



**MAINE POWER**  
**RELIABILITY PROGRAM**  
A CENTRAL MAINE POWER COMPANY PROGRAM

November 4, 2010

John Der Kinderen  
Arundel Planning Board, Chair  
468 Limerick Road  
Arundel, Maine 04046

Dear Mr. Der Kinderen:

Enclosed are responses to your submission requests, exhibits in support of those answers, and a survey performed by a licensed surveyor. We hope that this new information, along with outstanding issues regarding Central Maine Power Company's Conditional Use and Shoreland Zoning applications can be discussed at the next Arundel Planning Board meeting on November 18, 2010.

In addition, Doug Ide from TRC will be assuming my role, as I will be leaving TRC for a new position elsewhere. My last day at TRC will be November 12, 2010, so if you have any questions before then, please have Tad Redway contact me at (207) 624-2645 (cell), (207) 620-3851 (office), or at dschneider@trcsolutions.com. Communications after this date should be to Doug at (207) 620-3836, or at dide@trcsolutions.com.

Thank you for your time and consideration.

Sincerely,

Deirdre Schneider

cc: Tad Redway, Arundel Town Planner  
Arundel Planning Board

# **Requested Survey**

## Town of Arundel: Request for Additional Information

### A. EMF

1. *Provide an EMF gradient from 0 to height of conductors at the ROW boundary at each pole and each point of maximum sag. EMF in excess of 4 kV/m has been shown to have a biological effect. See attached document.*

EMF, or electric and magnetic fields are ubiquitous, associated with any electrically powered object, and are found near anything from a microwave oven to transmission lines. EMF from transmission lines are termed extremely low frequency fields and have very long wavelengths; and as a result, impart infinitesimally low energy when interacting with cells and living organisms.

EMF and their effects on abutters were looked at extensively throughout the Maine Public Utilities Commission proceedings on the MPRP. ExPonent, as part of the aforementioned proceeding conducted modeling of EMF, and the parameters used for that modeling can be found at Exhibit 1. While these parameters do not address the scope requested by the Planning Board, they are sufficient for the purpose for which these questions are being asked.

The locations selected for modeling for the MPRP were predominantly areas where clusters of residences abutted the corridor. Since a majority of the proposed project in Arundel is within rural areas, modeling was not performed specifically along the portion of the project that runs through Arundel, but results are available for a portion of the project that is nearly identical in its configuration as what is being proposed in Arundel. The cross section for the portion of the project being used to address EMF is available at Exhibit 2 for comparison.

At the edge of the corridor where the new 345 kV line is proposed, magnetic fields at average loads are estimated to be at 14.4 mG; at peak loads 47.2 mG; and electric fields average 1.21 kV/m for peak and average loads. Two states, New York and Florida have enacted standards for EMF. The magnetic and electric fields for EMF associated with the MPRP are below the standards in Florida and New York, as well as international guidelines recommend by scientific councils. It is important to note that none of the standards at the state level are designed to protect against health effects.

For comparison, an Environmental Protection Agency study measured the following magnetic fields at 6 inches from the source for the following common household and office appliances: 200 mG for microwave ovens, 300 mG for hairdryers and 90 mG for copiers.

2. *Provide an EMF gradient from edge of ROW outward for 100 ft. (into abutting property) at max and min points at ground level and at 15 ft. Just like odor, noise, etc. EMF impacts abutters and should be considered in the same context.*

As illustrated in the article provided by the Board from the National Institute for Environmental Health Sciences, the strength of electric and magnetic fields decrease rapidly (inversely proportional to the square of the distance from the source) as one moves away from the source. Therefore, at 100 feet from the edge of the corridor, levels would be extremely low (peak loads) to almost non-existent (average loads). Additionally, electric fields associated with EMF are blocked or weakened by things such as trees and walls.

3. *Provide an analysis of potential EMF damage to sensitive electronic equipment (i.e. cell phone, computer, etc.) What are the risks at points of maximum EMF levels produced by both high voltage lines?*

EMF levels produced by transmission lines like those proposed as part of the MPRP are not large enough to result in damage to sensitive electronic equipment.

4. *Provide an analysis of radio, television, wireless, and personal medical device interference levels at ROW boundary.*

An AM broadcast re-radiation study was prepared as part of the program. This study was conducted in accordance with IEEE 1260-1996, and found no communication interference issues with the proposed lines in Arundel.

5. *Provide calculations for induced current generation at points of maximum sag both at closest approach to ground in ROW and at edge of ROW.*

The lines are designed in accordance with the National Electrical Safety code, which specifies minimum horizontal and vertical clearances between grounded objects and the conductors. These distances are determined, in part, to limit any induced voltages on adjacent facilities to limits that ensure the safety of the public.

## **B. Noise**

1. *Provide the configuration and size of conductors. Conductor diameter and bundle configuration of conductors impacts corona noise;*

Each phase will utilize a twin bundle of 1590kcmil ACSR 54/19 conductor, horizontally

spaced 18 inches. Each subconductor has a diameter of 1.545 inches.

2. *Provide the model data for corona noise calculations;*

Please, see below

3. *Provide a calculation of total noise at lot line created by all construction in ROW due to wind at a number of points along ROW in severe conditions. Select points of maximum, minimum, and close proximity to residences; and*
4. *Provide an analysis to show the existence of lack of synergistic corona noise effect among of all the transmission lines in the ROW at normal and maximum loads.*

Noise levels generated by the project will not adversely affect abutting and nearby residents. For electric transmission lines, audible noise (AN) is related to conductor (wire) size. Audible noise is produced when protrusions on the conductor surface, particularly water droplets on or dripping off the conductors, cause the electric field intensity at the conductor surface to exceed the breakdown strength of air thus creating a hissing or crackling sound. CMP has selected conductor sizes that under ideal, dry conditions are designed to be noise free. Under adverse weather conditions (e.g., very high humidity and storm conditions) these same conductors will emit only a slight crackling sound, usually quieter than the sound of the adverse weather conditions. Therefore, AN from transmission lines is typically a minor, foul weather/wet conductor phenomenon.

CMP has conducted modeling of AN for the MPRP, which concluded that upgrades to the transmission lines associated with the MPRP generally would produce modest increases in the levels of AN at the edges of rights-of-way, and that this noise will dissipate quickly as distance from the edge of the ROW increases. Again, this modeling was not done specifically in Arundel, but the figures used were from an area where the configuration of the transmission structures are similar to the configuration proposed in Arundel. It is anticipated that the sound produced by the conductors at the edge of the transmission corridor ROW will be at a maximum of about 41 dBA (comparable to a quiet office) under foul weather conditions and 16 dBA under fair weather conditions. This is below both the daytime and evening standards established for all districts in the Town of Arundel.

Noise associated with normal construction activities will be temporary and generally during daytime hours. Noise associated with construction and maintenance activities between the hours of 7:00 a.m. and 10:00 p.m. is exempt from the sound pressure levels set in Arundel. Nighttime construction activity is not anticipated. If nighttime construction becomes essential to comply with outage sequencing or other external factors, CMP will meet the standards for nighttime construction under the applicable municipal ordinances.

