9.0 UNUSUAL NATURAL AREAS

9.1 Introduction

Numerous plant species in Maine are considered rare, threatened, and endangered (RTE), and that are protected under the federal Endangered Species Act of 1973 (16 U.S.C. §§ 1531 et seq.) and/or Maine's Natural Areas Program (MNAP) statute (12 M.R.S. §§ 544, 544-B & 544- C). Under the federal Endangered Species Act there are one endangered and two threatened plant species in Maine. These plants include the Furbish's lousewort (*Pedicularis furbishiae*), prairie white-fringed orchid (*Platanthera leucophaea*), and small whorled pogonia (*Isotria medeoloides*). The Official Species List, obtained through the ECOS-IPAC website, identifies the small-whorled pogonia (Federally Threatened) and its possible presence within the boundaries of the NECEC Project.

The MNAP tracks a total of 347 plant species: 98 of these are listed as endangered, 75 as threatened, 105 of special concern, and 69 as "potentially extirpated" (i.e., not known recently in the state) (MNAP 2015). The MNAP has also classified natural and distinguished vegetative communities across the state and has identified rare and unusual natural community types. According to the MNAP, "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 and animal) in a particular physical setting, as well as the physical setting itself" (MNAP 2004). The MNAP is particularly interested in natural community types ranked S1, S2, or S3, and outstanding examples of S4 and S5 types. The MNAP defines the state rarity rankings as:

- S1 - Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine
- S2 - Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline
- S3 - Rare in Maine (20-100 occurrences)
- S4 - Apparently secure in Maine
- S5 - Demonstrably secure in Maine

CMP has been engaged in the consultation process with both federal and state agencies to determine the location of any RTE plant species and unusual natural communities in the vicinity of the NECEC Project. The locations of federal and state botanical resources including RTE plants and rare and exemplary natural communities in Maine are mapped by the U.S. Fish and Wildlife Service (USFWS) and MNAP. This information is used for status assessment, species management, and habitat conservation of those natural resources.

Portions of the NECEC Project are within areas previously surveyed for rare plants during the permitting effort for CMP's Maine Power Reliability Program (MPRP). As part of the MPRP, CMP consulted with MNAP to gather rare plant and natural community data and to develop a methodology to conduct rare plant surveys. CMP executed those surveys during the 2007, 2008, and 2009 field seasons. These rare plant surveys included the NECEC Project ROWs between Wyman Hydropower Station in Moscow and Surowiec Substation in Pownal, and between the Coopers Mills and Maine Yankee substations. As a result of these surveys, only a few locations were identified as having RTE plant and natural community resources along the NECEC corridor. The results of these findings pertinent to the NECEC Project are provided in Section 9.3 of this document. Additional plant surveys may be required in portions of the NECEC Project not previously surveyed (i.e. Segments 1 and 2) if deemed necessary through landscape analysis and if required by MNAP.

CMP's consultation with MNAP is ongoing. As a result, additional landscape analysis will not be completed in time for inclusion in this initial application submittal. It is anticipated that any future survey work will take place in advance of construction of the NECEC Project with the results provided as a supplement to this application, prior to any formal decision by the MDEP. In the event rare plant occurrences are located during field surveys, CMP will consult with MNAP to determine if the project would have an adverse impact on the population, assess the mitigation measures that would be needed (e.g., protective matting), and relocate project access ways or shift pole locations, if required.

9.2 Methods

9.2.1 Agency Correspondence

The USFWS and the MNAP were contacted in June 2017 to determine specific known locations of any RTE plant species or unusual natural areas in the vicinity of the proposed NECEC Project. The goal of obtaining unusual natural area and RTE plant data was to use the information in conjunction with the data previously collected during the MPRP to identify existing resources, determine the status of these resources, and determine the need for additional surveys.

During a June 7, 2017 interagency meeting at the CMP office in Augusta, which included Don Cameron/MNAP, field survey methods that would be implemented for the NECEC Project to identify RTE plants and exemplary natural communities were discussed. At this meeting MNAP indicated that the northern portion of the Project, primarily Segments 1 and 2, is not an area that has a high occurrence of documented rare plant species. A desktop landscape and existing data analysis will be performed prior to construction to identify field survey target areas

along portions of the Project area that have not been previously surveyed. The analysis, developed in consultation with MNAP, will be implemented to identify the most appropriate locations for field surveys and to ensure that habitats most likely to harbor RTE plants or natural communities are thoroughly examined. See **Exhibit 9-1** for agency correspondence. If RTE plant species or natural communities are identified through field survey efforts, the Project will avoid these areas is practicable and if avoidance is not possible, mitigation efforts will be coordinated with MNAP and MDEP.

9.2.2 Landscape Analysis

In 2007 Gilman and Briggs Environmental utilized a comprehensive assortment of sources to perform the initial desktop landscape analysis to target field survey locations for the MPRP Project. The MPRP 2007 RTE Plant Species Survey Summary Report (March 2008) is included as **Exhibit 9-2**. These sources included USGS topographic maps, color aerial photography, historic MNAP RTE plant locations, MNAP exemplary natural community locations, MNAP identified Focus Areas of Ecological Significance, MNAP consultation input, and surface geology maps. This information, along with direct field experience with portions of the NECEC transmission line corridor as a result of working on other past Projects, will be used to perform the landscape analysis for the portions of the NECEC Project that have not been previously evaluated and will occur prior to construction.

Based on this analysis, it is likely that not all previously unsurveyed areas along the NECEC Project corridor would need field examination. Consideration for areas where surveys are not likely to be conducted included the following:

- Areas defined as having low potential for harboring RTE plant species as identified during the landscape analysis;
- Areas where no RTE plant species were documented during previous field surveys; and
- Certain portions of the study area which did not possess preferred habitat characteristics for RTE plants, as judged from inspection of adjacent areas.

