



MAINE POWER RELIABILITY PROGRAM

A CENTRAL MAINE POWER COMPANY PROGRAM

APPLETON, MAINE SHORELAND ZONING, FLOODPLAIN MANAGEMENT AND SITE PLAN REVIEW PERMIT APPLICATION

Section 254 Transmission Line Construction

Prepared for:

Central Maine Power Company
83 Edison Drive
Augusta, Maine 04336

Prepared by:



TRC Engineers, LLC
249 Western Avenue
Augusta, Maine 04330

September 2009

Agent Authorization Letter

**Shoreland Zoning, Floodplain Management and
Site Plan Review Permit Application**

INTRODUCTION

The project described in these application materials is located in a portion of the Town of Appleton's Shoreland Zone within the Limited Residential District. Those portions of the project within the Shoreland Zone require approval under the Shoreland Zoning Ordinance. The project also crosses an area designated as Federal Emergency Management Agency (FEMA) Flood Zone. This portion of the project will require approval under the Floodplain Management Ordinance. In addition, the project may require Site Plan Review.¹ The application materials are divided into the following parts:

- Part A: Project Overview and Description – beginning on page 2.
- Part B: Shoreland Zoning Permit Application – beginning on page 5.
- Part C: Floodplain Management Application – beginning on page 17.
- Part D: Site Plan Review Application – beginning on page 21.
- Exhibits: Beginning on page 28.

Permit applications to the Army Corps of Engineers (Clean Water Act, Section 404 permit) and the Maine Department of Environmental Protection (Site Location of Development permit and Natural Resources Protection Act permit) were submitted in June of 2009 and are currently under review. A request for Certificate of Public Convenience and Necessity is currently under review by the Maine Public Utilities Commission.

¹ Based on the language of Section 3 in the Site Plan Review Ordinance, which addresses the applicability of that ordinance, it is unclear whether site plan approval is required for this project. Nevertheless, the site plan review standards are addressed in Part D of these application materials, should site plan approval be required.

PART A: PROJECT OVERVIEW AND DESCRIPTION

The Maine Power Reliability Program (MPRP) is a project by Central Maine Power Company (CMP) to upgrade Maine's bulk power system. The vast majority of Maine's bulk power transmission system was placed into service in the early 1970s and is now reaching the limits of its ability to meet the growing electrical demand of Maine customers. Since the last major transmission infrastructure was completed more than 30 years ago, the patterns of both available generation and customer load have shifted significantly. For example, population has become more concentrated in the southern part of the state, while the generation needed to serve that load is now more distant and dispersed. When these pattern changes are combined with the increasing peak demand the current transmission infrastructure in Maine will, in very few years, become inadequate. In addition, the reliability and security standards mandated by law and administered by the North American Electric Reliability Corporation (NERC), the Northeast Power Coordinating Council, Inc. (NPCC), and ISO New England (ISO-NE) have changed significantly in recent years. CMP must upgrade its bulk power system with this proposed project in order to meet the mandatory standards and to provide reliable electric service to Maine customers into the future.

CMP's system consists of both "transmission" and "distribution" lines. Transmission lines function as the highway system of the electrical grid by feeding electricity from where it is generated (such as at power plants) to substations. From there, the distribution system takes over by carrying the electricity from substations to customers. Transmission lines in Maine are typically operated at one of two levels – 115,000 volts, also expressed as 115 kilovolts (kV), and 345,000 volts, often referred to as 345 kV.

CMP's 345 kV transmission system was built and put into service in 1971. Since then power consumption has more than doubled. In recent years, both CMP and ISO-NE have identified reliability issues with the 345 kV system that need to be assessed and addressed.

In January 2007 the MPRP began a comprehensive needs assessment of CMP's bulk power transmission system. The study included a 10-year forecast to evaluate the system in Maine, including a review of system reliability and performance under various system conditions and operating scenarios, as well as a needs assessment to ensure a reliable transmission system in the most cost-effective manner possible. The study identified a number of significant reliability issues with Maine's bulk transmission system, including insufficient 345 kV transmission capacity, insufficient 115/345 kV transformation capacity, and insufficient transmission support and infrastructure in all regions served by CMP.

After completing the needs assessment, the MPRP team went to work to study possible solutions. This included both transmission and non-transmission alternatives, including energy efficiency, before designating its preferred solution. CMP ultimately selected a primarily transmission solution (a small geographic area known as the South Portland loop will be addressed through non-transmission alternatives) based on a number of factors, including electrical performance, cost effectiveness, impacts to landowners, and Maine's environment under various forecasts of future conditions. The proposed solution consists of 345 kV and 115 kV transmission lines and associated substations throughout CMP's service territory where particular needs were identified (Figure 1).

The proposed transmission solution ranges from Eliot in the south, Rumford in the west, Warren and Searsport in the east, and Orrington and Pittsfield to the north. In all, MPRP will encompass nearly 80 Maine towns, and will require approvals from the Maine Public Utilities Commission, the Maine Department of Environmental Protection, the U.S. Army Corps of Engineers, and numerous municipalities.

The MPRP in Appleton

The part of the program located in Appleton involves work in the existing transmission line corridor that extends through the northern portion of town for approximately 2 miles from Liberty southeasterly through Appleton and into Searsmont. See attached location maps included as Exhibit 1 and ROW configuration included as Exhibit 2. Specifically, the project involves:

- Installing a new 115 kV transmission line, Section 254, within the existing corridor that currently contains CMP's 345 kV transmission line, Section 388. The new line will be carried on H-frame structures similar to those that are currently used for Section 388. These structures are typically 75 feet above ground.
- Additional clearing in some portions of the existing corridor will be required. This clearing will occur within the existing corridor between Section 388 and the Maritimes and Northeast gas pipeline to accommodate the proposed Section 254. CMP will not need to acquire additional lands for this purpose; rather this portion of the MPRP will be built entirely within the existing transmission corridor.

Structure heights will vary due to varying terrain and the need to achieve spans that will avoid or minimize impacts to natural resources. Typical above ground structure heights are 75 feet above ground, although some structures may exceed 75 feet in specific instances. See Exhibit 3 for a table showing the number of structures within specific height ranges for Section 254.

The proposed upgrades in Appleton, as outlined above, are a part of the program to improve the reliability, safety, and security of the bulk power transmission system in Maine, while at the same time meeting the increasing demands for electrical power.

**PART B:
SHORELAND ZONING PERMIT APPLICATION**

GENERAL INFORMATION

1. Applicant Central Maine Power Company	2. Applicant's Address 83 Edison Drive Augusta, Maine 04336	3. Applicant's Tel. # (207) 623-3521
4. Property Owner Maine Electric Power Co.(CMP has entered into an agreement with MEPCO providing CMP with title, right, or interest in the property)	5. Owner's Address 83 Edison Drive Augusta, Maine 04336	6. Owner's Tel. # (207) 623-3521
7. Contractor	8. Contractor's Address	9. Contractor's Tel. #
10. Location/Address of Property Transmission Line Corridor (See Exhibit 1, attached)	11. Tax Map/Page & Lot # See Deed Reference Table (Exhibit 4, attached).	12. Zoning District Limited Residential Resource Protection
13. DESCRIPTION OF PROPERTY INCLUDING A DESCRIPTION OF ALL PROPOSED CONSTRUCTION, E.G. LAND CLEARING, ROAD BUILDING, SEPTIC SYSTEMS, AND WELLS (PLEASE NOTE THAT A SITE PLAN SKETCH IS REQUIRED). See attached application text, drawings, and maps.		
14. Proposed Use of Project Essential Service -- Electric power transmission.	15. Estimated Cost Of Construction \$3.98 million	

SHORELAND AND PROPERTY INFORMATION

<p>16. LOT AREA Approximately 65 acres.</p>	<p>17. FRONTAGE ON ROAD (FT.) The transmission line corridor crosses one (1) public road with a corridor width of 270 feet.</p>
<p>18. SQ. FT. OF LOT TO BE COVERED BY NON-VEGETATED SURFACES. The transmission line structures will occupy less than 0.1% of the project area. The remainder will remain vegetated.</p>	<p>19. ELEVATION ABOVE 100 YR. FLOOD See application text (especially Section 7, page 16).</p>
<p>20. FRONTAGE ON WATERBODY (FT.) N/A</p>	<p>21. HEIGHT OF PROPOSED STRUCTURE(S) See attached Exhibit 3.</p>
<p>22. EXISTING USE OF PROPERTY Essential Service -- Electric power transmission.</p>	<p>23. PROPOSED USE OF PROPERTY Essential Service -- Electric power transmission.</p>
<p><i>Note: Questions 24 & 25 apply only to expansions of portions of existing structures which are less than the required setback</i></p>	
<p>24. A) SQ. FT. OF PORTION OF STRUCTURE WHICH IS LESS THAN REQUIRED SETBACK AS OF 1/1/89: N/A</p>	<p>25. A) CU. FT. OF PORTION OF STRUCTURE WHICH IS LESS THAN REQUIRED SETBACK AS OF 1/1/89: N/A</p>
<p>B) SQ. FT. OF EXPANSIONS OF PORTION OF STRUCTURE WHICH IS LESS THAN REQUIRED SETBACK FROM 1/1/89 TO PRESENT: N/A</p>	<p>B) CU. FT. OF EXPANSIONS OF PORTION OF STRUCTURE WHICH IS LESS THAN REQUIRED SETBACK FROM 1/1/89 TO PRESENT: N/A</p>
<p>C) SQ. FT. OF PROPOSED EXPANSION OF PORTION OF STRUCTURE WHICH IS LESS THAN REQUIRED SETBACK: N/A</p>	<p>C) CU. FT. OF PROPOSED EXPANSION OF PORTION OF STRUCTURE WHICH IS LESS THAN REQUIRED SETBACK: N/A</p>
<p>D) % INCREASE OF SQ. FT. OF ACTUAL AND PROPOSED EXPANSIONS OF PORTION OF STRUCTURE WHICH IS LESS THAN REQUIRED SETBACK SINCE 1/1/89: (% INCREASE = $(B + C) / A \times 100$) N/A</p>	<p>D) % INCREASE OF CU. FT. OF ACTUAL AND PROPOSED EXPANSIONS OF PORTION OF STRUCTURE WHICH IS LESS THAN REQUIRED SETBACK SINCE 1/1/89: (% INCREASE = $(B + C) / A \times 100$) N/A</p>

The following application describes the MPRP's compliance with the Town of Appleton Shoreland Zoning Ordinance (Amended June 10, 2009).

Shoreland Zoning Districts in the Project Area

The new Section 254 transmission line will traverse two areas shown on the Town of Appleton Shoreland Zoning Map as being in the Limited Residential (LR) District. In addition, the southwestern edge of the corridor along which Section 254 will run crosses one area mapped as being in the Resource Protection (RP) District. However, the new transmission line will not pass through the RP District, nor will any work associated with the MPRP be located in this district. These shoreland zoning districts are identified and described as follows:

1. A LR District located along freshwater wetlands associated with Harriet Brook

The existing corridor for Section 388 crosses into the LR District approximately 200 feet to the west of Collinstown Road (see Figure 2). This area is designated as such because it surrounds freshwater wetlands associated with Harriet Brook. The new Section 254 will run along the existing corridor and similarly cross the LR District in this same area.

Currently, one H-frame structure (Structure 134; a total of two poles) associated with Section 388 is located on the edge of this LR District approximately 245 feet east of the freshwater wetland boundary. Construction of Section 254 will require the installation of one H-frame structure (Structure 254-125; a total of two poles) along the edge of this LR District approximately 240 feet from the freshwater wetland. Installation of this structure will result in approximately 60 square feet of ground disturbance (a total of 30 square feet per pole). However, no clearing of trees will be necessary within this shoreland zone and no temporary access way is proposed to cross the wetland. All work will occur within the existing 270-foot wide transmission line corridor.

2. A LR District located along freshwater wetlands associated with Dead River

The existing corridor for Section 388 crosses freshwater wetlands associated with the Dead River that are designated as being within the LR District (see Figure 3). Approximately 3.50 acres of the LR District is located within the corridor. Construction of the proposed project will occur within the existing corridor to the northwest of Section 388.

Currently, one H-frame structure (Structure 149; a total of two poles) associated with Section 388 is located within this LR District. Construction of Section 254 will require the installation of one H-frame structure (Structure 254-141; a total of two poles) along the edge of this LR District approximately 220 feet from the freshwater wetland. Installation of the structure will result in approximately 60 square feet of ground disturbance (a total of 30 square feet per pole). Furthermore, it will be necessary to clear approximately 0.28 acres of woodland vegetation within the 250-foot LR District for the construction and operation of the new 115 kV transmission line. In addition, a temporary access way will be installed across the LR District during construction of Section 254. All work will occur within the existing 270-foot wide transmission line corridor.

3. A RP District located along freshwater wetlands associated with Dead River

The southeastern edge of the existing corridor crosses a small portion of the RP District located along a freshwater wetland that borders the Dead River (see Figure 3).

Approximately 0.70 acres of the RP District is located along this edge of the corridor. The new Section 254, however, will run along the northwestern side of the corridor and will not cross the RP District. Further, no work is proposed within the portion of the corridor in the RP District.

As a result of no activity associated with the MPRP being conducted in the RP District, no corresponding shoreland zoning approval is required. The only approval required pursuant to the Town's Shoreland Zoning Ordinance for the MPRP is associated with the work proposed in the two areas where activity will occur within the LR District.

As discussed below in Land Use Standards, Section 15(L)(2), impacts to natural resources have been minimized to the maximum extent practicable. For instance, measures will be taken to avoid and minimize impacts to wetlands through the use of crane mats, temporary bridges, geotextile fabrics, and culverts, when necessary. Appropriate erosion controls will be installed wherever necessary. If necessary, mats will be placed parallel to the upland edge as abutments to further protect bank stability and establish stability. No extensive grubbing (grading to remove root systems) within wetland crossing areas will be done prior to mat placement. However, some minor grading may be required to ensure mat stability and construction access safety. In addition, no fueling or maintenance of vehicles will be performed within 100 feet of wetlands in order to minimize spill potential during construction.

Permitted Land Uses

The MPRP is classified under the Shoreland Zoning Ordinance as an "essential service." Pursuant to Section 14 and Table 1, essential services such as the new transmission line proposed by CMP is a permitted use in all shoreland zoning districts, including the LR District, with the approval of the Planning Board. Although the project does not involve "installation" of an essential service because it is related to an existing essential service, the transmission line project meets the requirements of Section 15(L) of the Shoreland Zoning Ordinance for installation of an essential service:

- The installation of essential services, where feasible, shall be limited to existing public ways and existing service corridors.
- The applicant must demonstrate that no reasonable alternative exists when installing essential services in the Resource Protection or Stream Protection Districts.
- Essential services must be located so as to minimize any adverse impacts on surrounding uses and resources, including visual impacts.

The standards contained in Section 15 of the Shoreland Zoning Ordinance, including Section 15(L), are discussed further in the following sections.

Shoreland Zoning Land Use Standards

(From Section 15 of the Shoreland Zoning Ordinance)

A. Minimum Lot Standards

Not applicable.

B. Principal and Accessory Structures

Not applicable.

C. Piers, Docks, Wharfs, Bridges, etc.

Not applicable.

D. Campgrounds

Not applicable.

E. Individual Private Campsites

Not applicable.

F. Commercial and Industrial Uses

Not applicable.

G. Parking Areas

There will be no parking areas associated with the project.

H. Roads and Driveways

There will be no new permanent roads or driveways associated with the project, other than CMP-maintained access points and ways suitable for routine and urgent maintenance by its own vehicles (see Exhibit 1, Maps 1-3). Temporary access ways, which are not considered to be roads or driveways, will not add any impervious surface area, and will be established for use during the construction phase. This will be an ongoing process as access will be established to areas undergoing immediate construction. Determinations surrounding the exact nature of the construction of these temporary access ways will be made by the contractor in consultation with an environmental representative. All access paths are temporary and will be removed once construction is complete.

General access to the corridor for construction purposes will be achieved through the construction of temporary access ways which will be in place for more than one growing season, but will be removed once all aspects of construction in that area are complete. Access to pole sites, either for removal or construction, will be achieved by temporary access ways which will be in place for no more than one growing season. Areas where soils have been disturbed will then be mulched with hay. Vegetation will be allowed to reestablish itself once the temporary access ways have been removed.