Based on the modeling described above, AN from the operation of the transmission line is expected to meet applicable noise standards. The upgrades associated with the MPRP are below the most stringent noise standards set in Arundel, which is 45 dBA.

### **C. Encroachment on Abutters**

- 1. Provide calculation of maximum safe building height at ROW edge closest approach of conductors both at pole and at maximum sag points. The concern is with corona streamer discharge and induced current.*

The lines are designed in accordance with the National Electrical Safety code, which specifies minimum horizontal and vertical clearances between grounded objects and the conductors. These distances are determined, in part, to limit any induced voltages on adjacent facilities to limits that ensure the safety of the public. The CMP ROW in Arundel is of sufficient width such that the minimum horizontal clearance, specified in the National Electrical Safety Code, to the edge of the ROW is maintained such that construction of facilities outside the ROW will not impede safe operation of the transmission lines. Therefore, from CMP's perspective, there is no limit to the safe building height outside the ROW.

- 2. Provide a plan for herbicide usage near ROW edge. Answer the question "Should there be a setback to prevent accidental over spray or leaching into abutting properties?"*

After construction, the electrical transmission line corridor is maintained to encourage the growth of scrub-shrub vegetation. CMP uses a selective herbicide program to treat an area once every four years to maintain an early successional stage of growth. The use of herbicide in transmission line corridors is a standard practice that CMP has been utilizing for years, and is not an MPRP specific related activity.

Herbicide is selectively applied (using a low-pressure backpack applicator and nozzles to

minimize drift) to capable species to prevent growth (or re- growth of a cut plant) of individual plants. In sensitive resource areas, CMP uses only products with low potential for mobility and low persistence in the environment. CMP does not use herbicides within 25 feet of any waterbody, wetland with standing water, significant vernal pool depressions, or certain other sensitive resource areas. In addition, CMP does not use herbicide within 100 feet of springs and known private wells and intakes, or within 200 feet from public water supply wells and intakes. No herbicides are stored, mixed, or loaded within 100 feet of any wetland or surface water. The Maine Pesticide Control Board certifies crew forepersons, and all herbicides are EPA registered and DEP approved. The selective use of herbicides within the transmission line corridor does not pose a threat to abutting landowners within the Town of Arundel. For more information, see the Vegetation Management Plan for the MPRP at Exhibit 3.

To answer the question posed in question two above, setbacks are already in place to protect abutting property owners.

3. *EMF encroachment concerns (above)*

See Section A (1-5) above.

4. *Provide an assessment of*

- a. *Most likely modes of physical failures*
- b. *Most likely location of physical failures*
- c. *Plan for proactive prevention of physical failures*

Transmission lines are designed in accordance with the strength and loading requirements of the National Electrical Safety Code, as well as Central Maine Power's design criteria. These requirements have been in place for decades and have proven to provide safe and reliable transmission lines, both in Maine and throughout the United States. Failure of transmission line structures, when designed and constructed in accordance with these standards is extremely rare. The proactive plan for prevention of physical failures is to utilize the established guidelines and years of experience when designing and maintaining transmission facilities.

5. *Are there any so called "danger trees" outside the ROW? Are there any potential hazards when cutting trees near but outside the ROW?*

The potential exists that there are "danger trees" outside of the ROW. However, CMP's approach to vegetation management minimizes to the greatest extent practicable the impacts of danger trees on the function and safety of transmission lines.

If cutting near energized power lines, whether high voltage transmission lines, or distribution lines, there are inherent risks to falling trees in these areas. However, if proper safety procedures and precautions are taken, any potential hazard can be greatly minimized.

#### **D. Safety**

1. *Provide exact location of all poles, ROW boundaries, and maximum sag points. At a minimum ROW boundary points should be plotted for each abutting lot corner and at closet approach to lot lines at each direction change.*

The strip maps provided with the application submitted to the Town of Arundel in July 2010 depict the corridor boundaries, as well as pole locations, areas of clearing and natural resources. In addition, submitted with this packet, is a survey developed by a license surveyor showing property boundaries.

2. *Provide a longitudinal profile of conductor height at maximum load.*

Please see Exhibit 4, for a depiction of the preliminary plan and profiles for the proposed 345 kV line.

3. *Provide an emergency plan in case of pole or conductor damage or failure*

The proposed line (as well as all of the CMP bulk power system) is protected by high-speed relay equipment, which is capable of de-energizing the circuit within a fraction of a second in the event the voltage or current is outside specified limits. If and when these relays open the circuit, CMP receives an alarm communicated to their central control center. At that point, crews would be dispatched to investigate the incidence and take the necessary action to restore power.

4. *Provide any conductor safety features over road crossings in case of conductor fall especially as it applies to RT. 111.*

During construction, temporary guard structures will be used at road crossings. Otherwise, there are no special provisions for road crossings. See also Section C (4) under Encroachment on Abutters, and Section D (3) above.

5. *Design parameters for the poles are 95 mph wind, but there have been at least 2 storms which have exceeded that threshold. Provide data to substantiate the design parameters especially where pole height exceeds the distance to ROW edge.*

The design wind speed for the project was selected in accordance with the wind speed maps included in the National Electrical Safety Code. These wind maps are consistent with the American Society of Civil Engineers “Minimum Design Loads for Buildings and Other Structures.” In these standards, the design wind speed is based on a 50-year return period, and is not based on the maximum observed wind. These design parameters have been utilized throughout the country in the design of transmission lines, building and many other structures with consistent reliable results.

With that said, in selecting the maximum design speed for the Program, CMP evaluated data from the National Climatic Center for Portland and other regions of the state. For Portland, this data shows the top 3 maximum 5-sec wind speed to be 72 mph in November of 1995, 61 mph in August of 1990 and 56 mph in February 1995. The report includes data for the period between 1930 and 1996. This 72 mph 5-sec gust is confirmed in the 2006 Local Climatological Data for Portland. In the past 80 years, there has not been a recorded wind speed in excess of 72 mph in the Portland area.

## **E. Environmental**

### *1. Specify location of permanent and temporary construction of access roads*

There will be no new permanent roads or driveways associated with the MPRP. Existing CMP-maintained access points and ways suitable for routine and urgent maintenance by its own vehicles will remain within the corridor. The MPRP will involve only the use of temporary access ways for the purpose of constructing the new 345 kV line.

The locations of these temporary accessways are again depicted on the strip maps provided in the Conditional Use Application submitted to the Town of Arundel. These accessways have been approved by the DEP. If any change in access occurs, it will be to minimize environmental impacts, and will be done in consultation with Third Party Inspectors.

### *2. Provide a plan to monitor and mitigate erosion damage cause by RV (ATV?) traffic in ROW.*

ATV's are generally not allowed in transmission corridors. In some instances, organized all-terrain vehicle (ATV) clubs licensed by the State of Maine Department of Conservation, Bureau of Parks and Lands, may be granted a license for trail locations on CMP's corridors. This procedure ensures trails meet safety, engineering, operations, legal and environmental requirements.