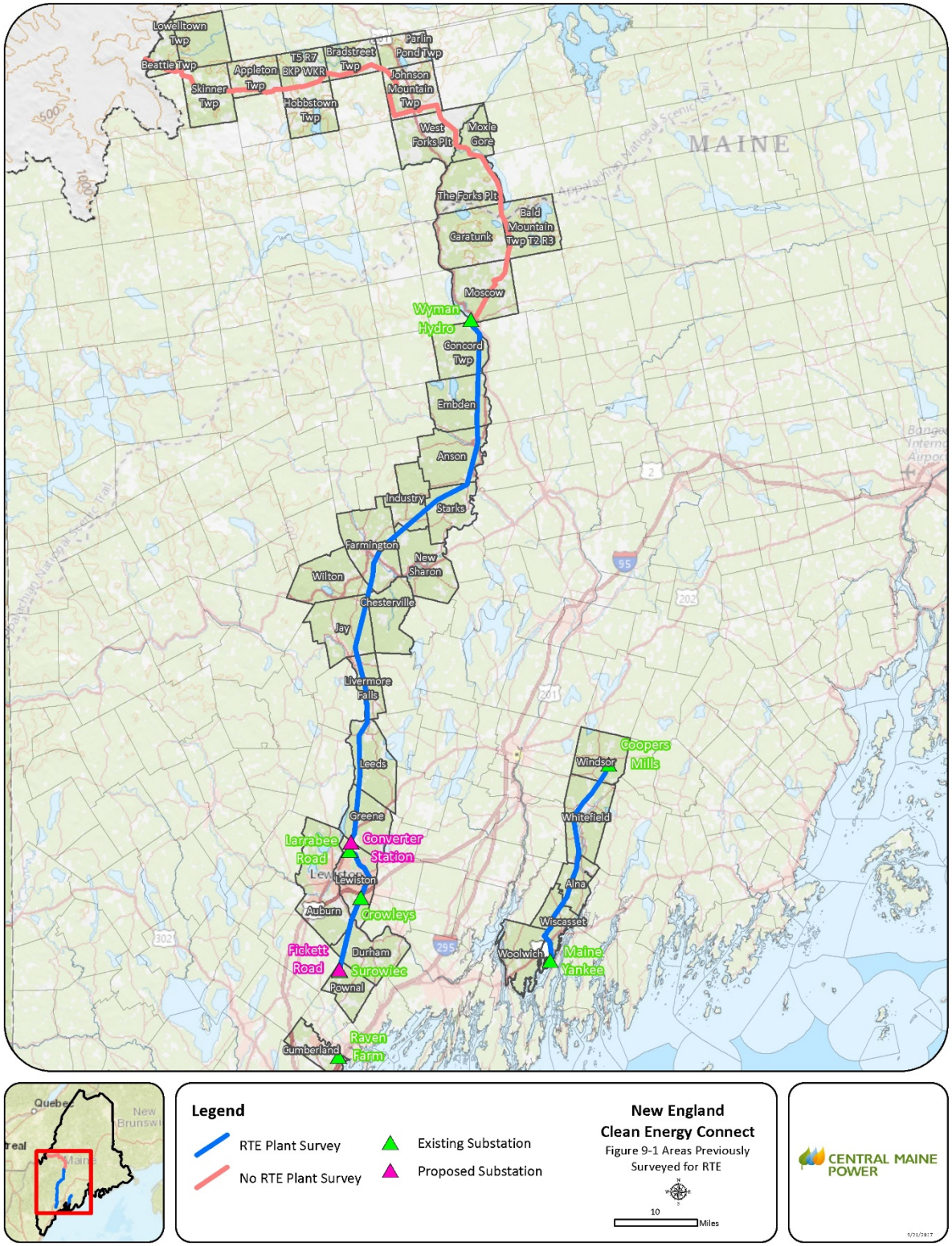
9.2.3 Field Survey Methodology Overview

During the 2007, 2008, and 2009 field effort, Gilman and Briggs Environmental performed "meandering" surveys to ensure maximum coverage of the transmission line corridors and potential infrastructure sites. In several instances, based on the habitat observed, the same areas were examined more than once to ensure complete coverage and reduce the potential of any RTE plant populations being missed due to the seasonality of certain species. Information obtained from biologists conducting wetland delineations and vernal pool surveys was also considered, and minor survey scope adjustments were made where deemed appropriate. Additional field

evaluation was also incorporated by conducting visual habitat assessments from each accessible road crossing along the select transmission line corridor components. Inspection of the local terrain and habitats in this manner greatly augmented the searches that were planned from the MPRP landscape analysis, and resulted in the discovery of additional populations of rare species. In total, approximately 116 miles of the NECEC transmission line Project area was surveyed for rare plants by Gilman and Briggs Environmental during the previous effort on the MPRP Project (see **Figure 9-1**).

The locations of all plant species listed on the MNAP RTE plant list for Maine that were observed during the MPRP field surveys were recorded using Trimble GPS units. These units are capable of achieving sub-meter accuracy and are commonly used to record natural resource location data. In addition, extensive field notes were taken and detailed sketches of the plant locations were drawn onto field maps. Rare plant occurrences and unusual natural areas data sourced from the 2008 Gilman and Briggs report and from data provided by MNAP in 2017 is included on the NECEC Natural Resources Maps located in **Attachment 2** of the Site Law application.

Figure 9-1: Areas Previously Surveyed for RTE Plants



9.3 Findings – Transmission Line Corridors

The results of agency data acquisition in 2017 and RTE field surveys previously conducted for the MPRP Project along the proposed NECEC transmission components are described below. This information is also depicted on the Natural Resources Maps developed for the NECEC, located in Attachment 2 of the Site Law application. Consultation with MNAP is ongoing. Additional plant surveys will be performed, if required, prior to construction of the NECEC Project and any new RTE identified will be included on the natural resource maps.

9.3.1 RTE Plants

Most of the NECEC Project involves work within existing cleared transmission line corridors and, therefore, there is limited potential habitat along the program route for forest species such as the federally threatened small whorled pogonia. The forested portion of the HVDC line ROW between the Maine/Canada border and Wyman Hydro has not been previously surveyed by CMP for RTE plants. However, during a June 7, 2017 consultation meeting with the agencies, Don Cameron/MNAP suggested that the northern portion of the Project is not an area that has a high occurrence of documented rare plant species. Additionally, the undeveloped portion of the HVDC route is a working commercial forest that is routinely disturbed by harvesting activities.

The landscape analysis, performed by Gilman and Briggs Environmental in 2007, identified one area with habitat and community composition similar to known sites for the small whorled pogonia species in Livermore Falls. During the 2007 to 2009 survey effort, the entire area of potential habitat was thoroughly searched, and none was found. The landscape analysis performed did not identify potential habitat for other federally listed plant species and none is known to occur in the NECEC Project vicinity. The Furbish's lousewort's range is restricted to the banks of the St. John River and the prairie white-fringed orchid is known to occur in only one location, Crystal Bog, in northeastern Maine.

Four RTE state-listed plant species were identified along the portions of the NECEC Project area previously surveyed for the MPRP Project. No federally listed threatened or endangered species were observed during the 2007 through 2009 field survey efforts. Plant populations of the four state-listed plant species varied from single individuals to small groups. The Maine State legal status for rare plants includes:

- Endangered; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
- Threatened; Rare and, with further decline, could become endangered; or federally listed as Threatened.

The Maine State non-legal status for rare plants includes:

- Special Concern; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

Representative photos of rare plants found along the NECEC Project area are included in the 2008 Gilman & Briggs Report located in **Exhibit 9-2**. Rare plant information sourced from both the MPRP field survey effort and in consultation with MNAP is summarized in **Table 9-1**. Potential impacts and proposed mitigation measures are discussed in **Section 9.5**.

Table 9-1: Documented NECEC RTE Plant Occurrences

NECEC Segment	Rare Plant Common Name	Rare Plant Scientific Name	Rank	Status	Location
2 & 3	Long-leaved bluet	*Houstonia longifolia*	S2S3	SC	Concord Twp, Moscow
3	Wild Leek	*Allium tricoccum*	S3	SC	N. Anson
3	Red-stemmed gentian	*Gentiana rubricaulis*	S1	SC	Concord Twp
4	Dry land sedge	*Carex siccata*	S2	SC	Lewiston

9.3.1.1 Segments 1, 2, and 3 - Section 3006

Wild leek (*Allium tricoccum*); state rarity rank of S3 – Special Concern: Based on Gilman and Briggs 2008 Report and MNAP occurrence data, the small population is located on the southern terrace of the Carrabassett River in Anson.

Red-stemmed gentian (*Gentiana rubricaulis*); state rarity rank of S1 – Special Concern: Based on MNAP occurrence data the population is located in an already developed portion of the ROW south of Jackson Pond Road in Concord Twp.

Long-leaved bluet (*Houstonia longifolia);* state ranked S2/S3 – Special Concern; Based on MNAP occurrence data the population is located in the ROW just south of Wyman Hydro in both Moscow and Concord Twp, north of the river.

9.3.1.2 Segment 4 - 115kV Section 62 & 64

Dry land Sedge (*Carex siccata*); state rarity rank of S2 – Special Concern: During the Gilman and Briggs field surveys, one small population was identified in corridor on a dry bank near the Androscoggin River in Lewiston. This population was found on the northeastern side of the river near structure 37 of the existing Section 62 (115 kV) line.

9.3.1.3 Segment 5 - 345kV Section 3027

Landscape analysis and rare plant surveys were conducted by Gilman & Briggs Environmental during the MPRP field survey effort and no rare plant populations were identified. Similarly, MNAP occurrence data did not identify RTE plant species along this portion of the NECEC Project.

9.3.2 Natural Communities

The MNAP classifies natural and distinguished natural communities across the state and has identified rare and unusual natural community types ranked S1, S2, or S3, and outstanding examples of S4 and S5 types. One area currently mapped by the MNAP as unusual natural communities is crossed by the NECEC Project. The field surveys conducted in 2007, 2008, and 2009, did document one additional area that fit the description of unusual natural communities. The unusual natural communities identified along the NECEC Project are described below. Potential impacts and proposed mitigation measures are discussed in **Section 9.5.2** below.

