# Black Nubble Wind Farm Project

# Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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# 1.0 Introduction

DeLuca-Hoffman Associates, Inc. was retained to prepare designs and portions of the permit applications for a series of wind turbines proposed to be sited on Black Nubble. DeLuca-Hoffman Associates, Inc. designed the primary access roads and summit roads, which will be used to access the wind turbines from existing roadway systems; and also prepared the Stormwater Management Report, Erosion and Sedimentation Control Plans, Road Maintenance Plan, Solid Waste Narrative, and Blasting Narrative associated with the primary access roads and summit roads. Note that the term "summit road" is synonymous with "ridgeline road" within this application. The work of DeLuca-Hoffman Associates, Inc. is summarized in a series of reports as follows:

- Basis of Design for Primary Access Roads and Summit Roads;
- Erosion and Sedimentation Control Plan for Roadway Construction;
- Stormwater Management for Primary Access Roads and Summit Roads;
- Road Maintenance;
- Blasting Narrative;
- Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction; and
- Solid Waste Narrative.

The narratives prepared by DeLuca-Hoffman Associates, Inc. are supported by the project Civil Engineering Design Drawings included with this submission. Please refer to Cover Sheet C-1 for a complete list of the project drawings.

The designs and reports prepared by DeLuca-Hoffman Associates, Inc. rely upon baseline information provided for this project by other Project consultants.

Civil Engineering Design Specifications for the project are provided in Appendix 2.11.

DeLuca-Hoffman Associates, Inc. has prepared the following plan, which presents the erosion and sedimentation control provisions required for transmission line corridor construction.

The baseline data prepared by other Project consultants includes the following:

- The identification and location of wetlands and other natural resources by Woodlot Alternatives.
- Surficial Soils Surveys, identification of water courses and seep areas, and narratives prepared by Al Frick.
- Base topographic mapping prepared by Aerial Survey with ground truthing survey integrated by Westwood Professional Services.
- Geotechnical evaluations and recommendations for Roadway Construction prepared by S. W. Cole.

There are other physical elements of the project such as the electrical power transmission lines, staging areas, and small buildings with attendant construction areas, which are being designed by other consultants and discussed in separate portions of the application.

This plan presents the erosion and sedimentation control provisions required to construct the transmission lines. There is the potential for conditions to be encountered during construction that have not been anticipated at this time, which will require modification to this plan. This plan identifies the tools which can be implemented during construction of the transmission line corridors, explains the basis for their use, and provides details for their installation. The erosion and sedimentation control plan and attendant drawings are not intended to provide the exact location for placement of the erosion control measures, but rather provide the basis for their use. The erosion and sedimentation control plan has been developed to satisfy the requirements of LURC Chapter 10 Rules and Standards and calls for provisions for the construction of transmission line corridors to minimize unreasonable soil erosion and not result in reduction in the capacity of the land to absorb and hold water.

This plan only covers the installation of the transmission lines and poles. The construction of any road extensions to access the transmission line corridors is not discussed in this section because that activity will be required to follow the erosion & sedimentation control plan developed for the roads to access the wind turbine sites. Permanent roads along the transmission line corridors are not proposed as part of this project.

The construction of the transmission lines for the Black Nubble Wind Farm Project will disturb areas limited to those in immediate vicinity of pole and guy installations and as necessary to level rough terrain to allow passage of tracked equipment along the corridors. Table 1 below presents a summary of approximate transmission line corridor construction lengths for the project.

| **Table 1 – Summary of Transmission Line Corridor Construction Lengths** | |
|---|---|
| **Transmission Line Corridor Segment** | **Length (Feet)** |
| Black Nubble 34.5kV transmission line (Black Line) | 6,040 |
| 115kV transmission line (Main Line) | 38,200 |
| **TOTAL** | 44,240<br>**(Approx.** 8.4 **Miles)** |

## 2.0 Existing Site Conditions

The proposed wind turbines will be erected on Black Nubble.. A 34.5kV transmission line is proposed to transmit the power generated by the turbines from the mountain range to the substation interconnect (see project Base Map for location). A 115kV transmission line is proposed to transmit the power from the substation to the CMP substation located just off Route 27 on the northern boundary of Carrabassett Valley. The 34.5kV transmission line will require a cleared Right-of-Way (ROW) width of 75 feet, the 115kV transmission line will require a 150 foot wide cleared ROW. The topography along the proposed transmission line corridors varies from quite steep in the higher elevations to relatively mild in the lower valleys with slopes generally ranging between 40% and 5%.

The proposed transmission line corridor from Black Nubble Mountain to the substation (the Black Line shown on the Base Map) is approximately 6,040 feet long and will be accessed from the existing woods road along Nash Stream and from an existing logging road off RE2 near C6 shown on the Base Map.

The proposed 115kV transmission line corridor from the proposed substation interconnect near Nash Stream to the existing CMP substation off Route 27 is approximately 38,200 feet long and will be 150 feet wide. A portion of this corridor is 75 feet wide where it parallels the Boralex corridor. This transmission line corridor will be accessed from multiple locations along existing woods roads and proposed logging road extensions. The project Base Map shows the proposed 115kV transmission line corridor

relative to existing logging roads and proposed logging road extensions. Figure T-1 included in Appendix D shows potential transmission line access points, wet areas anticipated along the transmission line routes and travel distances along the transmission line route from the access points.

The transmission line corridors are within a region of commercial, industrial forests, much of which has been clearcut and heavily cut over. However, the majority of the proposed transmission line corridors are assumed to require clearing.