Measures will be taken to avoid and minimize impacts to streams and wetlands through the use of crane mats, temporary bridges, geo-textile fabrics, and culverts, when necessary. Appropriate erosion controls will be installed wherever necessary. If necessary, mats will be placed parallel to the upland edge as abutments to further protect bank stability and establish stability. No extensive grubbing (grading to remove root systems) within wetland crossing areas will be done prior to mat placement. However, some minor grading may be required to ensure mat stability and construction access safety. Streams that are too wide to cross with crane mats or temporary bridges will be avoided.

I. Signs

There will be no signage associated with the project.

J. Storm Water Runoff

With the exception of the immediate area around the base of the support structures, there is no increase in impervious surface area associated with the transmission line. Therefore there will be no significant storm water run-off generated from the project. All new construction will be designed to minimize storm water runoff from the site in excess of the natural predevelopment conditions.

K. Septic Waste Disposal

There will be no wastewater generated from the project site.

L. Essential Services

(1) A guiding principle in the design of the MPRP transmission line upgrades has been to utilize the existing transmission line corridors to the maximum extent possible. Only where existing corridors cannot accommodate the proposed upgrades while meeting safety and reliability standards is CMP seeking to widen the existing corridors. Creating an entirely new corridor is a last resort. As a result, the vast majority of the transmission line upgrades proposed as part of the MPRP are located within or immediately adjacent to existing corridors. Co-location of the transmission line upgrades, as opposed to the creation of new corridors, has multiple benefits, including the minimization of impacts to communities, individual property owners, and the environment.

Within the Town of Appleton, construction of the new Section 254 will occur entirely within the existing right-of-way. To allow for the safe and reliable operation of this new line, some clearing within this right-of-way will be required, but CMP will not need to acquire any additional property to accommodate the upgrade.

(2) The new Section 254 will not cross either the Resource Protection or Stream Protection Districts. The corridor along which the new transmission line will run crosses the LR District in two different areas. Within the corridor, CMP has, to the greatest extent practicable, sited each H-frame structure so as to avoid, and where unavoidable to minimize, adverse impacts on surrounding uses and resources. As part of this avoidance and minimization effort, CMP has attempted to site the structures so that none are located within the LR District. In Appleton, however, due to the fact that the existing corridor crosses this district in two areas and the H-frame structures cannot be sited in a manner that allows these areas to be spanned entirely, two H-frame structures (a total of four poles) will be located within the LR District (Figures 2 and 3).

There is no reasonable alternative to locating the two structures within the LR District. The amount of ground disturbance associated with the planned structures will be small, i.e., limited to the immediate vicinity of the pole placements, and because the project is within the existing transmission line corridor (which contains structures of a similar bulk and style), locating structures within the LR District causes the least overall impact when compared to the alternatives. Avoiding the LR District would require expanding or moving the existing transmission line corridor or erecting much taller and much more substantial structures (e.g., steel towers with concrete footings) to achieve the required spans over the each area within

this district. The overall environmental and visual impacts of either of these alternatives would be much greater than the impacts associated with the project as planned. (See the sections related to specific Shoreland Zone districts starting on page 7 for more detailed information.)

M. Mineral Exploration and Extraction

Not applicable.

N. Agriculture

Not applicable.

O. Timber harvesting

Not applicable.

P. Clearing of Vegetation for Development

Some clearing of vegetation will be required within the service corridor to accommodate the project and ensure that the project meets federal reliability and safety standards (in accordance with P(1) of this standard). The amount of clearing will be limited to that which is necessary for development of the project, and is generally limited to removal of species that are capable of growing tall enough to interfere with the transmission lines (so-called “capable species”). Non-capable species are allowed to remain to ensure that the corridor is vegetated, which prevents erosion and provides wildlife habitat. No grubbing (i.e., stump removal) will take place.

The cutting work will be performed using equipment typical of logging operations, including cable and hook skidders, forwarders, tree movers, chain saws, and logging trucks. In general all trees, saplings of capable species, and sometimes tall shrubs are cut at ground level. All root systems are left intact, as the ground is not grubbed or graded. All slash (i.e., limbs, tree trunks, wood chips, etc.) from the cutting operation is disposed of in accordance with the Maine Slash Law (12 M.R.S.A. § 9333). The remaining vegetation is typically composed of scattered growth of small shrubs of non-capable species and herbaceous plants. After initial clearing, the condition of these cleared areas generally resembles that of a high-quality forestry operation. Specifically, great care is taken to prevent rutting and erosion.

After construction is completed, non-capable species are allowed to grow to ensure that the corridor is vegetated, which prevents erosion and provides wildlife habitat. Over a relatively short period of time (generally within one calendar year), the newly cleared portions of the corridors will exhibit the early-successional habitat type that is typical of existing transmission line corridors in Maine.

See Figures 2 and 3 and the sections related to specific Shoreland Zone Districts, starting on Page 7, for more detailed information.

Q. Erosion and Sedimentation Control

With the exception of the immediate area around the base of the support structures there will be no increase in impervious surface area associated with the transmission line. The amount of ground disturbance associated with this project will be limited to the immediate vicinity of the pole placements and the impacts associated with access roads. CMP has developed a standard manual, “Environmental Guidelines for Construction and Maintenance Activities on Transmission Line and Substation Projects” (2007), which it uses as a routine part of all transmission and substation projects. (A copy of the manual is attached as Exhibit 6.) This

manual contains erosion and sedimentation control requirements, standards, and methods that will be used to protect soil and water resources during construction of the various MPRP components. The manual was developed in consultation with the Maine Department of Environmental Protection (DEP) and is based on DEP's *Maine Erosion and Sediment Control BMPs*, dated March 2003, and DEP's Chapter 500, and contains specific Best Management Practices appropriate for electric transmission line and substation construction. These guidelines will be followed in the construction of transmission lines for all of the MRPP, including the line proposed in Appleton.

R. Soils

Based on the applicants' analysis of the Soil Survey Geographic Database compiled by the United States Department of Agriculture – Natural Resources Conservation Service, soils within the transmission line corridor will accommodate the proposed MPRP construction activities in Appleton. Soil constraints within the transmission line corridor will be managed and mitigated through implementation of erosion and sediment control measures, proper site and project design, and special construction procedures.

S. Water Quality

To minimize spill potential during construction, no fueling or maintenance of vehicles will be performed within 100 feet of wetlands, streams or other sensitive natural resources. After construction, the electrical transmission line corridor will be maintained to encourage the growth of scrub-shrub vegetation as it is today. Capable species must be removed for safety and reliability reasons. CMP uses a selective herbicide program to treat an area once every four years to maintain an early successional stage of growth. Herbicide is selectively applied (using a backpack applicator) to capable species to prevent growth (or re-growth of a cut plant) of individual plants. No broadcast application is used, and CMP does not use herbicides within 25 feet of any waterbody or wetland with standing water. Crew forepersons are certified by the Maine Pesticide Control Board. All herbicides are EPA registered. The selective use of herbicides within the transmission line corridor does not impose a threat to groundwater quality and will not impair designated uses or the water classification of any water body.

T. Archaeological and Historic Resources

Following consultation with the Maine Historic Preservation Commission (MHPC), CMP has conducted extensive investigations of potential pre-historic archaeological, historic archaeological and historic architectural surveys along the project corridor. No cultural resource sites were identified in Appleton during the MPRP investigations. CMP continues to consult with the MHPC regarding cultural resources in other project areas.

Shoreland Zoning Approval Standards

(From Section 16 D of the Shoreland Zoning Ordinance)

The proposed use:

1. Will maintain safe and healthful conditions.

The proposed project will maintain the same safe and healthful conditions which are already present in the transmission line corridor. The transmission line corridor and the structures within it are maintained to established industry standards so as to ensure the safety of utility

workers and the general public. Maintaining sufficient clearances around the conductors is paramount to the safe operation of the line. These clearances are achieved through appropriate siting of the structures themselves and through vegetation maintenance practices as described above. All construction will be in accordance with CMP's transmission standards, general industry standards, and "Good Utility Practice," including all necessary live line working clearances, strength factors, and reliability factors as governed by the National Electrical Safety Code (NESC). In all instances, the line will be designed to meet or exceed the NESC and other standards, as applicable. The transmission line and all facilities will be operated in full compliance with CMP safety standards, which fully comply with Federal Occupational Safety & Health Administration requirements.

A health concern that is sometimes expressed revolves around the electric and magnetic fields produced by transmission lines. These fields are produced by any electric equipment or anything that carries electric current. The World Health Organization and numerous other scientific agencies around the world have studied the issue extensively. These studies have been unable to establish that electric and magnetic fields produced by transmission lines such as those being proposed as part of the MPRP cause any adverse health effects. There is no scientific basis to project any adverse health effects as a result of the electric and magnetic fields produced by transmission lines associated with this project. Accordingly, this standard has been met.

2. Will not result in water pollution, erosion, or sedimentation to surface waters.

As described above with respect to Ordinance Sections 15(J), page 12, and (S), page 14, the MPRP will not result in water pollution, erosion, or sedimentation to surface waters.

3. Will adequately provide for the disposal of all wastewater.

There will be no wastewater disposal required for this project, and therefore this standard has been met.

4. Will not have an adverse impact on spawning grounds, fish, aquatic life, bird, or other wildlife habitat.

Impacts to spawning grounds, fish, aquatic life, or other wildlife habitat will be largely avoided through the use of the existing service corridor, which has been in place for several decades. In general, given the existing landscape characteristics of the site, construction and maintenance of the project is not expected to create conditions that are not already common to the project area. It is fully anticipated that local wildlife populations will adapt and respond to any additional alterations much as they already do to ongoing land uses within the vicinity of the proposed project. Therefore, impacts to wildlife are expected to be minimal to non-existent. Throughout the MPRP project area, identified significant wildlife habitats and natural areas, such as vernal pools and rare plant locations, will be avoided and impacts minimized to the extent practicable through careful siting and placement of poles. Once installed, the transmission line structures, due to the minimal amount of ground surface area they occupy, will have no significant impact on these natural areas. Significant wildlife habitats and natural areas will be avoided to the greatest extent practicable during construction, including measures that are taken to ensure any impacts will be minimal and temporary. In Appleton, no significant wildlife habitat has been identified within the portion of the corridor within the shoreland zone.

5. Will conserve shore cover and visual, as well as actual, points of access to inland waters.

The proposed project will take place entirely within the existing corridor, which already contains structures of a similar nature. The proposed project will not block or otherwise significantly affect visual points of access to inland waters, and will have no impact on actual points of access to inland waters. The corridor will continue to be maintained in a vegetated state, thereby preserving a similar degree of shore cover which currently exists.

6. Will protect archaeological and historic resources as designated in the comprehensive plan.

As discussed above with respect to Ordinance Section (15)T, page 14, the project will not impact any archaeological and historic resources within the shoreland zone, and no such resources in the shoreland zone have been designated in the comprehensive plan.

7. Will avoid problems associated with flood plain development and use.

As depicted on Map 3 in Exhibit 1, two of the proposed structures (Structure 254-139 and Structure 254-142) will be located just within the 100-year floodplain. However, the project meets the requirements found in Article VI of the Town's Floodplain Management Ordinance. Because of the nature of a transmission line and the minimal additional impervious surface associated with the project, construction and maintenance of the proposed transmission line will not cause or increase flooding or cause a flood hazard to any neighboring structures. Furthermore, the program will not affect runoff/infiltration relationships. Thus, the project will avoid problems associated with floodplain development and use.

8. Is in conformance with the provisions of Section 15, Land Use Standards.

As discussed above with respect to Ordinance Sections 15(A) through (T), this project complies with all of the provisions of Section 15 of the Ordinance.

PART C: FLOODPLAIN MANAGEMENT APPLICATION

The proposed project will cross one FEMA-mapped 100-year Flood Zone. As shown on the FEMA Flood Insurance Rate Maps (FIRM) for the Town of Appleton (Community Panel No. 230073B, December 4, 1985), the flood zone associated with the Dead River is identified as Zone A. While the project will not cross the Dead River in this location, it will run parallel to the north of the river and will be located within the flood zone associated with the river.

Currently, three H-frames associated with the existing Section 388 (H-frames 147, 148, and 149) are located within this flood zone. CMP proposes to construct Section 254 to the north of Section 388 which will involve placement of two new H-frames (H-frames 254-139 and 254-142) within the flood zone (see Exhibit 1, Map 3). The amount of ground disturbance associated with construction will be small (i.e., approximately 120 square feet) and limited to the immediate vicinity of the pole locations.

CMP proposes to install a temporary access way to cross the flood zone during construction. Measures will be taken to avoid and minimize impacts to Dead River and associated wetlands through the use of crane mats, temporary bridges, geo-textile fabrics, and culverts, if necessary.

CMP's proposed construction within this flood zone is not anticipated to have any significant impact on flood levels given the minimal potential displacement of flood water by the transmission line poles. In addition, the diameter of the new poles making up the H-frames would not be significantly larger than the existing poles currently located in the floodway. As such, the new poles would not result in any significant changes to flood levels.

Article III – Application for Permit

The following section includes the information requested in Article III of the Town of Appleton Floodplain Management Ordinance.

A. Name, Address, and Phone Number

Applicant:

Central Maine Power Company
83 Edison Drive
Augusta, Maine 04336
Attention: Mary Smith (207)623-3521

Applicant's Agent:

TRC
400 Southborough Drive
South Portland, ME 04106
Attention: Stephenie Swiezynski (207)879-1930 ext.112

B. Map of Construction Site

The maps provided in Exhibit 1 show the extent of the MPRP in the Town of Appleton.

C. Site Plan of Existing and Proposed Development

The flood zone information from the FEMA FIRM for the Town of Appleton has been incorporated into the MPRP mapping. Exhibit 1 includes aerial photo based maps (Maps 1 – 3) showing detailed project information in Appleton including the location of the CMP corridor, existing and proposed pole locations, proposed access ways, flood zones, wetlands and waterbodies, and other natural resource data.

D. Statement of Intended Use

The proposed development in the floodplain consists of construction of the new Section 254 115 kV transmission line within the Town of Appleton.

E. Statement of Cost

CMP estimates that construction of the proposed project within the entire Town of Appleton (and not just within the floodplain) will cost a total of \$3.98 million dollars.

F. Statement of Sewage System Type

Not applicable. No sewage system is proposed as part of this project in the Town of Appleton.

G. Specification of Dimensions

The diameter of the poles associated with the new H-frames proposed within the floodplain of the Dead River will not be significantly larger than the poles associated with the existing Section 388 H-frames that are currently located in the floodplain. Exhibit 3 provides a table showing the height ranges of the proposed transmission line poles in Appleton. H-frame 254-139 will be approximately 84 feet above ground and H-frame 254-142 will be approximately 70 feet above ground.

H - K. Elevation Information

The standards at Sections H through K apply only to the new construction or substantial improvement of “structures” as defined in the Town of Appleton Floodplain Management Ordinance. Neither of the two H-frames (referred to as structures in the shoreland zoning portion of these application materials) proposed within the 100-year floodplain are defined as a “structure” in the Floodplain Management Ordinance because neither consists of a walled and roofed building. Instead, the placement of the two H-frames is defined as “minor development” under the Appleton Floodplain Management Ordinance. As such, the elevation requirements in Sections H through K do not apply to the proposed work in the floodplain of the Dead River in Appleton.

L. Water Course Alteration

The proposed project includes the installation of two new 115 kV H-frames within the floodplain of the Dead River. No poles will be placed within the Dead River and, as such, the project will not alter or relocate the course of the Dead River.

M. Compliance with Article VI

The project's compliance with the Article VI Development Standards is presented in the following section.

*Article VI - Development Standards**A. All Development*

The transmission line poles proposed within the floodplain will be adequately anchored to prevent flotation, collapse, or lateral movement during a flood. In general, the poles are buried to a depth measuring ten percent of the total pole length plus two feet. For example, a 90-foot pole would be buried eleven feet below the ground surface. All construction will be conducted in accordance with CMP's transmission standards, general industry standards, and "Good Utility Practice," including all necessary live-line working clearances, strength factors, and reliability factors as governed by the NESC. In all instances, the line will be designed to meet or exceed the NESC and other standards, as applicable. The transmission line and all facilities will be operated in full compliance with CMP safety standards, which fully comply with Federal OSHA requirements.