9.3.2.1 Segment 1, 2, and 3 - Section 3006

Basswood – Ash - Red Maple Floodplain Forest; state rarity ranking of S3: This community was identified during the MPRP Project at the Hunton Brook crossing in Livermore Falls. In this area, Hunton Brook meanders throughout the existing transmission line corridor for approximately 2,000 feet. Hunton Brook is a tributary to the Androscoggin River, and this area is apparently back-flooded on a regular basis. Basswood was not observed to be prominent in this habitat, but otherwise this community appears consistent with the MNAP description of a Maple – Basswood – Ash Forest (Enriched Northern Hardwoods Forest). The community occupies the western side of the ROW where the new HVDC line will be located.

Upper Floodplain Hardwood Forest; state rarity ranking of S2: Based on MNAP data the Project corridor crosses this community along the northern bank of the Carrabassett River near the confluence of the Kennebec River in Anson. Only a small portion of this mapped community is located within the Project ROW. Much of this occurrence is located west of the ROW, outside the Project corridor.

No rare and unusual natural communities were identified on Segments 4 and 5 of the Project.

9.4 Findings – Substations

Based on agency correspondence and mapping information provided by the USFWS and the MNAP (**Exhibit 9-1**), no state- or federally-listed threatened or endangered plants or unusual natural communities are known to occur in the vicinity of the proposed Fickett Road Substation site in Pownal or the proposed Merrill Road Converter Station site in Lewiston.

Larrabee Road, Coopers Mills, Surowiec, Raven Farm, Crowley's and Maine Yankee substation sites will not include yard expansions so field surveys will not be required.

9.5 Potential Impacts and Mitigation – Transmission Line Corridors

9.5.1 RTE Plants

The NECEC Project design avoids identified RTE plant populations to the maximum extent practicable. The design effort focused on avoidance of RTE plants as the primary means to minimize impacts. Pole structure placement and installation has been designed to avoid rare plant locations. Crews will need access along the transmission line corridor during construction, however access will be located to avoid known populations to the extent practicable. Structure locations and proposed access locations are depicted on the NECEC Project Natural Resources Maps located in **Attachment 2** of this Site Law application.

On occasion, construction access may need to be altered, resulting in crossing of an RTE plant population. For example, safety concerns (e.g., operating heavy equipment on excessively steep slopes, unstable soils, equipment-to-conductor clearance issues, etc.) may necessitate adjusting access that was originally planned to avoid an RTE plant population. Any deviations in the proposed access plan that could result in impacts to any rare plant populations will require review and approval from the MNAP and MDEP prior to implementation. These site-specific situations are not currently expected, however if they do occur it is anticipated to be infrequent. This effort combined with the implementation of erosion and sedimentation controls, use of equipment mats (when appropriate), and dormant-season construction (when possible) will greatly minimize the potential for direct and indirect impacts to any RTE plants located within the proposed transmission line corridor.

In locations where pole structures will be removed, measures will be taken to minimize impacts to rare plants. Where avoidance is not possible, crews can work during frozen ground conditions or use equipment mats to access structures to minimize impacts to the soils and vegetation. Poles will also be cut at ground level so there will be no excavation to cause disturbance. Other options include hand cutting poles in place and winching them to a suitable equipment access point.

The information below describes the potential impacts to specific RTE plant occurrences and the mitigation measures that are proposed to minimize those impacts (for specific location information for RTE species, refer to Section 9.3).

9.5.1.1 Segments 1, 2, and 3- Section 3006

Wild leek (*Allium tricoccum*); state rarity rank of S3 – Special Concern: Based on Gilman and Briggs 2008 report the small population is located on the terrace of the Carrabassett River in Anson. No direct or temporary impacts are proposed by the NECEC Project.

Red-stemmed gentian (*Gentiana rubricaulis*); state rarity rank of S1 – Special Concern: Based on MNAP data the population is located in the ROW south of Jackson Pond Road in Concord Twp. No direct impacts are proposed to this community. Approximately 3,093 square feet of impact from clearing is proposed within the polygon associated with this rare plant occurrence. The majority of the habitat, approximately 51,393 square feet, is located within the existing maintained corridor and will not be impacted by Project construction. The Project impact will be restricted to temporary disturbances associated with tree clearing. Ground disturbance will be minimized in this area by using equipment mats as well as a prohibition on grubbing of stumps.

Long-leaved bluet (*Houstonia longifolia);* state ranked S2/S3 – Special Concern; Based on MNAP data the population is located in the ROW just south of Wyman Hydro in both Moscow and Concord Twp. Direct impacts to this MNAP mapped area is 40 square feet for transmission line structure installation, and 6,504 square feet of temporary impact from clearing. There is approximately 8.9 acres of habitat associated with this rare plant occurrence. As a result, project impacts in this area are limited to a very small percentage of the overall habitat. Additionally, ground disturbance will be minimized in this area by using equipment mats as well as a prohibition on grubbing of stumps.

9.5.1.2 Segment 4 - 115kV Section 62 & 64

Dry land Sedge (Carex siccata); state rarity rank of S2 – Special Concern: One small population of dry land sedge was identified on the northeastern side of the Androscoggin River near structure 37 of the existing Section 62 (115 kV) line. Modifications to these existing sections are proposed as part of the NECEC Project. This population is located within the existing transmission line corridor and it will be clearly marked and avoided by construction. As such, no impacts are anticipated.

9.5.1.3 Segment 5 - 345kV Section 3027

No RTE plant species were noted along this section of the NECEC Project. If an RTE plant species occurrence is observed during construction all necessary precautions will be implemented to minimize or avoid any disturbance.

9.5.2 Natural Communities

9.5.2.1 Segment 1, 2, and 3 - Section 3006

Basswood-Ash-Red Maple Floodplain Forest; state rarity ranking S3: This community was identified during the MPRP Project at Hunton Brook near the confluence of the Androscoggin River, south of Bowman Airfield in Livermore Falls. The community occupies an area within the floodplain on the west side of the existing transmission line corridor. The clearing needed to accommodate the new HVDC will impact approximately 2.5 acres of this 22 acre community. This natural community is not identified in MNAP's database and therefore has no status, identifying the quality of the resource. CMP will work with MNAP to determine if this is an exemplary example of this community type and to identify appropriate mitigation for this impact, if required.

Upper Floodplain Hardwood Forest; state rarity ranking of S2: This community was identified on the northern banks of the Carrabassett River where the Carrabassett River meets the Kennebec River in Anson. Based on MNAP data and Project mapping it appears that the corridor runs directly through this natural community. Some clearing, approximately 6,504 square feet, is proposed to accommodate the new HVDC line, however it will only occur in a small portion, 0.7 percent, of this mapped community. Direct impacts associated with transmission line structure installation, is 40 square feet, however, the direct impact will be in a location that will be maintained as scrub shrub habitat.

9.6 Potential Impacts and Mitigation – Substations

MNAP occurrence data did not identify rare plants or unusual natural communities at either of the new substation locations. Upgrades and modifications to existing substations will be performed within previously developed areas. No impacts to RTE plant species or unusual natural areas are expected to occur.

Exhibit 9-1: Agency Correspondence

BURNS McDONNELL

May 10, 2017

Lisa St. Hilaire
Maine Natural Areas Program
Department of Conservation
93 State House Station
Augusta, ME 04333

Re: Central Maine Power, Quebec-Maine Interconnect Project
Data Request and Project Review

Dear Ms. St. Hilaire:

Burns & McDonnell will be preparing the state and federal permit applications for the Central Maine Power Company's (CMP) proposed Quebec-Maine Interconnect (QMI) Project. For more details, please find an attached Project Description and Map.

On behalf of CMP, Burns & McDonnell is requesting a project review to identify significant habitats, rare or listed plant species or significant communities that may be present on or within the impact area. Included with this email request are GIS shape files illustrating the approximate Project boundaries to facilitate your review.