Natural resources along the transmission line routes have been identified by Woodlot Alternatives and are depicted on project maps.

The USDA medium intensity soils map shows the following soil types along a portion of the transmission line corridors:

- Sisk-Surplus
- Surplus-Sisk
- Saddleback-Mahoosuc-Sisk
- Ricker-Rock Outcrop
- Telos Chesuncook
- Colton Sheepscot
- Dixfield Marlow
- Colonel Dixfield

These soils are described in the detailed soils narrative prepared by Al Frick.

## 3.0 Overview of Soil Erosion and Sedimentation Concerns

The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. The "K" value is frequently used with the universal soil loss equation. The higher values are indicative of the more erodible soils. The soils identified by Al Frick in the transmission line regions and the USDA Medium Intensity Soil Survey with the attendant "K" values are listed in Table 2.

| **Table 2 - Surficial Soil Types and Relative Erodibility** | | |
|---|---|---|
| **Soil Type** | **Soil Description** | **K Value** |
| Sisk-Surplus Association | HSG C – Very stony, highly erodible, and well drained. Not hydric. | .24 - .32 |
| Surplus-Sisk Association | HSG C – Strongly sloping, very stony, potentially highly erodible land, and moderately well drained. Not hydric. | .24 - .32 |
| Saddleback-Mahoosuc-Sisk | HSG C/D – Very steep, highly erodible, and well drained. Not hydric. | .05 - .28 |
| Ricker-Rock Outcrop Complex | HSG A – Highly erodible and well drained. Not hydric. | .49 |
| Brayton Colonel | HSG C – Gently sloping, very stony, potentially highly erodible land, and poorly drained. Partially hydric. | .17 - .32 |
| Hermon-Monadnock | HSG A – Rolling, very stony, potentially highly erodible land, and somewhat excessively drained. Not hydric. | .10-.28 |
| Telos Chesuncook | HSG C - Moderately well drained, with a perched water table 1.5 to 3.0 feet beneath the existing soil surface March through May and during periods of excessive precipitation | .24-.28 |
| Colton Sheepscot | HSG A/B - large stones, Excessively drained, with no | .17-.20 |

| | | |
|---|---|---|
| | observed water table within 6 feet of the soil surface | |
| Dixfield<br>Marlow | HSG C - Well drained, with a perched water table 2.0 to 3.5 feet below the soil surface through March and April, and during periods of excessive rainfall | .17-.24 |
| Colonel<br>Dixfield | HSG C - Somewhat poorly drained, with a perched water table 1.0 to 1.5 feet beneath the soil surface from November through May or during periods of excessive precipitation | .17-.20 |

Based on a review of the K values, the onsite soils in the area where construction is focused are potentially moderate to highly erodible after the cover material is stripped.

## 4.0 Construction Activities and Procedures

This section of the plan describes the activities that will occur during the installation of the transmission line and substation:

### 4.1 Transmission Line Installation

Construction of the proposed 115 kV and 34.5kv line will consist of two main stages. The first stage is the clearing of vegetation followed by the actual line construction stage. An on-site project manager will dictate the day-to-day activities during both stages. The project manager's responsibilities include ensuring compliance with all applicable environmental standards and conditions of agency permits.

The construction plan calls for clearing overstory vegetation for widths of 75 to 150 feet.

Crews with whole-tree harvesting machines will first ground cut all vegetation that is two inches in diameter at breast-height (dbh) and greater. Merchantable timber will be utilized for various forest products. Mowing machines and/or hand clearing crews will then remove or top any remaining "capable species." Capable species are defined as those vegetative species capable of growing tall enough to reach within the required clearance between the conductors and vegetation established by the New England Power Pool (NEPOOL) Vegetation Maintenance Standards (NEPOOL Vegetation Maintenance Standard) within the next four to five-year vegetation maintenance cycle. Due to the sag in power lines, which varies due to a number of factors, compliance with the NEPOOL Vegetation Maintenance Standard is typically achieved by removing all capable species and topping other vegetation greater than 8 – 10 feet in height, except in waterbody and visual buffer zones and at rare plant or unique natural community locations. Significant branches that overhang the ROW and any dead or damaged trees outside of the ROW that could contact or come within 15 feet of a conductor if they fall ("danger trees") are also removed. All ground level vegetation will remain in place and the stumps left after cutting of overstory trees will not be removed, unless necessary to install a pole or guy.

The pole construction work area will not be grubbed or cleared of brush, unless leveling of the area is required. The only soil disturbance will be associated with the drilling/excavation of a hole for the installation of poles and, in some cases, due to the need to level the work area or for access along and adjacent to the ROW. Temporary erosion and sedimentation control measures will be installed prior to ground disturbance, as determined during the site walk-through.

After clearing and preparation of the ROW, the first step in line construction is to erect the poles. Poles are to be transported to their respective locations along the

corridors during the clearing operations to avoid extra trips along the corridor with empty equipment. The primary pole structure will be wooden H-frames which consist of two in-ground poles connected by cross members. Some poles will be erected by drilling a hole with an auger, placing the pole in the hole and backfilling around the pole with any excess soil material. This backfill is tamped in (or packed down) to provide a firm base. Other poles will be erected using a small excavator to excavate approximately 5.5 cubic yards of material, allowing each pole to be placed up to 10 feet deep. The excavated area around the poles will then be backfilled. This backfill is also tamped in to provide a firm base. The use of heavy earth moving equipment such as bulldozers will not be required. In all cases, poles are buried to a depth equaling 10 percent of their length, plus two feet [an 80-foot pole would be buried 10 feet (8 feet plus 2 feet)].

