passage of wind turbine blades and typically range from 2 to 4 dba. The applicant stated that operations of the proposed project are not expected to result in the 6 dba increase required to be SDR sounds as set forth in Chapter 375.10

In response to the interested parties' concerns, EnRad commented that the position stated by the interested parties is not a widely accepted fact, and the applicant's noise analysis is reasonably and technically correct. EnRad further stated that predicted sound levels including tonal and short duration repetitive sounds are indicated to be below Department sound level limits.

The sound level modeling that was conducted by RSE included the following assumptions: all wind turbines operating at full sound power output, downwind conditions in all directions simultaneously, moderate ground absorption, no foliage attenuation, and the addition of a 5 dba uncertainty factor applied to the turbine manufacturer's specifications.

While the sound modeling techniques used by the applicant are in keeping with standard industrial sound modeling protocols, the Department finds that there is sufficient concern related to the model's ability to accurately predict SDR sounds to require the applicant to implement the assessment plan referenced above. If the compliance data indicates that,

under most favorable conditions for sound propagation and maximum amplitude modulation, the Record Hill Wind Project is not in compliance with Department standards as described above, within 60 days of a determination of non-compliance by the Department, the applicant must submit, for review and approval, a revised assessment plan that demonstrates that the project will be in compliance at all the protected locations surrounding the development. This revised assessment plan must include, among other strategies, consideration and analysis of how potential turbine shutdown scenarios may cause the wind energy development to operate in compliance with the terms of this permit.

6. SCENIC CHARACTER, VISUAL QUALITY, & EXISTING USES:

In order to assess the potential scenic impact of the Record Hill Wind Project on resources of state and/or national significance, the applicant submitted a visual assessment of the project area which was prepared by Terrence J. DeWan & Associates (TJD&A). The visual study area focused on the Town of Roxbury and included all the abutting towns and unorganized townships within eight miles of the proposed project. This includes all of Roxbury and Byron and portions of Townships C, D, and E, Township 6 North of Weld, Weld, Carthage, Mexico, Rumford, Newry, Andover, and Andover North Surplus.

Three-dimensional resources of Google Earth Pro were used to look at the study area from the air and on the ground in order to give reviewers the capability to experience the overall physical characteristics of the landscape and understand the setting of the wind project relative to the surrounding topographic features. Field data was collected during site visits on October 16 and 17, 2007, June 8, 2008, August 13, 2008, and October 18, 2008. Fieldwork concentrated on examining scenic areas of state or national significance.

Title 35-A § 3452 (1) in pertinent part provides that:

> In making findings regarding the effect of an expedited wind energy development on scenic character and existing uses related to scenic character pursuant to…Title 38 § 484 (3) or § 480-D the Department shall determine, in a manner provided in subsection 3, whether the development significantly compromises views from a scenic resource of state or national significance… . Except as otherwise provided in subsection 2, determination that a wind energy development fits harmoniously into the existing natural environment in terms of potential effects on scenic character and existing uses related to scenic character is not required for approval under…Title 38, section 484 § 3.

Title 35-A § 3452 (2) provides in pertinent part that:

> The primary siting authority (Department) shall evaluate the effect of associated facilities of a wind energy development in terms of potential effects on scenic character and existing uses related to scenic character in accordance with…Title 38 § 484 (3), in the manner provided for development other than wind energy development if the Department determines that application of the standard in subsection 1 to the development may result in unreasonable adverse effects due to the scope, scale, location or other characteristics of

the associated facilities. An interested party may submit information regarding this determination to the Department for its consideration. The Department shall make a determination pursuant to this subsection within 30 days of its acceptance of the application as complete for processing.

Title 35-A § 3452 (3) provides that:

In making its determination pursuant to subsection 1, and in determining whether an applicant for an expedited wind energy development must provide a visual impact assessment in accordance with subsection 4, the Department shall consider:

(A) The significance of the potentially affected scenic resource of state or national significance;
(B) The existing character of the surrounding area;
(C) The expectations of the typical viewer;
(D) The expedited wind energy development's purpose and the context of the proposed activity;
(E) The extent, nature and duration of potentially affected public uses of the scenic resource of state or national significance and the potential effect of the generating facilities' presence on the public's continued use and enjoyment of the scenic resource of state or national significance; and
(F) The scope and scale of the potential effect of views of the generating facilities on the scenic resource of state or national significance, including but not limited to issues related to the number and extent of turbines visible from the scenic resource of state or national significance, the distance from the scenic resource of state or national significance and the effect of prominent features of the development on the landscape.