3. *Provide certification that pole treatment chemicals will not affect groundwater, surface water runoff, or sensitive environmental areas.*

The preservative utilized by CMP on its wooden transmission structures is Penta. The EPA recently re-registered the use of Penta in transmission corridors. Studies have shown that wood treatment chemicals, like Penta do not migrate more than a few feet from a pole, and that the potential for migration of these chemicals to a water supply are minimal. However, to provide added protection it is CMP's policy that an untreated pole must be used when the pole is to be sited within 50 feet of the following drinking sources: shallow wells, dug wells, driven point wells, and springs.

4. *Provide plan to decommission temporary access roads.*

The removal of temporary accessways will need to comply with the DEP permit, which requires that temporary accessway sites are to be returned to pre-construction conditions. Additionally, CMP's Environmental Guidelines, which were provided with the application to the Town of Arundel, outline the procedures for Site Restoration following construction.

This manual was developed in consultation with the Maine Department of Environmental Protection (DEP), and is largely based on DEP's *Maine Erosion and Sediment Control BMP's*, dated March 2003, and DEP's Chapter 500, and contains specific Best Management Practices appropriate for electric transmission line and substation construction. These guidelines have been a component of several CMP transmission line and substation applications that have been reviewed and approved by the Maine Department of Environmental Protection.

## **F. Other**

1. *Provide profiles of each different type of pole showing all conductors planned, both immediate and future. This includes shield lines and communication/control lines, if any are planned.*

Please see Exhibits 4 and 5. Exhibit 5 provides all structures to be used when constructing the MPRP. Those outlined in red are the structures that will be used in Arundel.

At this time, the plan before the Planning Board is what is planned to occur with the construction of the MPRP in the Town of Arundel. To comment and put forth in an

application what potential future plans may encompass is both speculative and beyond the requirements set forth in the Ordinance.

The planning and construction of any transmission project takes years of planning, modeling, surveying, and permitting. The MPRP has gone through a rigorous planning and permitting process on many levels. The granting of a Certificate of Public Convenience and Necessity by the Maine PUC signifies that there is a need for the MPRP, and in determining this need the Commission took into account public health and safety, the proximity of transmission structures to habitable dwellings, and whether alternatives to traditional transmission construction were available to meet the needs of the system.

The issuance of permits by both the Army Corps Engineers and the Maine Department of Environmental Protection signifies that impacts to the environment have been minimized to the greatest extent practicable. In designing the MPRP, the continual goal has been to provide safe and reliable electrical service, while minimizing any impacts to abutters, natural and scenic resources, and wildlife.

# **Exhibit 1**

**Report: EMF and Audible Noise Modeling: Maine  
Power Reliability Program**

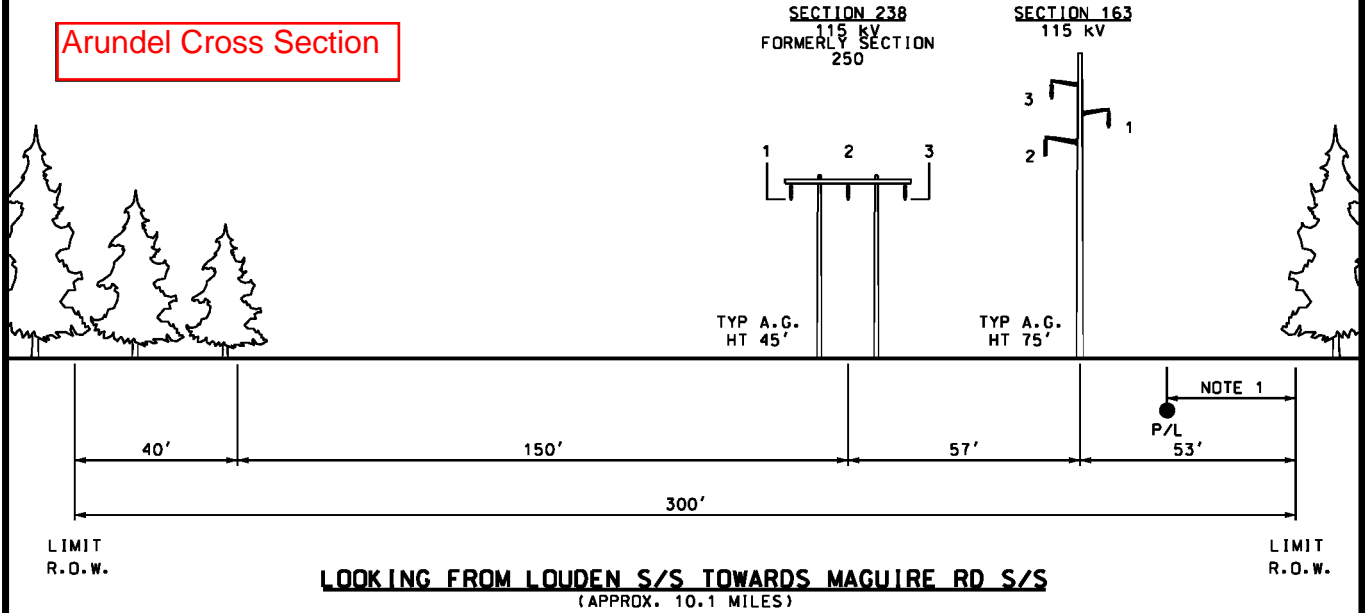
## **Exhibit 2**

### **Transmission Line Configuration Cross Sections for Comparison**

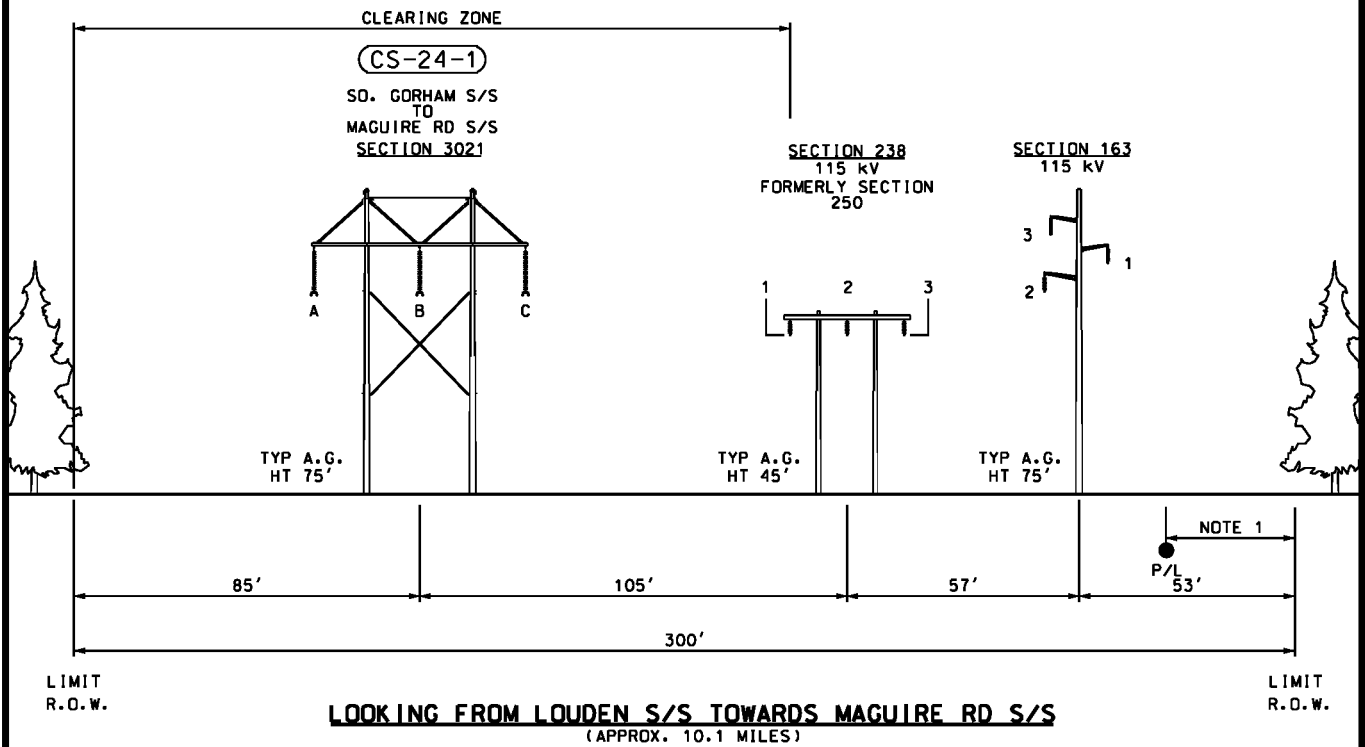
NOTE 1: GAS PIPELINE LOCATION VARIES ALONG R.O.W.

