

Redington Wind Farm Project

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

Prepared by:

DeLuca-Hoffman Associates, Inc.

South Portland, Maine

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

Table of Contents

1.0	Introduction	1
2.0	Existing Site Conditions.....	4
3.0	Overview of Soil Erosion and Sedimentation Concerns	6
4.0	Construction Activities and Procedures	8
4.1	Transmission Line	8
4.2	Substation Interconnect.....	11
5.0	Erosion and Sedimentation Control Plan Guiding Principles	12
5.1	Timing of Work.....	13
5.2	Minimize Disturbed Areas	16
5.3	The Proper Selection and Installation of Erosion Control Materials.....	17
5.4	The Availability of the Materials for Construction	17
6.0	Proposed Erosion/Sedimentation Control Measures	18
6.1	Siltation Fence.....	19
6.2	Mulch	20
6.3	Wood Waste	20
6.4	Construction Entrances.....	21
6.5	Dirtbags™	21
6.6	Loam and Seed	21
7.0	Temporary Erosion/Sedimentation Control Measures	21
8.0	Standards for Stabilizing Sites for the Winter.....	24
8.1	Standard For The Timely Stabilization Of Ditches And Channels	24
8.2	Standard For The Timely Stabilization Of Disturbed Slopes.....	25
8.3	Standard For The Timely Stabilization Of Disturbed Soil.....	26
9.0	Sedimentation Sumps	28
10.0	Permanent Erosion Control Measures	28
11.0	Erosion and Sedimentation Control Implementation Process	28
12.0	Contracting Procedure.....	29
12.1	The Work Shall Be Constructed In Accordance With This Erosion Control Plan.....	30
12.2	The Area of Denuded Non-Stabilized Construction Shall Be Limited To The Minimum Area Practicable	30
13.0	Provisions for Winter or Seasonal Shutdown.....	31
14.0	Provisions for Maintenance of the Erosion/Sedimentation Control Features	31
15.0	Preconstruction Conference	34
16.0	Closure	34

List of Appendices

Appendix A - Seeding Plan

Appendix B - Sample Certification and Inspection Forms

Appendix C – Erosion Control Specifications

Appendix D – Figure T-1

List of Tables

Table 1 - Surficial Soil Types and Relative Erodibility

Table 2 – Summary of Transmission Line Corridor Construction Lengths

Table 3 - Schedule of Silt Fence Requirements

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

1.0 Introduction

DeLuca-Hoffman Associates, Inc. has prepared the following plan, which presents the erosion and sedimentation control provisions required to construct the transmission line corridors. Redington Mountain Windpower, LLC has retained DeLuca-Hoffman Associates, Inc. to prepare a number of reports for the Redington Wind Farm Project. The work of DeLuca-Hoffman Associates, Inc. is summarized in seven reports, which accompany the Maine Department of Environmental Protection (MeDEP) and LURC applications and are titled:

- Erosion and Sedimentation Control Plan for Roadway Construction;
- Basis of Design for the Roadways to Access Wind Turbines;
- Basis of Stormwater Management for Access Roadways;
- Access Road Maintenance;
- Blasting;
- Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction; and
- Solid Waste

The reports are supported by a series of drawings prepared by DeLuca-Hoffman Associates, Inc. and include the following:

Index of Drawings	
Drawing	Description
Base Map	Redington Wind Farm Project Base Map
C-1	Cover Sheet, Index And Legend
C-2	Lower Black Nubble Summit Road
C-3	Lower Black Nubble Access Road, Spur To Turbines 20, 21 & 22, and Portions of Summit Roads
C-4	Upper Black Nubble Access Road And Summit Road
C-5	Redington Access Road
C-6	Redington Summit Road And Spurs To Turbines 1, 2, 3 & 4
C-7	Redington Summit Road And Spur to Turbines 8, 9, 10 & 11

