The following is in response to application review comments received from MDIFW concerning the Redington Wind Farm (RWF) application presently before LURC staff. Response comments are presented on a point by point basis.

Maine Department of Inland Fisheries and Wildlife

Comments from Dave Boucher – Fisheries Division – Region D

Our initial comments (see Forrest's original letter in application CD) focused on maintaining the integrity of brook trout habitat in Nash Stream, a major tributary to the S. Branch of the Dead River, and a locally important sport fishery. These same concerns are noted for Stony Brook, a tributary to Stratton Brook and Flagstaff Lake, Caribou Pond and the S. Branch of the Carrabassett River, and for several unnamed intermittent or small perennial streams. All are known or presumed to support wild trout and several cyprinid species common to the region.

The applicant proposes to construct about 12.5 miles of new roads, and upgrade about 12 miles of existing roads to access, construct, and ultimately service the project's various components. In addition, new transmission line corridors will total about 11 miles - clearings will vary from 75 to 150 feet wide. The potential for sedimentation is high with this project because soils have been described as "moderately to highly erodible", and slopes are steep in most locations. Streams may also be negatively impacted (flow volume and timing, temperatures) if vegetated buffers are inadequate.

The applicant has addressed some of these issues by 1) relocating sections of the transmission corridor to parallel the streams, or positioning them upslope and away from streams; 2) locating lines where floodplain impacts are minimized, where feasible; 3) locating lines where stream channels flow through narrow and deep valleys, thereby reducing canopy clearing over the stream. They will also allow powerline crossings to re-vegetated to a height of 15 ft where they intersect streams. They also appear to have designed a comprehensive erosion and sediment control plan for upgrade and construction of roads, etc.

I don't anticipate significant negative impacts to fisheries habitat, provided the applicant follows through with transmission line changes noted above, and strictly adheres to the erosion and sedimentation control plan during and after construction. I would, however, request that the instream work window be narrowed to July 15-September 1 to better reflect the sub alpine conditions (early pre-spawning movement of brook trout). In addition, I think we should reiterate Forrest's earlier request for vegetated buffers that exceed LURC's current PS-L zoning standards.

Response

1. *Soil Erosion. In response to concerns over road and transmission line construction and the potential for soil erosion due to steep slope and erodable*

soil conditions, the applicant has modified the design to relocate, as indicated in the plans, transmission lines and roads to avoid and minimize impacts to fisheries habitat, and has pledged to strictly adhere to the erosion and control plan during and after construction. MMP's contractors will be required to strictly adhere to the erosion and sedimentation control plan. In-stream work activities will be coordinated with IF&W Fisheries biologists to avoid potential disruptions to early pre-spawning movements of brook trout.

2. *Stream Setbacks. Regarding the agency request for stream setbacks to exceed LURC vegetative buffer standards, all streams will be protected by a vegetated buffer which will exceed the LURC standard of 75'.*

Comments from Tom Hodgeman – Wildlife Division – Bird Group

I have just reviewed the permit application for Maine Mountain Power's wind energy development at Redington and Black Nubble. The materials were informative and strongly suggest the likelihood of no undue adverse impact on birds during construction or operation of the facility. I am not requesting further field studies to be conducted prior to construction. However, there were a few points of clarification that I feel we should see before we recommend approval to LURC.

First, in the discussion of raptor surveys, the authors present a comparison with two other sites demonstrating that raptor migration is much lower at the project area than elsewhere. However, no measure of effort is presented. These total counts of birds could be the result of simply less effort, rather than actually fewer individuals present. Presenting these data per unit effort (somehow) would allow for a more thorough interpretation of these data.

Secondly, were analyses conducted to show how many birds were flying through the valley between Redington and Black Nubble versus towards the proposed development areas? This was done for the fall study. I recognize that because of the location of the radar unit, this may not have been as easily calculated. It was not clear to me, but again would help with my understanding of spring bird movements through the area.

