The following is in response to application review comments received from Art McGlauflin's April 10, 2006 memo to LURC. For ease of reference, we have included Mr. McGlauflin's comments along with our responses below. MMP is still working on a response to Comment 1 as a result of a May 23, 2006 memo from David Rocque.

Comment 2:

The proposed roadway design and erosion and sedimentation control plans do not specify the surface treatments and drainage measures to be used for the roadway surfaces.

The roadway design narrative, in particular, says that this will be left to the applicant. I recommend that the design engineer prepare a surface treatment and road surface drainage "tool kit" for this project. It can be brief.

Surface treatments (chip seal, reclaim, or mix-in place treatments) should be mandatory on very steep sections of roadway (those greater than 10%) and on curves (e.g. switchback sections) where runoff velocity and vehicle wearing can be expected to be greatest.

Frequent grading can be used on the remaining, gravel-surfaced sections. A very tight specification for the surface gravel should also be provided, as gravels too rich or too poor in fines are more prone to washing and rutting.

Broad-based drainage dips should also be used to drain water off road sections where topography will create long drainage lengths on the road surface (> 140 feet at 5% grade, > 80 feet at a 10% grade, and > 60 feet at a 15% grade).

Without these simple measures, rilling and rutting of the travel surface and inslopes will likely be frequent and severe.

Response:

The applicant proposes to treat the roadway surface where grades exceed 10% and at switchbacks with Lignin Sulfonate (tree sap) or other surface stabilizer. The applicant also proposes to use a special surfacing gravel/rock which is to be specified by S. W. Cole Engineering or another qualified engineer.

On steep road sections the use of reclaimed asphalt, processed shale, and the special surfacing gravel/rock is proposed to limit the potential for erosion. During the construction period of the project the use of these surfaces and stabilizing treatments will be employed to reduce the need for drainage dips and water bars. As needed, broad-based drainage dips will be installed at the spacing determined by final road design along proposed access roads. Along mountaintop roads, conveyor belt water bars will be employed as needed at the spacing determined by final road design to accommodate low clearance haul equipment using the mountaintop roads between turbine sites. Once construction is complete, any conveyor belt water bars will be removed and replaced with broad-based drainage dips for ease of maintenance. Construction details for these drainage dips and bars will be provided in the final LURC submission.

Comment 3:

The design engineer should revise the erosion and sediment control plan to impose specific maximum lengths for the areas disturbed by grubbing and areas disturbed by roadway construction. The current plan defines a segment length as that which can be constructed in one week (page 26) or in four days below elevation 2700 feet and two days above elevation 2700 feet (page 33). A working segment based on construction time is impossible to enforce in the field. I recommend that the lengths of disturbance be limited as follows:

	Below 2700'	Above 2700'
Alignment length cleared but not grubbed (trees cut, brush cut, logs removed)	unlimited	1200 ft.
Alignment length grubbed (stumps pulled, boulders removed, surface soil stripped, etc.)	600 ft.	400 ft.
Alignment length under active roadway construction (cuts made, road fills placed, no permanent stabilization done)	600 ft.	400 ft.
Total soil disturbance at any time for all construction activity	3 acres	1.5 acres

Response:

The contractor will be required to install temporary and permanent control measures as provided in the project drawings and erosion and sediment control report as construction of roads progresses. The applicant is of the opinion that a working segment based upon construction time will be possible to enforce with a field engineer on site required to log daily activities by stationing.

Comment 4:

The bridge design section did not provide any design recommendations or plans for the two, new crossings for the Redington Access Road. The applicant will need to submit the completed crossing designs for review and approval. To avoid any significant alterations to stream morphology, each crossing structure must span the floodway/floodplain (if any) rather than just the stream banks.

Response:

No new bridge crossings are proposed for the Redington access road.