If you have any questions regarding this request, please contact me by telephone at (207) 517-8483 or email at lajohnston@burnsmcd.com. Thank you for your assistance in obtaining this information.

Sincerely,

Lauren Johnston

Lauren Johnston, CPESC
Senior Environmental Scientist

Enclosure: Project description, Project map, electronically provided shapefile

cc: Gerry Mirabile, Central Maine Power; Adam Marquis, Central Maine Power;
Mark Goodwin, Burns & McDonnell

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

June 6, 2017

Lauren Johnston
Burns McDonnell
27 Pearl Street
Portland, ME 04101

Via email: lajohnston@burnsmcd.com

Re: Rare and exemplary botanical features in proximity to: Central Maine Power Company's Quebec-Maine Interconnect (QMI), Maine

Dear Ms. Johnston:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received May 10, 2017 for information on the presence of rare or unique botanical features documented from the vicinity of the Quebec-Maine Interconnect (QMI) project in Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

Note that a 1000 foot buffer was applied to the proposed transmission corridor for the purposes of identifying significant botanical features that intersect or are near to the proposed alignment. According to the information currently in our Biological and Conservation Data System files, there are several rare botanical features documented within 1000 feet of the proposed QMI transmission line. Please see Table 1 below and the shapefiles sent with this response for the locations of these features. This data represents documented features, but please note that much of the region where the QMI transmission line passes through has not been surveyed for significant botanical features, and surveys may be warranted.

Table 1: Botanical features documented within 1000 feet of the proposed QMI transmission line

Feature	State Status	State Rank	Global Rank	Occurrence Rank	Site Name	Town
Black Spruce Barren	N/A	S2	G5	C Fair	Moore Pond	Bradstreet Twp
Boreal Bedstraw *Carex siccata*	SC	S2	G5	A Excellent	Peaked Mountain	Skinner Twp
Dry Land Sedge *Carex siccata*	SC	S2	G5	BC Good to Fair	ROW at Androscoggin River	Lewiston

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM

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WWW.MAINE.GOV/DACF/MNAP

Enriched Northern Hardwoods Forest	N/A	S3	GNR	H Historical	Farmington Woods	Farmington
Long-leaved Bluet *Houstonia longifolia*	SC	S2S3	G4G5TNR	B Good	Wyman Dam	Concord Twp, Moscow
Red-stemmed Gentian *Gentiana rubricaulis*	T	S1	G4?	B Good	ROW South of Jackson Pond Road	Concord Twp
Spruce – Fir – Northern Hardwoods Ecosystem	N/A	S5	GNR	B Good	Cold Stream Forest	West Forks Plt
Upper Floodplain Hardwood Forest	N/A	S3	GNR	C Fair	Kennebec River, Bingham Islands/Austin Brook	Bingham
Upper Floodplain Hardwood Forest	N/A	S3	GNR	CD Fair to Poor	Carrabassett River	Anson
Wild Leek, *Allium tricoccum*	SC	S3	G5	D Poor	ROW at Mouth of Carrabassett River	Anson

This finding is for project scoping purposes only and should not be considered as a final review of the proposed project. When specific location options for the project or projects have been determined and updated environmental assessments have been completed, a subsequent review request should be submitted to us for recommendations regarding impacts to significant natural features prior to application submittal. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $300.00 for four hours of our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Don Cameron | Ecologist | Maine Natural Areas Program
207-287-8041 | don.s.cameron@maine.gov

MEETING MINUTES
QMI Wildlife and Fisheries Consultation Meeting

***Contact**:* *Mark Goodwin*
***Title**:* *Environmental Manager - Burns & McDonnell*
***Date**:* *June 7, 2017*
Time: *9:00am-11:30am*
Location: *CMP, Augusta*

Attendees:

Gerry Mirabile- CMP
Adam Marquis-CMP
Mark Goodwin- Burns & McDonnell
Lauren Johnston- Burns & McDonnell
Bob Stratton- MDIFW
John Perry- MDIFW
John Mclaire- MDIFW
Don Cameron- MNAP
Jay Clement- USACE
Mark McCollough- USFWS
Wende Mahaney- USFWS

Sign-in sheet and meeting agenda attached

Discussion:

The meeting began with introductions. Department of Energy (DOE) representative has not been identified as of the date of this meeting. DOE will likely be the lead agency for Section 7 consultation, however that will be determined in the Presidential permit pre-submission meeting. Jay Clement has requested attendance to this meeting.

A summary of information received to date from the agencies was provided by Lauren Johnston (BMCD).

- USFWS has provided shapefile for bald eagle nest locations. Wende Mehaney (USFWS) stated that this project does not need follow the "step process" identified on the USFWS website or submit a "species summary table" since we will be making regular contact during the consultation process. Burns & McDonnell has obtained the Official Species List.
- MDIFW has provided a shapefile which contains: DWA, SVP buffers, riparian buffers, WWH, and RTE. Also received was an Information Request response letter (dated June 5, 2017) with enclosed Recommended Performance Standards for Riparian Buffers, SVPs, IWWH, and DWA (dated March 26, 2012).

- MNAP has provided a shapefile which contains botanical features documented within 1,000-feet of the QMI transmission line as well as a letter response (dated June 6, 2017).

Boyle Associates has completed delineation and field verification surveys for wetlands and vernal pools. GIS information for all delineations and verifications will be submitted. Data sheets will be submitted for all pools. MDIFW asked to BMCD to provide 2017 Resource Delineation Protocol (including previously mapped resources). MDIFW would like the data sheets submitted as soon as possible and noted that they can be submitted in smaller batches so they can begin review and determination of significance. MDIFW stated that vernal pool determinations will take the most time so getting started as soon as possible is beneficial.

Wildlife discussions were provided by each agency as follows:

USFWS: Mark McCollough and Wende Mehaney

Canada Lynx

- Critical habitat (CH) includes the greenfield line from the Quebec border to a location near The Forks.
- Section 7 review area is broader than the CH area (two differently mapped areas). USFWS will provide a GIS shapefile for this.
- A biological assessment (BA) should be considered for the lynx (and all federally listed species in the project area). The federal agency is responsible for the BA however it is often applicant prepared.
- Likely no survey would be needed as lynx are presumed to be in the project area.
- There is existing survey information from MDIFW and it is recommended that we compile this. They have information regarding documented occurrences for the past few years. Contact Jen Vashon (MDIFW).
- The BA should include effects of clearing on CH. Should include total area cleared, how much spruce/fir habitat to be cleared, how much young vs old spruce/fir habitat to be cleared. There is a high population of snowshoe hare associated with young spruce/fir habitat.
- To determine presence of lynx habitat (ie young spruce/fir stands) we could obtain "stand maps" from landowners or complete a habitat analysis based on aerial photography images. USFWS can provide guidance and protocols for the desktop analysis.
- Scientific literature indicates that Canada Lynx are reluctant to cross 300-feet of cleared area. BMCD noted that the greenfield portion of transmission line will be cleared to a width of 150-feet and in collocated corridors, the width will not exceed 225-feet in most locations. BA should include some information regarding lynx movement and areas to be cleared.
- BA should include vegetation management standards and the conditions of the ROW post-construction.
- John Perry (MDIFW) will provide contact information for Jen Vashon who is the Lynx biologist at MDIFW. BMCD to contact Jen for survey data and recommendations.

- John Perry noted that MDIFW asked for track surveys during winter conditions for the Number 9 wind farm project.