In all probability, it will be necessary to blast ledge and large rocks at a number of locations during construction of the project. Blasting will be limited to pole locations where bedrock is exposed or shallow, and possibly used to move or break large boulders providing access to pole locations.

During erection of some poles, it may be necessary to create a level area for the equipment in order to allow for proper (straight) installation of the pole. In most cases appropriate topography exists. However, in locations where the terrain is not level, it is expected that a level working area will need to be created by pulling material (rocks and soil) from the area immediately adjacent to the pole location to create safe working conditions. These locations will be limited to only those places where the topography is too sloped to allow the equipment to level itself. All necessary erosion and sedimentation control measures will be installed at areas requiring leveling and will be left in place until the area is restored to original contours and stabilized.

For poles located at angle points, guy wires will be anchored near the poles to account for the change in direction of the tension on a given pole. These anchors

are simply screwed into the ground and attached to the pole with a cable. Because of higher tensions due to sharper angles, some locations may be anchored by burying a 4-foot section of pole and attaching a cable between the poles and the buried stub. All necessary erosion and sedimentation control measures will be installed at anchor locations and will be left in place until the area is stabilized.

After the poles are erected [the horizontal insulators which hold the conductors (electrical wires) are installed prior to placement of the pole], the next step involves running a pull (or p-) line along pulleys attached to each insulator. In all sensitive areas, the p-line will be pulled across the resource by construction personnel 'walking' the line across, to avoid unnecessary crossing of the resource by construction equipment and to minimize impacts. The p-lines are then connected to the conductors which are pulled from pole to pole until they are run the entire length of the line. The last step involves tying the conductors into each insulator.

Total site time needed for the installation of each pole is less than one day and the excavated area will be backfilled, seeded, and mulched. Work within inundated or saturated wetlands will be limited to the winter months (i.e., frozen conditions), as much as possible. Work within wetland or similarly sensitive areas that must occur outside of the winter season will be conducted with appropriate equipment (i.e., tracked or high flotation vehicles) and/or with the use of temporary mats or platforms in order to avoid soil rutting or excessive impacts to ground vegetation. Restoration measures will return the disturbed area to its original contour in order to allow natural re-vegetation with shrub and brush cover. The site will be re-vegetated with temporary and/or permanent seeding, as necessary, to stabilize the area.

### 4.2 Substation Interconnect

Construction at the Substation Interconnect will begin with establishing base lines, the site perimeter, and clearing and removal of the topsoil. Following the establishment of site drainage and sediment and erosion controls, a sub-grade will be established. Where necessary, ledge will be removed by either blasting or mechanical means, depending on the competency of the rock. If acceptable, site material will be used in a cut and fill scheme to establish the sub-grade of the substation yard. Off-site material will be used wherever the quantity or quality of the native material is insufficient for use. At this point individual foundation excavations will be made and concrete forms installed for the placement of concrete substructures.

Following installation of the concrete foundations, sub-surface conduits, cable trench, and ground grid will be installed on the sub-grade. Structural fill will be installed on top of these systems to bring the sub-grade of the yard to six inches below finish grade. This sub-grade will likely be off-site material consisting of select gravel. At this point, the steel substation structures, dead end structure, control house, electrical equipment (circuit breakers, switches, etc.), and yard fence posts will be installed. The finished grade of the yard will consist of 6 inches of select crushed stone on top of the sub-grade. Finally, the remaining electrical equipment and low voltage cabling between the yard equipment and the control house will be installed, and the fence fabric will be attached to the fence posts. Final grading, seeding and mulching of areas outside of the substation fence will complete the work at the substation.

## 5.0 Erosion and Sedimentation Control Plan Guiding Principles

As discussed above, the transmission line construction activities will only strip cover material in those areas where poles or guys will be set and where the grade needs to be leveled to allow tracked equipment to operate. The plan has been designed to meet the six principles below which are necessary, irrespective of tools selected for construction:

- Timing of work;
- Effort to minimize the amount of disturbed area;
- The proper selection and installation of the erosion control materials;
- The use of native materials to the extent possible; and
- The availability of the materials for construction without delay.
- Use of winter conditions to limit and control the disturbance of soils that would be subject to erosion conditions at other times of the year.

These five principles must be strictly adhered to and are essential for the erosion/sediment control plan to be successful. **It is recommended that any contract include a specific statement requiring the contractor to certify the work will comply with the six requirements listed above.**

These six limitations are expounded upon further in the following paragraphs:

### 5.1 Timing of Work

Work in the wettest areas of the transmission line corridors is to take place during winter frozen ground conditions or during the driest parts of the summer. No work should take place in wetlands or other low wet areas during either the spring or fall mud seasons. Figure T-1 included in Appendix D shows wetland areas located by Woodlot Alternatives along the route of the transmission line corridors. Access points are also labeled on this figure and the following provides a brief description of the corridor between these access points:

- ***Segment Between Access Points 6 & 7*** (length of this segment is 2,450 feet) – This segment will be accessed from existing logging roads. This is a very steep area where limited wetlands were encountered and therefore should be worked in the winter or summer months.

- ***Segment Between Access Points 7 & 8*** (length of this segment is 2,800 feet) – This is a relatively steep, dry area, which will be accessed from the woods

road along Nash Stream and a logging road which travels up the steep terrain in this area. This segment should be constructed during winter or summer months.

