

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

**Petition of BNE Energy Inc. for a
Declaratory Ruling for the Location,
Construction and Operation of a 4.8 MW
Wind Renewable Generating Facility on
Winsted- Norfolk Road and Rock Hall Road
Colebrook, Connecticut**

Petition No. 984

May 4, 2011

REBUTTAL PRE-FILED TESTIMONY OF CURTIS C. JONES

Q16. Mr. Jones, please state your name and position.

A16. Curtis Jones. I am the President of Civil 1. I am a licensed Professional Engineer (P.E.) in Connecticut and a LEED Accredited Professional (LEED AP). Civil 1 has offices at 43 Sherman Hill Road in Woodbury, CT.

Q17. You previously filed testimony in this proceeding. Why are you submitting this supplemental testimony?

A17. Supplemental testimonies were filed by Michael S. Klein and William F. Carboni providing comments regarding the plans submitted for Colebrook North. The purpose of this supplemental testimony is to provide a rebuttal to comments and conclusions made by Mr. Klein and Mr. Carboni.

Q18. Did you review the supplemental testimony of Michael S. Klein and William F. Carboni dated April 27, 2011 and May 2, 2011 respectively?

A18. Yes, I did.

Q19. What is your general response to Mr. Klein's and Mr. Carboni's supplemental testimonies?

A19. In general, I find their comments flawed and misleading. Many of the statements result from a lack of understanding and a misreading of the plans and calculations.

We disagree that the plans do not ‘fully comply with the minimum standards for erosion control and stormwater management’ and with the statement that ‘significant erosion will occur.’ There are several comments stating that the plans do not meet the requirements of the 2002 Guidelines for Soil Erosion and Sediment Control (the Guidelines). Notwithstanding the fact that many of the statements are erroneous, as we shall testify to later in this testimony, the Guidelines are just that- guidelines. They are not intended to replace the experience and professional judgment of the professional engineer. Not all measures included in the Guidelines are applicable to all sites. In some cases, different measures may be utilized for a specific situation. It is up to the professional judgment of the engineer to choose appropriate mitigation measures. Additionally, the plans as presented are preliminary drawings. If the Siting Council approves the project, then final construction drawings will be prepared during the Development and Management (D&M) phase.

Q20. Do you have specific concerns regarding Mr. Klein’s supplemental testimony?

A20. Yes.

Q21. Can you please tell us what those concerns are?

A21. Mr. Klein makes several statements that are inaccurate in his testimony. First, I would note that Mr. Klein is not a professional engineer and therefore is unqualified to make many of the statements that he has made.

In A24 Mr. Klein states that over 10 acres of mature forest will be cut including the acreage which has already been cut to install the meteorological tower. This is untrue. There is no meteorological tower on the site. As the Council saw in its field review of this Site, there is a

Sodar unit which measures wind velocity and direction and measures approximately six feet tall. There were approximately 1.1 acres cleared for the Sodar site. With the additional 7.85 acres that will be cleared for the project, the total aggregate amount of clearing is 8.95 acres. Of the 8.95 acres total aggregate over half or 4.88 acres will be restored for a net change of 4.07 acres.

Q22. Do you have further concerns with Mr. Klein's testimony?

A22. In A26 Mr. Klein states that there are deficiencies in the topographic data and characterizes the site as steeply sloping. There are no deficiencies or omissions in the data as Mr. Klein states. Further there is no acknowledgement that the topographic data is inadequate nor that further design cannot be completed. As has been stated in previous responses to interrogatories the topographic data in the area of the wetlands crossing is based upon very accurate field measurements. The remaining topographic data presented is based upon Lidar information provided by the State of Connecticut. Additionally, the centerline elevations of the proposed roadway have been field measured and compared to the Lidar information. The field survey information compares favorably with the Lidar information with comparative precision ranging from zero to two feet. Therefore, we can definitively state that the topographic data is adequate for the present phase of the project.

As also previously stated in the response to interrogatories, the plans presented are for preliminary evaluation and do not represent final construction drawings. Additional field topographic work will be completed for final design if the CT Siting Council approves the project.

We also disagree with the characterization of the site as being steep with significant cuts and fills. The centerline cuts and fills for the access road do not exceed eight feet and more generally are in the three to four foot range. The maximum road grade is 9.9%.

Mr. Klein further states in A26 that the revised plans still do not meet the requirements of the 2002 Guidelines, the CT Stormwater General Permit, the CT DEP Stormwater Quality Manual or the CT Surface Water Quality Standards. We disagree. We reiterate that Guidelines are not requirements. The preliminary plans submitted will be supplemented with detailed geotechnical information which will be gathered during the (D&M) phase should the CT Siting Council approve the project. The implementation of the plans will not result in any violation of the CT Surface Water Quality Standards.