A finding by the Department that the development's generating facilities are a highly visible feature in the landscape is not a solely sufficient basis for determination that an expedited wind energy project has an unreasonable adverse effect on the scenic character and existing uses related to scenic character of a scenic resource of state or national significance. In making its determination under subsection 1, the primary siting authority shall consider insignificant the effects of portions of the development's generating facilities located more than 8 miles, measured horizontally, from a scenic resource of state or national significance.

Title 35-A § 3452 (4) provides, in pertinent part that:

An applicant for an expedited wind energy development shall provide the Department with a visual impact assessment of the development that addresses the evaluation criteria in subsection 3 if the Department determines such an assessment is necessary in accordance with subsection 3. There is a rebuttable presumption that a visual impact assessment is not required for those portions of the development's generating facilities that are located more than 3 miles, measured horizontally, from a scenic resource of state or national significance. The Department may require a visual impact assessment for portions of the development's generating facilities located more than 3 miles and up to 8 miles from a scenic resource of state or national significance if it finds there is substantial evidence that a visual impact assessment is needed to determine if there is the potential for significant adverse effects on the scenic resource of state or national significance…

The proposed Record Hill Wind Project contains "generating facilities" including wind turbines and towers as defined by 35-A M.R.S. § 3451 (5) and "associated facilities" such as buildings, access roads, substations, and generator lead transmission lines as defined by 35-A M.R.S. § 3451 (1). Therefore, the proposed Record Hill Wind Project must be reviewed pursuant to the expedited wind energy development standards outlined above and, to the extent applicable, 38 M.R.S. § 484 (3).

In accordance with 35-A M.R.S. § 3452 (4), the applicant conducted a visual assessment of all viewsheds of the proposed project. The Department requires that an applicant conduct a visual impact assessment within a three mile radius of the proposed project. Because the Swift River, a resource of state or scenic significance, is located within three miles of the proposed project, a visual assessment was required. Although not specifically required by the Department, the applicant elected to conduct a visual impact assessment within eight miles in recognition of the number and variety of scenic resources of state or national significance surrounding the proposed project. The applicant's visual assessment identified scenic resources of state or national significance as defined pursuant to 35-A §3451(9).

1.) National natural landmarks (NNL). The applicant determined that there are no NNL within eight miles of the Project.

2.) Historic Resources. The applicant conducted several historic resource surveys, which indicated that there are four properties on the National Register of Historic Places within eight miles of the Project area.
- Lovejoy Bridge, Maine's shortest covered bridge, over the Ellis River in South Andover (6.0 miles)
- Andover Library, Andover (6.0 miles)
- Hook and Ladder Building, Andover (5.8 miles)
- Merrill-Poor House, Andover (5.5 miles)

The applicant determined that none of these properties will have a view of the wind turbines or associated facilities due to intervening topography and vegetation.

3.) National or State Parks. The applicant determined that there are no State Parks within eight miles of the proposed project. The closest unit of Mount Blue State Park is over eight miles from the closest turbine, and there will be no view from this area. Mount Blue, in the eastern part of Mount Blue State Park, is 15 miles to the east of the proposed project. The closest unit of the National Park Service (NPS) is the Appalachian National Scenic Trail, which is approximately 7.8 miles to the west at its closest point. This is discussed further below.

4.) Great Ponds. There are two great ponds located on the west side of the proposed project, known as Ellis Pond (Roxbury Pond/Silver Lake) and Little Ellis Pond (Garland Pond). These ponds are not designated as scenic resources of state or national significance according to "Maine's Finest Lakes, the Results of the Maine Lakes Study",

published by the Maine State Planning Office (MSPO), pursuant to 35-A M.R.S. § 3451 (9)(D) .

Interested parties acknowledged that Ellis Pond and Little Ellis Pond are not listed in the report on Maine's Finest Lakes, as stated above. However, the interested parties contend that these ponds should be considered, evaluated, and included in the report.