B. Water Supply

Not applicable.

C. Sanitary Sewage Systems

Not applicable.

D. On-site Waste Disposal Systems

Not applicable.

E. Watercourse Carrying Capacity

Not applicable.

F. Residential

Not applicable.

G. Non-residential

Not applicable.

H. Manufactured Homes

Not applicable.

I. Floodways

CMP does not propose any development for the MPRP within the regulatory floodways identified by FEMA in the Town of Appleton.

J. Elevations

The elevation requirements do not apply to the proposed work in the Dead River floodplain because the poles proposed within the 100-year floodplain are not defined as structures.

PART D: SITE PLAN REVIEW APPLICATION

The following application describes the MPRP's compliance with the Town of Appleton's Site Plan Review Ordinance (Amended June 18, 2005).

Section 4 – Performance Standards

1. Preservation and Enhancement of the Landscape

CMP will preserve the landscape in its natural state so far as practicable. Clearing will be limited to that which is necessary for safe and reliable operation of the new transmission line. In order to maintain required minimum operational safety clearances, vegetation within the corridor will be managed to ensure that it generally does not grow taller than ten feet. Natural buffering between the corridor and abutting properties, consisting primarily of native scrub-shrub non-capable species (i.e., species not capable of growing greater than ten feet in height), will be maintained. Any areas that are cleared of capable species will become characterized by this same scrub-shrub environment.

There will be minimal changes to the landscaping and buffering features of the site once construction is completed. In addition, the project will minimize any detrimental visual impacts on neighboring properties through the use of the existing service corridor, which already contains transmission lines of a similar bulk, height, and design. Further, the new line will be placed near the center of the corridor, between an existing transmission line and an underground gas pipeline. H-frames associated with the new line will be set back as far from streams, rivers, and other areas of visual and habitat sensitivity to the maximum extent practicable. The new poles will not have an unreasonable adverse effect on the scenic character of the surrounding area.

2. Relationship of the Proposed Buildings to the Environment

Not applicable. There are no buildings associated with the portion of the project located in Appleton.

3. Vehicular Access

There will be no new permanent roads or driveways associated with the transmission lines, other than CMP-maintained access points and ways suitable for routine and urgent maintenance by its own vehicles. The corridor will be accessed from major roads that are intersected by the project. In Appleton, only one road (Collinstown Road) intersects with the corridor. Once the corridor is reached, construction vehicles will travel along the corridor to access each of the pole locations.

4. Parking and Circulation

Not applicable. There will be no parking areas associated with the portion of the project located in Appleton.

5. Surface Water Drainage

Current surface water drainage patterns across the site will be largely unaffected by the proposed project once construction is complete. Surface water, as a result of the MPRP, will not adversely affect neighboring properties, downstream water quality, or the public storm drainage system. In addition, CMP will apply measures to control erosion and

sedimentation both during and after construction. Please see Part B, Sections J (page 12) and Q (page 13) for more information.

6. Existing Utilities

Not applicable. The project will not affect existing utilities.

7. Advertising Features

Not applicable. Advertising features are not proposed as part of the project in Appleton.

8. Special Features of the Development

Not applicable. No special features or buildings are proposed as part of the project in Appleton.

9. Exterior Lighting

Not applicable. There will be no lighting associated with this part of the project.

10. Municipal Services

The proposed project will involve construction of transmission lines in the existing transmission line corridor. As such, the proposed use of this project will not have an effect on existing public safety problems as it will function in the same manner as the existing transmission lines. In addition, there will not be an increase in the need for municipal fire or police protection as a result of the proposed project.

11. Water Pollution

The project will not adversely affect water quality in any way and there is no need for water intake or discharge in Appleton. Please see Part B, Sections J (page 12) and S (page 14) for more information.

12. Air Pollution

No degradation of air quality is expected as a result of the proposed project. However, minimal, temporary influences on air quality as a result of program related construction activities may occur. Such influences may arise from construction personnel commuter traffic, exhaust from construction vehicles, and temporal dust generated by construction activities along unpaved roads. Given the limited duration of activities at any one location, the generally rural nature of the MPRP area and the limited number of unpaved roads along the transmission line corridor, any influences on overall air quality will be insignificant. Construction will not result in undue air pollution.

No increase in air emissions will occur as a result of program operation or maintenance. There will be some minor traffic associated with program operations; however, such traffic will be rare and occasional and will not constitute an increase in air emissions.

13. Water Supply

Not applicable. Construction and operation of the proposed 115 kV transmission line in Appleton will not require a water supply and will not affect existing water supplies in the project area.

14. Soil Erosion

CMP has developed a standard manual, "Environmental Guidelines for Construction and Maintenance Activities on Transmission line and Substation Projects", which it uses as a

routine part of all transmission and substation projects (see Exhibit 6). This manual contains erosion and sedimentation control requirements, standards, and methods that will be used to protect soil and water resources during construction of the various MPRP components. The manual is largely based on the Maine Department of Environmental Protection's (DEP) *Maine Erosion and Sediment Control BMPs*, dated March 2003, and DEP's Chapter 500, and contains specific Best Management Practices appropriate for electric transmission line and substation construction. These guidelines will be followed in the construction of transmission lines. The project will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water.

15. Sewage

Not applicable. There will be no wastewater generated from the project site.

16. Historic and Scenic Areas

No cultural resource sites were identified in Appleton during the MPRP investigations. In addition, by co-locating the new Section 254 transmission line within an existing corridor adjacent to an existing transmission line, the project will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, or rare and irreplaceable natural areas.

17. Shoreline

The MPRP will not adversely affect the shoreline of any pond, lake, or river. See Part C – Shoreland Zoning Permit Application.

Section 6 – Site Plan Content and Application Procedures

A. Minimum Requirements

1. Mapping (at a scale of not less than 1 inch to 50 feet) shall include:

- a. Name and address of the applicant or his/her authorized agent, name of proposed development land within 500 feet of the proposed development in which the applicant has title, right, or interest, scale, north point

See maps at Exhibit 1. A list of the lands for which CMP holds title, right, or interest is provided in Exhibit 4.

- b. Existing soil conditions on the site as described by either a soil scientist, geologist, engineer, or Soil Conservation Service medium intensity soil survey

Based on the applicants' analysis of the Soil Survey Geographic Database compiled by the United States Department of Agriculture – Natural Resources Conservation Service, soils within the transmission line corridor will accommodate the proposed MPRP construction activities in Appleton. Soil constraints within the transmission line corridor will be managed and mitigated through implementation of erosion and sediment control measures, proper site and project design, and special construction procedures.

- c. Municipal tax maps, lot numbers, and names of abutting landowners

See Exhibit 5.

- d. Perimeter survey of the parcel, certified by a registered land surveyor relating to reference points. Showing true north point, graphic scale, corners of parcel, date of survey and total acreage. Ares within 500 feet of the proposed development site shall be included

See maps at Exhibit 1.

- e. Existing structures, proposed development, and dimensions of: utility lines, sewer lines, water lines, easements, drainage ways, and public or private rights-of-way

See maps at Exhibit 1.

- f. Location, ground floor area, elevations of buildings and other structures on parcels abutting the site

See maps at Exhibit 1.

- g. If the site is not to be served by a public sewer line, then an on-site soils investigation report by a Department of Human Services licensed site-evaluator shall be provided. The report shall contain the types of soil, location of test pits, wells, steep slopes, proposed disposal location, design of the best practical subsurface disposal system and other pertinent existing physical features

Not applicable. Subsurface disposal is not proposed as part of this project.

- h. Location and dimensions of on-site pedestrian and vehicular access ways, parking areas, loading and unloading facilities, design of ingress and egress of vehicles to and from the site on to public streets, and curb and sidewalk lines

Not applicable. There are no driveways, parking and loading areas, or walkways, associated with this project. No traffic will be generated or affected by this project.

- i. Landscaping plan showing location, type, approximate size of plantings, location and dimensions of all fencing and screening

See attached maps at Exhibit 1. Also see Part B, Sections P (page 13) and S (page 14) for a discussion of vegetation management practices, and Section 4.1, page 21, for a discussion of buffering.

- j. Topography indicating contours at intervals of either 5, 10 or 20 feet in elevation as specified by the Planning Board

See maps at Exhibit 1 providing an aerial overview of the project area.

- k. Location of aquifers and aquifer recharge areas

Not applicable. The portion of the MPRP located in Appleton is not located on any mapped aquifers or aquifer recharge areas.

- l. Location of watercourses, marshes, rock outcroppings, wooded areas, and single trees with a diameter of 10 inches measured three feet from the base of the trunk

See maps at Exhibit 1.

2. Written statement shall consist of:

- a. Evidence by the applicant of his/her title and interest in the land proposed for development
See Exhibit 4.
- b. A description of the proposed use(s) to be located on the site, including quantity
See Part A: Project Overview and Description beginning on page 2.
- c. Total floor area of each proposed building or structure and percentage of lot covered by the total development
Not applicable. There are no buildings associated with this project.
- d. Existing easements, restrictions, covenants or other restrictions placed on the property, adjacent property, or intersecting the property
See Exhibit 5.
- e. Method of solid waste disposal with letter from authorities stating approval of the disposal

Once the project is constructed there will be no waste generated by the site. CMP anticipates that solid waste generated from the proposed project will be limited to minimal land clearing and construction debris. This debris is inert, non-hazardous material that will be handled in accordance with the Maine State Solid Waste Management and Recycling Law (38 M.R.S.A. §§ 2101 et seq.).

Wood cut and cleared from the MPRP right of way will be limited to capable species, i.e., tree species that grow tall enough that they are capable of growing into the safety zone beneath conductors (wires). All merchantable wood will be hauled off and sold for lumber or firewood. All other woody material will be managed in compliance with the Maine Slash Law (12 M.R.S.A. § 9331-9338). All other wood waste generated in the process of land clearing will be shipped off site to be used as fuel at an appropriate licensed boiler, provided to a licensed chip processing plant, or donated to a facility to be utilized in the production of erosion control mulch.

The project will generate other construction-related debris during the construction phase. Waste electrical system and construction process components such as scraps of cable, cable spools, and ceramic insulators will be generated. Most of these materials will be recycled or reused. Small amounts of waste plastic containers for oils and lubricants, broken filters and belts, and damaged tires, etc., will be generated from the use of construction equipment. Construction and managerial staff will generate some incidental waste such as paper, bottles, cans, plastics, and food scraps. All of these materials will be recycled or shipped to a licensed landfill, transfer station, or incinerator. Contractors will hire a licensed waste management company for the collection and disposal or recycling of such incidental waste.

f. Erosion and sedimentation control plan

See Exhibit 6.

g. Copies of letters sent to the abutting landowners, selectmen, road commissioner/public works director, fire chief, police chief, etc. notifying them of the proposed development

See Exhibit 7.

h. Statement of financial capacity

The MPRP will be financed by CMP. As owner of all improvements contemplated under the MPRP, CMP will be fiscally responsible for all improvements included in the MPRP. CMP is a subsidiary of Energy East Corporation (Energy East), a public holding company (symbol: EAS). On December 31, 2007, Energy East had book equity capital of \$3.2 billion and assets of \$11.9 billion on a consolidated basis. On May 28, 2008, Energy East and its subsidiaries had a debt and equity market capitalization of approximately \$8 billion. On December 31, 2007, CMP had a book equity capital of \$754 million and assets of \$1,950 million².

The MPRP will be funded by CMP using a combination of debt and equity. Equity will come from retained earnings and equity infusions from the corporate parent. Short-term debt from the syndicated revolver and/or a commercial paper program will be used on a temporary basis to bridge to periodic long-term debt financings. Long-term debt will be raised through offerings of debt securities similar in nature to CMP's currently outstanding "Medium-term Notes" (MTNs). The MTNs will be underwritten or sold by investment banks, most likely under SEC's Rule 144A. Rule 144A provides a safe harbor from the registration requirements of the Securities Act of 1933 for certain private resale of restricted securities to qualified institutional buyers (QIB), which generally are large institutional investors with over \$100 million in investable assets. When brokers are selling securities in reliance of Rule 144A, it is subject to the condition that they may not make offers to persons other than those it reasonably believes to be QIBs.

i. List of applicable local, state, and federal ordinances, statutes, laws, codes, and regulations

Permit applications to the Army Corps of Engineers (Clean Water Act, Section 404) and the Maine Department of Environmental Protection (Site Location of Development permit and Natural Resources Protection Act permit) were submitted in June of 2009 and are currently under review. A request for Certificate of Public Convenience and Necessity is currently under review by the Maine Public Utilities Commission. A Location Permit from the Maine Department of Transportation also will be needed. Municipal approval for the MPRP is being sought in approximately 80 municipalities.

² CMP book values include Goodwill of \$325 million.

- j. In cases where off-site facilities are proposed for primary or secondary use, applicants shall provide a statement of evaluation of the availability and suitability of off-site public facilities including sewer, water, and streets

The use of off-site facilities is not proposed for this part of the project in Appleton.

- k. A statement from the Fire Chief as to the availability of the fire protection services, including: fire hydrants and/or fire ponds

The applicant requests that this submission requirement be waived. The Applicant provides safety training to local fire, police, and EMT departments on request. As a practical matter, there is no difference in safety procedures for incidents within the existing Section 388 345 kV line or the new Section 254 115 kV line; the standards and practices are the same.

- l. If public water and/or sewer are to be used, a statement from the water and/or sewer district, or utility, as to the availability of public water and/or sewer lines

There will be no water supply to the project or sewage generated by the project.

- m. A statement from the Town Engineer, Public Works, Director, Road Commissioner and Board of Selectmen that the proposed road or street construction will meet Town specifications

Not applicable. Road or street construction is not proposed as part of this project.

- n. A proposed start-up date and completion date

Construction of the portion of the MPRP located in Appleton is currently scheduled to begin in the first half of 2010 and most likely will be completed within 12 months of the start date. It is possible, however, that the start date will be delayed until 2011. Given the size of the project, the number of approvals that must be obtained prior to construction, and the complexity of setting the construction sequence for the project (since work within a corridor can involve taking existing lines out of service during the construction and power still must be delivered to customers) the current predicted start date could change.

B. Traffic Data

The project does not exceed the thresholds triggering the potential need for a traffic study.