Finally, the authors use a 2,700 ft contour to "delineate" habitat for Bicknell's Thrush. In fact, based on fig 7.2 habitat at Black Nubble is part of a contiguous block extending all the way to Sugarloaf and Burnt Hill. I think this may be a bit generous (i.e., elevation cutoff should be slightly higher and consequently suitable habitat patch much smaller) and would request that the developer provide a map of suitable habitat based on a 3,000 ft contour plus a calculation of the proportion of habitat above 3,000 feet that will be cleared for the development (i.e., % of the habitat patch above 2,700 and 3,000 feet within which the 2 turbine strings will be located that will be cleared). My long-term desire would be not to lose occupancy at any currently occupied patches as the result of high elevation development. Based on the literature, clearing to some degree at high elevation may have little effect on occupancy (though not sure about reproductive success). I don't believe this development will cause permanent abandonement by

Bicknell's on either Redington or Black Nubble but it would be useful from a landscape scale, however, to place the development footprint in context with the amount of habitat at the site. I'd be happy to speak directly with the developer or their consultant to clarify the parameters of such a calculation.

We also need to discuss what options will be necessary for post construction monitoring and mitigation should the project be approved and constructed. The authors laid out some basic discussion of these and I have some ideas of my own. I'm not sure exactly when would be the best time to comment on these. Do we need to have post-construction studies all designed and a decision matrix for mitigation options all set before we give our approval to LURC?

Response:

The reviewed information 'strongly suggests' the likelihood of no undue adverse impact on birds during construction or operation of the facility. No further field studies prior to construction are being requested. The following is offered in response to specific concerns or additional information requests.

1. *Raptor Survey Effort. In response to comments regarding raptor survey effort, an expanded analysis of available regional migration monitoring data was performed, the results of which are illustrated below both in terms of numbers of hours and numbers of days of survey effort per total observed raptors (Figure 7-3a and 7-3b, respectively).*

   As depicted, raptor migration is lower in the project area compared to other areas around the northeast. Regionally, sites in western Maine reported far fewer hawk migration traffic rates than in areas further to the south. For example, 6,019 raptors were observed over the course of a 15-day survey period at Mount Agamenticus in southern coastal Maine and 9,923 raptors were observed over the course of a 21-day survey period at Mount Wachusett in central Massachusetts in the fall of 1994, indicating an overall higher traffic activity of migrating hawks in these more southern, less mountainous areas.

Table 7-3a. Fall 1994 Raptor Count Data from Northeastern Sites, as Recorded by the HMANA, and Redington Wind Farm Project Area

Site	***Total Count***	***Survey Effort (hours)***	***Avg. Raptors per obs. hr***	***Site Classification***
*Mount Wachusett, Massachusetts**	*9923*	*110.2*	*90*	*Inland Mountain*
*Mount Agamenticus, Maine***	*6019*	*80.3*	*75*	*Coastal Mountain*
*Little Round Top, New Hampshire***	*281*	*25.8*	*10.9*	*Inland Mountain*

*Kibby Mountain, Maine**	*195*	*29.0*	*6.7*	*Inland Mountain*
Redington Mountain, Maine	*18*	*64 approx.*	*0.28*	*Inland Mountain*

*From Mirick, S. 1995. North Atlantic Region. HMANA Hawk Migration Studies. Vol. XXI. No.1 pp. 27-29.
**From Walter, S. 1995. Northeast Region. HMANA Hawk Migration Studies. Vol. XXI. No.1 pp. 32-35.

Table 7-3b. Fall 1994 Raptor Count Data from Northeastern Sites, as Recorded by the HMANA, and Redington Wind Farm Project Area

Site	***Total Count***	***Survey Days***	***Avg. Raptors per day***	***Site Classification***
*Mount Wachusett, Massachusetts**	*9923*	*21*	*473*	*Inland Mountain*
*Mount Agamenticus, Maine***	*6019*	*15*	*401*	*Coastal Mountain*
*Little Round Top, New Hampshire***	*281*	*7*	*40*	*Inland Mountain*
*Kibby Mountain, Maine***	*195*	*5*	*39*	*Inland Mountain*
Redington Mountain, Maine	*18*	*8*	*2*	*Inland Mountain*

*From Mirick, S. 1995. North Atlantic Region. HMANA Hawk Migration Studies. Vol. XXI. No.1 pp. 27-29.
**From Walter, S. 1995. Northeast Region. HMANA Hawk Migration Studies. Vol. XXI. No.1 pp. 32-35.