Q23. What other concerns do you have regarding the supplemental testimony of Mr. Carboni and Mr. Klein?

A23. In Q27 Mr. Klein makes the statement that significant erosion will occur. We strongly disagree that significant erosion will occur. As noted in the Stormwater Pollution Prevention Plan and the Erosion Control Plan, a variety of measures will be utilized to control and minimize erosion. Additionally, and equally important, regular inspections will occur during construction. These inspections will occur weekly or after any rain event greater than 0.1". These inspections will recognize any incipient issues with regards to erosion control and corrective action will then be taken. Therefore the statement that the sediment will degrade the wetlands and destroy fish habitat is incorrect.

Q24. What other concerns do you have regarding the supplemental testimony of Mr. Carboni and Mr. Klein?

A24. In A28 Mr. Klein makes a long series of unsubstantiated and misleading statements. While it is true and we agree that the plans are preliminary in nature, we disagree that the supporting documentation suffers from technical deficiencies. It is not clear from the testimony what technical deficiencies Mr. Klein is referring to in this statement.

We have not stated that there are no direct impacts to the wetlands. Clearly the installation of two box culverts to create an access driveway which requires the filling of 4,860 square feet of wetlands is a direct impact.

Mr. Klein's statement that there are no reverse slope benches on slopes steeper than 3:1 and higher than 15' is true. There is one small area of the project where the proposed temporary slope is steeper than 3:1 and higher than 15'. This occurs at the location of the downhill leg of the blade assembly area for turbine #3. This temporary slope is 2:1 and approximately 16' high. There is no significant uphill drainage area above this location since there will be a temporary diversion ditch above this area during construction. Runoff from the area in question will flow into temporary sediment trap #1 (TST #1) which is approximately 895' upgradient to the closest wetlands.

However, Mr. Klein's statement is misleading because a reverse slope bench is only one of many measures suggested by the Guidelines for these types of situations. Chapter 5 Section 2 of the Guidelines entitled "Preserve and Conserve Soils" on page 5-2-5 in the paragraph entitled 'Structurally Stabilized Slopes' suggests that slopes steeper than 2:1 or slopes steeper than 3:1 and higher than 15' without a cross slope bench can be stabilized utilizing engineered structural design measures which may include those found in Stabilization Structures Functional Group referred to as Figure 3-4 but actually labeled Figure 3-2 in the Guidelines. There are many measures listed in this figure which are considered appropriate in these circumstances. It is left to the judgment and experience of the Engineer to choose the appropriate measure.

Mr. Klein's statement that the stone check dams do not meet the criteria for spacing or height is mistaken because there are no check dams shown in the roadside ditches nor are they

suggested by the Guidelines. The roadside ditches are lined with riprap and hence will not erode as stated by Mr. Klein.

Mr. Klein's statement that the project does not control non- point source pollutants is also mistaken. We have already testified that the final plans and construction inspections will prevent sedimentation of the wetlands and watercourses. The Project will not result in discharge of phosphorous and nitrogen that will impair the site wetlands. Disturbed areas of the site will be revegetated following construction with a variety of native herbaceous vegetation. The proposed low maintenance plantings will not require fertilization or inputs of anthropogenic nutrients required to maintain turfgrasses typically found in residential developments.

Q25. Are there other concerns you have regarding the supplemental testimony of and Mr. Klein?

A25. Yes in A29 there is again a long series of statements which are either untrue or misleading. Additionally some comments are clearly outside Mr. Klein's area of expertise.

As has been stated in previous responses to interrogatories the topographic data in the area of the wetlands crossing is based upon very accurate field measurements. The remaining topographic data presented is based upon Lidar information provided by the State of Connecticut. Additionally, contrary to Mr. Klein's testimony, the centerline elevations of the proposed roadway have been field measured and verified and compared to the Lidar information. The field survey information compares favorably with the Lidar information with comparative precision ranging from zero to two feet. Based upon my experience and judgment as an engineer this level of accuracy is appropriate for the current phase of the project. Final field topographic surveys will be completed if the Siting Council approves the project.

Contrary to Mr. Klein's testimony, a statement regarding the dewatering measures have been provided in the Construction Sequence for Culvert Installation shown on Sheet C-500. We have indicated that groundwater from footing excavation for the proposed culvertswill be pumped to TST4 for dewatering. Final design of the dewatering features will be completed after the geotechnical investigations are conducted in the D&M phase if the Siting Council approves the project.