Application prepared by:

Stephenie Swiezynski, Environmental Specialist



Phone: (207) 879-1930 ext.112

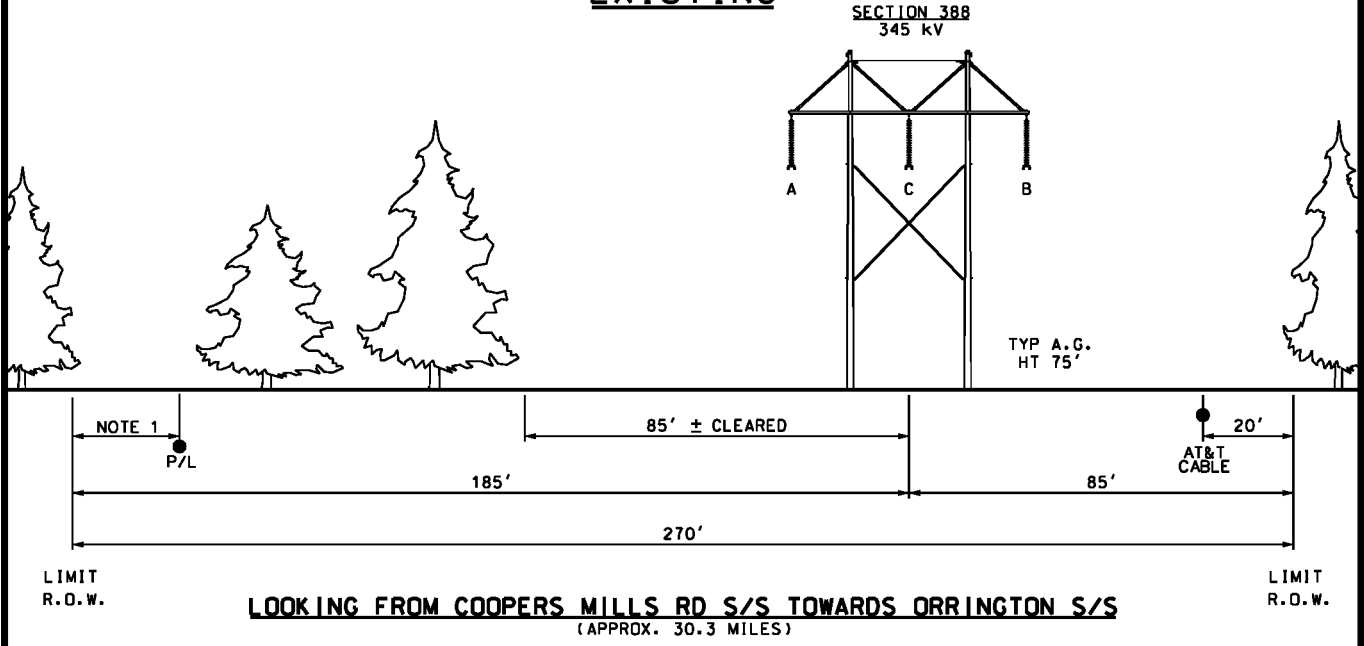
Fax: (207) 879-9293

EXHIBIT 1
Project Overview Map

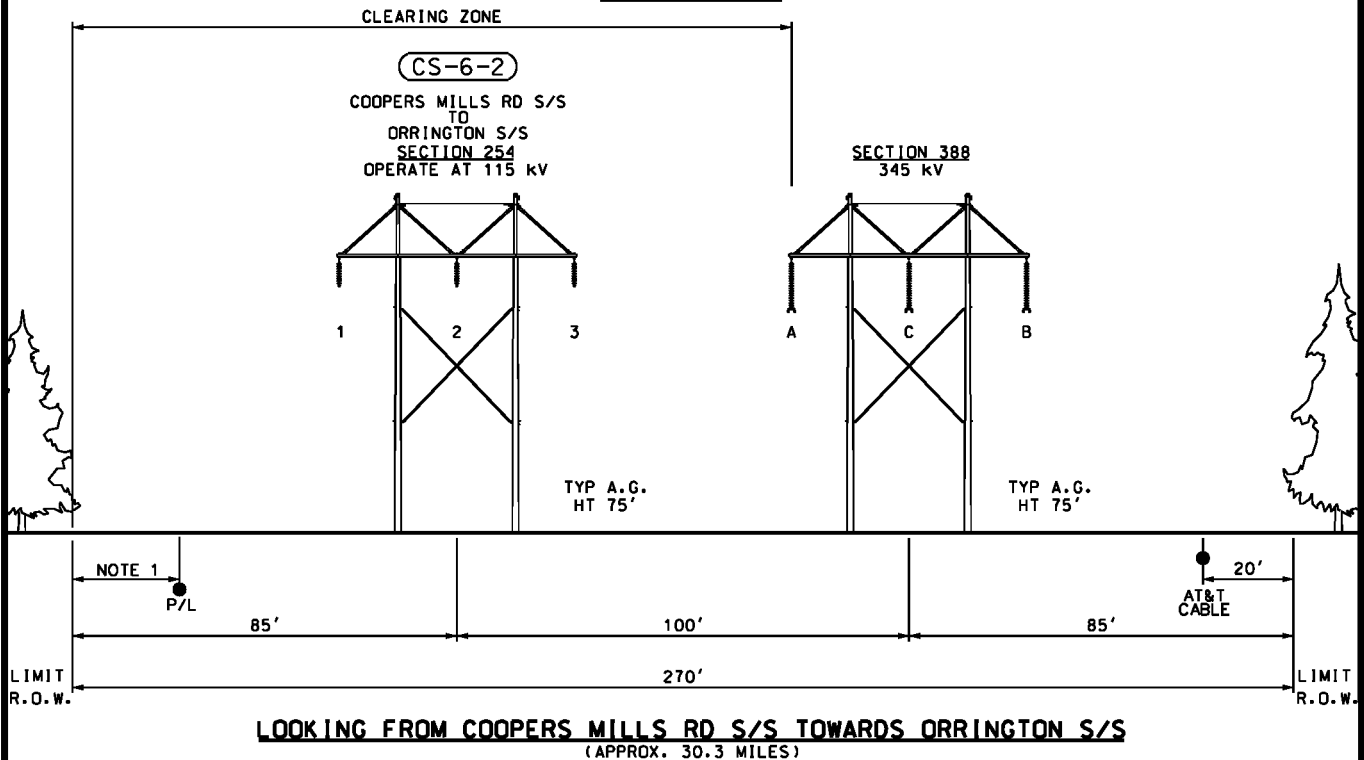
EXHIBIT 2
Transmission Line Configuration Cross Section

NOTE 1: GAS PIPELINE LOCATION
VARIES ALONG R.O.W.

EXISTING



PROPOSED



THIS DRAWING SHALL
BE REVISED ON THE
CADD SYSTEM ONLY

-DRAFT- FOR REVIEW ONLY				SECTION 388		POLE 10 TO 274		STA. 1382+80 TO 2981+72																	
MAINE POWER RELIABILITY PROGRAM				EXISTING AND PROPOSED R.O.W. ALTERNATIVE N5 FOR N-1-1 ANALYSIS																					
ENG. CONTRACTOR																									
<table border="1"> <tr><td>D</td><td>ADDED CLEARING ZONE</td><td>9/23/09</td><td>PEI</td></tr> <tr><td>C</td><td>ADDED SEQUENCING/PHASING</td><td>8/7/09</td><td>PEI</td></tr> <tr><td>B</td><td>ADDED SECTION NO.</td><td>4/11/08</td><td>PEI</td></tr> <tr><td>A</td><td>ISSUED FOR REVIEW</td><td>9/28/07</td><td>PEI</td></tr> </table>				D	ADDED CLEARING ZONE	9/23/09	PEI	C	ADDED SEQUENCING/PHASING	8/7/09	PEI	B	ADDED SECTION NO.	4/11/08	PEI	A	ISSUED FOR REVIEW	9/28/07	PEI	CHECKED		DESIGNED KJF		DATE 8/27/07	
D	ADDED CLEARING ZONE	9/23/09	PEI																						
C	ADDED SEQUENCING/PHASING	8/7/09	PEI																						
B	ADDED SECTION NO.	4/11/08	PEI																						
A	ISSUED FOR REVIEW	9/28/07	PEI																						
				SGW		8/4/09		DRAWN SAT																	
				CENTRAL MAINE POWER CO.																					
				TRANSMISSION ENGINEERING																					
NO.		REVISION		DATE		BY		SCALE NTS																	
								SEGMENT 6																	
								SHEET N5-6-2																	

EXHIBIT 3
Structure Height Ranges

Pole Height Ranges in Appleton	
Above Ground Structure Height (ft)	Number of Structures
61 – 70	2
71 – 80	9
81 – 90	8
Total	19

EXHIBIT 4
Table of Deeds
Showing Proof of Right, Title, or Interest

EXHIBIT 5
List of Abutters

EXHIBIT 6
Environmental Guidelines for Construction and Maintenance
Activities on Transmission line and Substation Projects

Central Maine Power Company

**Environmental Guidelines
For Construction and Maintenance
Activities on Transmission Line
And Substation Projects**

Prepared for:

**Central Maine Power Company
83 Edison Drive
Augusta, Maine 04336**

Prepared by:

**TRC Engineering, LLC
249 Western Avenue
Augusta, Maine 04330**

December 2007

2nd Edition

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 PLANNING AND DESIGN CONSIDERATIONS.....	1
2.1 RESOURCE IDENTIFICATION	2
2.2 “WALK-THROUGH” MECHANICS	3
2.2.1 <i>Use of Flagging and Signs</i>	3
2.2.2 <i>Identification and Use of Existing Roads</i>	4
2.3 CONSTRUCTION SEQUENCING	4
3.0 STANDARDS FOR CONSTRUCTION	5
3.1 ROAD CONSTRUCTION	5
3.2 STREAM OR WETLAND CROSSINGS	6
3.2.1 <i>Types of Crossings Used</i>	6
3.3 CONSTRUCTION IN WETLANDS	6
4.0 INSTALLATION OF CROSSINGS	7
4.1 BRIDGES.....	7
4.2 CULVERTS.....	8
4.3 MATS (CRANE OR SWAMP MATS).....	9
4.4 CORDUROY	10
5.0 SURFACE WATER DIVERSION STRUCTURES (WATER BARS).....	11
6.0 SEDIMENT BARRIERS (STRUCTURAL MEASURES)	13
6.1 INTRODUCTION	13
6.2 SILT FENCE	14
6.3 HAY BALES.....	16
6.3.1 <i>Problems With Straw or Hay Bale Barriers</i>	17
6.4 EROSION CONTROL MIX BERMS	18
7.0 NONSTRUCTURAL EROSION CONTROL MEASURES	19
7.1 NONSTRUCTURAL MEASURES DEFINED	19
7.2 IMPORTANCE OF NONSTRUCTURAL MEASURES	19
7.3 PLACEMENT OF NONSTRUCTURAL MEASURES	19
7.3.1 <i>Temporary Measures</i>	20
7.3.2 <i>Permanent Measures</i>	21
8.0 WINTER CONSTRUCTION CONSIDERATIONS.....	21
9.0 SITE RESTORATION STANDARDS	25
9.1 PROCEDURE	25
9.2 METHODS FOR RESTORATION	25

LIST OF TABLES

TABLE 1 RECOMMENDED WIDTHS FOR FILTER STRIPS BETWEEN DISTURBED AREAS AND WATER RESOURCES	5
TABLE 2 LOG BRIDGE STRINGER REQUIREMENTS	7
TABLE 3 CULVERT SIZE - LENGTH OF ROCK PROTECTION.....	9
TABLE 4 RECOMMENDED DISTANCES BETWEEN WATER DIVERSION STRUCTURES.....	12
TABLE 5 TEMPORARY SEEDING RATES AND DATES.....	20
TABLE 6 NONSTRUCTURAL EROSION CONTROL MEASURES (SEASONAL DIFFERENCES IN CONSTRUCTION BMP REQUIREMENTS)	23

LIST OF APPENDICES

- A. DEFINITION OF TERMS
- B. CONSTRUCTION MATERIALS SOURCE LIST
- C. OTHER RECOMMENDED REFERENCE MANUALS
- D. CONSTRUCTION TECHNIQUE ILLUSTRATIONS
- E. EROSION AND SEDIMENTATION CONTROL LAW
- F. MAINE SLASH LAW
- G. CULVERT SIZES FOR STREAM CROSSINGS (3X RULE)

This manual is the property of Central Maine Power Company and can be copied and distributed only upon the express permission of Central Maine Power Company.

CENTRAL MAINE POWER COMPANY

Environmental Guidelines for Construction and Maintenance Activities on Transmission Line And Substation Projects

1.0 INTRODUCTION

These guidelines contain standards and methods used to protect soil and water resources during construction, reconstruction, and maintenance of transmission lines and substations. They are based on practical methods developed for construction in utility corridors and their use is enforced by both State of Maine and Federal regulatory agencies. The construction practices described in this manual are typically required by the regulatory agencies for all projects. These practices are commonly referred to as Best Management Practices (BMPs). Illustrations have been provided as part of this manual (Appendix D) which demonstrate both the proper and improper techniques used for the more common construction activities.

All contracts for work performed on Central Maine Power Company (CMP) transmission line rights-of-way and substation sites will include these specific guidelines to ensure the project is constructed in an environmentally conscious manner. CMP personnel or their designated representatives will ensure that the guidelines are followed by inspecting all work and prescribing corrective steps to be taken where necessary. While this manual takes into consideration legal requirements, project personnel are still responsible for compliance with all federal, state, and local requirements.

This guide uses a number of scientific and technical terms. Definitions of these terms are provided in Appendix A.

2.0 PLANNING AND DESIGN CONSIDERATIONS

Planning is an important practice that will reduce the risk of erosion on a construction site, saving both time and money for Central Maine Power Company and its contractors. An erosion control plan should be prepared during project planning and design phases. It will likely be required for any Maine Department of Environmental Protection and/or local permits.

The erosion control plan should consist of:

- A narrative.
- A map.
- Plan details.

The narrative should describe the proposed project, existing site conditions, adjacent land uses, and any natural resources or properties that might be affected by the project. Other important details to include are descriptions of critical areas, proposed construction start and end dates, construction sequence, and brief descriptions of erosion and sedimentation control measures,

inspections and maintenance programs, and other clearing or construction that has taken place on the site in the last five years.

The map should include pre-development site contours at a scale to identify runoff patterns (minimum 5-foot contour interval), final contours, limits of clearing and grading, existing buffers, critical areas, natural resources, erosion control measures, and other clearing or construction that has taken place on the site in the last five years.

The plan details should include drawing of the erosion control structures and measures, design criteria and calculations, seeding specifications, and inspection and maintenance notes.

Key considerations include resource identification, familiarizing all parties with the construction site and limitations, and construction sequence.

2.1 Resource Identification

Sensitive natural areas which will receive priority treatment include:

- Streams and rivers.
- Great ponds.
- Wetlands.
- Steep slopes.
- Unstable soil conditions.

Sensitive natural areas which may receive priority treatment, depending upon the specifics of the project, include:

- Stream, river, pond, and wetland buffers.
- Significant wildlife habitats.
- Habitat for rare species.
- Historic and prehistoric sites.

During the planning phase, all sensitive natural areas that require priority treatment will be identified. The method of avoiding or crossing the sensitive natural areas to minimize impacts will be identified and incorporated into the project plans. Project plans should be designed and drawn to provide contractors and inspectors with a comprehensive reference guide that include, but is not limited to, locations of sensitive natural areas, access, and abutter and landowner issues. If modifications to the plans need to be made in the field, a designated person shall make necessary changes and shall notify all necessary personnel promptly. Copies of these plans should be provided and explained to equipment operators to assure that construction practices meet the intent of avoiding or minimizing impacts to the identified sensitive natural areas. In addition to the plans, the proposed access ways and water/wetland crossing locations, as well as other environmentally sensitive areas where activities will be restricted or prohibited, will be flagged and/or have signs posted.

Prior to crossings or construction in or near any sensitive natural areas, a “walk-through” will be conducted. Attendees at the walk-through will include: 1) the contractor, 2) CMP and/or any designated representative, and may include 3) any assigned Third Party Inspector. The purpose of the walk-through is to establish the following objectives, **prior to any clearing or construction work**:

- Identify available or alternate points of access to the project site.
- Identify sensitive natural areas.
- Identify future “No-Access” areas.
- Review color designation for all flagging used.
- Establish the Communication Chain of Command (Contact Point).
- Identify and flag access/construction roads within the ROW and/or project area.
- Establish methods of access over water resource areas (mats, timber corduroy, frozen ground, tracked equipment).

In order to minimize impacts to sensitive natural areas, the above objectives will continually be evaluated throughout the construction process. Project superintendents, foremen, and inspectors should also monitor weather conditions and reports on an on-going basis. Knowledge of changing or anticipated wet weather will allow time to address erosion control needs. In this way, CMP and its contractors will be prepared to respond to changing environmental conditions (e.g., unusually wet or dry weather) and other unknowns that are inherent in the construction and maintenance of transmission lines.

2.2 “Walk-Through” Mechanics

2.2.1 Use of Flagging and Signs

Flagging will be conducted at the time of the walk-through in order to visually identify select features or construction methods to be used. Wetlands may be flagged earlier as part of project permitting. Signs may also be installed following the walk-through to direct construction to approved access routes and away from “no access” areas. The CMP flagging color-code is as follows:

- **Glow-pink** with the printed words “Wetland Delineation”, “Wetland Boundary” or “Wetlands”. This flagging denotes the edge of wetlands.
- **Red** with or without the printed words – “Do Not Cross”. This flagging denotes a No-Access area where no equipment is allowed.
- **Yellow** – no printed words. This flagging denotes the location of an environmental measure such as a waterbar, hay bale barrier, or silt fence.
- **Blue** – no printed words. This flagging denotes approved travel ways. This is typically flagged on each side of the access-way to denote the designated travel lane for all access.
- **Glow-pink with black stripes** or otherwise printed with the words Buffer or Wetland Buffer. This denotes a setback from a water resource and should be treated the same as No-Access area.