- ***Segment Between Access Points 8 & 9*** (length of this segment is 1,200 feet) – Special care will need to be taken between these access points for the crossing of Nash Stream and the associated steep bank and wetlands. This segment should either be worked during winter frozen ground conditions or during the driest part of the summer with special care within the proximity of the Nash Stream and wetlands.

- ***Segment Between Access Points 9 & 10*** (length of this segment is 1,800 feet) – Access Points 9 & 10 are along existing woods and logging roads in this area. Some wet areas and a stream segment in this area exist. This segment should be constructed during the winter or summer months.

- ***Segment Between Access Points 10 & 11*** (length of this segment is 6,200 feet) – Access Points 10 & 11 are located off an existing logging road, some wetlands exist between Access Points 10 & 11. This segment should be constructed during winter or summer months.

- ***Segment Between Access Points 11 & 12*** (length of this segment is 3,000 feet) – Some wetlands and a stream exist between Access Points 11 & 12. This area is quite steep with grades on the order of 20+%. An extension of the existing logging road of approximately 800 feet is required to reach Access Point 12. This segment should be constructed during winter or summer months.

- ***Segment Between Access Points 12 & 13*** (length of this segment is 4,500 feet) – Very steep grades exist between this segment on the order of 25% and

limited wet areas exist. This segment should be constructed during winter or summer months.

- ***Segment Between Access Points 13 & 14*** (length of this segment is 4,300 feet) – A number of wet areas and a stream exist along this segment. This segment should be constructed during winter or summer months.

- ***Segment Between Access Points 14 & 15*** (length of this segment is 4,600 feet) – Some wet areas and steep slopes exist along this segment. This segment should be constructed during winter or summer months.

- ***Segment Between Access Points 15 & 16*** (length of this segment is 1,800 feet) – Some wet areas exist along this segment. This segment should be constructed during winter or summer months.

- ***Segment Between Access Points 16 & 17*** (length of this segment is 2,500 feet) – Some wet areas exist along this segment. This segment should be constructed during winter or summer months.

- ***Segment Between Access Points 17 & 18*** (length of this segment is 2,800 feet) – Some wet areas, steep slopes and a stream exist along this segment. This segment should be constructed during winter or summer months.

- ***Segment Between Access Points 18 & 19*** (length of this segment is 4,000 feet) – Some wet areas and steep slopes exist along this segment. This segment should be constructed during winter or summer months.

### 5.2 Minimize Disturbed Areas

There will undoubtedly be periods of adverse weather during the construction period for the transmission line corridors and associated access roadways. Most construction areas are susceptible to erosion during adverse weather. By minimizing the amount of disturbed area, the area exposed to erosion at any given

time is reduced and a major rain event will not cause significant erosion, because the open area, which is susceptible to erosion, will be small.

Achieving this objective is expected to require the transmission line corridors and associated access roadways to be constructed and completed in segments. If possible, transmission line corridors will be cleared all at once during winter months, otherwise, a construction schedule will be implemented which will avoid sensitive areas during the wet seasons.

### 5.3 The Proper Selection and Installation of Erosion Control Materials

The erosion control material selection is contingent upon the slope, the tributary watershed and the season of construction. Winter provisions for erosion control are different than those used in the other periods of the year.

The installation of erosion control materials should be in strict accordance with the details, MeDEP Best Management Practices, and information provided by suppliers. There are numerous examples of past projects where silt fence has not been toed in, erosion control fabrics have been installed in the wrong direction, and/or not secured in accordance with the requirements of the plans. The result has been the failure of these materials to function properly when needed. **The applicant will provide a training session for the contractor prior to the start of construction. Samples of all erosion control materials will be at the site of the training session in order that the selection and installation techniques can be reviewed. The bids and specifications for the contractor will have the plan attached.**

### 5.4 The Availability of the Materials for Construction

The contractor will not be allowed to substitute material or delay installation of erosion control measures. The contractor shall be given the responsibility to maintain an adequate supply of all erosion/sedimentation control materials. In the event that a material supply is depleted, additional areas for the transmission line

corridors construction cannot be denuded until the materials have been received and are available for use on the project. Note: As discussed in Section 4, denuded areas for transmission line corridor construction are anticipated only at the locations of pole and guy installations and limited areas for leveling of rough terrain for passage of tracked equipment, roads along the transmission line corridors are not proposed.

## 6.0 Proposed Erosion/Sedimentation Control Measures

This section describes the types of control measures that will be used at various times and locations during the construction of the transmission line. The applicant should provide the contractor with this plan, since it defines the basis of the erosion/sedimentation control plan for the project. **It should be the responsibility of the contractor to properly install these devices to achieve the requirement for control of fugitive dust emissions, avoidance of turbid discharges, and avoiding significant sedimentation throughout construction.** The proper installation of these devices, combined with the essential steps of implementation outlined in Sections 5.1 to 5.4, will be necessary for the contractor to meet these responsibilities. The devices described in this section are among the tools available to the contractor for construction of this project. These devices shall be installed as indicated on the plans or as described within this plan. For further reference, see the MeDEP Erosion and Sediment Control Best Management Practices, March 2003. Also see: State of Maine Department of Transportation (MDOT), Standard Specifications, Highways and Bridges, Revision of 1992; Erosion and Sediment Control Handbook for Maine Timber Harvesting Operations – Best Management Practices, June 1991; and Land Use Handbook – Section 6 – Erosion Control on Logging Jobs and Revision (Supplement), effective January 5, 1981. In addition, the contractor may add measures to meet the responsibility as defined by this narrative.