The Department considered the concerns raised by interested parties and asked the MSPO to comment regarding this issue. MSPO commented that 35-M.R.S. §3451(9) defines "scenic resources of state or national significance" as including a "great pond that is one of the 66 great ponds located in the State's organized area identified as having outstanding or significant scenic quality in the 'Maine's Finest Lakes' study published by the Executive Department, State Planning Office in October 1989." This report discusses potential impact to the 66 identified great ponds. The Maine's Finest Lakes study involved assessment of great ponds of 10 acres or more in size for a number of different natural resources-related values, one of which was scenic quality. The report is used as guidance for statewide planning and Department land use permit review. In its findings, the report indicates that there are 66 lakes identified as having "outstanding" or "significant" scenic quality. These 66 "finest" lakes are those that under the study methodology detailed in the report were "judged to have cumulative resource values that are of statewide significance." Ellis Pond and Little Ellis Pond are not among the lakes identified as having outstanding or significant scenic quality in the report. For each lake studied, the assessment results indicate whether the lake was found to be "significant" or "outstanding" for each category assessed. The report sets forth the methodology used in assessing each lake's scenic quality. Pursuant to 35-M.R.S. §3451(9), the Legislature directed that the "Maine's Finest Lakes" study be used as a tool for the primary siting authority to determine whether a great pond is designated as a scenic resource of state or national significance for review of a wind energy development.

5.) Scenic Rivers. The Swift River, located between 1.5 and 2.5 miles to the east of the project area, is identified by the Maine Rivers Study as having unique/significant scenic resource values. The Swift is rated as a "C" River in the Maine Rivers Study, which means that it has a composite of natural and recreational resource values of statewide significance. The wind turbines of the proposed project would be seen from some sections of this river. One of the most notable portions of the Swift River is the segment that flows through and carves into Coos Canyon, 2.7 miles north of the project. However, the wind turbines would not be visible from Coos Canyon or the immediate area surrounding the canyon. The other point of interest along the Swift River in the study area is the Swift River Falls, also known as Three Falls, adjacent to Route 17 due east of the southernmost turbine in Roxbury. It may be possible to see some turbines during fall and winter months through the bare branches of the trees above the western riverfront; however, this would be at a time when recreational use the river is expected to be very low. While the GIS-based, topographic viewshed map indicates that there may be views along one-third of the Three Falls segment, the applicant determined it is unlikely that there would be much visual contact due to the dense streamside vegetation and intervening micro-topography. Most views of the turbines will be blocked by

riparian vegetation and topography throughout the majority of the pertinent length of the river.

6.) Scenic Viewpoints or Trails. The applicant identified two scenic viewpoints or trails within eight miles of the proposed project.

Tumbledown Mountain, Trails, and Webb Lake. The summit of Tumbledown Mountain affords a 360° view of the surrounding mountains and broad valleys. One of the focal points is Webb Lake, four miles to the southeast. This is the largest waterbody in the immediate area, sitting in the valley defined by West Mountain, Spruce Mountain, Saddleback Mountain, Mount Blue, and several other peaks. There are three main routes to access the summit of Tumbledown Mountain. The Loop Trail begins approximately 5.3 miles from the northerly end of the project. Views of the project area start near the summit of Tumbledown Mountain, 5.8± miles away. Two other trails, the Brook Trail and Parker Ridge Trail, are within eight miles of the proposed project. The maximum project visibility will occur on the West Peak of Tumbledown Mountain. This viewpoint would be 5.7± miles from the nearest wind turbine and 8.6 miles from the most distant one. At this point, most of the ridgeline and all of the turbines will be visible above Whale Back and West Mountains. The applicant stated that there will be no views of the proposed project from Webb Lake.

Little Jackson Mountain and Trail. The view from the summit of Little Jackson Mountain will be very similar to the view from the West Peak of Tumbledown, but the turbines will appear somewhat smaller since the viewer on Little Jackson will be 1.3 miles further away than a viewer on the West Peak.

Appalachian Trail. A 2-mile section of the Appalachian National Scenic Trail (AT) that includes the summit of Old Blue Mountain is located within eight miles of the Project. At its closest point, the AT will be 7.8± miles to the northwest of the northerly end of the project. Most of this 2-mile section will not have any views of the proposed project due to topography and intervening mountains.

7.) Scenic Turnouts. Pursuant to 35-M.R.S. §3451 (9)(G), the applicant determined that there are no scenic turnouts off a public road that are constructed by the Maine Department of Transportation within eight miles of the proposed project. The closest turnout off a public road is at Height of Land on the Rangeley Lake Scenic Byway (Route 17), 11.5 miles to the north. The applicant determined that there are no views of the project site from Height of Land.

GENERATING FACILITES AND ASSOCIATED FACILITIES:
The following describes the generating facilities and associated facilities, which are the visible components of the proposed project:

Wind Turbines. The turbines used for the project are identified by the applicant as Siemens SWT-2.3-93. The turbines have a blade diameter of 93 meters. With blade fully extended, the turbines will have a total height of 126.5 meters, or approximately 415 feet.