**EXISTING**

**Arundel Cross Section**



**PROPOSED**



THIS DRAWING SHALL BE REVISED ON THE CADD SYSTEM ONLY

**-DRAFT-  
FOR REVIEW ONLY**

SECTION 250 POLE 22 TO 153 STA. 88+30 TO 594+00

ENG. CONTRACTOR			
E	ADDED CLEARING ZONE	9/23/09	PEI
D	ADDED SEQUENCING/PHASING REVISED STRUCTURES	8/18/09	
C	REVISED STATIONING	12/9/08	PEI
B	REVISED SECTION 163	4/11/08	PEI
A	ISSUED FOR REVIEW	9/28/07	PEI
NO.	REVISION	DATE	BY

**MAINE POWER RELIABILITY PROGRAM**  
EXISTING AND PROPOSED R.O.W.  
ALTERNATIVE S1 (ELM) FOR N-1-1 ANALYSIS

**CHECKED** SGW 8/7/09 **DESIGNED** KJF **DATE** 8/22/07  
**DRAWN** KGH **APPR.**

**CENTRAL MAINE POWER CO.**  
**TRANSMISSION ENGINEERING**

**SEGMENT 24**

SHEET S1-E-24-5

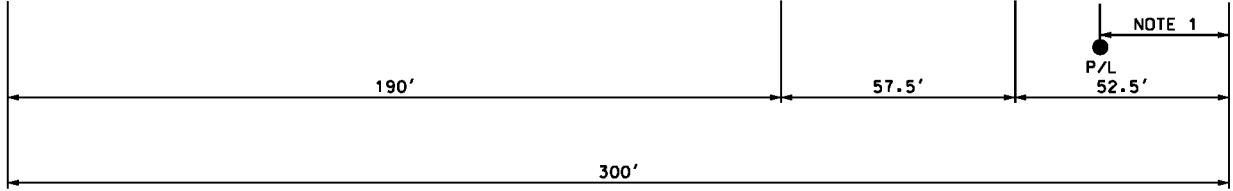
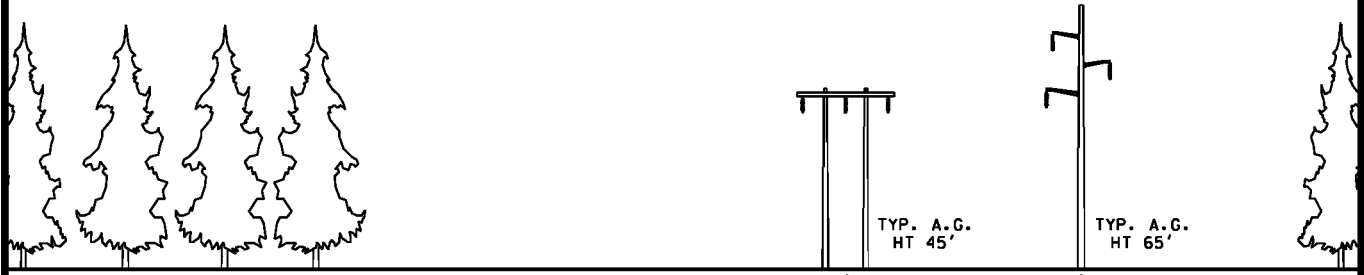
NOTE 1: GAS PIPELINE LOCATION Varies ALONG R.O.W.

Cross Section used for comparison

**EXISTING**

SECTION 250  
115 kV

SECTION 140  
115 kV



LIMIT  
R.O.W.

LIMIT  
R.O.W.

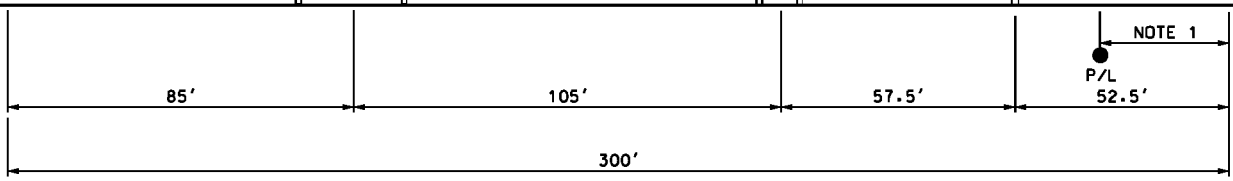
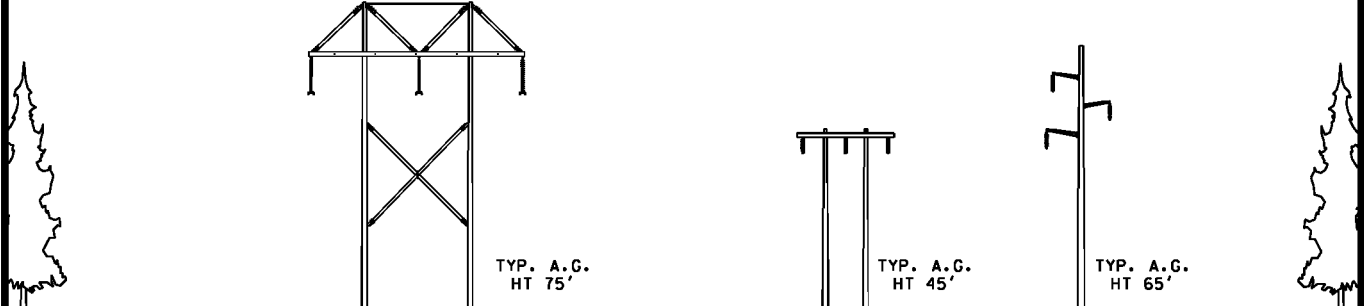
**LOOKING FROM MAGUIRE RD S/S TOWARDS QUAKER HILL S/S**  
(APPROX. 8.7 MILES)

**PROPOSED**

MAGUIRE RD S/S  
TO  
THREE RIVERS S/S  
SECTION 3022  
345 kV

SECTION 250  
115 kV

SECTION 140  
115 kV



LIMIT  
R.O.W.