Eagles

- *Bald Eagles*
    - Bald eagles/golden eagles are protected by the Eagle Act. Setback is 660-feet from the bald eagle nest.
    - If CMP needs to pursue a Take Permit, it will take some time.
    - Last survey effort for bald eagles was in 2013.
    - GIS data provided by USFW has a buffer of 3-miles.
    - Eagles are most likely to be found within ¼ mile of a large wetland or waterbody.
    - Surveys will need to be conducted for the whole line but we should identify areas more likely to contain nest sites.
    - Marker balls are a minimization measure for areas near the eagle nests.
    - Contact Charlie Todd (MDIFW) for survey guidance.
    - Two surveys are recommended: one when the eagles are starting to nest and one when the chicks have hatched.
    - Prior to survey, we should draft a scope of work (SOW)/work plan and provide to USFWS for review.
    - Timing of the survey dates for will vary because of the range of the project. In the south the target date for surveys will be mid-March. In the north, the target date for surveys will be in April. A second survey should be conducted two months afterwards.
- Golden eagles
    - USFWS did not include golden eagle occurrences in GIS shapefile
    - Northern portion of the project has historic nest locations.
    - Look at MDIFW database for historic nest locations and contact Charlie Todd (MDIFW) for recommendations
    - Cliff faces may provide nest sites
    - Bob Stratton (MDIFW) indicated that one mapped golden eagle location on MDIFW is 5-miles from the project area.
    - No known nesting pairs in the state since 2001. There is one radio tagged eagle (currently deceased) with data that we may want to consider.
    - If peregrine falcons are present, eagles are often absent.

Northern Long-eared bat

- Federally and state listed
- USFWS has streamlined consultation process which assumes presence.
- Streamlined consultations has no requirements for surveys (surveys are optional)
- If CMP decides to do surveys, USFWS can provide a survey protocol.
- MDIFW stated that clearing is generally not an issue and they also don't require surveys.

- John Perry (MDIFW) indicated that Cory Mosby (MDIFW Small mammal biologist) may have some heightened concerned around any rocky features, talus slopes and we should discuss surveys and acoustic monitoring recommendations near any similar potential habitat areas..
- Mark Goodwin (BMcD) discussed modifying in corridor access and structure location to avoid habitat.
- Aerial imagery work to identify rocky features and talus slopes may be recommended in consultation.
- Wende Mehaney (USFWS) indicated that time of year restrictions (TOYR) are not required by USFWS; however, the federal action agency may require TOYRs.
- USFWS recommends winter clearing and the action agency will likely encourage the applicant to agree to no clearing between June 1 and July 31.
- For the streamlined process USFWS will need to know total acreage of tree clearing.
- An Incidental Take permit (ITP) is an option if there is known bat activity in the vicinity of the project. ITP's are voluntary if there a potential take and may provide a level of liability to CMP.
- The status of the Northern long-eared bat could change to endangered and the 4(D) rule would no longer be applicable. This may be a consideration for longer term projects.
- Bat surveys are good for 3 years.

Atlantic Salmon

- During MPRP we avoided in-stream crossings, access for QMI is still being developed.
- QMI project area is in the Gulf of Maine Distinct Population Segment (GOM DPS) and Critical Habitat (CH). CH is a subset GOM DPS.
- Identify stream crossings in a table and whether each stream is DPS/CH or coldwater fisheries (MDIFW).
- Direct effects are work in streams, permanent or long-term crossings. Indirect effects are clearing, erosion and sediment control (E&S).
- Informal consultation for the ESA is driven by a No effect or Not likely to affect finding. Generally, in-stream crossings in streams with known presence of salmon will trigger a formal consultation.

Rusty Patch bumblebee

- New listing
- Found west of Penobscot Bay
- Not found near the project area, however surveys continue this summer and it is possible that a survey could find the species near the project.
- No survey would be required at this point.

Yellow-banded bumblebee

- Proposed for federal listing and a determination is planned for 2018.
- Surveys have found this species in the southern half of the state.

- Beth Swartz (MDIFW) is a resource for both species and has a statewide bumblebee atlas for survey data.
- Mark McCollough stated that surveys are simple and it might make sense to voluntarily do this prior to the decision.
- Options for mitigation include creation of pollinator habitat within the ROW.

Small Whorled Pogonia (USFWS and MNAP)

- Maps include a large geographic area.
- Applicants are to provide information to the federal agency for potential of species presence and determination of effect.
- Aerial photography analysis or onsite visits should be conducted to provide the agency with a habitat assessment and a determination of likelihood of presence.
- MNAP is testing a prototype of a predictive habitat model to help narrow down areas to focus survey areas.
- Don Cameron (MNAP) provided the survey protocol to Burns & McDonnell.
- Survey protocol has elimination criteria.
- Don indicated that he will work with CMP or a consultant to refine the search area to determine areas where the species may be supported.
- Survey timing: mid-June to end of September. Surveys could be completed this summer based on this window.
- Don recommends that surveys areas extend an additional 150-feet beyond the cleared ROW.
- The small whorled pogonia is found in forested locations so it would not be found in already cleared ROW.

MNAP: Don Cameron

- Don suggested that existing rare plant sites identified/surveyed through MPRP should be revisited.
- If completed revisits, all rare plant work could be considered acceptable with some new guidance regarding newly cleared areas. The northern portion of the project is not an area that has a high occurrence of documented rare plant species.
- Areas that are determined to have a higher potential for rare plants should be surveyed.
- The project intersects with one natural community: Upper Floodplain Hardwood Forest in Anson. Gerry noted that this community is rated CD. Don indicated that impact to this natural community is not a deal breaker, however it needs to be clarified as an impact. Don stated that ranking would influence MNAPs interest.
- Art Gilman and TRC (for MPRP) came up with a protocol for landscape analysis to identify potential hotspots for rare species or unmapped natural communities.
- In determining which areas to look at or which to consider hotspots, work with MNAP.

MDIFW: John Perry, Bob Stratton, John Mclaine

John Perry noted to make sure we are including the regional biologists in all correspondence as well as the biological specialists identified in the Information Request response letter dated June 5, 2017.

Bats

- Additional details regarding bats were discussed prior and discussions apply to the state listed species.
- Three additional bats are protected under the Maine Endangered Species Act (MESA) and four are listed as Special Concern.
-

North Bog Lemming

- Occurrences of the North Bog Lemming did not get captured by the GIS shapefile provided by MDIFW.
- Found at elevations above 2700-feet, however new research shows it may be found in areas above 1,000-feet.
- DNA sampling can be used to verify presence/absence.
- Cory Mosby (MDIFW) should be consulted.

Rare mussels

- Setbacks are a standard recommendation. Look to avoid impacts by spanning streams and protection of riparian habitat.
- Consult with Beth Swartz (MDIFW). Beth has documentation of known occurrences.

Roaring Brook Mayfly

- Can occur in any of our streams in the northern portion of the project.
- Occurs in elevations of 1,000-feet or higher.
- Similar habitat to the Northern Spring Salamander. Beth Swartz is the contact for both species.

Northern Spring Salamander

- Discussed in tandem with the Roaring Brook Mayfly.

Bicknell's Thrush

- Found in subalpine spruce forest.
- MNAP indicated they have mapped locations of subalpine spruce forest habitat.
- This species is very habitat dependent and is tied to the 2700-foot elevation, however have been found as low as 2400-feet.
- USFWS is in process of determining potential listing under the ESA.
- Bob Cordos (MDIFW Region D) and Adrienne Leppold (MDIFW Bird Group) should be contacted.

Rusty blackbird

- Similar habitat requirements to the Bicknell's Thrush.

Great Blue Heron

- Consider marker balls at line crossing near feeding areas.
- MDIFW may request aerial surveys for unmapped colonies.
- Timing for surveys does not align with bald eagle survey timing.
- Contact Danielle D'Auria (MDIFW) for consultation.

Wood Turtle

- Derek Yorks (MDIFW) will have up to date information.
- Minimal concern but dependent on known hotspots a survey may be recommended.
- Surveys may be warranted prior to or during construction phase.

Other rare invertebrates

- The list provided by MDIFW may not capture all recent occurrence.
- It is advised that we contact Phillip deMaynadier for up to date information.

Eel

- The concern is in-stream work. Any measures to protect streams will protect the eel.

Deer wintering area (DWA)

- In the northern portion of the project, DWAs are very important.
- We should rely on the regional biologist in the northern section for consultation regarding mapped DWAs.
- The project should seek to avoid if it's a particularly critical DWA.
- Spanning the DWA or feathering of trees have been used as mitigation measures.
- In higher elevations, clearing of trees could become a barrier for deer.
- Project alignment should attempt to avoid bisecting DWA where practicable.