A nacelle is the structure that contains the generating components for the turbine. The turbines are controlled so they face into the wind when it is strong enough to generate power. All components of the turbine will be painted white. The blades will spin very slowly in low wind and will begin producing power when the wind velocity reaches approximately 4 meters per second (m/s). After the wind reaches a certain maximum velocity (approximately 25 m/s or 60 mph, but will vary with the intensity of turbulence), the machines will shut down for protection. The turbines may not be operational at other times, such as when the turbines are in-line or when they are taken out of service for repair or regularly scheduled maintenance. Depending upon the wind velocity, the blades will rotate at 9.6 to 15.5 revolutions per minute, which is equivalent to one revolution every 3.9 to 6.3 seconds. With unobstructed viewing conditions , individual blades will be clearly visible with virtually no detectable blurring while they rotate. The turbines in the project will be spaced a minimum of 720 feet apart and are on average 920 feet apart. When siting the individual turbines, the applicant took into account the wind resource, site-specific topography, town boundaries, proximity to wetlands, and other site conditions.

Lighting. Lighting for the proposed project will comply with Federal Aviation Administration (FAA) recommendations for aviation safety. The only lighting that is proposed are lights which will be mounted on the top of some of the nacelles. These lights will be mounted in accordance with an FAA-approved lighting design. Under normal operations, the lights will be on at night, red, flashing, and have a slow-on, slow-off profile. The permanent meteorological towers will also have FAA-approved lighting. By using white turbines, which offer sufficient visual contrast for pilots, the FAA will not require daytime lighting. There are no scenic resources of state or national significance within eight miles of the proposed project that are expected to have viewers after dark.

Access Roads and Crane Path. Access to the project site is proposed by upgrading and extending the existing Mine Notch Road. The existing roads will be modified to accommodate the delivery and construction vehicles needed for the proposed project. The access roads will not be visible to the general public beyond their immediate intersections with Route 120 and the Frye Crossover Road. Each wind turbine will be linked by a 32-foot wide crane path designed to provide safe access for the construction crane to the structures throughout the installation process. This path will be screened by existing vegetation in most locations and will not be visible from outside the immediate area.

Electrical Collector Substation and Operations & Maintenance Building. These structures are proposed to be located on the north side of Route 120, at a distance of approximately 2 miles east of the project site. The structures will be built on an existing area of development. The structures will be visible from Route 120.

Meteorological Towers. Two permanent 80 meter (262 feet) towers will be constructed and remain on site for the life of the proposed project. These towers will be lighted according to FAA requirements as described above and will be constructed of guyed lattice with a triangular cross section approximately 18 inches across. Due to their profile

and coloration, the applicant determined that the visibility of these towers at distances greater than one mile will be minimal.

The applicant avoided scenic and aesthetic impacts from the public viewpoints by proposing to use existing access roads wherever practicable for construction and maintenance, and siting the proposed generating facilities and associated facilities in areas where existing topography and vegetation provide visual screening. Therefore, the Department finds that the generating facilities and associated facilities will not have an unreasonable adverse effect on the scenic character or existing uses related to scenic character of scenic resources of state or national significance.

EXISTING USES:

1.) Andover Earth Station. Interested parties expressed concern regarding potential adverse impacts in the form of radio interference with the Andover Earth Station in the town of Andover. Interested parties assert that satellite antennas at this station are pointed toward Partridge Peak, North Twin Mountain, and South Twin Mountain.

The Verizon Satellite Earth Station, commonly known as the Andover Earth Station, is owned and operated by Verizon Network Services Group. The earth station has been federally licensed by the Federal Communications Commission (FCC) since the 1960s to operate Fixed Satellite Services. A license was required from the FCC, because all earth stations that transmit satellite signals must have a telecommunications license for each antenna.

In November 2008, a representative from the earth station contacted the applicant to determine if the proposed project would create a physical obstruction of the signal path from any of the antennas and/or create electronic noise. The applicant provided information about the scope of the proposed project to the representative. Based on the information provided, the representative determined that the line of proposed turbines would not extend south of Partridge Peak. The representative further stated to the applicant that there appeared to be no conflict between the proposed project and the earth station.

The Department contacted the same representative, who confirmed to the Department in a statement, dated June 4, 2009, that the turbines of the proposed wind energy development will be out of the line of transmittal sight from the antennas and that the proposed project will not create any concerns for the earth station.