Comment 5:

The design engineer needs to complete and submit for review the "Cross Drainage Options" table on details sheet C20. The hydrology design for the roadway is supposed to be based on

preserving natural drainage seeps and channels. The applicant should make it clear on the table that all existing subsurface and surface drainage features identified in the field will be preserved along the roadway alignment by use of stone cross drains, cross culverts, or, when necessary, both. The use of long roadway ditches must be avoided in favor of short sections of ditches flowing to frequent cross drains. While siting cross drainage should always be based on local topography and soils conditions, I suggest that cross-drainage be provided not less than every 200 feet on this steep terrain.

Response:

The cross drainage options detail on Sheet C-20 has been revised and is attached. Notes have been added to clarify that all existing subsurface and surface drainage features identified in the field are to be preserved along the roadway alignment by use of appropriate measures. Notes A and B on the current project profile drawings currently indicate that culvert spacing will not exceed 200 feet; Note C on these drawings will be edited to also reflect this 200-foot requirement.

Comment 6:

The use of flow dispersion berms and ditch turnout spreaders on this project needs to be carefully controlled. While spreading devices are desirable, they need to be sited with the realization that flows will re-concentrate within 100 feet on terrain this steep. For this reason, each flow dispersion berm and turnout must be sited so that flows will enter an identifiable channel (drainage swale, brook, or stream) within 100 feet. This should be noted on the road ditch turnout detail on plan sheet C23 and the flow dispersion berm detail on plan sheet C22.

Response:

These notes have been added to the respective details on Sheets C-22 and C-23 attached.

Comment 7:

The ditch lengths flowing to a flow dispersion berm should be limited to the same maximum ditch lengths as for road ditch turnouts. These dispersion berms should also be limited to use with culverts less than 18 inches in diameter. Flows from larger culverts should be reconnected to existing channels using lined waterways. The terrain is just too steep and the soil conditions are just too poor to effectively spread larger flows without erosion.

Response:

This note has been added to the respective details.

Comment 8:

The stone cross drains and cross culvert details on plan sheets C20 and C22 should show the stone-drain invert or cross-culvert invert even with the bottom of the riprap layer rather than

even with the top of the riprap layer. Since most flows will travel through the riprap rather than on top of it, the cross drainage must be low enough to prevent by-pass of flows. In most cases, a small pool should be created at the inlet of each cross-drainage structure to guarantee flow by-pass will not occur.

Response:

A small pool is provided at the inlet of culverts as shown on Sheet C-22, details E and D. The stone sandwich cross drainage detail has been amended on Sheet C-22 to align with the bottom of the riprap in the riprap ditch.

Comment 9:

To facilitate the identification of the drainage features in the field, the field design team needs to include a wetland/soils scientist familiar with mountain soils and hydrology.

Response:

The team will include a wetland/soils scientist familiar with mountain soils and hydrology.

Comment 10:

The erosion and sedimentation control plan indicates the frequent use of uphill diversions to control runoff passing through the construction area. The design engineer needs to explain under what circumstances these diversions will be left as permanent structures and under what circumstances they will be removed and the area stabilized. (As a matter of preserving the natural hydrology as much as possible, the diversions should be removed in most cases.)

Response:

The diversions will only be removed in areas where a trap rock sandwich is required under the roadway to maintain hydrology.

Comment 11:

The erosion and sedimentation control plan needs to indicate how flow estimates will be made in the field so to choose stone-sizing for diversions. Who will make these estimates? Are stone mixes in the range of d50s specified actually available in this location? Are stone specifications this exact really necessary? Could the project get by with two stone sizes, such as d50 = 4 inches and d50 = 8 inches?

Response:

Flow estimates in the field will be made by a field engineer engaged by the contractor. From speaking with contractors in the area, there is an abundance of available rock and nearly any

size d50 can be processed. Stone specifications this exact are not really necessary and the more conservative size can be used.

Comment 12:

The erosion and sedimentation control plan needs to indicate where and how mucks excavated from wetland areas and seeps will be disposed. These soils would be best utilized for any wetland mitigation needed for this project. If such mitigation is not necessary on this project, then the soils can be incorporated into more granular fills for use as a loam substitute.