2. *<u>Spring 2004 Radar Analysis</u>. In response to comments regarding bird passage through the valley between Redington and Black Nubble, MDIFW recognizes the fall migration radar position was chosen in order to determine how avian targets approached the project area. Establishing a marine radar system, with support equipment, in remote areas is extremely demanding, particularly in forested areas with limited road and seasonal access. Fall (2002) surveys were conducted on a north facing slope, at the highest accessible elevation that afforded a clear viewshed in the direction of the fall migration; a similar approach was taken for the spring survey with migration from the south. In both areas individual trees were removed in support of obtaining a clear viewshed.*

   The spring 2004 survey site was particularly challenging due to late winter/early spring road and trail conditions as well as the controlled access restrictions in place within the adjoining US Navy lands. The radar unit was situated in a saddle between the southeast end of the Black Nubble development area and the

southern end of Redington Mountain. This particular location was chosen in order to determine how avian targets were moving through the valley between the two project areas. Both survey locations were reviewed in advance by MDIFW biologists and determined to be appropriate for evaluating local avian passage rates and flight direction.

As noted in the application, the radar was operated at a maximum range of 0.5 nautical miles (3.038 ft) to facilitate recordings of small passerines. The range setting enabled a view from the southeastern slopes of Black Nubble across and over the valley floor to the western slopes of Redington. Surveys were conducted in accordance with protocols in use by radar ornithologists at the time of the survey and further supported by coordinated acoustic monitoring studies that included a recorder at the radar site and Redington summit, and ceilometer surveys. Passage rates and directions for fall 2002 and spring 2004 surveys are presented in RWF LURC application Tables 7-7 and 7-8, respectively.

<u>Bicknell's Thrush Habitat Fragmentation</u>. Past and ongoing local timber harvesting practices have affected the availability of Bicknell's thrush habitat. Additional impacts associated with the project are minimal in respect to the amount of local habitat available. Figure 1 (attached) has been prepared in order to depict existing 'locally' available forestland potentially capable of supporting Bicknell's thrush habitat. The figure includes the Redington, Black Nubble, Crocker, Stony Brook, Sugarloaf, and northwesterly portion of the Mt Abraham summits, but does not include Bigelow Mountain ridgeline or other surrounding areas above 2700' elevation. The figure depicts 2700' and 3000' elevations points; recently harvested areas are not considered available breeding habitat because of the type and extent of harvesting. Total area calculations of available forested (i.e., uncut, balsam fir-dominated) habitat above 2700' and 3000' elevations are 9218 acres and 6037 acres, respectively. Consequently, clearing activities associated with the project represent 0.92% (84 acres) of the available Bicknell's thrush habitat above 2700' and 0.85% (51 acres) of the habitat above 3000'. The percentage of cleared project areas in relation to viable Bicknell thrush habitat available at a larger and regional landscape level is obviously even more limited (see Figure 2 - Bicknell's Thrush Habitat Map; VINS 2005). Field surveys at Redington included observations of Bicknell's thrush below 2700 feet and along the edges of clearcuts. These clearcuts also frequently extended above the 2700 and 3000' elevation points (Figure 1).

The effects of fragmentation on Bicknell's thrush habitat requires further study, including determinations as to whether edge creation or road development can actually enhance breeding habitat quality. Recent and ongoing studies at Whiteface Mountain and other ski resorts in Vermont have supported past observations of the preference for this species to utilize dense regenerating growth that often characterizes the edges of ski slopes and mountain roads (Glennon & Karasin 2005, Rimmer et al. 2004). These studies have documented higher nest densities near ski trail edges, and have determined these edge effects