2.2.2 Identification and Use of Existing Roads

Available logging, farm, or access roads, as well as other existing rights-of-way, will be utilized for access to and from transmission line rights-of-way with permission of the respective landowners. In order to minimize ground disturbance, existing roads within the right-of-way and wetland/stream crossing areas will be used whenever possible for travel during construction, unless a better route is agreed upon during the walk-through. The movement of equipment and materials within the transmission line right-of-way will be confined as much as possible to a single road or travel path.

For example, it may be better to construct new access roads in order to: (1) minimize the span of a wetland or stream crossing, or (2) avoid the more environmentally sensitive or “wetter” portions of a wetland or stream crossing.

In all cases, CMP and its contractors will attempt to avoid and minimize impacts to sensitive natural areas. As a result of this procedure, wetland and stream crossings, steep slopes, unstable soils, and other sensitive natural areas will be avoided and adverse impacts minimized whenever practicable.

2.3 Construction Sequencing

Although a “Project Plan” may be specific in identifying the *locations* of water resource areas (wetlands, streams, etc), and the *methods* of access over water resource areas (crane mats, frozen ground, etc) it should not dictate *when* construction activities should occur. It would be impractical to include day to day activities in the “Project Plan” such as, ‘pole X will be installed on Y date’. However, including environmental considerations in the daily and weekly project planning is very important. Factors such as the project schedule and weather often determine where and when construction activities occur; environmental impacts should also be considered. Below are some guidelines:

- Work closely with the individual(s) in charge of environmental compliance to plan project activities.
- Construction activities that cause soil disturbance should not occur during or just prior to forecast heavy rain events.
- Coordinate access planning with all of the contractors on the project. Often temporary access roads are used by several different contractors and the construction and use of temporary access roads can cause significant soil disturbance. Minimize equipment and vehicle travel on temporary access ways.
- Stabilize/restore disturbed areas as soon as possible, preferably while equipment is on site. Additional trips with equipment can create more soil disturbance which will need to be stabilized. Often a site can and should be stabilized within hours of when the soil disturbance occurred.
- Use frozen conditions to your advantage. There may be instances where water resource areas can be crossed during frozen conditions in lieu of installing crane mats. Before using this technique consult with the project environmental inspector.

- Crane mats should be removed as soon as they are no longer needed and/or when conditions are favorable.

3.0 STANDARDS FOR CONSTRUCTION

3.1 Road Construction

The following five standards apply to the construction and/or upgrade of all roads, skid trails, yarding areas, or work pads whether temporary or permanent.

1. Where construction will be located near water resources, such that material or soil may be washed into them, these disturbances will be set back from the edge of the water resource to maximize the amount of undisturbed filtering area between the disturbed area and the resource. These “filter strips” will consist of an area of undisturbed vegetation between the edge of disturbed area and/or silt fence/hay bale barriers placed to intercept any sediment load in runoff water before it can enter the resource area. In order to maintain the integrity and effectiveness of filter strips, sediment barriers should be installed very early in the construction sequence, and they need to be monitored to make sure they are functional. Effective filter strip widths may vary from only a few feet in relatively well drained flat areas to as much as several hundred feet in steeper areas with more impermeable soils. The minimum width of the buffer strip shall be 25 feet or in accordance with local CEO or DEP regulations. The width of the filter strip shall be increased proportionately for slopes longer than 150 feet or for higher sediment concentrations. **Table 1** below provides the recommended widths for the filter strips according to the slope of land between the edge of the resource and any exposed soil.

Table 1 Recommended Widths For Filter Strips Between Disturbed Areas And Water Resources	
Slope of Land Between Disturbance and the Resource (Percent)	Width of Filter Strip* (Feet)
0	25
10	45
20	65
30	85
40	105
50	125
60	145
70	165
*Measured along surface of the ground	

2. Wherever possible, construction equipment will either avoid steep slopes or proceed across the slope in a safe manner to avoid excessive disturbance of vegetation and soils. Equipment will not travel straight up or down any slopes with a grade steeper than 10 percent, except where necessary due to safety concerns and/or terrain constraints.

3. Where access roads or construction areas are to be built across the slope, the area will be properly sloped, slanting away from the cut bank to the outside edge of the roadbed in order to facilitate road surface drainage.
4. Slopes of cut-and-fill banks will be no steeper than 1 horizontal to 1 vertical. If located within 100 feet of water resources, the slopes will be no steeper than 2 horizontal to 1 vertical.
5. Rivers, streams, and wetland areas will be crossed, where necessary, at right angles to the channel and/or at points of minimum impact. To insure that natural drainage patterns will not be altered or restricted as a result of construction activities, crossings will be designed and constructed according to specific standards outlined below.

3.2 Stream or Wetland Crossings

The following standards apply to all unavoidable stream, drainage way, or wetland crossings encountered while accessing the project site or on the project site itself.

3.2.1 Types of Crossings Used

The type of crossing used for access is dependent on: the purpose and use of the crossing, the nature of the resource being crossed, ground conditions present at the time of construction, and construction materials available. Some planning guidance is provided below. The appropriate means and location of the crossing will be determined at the time of the formal walk-through. It is important to consult with the project environmental inspector prior to installing any crossing.

- Permanent culverts and bridges will be used only where long-term, continued, and frequent access is required (such as substation access roads).
- Temporary crossings will be used at all other locations. Temporary bridges, culverts, or crane mats must be used to cross any streams, drainage ways, or wetland swales that contain: (1) flowing water, (2) standing water, (3) saturated soils, or (4) organic/mucky soils.
- The use of corduroy as crossing material will be limited to wetlands which are not anticipated to have flowing or standing water during the construction period.
- In certain cases, no crossing material will be required if the stream bottom or drainage way is dry and contains a gravel or solid rock bottom (a “ford”). Fords can only be used if they will cause no unreasonable sedimentation of the stream and no unreasonable alteration of the stream banks and bottom.
- All crossings should include water bars or broad based dips or turn outs on the access, approximately 50 feet from each side of the crossing, to promote filter-strip treatment of runoff.
- All temporary crossings must be stabilized within seven (7) days of its removal, unless specified otherwise.

3.3 Construction in Wetlands

Where structures are to be placed in wetlands, topsoil must be excavated first, and stockpiled separate from subsoil. Be sure that stockpile soils are placed in such a manner that they are readily replaced into the excavated area. Soils shall be replaced into the excavated area in the

opposite order they were removed. Excavation and pole placement in wetland areas should be completed within the same day. After pole installation, topsoil must be restored to the original surface grade, except where mounding around a structure is necessary for structure stability.

4.0 INSTALLATION OF CROSSINGS

4.1 Bridges

Bridges are a preferred method for temporary access waterway crossings. Normally, bridge construction causes the least disturbance to the waterway bed and banks when compared to the other waterway crossing methods. Most bridges can be quickly removed and reused without significantly affecting the stream or its banks and without interfering with fish migration.

Materials

Access bridge construction typically entails the use of log stringers as construction materials.

Sizing

Table 2 below illustrates the log sizing requirements depending on the span and anticipated loads.

Table 2		
Log Bridge Stringer Requirements		
Span	Minimum Log Diameter*	
	(80,000 lb. Load)	(40,000 lb. Load)
8 ft.	16 in.	12 in.
12 ft.	18 in.	14 in.
16 ft.	20 in.	16 in.
Wheel guards: 10" diameter - Size of deck planks: 4" x 12" x 12' * Assume 6 stringers at 24" centers		

Positioning

The following is guidance for the positioning and installation for all permanent and temporary bridges:

- Access roads will cross streams at right angles to the channel at a location with firm banks and level approaches whenever possible.
- Bridge piers and abutments will be aligned parallel to the stream flow so that the original direction of stream flow is not altered.
- Piers and abutments will be imbedded in good foundation material. The grade of the bridge should coincide with that of the road wherever practicable.

For additional specifications on bridge construction, refer to section F-2 of the Maine Erosion and Sediment Control BMPs (see full citation in Appendix C).

4.2 Culverts

Materials

Permanent culverts will be either corrugated metal or plastic pipe. Temporary culverts will be corrugated metal, plastic pipe, or lumber ties. Chemically-treated wood will be not used.

Sizing

Permanent culverts will be sized to have a diameter of at least 3 times the cross-sectional area of the stream channel or will be designed to accommodate 25-year frequency flows. Multiple culverts may be used in place of one large culvert if they have the equivalent capacity of a larger one. A culvert sizing criteria table (3x Rule) produced by the MDEP can be found in Appendix G. However, it is recommended that an engineer be consulted when installing any permanent culvert.

Temporary culverts will also be sized to provide an opening at least 3 times the cross-sectional area of the stream channel and sized to accommodate a 25-year frequency storm flow. The stream channel cross-section will be determined at highest flows or will be approximated during periods of lower flows using the apparent natural high water marks remaining on the stream banks. For small intermittent streams, drainage ways or wetland crossings, the minimum sized culvert that may be used is 18 inches. Multiple culverts may be used in place of one larger culvert if they have the equivalent capacity of a larger one.

Positioning

The following is guidance for the positioning of all permanent and temporary culverts:

- Culverts should be placed to allow for the crossing to take place at right angles to the channel to assure that natural drainage patterns will not be altered.
- Culverts should be placed at the point of narrowest crossing and where firm banks and level approach slopes are available. Slopes should be no greater than 1.5 to 1.

Installation

The following is guidance for the installation of all permanent and temporary culverts:

- Culverts should be of sufficient length to allow both ends to extend at least one foot beyond the toe of any fill used to cover the culvert.
- Inlet and outlet armoring shall extend at least one pipe diameter beyond the upstream and downstream end of the culvert. See Table 3 below for outlet protection in erodible areas.
- Culverts should be bedded on firm ground. Supplemental use of geotextile with gravel can be used to create this firm base. Permanent culvert installation should include firm compaction of the foundation and the fill around the sides of the culvert. Compaction should be done in no less than 8-inch lifts.
- Both the inlet and outlet ends of the culverts will be set at or slightly below the natural stream bottom to allow passage of fish and other aquatic life at all levels of flow. At no point should either end of an installed culvert be positioned in the air out of the water.
- Multiple culverts must be offset in order to concentrate low flows into the culvert within the natural channel.

- When working in and around a perennial stream, temporary stream diversion may be necessary to avoid creating turbidity in the stream water. This type of work requires a permit from Maine DEP, and must be coordinated with the project environmental inspector.
- Fill used to bury the culvert will be compacted at least half-way up the side of the culvert for its full length in insure that flowing water will not undermine the culvert.
- Culverts will be covered with fill to a depth of at least one foot or one and a half times the culvert diameter, whichever is greater.
- Road fill at the upstream (headwall) and downstream (out-fall) ends of culverts will be armored with either rock rip rap or logs to protect the road fill from being eroded by the action of water or road traffic. This material will be installed up to the level of anticipated high water.
- In areas where the streambed appears highly erodible, the streambed at the outlet end of the culvert will be lined with riprap to prevent erosion and potential stream bed scour. Table 3 below indicates the distances away from the culvert to install such riprap.

Culvert Diameter (Inches)	Length of Rock Protection From Culvert (Feet)
12 – 20	7
21 – 24	9
30	11
36	13
42 – 48	18
54 – 60	24
66 – 78	32

Removal

Temporary culverts will be removed once their use is no longer necessary. The fill material can be redistributed and spread out on the nearby uplands at a distance sufficient to prevent its reentry into the resource. Silt fence/hay bales, seeding, and mulching may be necessary to stabilize this material. The banks and bottoms of the stream, drainage way, or wetland should be restored to original conditions. Exposed soils on the banks and within 100 feet of the crossing should be stabilized using seed and mulch. Some banks and steep slopes adjacent to streams may require stabilization with curlex or jute matting in combination with seed and mulch.

4.3 Mats (Crane or Swamp Mats)

CMP construction projects require that adequate mats are present at the project site prior to construction. A readily accessible source of mats should also be available in case construction conditions change and necessitate the need for more mats.

Materials

A number of different sized and constructed crane mats are typically available. CMP requires that the appropriate mats be used for the appropriate crossing. For example:

- Longer mats should be used for the longer crossing spans. This practice avoids the need to install additional mats within the crossing area in order to support the “span” mats.
- Mats should be in good condition to allow for their “clean” installation. Having mats in good condition prevents them from being dragged in versus them being carried in due to broken hitching cables, breaking apart on the job site, or becoming imbedded in mud due to their inability to support the required weight.
- Mats with partial/short timbers joined end to end should generally not be used to cross stream channels.

Installation

- Whenever possible, mats should be carried and not dragged. Dragging mats creates more soil disturbance which requires additional erosion control or final restoration work.
- At the crossing location, the ends of the crane mats should extend at least two feet onto firm banks or several feet into the upland edge of a wetland to assure a dry, firm approach onto the mats.
- At crossings which contain open or flowing water, the mats should be supported within the span using cross mats as abutments in order to prevent the impoundment of water or having water flow over the mats.
- At “dry” crossings where no water is present or anticipated during project construction, the mats may be placed directly onto the sensitive natural area in order to prevent excessive rutting, provided stream banks and bottoms are not altered.

Maintenance

Matted crossings should be continually monitored to assure their correct functioning. Mats which become covered with dirt should be kept clean and the material removed must be disposed of in an upland location. The material must not be scraped and shoveled into the water resource. Mats which become imbedded must be reset or layered to prevent mud from covering them or water passing over them.

Removal

Mats should not be removed until their use is absolutely no longer necessary. Specifically, all final restoration work should be completed prior to the mats being removed from the crossings. The planned removal of mats should be coordinated with CMP (or designated representative), the project environmental inspector, and any Third Party Inspector. As temporary structures, they should be removed within one year from the date of installation. All areas disturbed during ford removal shall be stabilized with seed and mulch.

4.4 Corduroy

Materials

Corduroy material will consist of de-limbed trees or logs. The logs must have a diameter greater than three inches at the small end and lengths greater than 18 feet. Shorter length material may be used only as described in the Installation section below.

Positioning

Corduroy should be placed perpendicular to the direction of travel. Corduroy should be placed at the point of narrowest crossing and where firm banks and level approach slopes are available.

Installation

The corduroy should be placed with the longer length pieces laid down first. The bed of corduroy should not only be placed within the low portions of the crossing but also for at least three feet up the sides of any upland side slopes in order to prevent rutting and sedimentation from the approaches to the crossing.

Once a thick base of corduroy has been laid, pieces shorter than 18 feet can be used to fill gaps and raise the elevation of the corduroy to provide for a more stable crossing.

Removal

Removal is the reverse of installation. Once the corduroy has been removed from the crossing, it may be moved off the right-of-way, burned, or chipped. The material may also be spread and distributed on the ROW over the nearby upland if in accordance with the Maine Slash Law (see Appendix E) and approved by a CMP representative. The banks of streams and drainage ways must be graded back to original conditions. Exposed soils on the banks and within 100 feet of the crossing must be stabilized using seed and mulch. Banks of drainage ways that are expected to receive high flows should be stabilized with seed and curlex or jute matting.

5.0 SURFACE WATER DIVERSION STRUCTURES (WATER BARS)

A number of above-ground structures or techniques are available to divert water out of travel ways and work areas in order to prevent subsequent runoff and erosion. The terminology and definitions for these techniques (i.e., broad-based dips, water bars, skid humps, water turnouts, and cross-drainage box culvert) vary, but the purpose of all is to redirect water moving down a slope into adjacent vegetated areas (filter strips). Any activities that involve land grading have the potential to cause sedimentation. Their use and installation needs to be carefully planned. Planning for these techniques must include timing, use of natural buffers (filter strips), mulching, and temporary and permanent seeding. Minimizing the area of soil exposed at one time is a key component of ensuring that surface water diversion structures function effectively. General standards for their construction are as follows.

Materials

Most of these structures are constructed by excavating or moving and shaping earth from within the access way or work area. The cross-drainage culvert structure typically uses logs or timber to form a box-like structure to catch water from travel ways or side ditches in order to direct it across the travel way and away from disturbed areas.

Positioning

These structures should be installed immediately above and along steep pitches in the road and below seepage areas on natural or cut banks. They should be sited to take advantage of existing vegetation for filtering and slope away from the travel surface. The interval for installing these diversion structures depends on the slope of the road, as well as the nature of the road surface, soils, and wetness. Generally speaking, steeper slopes require shorter distances between

diversion structures. The following table contains recommended distances between installed structures depending on slope.

