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Black Oak Wind Farm

Preliminary Blasting Plan

Introduction

Bedrock conditions in the Black Oak Wind Farm project area were evaluated in a geotechnical study performed by Tectonic Engineering and Surveying Consultants in 2012-2013. According to this study, the type of bedrock that would be encountered at the turbine sites is considered rippable to a depth of at least 10 feet. If the bedrock is not rippable, it can be broken up by pneumatic jacking or hydraulic drilling and subsequently removed with a backhoe. According to the Tectonic analysis, none of the turbine sites should require blasting. Nevertheless, this Preliminary Blasting Plan has been prepared in order to provide initial information regarding blasting procedures, in the event that it becomes necessary. If blasting is in fact proposed during construction, a Final Blasting Plan will be prepared in accordance with best management practices and the specific measures outlined below. (Note: if blasting is not needed during construction, no Final Blasting Plan will be required nor prepared).

Preliminary Blasting Plan

Although not anticipated, the general blasting procedure shall consist of implementing line control to full depth and then the use of controlled blasting techniques in one or more benches to create minimum

breakage outside the line control but create maximum rock fragmentation within the target area. Blasted rock or boulders may be further broken into a well-graded mixture of the size recommended by the geotechnical engineer and utilized in the nearest appropriate location (e.g. access roads). The Final Blasting Plan will include mitigation measures to limit offsite impacts. This plan will address blast size, timing, and sequencing to focus force within the area of excavation. The Final Blasting Plan shall be submitted to (and approved by) the County, in writing. Blasting shall be performed by a New York State Department of Labor licensed blasting contractor only after approval has been given for such operations and must comply with the provisions set forth below, as well as others established by the appropriate regulatory agencies.

A. All necessary blasting will receive oversight by an Environmental Monitor.

B. Pre-notification signs and warnings will be provided to inform affected landowners and nearby residents. The Final Blasting Plan will include a list of the names and mailing addresses of affected landowners, including the rationale used to identify “affected landowners.” The Final Blasting Plan will describe the method and timing of landowner notification, as well as the number and placement of warning signage. The use of air-horns or other warning sounds before a blast is detonated will also be described in the Final Blasting Plan.

C. Pre-Blast Surveys will be conducted to document existing conditions using both written and photographic documentation. Structures within a minimum distance of 1,500 feet from any blasting activity shall be surveyed as part of a Pre-Blast Structural Survey. The extent beyond the 1,500-foot minimum shall be determined by the contractor, the blasting subcontractor, and their insurance companies. Note that the Statement of Findings prepared for the Black Oak

Wind Farm recommends that no blasting of bedrock should be performed within 1/10 mile of an existing residence and that this limitation on the use of blasting should be included in Project specifications. A Pre-Blast Well/Utility Survey will also be completed if a well/utility is located within 1,000 feet. This Pre-Blast Well/Utility Survey will include well yield and turbidity measurements. The Final Blasting Plan shall include more information on the methods for conducting the Pre-Blast Structural Survey and the Pre-Blast Well/Utility Survey.

D. The Final Blasting Plan will address air-blast limits, ground vibrations, and maximum peak particle velocity (PPV) for ground movement, including provisions to monitor and assess compliance with the established air-blast, ground vibration and PPV requirements.

E. The Final Blasting Plan will meet the criteria established in Chapter 3 (Control of Adverse Effects) in the Blasting Guidance Manual of the United States Department of the Interior Office of Surface Mining Reclamation and Enforcement. NYSDOT's Geotechnical Engineering Manual: Procedure for Blasting (GEM-22) will also be used as a reference.

F. The contractor or its subcontractor shall use sufficient stemming, matting or natural protective cover to prevent fly rock from leaving property owned or under control of the permittee or operator or from entering protected natural resources or natural buffer strips. Crushed rock or other suitable material must be used for stemming when available. Native gravel, drill cuttings or other material may be used for stemming if no other suitable material is available.

G. The maximum allowable air-blast at any inhabited building not owned or controlled by the developer may not exceed 128 decibels peak when measured by an instrument having a flat response (+ or - 3 decibels) over the range of 5 to 200 hertz.

H. The maximum allowable air-blast at an uninhabited building not owned or controlled by the developer may not exceed 128 decibels peak when measured by an instrument having a flat response (+ or - 3 decibels) over the range of 5 to 200 hertz. Depending on building use (or lack thereof), the allowable air-blast may increase to 140 decibels peak. If a blast is to be initiated by detonating cord, the detonating cord must be covered by crushed rock or other suitable cover to reduce noise and concussion effects.

I. Prior to blasting at each site, a pre-blast survey will be conducted. The pre-blast survey will inspect the blast area, and adjacent areas. The survey will document existing conditions and will include, but not be limited to buildings/structures, water supply wells, utilities (above and below ground). The survey will include written documentation as well as photographic documentation of existing conditions.

J. All blasting shall be monitored with a properly calibrated seismograph. Seismographs shall be installed at the nearest inhabited structure and any other sensitive structure agreed to by the County.

K. Storage of explosives, if necessary, shall conform to applicable regulatory requirements, including those contained in Department of Labor Industrial Code Rule 39 (12 NYCRR Part 39)

L. Blasting may not occur in the period between sundown and sunrise of the following day or in the period from 7:00 p.m. to 7:00 a.m., whichever is greater. Blasting shall not be conducted on Sundays or recognized holidays.

M. A record of each blast, including seismographic data, must be kept for at least one year from the date of the last blast by the general contractor, its subcontractor (if appropriate) and developer, and must be available for inspection during normal business hours. The blast record shall contain, at a minimum, the following data:

- Name of blasting company or blasting contractor;
- Location, date and time of blast;
- Name and signature of blaster;
- Type of material blasted;
- Number and spacing of holes and depth of burden or stemming;
- Diameter and depth of holes;
- Type of explosives used;
- Total amount of explosives used;
- Maximum amount of explosives used per delay period of 8 milliseconds or greater;
- Maximum number of holes per delay period of 8 milliseconds or greater;
- Method of firing and type of circuit;
- Direction and distance in feet to the nearest structure (both owned and not owned) by the project developer;
- Weather conditions, including such factors as wind direction and cloud cover;
- Height or length of stemming;
- Amount of mats or other protection used;
- Type of detonators used and delay periods used;
- The exact location of each geophone and the distance of each geophone from the blast;
- Seismographic readings, including peak particle velocity and frequency measured in the horizontal, vertical and longitudinal directions, and air-blast data;
- Name and signature of the person operating each seismograph;
- Names of the person and the firm analyzing the seismographic data, and
- The stratum or structure on which the geophone is located during each blast.

N. At the completion of blasting, a post-blast survey will be conducted of the same facilities (structures, foundations, water supply wells, utilities, etc.) as documented during the pre-blast survey. Findings inconsistent with those reported during the pre-blast survey will immediately be provided to the contractor/subcontractor/developer, and will be documented in writing and photographed. Depending on the nature (and source) of the inconsistency, specific corrective actions will be developed in consultation with the affected party, and will set forth the method, procedures, and timing of implementation.