Inland waterfowl and wading bird habitat (IWWH)

- Setbacks in riparian areas have increased to 250-feet for some IWWH.
- IWWH mapped on aerial imagery may not be field verified.
- High value IWWH should be avoided if possible.
- Marker balls are likely to be recommended near the IWWH.

Significant Vernal Pools (SVP)

- Start sending data sheets to Beth Swartz.
- Making determinations on new pools will be the biggest time issue.
- BMCD to contact Beth Swartz to talk about the best way to get them to her and coordination with Boyle.

Fisheries

- Stream crossings are still being determined by CMP.
- Likely no permanent stream crossings.
- MDIFW to provide brook trout GIS layer.
- Most streams in the northern section have native brook trout.
- MDIFW has concerns regarding riparian buffer clearing and leaving vegetation intact (except for capable species).
- Temperature change (insolation) and wood debris input should be considered as well as erosion control.

General Discussion

- MDIFW asked if there was a Bureau of Public Lands (BPL) intersect? BMCD to follow-up.
- MDIFW asked if there was an intersect with the Coldwater parcel. The route may run along the border of this parcel. MDIFW will provide map. BMCD to follow-up.
- Invasive species list for MPRP was reviewed by Don Cameron (MNAP). Jay Clement suggested that BMCD look at the invasive species list on the ACOE website.
- Mark McCollough brought up staging areas and whether the siting of those areas required any additional clearing. MPRP utilized already improved areas for laydown yards so no clearing was needed. We will need to evaluate this for QMI.
- John Perry (MDIFW) mentioned the Bigelow route alternative. This alternative has some issues because it goes through an old growth forest and intersect with BPL.
- MDFIW noted that site visits are encouraged with regional staff. The earlier we reach out the better will result in minimal surprises after the application is submitted.
- USFWS requested that as soon as we have contact with DOE, the lead for Section 7 should be determined.
- DOE may have specifics regarding what they require for BAs. USFWS has a protocol they worked out with Jay Clement but DOE may differ.

Action Items:

<u>BMCD follow up items:</u>

- Provide agencies a copy of 2017 Resource Delineation Protocol (including previously mapped resources)
- Submit vernal pool data sheets to MDIFW as they are submitted by Boyle Associates.
- Obtain shapefile for Lynx Section 7 review area from USFWS.
- Contact USFWS for BA outline.
- Contact Jen Vashon (MDIFW) regarding Canada Lynx occurrences near the project area.
- Create stream crossings in a table identify: Atlantic Salmon GOF DPS, CH (USFWS) or coldwater fisheries (MDIFW).
- BMCD to reach out to MDIFW for brook trout GIS layer.
- Is there a BPL intersect?
- Is there an intersect with the Coldwater parcel?

- Review invasive species plan and current invasive species list on USACE website.
- Evaluate the need for laydown areas and additional clearing needs.

Johnston, Lauren A

From: Johnston, Lauren A
Sent: Wednesday, May 10, 2017 1:01 PM
To: 'maine.nap@maine.gov'
Cc: 'gerry.mirabile@cmpco.com' (gerry.mirabile@cmpco.com); Marquis, Adam; Goodwin, Mark (magoodwin@burnsmcd.com)
Subject: QMI: Data Request and Project Review
Attachments: MNAP Consultation Letter 5.10.17.pdf; QMI_Project_Area_2017_05_10.zip

Follow Up Flag: Follow up
Flag Status: Flagged

Lisa,

Please find the attached cover letter, project description and map. I've also attached a shapefile to assist in your review. Please contact me if there are any questions or fees associated with this request.

Thank you.

Lauren Johnston, CPESC \ Burns & McDonnell
Senior Environmental Scientist
Mobile 207-272-7294 **Office** 207-517-8483
lajohnston@burnsmcd.com \ burnsmcd.com
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Morin, James

From: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>
Sent: Monday, July 31, 2017 12:56 PM
To: Morin, James; Cameron, Don S.
Cc: Goodwin, Mark; Johnston, Lauren A
Subject: RE: Rare plants and Natural Communities on QMI

Hi James,

We updated the status of several species in 2015. The correct numbers are here:

Endangered	98
Threatened	75
Special Concern	105
Potentially Extirpated	69
Total	**347**

Thanks,

Lisa St. Hilaire

Information Manager | Maine Natural Areas Program
Department of Agriculture, Conservation and Forestry
93 State House Station | Augusta, ME 04333
PHONE 207-287-8044 | FAX 207-287-8040

From: Morin, James [mailto:jmorin@burnsmcd.com]
Sent: Friday, July 28, 2017 11:44 AM
To: Cameron, Don S. <Don.S.Cameron@maine.gov>
Cc: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>; Goodwin, Mark <magoodwin@burnsmcd.com>; Johnston, Lauren A <lajohnston@burnsmcd.com>
Subject: RE: Rare plants and Natural Communities on QMI

Don,

Can you verify the accuracy of the numbers provided in the statement below? These numbers are from an MNAP publication in 2010.

The MNAP tracks a total of 351 plant species: 94 of these are listed as endangered, 79 as threatened, 69 as "possibly extirpated" (*i.e.*, not known recently in the state), and 109 of special concern.

Thanks,
Jim

From: Morin, James
Sent: Friday, July 28, 2017 11:10 AM
To: 'Cameron, Don S.' <Don.S.Cameron@maine.gov>
Cc: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>; Goodwin, Mark <magoodwin@burnsmcd.com>; Johnston, Lauren A <lajohnston@burnsmcd.com>
Subject: RE: Rare plants and Natural Communities on QMI

Ok, will do.

James P. Morin, LF*, CPESC \ Burns & McDonnell
Sr. Environmental Scientist \ Forester
Office 207-808-4924 \ **Mobile** 207-229-6752
jmorin@burnsmcd.com \ burnsmcd.com
27 Pearl Street \ Portland, Maine 04101

From: Cameron, Don S. [mailto:Don.S.Cameron@maine.gov]
Sent: Friday, July 28, 2017 10:58 AM
To: Morin, James <jmorin@burnsmcd.com>
Cc: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>
Subject: RE: Rare plants and Natural Communities on QMI

James,

Sorry for the slow response on this. Yes, we would like this area included in the analysis for this project.

Thanks for checking.

Don

Don Cameron, Botanist/Ecologist
Maine Natural Areas Program
#93 State House Station
Augusta, ME 04333-0093
(phone - 207-287-8041 / fax - 207-287-8040)

From: Morin, James [mailto:jmorin@burnsmcd.com]
Sent: Monday, July 10, 2017 2:20 PM
To: Cameron, Don S. <Don.S.Cameron@maine.gov>
Cc: St.Hilaire, Lisa <Lisa.St.Hilaire@maine.gov>; Goodwin, Mark <magoodwin@burnsmcd.com>; Johnston, Lauren A <lajohnston@burnsmcd.com>
Subject: RE: Rare plants and Natural Communities on QMI

Don,
For the MPRP project we recognized a Bass-Ash-Red Maple Floodplain Forest in Livermore Falls (see attached docs), but other than the attached map and recognition in the applicable Site Law Application we have no other supporting documentation.

Would you like to see us include this in our analysis for the QMI project?