LIMIT  
R.O.W.

**LOOKING FROM MAGUIRE RD S/S TOWARDS QUAKER HILL S/S**  
(APPROX. 8.7 MILES)

THIS DRAWING SHALL BE REVISED ON THE CADD SYSTEM ONLY

**-DRAFT-  
FOR REVIEW ONLY**

ENG. CONTRACTOR

		///	
		///	
		///	
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B	UPDATED	1/22/08	PEI
A	ISSUED FOR REVIEW	9/28/07	PEI

SECTION 250

POLE 165 TO 279

STA. 637+00 TO 1098+48.3

**MAINE POWER RELIABILITY PROGRAM**

EXISTING AND PROPOSED R.O.W.  
ALTERNATIVE S1 (ELM) FOR N-1-1 ANALYSIS

CHECKED

DESIGNED

KJF

DATE 8/24/07

SGW

9/13/07

DRAWN

KGH

APPR.

**SEGMENT 27**

**CENTRAL MAINE POWER CO.**  
**TRANSMISSION ENGINEERING**

NO.	REVISION	DATE	BY
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SCALE NTS

**CENTRAL MAINE POWER CO.**  
**TRANSMISSION ENGINEERING**

SHEET S1-E-27-2

# **Exhibit 3**

## **Vegetation Management Plan**

Appendix B  
**Vegetation Management Practices:  
Maine Power Reliability Program (Last Revised March 2010)**

This document applies to the transmission lines carrying 100 kV or more and/or generator leads for the Maine Power Reliability Program project.

If a standard in this appendix requires “avoid and minimize”, then avoidance is the preferred and required alternative to minimization where practicable.

1. General vegetation management performance standards. **The following apply in all categories of protected natural resources and critical habitats**

A. Arboricultural Management Practices

- (1) Capable vegetation may be removed and controlled within the transmission line corridor portions of the development. Capable vegetation is defined as species that are capable of growing to a height that would reach the conductor safety zone as illustrated in Figure 1A and 1B attached to this appendix. Most tree species in Maine are defined as capable vegetation; a partial list of non-capable species is provided in Table 1 attached to this Appendix.

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For useful guidance, see North American Reliability Corporation standard, FAC-003-1, Transmission Vegetation Management Program, as amended.

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- (2) When and if terrain conditions permit (e.g., certain ravines and narrow valleys) capable vegetation must be permitted to grow within and adjacent to protected natural resources or critical habitats where maximum growing height can be expected to remain below the conductor safety zone. Narrow valleys are those that are spanned by a single section of transmission line, pole-to-pole.
- (3) Locations within the MPRP that contain invasive plant species, as identified in Table 2 below, will be identified prior to the start of construction of the project or the start of construction on any individual segment of the project at the discretion of the applicant. The applicant shall develop an invasive species vegetation monitoring plan and submit it to the Department for review and approval prior to the start of construction on the project. The vegetation monitoring plan must have a stated objective of preventing the introduction and spread of invasive species as a result of construction. Herbicide application is an acceptable method of controlling invasive growth, when hand removal or other non-chemical methods will not be effective, including in protected natural resources and other sensitive areas.

Table 2 – Invasive Plant Species

Species	Common Name
1. Acer platanoides	Norway maple
2. Alliaria petiolata	Garlic mustard
3. Berberis thunbergii	Japanese barberry
4. Celastrus orbiculatus	Oriental bittersweet
5. Cynanchum louiseae	Black swallowwort
6. Elaeagnus umbellata	autumn olive
7. Fallopia japonica	Japanese knotweed
8. Frangula alnus	glossy buckthorn
9. Lonicera morrowii	Morrow’s honeysuckle
10. Lonicera tatarica	tatarian honeysuckle
11. Lythrum salicaria	purple loosestrife
12. Phragmites australis	common reed
13. Rhamnus cathartica	common buckthorn
14. Rosa multiflora	multiflora rose

- (4) When capable vegetation within and adjacent to a protected natural resource or identified critical habitat must be removed for the purpose of constructing the development, the natural re-generation of non-capable woody vegetation must be allowed within all protected resources as defined in Section 9(B) and special habitats as defined in Section 15(B)(1). At a minimum, the natural re-generation of non-capable woody vegetation must be allowed. To facilitate the regeneration of natural vegetation within and adjacent to protected resources as defined in Section 9(B) and special habitats as defined in Section 15(B)(1), the contractor must separate the topsoil from the mineral soil when excavating during project construction. The excavated topsoil must be returned to its original place and position in the landscape and appropriate erosion control methods must be utilized.

B. Herbicide application

- (1) Herbicide usage must comply with all label requirements and standards established by the Maine Board of Pesticides Control (MBPC), as amended from time to time. Herbicide restrictions and approvals are governed by MBPC. Some key standards include the following.
  - (a) Use of only trained applicators working under licensed supervisors.
  - (b) Awareness of the impacts of climatic conditions prior to application.
  - (c) Application must not take place when wind speed exceeds 15 MPH as measured on-site at the time of application. The application must be administered in such a manner that drift will be minimized to the extent practicable.

NOTE: The use of combinations of herbicides and surfactants/adjuvants is governed by the United States Environmental Protection Agency (USEPA) and label requirements

- (2) Products with low potential for mobility and low persistence in the environment must be selected for use in sensitive resource areas. When operating within riparian areas, SVPs, and IWWHs the following is required.

- (a) The following are the only herbicides that may be used within riparian areas, SVPs, and IWWHs unless otherwise authorized by the department prior to application
  - (i) 2,4-D salt formulation, NOT the ester formulation.
  - (ii) Glyphosate.
  - (iii) Imazapyr.
  - (iv) Fosamine Ammonium.
  - (v) Aminopyralid Triisopropanolammonium.
  - (vi) Metsulfuron methyl.
- (3) The following surfactants, as well as others approved by the department in consultation with MDIFW may be used within riparian areas, SVPs, and IWWHs.
  - (a) Agri-Dex.
  - (b) Competitor.
  - (c) Dyne-Amic.
  - (d) Clean Cut.
  - (e) Cide-Kick.
  - (f) Nu-Film IR.
  - (g) Induce.
  - (h) Chemsurf90.
  - (i) 41-A
- (4) Herbicides must be applied in accordance with USEPA label requirements to minimize wash-off.
- (5) There may be no aerial or motorized application of herbicides.
- (6) Pre-application planning meetings with the contractor must be conducted.
- (7) The electric utility owner or agent must closely supervise and inspect all protected natural resource areas during application.
- (8) Low-pressure, manual backpack sprayers, with appropriate nozzles to minimize drift, must be used.
- (9) Herbicide application must be specific to individual targeted species.
- (9) The owner or agent must conduct post-treatment inspection.
- (10) No herbicide may be stored, mixed or loaded within 100 feet of any wetland or surface water.
- (11) Herbicides may not be applied within the following setbacks from drinking water supplies.
  - (a) Water supply wells.
    - (i) 100 feet from a known private well, and 200 feet from a public water supply well, for any product with an active ingredient listed in the Agricultural Research Services' Pesticide Properties Database as having a Pesticide Leaching Potential of low or very low.