Table 4	
Recommended Distances Between Water Diversion Structures	
Slope (Percent)	Spacing (Feet)
0 – 2	500 – 300
3 – 5	250 – 180
6 – 10	167 – 140
11 – 15	136 – 127
16 – 20	125 – 120
21+	100

All of these structures should be sized in anticipation of greater flows resulting from snow melt, spring runoff, and storm rains.

Installation

These structures should be installed at 30-degrees angled down grade. The shape of the backside portion of the structure should have a reverse slope of about 3 percent. Use of a pop-level is recommended to ensure that drainage is away from the road. Structures should be constructed with rounded (not vertical) mounds and dips to allow for firm compaction and to allow re-vegetation.

In the case of the cross-drainage culvert, the minimum width of the open face of the culvert should be 18 inches. The travel surface should consist of at least 12 inches of gravel or soil over the culvert. The slope of the culvert should be a drop of at least 5 inches in every 10 feet of length to ensure proper drainage.

The inlet end of all structures should extend beyond the edge of the access road so that it fully intercepts water flows that may flow onto the access road. The outlet end of the structure should extend out enough to prevent water from flowing around and re-entering the road or work area.

The discharge ends of any of these diversion structures should outlet into a vegetated filter strip. Where heavy flows are encountered or anticipated, the outlet end of the structures should incorporate an apron of rock, gravel, or brush to reduce water velocities. If construction will extend into fall and winter months, be sure to upgrade to meet winter standards all erosion control measures (e.g., increase amount of mulch, etc.), to protect the site from spring runoff.

Where the structure is within 100 feet of a stream or wetland, the incorporation of a small, excavated settling basin or ditch turnout to reduce the velocity of flows and the continued movement of sediment downslope should be considered. In addition, some type of sediment barrier (silt fencing or staked hay bales) will be installed at the outlet of the diversion structure, where vegetated filter strips are narrow or sparsely vegetated, in order to prevent sediment from eroding into water resources.

Maintenance

Due to repeated travel over these structures, maintenance is critical to their effective functioning. As the structure becomes flattened or rutted, it needs to be re-excavated or graded to ensure the interception and redirection of water runoff. The ends of any cross-drainage culverts should be maintained by clearing away any potential blockages.

Removal

After the completion of the construction project, removal of these structures is not a requirement, with the exception of the cross-drainage culvert. The structures can be left in place provided they have been suitably stabilized with seed and mulch. Any hay bale barriers or silt fence at the outlet end should be removed when the site has a healthy vegetative cover.

6.0 SEDIMENT BARRIERS (STRUCTURAL MEASURES)

6.1 Introduction

The use of properly installed erosion and sediment control barriers is a fundamental and critical component for preventing erosion at CMP construction projects. Erosion control barriers include silt fence, hay bales, and/or erosion control mix berms. In some cases, these barriers may be deemed unnecessary by CMP, its representatives, or a Third Party Inspector due to factors including slope and filter strip width within project boundaries. A typical CMP construction project will use a combination of barriers to effectively control erosion near water resources. Installation and diligent maintenance of these barriers serves the following purposes:

- Assures the environmental integrity of those upland and water resource areas not designated or permitted for disturbance. Specifically, it maintains the onsite vegetative community and water quality of the surface water within the watershed.
- Assures compliance with all applicable federal, state, and local environmental and land use regulations or permit conditions.

Generally, silt fence is the preferred barrier because: it traps a much higher percentage of suspended sediments than hay bales; it can be easier to install, obtain, and transport; and is less costly. In addition, the structural longevity of silt fence is 60 days or longer unlike straw or hay bales' longevity which is 60 days or less.

The standards and procedures outlined in this section of the manual are meant to address a majority of the situations encountered during transmission line and substation construction activities. For additional information on sediment and erosion control methods and techniques, or to address a particularly problematic situation, this manual should be used in conjunction with and supplemented by the Maine Erosion and Sediment Control BMPs. For other recommended references, see Appendix C.

6.2 Silt Fence

Materials

Silt fence is provided by a number of manufacturers and is generally a synthetic fabric pre-attached to wooden staking. The fabric should be pervious to water allowing a flow through rate of 0.3 gallon per square foot per minute. The fabric should contain stabilizers and ultraviolet ray inhibitors to allow it to sustain exposure of a minimum of 6 months. The height of the filter fabric should not exceed 4 feet in height.

Placement

Silt fence is to be utilized at the edge of any planned work area or area which will cause the disturbance of soil. It will be installed to intercept any sheet flow of water and detain sediment from entering water resources or leaving the project site. It should be installed prior to starting work. Given the expansiveness of CMP transmission line projects in particular, the amount of silt fence placement must be selective; however, it should still be used in amounts sufficient to meet potential changing conditions in a pro-active manner. After the primary stabilization measures (temporary and permanent) have been implemented, silt fence use is encouraged in the following selected locations, as appropriate:

- Around all substation project sites.
- Along all access roads or work areas that are within 100 feet of water resources.
- Along all access roads or work areas in upland settings that encounter seepage moving across slope.
- Around all stockpiled soils.

In general, the placement of silt fence is appropriate when:

- Serving a drainage area of no more than .25 acre per 100 feet of silt fence length.
- The maximum slope length behind the fence is 100 feet or less.
- The maximum gradient behind the fence is 50% or 2:1 horizontal/vertical.
- Where the filter strip is not of an adequate width (see Table 1).

Installation

The following installation guidelines are the minimum which should be implemented; however, appropriate changes to silt fence installation should be made as conditions change during the construction operation.

Silt fence will be placed an adequate distance (6-10 feet) beyond the toe of the slope (if there is sufficient room) to allow for sediment accumulation between the disturbed area and the down-gradient water resources. If there is not sufficient room to place the silt fence an adequate distance beyond the toe of the slope, CMP, a representative of CMP, or the Third Party Inspector should be consulted. The barrier should be installed along the contour, within reason. The goal is to slow and pool the sediment-laden runoff to allow fine sediments to settle-out before the runoff enters the water resource. The ends of the barrier should be up-turned to maintain the pool volume.

A trench shall be excavated approximately 6 inches wide and 6 inches deep on the up-slope side of the silt fence alignment. The lower edge of the silt fence fabric should be entrenched for a distance of at least 4 inches up-slope and then back-filled. Should frozen or rocky ground conditions prevent the effective or practical use of trenching, materials such as bark/wood chips, wood fiber mulch, or a soil erosion control mixture can be used. This material is to be mounded on top of at least 4 inches of filter fabric which would otherwise be trenched.

Silt fence should be installed in a continuous roll to avoid the need of a joint between different pieces of fence. If joints are necessary, filter fabric shall be “spliced” together at a support post, securely sealed, and with a minimum of 6 inches of overlap. Splicing rolls of silt fence entails twisting end posts together, creating a continuous section of silt fence.

Support posts should be placed on the down-slope side or the side closest to or facing the water resource. The posts should be placed 6 feet apart (a maximum of 10 feet may be acceptable in some locations) and driven securely into the ground, typically about one foot deep. Silt fence usually has posts pre-attached.

Silt fence should not be installed in streams or drainage ways where concentrated water flow is present or concentrated flows are anticipated.

Maintenance

Once a week, or after rainstorms producing at least ½ inch of rainfall, whichever is more frequent, the contractor is responsible for inspecting all temporary erosion and sediment control barriers. Such inspection is necessary to assure that the barriers are functioning properly as well as identifying new areas requiring installation. A maintenance log should be kept of all erosion control changes, improvements, and maintenance performed.

If any barriers are not functioning properly, they will be repaired or replaced. A sediment control barrier is not functioning if:

1. Water is flowing around the sides or under the barrier.
2. Soil has built up behind the barrier to the point more than half-way up the fence.
3. There is excessive sag in the fence.
4. There is evidence of sedimentation such as gully erosion, slumping of banks, or the discoloration of water outside of the perimeter silt fence.

Corrective measures include removing accumulated sediment from behind the barrier, restaking, extending the ends of the fence, or installing another fence further upslope.

Removal

Installed silt fence will be removed once it is evident that the soils have become stabilized and the potential for erosion no longer exists. In most cases, the silt fence will not be removed until at least one growing season has past. Removal of silt fence should be coordinated with CMP or their designated representative.

Any ridges or mounds of soil or caught sediment remaining in place after the silt fence has been removed, must be leveled-off to conform to the existing grade. Any newly exposed soil that may erode must be seeded and mulched.

All removed silt fence must be properly disposed of off the project area.

6.3 Hay Bales

Placement

Like silt fence, hay bale barriers can be utilized at the edge of any planned work area or areas where soil disturbance has occurred or will occur. Barriers are installed to intercept sheet flow of water and detain sediment from entering water resources or leaving the project site. Given the expansiveness of CMP transmission line projects in particular, the amount of hay bale barrier placement must be selective, but still in amounts sufficient to meet potential changing conditions in a pro-active manner. Hay bale barriers will be used, as appropriate, in the following locations:

- Around all substation project sites.
- Along all access roads or work areas that are within 100 feet of a water resource area.
- Along all access roads or work areas in upland settings that encounter seepage moving across slope.
- Around all stockpiled soils.

In general, the placement of hay bales is appropriate when:

- Serving a drainage area of no more than .25 acre per 100 feet of barrier length.
- The maximum slope length behind the barrier is 100 feet or less.
- The maximum gradient behind the barrier of 50% or 2:1 horizontal/vertical.
- Where the filter strip is not of an adequate width (see Table 1).

Installation

The following installation guidelines are the minimum which should be implemented; however, appropriate changes to hay bale installation should be made as conditions change during the construction operation.

The barrier will be placed an adequate distance (6-10 feet) beyond the toe of the slope (if there is sufficient room) to allow for sediment accumulation between the disturbed area and the down-gradient sensitive areas. If there is not sufficient room to place the hay bales an adequate distance beyond the toe of the slope, CMP, a representative of CMP, the project environmental inspector, or the Third Party Inspector should be consulted. Within reason, the barrier should be installed along the contour. The goal is to slow and pool the sediment-laden runoff to allow fine sediments to settle-out before the runoff enters the water resource. The ends of the barrier should be up-turned to maintain the pool volume.

A shallow trench shall be excavated the width of the bale and to a minimum depth of 4 inches in which to bed the bale. The excavated soils are then used to seal the lower inside (up-slope) edge of the barrier. The bales should be set tightly together and entrenched with the baling string oriented on the sides (i.e., not touching the ground) in order to prevent deterioration of the string.

Every bale should be staked using 2 stakes per bale. The stakes should be driven in at angles such that it binds and forces abutting hay bales together.

Gaps between bales shall be packed with loose hay to prevent water from escaping between the bales.

Hay bales will not be placed in streams where flow is present or anticipated.

Maintenance

Once a week, or after rainstorms producing at least ½ inch of rainfall, whichever is more frequent, the contractor is responsible for inspecting all temporary erosion and sediment control barriers. Such inspection is necessary to ensure the structures are functioning properly as well as identifying new areas requiring installation. A maintenance log should be kept of all erosion control changes, improvements, and maintenance performed.

If any barriers are not functioning properly, they must be repaired or replaced. A sediment barrier is not functioning if:

- Water is flowing around the sides or under the barrier.
- Soil has built up behind the barrier to the point more than half-way up the hay bale or where there is excessive lean to the barrier.
- There is evidence of sedimentation such as gully erosion, slumping of banks, or the discoloration of water outside of the hay bale barrier.

Corrective measures include removing accumulated sediment from behind the barrier, re-staking, extending the barrier at the ends, or installing another barrier further up-slope.

It is not recommended that straw or hay bales be used for periods greater than 60 days.

Removal

Installed hay bales will be removed once it is evident that the soils have become stabilized and the potential for erosion no longer exists. In most cases, the hay bale barrier will not be removed until at least a healthy growth of vegetation is established on the disturbed site. Removal of hay bale barriers should be coordinated with CMP or their designated representative.

Any ridges, mounds of soil, or caught sediment remaining in place after the hay bales have been removed, must be leveled-off to conform to the existing grade. Any newly exposed soil that may erode must be seeded and mulched.

All removed hay bales must be properly disposed of, or broken up and used as mulch on the bare soils near the barrier.

6.3.1 Problems With Straw or Hay Bale Barriers

There are several situations where straw or hay bale barriers may be ineffective or cause problems:

1. When improperly placed and installed (such as staking the bales directly to the ground with no soil seal or entrenchment), hay bales allow undercutting and end flow.

2. When used in streams and drainage ways, high water velocities and volumes destroy or impair their effectiveness.
3. When bales are not inspected and maintained adequately.
4. When hay bale barriers are removed before up-slope areas have been permanently stabilized.
5. When hay bale barriers have not been removed after they have served their usefulness.

6.4 Erosion Control Mix Berms

Composition

Erosion control mix berms are made up of shredded bark, stump grindings, and composted bark. It may be made on a project site if adequate materials are available, however its composition needs to be a well-graded mix of different particle sizes. Wood chips, bark chips, ground construction debris and processed wood cannot make up the organic component of the mix. Be sure to consult with the project environmental inspector regarding the suitability of any erosion control mix material proposed for use.

Installation

Erosion control mix berms are simply placed on the surface of the ground and do not require any soil disturbance. The berm should be located in a similar manner to other sediment control barriers along contour, downslope of disturbed soils. Also similar to other sediment barriers, they should not be placed in areas of concentrated runoff, below culvert outlets, around catch basins, or at the bottom of a large contributing subwatershed. At the toe of shallow slopes less than 20 feet long, at a minimum berms should be 12” high and a minimum of 2 feet wide at their base. For longer or steeper slopes, the berms should be wider to accommodate additional runoff. They are ideal for installation on frozen ground, on shallow to bedrock soils, outcrops of bedrock, and heavily rooted forested areas (i.e., those areas where other barriers are difficult to install).

Erosion control mix can also be placed in a synthetic “sock” to create a contained stable sediment barrier. This is especially useful in areas where trenching is not feasible, such as frozen ground, across pavement, or compacted gravel. When in a sock, erosion control mix can be staked in an area of concentrated flow (i.e., ditch or swale) as the netting prevents movement of the mulch mixture.

Maintenance

As with other barriers, inspection should be performed after each rainfall or daily during prolonged periods of rain. Accumulations of sediment should be removed when they reach half the height of the barrier, and the berms can be reshaped and new material can be added as needed.

Removal

In most cases, erosion control mix berms do not need to be removed. They will continue to function as they decompose, become part of the soil on the site and will naturally revegetate. If synthetic socks are used, the erosion control mix can be emptied from the sock and the socks can be disposed of off site.

7.0 NONSTRUCTURAL EROSION CONTROL MEASURES

7.1 Nonstructural Measures Defined

Nonstructural measures are temporary or permanent methods used to cover exposed soil areas to prevent erosion from occurring. Their purpose is to cover whole areas of exposed soil to prevent initial erosion of soil from a construction site.

Examples of nonstructural measures include hay or straw mulch, erosion control mix, matting, or seeding.

7.2 Importance of Nonstructural Measures

Nonstructural measures are important because they provide both temporary and permanent protective cover to exposed soils. Generally, they provide the first line of protection against erosion, and can be the most effective means of preventing erosion. This protection is important because exposed soils are easily eroded by wind or water. Some soils such as silts can easily be removed from a construction site by rainwater. The impact of individual raindrops on exposed soils can loosen soil particles, and these particles can then be carried off the work site by runoff and deposited into water resources including streams, rivers, wetlands, ponds, and lakes. Silt particles don't settle out of water easily, and water siltation can pollute surface waters and harm aquatic creatures such as insects and fish. For example, brook trout, one of Maine's premier game fish species, requires clear, high quality water in order to survive. Silty water can reduce spawning habitat, irritate fish gills, lower oxygen content in water, and make fish susceptible to diseases.

Dry soil conditions and high winds can also cause siltation. When small particle soils such as silts become dry, they have a baby powder-like texture and can easily be swept away by winds. Nonstructural measures help prevent wind erosion because they hold moisture next to the soil, keep the soil from drying out due to wind exposure, and prevent winds from carrying away dry soil particles. Keep in mind, however, that proper construction sequencing is invaluable (See Section 2.3).

