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SECTION 9. UNUSUAL NATURAL AREAS

Bangor Hydro-Electric Company (BHE) consulted with federal and state agencies to determine the location of any unusual natural areas along the proposed Northeast Reliability Interconnect (NRI) route. The U.S. Fish and Wildlife Service (USFWS) and the Maine Department of Conservation (MDOC) - Natural Resources Information and Mapping Office – Maine Natural Areas Program (NAP) were contacted to determine specific locations of any unusual natural areas adjacent to the proposed route. The locations of rare, threatened, and endangered (RTE) plants and rare and exemplary natural communities in Maine are mapped by the NAP. This dataset is used for status assessment, species management, and habitat conservation of rare plant species and rare and exemplary natural communities in Maine. The dataset provides the state status (i.e., endangered, threatened, or no status) and rank, based on a system utilized by other state natural heritage programs. This subset of data published by the NAP represents species and natural community records for which the NAP has accurate locational information that has recently (within the last 20 years) been confirmed through on-the-ground field survey and aerial photo-interpretation. According to the NAP, “A natural community is an assemblage of interacting plants and animals and their common environment, recurring across the landscape, in which the effects of human intervention are minimal. A natural community includes all of the organisms (plant, animal, etc.) in a particular physical setting, as well as the physical setting itself” (NAP 2001).

Known occurrences of rare botanical resources within the proposed right-of-way (ROW) were determined using Geographic Information System (GIS). NAP provided polygon shapefile data for rare plants and natural communities within one mile of the proposed route. The NAP shapefile database includes the species or community name (common and scientific), state and global rank, state legal status, survey site name, Element Occurrence rank, and general habitat category for each entry. The rare plants and ecosystems and natural community types identified within the proposed project area included: alga-like pondweed (*Potamogeton confervoides*), a Domed Bog Ecosystem, a Raised Level Bog Ecosystem, and a Low Sedge Buckbean Fen Lawn which are described below. Environmental field assessments were also conducted along the route to observe those rare plants and natural communities in the field; to determine if any state- or federally-listed protected plants or rare and exemplary natural communities occurred in the

project area, in addition to those identified above; and to assess potential impacts to rare botanical features. The rare plant species and communities identified in the NAP database were not found within the proposed ROW. However, two new rare species were discovered along the proposed ROW.

9.A Agency Data on Federally-Listed Potential Rare Botanical Resources

Based on agency correspondence provided by the USFWS (Appendix 9-1), no federally-listed unique or unusual natural features such as rare plants, rare natural communities or unusual areas were identified within the project area.

9.B Agency Data on State-Listed Potential Rare Botanical Resources

9.B.1 Alga-like pondweed

Alga-like pondweed (*Potamogeton confervoides*) is known to occur in several acidic, clear-water (oligotrophic) ponds in Maine. Substrate where this species is usually found is at least partly organic, and usually with an admixture of sand or gravel (NAP 1999). Like other *Potamogeton* species, this pondweed is entirely aquatic and has small spikes of inconspicuous flowers, and later fruits, which protrude above the water (NAP 1999). This species is considered to be rare in Maine.

Based on the NAP database, alga-like pondweed has been identified as occurring in Allen Brook along the Stud Mill Road in township T 35 MD (see Figure 9-1). The proposed project is adjacent to the Stud Mill Road at this location.

Figure 9-1. Unusual Natural Areas Map Bangor Hydro-Electric Company Northeast Reliability Interconnect

9.B.2 Domed Bog Ecosystem

The Domed Bog Ecosystem is a type of raised bog. These ecosystems are large inland peatlands, which are usually more than 500 meters in diameter, contain convex surfaces that rise several meters above the surrounding terrain, and that display concentric patterning. Typically, peat accumulation is sufficient to maintain a perched water table. Consequently, most water available for plant growth comes from precipitation and is nutrient poor (NAP 2001). According to NAP, “Most domed bogs show a vegetation zonation reflecting the nutrient gradient, where more nutrient-demanding (minerotrophic) vegetation occurs around the perimeter of the peatland (where water from surrounding uplands or draining from the center of the peatland flows) and low-nutrient vegetation occupies the raised portions of the bog. The peatland surface is characterized by hummocks and hollows” (NAP 2001).

According to data received from NAP, the proposed project ROW would cross the northern most portion of a Domed Bog Ecosystem in the area surrounding Birch Stream Bog (Figure 9-1). Based on GIS data analyses, approximately 2.7 acres of the Domed Bog Ecosystem would be impacted during construction. This natural community totals 87.5 acres and is located within “The Horseback” in township T32 MD.