(ii) 200 feet from a known private well, and 400 feet from a public water supply well, for any product with an active ingredient listed in the Agricultural Research Services' Pesticide Properties Database as having a Pesticide Leaching Potential of intermediate, high, or very high.

(b) Surface water sources and springs.

(i) 100 feet from a known private intake or spring, and 200 feet from a public water supply intake, for any product with an active ingredient listed in the Agricultural Research Services' Pesticide Properties Database as having a Pesticide Solution Runoff Potential or Pesticide Adsorbed Runoff Potential of low or very low, or for any product applied only by cut surface treatment, thin-line or low-volume basal, or low-volume foliar application.

(ii) 200 feet from a known private intake or spring, and 400 feet from a public water supply intake, for any product with an active ingredient listed in the Agricultural Research Services' Pesticide Properties Database as having a Pesticide Solution Runoff Potential or Pesticide Adsorbed Runoff Potential of intermediate or high.

(c) If requested by the applicant, the department may waive this restriction for private water supplies owned or controlled by the applicant or any water supply to be abandoned in a manner approved by the department during construction of the development. The department may require greater setbacks from public water supplies if recommended by the Department of Health and Human Services, or from any water supply if it determines that soil conditions, use of the supply, or other relevant considerations warrant such increases.

(12) Herbicides may not be applied within 25 feet of the following:

(a) Any surface waters of the State.

(b) Wetlands with open water at the time of application.

(c) Significant Vernal Pool depressions (whether there is standing water or not).

(d) An area listed in Maine's biological conservation data system, Biotics, of the Maine Natural Areas Program, including rare natural communities and ecosystems (state rarity rank of S1 through S3 and habitats supporting Endangered or Threatened plant species). Boundaries and locations are as determined by the Maine Natural Areas Program of the Department of Conservation.

(e) Habitat of any species declared rare, threatened or endangered by the Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, or the Director of the U.S. Fish and Wildlife Service.

The setbacks from areas listed in (d) and (e) above may be increased by the department upon the recommendation of one or more of the agencies listed in those provisions.

C. Spill management.

(1) Any spill or release of petroleum products or other hazardous material within a utility transmission line corridor must be managed in accordance with the Spill Contingency Plan approved by the department.

(2) The plan must include the following setbacks unless the applicant can demonstrate that, due to special circumstances at specified locations, these setbacks are impractical at those locations.

(a) No fuel storage, vehicle/equipment parking and maintenance, and refueling activity may occur within 100 feet of a protected wetland or other waterbody.

- (b) No fuel storage, vehicle/equipment parking and maintenance, and refueling activity may occur within 200 feet of a private water supply.
- (c) No fuel storage, vehicle/equipment parking and maintenance, and refueling activity may occur within 400 feet of a public water supply.
- (d) No fuel storage, vehicle/equipment parking and maintenance and refueling activity may occur within 25 feet minimum of the following:
  - (i) An area listed in Maine's biological conservation data system, Biotics, of the Maine Natural Areas Program, including rare natural communities and ecosystems (state rarity rank of S1 through S3 and habitats supporting Endangered or Threatened plant species). Boundaries and locations are as determined by the Maine Natural Areas Program of the Department of Conservation.
  - (ii) Habitat of any species declared rare, threatened or endangered by the Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, or the Director of the U.S. Fish and Wildlife Service.

The setbacks from areas listed in (i) and (ii) above may be increased by the department upon the recommendation of one or more of the agencies listed in those provisions.

#### D. Defining boundaries of setbacks

- (1) The boundaries of all setbacks defined in subsections (B) and (C) must be clearly marked in the field, or designated areas outside of those boundaries must be established for fuel storage, vehicle/equipment parking and maintenance, refueling, and storage, mixing, or loading of herbicides and shown on the plans, prior to initial line clearing and flagged or located with a global positioning system (GPS) prior to any maintenance operations. Setbacks from wells for herbicide application must be clearly marked in the field.
- (2) Prior to routine applications of herbicides as part of right-of-way maintenance, the applicant must determine whether or not additional sections of the right-of-way are affected as a result of new public or private water supplies, and clearly mark in the field or located with GPS the boundaries of any such water supplies prior to these applications, so that the setbacks defined in subsections (B) and (C) can be maintained. The applicant is not required to maintain herbicide application setbacks from water supplies outside of the right-of-way that are no longer in use.

#### E. Construction Matting

- (1) The following requirements apply to timber mats or matting used for any construction purposes. Timber mats or matting:
  - o shall not be made from wood from ash trees (*Fraxinus sp*);
  - o with unfinished timbers used in the construction of the mats must be free of bark;
  - o before entering the State of Maine shall be cleaned of soil and vegetative material by pressure washing;
  - o shall not have been used in, or made from lumber from, Federally Quarantined areas as set out in 7 CFR 301 unless accompanied by the appropriate USDA certificate of treatment required for interstate transport. Said certificates will be maintained in a central filing

location available for review by appropriate Agency personnel for a period of three (3) years after project completion, as determined by CMP; and,

- o must have shipping information sufficient to identify the shipper and number and shipping origin of the mats.

The Maine Forest Service and U. S. Department of Agriculture reserve the right to inspect mats and matting material for compliance with these standards.

## **2. Stream alterations and riparian natural buffers**

- A. Riparian natural buffers (or “riparian buffers”) must be retained within 100 feet of all Class A, AA, outstanding river segments, or rivers, streams, or brooks containing Threatened or Endangered species unless the department determines that the functions and values of the riparian buffer will not be impacted by the removal of vegetation and approves an Alternative minimum buffer. A “riparian buffer” is a buffer on a stream, river, or brook. In no case may the riparian buffer be reduced to less than 25 feet. The riparian buffer is measured horizontally from the top of the stream bank. Class A & AA rivers, streams and brooks are listed in Title 38 M.R.S.A. § 467 and 468 and can be found at the Department’s website:  
<http://www.maine.gov/dep/blwq/docmonitoring/classification/index.htm>
- B. Riparian buffers on rivers, streams or brooks other than those described in (1) must include all areas within 25 feet of the river, stream or brook unless the applicant demonstrates that functions and values of the riparian buffer will not be impacted by the removal of vegetation. The riparian buffer is measured horizontally from the top of bank.
- C. The placement of structures within a riparian buffer must be avoided to the maximum extent practicable and is not allowed unless specifically approved by the department.
- D. All riparian buffers must be flagged in the field prior to initial line clearing and flagged or located with a global positioning system (GPS) prior to any maintenance operations.
- E. No accumulation of slash may be left within fifty (50) feet, horizontal distance, of the top of the stream bank. In all other areas slash must either be removed or disposed of in such a manner that it lies on the ground and no part thereof extends more than eighteen (18) inches above the ground. Any debris that falls below the normal high-water line of a water body or tributary stream shall be removed.
- F. Unless frozen, streams must be crossed using mats or bridges. Streams may not be forded, except as provided in (H) below. The Department prefers the use of mats and bridges, however, in specific instances culverts may be installed during the construction of the temporary access roads provided that the streams to be culverted are not: Class A or AA waters, outstanding river segments, do not support salmon or other coldwater fisheries, or contain threatened or endangered species. These culverts must be installed when the stream channel is dry, the stream may be dammed and pumped around the construction site, and the culverts must be embedded six inches into the soil and sized so that the diameter is equal to 1.2 times the bank full width of the stream. The stream channel must be restored to natural conditions when the culverts are removed.