With regards to North and South Twin Mountains, the Department concludes that no wind turbines or other similar activities are proposed on these mountains. For this reason, there are no adverse impacts to satellite antenna transmittal associated with the proposed project.

2.) Domestic Animals. Interested parties stated that wind turbines were the cause for 400 goats to die from terminal insomnia on an island off the mainland of Taiwan.

Interested parties assert that similar events will occur within the surrounding community as a result of the proposed project and referenced an article available online on this topic.

The current use of the proposed project site is primarily commercial timber management. According to the Maine Geographic Information Systems (GIS) mapping database, the nearest pasture or open field is approximately 4500 linear feet from the ridgeline; however, the Department was not able to confirm whether livestock are kept at this location. While the keeping of domestic animals in the vicinity of the proposed project is an existing use, interested parties supplied no credible evidence to indicate that the operation of the Record Hill Wind Project at the proposed project site will adversely affect livestock.

3.) Weather. Interested parties stated that wind turbines interfere with the line of sight operation of weather radar resulting in a decreased ability of weather radar to accurately track and or predict severe weather events.

On June 1, 2009, the applicant submitted a request to the National Oceanic and Atmospheric Administration (NOAA) for an analysis of the proposed project's potential impacts to weather radar.

In a report entitled "Impact Analysis of the Proposed Record Hill Wind Project", dated July 27, 2009, NOAA stated that its organization had reviewed the proposed project and its location relative to the Portland, Maine WSR-88D (KGYX) radar. The report stated that the greatest penetration into the radar beam at 0.5 degree elevation will be 90 meters (6% of beam height), and the proposed project is far enough away at a distance from the radar that only 1 degree of azimuth of data will potentially be impacted. Results of NOAA's impact risk scored operation impacts to be less than 1, which suggests that the proposed project will have a minimal impact risk to weather radar.

Based on the project's location and design and in consideration of the evaluation criteria pursuant to 35-A M.R.S. § 3452 (3), the Department finds that the applicant has made reasonable accommodation to fit the development into the natural environment and that no aspect of the project will have an unreasonable adverse effect on the scenic character or existing uses related to scenic character of scenic resources of state or national significance.

7. WILDLIFE AND FISHERIES:

Prior to submittal of the application, the applicant initiated a series of ecological field surveys, including migrating and breeding bird and raptor surveys, acoustic bat surveys, vernal pool surveys, wetland delineations, and rare, threatened, and endangered (RTE) species surveys. Surveys were targeted to provide data to help assess the project's potential to impact birds and bats, RTE plants and animals, breeding amphibians, and wetlands. The scope of the surveys was based on a combination of developing standard methods within the wind power industry for pre-construction surveys based upon guidelines outlined by U.S. Fish and Wildlife Service (USFWS) and Maine Department

of Inland Fisheries and Wildlife (MDIFW). The applicant conducted additional agency consultations with MDIFW in January 2008 to discuss work that had already been completed in 2007 at the project site, as well as a proposed work scope for the project that would be followed during spring 2008. The additional surveys discussed at that meeting were conducted during spring 2008 and were in compliance with the final work plan submitted and approved by MDIFW on March 6, 2008. The applicant completed a third avian survey during summer 2009.

Temporary and permanent changes in habitat conditions from the construction and installation of wind turbines, access roads, collector line poles, and collector lines for the proposed project have the potential to impact wildlife habitat. Impacts to habitats will consist of clearing land on the ridgelines of Partridge Peak, Flathead Mountain, and Record Hill and along the proposed generator lead segment on the east side of the ridge for turbines and roads, and along the proposed collector line segment on the east side of the ridge. Direct and indirect impacts to wildlife such as injury, mortality, or displacement are possible during clearing, construction, and operation of wind turbines, access roads, and electric lines and poles.

Avian and bat mortality through direct collisions with the turbines are two of the primary wildlife impacts expected from the proposed project. The applicant stated that, once constructed, the turbines and associated facilities are anticipated to pose little threat to terrestrial wildlife.

1.) Significant Vernal Pools. Vernal pool surveys were conducted in May 2008 and May 2009. The vernal pool surveys focused on those areas that were identified as Potential Vernal Pools during the wetland and waterbody delineations conducted between September and November 2007. In total, 32 vernal pools were identified. Of these pools, fourteen were determined to be man-made and occurred within either a roadside ditch or a rut created by heavy equipment. For this reason, these fourteen vernal pools did not meet the Department's identification criteria for significant vernal pools pursuant to Chapter 335, Significant Wildlife Habitat. The remaining 18 pools were naturally occurring and supported breeding activity by wood frogs and/or spotted salamanders. Five pools met the criteria to be considered Significant Vernal Pools based upon the level of amphibian breeding activity. A summary of identified vernal pools can be seen in Appendix 7-1(D) in the application.