### 6.1 Siltation Fence

Siltation fence shall be installed downslope of any disturbed area to trap runoff-borne sediments until the site is revegetated. The silt fence shall be installed per the detail provided in the plan set and inspected immediately after each rainfall

and at least daily during prolonged rainfall. The contractor shall make repairs immediately if there are any signs of erosion or sedimentation below the fence line. Proper placement of stakes and keying the bottom of the fabric into the ground is critical to the fence's effectiveness. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence, the barrier shall be replaced with a stone check dam.

Silt fence is classified by three types depending upon the timing and intent as follows:

**Table 3 - Schedule of Silt Fence Requirements**

| Silt Fence | Type and Purpose | Time of Installation |
|---|---|---|
| Type 1 | To trap sediment along the downgradient edge of the disturbed area with the silt fence; placed in segments to nearly parallel existing contours. | At initial site preparation and clearing, prior to other work. Also install around the perimeter of any stockpile which has erosion potential. |
| Type 2 | To trap sediment from the work area; install in short sections parallel to existing contour; typically occurs where proposed and existing contours form a "V" shape. | During construction as the contour is shaped. |
| Type 3 | To trap sediment along the base of proposed cut slopes; typically used in deeper cut areas. | During construction after new grade and backslope are shaped. Time between work in area and shaping new grade to allow silt fence to be installed shall be minimized. Typically not required if the cut slope height exceeds five feet. However, slopes which are found to be wet or have seepage may warrant the use of this silt fence for shallower heights. |

### 6.2 Mulch

Straw or hay mulch, including hydroseeding, is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed on slopes of less than 10 percent shall be anchored by applying water; mulch placed on slopes steeper than 10 percent shall be covered with fabric netting and anchored

with staples in accordance with the manufacturer's recommendations. Proposed drainage channels and the ditch at the toe of the "cut" slopes, (which are to be revegetated), shall receive Curlex blankets by American Excelsior or equal. Mulch application rates are provided in Attachment A of this section. Hay mulch shall be available on site at all times in order to provide immediate temporary stabilization when necessary. Where necessary, a temporary stone channel pipe sluice may be used to convey runoff down the slope as might be required from upstream diversion berms. For the cover material to be effective, it is necessary that it is applied uniformly at the rates indicated in this plan and that proper anchorage be used to secure the material in place.

### 6.3 Erosion Control Mix[1] and Wood Waste

Erosion and sedimentation control material processed onsite is intended to provide a cover material over bare slopes as an Erosion Control Mix. It may also be applied as a berm for erosion and sedimentation control in lieu of silt fence where appropriate.

In non-wetland areas, wood waste may also be used as a mat to drive over in wet areas to avoid soil disturbance. Temporary corduroy roads, and tracked and/or high floatation vehicles are proposed to be used in wetland areas. Some trees may be cut and bucked in place to avoid traveling through wet areas.

### 6.4 Construction Entrances

A construction entrance will be constructed at access points at the transmission line corridors.

[1] June 2, 2006 MMP Response to Agency Questions, Response No. 21(C) & (D) at pp. 11-12.

### 6.5 Dirtbags™

Dirtbags™ will be required to be on site and available for construction dewatering. The contractor will be required to provide four Dirtbags™ with one available for use in any new disturbed areas. These will have particular benefit for dewatering of areas where wet subgrade has been encountered and filtering of turbid water is required.

### 6.6 Loam and Seed

Loam and seed is intended to serve as the primary permanent revegetative measure for all denuded areas along transmission line corridors not provided with other erosion control measures, such as riprap. Application rates are provided in Attachment A of this section for temporary and permanent seeding in non-wetland areas.

## 7.0 Temporary Erosion/Sedimentation Control Measures

The following are planned as temporary erosion/sedimentation control measures during construction:

- A crushed-stone-stabilized construction entrance shall be placed at any construction access points.

- Type 1 and 2 siltation fence or erosion control mix berm shall be installed along the downgradient side of the proposed improvement areas. The siltation fence will remain in place and properly maintained until the site is acceptably revegetated.

- Dirtbags™ shall be available for use and, where necessary, installed in accordance with the details in the plan set. The Dirtbags'™ function on the project is to receive any water pumped from excavations during construction. When Dirtbags™ are observed to be at 50% capacity, they shall be cleaned or replaced. Stone under the Dirtbag™ shall be removed and replaced concurrently.

- Temporary stockpiles of erodible materials should be protected as follows:

  1. Temporary stockpiles shall not be located within critical areas and are to be surrounded by silt fence. In general, these stockpiles are expected to consist of the material which has been stripped from the surface.

  2. Inactive stockpiles shall be stabilized within 5 days by either temporarily seeding the stockpile with a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch or erosion and sediment control mix. If necessary, mesh shall be installed to prevent wind from removing the mulch.

- All back and fill slopes below elevation 2,700, which will be seeded, should be rough graded then fine graded with loam or an organic soil mixture. The mulch and mesh should be applied as soon as possible.

- All soils disturbed between November 1 and April 1 in areas below elevation 2,700 (and between September 1 and May 31 in areas above elevation 2,700) should be covered with mulch or erosion control mix within 5 days of disturbance, prior to any predicted storm event of the equivalent of ½" of equivalent rainfall in a 24-hour period, or prior to any work shutdown lasting more than 35 hours (including weekends and holidays). The mulch rate shall be double the normal rate.