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

Index of Drawings	
Drawing	Description
C-8	Lower Black Nubble Summit Road Profile
C-9	Lower Black Nubble Summit Road, Access Road, And Spurs To Turbines 13, 14, & 15 Profiles
C-10	Lower Black Nubble Spur to Turbines 20, 21 & 22 Profiles
C-11	Upper Black Nubble Access Road Profile
C-12	Upper Black Nubble Access Road And Alternate Route to Turbines 20 & 21 Profiles
C-13	Upper Black Nubble Summit Road and Spurs to Turbines 16 & 19 Profiles
C-14	Redington Summit Road Profile
C-15	Redington Summit Road Profile
C-16	Redington Spur to Turbines 2-4 and Spur to Turbines 8-11 Profiles
C-17	Redington Access Road Profile
C-18	Redington Access Road Profile
C-19	Redington Access Road Profile
C-20	Roadway Details
C-21	Backslope Details
C-22	Ditch Details
C-23	Erosion Control Details
C-24	Fill Slope Details
W-1	Lower Black Nubble Drainage Areas
W-2	Lower Black Nubble Drainage Areas
W-3	Upper Black Nubble Drainage Areas
W-4	Redington Access Road Drainage Areas
W-5	Redington Summit Road Drainage Areas
W-6	Redington Summit Road Drainage Areas
I-1	Existing Road Improvements Inset Areas 4 and 5
I-2	Access Route Extensions and Existing Road Improvements Inset Areas 1, 2, 3, and 6
I-3	Substation Interconnect and Access Road Inset Area 7
B-1	Redington Parcel Water Quality Buffer Areas
B-2	Black Nubble Parcel Water Quality Buffer Areas

The designs and reports prepared by DeLuca-Hoffman Associates, Inc. rely upon baseline information provided for this project by other consultants of Redington Mountain Windpower, LLC. The baseline data prepared by other consultants to Redington Mountain Windpower, LLC include the following:

- The identification and location of wetlands and other natural resources by Woodlot Alternatives.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

- Surficial Soils Surveys and narratives prepared by Al Frick.
- Base topographic mapping prepared by Aerial Survey.
- Geotechnical evaluations and recommendations for Roadway Construction prepared by S. W. Cole.

There are other physical elements of the project such as the staging area, small buildings, and the wind turbines, 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 line corridors. 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 the MeDEP, 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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

The construction of the transmission lines for the Redington 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	Miles
Redington 34.5kV transmission line (Red Line)	2.6
Black Nubble 34.5kV transmission line (Black Line)	1.2
115kV transmission line (Main Line)	7.5
TOTAL	Approx. 11.3 Miles

2.0 Existing Site Conditions

The proposed wind turbines will be erected on two mountaintop ranges: Redington Range and Black Nubble Range. 34.5kV transmission lines are proposed to transmit the power generated by the turbines from each 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 lines 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 ranging between 40% and 5%.

The proposed transmission line corridor from Redington Mountain to the substation (the Red Line shown on the Base Map) is approximately 2.6 miles long and follows a similar route to that of RE6b as the corridor approaches the substation interconnect. The existing woods road along the route of RE6b will be utilized to access the transmission line corridor from Redington Mountain.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

The proposed transmission line corridor from Black Nubble Mountain to the substation (the Black Line shown on the Base Map) is approximately 1.2 miles 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 7.5 miles 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 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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

- ❑ 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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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 observed water table within 6 feet of the soil surface	.17-.20
Dixfield 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 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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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 was designed to meet the five 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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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 five requirements listed above.**

These 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 1 & 2*** (length of this segment is 3,800 feet) – This segment along the Red Line will be accessed from the location of the proposed Redington Access Road. One small area of wetland exists in this segment. This segment should be constructed during winter or summer months.
- ***Segment Between Access Points 2 & 3*** (length of this segment is 1,800 feet) – With the exception of the lower end, this segment is expected to be relatively dry and should also be worked during summer or winter months.
- ***Segment Between Access Points 3 & 4*** (length of this segment is 1,200 feet) – This segment of corridor exists along RE6b and is

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

expected to be relatively dry and should be worked during winter or summer months.