Response:

Mucks will be stockpiled and stabilized within the project area where no additional clearing of vegetation is required and will be mixed and incorporated into the project where appropriate.

Comment 13:

The erosion and sedimentation control plan should specify methods for stump disposal other than burying them on the mountain. Burying the stumps seems an unnecessary disturbance and is likely to be difficult to accomplish on the shallow soils at higher elevations. The stumps would be better "disposed" by grinding them and incorporating them into erosion control mix for use as slope stabilization.

Response:

It is the applicant's intent to process as many of the stumps on site as practicable and incorporate them into the erosion control mix used for the project. It is anticipated that approximately 50% of the stumps generated by the project will be buried.

Comment 14:

Section 7.3 of the erosion and sedimentation control plan should be revised to specify "erosion control mix" rather than "wood waste" as a stabilization material. Wood chips are not suitable slope stabilization material, as the chips knit together very poorly and are easily moved by surface runoff and seeps. Stump grindings may be suitable for slope stabilization provided the grinding mix meets the MDEP specifications (attached).

Response:

Where the term "wood waste" is used, it will be amended to erosion control mix or stump grindings meeting the Maine DEP specification for erosion control mix throughout the project application for the final LURC submission.

Comment 15:

The design engineer should make an estimate of the volume of erosion control mix necessary for this project, indicate where this volume of material will be obtained, and indicate where it will be stockpiled for construction. Steep slopes and a short growing season will likely require extensive use of erosion control mix on the project.

Response:

On the order of 20,000 cubic yards of erosion and sedimentation control mix is estimated to be required for this project. Approximately 45,000 cubic yards of stumps are estimated to result from the proposed development; therefore, processing less than 50% of these stumps would provide the required erosion control mix for the project. New England Organics has been contacted and has indicated they could provide on the order of 10,000 cubic yards of erosion control mix for this specific project in any given year.

Erosion control mix will be stockpiled within the footprint of the project where no additional clearing of vegetation is required.

Comment 16:

The design engineer should revise section 3.2.4 of the erosion and sedimentation control plan to specify the timeframes for completing ditch stabilization. Permanent ditch stabilization measures must be installed within 24 hours of completing the final grading for any section of ditch.

Response:

Section 3.2.4 of the erosion and sedimentation control plan will be amended to reflect this requirement in the final LURC submission.

Comment 17:

The design engineer should revise the erosion and sedimentation control plan to specify the timeframes for completing slope stabilization. Permanent slope stabilization measures must be installed within 48 hours of completing the final grading for any section of slope.

Response:

The erosion and sedimentation control plan will be amended to reflect this requirement in the final LURC submission.

Comment 18:

The technical ability section of the application specifies no technical requirements for selecting a contractor for this project. I recommend that LURC find no contractor acceptable unless that contractor has as a project resident who is an engineer (or other qualified professional) with

IECA or Maine NPSTC certification in erosion control and who has been employed with the contracting company at least one year.

Response:

The applicant will employ a contractor who has the appropriate certifications.

Comment 19:

As a matter of reducing the disturbance of fragile mountain areas, can the Redington Summit Roadway between stations 1774+00 and 1885+00 be eliminated and the turn-around between turbines three and four extended back to Redington Summit Roadway so to provide access to turbines five through eleven? This would eliminate about 800 feet of roadway (see attached photocopy of portion of project road plan sheet C6).

Response:

In the final development plan we will present the most cost effective and least environmentally disturbing alternative.

Comment 20:

As a matter of reducing the disturbance of fragile mountain areas, can turbine twelve be eliminated from the project and the project still be economically viable? 2600 feet of summit roadway is being built to access just this one turbine.

Response:

The final detailed design will be the most cost effective and least environmentally disturbing as practicable, while maintaining the performance requirements of the project.

Comment 21:

As a matter of reducing the disturbance of fragile mountain areas, the alternate route to turbines twenty and twenty-one is preferable. The alternate route is shorter in length and does not encroach on the property line.

Response:

In the final development plan we will present the most cost effective and least environmentally disturbing alternative.