7.3 Placement of Nonstructural Measures

Nonstructural measures should be used whenever there is a possibility that exposed soils on a construction site could wash into adjacent sensitive water resources. Temporary nonstructural measures such as hay or straw mulch should be spread on exposed soils within 100-feet of water resources within 48 hours of initial soil disturbance, or before any predicted storm event. There are two types of nonstructural measures: temporary and permanent. Temporary measures are typically used during construction, while permanent measures are usually applied after construction is complete (i.e., restoration). Provided below are general discussions and explanations of the common nonstructural measures that are used on CMP construction sites.

7.3.1 Temporary Measures

- Hay or straw mulch (unanchored on slopes less than 8%, anchored on slopes greater than 8%) on exposed soil areas and soil stockpiles in the construction area.
- Temporary seeding covered by hay or straw mulch on soil stockpiles or areas of exposed soil next to sensitive resources that are not scheduled for final restoration for 30 days (this only applies between the dates of April 16 to October 31 of any given year). Temporary seeding is not required during the Winter Construction Season.
- Erosion control mix can be used as a stand-alone temporary mulch on slopes that are 2 horizontal to 1 vertical, or less, on frozen ground, in forested areas, or at the edge of gravel parking and areas under construction. It should be applied at a thickness of 4 to 6 inches.
- Rolled Erosion Control Products (RECP's) such as Curlex or Jute matting, can be used on areas of high wind exposure, steep slopes (steeper than 8% grade), unstable soils, and stream/river bank restoration areas. Matting is typically anchored (usually with large staples, as recommended by the manufacturer). Although this type of material is usually used during final restoration, it is considered a temporary measure because it generally deteriorates within two years.

Table 5 Temporary Seeding Rates and Dates				
Seed	Lb./Ac	Seeding Depth	Recommended Seeding Dates	Remarks
Winter Rye	112(2.0 bu)	1-1.5 in.	8/15-10/1	Good for fall seeding. Select a hardy species, such as Aroostook Rye.
Oats	80 (2.5 bu)	1-1.5 in.	4/1-7/1 8/15-9/15	Best for spring seeding. Early fall seeding will die when winter weather moves in, but mulch will provide protection.
Annual Ryegrass	40	.25 in.	4/1-7/1	Grows quickly but is of short duration. Use where appearance is important. With mulch, seeding may be done throughout growing season.
Sudangrass Perennial	40 (1.0 bu) 40 (2.0 bu)	.5-1 in. .25 in.	5/15-8/15 8/15-9/15	Good growth during hot summer periods. Good cover, longer lasting than Annual Ryegrass. Mulching will allow seeding throughout growing season.
Temporary mulch with or without dormant seeding			10/1-4/1	Refer to TEMPORARY MULCHING BMP and/or PERMANENT VEGETATION BMP.

Proper application rates, location, and seasonal consideration are provided in Table 6 on page 22 of this manual.

7.3.2 Permanent Measures

Uplands

- Permanent grass and legume seeding covered by hay or straw mulch on all areas that have been restored to final grade (this seeding generally applies between the dates of April 16 to October 31 of any given year). This is required to establish permanent, perennial, vegetative cover on exposed soils. Permanent seeding is not required during the Winter Construction Season, although dormant seeding may be performed. (See Section 8.0 for details on winter construction.)
- Seeds covered by anchored (usually with large staples) Curlex or jute matting in areas of high wind exposure, on steep slopes (steeper than 8% grade), unstable soils, and stream/river bank restoration areas.
- The soil may need to be properly prepared before any seeds are placed on the ground. This preparation may include addition of fertilizer (only in designated upland areas not adjacent to, or near waterbodies or wetlands, if in doubt ask the environmental or construction inspector) in areas that have been tested, and are found to be deficient in plant nutrients.
- Erosion control mix can also be used as a permanent mulch to provide a buffer around disturbed areas. It can be left in place to decompose and naturalize. It will eventually support vegetation, which should be promoted. If vegetation is desired in the short-term, legumes and woody vegetation can be planted, which will create additional stability.

Wetlands

- Wetland areas are to be seeded only with resource agency approved wetland seed mixes. If it is decided that wetlands will not be seeded, disturbed wetland will be graded to original contours, mulched with straw, and allowed to revegetate naturally.

As with the Temporary Measures, refer to Table 6 on page 22 for proper application rates, locations, and seasonal considerations.

For permanent seeding mixtures refer to Appendix A of the Maine Erosion and Sediment Control BMPs.

8.0 WINTER CONSTRUCTION CONSIDERATIONS

If a project is actively being constructed between November 1 and April 15 of any given year, sediment and erosion control guidelines developed by the Maine Department of Environmental Protection for projects occurring during the winter months must be followed.

Of course, nothing can replace good common sense. These guidelines may not be necessary at all times during the winter construction dates for several reasons. For example, if there is no snow on the ground or the ground isn't frozen by November 1, only the standard BMPs must be followed. Also, if the ground thaws and all the snow is gone before April 15, the standard BMPs may be appropriate. Nothing substitutes good judgment, being familiar with the construction site, and being aware of the site-specific conditions. Proper construction sequencing (Section 2.3) can greatly minimize environmental impact during winter construction. When in doubt, contact the project construction manager or environmental inspector with any questions.

Table 6 on page 22 highlights some of the major differences between the winter construction guidelines and normal BMPs used during construction and for temporary stabilization. The table presents differences for temporary measures that should be used during construction, and permanent measures when construction is completely done.

Table 6
Nonstructural Erosion Control Measures (Seasonal Differences in Construction BMP Requirements)

Dates	General Construction April 16 through October 31 of every year	Winter Construction November 1 through April 15 of every year
Mulch on slopes less than 8%	Within 100-feet of sensitive water resources apply hay and/or straw mulch at a minimum of 70 lbs./1000 square feet of exposed soil (about 2 bales). Must be done within 7 days of initial soil disturbance and before storm forecasted events, unless specified otherwise.	Within 100-feet of sensitive water resources apply and maintain properly anchored hay and/or straw mulch at a minimum of 150 lbs./1000 square feet of exposed soil (about 5 bales) at all times. (double the April 16 – October 31 rate)
Mulch on slopes greater than 8%	Hay or straw mulch can be applied without being anchored, though specific site conditions may require use of anchoring.	Apply mulch as specified above. Properly anchor with Curlex, jute matting, or similar mulch netting on upland slopes exceeding 8% and within 100 feet of streams if no construction activities are anticipated for 7 or more days.
Area of exposed soils allowed at any one time	No restriction on area exposed, but contractor must attempt to minimize amount of exposed soil at any one time, especially next to water resources.	Not more than one (1) acre of exposed (not mulched or otherwise devoid of vegetative cover) soil.
Sediment barriers	A single line of sediment barriers including silt fence, hay bales, or wood waste filter berms must be installed between water resources and disturbed soils.	If soil is frozen, wood waste filter berms or 2 lines of sediment barriers (including hay bales and silt fence) must be placed between water resources and disturbed soils.
Temporary seeding in uplands	If required, apply at the rate specified by the supplier, CMP Environmental Department, or Environmental Inspector. Cover with mulch.	Not required, but if temporary seeding is desired, it must be applied at a rate 3 times higher than the General Construction Season, and covered with mulch.
Temporary seeding in wetlands	Wetlands are not to be seeded unless done so with an agency approved seed mix. Annual Rye Grass is not acceptable and shall not be used. Disturbed wetland areas will be mulched exclusively with straw.	Wetlands are not to be seeded unless done so with an agency approved seed mix. Annual Rye Grass is not acceptable and shall not be used. Disturbed wetland areas will be mulched exclusively with straw.
Permanent seeding in uplands	Site must be seeded at rate specified by the supplier and covered with hay or straw mulch. If needed, the site can be limed and fertilized.	Not required before April 16, but if dormant seeding is desired, the site should receive an adequate cover of loam, if necessary, be seeded at a rate 3 times higher than the General Construction Season, and covered with mulch at a minimum of 150 lbs./1000 square feet.
Permanent seeding in wetlands	Do not apply permanent seed mixes to wetland areas unless they are specially designated wetland seed mixes approved by a resource agency.	Do not apply permanent seed mixes to wetland areas unless they are specially designated wetland seed mixes approved by a resource agency.
Temporary seedbed preparation	Apply limestone and fertilizer (uplands only) according to soil test data. If soil test is not possible, 10-10-10 fertilizer may be applied at a rate of 600 lbs./acre and limestone at 3 tons/acre.	Not required, but seedbed can be prepared according to General Construction requirements.
Permanent seedbed preparation	Apply limestone and fertilizer (uplands only) according to soil test data. If soil test is not possible, 10-20-20 fertilizer may be applied at a rate of 800 lbs./acre and limestone at 3 tons/acre.	Not required before April 16, but if dormant seeding is desired, the seedbed can be prepared according to the General Construction requirements.

Dates	General Construction April 16 through October 31 of every year	Winter Construction November 1 through April 15 of every year
Temporary slope stabilization	Same as winter construction season, but mulch does not need to be anchored.	Anchored hay or straw mulch on slopes greater than 8% and drainage ways with greater than 3% slope as necessary. Wood waste mix can be used on slopes in place of anchored hay or straw mulch.
Maintenance of erosion controls	Same as winter construction guidelines.	All erosion controls should be inspected periodically to ensure proper function. If any evidence of erosion or sedimentation is evident, repairs should be made to existing controls or other methods should be used.
Inspection and monitoring	Monitoring should be performed as needed until a new, healthy vegetative cover is attained on the site. This applies to both temporary and permanent seeding.	Monitoring should be performed as needed to ensure proper stabilization and re-vegetation (both temporary and permanent). Starting in the spring following completion of the project, inspections should be performed until new, healthy vegetative cover is attained.

9.0 SITE RESTORATION STANDARDS

Following completion of the construction work, the contractor will be responsible for conducting site restoration work. The following guidelines will apply to all activities, including temporary and permanent roads, stream/wetland crossings, staging and work areas, and substation sites.

9.1 Procedure

At the completion of project construction in an area or at the end of the construction, CMP or their designated representative, the contractor, and any Third Party Inspector will review the project's restoration needs and prioritize the areas. This prioritization should consider time of year, ground conditions, re-vegetation probabilities, and equipment availability. A restoration "walk-through" is strongly recommended.

In many cases a site can and should be restored within hours of when the soil disturbance occurred. Often getting the equipment to a site that needs to be restored only creates more disturbed area to restore. It is important to "restore as you go" to reduce the equipment travel on temporary access roads. It can be particularly difficult to restore an area that was disturbed during winter construction activities in the spring or summer.

Likely areas of restoration include, but are not limited to:

- Around substation construction areas.
- Around pole and anchor pole placement.
- All wetland, stream, or brook crossings, particularly the approaches and any stream banks.
- Drainage ways or ditches.
- All temporary or permanent constructed roads, yarding, and staging areas.
- Cut banks.
- Steep slopes (over 8%).

9.2 Methods for Restoration

There are several methods of restoration for different areas.

1. All soil that is excavated, mounded, or deposited during construction will be re-graded or removed from the site as directed by CMP. All re-grading and redistribution of soil will be done to match existing grade.
2. The banks and bottoms of brooks, streams, and rivers will be restored to natural conditions. In general, any material or structure used at temporary crossings will be removed, and the bank and bottoms restored to their original depth and contour.
3. On permanent access roads, stream culverts and bridges will be left intact and in good repair to remain available for maintenance operations and/or public access (woods roads, camp roads, etc.).
4. On those construction roads to be closed to future vehicle traffic (as determined by CMP), bridges, culverts, and other temporary crossing or water diversion structures will be removed and the banks and bottoms restored to original conditions.

5. Previously installed water bars may remain or new ones will be installed at locations designated by CMP, their designated representative, or the Third Party Inspector. To prevent accelerated soil erosion, such water bars will be installed on all access and construction roads to be closed to vehicle traffic and on steep sections of permanent roads. Permanent water bars will be constructed to a sufficient height and width to divert the amount of water anticipated at each location as well as to provide some post-project permanence to the site. Water bars on permanent roads will be constructed in such a manner that they will remain effective and require minimal maintenance, and will be permanently seeded to ensure their long-term stability.
6. All areas severely rutted by construction equipment will be re-graded and permanently revegetated.
7. Upon completion of the project, the following areas will be permanently revegetated or otherwise permanently stabilized:
 - a) All exposed soil within 100-feet of the edge of any water resource, including, but not limited to, discontinued roads, staging areas, and fill around the base of transmission line structures.
 - b) Areas of exposed soil on slopes in excess of eight (8) percent, including discontinued roads and construction trails.
 - c) Cut and fill banks subject to erosion.
8. Liming, fertilizing, and seeding requirements for permanent re-vegetation will depend upon the soil type and drainage condition of the site. In the absence of soil tests, permanent seeding will generally be done in accordance with "Procedures for Permanent Seeding for Erosion Control" found in Table 6 on page 22.
9. The contractor will be responsible for the proper maintenance of all revegetated areas until the project has been completed and accepted. Where seed areas have become eroded or damaged by construction operations, the affected areas will be promptly re-graded, limed, fertilized, and re-seeded as originally required.
10. The contractor will perform all erosion control work to the complete satisfaction of Central Maine Power Company before the work is accepted. Central Maine Power Company will base acceptance of the erosion control and stabilization work on a final inspection.

APPENDIX A
DEFINITION OF TERMS

APPENDIX A

DEFINITION OF TERMS

Adjacent to a natural resource: Within 75 feet of, or in a position to wash into, a water resource (river, stream, brook, pond, wetland, or tidal area).

Annual seed mix: Seed mixture largely made up of plants that only persist one growing season.

Brook: Essentially the same as a stream, a water course that has a defined channel, a gravel, sand, rock or clay base, and flows at least part of the year. It may be a dry channel part of the year.

Corduroy: Logs greater than 3 inches in diameter at the small end and at least 18 feet long that are placed perpendicular to travel direction, on approaches to and in wetlands for crossings. The purpose of the logs is to prevent rutting and preserve vegetation root integrity in and adjacent to wetland areas. May also be used on approaches to mats or bridge stream crossings.

Crossing: Any activity extending from one side to the opposite side of a sensitive natural resource whether under, through, or over that resource. Such activities include, but are not limited to, roads, fords, bridges, culverts, utility lines, water lines, sewer lines, and cables, as well as maintenance work on these crossings. Crossings should be done to minimize impact. For example, crossing at a right angle to the resource and finding the driest or narrowest spot is one method for minimizing impact.

Cross-sectional area: The cross-sectional area of a stream channel is determined by multiplying the stream channel width by the average stream channel depth. The stream channel width is the straight-line distance from the normal high water line on one side of the channel to the normal high water line on the opposite side of the channel. The average stream channel depth is the average of the vertical distances from a straight line between the normal high water marks of the stream channel to the bottom of the channel.

Culvert: A pipe or box structure of wood, metal, plastic, or concrete used to convey water.

Erosion: Movement of earthen material by water or wind.

Erosion control blanket (matting): Manufactured material made out of natural or synthetic fiber designed to control movement of earthen material when installed properly.

Erosion control mix: Erosion control mix consists primarily of organic materials such as shredded bark, wood chips, stump grindings, composted bark, or similar materials. Ground construction debris or reprocessed wood products are not acceptable for use in erosion control mix. It contains a well-graded mix of particle sizes and may contain rocks up to 4 inches in diameter. Properly manufactured mix will have organic matter content between 80 and 100 percent (dry weight), 100 percent of particles must pass a 6-inch screen, the organic portion needs to be fibrous and elongated, it may contain only small proportions of silts, clays, or fine sand, and its pH should be between 5.0 and 8.0. Its applications include erosion control berms and mulch.

Erosion control plans: Written guidelines specific to a project or activity, describing various techniques and methods to control erosion for specific construction activities.

Fill: Any earth, rock, gravel, sand, silt, clay, peat, or debris that is put into or upon, supplied to, or allowed to enter a water body or wetland. Material, other than structures, placed in or adjacent to a water body or wetland.

Filter strip: Undisturbed areas of ground consisting of natural vegetation and natural litter such as leaves, brush, and branches, located between a water resource and access road, skid road or trail, or other area of disturbed soil.