- ***Segment Between Access Points 4 & 5*** (length of this segment is 3,600 feet) – This segment of corridor exists along RE6b and is expected to be relatively dry and should be worked during winter or summer months.
- ***Segment Between Access Points 5 & 9*** (length of this segment is 2,400 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 6 & 7*** (length of this segment is 1,500 feet) –This segment will be accessed from existing logging roads. This is a very steep area where no 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 3,700 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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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 6,000 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 2,400 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 exist along this segment. This segment should be constructed during winter months.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

- ***Segment Between Access Points 14 & 15*** (length of this segment is 3,500 feet) – Some wet areas and steep slopes exist along this segment. This segment should be constructed during summer or winter months.
- ***Segment Between Access Points 15 & 16*** (length of this segment is 6,700 feet) – Some wet areas and steep slopes exist along this segment. This segment should be constructed during summer or winter months.
- ***Segment Between Access Points 16 & 17*** (length of this segment is 1,600 feet) – Some wet areas exist along this segment. This segment should be constructed during summer or winter months.
- ***Segment Between Access Points 17 & 18*** (length of this segment is 3,000 feet) – Some wet areas and steep slopes exist along this segment. This segment should be constructed during summer or winter 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 summer or winter 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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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 Wood Waste

Wood waste generated by chipping trees and cleared material is intended to provide a cover material over bare slopes as an erosion control material. It may also be applied as a berm up to 12" height on the uphill side of Type 1 silt fences. It must be securely anchored with a geotextile since it is buoyant and therefore prone to dislodging by water. The wood waste will eventually break down and become thin. Therefore, it is recommended that a native and non-invasive seed mix be applied to the soil below the wood waste material. Recommendations for this seeding are provided in Attachment A of this plan. The wood waste material is available at the site. Therefore, the wood waste is a resource that should

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

not be discounted, but effectively integrated into the erosion/sedimentation controls.

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.

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 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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

- Type 1 and 2 siltation fence 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. If necessary, mesh shall be installed to prevent wind from removing the mulch.
- All back and fill slopes, 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 within 5 days of disturbance, prior to any predicted storm event of the equivalent of ½" of equivalent rainfall in a 24-

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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 wood waste. 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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

- Slopes steeper than 3:1 shall receive reinforced turf or reinforced bark mulch.
- 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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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). 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 October 1 (except August 15 in areas 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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

by November 15, then the contractor shall cover the slope with a layer of wood waste compost as described in this standard, or with stone riprap as described in this standard.

- 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 contact 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.

- Stabilize The Slope With Wood Waste Compost – The contractor shall place a six-inch layer of wood waste compost on the slope by November 15 (October 1 in areas above elevation 2,700). Prior to placing the wood waste compost, the contractor shall remove any snow accumulation on the disturbed slope. The contractor shall not use wood waste compost 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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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.

- 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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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 bark mulch, 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 6.1. 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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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:

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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.

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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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 may be required to retain a third party 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 Winter or 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 requirement of a MeDEP Storm Water Discharge Permit. 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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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 registered Professional Engineer to conduct follow-up inspections. Both 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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the permittee.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

PERMANENT SEEDING PLAN NON-WETLAND AREAS BELOW 2700 FEET

Project Redington Wind Farm

Site Location Transmission Line Corridors

X Permanent Seeding _____ Temporary Seeding

1. Area to be seeded: not determined acre, OR _____ M Sq. Ft.
2. Instructions on preparation of soil: Prepare a good seed bed for planting method used.
3. Apply lime as follows: _____ #/acres, OR 138#/M Sq. Ft.
4. Fertilize with _____ pounds of - - N-P-K/ac. OR
18.4 pounds of 10 - 20 - 20 N-P-K/M Sq. Ft.
5. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
6. Seed with the following mixture:
 50% Perennial Ryegrass
 20% Tufted Hairgrass (as available)
 15% Poverty Oatgrass (as available)
 15% Wild Oatgrass (as available)

When using small grain as nurse crop seed it at one-half the normal seeding rate.

7. Mulching instructions: Apply at the rate of _____ tons per acre. OR
115 pounds per M. Sq. Ft.

	<u>Amount</u>	<u>Unit #, Tons, Etc.</u>
8. TOTAL LIME.....	<u>138</u>	<u>#/1000 sq. ft.</u>
9. TOTAL FERTILIZER.....	<u>13.8</u>	<u>#/1000 sq. ft.</u>
10. TOTAL SEED.....	<u>4.0</u>	<u>#/1000 sq. ft.</u>
11. TOTAL MULCH.....	<u>230</u>	<u>#/1000 sq. ft.</u>
12. TOTAL other materials, seeds, etc.....	_____	