  For denuded work areas not being covered with stone or gravel that occur between November 1 and April 15 in areas below elevation 2,700 (and between September 1 and May 31 in areas above elevation 2,700), they should have a cover of hay mulch, applied at twice the normal application rate, or erosion control mix. All mulched areas shall be covered with at least an anchored fabric netting. The time period for applying mulch in areas below elevation 2,700 shall be limited to 5 days for all areas or immediately in advance of a predicted rainfall event. In areas above elevation 2,700, the period will be 3 days.

- The existing roadways shall be treated to control fugitive dust as necessary.

- Stone check dams or hay bale barriers or downstream stone or fabric should be installed at any evident concentrated flow discharge points during construction and earthwork operations. The treatment should extend downgradient to a location where stable flow conditions exist.

- Silt fencing with a maximum stake spacing of 6 feet should be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence should be properly anchored a minimum of 6" per the plan detail and backfilled. Any silt fence identified by the applicant or reviewing agencies, as not being properly installed during construction shall be immediately repaired in accordance with the installation details.

- All slopes over 4:1 shall receive erosion control mesh.

- Slopes steeper than 3:1 shall receive reinforced turf or reinforced erosion control mix.

- Type 3 silt fences shall be installed as construction progresses.

- Areas of visible erosion shall be stabilized with crushed stone. The size of the stone shall be determined based upon flow, slopes, and observed field conditions.

  All temporary sedimentation and erosion control measures shall be removed after construction activity has ceased and healthy vegetation has established itself or other appropriate permanent control measures have been implemented.

# 8.0 Standards for Stabilizing Sites for the Winter

## 8.1 Standard for the Timely Stabilization of Ditches and Channels

The following additional measures apply to the colder seasons. The contractor shall construct and stabilize stone-lined ditches and channels using the standard methods by November 15 (except in elevations above 2,700 where standard methods apply only until September 30). The contractor shall construct and stabilize all grass-lined ditches and channels using the standard methods by September 15 (except in areas above elevation 2,700 where the standard methods apply only until August 21). If the contractor fails to stabilize a ditch or channel to be grass-lined by the specified dates, then the contractor shall take one of the following actions to stabilize the ditch for late fall and winter.

- Install A Sod Lining In The Ditch – The contractor shall line the ditch with properly installed sod. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

- Install A Stone Lining In The Ditch – The contractor shall line the ditch with stone riprap. The contractor shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the contractor shall regrade the ditch prior to placing the stone lining so as to prevent the stone lining from reducing the ditch's cross-sectional area.

## 8.2 Standard For The Timely Stabilization Of Disturbed Slopes

The contractor shall construct and stabilize stone-covered slopes using standard methods by November 15 (except in elevations above 2,700 where the standard methods apply until September 30). Permanent slope stabilization measures must be installed within 48 hours of completing the final grading for any section of

slope.[2] The contractor shall seed and mulch all slopes to be vegetated using standard methods by September 15, except in elevations above 2,700, where the standard methods will end on August 21. The department will consider any area having a grade greater than 15% (7H: 1V) to be a slope. If the contractor fails to stabilize any slope to be vegetated by the specified date, the contractor shall take one of the following actions to stabilize the slope for late fall and winter.

- Stabilize The Soil With Temporary Vegetation And Erosion Control Mesh – By September 15[3] (except August 15 in areas above elevation 2,700), (mulch containing any seed other than balsam fir is not to be used above Elevation 2,700) the contractor shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The contractor shall monitor growth of the rye over the next 45 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed slope by November 15, then the contractor shall cover the slope with a layer of erosion control mix as described in this standard, or with stone riprap as described in this standard. Rye grass and any other specified grass seed is only to be used below elevation 2,700.

- Stabilize The Slope With Sod – The contractor shall stabilize the disturbed slope with properly installed sod by October 1 (except August 15 in areas above elevation 2,700). Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contract between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H: 1V) or having groundwater seeps on the slope face.

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[2] June 2, 2006 MMP Response to Agency Questions, Response No. 17 to Art McGlaflin's April 10, 2006 Memo to LURC.

[3] June 2, 2006 MMP Response to Agency Questions, Response No. 12 to David Rocque's March 10, 2006 Memo to LURC.

- Stabilize The Slope With Erosion Control Mix – The contractor shall place a six-inch layer of Erosion Control Mix on the slope by November 15 (October 1 in areas above elevation 2,700). Prior to placing the Erosion Control Mix, the contractor shall remove any snow accumulation on the disturbed slope. The contractor shall not use Erosion Control Mix to stabilize slopes having grades greater than 50% (2H: 1V) or having groundwater seeps on the slope face.

- Stabilize The Slope With Stone Rip Rap – The contractor shall place a layer of stone riprap on the slope by November 15 (October 1 in areas above elevation 2,700). The contractor shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

### 8.3 Standard For The Timely Stabilization Of Disturbed Soil

By September 15 (August 1 in areas above elevation 2,700) the contractor shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the contractor fails to stabilize these soils by this date, then the contractor shall take one of the following actions to stabilize the soil for late fall and winter. Mulch containing any seed other than balsam fir is not to be used above Elevation 2,700.

- Stabilize The Soil With Temporary Vegetation – By October 1, the contractor shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1,000 square feet, lightly mulch the seeded soil with straw at 75 pounds per 1,000 square feet, and anchor the mulch with plastic netting. The contractor shall monitor the growth of the rye over the next 45 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 15, then the contractor shall mulch the area for over-winter protection.