Thanks,

James P. Morin, LF*, CPESC \ Burns & McDonnell
Sr. Environmental Scientist \ Forester

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From: St.Hilaire, Lisa [mailto:Lisa.St.Hilaire@maine.gov]
Sent: Monday, July 10, 2017 9:06 AM
To: Cameron, Don S. <Don.S.Cameron@maine.gov>; Morin, James <jmorin@burnsmcd.com>
Subject: RE: Rare plants and Natural Communities on QMI

Hi James,

Zip with the shapefile is attached. Screen shot below is from the unzipped file in here. Call if you have questions, thanks,

Lisa St. Hilaire

Information Manager | Maine Natural Areas Program
Department of Agriculture, Conservation and Forestry
93 State House Station | Augusta, ME 04333
PHONE 207-287-8044 | FAX 207-287-8040

From: Cameron, Don S.
Sent: Monday, July 10, 2017 9:03 AM
To: Morin, James
Cc: St.Hilaire, Lisa
Subject: RE: Rare plants and Natural Communities on QMI

James,

Apologies for not getting back to you sooner on this. We reviewed the shapefiles we sent to you and the features you listed below were in them. Here's a copy of the data table from the shapefile we sent (fn = MNAP_features_1000ft_projectline_clip):

Table

mnap_features_1000ft_projectline_clip

FID	Shape *	FEATURE_ID	EO_ID	ELCODE	EO_NUM	SNAME	SCOMNAME
3	Polygon ZM	9975	6364	CWCU110000	4	Spruce - heath barren	Black Spruce Barren
1	Polygon ZM	10650	2380	PDRUB0N150	11	Galium kamtschaticum	Boreal Bedstraw
6	Polygon ZM	9438	2437	PMCYP034V0	4	Carex siccata	Dry Land Sedge
4	Polygon ZM	96	6147	CFDU200000	22	Maple - basswood - ash forest	Enriched Northern Hardwoods Forest
7	Polygon ZM	1596	2728	PDRUB1T0E1	17	Houstonia longifolia var. longifolia	Long-leaved Bluet
8	Polygon ZM	29073	9302	PDGEN060P0	6	Gentiana rubricaulis	Red-stemmed Gentian
5	Polygon ZM	9858	6460	CX02FE0000	6	Spruce - fir - northern hardwoods ecosystem	Spruce - Fir - Northern Hardwoods Ecosystem
0	Polygon ZM	40579	10106	CFDF200000	37	Hardwood river terrace forest	Upper Floodplain Hardwood Forest
2	Polygon ZM	40576	10105	CFDF200000	36	Hardwood river terrace forest	Upper Floodplain Hardwood Forest
9	Polygon ZM	29012	9293	PMLIL022E0	45	Allium tricoccum	Wild Leek

0 (0 out of 10 Selected)

mnap_features_1000ft_projectline_clip

I'll have our data manager resend the shapefile. Please let us know if it includes this data when you open it.

Regarding Art Gilman's MPRP survey data, we have some of it from that time but not these records. Perhaps they were in a report we never received or were not needed for permitting at the time.

Please let me know if you have any other questions.

Don

Don Cameron, Botanist/Ecologist
Maine Natural Areas Program
#93 State House Station
Augusta, ME 04333-0093
(phone - 207-287-8041 / fax - 207-287-8040)

From: Morin, James [mailto:jmorin@burnsmcd.com]
Sent: Monday, July 10, 2017 7:45 AM
To: Cameron, Don S.
Cc: Goodwin, Mark; Johnston, Lauren A
Subject: RE: Rare plants and Natural Communities on QMI

Hi Don,
Please let me know if there is any additional information I can provide you that would be helpful in my request.

Thanks,

James P. Morin, LF*, CPESC \ Burns & McDonnell
Sr. Environmental Scientist \ Forester
Office 207-808-4924 \ **Mobile** 207-229-6752
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From: Cameron, Don S. [mailto:Don.S.Cameron@maine.gov]
Sent: Wednesday, June 28, 2017 10:48 AM
To: Morin, James <jmorin@burnsmcd.com>
Subject: RE: Rare plants and Natural Communities on QMI

Hi James,

We'll look into it and get back to you by the end of the week.

Don

Don Cameron, Botanist/Ecologist
Maine Natural Areas Program
#93 State House Station
Augusta, ME 04333-0093
(phone - 207-287-8041 / fax - 207-287-8040)

From: Morin, James [mailto:jmorin@burnsmcd.com]
Sent: Tuesday, June 27, 2017 8:13 AM
To: Cameron, Don S.
Cc: Marquis, Adam; Goodwin, Mark; Johnston, Lauren A; gerry.mirabile@cmpco.com
Subject: Rare plants and Natural Communities on QMI

Don,
We are currently reviewing the occurrences of rare plants and natural communities on CMP's proposed QMI project. MNAP provided GIS data on 6/6/17 and identified two features which intersect the current transmission line alignment: Upper Floodplain Hardwood Forest in Anson and the Red-stemmed Gentian in Concord Twp. Not all of the botanical features identified in Table 1 of the letter sent by MNAP on 6/6/17, are included in the associated spatial data. Do you have site specific location information available for the following features:

- Long-leaved bluet in Concord Twp;
- Boreal Bedstraw in Skinner Twp;
- Enriched Northern Hardwood Forest in Concord Twp;
- Spruce-Fir-Northern Hardwood Ecosystem in West Forks Plt;
- Black Spruce Barren in Bradstreet Twp.

Since portions of the QMI project are within the surveyed areas of the MPRP, we have reviewed the MPRP permit applications as well as the 2008 Gilman and Briggs Report (attached) to identify any additional occurrences. Our review notes one additional natural community: Bass-Ash-Red Maple Floodplain Forest in Livermore Falls; and two additional rare plants species: Pale green orchis in Wiscasset, and Fall fimbry (dwarf bulrush) at an unknown location between Livermore Falls and Lewiston. Does MNAP have record of these occurrences?

We are trying to reconcile the data provided by MNAP and data presented in the MPRP studies to determine which natural features (or all) should be included in our analysis.

I welcome the opportunity to discuss this information with you at your earliest convenience.

Thanks,

James P. Morin, LF*, CPESC \ Burns & McDonnell
Sr. Environmental Scientist \ Forester
Office 207-808-4924 \ **Mobile** 207-229-6752
jmorin@burnsmcd.com \ burnsmcd.com
27 Pearl Street \ Portland, Maine 04101

Exhibit 9-2: MPRP 2007 Rare, Threatened, and Endangered Plant Species Survey Summary Report

FINAL DRAFT

Maine Power Reliability Program

2007 Rare, Threatened, and Endangered Plant Species Survey Summary Report

March 31, 2008

Prepared by:

Gilman and Briggs Environmental

Executive Summary

Searches for rare, threatened, or endangered (RTE) plant species along the powerline corridors and other involved lands associated with the Maine Power Reliability Program (MPRP) were performed during the 2007 growing season.

A total of approximately 206 linear miles of powerline corridor were searched on foot. This area included the entirety of the corridors from Three Rivers substation in Eliot to South Gorham substation in South Gorham, and large samples of other study segments. The search effort included approximately 70 field days between June 4 and October 30, 2007, and covered approximately 33.4 percent of the cumulative total linear distance of the study segments.

Thirty-two species listed by the Maine Natural Areas Program (MNAP) were observed, in approximately 120 discrete localities. These include 8 species that are listed as Endangered, 11 that are listed as Threatened, 10 that are listed as species of Special Concern, 2 that are listed as Possibly Extirpated (despite recent confirmation of existence), and one that is not listed in these categories even though it is tracked by MNAP. Two species, slender reed-grass and tall path rush, accounted for approximately half of the 120 locations.

Additionally, 4 species that are listed in law, but are no longer tracked by MNAP, were observed. Furthermore, one variety of an indigenous species that has not been previously observed in Maine, and one species that has been listed in recent literature as rare in Maine were also documented.

The majority of these observations were made on powerline corridors in southern Maine, with concentrations at and near the Kennebunk Plains and Wells Barrens, and at the freshwater tidal marshes on Merrymeeting Bay and its major tributaries. Other areas were characterized by species and populations that were generally more scattered along the corridors in habitat-dependent situations.

These observations were mapped so that these populations of rare plant can be avoided as much as possible during the planning, design and construction phases of the MPRP project, with the goal of maintaining them as viable components of Maine's natural heritage. Powerline habitats are often well-suited to this purpose for many rare species, and with careful planning, conflicts should be minimal.

INTRODUCTION

The MPRP is an initiative of Central Maine Power to ensure the continued reliability of its bulk power transmission system. Planning for the Program requires mapping of natural resources, including populations of rare, threatened, or endangered plants along potential powerline corridors and at substation locations throughout southwestern Maine.