The applicant's proposed clearing and grading will impact upland critical terrestrial habitat to two of the five identified significant vernal pools (SVP 03CF and SVP 18CF). When combined with existing impacts, these activities will alter 22% of critical terrestrial habitat within SVP 03CF and 17% of critical terrestrial habitat within SVP 18CF. The applicant submitted two Permit By Rule notifications indicating that the activities within critical terrestrial habitat would be done in accordance with Department Rules, Chapter 305, Section 19.

2.) Inland Waterfowl and Wading Bird Habitat. The proposed project area does not contain Geographic Information System (GIS) mapped Inland Waterfowl and Wading

Bird Habitat in areas proposed for wind turbines, access roads, collector lines, and associated structures.

3.) Deer Wintering Areas. The proposed project area does not contain GIS mapped Deer Wintering Areas in areas proposed for wind turbines, access roads, collector lines, and associated structures.

4.) Rare, Threatened, and Endangered (RTE) Species. The applicant conducted an RTE species survey for plant and animal species within the project area wetland. In addition to an RTE survey, bird and bat surveys conducted during fall 2007 and spring 2008 were also capable of documenting RTE species or Species of Special Concern if any were present. No RTE species or Species of Special Concern were observed during the fall 2007 or spring 2008 RTE surveys. However, one peregrine falcon (State Endangered), one bald eagle (State Threatened), one red-shouldered hawk (State Special Concern species), one Cooper's hawk (State Special Concern species), and one Northern goshawk (State Special Concern species) were observed passing through the area during the raptor migration surveys. The applicant states that raptor mortality documented from developed wind energy projects across the country has shown that diurnally migrating species are at low risk of collision with wind turbines with only 0 to 0.07 fatalities/turbine/year recorded from other developed wind projects in the United States outside of California. Breeding bird surveys documented a number of Maine special concern species within or in the vicinity of the project area, including tree swallow, veery, American redstart, black-and-white warbler, chestnut-sided warbler, and white-throated sparrow. These species are on conservation watch lists because of recent declines in their regional population trends, mainly due to loss of habitat. These species are known to occur in disturbed habitats as a result of industrial and commercial timber harvests and were found to be common in the project area. Based upon results of the surveys, the applicant determined that the proposed project is not anticipated to have an adverse impact to RTE species. Appendices 7-2 and 7-3 in the application provide details of RTE species observed at the project.

5.) Migratory Birds, Bats, and Raptors. The applicant conducted nocturnal radar surveys during the spring 2007 and fall 2008 migration periods to monitor nighttime migratory bird activity at the project site. Surveys were conducted using X-band marine radar, sampling from sunset to sunrise. Each hour of sampling included the recording of radar video files during horizontal and vertical operation. The radar site was located at the summit of Flathead Mountain and provided sufficient visibility. Targets were observed in most areas of the radar viewshed. The spring radar survey included 20 nights of sampling from April 22 to June 8, 2007. The fall radar survey included 20 nights of sampling from September 5 to October 13, 2007.

The applicant's migratory bird survey also included bald eagles which were conducted during fall 2007, spring 2008, and summer 2009. Two adult bald eagles were observed on September 4, 2007. Both were seen migrating at approximately 70 meters over Flathead Mountain. A juvenile bald eagle was observed on September 20, 2007, migrating west of the project ridgeline at an altitude of 200 to 300 meters. Two bald

eagles were observed during the spring 2008 raptor migration survey on May 1 and May 6, 2008. These individuals were observed flying parallel to the ridgeline over the valley to the west of the project. One eagle was observed flying low along the valley, while the other was estimated at 200 meters above the valley. Seven bald eagles were observed during the summer 2009 raptor migration between July 13, 2009 and August 16, 2009. These individuals were seen flying over Ellis Pond.

The applicant acknowledged that there is one bald eagle nest on French Island in Ellis Pond to the west of the project site. The applicant stated that bald eagles primarily fly along river corridors at varying heights in pursuit of prey, during aerial displays, and during daily movements. However, they also often expand their feeding grounds for many miles to lakes, ponds, and other waterbodies. The applicant stated that mortality from collisions with turbines is not expected due to the location of the turbines on upland ridgelines, because bald eagles tend to hunt on bodies of water.