- Stabilize The Soil With Sod – The contractor shall stabilize the disturbed soil with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

- Stabilize The Soil With Mulch – By November 15, the contractor shall mulch the disturbed soil by spreading straw at a rate of at least 150 pounds per 1,000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the contractor shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the contractor shall anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

- Stabilize The Slope With Wood Waste Compost – By November 15, the contractor shall place a six-inch layer of wood waste compost.

## 9.0 Sedimentation Sumps

Shallow sediment sumps are to be used on the downgradient side of erodible stockpiles and in areas where excess borrow is removed from the "cut side" of the soil disturbance.

## 10.0 Permanent Erosion Control Measures

LURC standards require permanent soil stabilization to be completed within one week of inactivity or completion of construction in accordance with the project's Erosion and Sediment Control Plan. Permanent soil stabilization measures include, but are not limited to, riprap slope protection, loam, seed and mulch, reinforced turf or erosion control mix, stone face slope, riprap channel protection, gravel road or shoulder surface, riprap outlet and inlet protection, and other measures shown in project drawings.

## 11.0 Erosion and Sedimentation Control Implementation Process

The best method to limit erosion and sedimentation is to prevent it from occurring by protecting exposed soils or sensitive areas. This section describes the process that will be used to identify the erosion and sediment control measures described in section 6.0. The placement and types of erosion control measures will be determined during the site walk-through of each section of the corridor. The following general sequence of work will be followed to mitigate the potential for erosion of exposed soils and/or discharge of sediment-laden water from the work area.

1. Conduct a walk-through of the ROW to establish limits of work for construction activity, identify and mark sensitive resources and the location of travel lanes.
2. Complete and stabilize with wood chips or slash any needed access route improvements.
3. Install and stabilize temporary equipment crossings over wetlands and waterbodies. Use timber mats or temporary bridges where necessary.
4. Clear timber and brush. No grubbing will be necessary unless the area requires leveling for passage of tracked equipment in difficult terrain or for installation of poles and guys.
5. Install silt fencing or other erosion control barriers around the perimeter of the work areas.
6. Protect resources along temporary travel lanes within the ROW and protect resources adjacent to construction laydown and work areas.
7. Construct temporary or permanent water bars, if needed.
8. Level the construction area and conduct any blasting, as needed.
9. Excavate for the poles. Pump excavation seepage and runoff to a temporary sedimentation trap or Dirtbag™, prior to discharge to a well-vegetated area. Control and direct runoff from the excavation areas using water bars, berms or hay bales. Remove excess spoils from site.
10. Monitor any paved public road used for access for signs of tracking and spilling of spoils on the roadway. Construct a stabilized construction entrance if needed.
11. Complete pole and conductor installation.

12. Stabilize disturbed soils associated with temporary wetland and stream crossings within 48 hours of removal of the temporary crossing.
13. Regrade the ROW to original contours, as needed, loam, seed, mulch, and anchor all exposed soils within 7 days from final grading.

Any deviation from this sequence is subject to approval of the applicant and may require separate approval of the regulatory officials.

## 12.0 Contracting Procedure

The transmission line will be constructed by subcontractors of the applicant. The contract documents will require a schedule for the completion of the work which will satisfy the following criteria:

### 12.1 The Work Shall Be Constructed In Accordance With This Erosion Control Plan

Work must also be scheduled or phased to prevent the extent of the exposed areas as stipulated in this plan. The contractor shall also agree and have the responsibility to control turbidity, to prevent significant erosion, to control fugitive dust, and to employ the tools outlined in this plan, and including other measures as may be necessary to meet this responsibility. The work shall be conducted in sections which will:

- Limit the amount of exposed area to those areas in which work is expected to be undertaken during the next 3 to 4 days.
- Revegetate disturbed areas as rapidly as possible.
- Incorporate specified inlets, groundwater control, and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.
- Comply with the provisions of this section.
- Stockpiled material shall be located at least 100’ from any stream/water body or wetland.

### 12.2 The Area of Denuded Non-Stabilized Construction Shall Be Limited To The Minimum Area Practicable

An area shall be considered to be denuded until the surface gravel is installed on the roadway surface, the final surface treatment constructed, or the areas have been loamed, seeded, and mulched or covered with Erosion Control Mix.

Any deviations from the schedule or provisions contained in this plan shall require the approval of the permittee. The permittee may elect to consult with LURC and MeDEP to secure their approval prior to approving any schedule changes.

The contractor must install any added measures which may be necessary to control erosion/sedimentation from the site, dependent upon the actual site and weather conditions occurring at the time of construction.

The applicant will retain an inspector. The contractor shall cooperate with the third party inspector and permit access to the site by the inspector at all times.

## 13.0 Provisions for Seasonal Shutdown

Because the transmission line construction is required to be completed in small segments, due to limited access points, the ability to shut down the work for seasonal or other reasons should be relatively easy. This narrative describes this shutdown procedure: Any segments of the transmission line where vegetation has not been reestablished shall be treated as outlined in Section 8.0 of this narrative.

An inspection shall be made to identify any areas where additional erosion control work is needed. Such areas shall be repaired.

Subsequently, the transmission line corridor shall be re-inspected after a significant rainfall. Any eroded areas shall be repaired. Inspections shall follow for four significant rainfall events.