9.B.3 Raised Level Bog Ecosystem

Raised Level Bog Ecosystems are flat peatlands contained within basins that have mostly closed drainage. Raised Level Bog Ecosystems receive water from precipitation and runoff from the immediate surroundings. According to NAP, “Most parts of level bogs are somewhat raised (though not domed), in which case vegetation is almost entirely ombrotrophic (dwarf shrub heath or forested bog). Other parts of the bog are not raised; in this case, vegetation is transitional (in nutrient status) between that of ombrotrophic bogs and minerotrophic fens. In all cases, *Sphagnum* spp. dominate the ground surface and is the main peat constituent. The surface of the bog is flat and featureless. These bogs are often at least partly treed with black spruce and larch” (NAP 2001).

According to data received from NAP, the proposed project ROW would cross the southern most section of a Raised Level Bog Ecosystem found within Sawtelle Heath in Baileyville and Princeton. Based on GIS data analyses, approximately 4.7 acres of the total 92.09 acre Raised Level Bog Ecosystem would be impacted during construction (Figure 9-1).

9.B.4 Low Sedge-Buckbean Fen Lawn

The Low Sedge-Buckbean Fen Lawn natural community occurs in the Raised Level Bog Ecosystem. This natural community type consists of peatland vegetation dominated by low mats of sedges, sometimes with sparse low heaths, over continuous and very wet sphagnum substrate. The sedges white beak-rush (*Rhynchospora alba*), mud sedge (*Carex limnosa*), and/or few-seeded sedge (*Carex oligosperma*) are usually dominant. Podgrass (*Scheuchzeria palustris*) and buckbean (*Menyanthes trifoliata*) are particularly characteristic. Heath shrubs are sparse. In very wet portions of peatlands, this natural community is often found as the wetter and more minerotrophic margin around or between raised portions of the bog. The substrate is typically acidic and unstable (NAP 2001).

The Low Sedge-Buckbean Fen Lawn is a natural community type occurring in the Raised Level Bog Ecosystem. Based on data received by NAP, the Low Sedge Buckbean Fen Lawn and the Raised Level Bog Ecosystem are juxtaposed in the same wetland system. Based on GIS data analyses, the proposed ROW would cross the natural communities on the southern most section affecting approximately 4.7 acres of the 92.09 acre area (Figure 9-1). The Low Sedge-Buckbean Fen Lawn is reportedly found within Sawtelle Heath in Baileyville and Princeton. However, as identified in the introduction of this section, field surveys conducted in the area do not support these findings.

9.C Field Surveys

As a result of BHE's previous permitting efforts, the Maritimes & Northeast Pipeline Project and most recently for this project, extensive field surveys have been conducted along almost the entire route proposed for the NRI. Art Gilman has conducted all of these surveys and as such has a comprehensive understanding of the plants and communities of this region. A copy of his Botanical Resources and Natural Communities Field Survey Report for the NRI is included in Appendix 9-2. No federally-listed threatened or endangered species were observed during any of the rare, threatened, or endangered plant and natural community field surveys. In addition, the field surveys found that the three rare natural communities identified as occurring in the project area by the NAP GIS database will not be crossed by the proposed ROW. However, two state-listed plant species were identified within the proposed ROW during the recent field surveys. Because field surveys for this project were only conducted during the fall of 2004, additional surveys will be conducted again during later-spring/early summer 2005 to ensure the entire flowering period has been surveyed when rare species are most visible.

9.C.1 Rare Plants

Sheathed sedge (*Carex vaginata*), currently listed as a rare species in Maine, was observed in abundance in a northern white cedar swamp at the south end of Sawtelle Heath in Baileyville within the proposed project ROW. However, NAP has decided to downgrade the status of this plant as a result of recent discoveries of a number of additional populations. Showy lady's-slipper (*Cypripedium reginae*), another state-listed rare plant species, was also found in the same swamp in the vicinity of sheathed sedge.

A third state-listed plant species, alga-like pondweed (*Potamogeton confervoides*) was found previously within the project area, but was not observed in the proposed ROW during the more recent field surveys. Although numerous alga-like pondweed plants were observed in Allen Brook on the south side of Stud Mill Road, none were found on the north side of the road within the proposed ROW.