The applicant conducted acoustic bat surveys with Anabat detectors within the project area in the fall of 2007 and the spring of 2008. The acoustic bat survey was designed to document bat activity patterns near the rotor zone of the proposed turbines, at an intermediate height, and near the ground. Acoustic surveys were also intended to document bat activity patterns in relation to weather factors, including wind speed, temperature, and relative humidity. Four bat detectors were deployed across the ridgeline of the project site during the fall migration season from August 9 to October 21, 2007 and during the spring migration season from May 1 to June 16, 2008.

Based on the results of the nocturnal radar surveys, raptor surveys, and acoustic bat surveys in 2007 and 2008, the applicant states that operation of wind turbines in the project area will not pose a significant threat to birds or bats. The radar surveys indicate that passage rates at the project are comparable to other radar sites in the state. Flight height and flight direction data indicate that the majority of migratory birds are flying at a height sufficient to avoid the proposed turbines and blades. Raptor surveys indicate that passage rates of raptors is low in the project area. The applicant states that this low rate is likely due to the lack of large landscape features that would concentrate raptor migration activity. Data from the surveys also indicate that the number of bats in the project area is similar to other sites in the vicinity of the project area.

Interested parties assert that the proposed project will negatively affect the bald eagles that utilize the existing nest on French Island, which is located approximately 1.8 miles west of the proposed project site.

In response to interested parties' concerns, MDIFW commented that its agency has monitored nesting of bald eagles at French Island since 1998. The nest and surrounding ¼ mile radius is designated as an Essential Habitat under the Maine Endangered Species Act to enable reviews of projects which might significantly alter or unreasonably harm the immediate nest vicinity. That regulation has been a key to mitigating potential disturbances near nesting eagles and bolstering species recovery. MDIFW stated that most bald eagle activity is along the shores of lakes, rivers, streams and coastal waters.

However, ridgelines like Record Hill can create updrafts favorable for soaring flights. The applicant conducted routine monitoring of raptor activity (including eagles) during fall and spring. MDIFW concluded that results from the studies showed relatively low use of the ridgeline being proposed for development by bald eagles during the surveys.

Based upon results of the applicant's wildlife studies and MDIFW's comments, the Department finds that the proposed project is not located in an area of significant bald eagles usage, and the construction of the project will not significantly impact populations of these species.

MDIFW determined that the survey results submitted by the applicant are consistent with other pre-construction studies conducted for wind power projects that MDIFW has reviewed in Maine. MDIFW believes that additional pre-construction studies at this site are not necessary.

MDIFW recommended that a detailed post-construction monitoring plan should be developed in conjunction with MDIFW. The post-construction monitoring efforts should be at least as rigorous as the pre-construction efforts, and include an appropriate amount of radar studies allowing for comparison with preconstruction radar data. This monitoring plan should be conducted in three separate years after the proposed project is placed on-line, specifically after years 1, 3, and 5. MDIFW stated that post-construction monitoring protocols must incorporate a sampling effort at all turbine locations in order to determine impacts to wildlife. Monitoring must be done at the individual turbine scale as well as at the project scale. Sampling all turbine locations provides the opportunity to assess whether individual turbines pose an undue risk to wildlife. This sampling scheme will guide MDIFW and the applicant in the implementation of appropriate and practical measures for ensuring the avoidance or minimization of any unreasonable adverse impacts, recognizing that such measures will depend on the research and science, since new technology is constantly developing. Based on recent research findings, measures that must be considered include, but are not limited to:

(1) Modified Operations. If a turbine is found to be causing unreasonable adverse impacts, the applicant must consider suspending its operation for periods determined by the Department to be of highest risk, provided there is good reason to expect that a non-operating turbine will pose less risk than an operating turbine. For example, if impacts were occurring at night during certain periods of fall migration, the applicant must modify the operation of the turbine during those high-risk nights; and

(2) On-Site Habitat Management. The applicant must consider habitat management measures in the vicinity of the turbines to modify wildlife behavior and reduce the risk of impacts. Any such measures must be determined by the Department in consultation with MDIFW in response to specific concerns or impacts that are related to habitat factors. Examples include, but are not limited to, modifying the type or extent of vegetation cover, forest openings, perching and nesting sites, or cover for prey species; and

(3) Habitat Protection. The applicant must consider providing appropriate compensatory mitigation for wildlife impacts such as protection or enhancement of wildlife habitat with a similar function and value similar to that impacted by the project. The Department in consultation with MDIFW will determine the appropriateness of any compensatory mitigation.