- G. Initial clearing within a riparian buffer must be undertaken during frozen ground conditions whenever practicable, and if not practicable, the recommendations of the third-party inspector must be followed regarding appropriate techniques to minimize disturbance to the maximum extent practicable, such as the use of travel lanes to accommodate mechanical equipment use within the riparian buffer.
- H. No mechanized equipment except All Terrain Vehicles (ATVs) for maintenance and inspection or as provided in (F) above, may be operated in any river, stream or brook or associated riparian buffers in order to minimize stream bank impacts.
- I. Within all riparian buffers impacts to scrub-shrub and herbaceous vegetation, and other non-capable species must be minimized to the maximum extent practicable.

### **3. Wetlands**

- A. The wetland vegetation management minimum performance standards apply to all delineated wetlands within the development unless the department determines that the functions and values of the wetlands will not be impacted by the removal of vegetation.
- B. All delineated freshwater wetlands must be flagged in the field prior to initial line clearing and flagged or located with GPS prior to any maintenance operations.
- C. If initial clearing or other construction activities result in areas of bare soil or minimally vegetated cover, the areas of bare soil must be allowed to re-vegetate naturally, where practicable. If areas are sufficiently large to warrant planting, a native seed designed to provide short term cover must be applied, and the area must be allowed to return to non-capable native woody and perennial herbaceous vegetation naturally.
- D. No accumulation of slash may be left within fifty (50) feet, horizontal distance, of the edge of an emergent marsh or open water the wetland. In all other areas slash must either be removed or disposed of in such a manner that it lies on the ground and no part thereof extends more than eighteen (18) inches above the ground. Any debris that falls into the emergent marsh or open water wetland shall be removed.
- E. Initial utility transmission line corridor clearing, slash removal and non-emergency infrastructure maintenance within wetlands must be undertaken during frozen ground conditions whenever practicable. If not practicable, appropriate techniques to minimize disturbance to the maximum extent practicable, such as the use of pre-established cutting lanes to accommodate mechanical equipment use within saturated or inundated wetlands.
- F. Within these freshwater wetlands, impacts to scrub-shrub and herbaceous vegetation, and other non-capable species must be minimized to the maximum extent practicable.

### **4. Significant Vernal Pools Habitat (SVPH)**

- A. The SVPH standards in this section apply to all SVPHs identified within the development and any portion of a SVPH that extends onto the development site and is included or eligible for inclusion on the State's SVPH GIS data layer, unless the department determines that the functions and values of the SVPH will not be impacted by the project.
- B. Field Geographic Information System (GIS) data maintained by the Department of Inland Fisheries and Wildlife must be used to avoid SVPHs to the maximum extent practicable

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Note: All vernal pools (significant and non-significant) identified by the permittee are provided to MDIFW and placed on the State's SVPH GIS data layer.

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- C. The utility corridor must be sited in a manner that avoids and minimizes fragmentation of the habitat area to the maximum extent practicable. If impacts are necessary within a SVPH, the development must be sited as close as practicable to the outside edge of the SVPH in a location that minimizes fragmentation of the habitat area to the maximum extent practicable.
- D. All identified SVPHs must be flagged in the field prior to initial line clearing and flagged or located with GPS prior to any maintenance operations.
- E. Equipment travel is prohibited within the SVPH depression (the significant vernal pool). The removal of capable species must be accomplished using hand cutting or "reach-in" techniques to cut and remove trees.
- F. Clearing and mechanical maintenance of vegetation within 250 feet of a SVPH depression is prohibited between April 1<sup>st</sup> and June 30<sup>th</sup>. Maintenance clearing between April 1<sup>st</sup> and June 30<sup>th</sup> within the 250-foot critical terrestrial habitat must utilize hand tools only (e.g. brush hooks, chainsaws and selective herbicide applications), unless otherwise approved by the Department. No vegetation maintenance operations may occur within 25 feet of a vernal pool depression during this time period.
- G. No accumulation of slash shall be left within fifty (50) feet, horizontal distance, of the edge of a SVPH depression. In all other areas slash must either be removed or disposed of in such a manner that it lies on the ground and no part thereof extends more than eighteen (18) inches above the ground. Any debris that falls into the SVPH depression must be removed.
- H. New construction and non-emergency infrastructure maintenance within a SVPH must be undertaken during frozen ground conditions. In the event that it is not practicable, vegetation within the SVPH must be removed using hand cutting or "reach-in" techniques. If hand cutting or "reach-in" techniques alone are not adequate to facilitate the removal of vegetation due to the size of the SVPH, travel lanes to accommodate mechanical equipment within the 250-foot critical terrestrial habitat may be used with the approval of the department.
- I. Within a SVPH impacts to scrub-shrub and herbaceous vegetation, and other non-capable species must be minimized to the maximum extent practicable.
- J. The permittee must have the third-party inspector provide oversight to the clearing of SVPH areas during construction.

##### **5. Inland Waterfowl and Wading Bird Habitat (IWWH)**

- A. The IWWH vegetation management minimum performance standards apply to all moderate or high value IWWHs that are located wholly or in part within the development unless the department determines that functions and values of the IWWH will not be impacted by the removal of vegetation
- B. Use field GIS data in concert with the State's database to site projects to avoid IWWH habitats to the maximum extent practicable.

