THE STATE OF NEW HAMPSHIRE
BEFORE THE
NEW HAMPSHIRE
SITE EVALUATION COMMITTEE

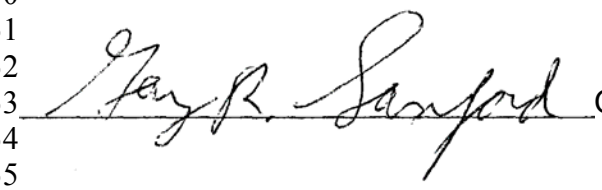
DOCKET NO.2008-04

RE: APPLICATION OF GRANITE RELIABLE POWER, LLC
FOR CERTIFICATE OF SITE AND FACILITY
FOR GRANITE RELIABLE POWER WINDPARK
IN COOS COUNTY

SUPPLEMENTAL TESTIMONY OF DR. GARY R. SANFORD ON BEHALF OF COUNSEL FOR THE PUBLIC

FEBRUARY 2009

I, Gary R. Sanford, Ph.D., do hereby state under the pains and penalties of perjury that the following attached testimony is true.



Gary R. Sanford, Ph.D.

On page 9 line 1-3 of my December 2008 testimony I noted that there may be additional measures that can be taken to further minimize impacts to wetlands. Among these potential measures are steeper side slopes leading to proposed wetland impact areas, use of hard engineering measures, realignment of roadway sections, and modifying the geometry of areas to be altered. After reviewing the latest plan set provided to me by Horizons Engineering on February 17, 2009 ("February 2009 Plan Set"), I have identified a number of examples where further impact reduction could potentially be accomplished. These examples do not exhaust the number of opportunities available to reduce impacts, but are identified in order to emphasize the availability of such opportunities.

The following examples currently have proposed slopes of 1 ½ to 1. Steeper slopes, including vertical walls, must be appropriately evaluated and designed by the project engineer and hence these examples represent only a limited number of potential opportunities for impact minimization. In my opinion a more exhaustive review of the February 2009 Plan Set would uncover many more such opportunities for additional wetlands impact avoidance and minimization.

Example 1 - Impact Area 102-1. Because of the length of proposed impact, for every foot the slope width is reduced there would be a corresponding reduction in impact of 150 s. f.

Example 2 - Impact Area 105-2. Because of the length of proposed impact on both sides of the proposed road, for every foot the slope width is reduced there would be a corresponding reduction in impact of 150 s. f.

Example 3 - Impact Area 105-3. Because of the length of proposed impact on both sides of the proposed road, for every foot the slope width is reduced there would be a corresponding reduction in impact of 120 s. f.

Example 4 - Impact Area 105-5 West Side of Proposed Road. Because of the length of proposed impact, for every foot the slope width is reduced there would be a corresponding reduction in impact of 40 s. f.

Example 5 - Impact Area 105-6. Because of the length of proposed impact, for every foot the slope width is reduced there would be a corresponding reduction in impact of 110 s. f.

Example 6 – Impact Area 105-7. Because of the length of proposed impact, for every foot the slope width is reduced there would be a corresponding reduction in impact of 80 s. f.

Example 7 - Impact Area 105-8 East Side of Proposed Road. Because of the length of proposed impact, for every foot the slope width is reduced there would be a corresponding reduction in impact of 40 s. f.

Example 8 - Impact Area 105-11. Because of the length of proposed impact, for every foot the slope width is reduced there would be a corresponding reduction in impact of 290 s. f.

Example 9 – Impact Area 120-1. Because of the length of proposed impact, for every foot the slope width is reduced there would be a corresponding reduction in impact of 200 s. f.

Example 10 – Impact Area 123-5. Because of the length of proposed impact, for every foot the slope width is reduced there would be a corresponding reduction in impact of 60 s. f.

Example 11 – Impact Area 129-5. Because of the length of proposed impact, for every foot the slope width is reduced there would be a corresponding reduction in impact of 80 s. f.

Example 12– Impact Area 129-6. Because of the length of proposed impact, for every foot the slope width is reduced there would be a corresponding reduction in impact of 70 s. f.

Because of the length of impacts to wetlands, a small reduction in slope width can result in a large reduction in impacts. If slope widths in all of the above examples were to be reduced by only one foot, there would be a corresponding reduction in impacts of

1,390 s. f. The certificate should be conditioned upon the Applicant going through the plans, identifying all such opportunities and conducting an appropriate analysis regarding the feasibility of making additional wetlands impact avoidance and minimization, providing the Committee a report concerning that analysis, and making changes to the plans and design to implement those changes that are feasible.

At a meeting with the Applicant and its consultants on February 17, 2009, we discussed an important opportunity for further impact avoidance and minimization. In many instances, particularly at higher elevation impact locations, bedrock may be very close to the surface. Because the Applicant has not done a geotechnical survey of much of the proposed road route in the high elevation areas it is uncertain the extent to which the project will need to impact wetlands with sloping cuts. Some of these areas have planned sloping cuts where the geotechnical survey could reveal that vertical cuts through bed rock could be employed. I would recommend that a condition to the certificate be included which would require that the Applicant utilize the results of the geotechnical survey in high elevations to redesign the road to eliminate sloping cuts into wetlands whenever possible.

Finally, based upon my review of the proposed wetlands, water quality and terrain alteration permits, I would recommend the following additional conditions be incorporated:

1. The new ditch systems be considered as mitigation for the impacted ditches and that they have the same monitoring conditions that DES imposed on the vernal pool creations.

2. The wording for the vernal pool creations should be changed to allow for "up

to 8" vernal pools. It may be that creation of a smaller number of vernal pools (that total 3,600 sq.ft.) is more appropriate.

3. A condition should be included that requires monitoring of the hydrology of the vernal pools and remediation within one year if the vernal pools do not hold water for a minimum of two months during the vernal pool season.

4. Add a condition that prohibits in-stream work during high flow conditions.

5. Add a condition that requires the applicant to implement additional measures to lessen the amount of wetland impacts (such as retaining walls where practical and/or modifying the layout of the roadway and pads) if location specific soils, grading or geotechnical information allows.

6. When the proposed road cuts through a sloping wetland a cut face will be created that may bleed ground and surface water from the up gradient portion of the wetland. In order to avoid disrupting the flow of ground and surface water to the down gradient portion of the wetland a means of transporting this water under the road is required. Add a condition requiring the use of a “rock sandwich” wherever needed to maintain groundwater flow under the proposed road to down gradient wetlands.