do not exert an "important influence" on rates of nest predation (Rimmer et al. 2004). Studies at 2 ski Green Mountain areas (Mt. Mansfield and Stratton Mountain) documented 57% of all nests within 10m of a ski trail edge, with 45% of these ≤2m from the edge (Rimmer et al. 2005). Similar studies at East Mountain VT determined a 4.8m mean distance of nests from nearest edge in 2005 (n=8, SD = +/-2.5) and 10m (n=4, SD= +/- 6.1) in 2004 (Rimmer et al. 2006, Rimmer & Faccio 2004, respectively). These studies help explain some of the incidental observations made at the RWF project area of male Bicknell's thrushes commonly calling and displaying from the edges of existing meteorological ("met") tower openings, and serve to indicate conservation efforts for Bicknell's thrush, as an obligate montane forest specialist, need not necessarily rely on core forest interior habitats.

3. *Post-construction Monitoring. The applicant agrees to conduct monitoring for a period of three years. Locations of individual turbines to be studied will be pre-selected in advance in conjunction with MDIFW staff. All night surveillance efforts will be coordinated the following morning with a carcass search of all cleared, open areas located at the base of the turbine.*

4. *Mitigation. Should post construction monitoring results establish that some type of mitigation is required, a mitigation program will be implemented in conjunction with MDIFW.*

Comments from Karen Morris – Wildlife Division – Mammal Group

There are 8 species of bats that might be found at this site rather than the 7 mentioned. The eastern small-footed myotis *(Myotis leibii)* was left off of the list of bats likely to be in the area. This is a Federal Species of Special Concern and is proposed for Special Concern Status in Maine. We have records of them hibernating about 30 miles to the south and a mist net capture a bit north of Redington so I would suspect that they might be encountered there. However, as there is not a lot of bat activity and most of the activity appears to occur well below the rotor swept area, there does not appear to be any reason to suggest any changes in the development. Of course we may want to take a look at bat strikes once the project is up and running.

I think they have addressed issues related to northern bog lemmings pretty well in the revised plan. They have moved towers out of the lemming habitat and the road has been moved out as much as possible (to edge of their ownership and nearly to the edge of likely habitat) so I think they have done as much for avoidance as they can. Post construction monitoring for this species would be desirable.

Response

1. *Eastern small-footed myotis (Myotis leibii). Eastern small-footed myotis (Myotis leibii), a Federal Species of Concern, was originally not included as it was*

thought to be beyond the northern limits of its typical range and had not been previously reported in response queries to USFWS and MDIFW.

Little is known about the summer ecology of the eastern small-footed bat. Summer roosts are generally on the ground under rocks or often in trees, behind loose bark, on rock outcrops and on rocky ridges. They are believed to feed primarily on flying insects such as beetles, mosquitoes, moths, and flies, and typically forage in and along wooded areas at or below canopy height, over streams and ponds, and along cliffs and ledges (Erdle & Hobson 2001). They are reported to select coniferous over deciduous stands to hawk over and within (ME Gap Analysis 2003). In winter, most are found individually or in small groups in caves or wedged in rock crevices. They seem to be more tolerant of winter extremes than most other bat species (Erdle & Hobson 2001).

In regard to potential project impacts on this species, none are anticipated. This is due to 1) the limited preferred roosting habitats in the higher elevations with limited rock outcrops and extensive small diameter balsam fir vegetation, 2) the reported below canopy foraging habits of the eastern small-footed myotis and for Myotid species in general, and 3) general high wind (i.e., low density foraging opportunities) conditions found at this elevation.

Comments from Bob Cordes – Wildlife Division – Region D

I concur with Karen and Tom's comments, and would like to reiterate the strong need to further discuss and define a monitoring protocol that encompasses the construction phase through an agreed on period of time post-construction/operation. This monitoring is probably as important as the pre-construction studies completed to date.

I have a few additional comments or clarifications to add:

There is very little mention of vernal pools in the wetlands mapping and discussions of herpetiles. Is this because vernal pools were not much of an issue at the time of the wetland surveys (therefore not mapped), or combined into the forested wetlands description, or that no vernal pools were found during the survey? It is probably not much of an issue because the applicant has taken steps to avoid wetland habitats when possible/practical, but I thought I would inquire.