9.C.2 Natural Communities

The Domed Bog Ecosystem, Raised Level Bog Ecosystem, and the Low Sedge-Buckbean Fen Lawn were not observed within the proposed ROW. This is contrary to data provided by NAP which depicts the ROW crossing through each natural community. NAP identified the area surrounding Birch Stream Bog as a Domed Bog Ecosystem, which is classified by NAP as being rare in Maine (S3). BHE's field surveys found that the proposed project crosses Birch Stream downstream of the rare ecosystem in an area with "alder shrub thicket" and "mixed graminoid-shrub marsh" communities, both of which are considered to be common in Maine (S5). The second and third locations examined were near the eastern end of the proposed project in the Sawtelle Heath area in Baileyville. This area was identified by NAP as a Raised Level Bog Ecosystem with an associated Low Sedge-Buckbean Fen Lawn. As proposed, the ROW in this area is located along the system's southern margin, and encroaches primarily on a northern white cedar swamp, a community that is considered to be secure in Maine (S4). The Raised Level Bog Ecosystem and the Low Sedge-Buckbean Fen Lawn were not observed within the proposed ROW.

9.D Mitigation

BHE has sited the NRI to avoid adversely affecting rare plants and unusual natural areas to the maximum extent practicable. As proposed, the ROW will not cross the Domed Bog Ecosystem, the Raised Level Bog Ecosystem and the Low Sedge-Buckbean Fen Lawn; instead it will skirt each community along the outer boundary. However, because the ROW is in close proximity to these communities, precautionary measures designed to minimize adverse impacts to the area have been identified and will be practiced to the maximum extent possible. As described below, BHE will follow Mr. Gilman's recommendations regarding construction and management of the proposed project in areas containing or adjacent to rare plants (Appendix 9-2). Based on prior experiences, Mr. Gilman believes that powerline corridors in northern New England provide habitat for many rare species of plants. In addition, BHE has developed a Vegetation Maintenance Plan provided in Section 10 Buffers, Appendix 10-1 that takes into consideration rare plants identified during the field surveys for this project

9.D.1 Rare Plants

Based on data collected during field studies, the project generally avoids impacts to rare plants, with populations of only two species known to occur within the proposed ROW. To protect known populations of sheathed sedge and showy lady's-slipper, construction will be conducted during winter months with at least 6 inches of snow cover in order to minimize impacts to existing plants and their underlying substrate. Cutting of tree species in this area after construction (likely consisting mostly of northern white cedar) will be limited to trees that are 8 feet tall or greater that could grow to within 15 feet of a conductor within the next vegetation maintenance cycle. Sheathed sedge is typically found in openings within cedar swamps and an opening of the canopy would likely favor this species (NAP 1999). In addition, showy lady's-slipper is known to thrive in moderate sunlight and partial removal of the canopy may benefit this species (NAP 1999). Based on prior experiences, Mr. Gilman believes that power line corridors in northern New England provide habitat for many rare species of plants. With the proposed mitigation, this project may provide additional or improved habitat for these species.

Alga-like pondweed is an aquatic species found in Allen Brook near the proposed NRI crossing, but not at the crossing location. In any case, this species will not be impacted by the project because no in-stream work will be conducted in this area. The nearest structure placement will be more than 100 feet from Allen Brook and no new access roads will be constructed in the immediate area. Furthermore, vegetation along the stream is low and will require only very limited (if any) maintenance. As described in the Vegetation Maintenance Plan, management of vegetation located along all streams will be performed by mechanical means rather than herbicidal application. Therefore there will be no negative effects to water quality and no impact to the species as a result of constructing or operating this project.

9.D.2 Rare Natural Communities

Given the nature of the project and the actual locations of Domed Bog, the Raised Level Bog Ecosystem, and the Low Sedge-Buckbean Fen Lawn in relation to the proposed ROW, the NRI will not adversely impact the form or function of these natural communities. However, because the ROW is in close proximity to these communities, construction will be conducted during the winter near these areas to minimize impacts to the underlying substrate, and minimize impacts to sensitive vegetation. No herbicides will be used in wetlands near the areas mapped as natural communities. In addition, construction and operation of the transmission line will not alter the hydrology of the natural communities.

9.E References

- Maine Natural Areas Program (NAP). 1999. Fact Sheets [for *Carex vaginata*, *Cypripedium reginae*, and *Potamogeton confervoides*].
- . 2001. Natural Landscapes of Maine: A Classification of Ecosystems and Natural Communities. Department of Conservation. Augusta, Maine. 79 pp.

APPENDIX 9-1
AGENCY CORRESPONDENCE

APPENDIX 9-2
BOTANICAL RESOURCES AND NATURAL COMMUNITIES
FIELD SURVEY REPORT