Ford: A permanent crossing of a stream utilizing an area of existing, non-erodible substrate of the stream, such as ledge or cobble, or by placing non-erodible material such as stone or geotextile on the stream bottom.

Geotextile, Non-woven: Synthetic material made of spun polypropylene fiber used to support wetland fill or stabilize soils.

Geotextile, Woven: Synthetic material of woven polypropylene used to stabilize soils and make sediment barriers (silt fence).

Great pond: An inland water body which in a natural state has a surface area in excess of 10 acres, and any inland water body which is artificially formed or increased which has a surface area in excess of 30 acres.

Intermittent watercourse: Water course that has water in it only part of the year. It is still considered a natural resource.

Mats: Pre-constructed, portable, timber platforms used to support equipment or travel in or over wetlands or water bodies.

Mulch: Temporary erosion control such as hay, bark, or some similar natural material utilized to stabilize disturbed soil.

Perennial seed mix: Seed mixture made up of seeds from plants that persist for several years.

Perennial watercourse: A river, stream, or brook depicted as a solid blue line on the most recent edition of a United States Geological Survey 7.5 minute series topographic map. Typically has water in it year round.

Permanent access road: Project access road that is not restored after project construction completion. Permanent access roads should be designed and constructed so they are not an erosion problem.

Permanent stabilization: Establishment of a permanent vegetative cover on exposed soils where perennial vegetation is needed for long-term protection.

Permanent vegetative cover: Perennial seed stock, including but not limited to grasses and legumes that persist for more than several growing seasons.

Protected Natural Resource: Coastal sand dune system, coastal wetlands, significant wildlife habitat, fragile mountain areas, freshwater wetlands, community public water system primary protection areas, great ponds or rivers, streams, or brooks. (From the Maine Natural Resources Protection Act, 38 M.R.S.A. Section 480-B., revised 2007).

Riprap: Heavy, irregular-shaped rocks that are fit into place, usually without mortar, on a slope in order to stabilize and prevent soil erosion.

Sediment barrier: Staked hay bales, silt fence, or similar materials placed in a manner to intercept silt and sediment laden water runoff.

Sedimentation: Deposition of earthen material in a water body or wetland.

Sensitive Natural Resource: Area that deserves special attention because it is significant wildlife habitat, fisheries habitat, or has other natural resource values. These areas may require the use of minimum impact construction techniques such as use of mats, leaving vegetation intact for buffers, special timing of construction, or other specific techniques.

Settling basin (sediment/catch basin): Excavated pit placed to intercept water running off disturbed soils or dirt road bed. Usually used only where filter strip is inadequate to protect a stream, pond, or wetland from silt and sediment.

Silt fence: Woven geotextile sediment barrier. Proper installation requires placement on-contour and keying the fabric in at ground level.

Steep slopes: Slopes in excess of eight (8) percent.

Stone check dam: A small, temporary dam constructed across a swale or drainage ditch. The purpose is to reduce the velocity of concentrated flows, reducing erosion and trapping sediment generated in the ditch.

Stream: Generally, a channel between defined banks with a gravel, sand, rock, or clay base that flows at least part of the year. It may be a dry channel part of the year. The Maine Natural Resources Protection Act contains a more detailed definition.

Structure: Anything built for the support, shelter, or enclosure of persons, animals, goods, or property of any kind, together with anything constructed or erected with a fixed location on or in the ground. Examples of structures include buildings, utility lines, and roads.

Temporary access road: Road constructed solely for project access which is restored to original grade upon project completion, if not sooner. All exposed soils on access road adjacent to water bodies or on slopes steeper than eight percent must be stabilized with a permanent seed mix and mulch or matting.

Temporary stabilization: Mulch, matting, or seed, or a combination thereof, utilized to stabilize soil. Soil stockpiles left in place longer than 14 days must have temporary stabilization.

Temporary vegetative cover: An annual seed mixture, typically annual rye and oats.

Topography: The contour and elevation of the surface of the ground.

Turn out: Water diversion that directs water out of a ditch or off a travel-way and into a vegetated buffer.

Upland edge: The area of uplands alongside a wetland, stream, or water body.

Wastes requiring special handling: Wastes generated from construction activity including engine oil, hydraulic oil, gear oil, diesel, gasoline, or coolants.

Water bar: Constructed bar across an access road or skid trail that directs surface water off the road or trail into a stable vegetated surface or filter strip. They are used as a temporary measure on active roads or when closing roads permanently to prevent erosion.

Water body: River, stream, brook, pond, wetland, or tidal area.

Water resource: River, stream, brook, pond, wetland, or tidal area.

Wetland: An area that is inundated or saturated by surface or groundwater at a frequency and for a duration sufficient to support, and which under normal circumstance do support, a prevalence of wetland vegetation typically adapted for life in saturated soils. The Maine Natural Resources Protection Act contains a more detailed definition.

APPENDIX B
CONSTRUCTION MATERIALS SOURCE LIST

APPENDIX B
CONSTRUCTION MATERIALS SOURCE LIST

The following list of vendors has been selected given the wide variety of construction materials they offer. The list is not meant to be all-inclusive or an indication of favored vendors.

W.H. Shurtleff Company (Culverts, Geotextiles)

One Runway Road
Suite 8
South Portland, Maine 04106-6169
1-800-633-6149
www.whshurtleff.com

A. H. Harris (Geotextiles, i.e. Curlex Excelsior Blankets)

22 Leighton Road Augusta, Maine 04332 (207) 622-0821 www.ahharris.com	585 Riverside Street Portland, Maine 04103 (207) 775-5764
--	---

North American Green (Erosion control materials)

Maine Distributor:
E.J. Prescott
P.O. Box 600
32 Prescott Street, Libby Hill Business Park
Gardiner, Maine 04345
(207) 582-1851
www.ejprescott.com

New England Organics (Erosion Control Mulch)

135 Presumpscot Street, Unit 1
Portland, ME 04103
1-800-933-6474
www.newenglandorganics.com

APPENDIX C
OTHER RECOMMENDED REFERENCE
MANUALS

APPENDIX C
OTHER RECOMMENDED REFERENCE MANUALS

Maine Erosion and Sediment Control BMPs. Bureau of Land and Water Quality, Maine Department of Environmental Protection, Augusta, Maine. March 2003.
DEPLW0588.

Best Management Practices for Forestry: Protecting Maine's Water Quality. Maine Forest Service, Augusta, Maine. 2004.
www.maine.gov/doc/mfs/pubs/bmp_manual.htm

Forest Transportation Systems: Roads and Structures Manual. Seven Islands Land Company, Bangor, Maine. Third Edition, 1999.

APPENDIX D
CONSTRUCTION TECHNIQUE ILLUSTRATIONS

APPENDIX E
EROSION AND SEDIMENTATION CONTROL LAW* 38
M.R.S.A. § 420-C

APPENDIX E

EROSION AND SEDIMENTATION CONTROL LAW*

38 M.R.S.A. § 420-C

A person who conducts, or causes to be conducted, an activity that involves filling, displacing or exposing soil or other earthen materials shall take measures to prevent unreasonable erosion of soil or sediment beyond the project site or into a protected natural resource as defined in section 480-B. Erosion control measures must be in place before the activity begins. Measures must remain in place and functional until the site is permanently stabilized. Adequate and timely temporary and permanent stabilization measures must be taken and the site must be maintained to prevent unreasonable erosion and sedimentation.

This section applies to a project or any portion of a project located within and organized area of this State. This section does not apply to agriculture fields. Forest management activities, including associated road construction or maintenance, conducted in accordance with applicable standards of the Maine Land Use Regulation Commission, are deemed to comply with this section. This section may not be construed to limit a municipality's authority under home rule to adopt ordinances containing stricter standards than those contained in this section.

* The Erosion and Sedimentation Control Law is administered by the Maine Department of Environmental Protection (MDEP), Augusta, Maine. Please contact the MDEP with specific questions regarding this law.

APPENDIX F
MAINE SLASH LAW* 12 M.R.S.A. § 9333

APPENDIX F
MAINE SLASH LAW*
12 M.R.S.A § 9333

§9333. Disposal along railroad and utility lines

*1. **Stumpage owner.** A stumpage owner, operator, landowner or agent who cuts or causes or permits to be cut any forest growth on lands that are within or border the right-of-way of a railroad, a pipeline, or an electric power, telegraph, telephone or cable line may not place slash or allow it to remain on the ground within the right-of-way or within 25 feet of the nearer side of the right-of-way.*

*2. **Construction.** Slash accumulated by the construction and maintenance of a railroad, a highway, a pipeline or electric power, telegraph, telephone or cable line may not be left on the ground but must be hauled away, burned or chipped. Slash may not be left or place within the right-of-way or within 25 feet of the nearer side of the right-of-way. If a burning permit is denied or revoked under this chapter, the director may allow logs that are too large to be chipped to remain in the right-of-way until the director determines that their removal is economically feasible.*

*3. **Utility line maintenance.** Slash accumulated by the periodic maintenance of a pipeline or an electric power, telegraph, telephone or cable line may be disposed of in the following manner.*

- A. Slash with a diameter of 3 inches or less may be left in piles on the ground within the maintained portion of the right-of-way. A pile may not be higher than 18 inches from the ground or longer than 50 feet and must be separated from other piles by a minimum of 25 feet in every direction. A buffer strip with a minimum width of 10% of the total width of the maintained right-of-way must be kept totally free of slash with a diameter of 3 inches or less.*
- B. Slash with a diameter of more than 3 inches must be removed, chipped or limbed and placed on the ground surface. The pieces must be separated and may not be piled one piece over another. Slash of this size may be left within the maintained buffer strips.*
- C. If a utility line right-of-way is adjacent to a road, slash that is 3 inches or less in diameter must be removed, burned or chipped. Slash with a diameter of more than 3 inches may be left on the ground within the right-of-way and must not be limbed and separated and may not be piled one piece over another. Usable timber products generated from the maintenance of a utility right-of-way may be piled within the right-of-way but must be removed within 30 days.*

* Note that this is an excerpt from the full text of the law. Please contact the Maine Forest Service, Augusta, Maine, for the full text of the law or with specific questions regarding the Slash Law.

APPENDIX G
CULVERT SIZES FOR STREAM CROSSINGS
(3X RULE)

CULVERT SIZES (ROUND) FOR STREAM CROSSINGS (3x RULE)

AVERAGE STREAM WIDTH

Take two measurements across the stream from bank to bank where you intend to place the culvert. Measurements should be taken at the normal high water line (NHWL). To find the NHWL during low flow periods look for water stains on rocks or a debris line along the bank. Add the first measurement to the second and divide this number by 2. This equals the average stream width.

Example: 36in. + 47 in. = 83in. $83 \div 2 =$ avg. stream width of 41.5 inches. (Round up to 42in.)

AVERAGE STREAM DEPTH

Take 3 measurements from the bottom of the stream to the NHWL.

Add the measurements together and divide this number by 3. This equals the avg. stream depth.

Example: 12in. + 16in. + 14in. = 42in. $42 \div 3 =$ average stream depth of 14 inches.

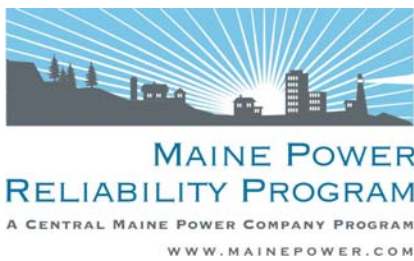
USING THE TABLE

Take the average width and depth figures and determine where they intersect on the table above.

*For example, for an average stream width of 42 inches (on the left side of the table), and an average stream depth of 14 inches (along the top of the table), the intersect shows a culvert diameter of 48 inches.

Average Stream Width		Average Stream Depth (Inches)														
Feet	Inches	2	4	6	8	10	12	14*	16	18	20	22	24	26	28	30
1	12	12	15	18	21	21	24	30	30	30	30	36	36	36	36	42
1.5	18	12	18	21	24	30	30	36	36	36	42	42	42	42	48	48
2	24	15	21	24	30	30	36	36	42	42	48	48	48	54	54	54
2.5	30	15	21	30	30	36	42	42	48	48	48	54	54	60	60	60
3	36	18	24	30	36	42	42	48	48	54	54	60	60	60	66	66
3.5	42*	18	30	36	36	42	48	48	54	54	60	60	66	66	72	72
4	48	21	30	36	42	48	48	54	54	60	66	66	66	72	72	78
4.5	54	21	30	36	42	48	54	54	60	66	66	72	72	78	78	84
5	60	21	30	42	48	48	54	60	66	66	72	72	78	78	84	84
5.5	66	24	36	42	48	54	60	60	66	72	72	78	78	84	84	90
6	72	24	36	42	48	54	60	66	66	72	78	78	84	90	90	96
6.0	78	24	36	42	54	60	60	66	72	78	78	84	90	90	96	96
7	84	30	36	48	54	60	66	72	72	78	84	84	90	96	96	102
7.5	90	30	42	48	54	60	66	72	78	84	84	90	96	96	102	102
8	96	30	42	48	54	66	66	72	78	84	90	90	96	102	102	108
8.5	102	30	42	48	60	66	72	78	84	84	90	96	102	102	108	108
9	108	30	42	54	60	66	72	78	84	90	96	96	102	108	108	114
9.5	114	30	42	54	60	66	72	78	84	90	96	102	102	108	114	114
10	120	30	48	54	66	72	78	84	90	96	96	102	108	114	114	120
10.5	126	36	48	54	66	72	78	84	90	96	102	108	108	114	120	120
11	132	36	48	60	66	72	78	84	90	96	102	108	114	114	120	126
11.5	138	36	48	60	66	78	84	90	96	102	108	108	114	120	126	126
12	144	36	48	60	66	78	84	90	96	102	108	114	114	120	126	132
12.5	150	36	48	60	72	78	84	90	96	102	108	114	114	120	126	132
13	156	36	54	60	72	78	90	96	102	108	114	114	120	126	132	138
13.5	162	36	54	66	72	84	90	96	102	108	114	120	126	132	132	138
14	168	36	54	66	72	84	90	96	102	108	114	120	126	132	138	144
14.5	174	36	54	66	78	84	90	96	108	114	120	126	126	132	138	144
15	180	42	54	66	78	84	96	102	108	114	120	126	132	138	144	144

EXHIBIT 7
**Copy of Notification Letters Sent to Abutters, Selectmen, Road
Commissioner, Police Chief, and Fire Chief**



NOTICE OF INTENT TO FILE

Dear Neighboring Property Owner and/or Town Official:

Central Maine Power Company (CMP) is intending to file an Application with the Appleton Planning Board on or about September 30, 2009 requesting project approval under the Site Plan Review Ordinance, Shoreland Zoning Ordinance, and Floodplain Management Ordinance. In accordance with requirements of the Town's Site Plan Review Ordinance, the purpose of this letter is to notify you of the project proposed by CMP.

This application describes CMP's proposed improvements to the existing transmission line corridor in Appleton as part of the Maine Power Reliability Program (MPRP).

CMP has been studying Maine's transmission system to ensure that it can continue to reliably deliver electricity to Maine homes and businesses in the future. This study identified several areas that require attention within the next three to five years in order to ensure that Maine's electricity needs will continue to be met reliably and safely. To address these needs, CMP is proposing a major investment in the transmission system. This investment, called the MPRP, includes the construction of approximately 350 miles of transmission lines and associated infrastructure.

The portion of the MPRP located in Appleton involves work in the existing transmission line corridor that extends through the northern portion of town for approximately 2 miles from Liberty southeasterly through Appleton and into Searsmont. Specifically, the project involves:

- Installing a new 115 kV transmission line, Section 254, within the existing corridor that currently contains CMP's 345 kV transmission line, Section 388. The new line will be carried on H-frame structures similar to those that are currently used for Section 388.
- Additional clearing in some portions of the existing corridor will be required. This clearing will occur within the existing corridor between Section 388 and the Maritimes and Northeast gas pipeline to accommodate the proposed Section 254. CMP will not need to acquire additional lands for this purpose; rather this portion of the MPRP will be built entirely within the existing transmission corridor.

For more information, contact the Maine Power Reliability Program toll free at 1-866-914-1944. Additional information on the MPRP may also be obtained at www.maine-power.com.