The only stone check dams shown are for temporary diversions around the proposed construction areas. Drainage areas contributing to these are typically 2 acres or less and will be used for a period of less than 6 months. These do not require an engineered design based upon the Guidelines. Additionally the drainage calculations we have prepared show 10 year design storm flow velocities of less than 4 fps. Grass-lined swales will adequately prevent erosion with these minimal flows and velocities and stone check dams have been shown only as an added mitigation measure.

Mr. Klein's statement is unclear and not specific regarding the silt fence and haybales. Silt fence is shown on the plans at the toe of fill slopes and is specified in accordance with the Guidelines. Details are shown on Sheet C-501, not C-502 as stated by Mr. Klein.

Any material generated with the initial excavation of the site can easily be stockpiled temporarily in the crane assembly area west of the proposed wetlands crossing. Once the crossing is complete, material can be stockpiled on the larger stockpile area shown east of the crossing. Contrary to Mr. Klein's testimony, this larger stockpile area will not be subject to runoff from a large upslope area because the upslope area will be cut off by permanent drainage swales as shown on the plans. The contributing drainage area will be less than 0.5 acres and silt fence will provide adequate erosion and sediment control in accordance with the Guidelines.

The proposed infiltration trenches are shallow 2' deep trenches and in all cases accept a minimal drainage area from a small portion of the gravel drive and vegetated shoulder and fill slopes. The proposed maintenance driveway will not have typical road traffic and winter maintenance associated with a residential subdivision and therefore the pollutant loading will be minimal. Contrary to Mr. Klein's testimony, pre-treatment for the infiltration trenches will occur as drainage will be filtered through the vegetated shoulder near the infiltration trenches. Vegetated grass shoulders are recognized as pretreatment measures as shown on page 11-P3-7 of the 2004 Stormwater Quality Manual.

Additionally, contrary to Mr. Klein's testimony vegetated grass strips are provided near the infiltration trenches. These areas range from 3' to 30' wide. The infiltration trenches accept minimal drainage from the site and accordingly chances of overflow are minimal. The trenches are located on relatively flat slopes and any potential for overflow and erosion are minimal. Subsurface information will be obtained for the final road and drainage design during the D&M phase should the Council approve the project.

The detail for Temporary Sediment Traps shown on Sheet C-305 shows modified riprap to be provided at the outlet for protection. This is in accordance with the details and design criteria in the Guidelines.

Mr. Klein's statement that a conflict would occur during the construction of the tower due to the physical arrangement of the assembly area reflects his lack of understanding of the construction process and is outside his area of expertise. The tower assembly will be brought onto the site and erected prior to any of the blades being brought onto the site. There will be no conflict as suggested.

Corduroy bridges and temporary skidder bridges are the typical measures used when crossing a wetland or watercourse for temporary construction access on the other side. These will span the proposed open bottom-culvert areas and therefore will result in no additional impacts. Details will be provided during the D&M phase should the Siting Council approve the project.

Contrary to Mr. Klein's assertion, 60 days is sufficient time for installation of the proposed culverts. In most cases the installation can be accomplished in three weeks or less. It has also been indicated that the installation will take place between July and September when the potential for large storm events is less likely.

Contrary to Mr. Klein's assertion, in the Construction Sequence for Culvert Installation shown on Sheet C-500 we have indicated that groundwater from footing excavation will be pumped to TST4 for dewatering. This dewatering operation will be fully designed in the D&M phase if the Siting Council approves the project. We disagree that the operation presents a reasonable likelihood of causing pollution to the wetlands and watercourses since it will be conducted utilizing the final plans and closely monitored.

Contrary to Mr. Klein's assertion, silt fencing has been shown to be installed right up to the edge of the watercourse. It is not recommended by this office that any measures be placed directly in the watercourse.

Again, contrary to Mr. Klein's assertion, the total cuts and fills are clearly shown on Sheet C-500. 4,950 CY of existing material on the site will be moved (cut and filled), indicating that the site is balanced based upon the proposed grading plan. Additionally off-site material (gravel/riprap) will need to be imported for construction (approx. 4,650 cubic yards).

We anticipate that the on-site topsoil will be used for restoration.

Mr. Klein's comment that the downhill slope of the blade assembly area is not graded properly reflects his lack of understanding of the construction process and is outside his area of expertise. The down-slope blade assembly areas have been graded out as necessary to allow the blade to cantilever out into the air as the majority of the weight of the blade is in the section closest to the hub. No additional supports will be required.