The post-construction monitoring plan also must include a survey of bald eagle activity associated with Ellis Pond and the ridgeline habitats along the Record Hill Wind Project. The survey protocol must be developed in consultation with MDIFW and the U.S. Fish and Wildlife Service, and must be inclusive of both migratory and non-migratory periods. How the post-construction monitoring plan is implemented will be determined by the Department, and will be dependent on the type and severity of impacts, cost benefit considerations, and practicality. Additional measures may be considered depending on future research findings.

In order to address concerns raised by MDIFW regarding avian, bat, and raptor (including bald eagle) mortality associated with the proposed project, the applicant agreed to conduct post-construction monitoring in consultation with MDIFW and the Department. Post-construction monitoring shall begin in the first year of the project's operation. The applicant must submit a finalized post-construction monitoring protocol to the Department for review and approval prior to the start of operation.

6.) Other Wildlife (Loons and Creeper).

Loons. Interested parties state that a large population of loons resides close to Ellis Pond, that the applicant failed to consider loons in their wildlife studies, and that the proposed project will negatively affect this population of loons.

In response to this concern, MDIFW commented that loons are protected by state and federal laws that prohibit the harassment of wildlife; however, they are not classified as a rare, threatened, or endangered avian species. MDIFW stated that there is a potential risk that loons may collide with a turbine associated with the Record Hill Wind Project. However, MDIFW believes that this risk is low since most of the loon flights would occur during daylight hours when they could see the structures. Preconstruction studies done by the applicant for the proposed project indicate that loons did not utilize the ridgeline. MDIFW does not anticipate that either the local loon population, or migrating loons, will be adversely impacted by the Record Hill Wind Project.

Creeper. Interested parties state that creeper, a species of freshwater mussel, is present in the Ellis River in the Andover area, and that the outlet to Ellis Pond is the start of the Ellis River, and that construction of the proposed project and its associated activities will negatively affect any present creeper population. The Ellis River is located approximately 2.8 miles west of the project site.

In response to this concern, MDIFW commented that the creeper is listed as a species of special concern in Maine. Creepers are usually found in clean, flowing streams and rivers. Sometimes, creepers are found in impounded stretches, and lake outlets which can be productive habitats for this species. The creeper can tolerate a range of flow conditions, but is rarely found in high-gradient streams of mountainous regions. These mussels are listed as a species of special concern because they are rarely abundant where they occur and are vulnerable to major disturbances and degradations to their habitats. Some of the activities associated with the construction of the Record Hill Wind Project will occur within the watershed where creepers are known to occur. The applicant has agreed to comply with the Department's Best Management Practices (BMPs) for erosion and sediment control and road construction. As such, MDIFW does not anticipate any negative impacts to this species.

Based on the comments of MDIFW, the Department finds that the proposed project, with BMPs for erosion and sedimentation control being followed, will not result in any negative impacts to loons and creeper.

7.) Streams and associated fisheries. The streams that will be affected on the ridgeline include a small perennial stream and intermittent streams. The applicant submitted evidence that the three intermittent streams would be unlikely to support fish, and the small perennial stream would support small non-game species. No fish were observed during the applicant's field surveys in the project area. The generator lead will cross both perennial and intermittent streams; however, no in-stream work is anticipated for these crossings. The applicant stated that there will be no in-stream vehicle crossings during construction. Impacts to the streams will only occur through limited clearing of the vegetated buffer. A small amount of thermal gain, a temperature increase of the water, is expected directly after clearing, but these areas will re-vegetate with a shrub buffer. The buffer clearing requirements that will be utilized to minimize impacts to fisheries are discussed in Finding 9.

The Department finds that the applicant has avoided and minimized impacts to significant wildlife habitat to the greatest extent practicable, and that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project. Moreover, the Department finds that the activity will not degrade any significant wildlife habitat, unreasonably disturb the subject wildlife, or unreasonably affect use of the site by the subject wildlife, provided that the applicant submits a finalized post-construction avian, bat, and raptor (including bald eagles) post-construction monitoring protocol to the Department for review and approval prior to the beginning of operation of the Record Hill Wind Project. The post-construction monitoring plan must also include a survey of Bald Eagle activity associated with Ellis Pond and the ridgeline habitats along the Record Hill Wind Project.