13. REMARKS

- Recommended seeding dates: Varies with elevation; see narrative.
- For areas with slopes >10%, waterways, areas within 100 feet of wetlands, and fall and winter erosion control areas, mulch netting shall be used per manufacturer's specifications.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the permittee.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

SEEDING PLAN WETLAND AREAS ALL ELEVATIONS

Project Redington Wind Farm

Site Location Transmission Line Corridors

X Permanent Seeding _____ Temporary Seeding

1. Area to be seeded: Not Determined acre, OR _____ M Sq. Ft.
2. Instructions on preparation of soil: Prepare a good seed bed for planting method used.
3. Apply lime as follows: _____ #/acres, OR 138#/M Sq. Ft.
4. Fertilize with _____ pounds of - - N-P-K/ac. OR 18.4 pounds of 10 - 20 - 20 N-P-K/M Sq. Ft.
5. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
6. Seed with the following mixture:
 35% Annual Rye
 35% Wool Grass
 30% Blue Joint Grass

When using small grain as nurse crop seed it at one-half the normal seeding rate.

7. Mulching instructions: Apply at the rate of _____ tons per acre. OR 180 pounds per M. Sq. Ft.

	<u>Amount</u>	<u>Unit #, Tons, Etc.</u>
8. TOTAL LIME.....	<u>138</u>	<u>#/1000 sq. ft.</u>
9. TOTAL FERTILIZER.....	<u>18.4</u>	<u>#/1000 sq. ft.</u>
10. TOTAL SEED.....	<u>5.0</u>	<u>#/1000 sq. ft.</u>
11. TOTAL MULCH.....	<u>180</u>	<u>#/1000 sq. ft.</u>
12. TOTAL other materials, seeds, etc.....	_____	

13. REMARKS

The above seed mix is required in all temporarily disturbed wetland areas.

Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the permittee.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

TEMPORARY SEEDING PLAN NON-WETLAND AREAS ALL ELEVATIONS

Project Redington Wind Farm

Site Location Transmission Line Corridors

_____ Permanent Seeding X _____ Temporary Seeding

5. Area to be seeded: not determined acre, OR _____ M Sq. Ft.

6. Instructions on preparation of soil: Prepare a good seed bed for planting method used.

7. Apply lime as follows: _____ #/acres, OR 138#/M Sq. Ft.

8. Fertilize with _____ pounds of - - N-P-K/ac. OR
18.4 pounds of 10 - 20 - 20 N-P-K/M Sq. Ft.

7. Method of applying lime and fertilizer: Spread and work into the soil before seeding.

8. Seed with the following mixture:
 100% Winter Rye

When using small grain as nurse crop seed it at one-half the normal seeding rate.

8. Mulching instructions: Apply at the rate of _____ tons per acre. OR
230 pounds per M. Sq. Ft.

	<u>Amount</u>	<u>Unit #, Tons, Etc.</u>
14. TOTAL LIME.....	<u>138</u>	<u>#/1000 sq. ft.</u>
15. TOTAL FERTILIZER.....	<u>18.4</u>	<u>#/1000 sq. ft.</u>
16. TOTAL SEED.....	<u>4.0</u>	<u>#/1000 sq. ft.</u>
17. TOTAL MULCH.....	<u>115</u>	<u>#/1000 sq. ft.</u>
18. TOTAL other materials, seeds, etc.....	_____	
19. REMARKS		

Spring seeding is recommended, however, late summer (prior to date specified in narrative) seeding can be made. Permanent seeding should be made prior to date specified in narrative or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the permittee.

ATTACHMENT B

Sample Certification and Inspection Forms

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

STORMWATER POLLUTION PREVENTION PLAN
CONTRACTOR/SUBCONTRACTOR CERTIFICATION

PROJECT INFORMATION

Project Name: Redington 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: Redington 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:

Erosion and Sedimentation Control Plan for Transmission Line Corridor Construction

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 C

Erosion Control Specifications

SECTION 02270 - SLOPE PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Temporary and permanent erosion control systems.
- B. Slope Protection Systems.