There could be a minor issue with loose wires on-site during construction. I would request that wires be neatly stored during and after the construction phase and not left loose on-site for moose or other animals to become entangled.

I would like to offer an additional statement to the paragraphs regarding the Canada lynx surveys. These surveys are not intensive; rather they are a reflection of a snapshot in time indicating only the presence of lynx in an area. If lynx are not recorded during this it doesn't mean that they are absent from the project area, just not detected in the survey. It doesn't change anything because this project shouldn't impact a lot of lynx habitat.

Finally, I was curious about the maintenance, replacement, and removal of the turbines. Is there a mechanism in place for the removal of the turbines whey they have reached their lifespan or this project is terminated? This may be an indirect wildlife issue, but if the Wind farm project is terminated at some point in time, will these towers be removed or remain a permanent fixture in the landscape?

Response:

1. *Construction/Post-Construction Monitoring Protocol. The applicant agrees to post-construction avian monitoring and a plan will be developed with MDIFW.*

2. *Vernal Pools. The project has been designed to avoid and minimize all wetland impacts, including those to vernal pools. Surveys for amphibian breeding habitat, including vernal pools, were conducted as part of the original and ongoing habitat surveys. No vernal pools, as defined by MDIFW and regulated in Maine, were observed within the project area. Several small temporary pools and basins in the project area were found to contain a limited number (<10) of egg masses but are expected to be avoided during construction. Several lower elevation roadside pools, created during the original road construction, were observed to contain larger numbers of wood frog and numerous spotted salamander eggs. These pools however are not regulated as breeding habitat due to their anthropomorphic origins. Regardless, impacts to these pools are not anticipated.*

3. *Loose wires. Any loose wires needing to be left on site at any time will be removed or neatly stored so as to not cause entanglements with wildlife.*

4. *Lynx. We concur with the comments regarding survey effort and opportunity for lynx to occur in the project area. We do not anticipate this project will affect local or regional lynx habitat conditions or quality.*

5. *Turbine Removal. All equipment and materials brought onto the site will be removed from the mountain during the decommissioning of the project.*

References:

Erdle, S.Y., and C.S. Hobson. 2001. Current status and conservation strategy for the eastern small-footed myotis (*Myotis leibii*). Natural Heritage Technical Report #00-19. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA.

Glennon, M. and L. Karasin. 2005. Use of Whiteface Mountain by Bicknell's Thrush and other montane forest bird species. Wildlife Conservation Society. Saranac Lake, NY.

Maine Gap Analysis. 2003. Eastern small-footed myotis (*Myotis leibii*) Maine Cooperative Fish and Wildlife Research Unit. Orono, ME. http://www.wle.umaine.edu/temp_unit/gap/index.html

Rimmer, et al. 2004. Evaluating the use of Vermont ski areas by Bicknell's Thrush: applications for Whiteface Mountain, New York. Vermont Institute of Natural Science. Woodstock, VT.

Rimmer, C.C. and S.D. Faccio. 2004. Ecology and demography of Bicknell's Thrush on east Mountain, East Haven Vermont: evaluating potential impacts of wind turbine construction. Vermont Institute of Natural Science. Woodstock, VT.

Rimmer, C.C., J.D. Lambert, and K.P. McFarland. 2005. Bicknell's Thrush (*Catharus bicknelli*) Conservation Strategy for the Green Mountain National Forest. VINS Technical Report 05-5. Vermont Institute of Natural Science. Woodstock, VT.

Rimmer, et al. 2006. Ecology and demography of Bicknell's Thrush on east Mountain, East Haven Vermont: evaluating potential impacts of wind turbine construction. Year 2 progress report. VINS Technical Report 06-01. Vermont Institute of Natural Science. Woodstock, VT.

VINS 2005. Bicknell's thrush habitat map. Vermont Institute of Natural Science. Woodstock, VT. (http://www.vinsweb.org/assets/jpg/BITHmap.jpg) and http://www.vinsweb.org/cbd/mbwmapsgis.html