Contrary to Mr. Klein's statement, the grading for the stormwater basins is shown on the post-construction grading plan on Sheets C-401 and C-402. We question if Mr. Klein is looking at the correct set of plans when making his testimony that the grading may extend off the property since Stormwater Pond #1 is 325 feet from the property line and Stormwater Pond #2 is 395 feet from the property line.

Mr. Klein's statements with regards to questioning the 'assumptions' made for the design temporary sediment traps, permanent diversions, outlet protections, permanent stormwater basins, etc. is unclear and undefined. All of the design work and calculations for the erosion control and storm drainage measures were done using generally accepted engineering methodology and recommendations & calculations provided in the Guidelines, the 2004 Stormwater Guidelines and the 2000 CT DOT Drainage Manual. These calculations have previously been submitted as part of the record.

Q26. Are there other concerns you have regarding the supplemental testimony of and
Mr. Klein?

A26. Yes in A30 we disagree with Mr. Klein's conclusion that the plans are deficient and that construction will result in erosion and sedimentation. As we have noted above, his statements are mistaken and misleading. It is our professional engineering judgment that the project can be built according to all applicable laws and regulations of the State of Connecticut.

Q27. Do you have specific concerns regarding Mr. Carboni's supplemental testimony?

A27. Yes we have concerns.

Q28. Can you please tell us what those concerns are?

A28. In A29 Mr. Carboni states that the plans contain errors which will negatively impact the waters of the State. We will refute each of his statements and show that there are no errors in the plans and documentation which will negatively impact the waters of the State.

Q29. Do you have further concerns in Mr. Carboni's testimony?

A29. Yes. In A30 Mr. Carboni has misread the detention analysis in appendix K. There are two proposed stormwater ponds that provide renovation and detention for post-development stormwater. Stormwater Pond #1 is east of the proposed wetlands crossing and accepts 4.70 acres of drainage area. Stormwater Pond #2 is west of the proposed wetlands crossing and accepts 2.46 acres of drainage area. Therefore a total of 7.16 acres of land flow into the stormwater ponds, not 3.67 acres as Mr. Carboni states. Mr. Carboni's conclusion that the detention basin would have to be larger or that the project might not conform to the water quality standards is therefore invalid since it was based upon a flawed analysis.

Additionally, it is generally accepted engineering practice that not every single square foot of developed area must be routed through a detention facility. Areas that are not routed through a detention facility still receive renovation.

More importantly, the post development stormwater flows from the site will be decreased for all of the proposed design storms (2, 10, 25, 50 and 100) per the summary included in Section 2.3.3 of the Stormwater Management Plan.

Q30. Do you have further concerns in Mr. Carboni's testimony?

A30. Yes in A31 Mr. Carboni incorrectly states that TST3 and Stormwater Pond #1 are in the same location and therefore should have the same contributing drainage areas. There is a *temporary* diversion swale shown east of the Turbine #3 location which will cut off some of the upland area during construction making the contributing drainage area to TST3 (3.60 acres) less than the *post development* contributing area to Stormwater Pond #1 (4.70 acres). Mr. Carboni's testimony fails to take into account the differing conditions between construction and post-development. Therefore the numbers as presented are correct.

Mr. Carboni incorrectly states that 10.9 acres of drainage area contributes to Stormwater Pond #1. Permanent diversion swales have been included in the design to minimize the contributing drainage area. These permanent diversion swales help to ensure that the developed portions of the property are routed through the Stormwater Ponds while the undeveloped portions are not. This helps to minimize the required size of the Stormwater Ponds and accordingly the limits of disturbance due to construction. As previously stated the drainage area for Stormwater Pond #1 is 4.70 acres and the drainage areas are delineated correctly.

Mr. Carboni also states that he believes that "Stormwater Pond 1 is similarly undersized". Based upon the elevations he references with regards to the pond (1242.41 and 1242.5) we believe he must mean Stormwater Pond 2. In any case he states that he believes the tributary area is twice what our analysis shows. There is no justification provided for this statement. We have provided a drainage area map that shows the contributing drainage area to be 2.46 acres. This was based upon the DEP LIDAR topography and field inspections of the area in question.

Mr. Carboni also states that the DEP LIDAR topography is different than the USGS topography that was used to delineate the proposed drainage areas. Both of the topographic methods were analyzed when delineating the proposed drainage areas. There is no significant

difference between the two topographic maps which would affect the storm drainage calculations. The DEP LIDAR was used for delineation of the smaller drainage areas on the property and the USGS topography was used for delineation of the larger off-site drainage areas. Therefore we reject Mr. Carboni's statements in A31.