1.2 RELATED SECTIONS

- A. Section 02000 – LURC Permit
- B. Section 02100 - Site Preparation
- C. Section 02200 - Earthwork
- D. Erosion and Sedimentation Control Plan
- E. Construction Requirements

1.3 ENVIRONMENTAL REQUIREMENTS

- A. The contractor shall protect adjacent properties and water resources from erosion and sediment damage throughout the life of the contract in accordance with the Erosion and Sediment Control Plan prepared for this project and in accordance with the requirements of the LURC Permit and special conditions of the permits. The Erosion and Sediment Control Report and Site Permits have specific restrictions on seasonal work limits, the amount of area which can be exposed at a given time, the general sequence of construction, and contractor monitoring.

- B. The general contractor will be required to designate, by name, a Registered Professional Engineer or equivalent person responsible for implementation of all erosion control measures as required by the MeDEP Site Location of Development Permit and LURC Permit for this project. Specific responsibilities will include:
1. Assuring and certifying the contractor's construction sequence is in conformance with the specified schedule. In addition, a weekly certification stating compliance, any deviations, and corrective measures shall be filed with the permittee by this person. A copy of the certification form is contained the Erosion and Sedimentation Control Plan.
 2. Inspection of the project work site on a weekly basis, with the installation of added erosion control measures in areas which appear vulnerable to erosion.
 3. Inspection of all erosion control measures and drainage inlets after any significant rainfall. 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. A significant rainfall shall be defined as over ½ inch of precipitation in any consecutive 24-hour period.
 4. Inspect areas for catch of grass. A minimum catch of 75 percent is required prior to removal of erosion control measures.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Quick growing grasses for temporary seeding (see seed mixes contained in Erosion and Sedimentation Plan).
- B. Hay or straw bales.

- C. Fencing for siltation control as specified on the plans.
- D. Curlex blankets by American Excelsior Company or approved equal.
- E. Bale stakes shall be a minimum of 4 feet in length and 1" in width.
- F. Temporary mulches such as loose hay, straw, netting, wood cellulose or agricultural siltage.
- G. Fence stakes shall be metal stakes a minimum of 8 feet in length.
- H. Stone check dams shall be spaced according to the Erosion Control Detail Plan.
- I. Stone Sediment Barriers or SiltSacks™, or approved equal for inlet protection.
- J. A stabilized construction entrance shall be constructed temporarily.
- K. Riprap for slopes, culvert, storm drain inlet, and outlet aprons.
- L. Reinforced turf.
- M. Wood mulch.
- N. Calcium chloride and water for dust control.
- O. DIRTBAGS™ as outlined on the contract drawings.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Review site erosion control plan attached to this section of the specifications.
- B. Deficiencies or changes in the erosion control plan as it is applied to current conditions will be brought to the attention of the Engineer for remedial action.

3.2 EROSION CONTROL AND SLOPE PROTECTION IMPLEMENTATION

- A. Provide catalog cuts and information concerning the erosion control products which will be used for construction for review by the permittee.
- B. Provide information concerning the installation of the erosion sedimentation control including anchorage trench provisions and anchorage devices and spacing for review by the permittee.
- C. Place erosion control systems in accordance with the erosion control plan and in accordance with approved installation procedures.
- D. This contract limits the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations. The permittee has the authority to direct the contractor to provide immediate permanent or temporary pollution control measures. The contractor will be required to incorporate all permanent erosion control features into the project at the earliest practical time to minimize the need for temporary controls. Cut slopes shall be permanently seeded and mulched as the excavation proceeds to the extent considered desirable and practical.
- E. The temporary erosion control systems installed by the contractor shall be maintained as directed by the Engineer to control siltation at all times during the life of the Contract. The contractor must respond to any maintenance or additional work ordered by the Engineer within a 48-hour period.

- F. Any additional material work required beyond the extent of the erosion control plan shall be paid for by the permittee except where such measures are required to correct deficiencies caused by the failure of the contractor to construct the work in accordance with the erosion sediment control plan.

- G. Slopes that erode easily shall be temporarily seeded as the work progresses with a cereal grain of wheat, rye or oats.

END OF SECTION 02270

**REDINGTON WINDFARM
REDINGTON TOWNSHIP, MAINE**

DECEMBER 2005

LURC PERMIT APPLICATION

Erosion and Sedimentation Control Plan

ATTACHMENT D

Figure T-1