## 14.0 Provisions for Maintenance of the Erosion/Sedimentation Control Features

The transmission line construction will be contracted by the applicant. The work will be subject to the requirements of MeDEP and LURC Permits. The final provisions of this permit are anticipated to require the applicant and his contractors to prepare a list and designate by name, address and telephone number all individuals who will be responsible for implementation, inspection and maintenance of all erosion control measures identified within this section and as contained in the Erosion and Sedimentation Control Plan of the contract drawings. The applicant shall also engage a contractor certified in erosion control practices by the MeDEP to install all control measures and to conduct follow-up inspections. The applicant may alternatively engage a Maine Licensed Professional Engineer to conduct follow-up inspections. The stormwater management, road maintenance, and transmission line sections of this application provide details on maintenance procedures specific to this project. Specific responsibilities of the contract documents for the inspector(s) should include:

1. Execution of the contractor/Subcontractor Certification contained in Appendix B by any and all parties responsible for erosion control measures on the site.

2. Inspection of this project work site on a weekly basis and after each significant rainfall event (0.5 inches or more within any consecutive 24-hour period) during construction until permanent erosion control measures have been properly installed and the site has been stabilized. Inspection of the project work site shall include:

- Identification of proper erosion control measure installation in accordance with the erosion control detail sheet or as specified in this section.
- Determine whether each erosion control measure is properly operating. If not, identify damage to the control device and determine remedial measures.
- Identify areas which appear vulnerable to erosion and determine additional erosion control measures which should be used to improve conditions.

- Inspect areas of recent seeding to determine percent catch of grass. A minimum catch of 75 percent is required prior to removal of erosion control measures.

  Accumulated silt/sediment should be removed when the depth of sediment reaches 50 percent of the barrier height. Accumulated silt/sediment should be removed from behind silt fencing when the depth of the sediment reaches 6 inches.

3. Certification that the contractor's construction sequence is in conformance with the specified schedule of this plan. A weekly compliance certification describing, any deviations and corrective measures necessary to comply with the erosion control requirements which shall be prepared and signed by the inspector(s).
4. In addition to the weekly certifications, the inspector(s) shall maintain written reports recording construction activities on site which include:
   - Dates when major grading activities occur in a particular area.
   - Dates when major construction activities cease in a particular area, either temporarily or permanently.
   - Dates when an area is stabilized.
5. Modifications to the erosion control plan, either to improve effectiveness or correct a site-specific deficiency if inspection of the site indicates a change should be made. The inspector shall immediately notify the contractor and the applicant that the contractor should implement the corrective measures.

Once construction has been completed, long-term maintenance of the permanent erosion control measures and storm water systems will be the responsibility of the applicant.

All certifications, inspection forms, and written reports prepared by the inspector(s) should be filed with the applicant, and the MCGP Permit File contained on the project site. All written certifications, inspection forms, and written reports should be filed within one (1) week of the inspection date.

## 15.0 Preconstruction Conference

Prior to any construction at the site, representatives of the MeDEP, LURC, the transmission line construction contractor, the soils engineer, and the site design engineer should meet with the applicant to discuss the scheduling of the site construction and compliance with this plan. By or before that meeting, the contractor will prepare a detailed schedule and a marked-up site plan indicating areas and components of the work and key dates showing date of disturbance and completion of the work. Three copies of the schedule and marked-up site plan shall be provided to the applicant.

## 16.0 Closure

This Erosion and Sedimentation Control Plan applies to the new transmission line corridors which will be constructed for the proposed wind farm project. LURC Chapter 10 Rules and Standards require permanent and temporary erosion and sedimentation control measures to meet the standards and specifications of the "MeDEP Erosion and Sediment Control BMP Manual of March 2003" or other equally effective practices. This Erosion and Sedimentation Control Plan, accompanying Maintenance Narrative, and project drawings seek to minimize any unreasonable soil erosion or reduction in the capacity of the land to absorb and hold water. **Any deviation from the requirements of this plan shall be reviewed with the Permittee and may require separate approval from MeDEP and LURC.**

# ATTACHMENT A

**Seeding Plan is to match the seeding plan in the Roadway Erosion Control Report**

# ATTACHMENT B

## Sample Certification and Inspection Forms

**STORMWATER POLLUTION PREVENTION PLAN**

**CONTRACTOR/SUBCONTRACTOR CERTIFICATION**

PROJECT INFORMATION

Project Name: Black Nubble Wind Farm

Address: Redington Township, Maine

CONTRACTOR/SUBCONTRACTOR INFORMATION

Firm Name: _____

Address: _____

Telephone: _____

Type of Firm: _____

CERTIFICATION STATEMENT

"I certify under penalty of law that I understand the terms and conditions of the general Maine Pollutant Discharge Elimination System (MePDES) permit that authorizes the stormwater discharges associated with industrial activity from the construction site identified as part of this certification."

_____

Signature

_____

Typed Name

_____

Title

_____

Date

**STORMWATER POLLUTION PREVENTION PLAN**

**INSPECTION REPORT**

PROJECT INFORMATION

Project Name: Black Nubble Wind Farm

Address: Redington Township, Maine

INSPECTOR INFORMATION

Inspector Name: _____

Firm: _____

Title: _____

Qualifications: _____

INSPECTION SUMMARY

Date of Inspection: _____

Major Observations: _____

_____

_____

_____

THE FACILITY IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

_____

_____

_____

_____

ACTIONS NECESSARY TO BRING FACILITY INTO COMPLIANCE:

_____

_____

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN (MUST BE IMPLEMENTED WITHIN 7 DAYS OF INSPECTION):

_____

_____

_____

_____

CERTIFICATION STATEMENT:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____

Signature

_____

Typed Name

_____

Title

_____

Date

**ATTACHMENT D**

**Figure T-1**