- C. All IWWHs must be field verified during the final stages of design and all identified IWWHs must be flagged in the field prior to initial line clearing and flagged or located with GPS prior to any maintenance operations.
- D. Initial clearing, slash removal, and non emergency infrastructure maintenance within an IWWH habitat must be undertaken during frozen ground conditions. In the event that it is not practicable, vegetation within the IWWH must be removed using hand cutting or “reach-in” techniques and appropriate techniques to minimize disturbance to the maximum extent practicable, such as the use of travel lanes to accommodate mechanical equipment use in the IWWH must be used. No clearing within the IWWH habitat must occur within the peak waterfowl and wading bird nesting season (April 15<sup>th</sup> to July 15<sup>th</sup>) unless approved by the department in consultation with MDIFW.
- E. Within an IWWH, impacts to scrub-shrub and herbaceous vegetation, and other non-capable species must be minimized to the maximum extent practicable.
- F. The permittee must have a third-party inspector provide oversight to the clearing of IWWH areas during construction.
- G. No accumulation of slash shall be left within fifty (50) feet, horizontal distance, of the edge of the habitat. In all other areas slash must either be removed or disposed of in such a manner that it lies on the ground and no part thereof extends more than eighteen (18) inches above the ground. Any debris that falls into the habitat shall be removed.
- H. Where overhead transmission lines cross an IWWH area, the permittee must install bird diverters or aviation marker balls according to manufacturer’s guidelines and applicable transmission line codes unless otherwise determined to be impracticable by the department in consultation with MDIFW. If aviation markers are used, colors must alternate between yellow/white (for dark and cloudy conditions) and red (for bright and sunny conditions). The use of other methods may be considered in consultation with MDIFW.
- I. Prior to initial clearing, heron colonies must be surveyed for and avoided to the maximum extent practicable. Mitigation measures such as artificial nest platforms with predator guards must be considered in consultation with MDIFW in areas adjacent to a disturbed heronry.
- J. Provided they do not present a safety hazard and are naturally present, the permittee must leave undisturbed a minimum of 2-3 snags per acre to provide nesting habitat for waterfowl. Where appropriate to mitigate habitat impacts due to the development, and as approved by the department, capable species must be topped, girdled and/or treated with herbicides to prevent re-growth to create snags. Snags must be 12-16 inch in diameter or the largest size available from the existing stand of vegetation.

## **6. Deer Wintering Areas (DWA)**

- A. The DWA vegetation management minimum performance standards apply to deer wintering areas as defined in Chapter 375, § 15 that are located wholly or in part within the utility transmission line corridor unless the department determines that functions and values of the DWA will not be impacted by the removal of vegetation.
- B. GIS data in concert with the State’s database must be used to site projects to avoid deer wintering areas to the maximum extent practicable.

- C. The utility corridor must be sited in a manner that avoids and minimizes fragmentation of the habitat area to the maximum extent practicable. If impacts are necessary within a DWA, the development must be sited as close as practicable to the outside edge of the DWA in a location that minimizes fragmentation of the habitat area to the maximum extent practicable.
- D. All identified DWAs must be flagged in the field prior to initial line clearing and flagged or located with GPS prior to any maintenance operations.
- E. Within a DWA impacts to scrub-shrub and herbaceous vegetation, and other non-capable species must be minimized to the maximum extent practicable.

#### 7. Rare and Exemplary Natural Communities and Ecosystems (Rare Community)

- A. The Rare Community vegetation management minimum performance standards apply to rare natural communities and ecosystems (State rarity rank of S1 through S3) as listed in Maine's biological conservation data system as managed by the Maine Natural Areas Program.
- B. A landscape analysis, approved by the Department in consultation with MNAP, shall be performed to identify portions of the new and expanded areas of the development that must be surveyed for rare plants, communities and ecosystems.
- C. All new and expanded areas of the development must be sited in a manner that avoids and minimizes impacts to the rare community to the maximum extent practicable, including avoiding fragmentation of rare community habitats, except as approved by the Department.
- D. All identified rare communities must be flagged in the field prior to initial line clearing and flagged or located with GPS prior to any maintenance operations.
- E. Initial clearing and maintenance within a rare community must be undertaken during frozen ground conditions whenever practicable, and if not practicable, appropriate techniques to minimize disturbance to the rare community to the maximum extent practicable must be used.
- F. Heavy equipment travel within the rare community must be minimized to the maximum extent practicable. Hand cutting or "reach-in" techniques to cut and remove trees or other techniques as agreed upon in consultation with the department and Maine Natural Areas Program (MNAP) must be used. When equipment access is necessary, activity must be restricted to a few narrow travel lanes that have been clearly marked prior to clearing activity.
- G. During construction, the third-party inspector must provide oversight to the clearing of capable species within rare community areas.
- H. If initial clearing or other construction activities result in areas of bare soil or minimally vegetated cover, where practicable, these areas must be allowed to re-vegetate naturally. If areas are sufficiently large to warrant planting, a native seed mix designed to provide short term cover must be applied, and the area must be allowed to return to native woody and perennial herbaceous vegetation naturally.

TABLE 1, A Partial List of Non-Capable Woody Species

<b>Large</b>	
Alt.ernate-leaf dogwood	<i>Cornus alternifolia</i>
American hazelnut	<i>Corylus americana</i>
Azaleas	<i>Rhododendron</i> spp.
Beaked hazelnut	<i>Corylus cornuta</i>
Common elderberry	<i>Sambucus canadensis</i>
Highbush blueberry	<i>Vaccinium corymbosum</i>
Maleberry	<i>Lyonia ligustrina</i>
Mountain-holly	<i>Nemopanthus mucronata</i>
Northern arrowwood	<i>Viburnum dentatum</i>
Chokecherry	<i>Prunus virginiana</i>
Shadbush	<i>Amelanchier</i> spp.
Speckled alder	<i>Alnus serrulata</i>
Willow (various species)	<i>Salix</i> spp.
Winterberry (Black alder)	<i>Ilex verticillata</i>
Witch hazel	<i>Hamamelis virginiana</i>
<b>Medium</b>	
Azaleas	<i>Rhododendron</i> spp.
Black chokeberry	<i>Aronia melanocarpa</i>
Blackberries	<i>Rubus</i> supp.
Broad-leaved Meadowsweet	<i>Spirea latifolia</i>
Buttonbush	<i>Cephalantus occidentalis</i>
Common juniper	<i>Juniperus communis</i>
Hobblebush	<i>Viburnum alnifolium</i>
Leatherwood	<i>Dirca palustris</i>
Northern bayberry	<i>Myrica pensylvanica</i>
Raspberries.	<i>Rubus</i> supp
Red chokeberry	<i>Aronia arbutifolia</i>
Red osier dogwood	<i>Cornus stolonifera</i>
Red-berried elder	<i>Sambucus pubens</i>
Rhodora	<i>Rhododendron canadense</i>
Roses	<i>Rosa</i> supp.
Silky dogwood	<i>Cornus amomum</i>
Steeplebush	<i>Spirea tomentosa</i>
Virginia rose	<i>Rosa virginiana</i>
Willow (various species).	<i>Salix</i> spp
Withrod	<i>Viburnum cassinoides</i>
<b>Small</b>	
Bog rosemary	<i>Andromeda glaucophylla</i>
Bush honeysuckle	<i>Diervilla lonicera</i>
Canada yew (Ground hemlock)	<i>Taxus canadensis</i>
Huckleberry	<i>Gaylussacia baccata</i>
Labrador tea	<i>Ledum groenlandicum</i>
Leatherleaf	<i>Chamaedaphne calyculata</i>
Lowbush blueberry	<i>Vaccinium angustifolium</i> , <i>V. pallidum</i> , <i>V. myrtilloides</i>
Rose (various species)	<i>Rosa</i> spp.
Sheep laurel	<i>Kalmia angustifolia</i>
Sweetfern	<i>Comptonia peregrina</i>
Sweetgale	<i>Myrica gale</i>

# **Exhibit 4**

## **Preliminary Plan and Profiles**

## **Exhibit 5**

### **Structure Types Associated with the MPRP**