Q31. Do you have further concerns in Mr. Carboni's testimony?

A31. Yes in A32 the stream channel protection criterion referenced by Mr. Carboni is intended to protect stream channels from erosion and sediment in downstream receiving waters as a result of urbanization. It is our judgment that this criterion is not applicable to the project due to the small amount of proposed impervious area and due to its location in the rural Mill Brook watershed.

The fact is that this project will hardly "urbanize" the subject property or the overall watershed. The proposed impervious area on the site due to development is approximately 1.4 acres. The overall drainage area that was analyzed for pre and post development flows is 126.9 acres so the proposed impervious surface due to the development is only 1.1% of this drainage area.

The overall drainage area contributing to the Mill Brook at the project site is approximately 1,380 acres. Therefore the proposed impervious surface due to the development is only 0.1% of the Mill Brook drainage area.

The 2004 Stormwater Quality Manual states that the stream channel protection criterion does not apply if the site discharges to a larger waterbody (Mill Brook) and the development area is less than 5% of the watershed area upstream of the development. This is the case with this project.

Additionally, there is a practical limitation to applying this criterion that is specifically referenced on page 7-9 of the 2004 Stormwater Manual. For sites where detention basins have contributing drainage areas with less than 1 acre of impervious surface, extended detention is impractical because the low-flow orifices would have to be so small as to be prone to clogging and would not function. Stormwater Pond #1 has 0.68 acres of impervious surface contributing, while Stormwater Pond #2 has 0.26 acres of impervious surface contributing. The stream channel protection criterion is neither applicable nor practical for this site.

Q32. Do you have a clarification for Mr. Carboni's testimony?

A32. Yes, the drainage calculations that reference TST's 5, 6, 7 and 8 do not apply to this project. They were mistakenly carried over from another project. There are only 4 TST's proposed and those calculations are correctly shown in Appendix K. Please disregard the calculations that reference TST's 5, 6, 7 and 8.

Q33. Do you have further concerns in Mr. Carboni's testimony?

A33. Yes in A34 we disagree with many of Mr. Carboni's statements. The introduction to the 2004 Stormwater Quality Manual states that 'The information and recommendations in this Manual are provided for guidance and are intended to augment, rather than replace, professional judgment'. This is how the Manual was used in the design of the post-development Stormwater Management Plan. The plan does meet the intent of the Manual and was used along with our professional judgment as professional engineers to design a Stormwater Management Plan that will be protective of downgradient wetlands and watercourses and meet the requirements of the State of Connecticut.

The introduction to the Guidelines similarly states that 'The Guidelines are intended to serve as a technical guide for meeting the requirements of the Soil Erosion and Sediment Control

Act and to assist in implementing the requirements of laws and statutes relating to water pollution control". This is how the Guidelines were used in the design of the Erosion and Sediment Control Plan. The plan does meet the intent of the Guidelines and was used along with our professional judgment as professional engineers to design an Erosion and Sediment Control Plan that will be protective of downgradient wetlands and watercourses and meets the requirements of the State of Connecticut.

Mr. Carboni's statement is incorrect regarding the requirements of the Soil Erosion Control Act and the Clean Water Act. The plans and design calculations do accurately represent the site and meet or exceed the requirements of the Soil and Erosion Control Act and the applicable sections of the Clean Water Act.

We find Mr. Carboni's statements referencing other petitions before the Siting Council as inappropriate. It is also our judgment that due to his misreading of the plans and his inaccurate statements, his conclusions regarding compliance with the Guidelines and the Stormwater Quality Manual are invalid.

Q34. Do you have other concerns regarding Mr. Carboni's testimony?

A34. In A35 Mr. Carboni makes inaccurate statements regarding the representation of the site and the size of the facilities due to his misunderstanding of the plans as previously noted. I stand by our calculations as presented.

Q35. Do you have any further testimony?

A35. Yes. It is our professional opinion that should the Siting Council approve the project, final plans can be produced which are in conformance with the Guidelines, the 2004 Stormwater Quality Manual and the Connecticut Surface Water Quality Standards. The

proposed activity is essentially an access driveway crossing two intermittent watercourses. This office has successfully designed and overseen many similar projects while maintaining the standards referenced above.

The Statements are true and accurate to the best of my knowledge.

May 4, 2011

Date

/s/ Curtis C. Jones

Curtis C. Jones, P.E. CT #17206, LEED AP

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