Certain plants are protected under both federal and state laws. Under the federal Endangered Species Act of 1973[1], there are one endangered and two threatened plant species in Maine. These are Furbish's lousewort (*Pedicularis furbishiae*), prairie white-fringed orchid (*Platanthera leucophaea*) and small whorled pogonia (*Isotria medeoloides*), respectively. Only small whorled pogonia is known to occur in the region of the MPRP. No additional plant species that occur in Maine are currently candidates for federal listing.

Under Maine statutes, 5 M.R.S.A. §§ 13076-13079, MNAP currently tracks a total of 341 plant species: 80 of these are listed as endangered, 94 as threatened, 71 as "possibly extirpated" (i.e., not recently recorded in the state) and 96 of "special concern." These numbers are likely to vary slightly, as MNAP currently proposes different status for some species.

Searches for rare plants on the MPRP corridors and substation sites were undertaken in consultation with the MNAP. Field work commenced on 4 June and continued through 30 October 2007. In 2007, Maine experienced a typical growing season, without especially prolonged wet spells (some minor flooding occurred as a result of strong thunderstorms in July) or droughts, and the searches were not hindered in any way by weather or climatic conditions.

METHODOLOGY

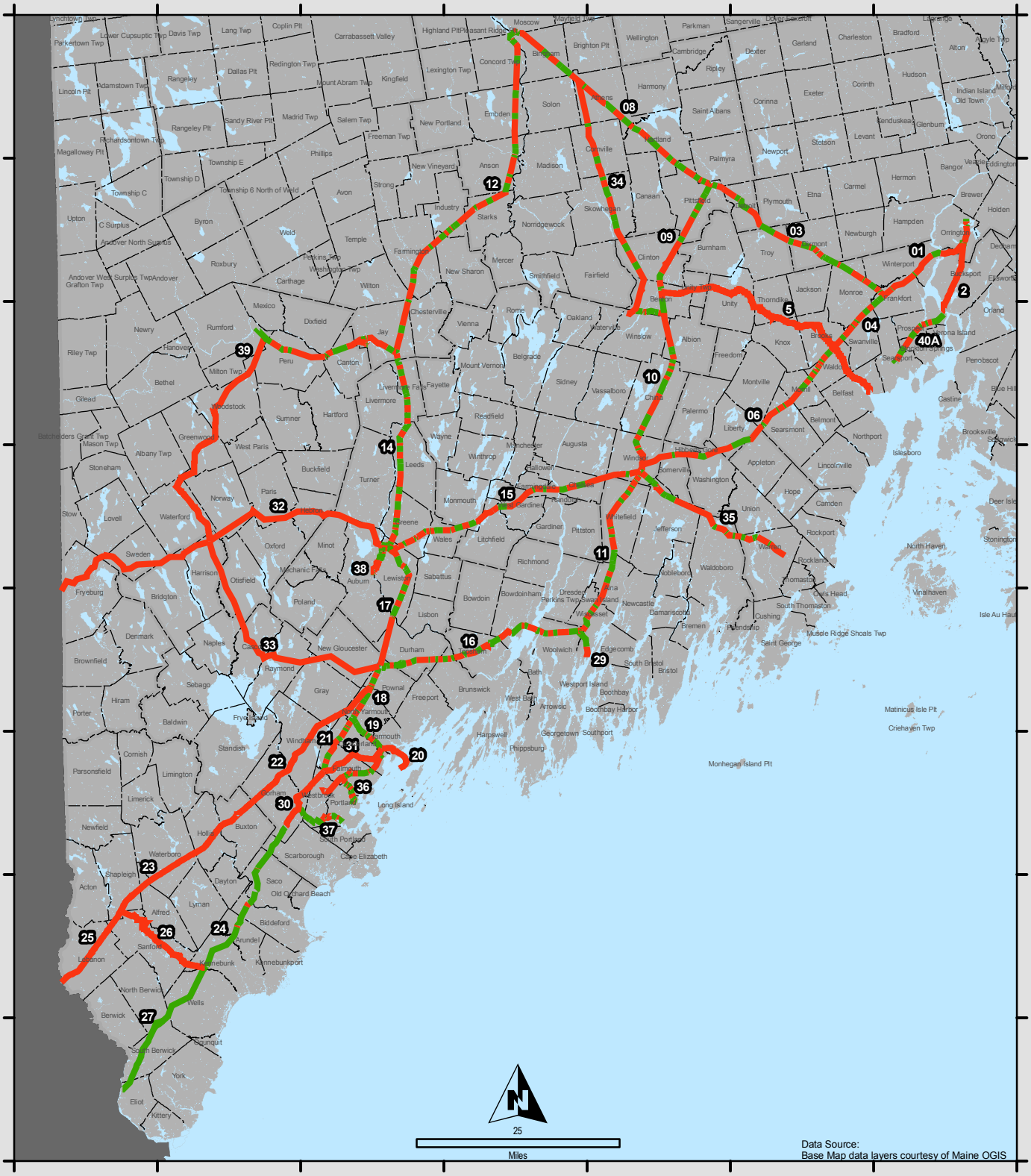
Study Area

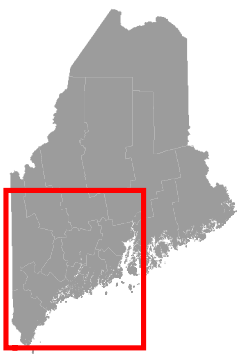
The 2007 study area consisted of 25 'segments' of Central Maine Power's (CMP) corridors, and lands in the vicinity several existing substations associated with these segments. Only lands under the ownership or control of CMP were included. The areas searched are graphically shown on the project's representative survey results maps and are stored in the MPRP GIS database. Several project segments and potential new substation sites were added to the project scope in late-2007. These were added to the scope too late in the growing season to effectively survey these areas for the presence of RTE plants. These areas will be examined for RTE plants during the 2008 growing season.

Figure RTE-1 depicts the project area, segments on which field surveys were conducted, and areas for which a landscape/sensitivity analysis was conducted.

[1] 16 U.S.C. §§ 1531 et seq. See 50 CFR 17.12 for the federal list of endangered and threatened plant species; proposed changes to the list were recently published in the Federal Register. 72 Fed. Reg. 69033, 69106 (Dec. 6, 2007). Both the Act and the list are available online at **www.fws.gov/endangered**.

The boundaries of the study area were defined by using project environmental basemaps and GPS ‘background maps’. These maps were used during field efforts for navigation and to ensure that only CMP lands were surveyed.





Legend

2007 RTE Survey, ROW Mileage Status

- Field Surveyed: 209 miles
- No Field Survey Required *
- 01 Segment Number

* As per results of landscape analysis

CONFIDENTIAL MATERIAL PURSUANT TO MPUC RULES, CHAPTER 140

MAINE POWER RELIABILITY PROGRAM
A CENTRAL MAINE POWER COMPANY PROGRAM

Figure RTE - 1

249 Western Ave
Augusta, ME 04330
TRC

Created: 04/01/2008

Survey Site Selection

Staff from TRC and Gilman and Briggs Environmental met with MNAP staff on June 25, 2007 to discuss the RTE plant survey approach. The approach of performing a landscape sensitivity analysis to narrow the field survey effort to those segments that would have the greatest potential of harboring RTE plants was deemed acceptable by MNAP. As such, in accordance with MNAP acceptance, the following effort work was performed.

Prior to field work, a landscape analysis using USGS topographic maps and aerial photography was undertaken for each segment. This analysis identified specific features that are considered to have at least a moderate potential for rare species. Such features include (but are not limited to): areas of high relief (e.g., steep slopes, valleys); large wetland systems; major streams and rivers, and their associated terraces and landforms; sandplains and areas of sandy soils; and areas of bedrock exposure. In addition, MNAP provided information regarding known locations of sensitive species and exemplary natural communities. Areas near any these known populations and communities are also considered to have a moderate potential for rare species. All locations identified during this analysis were selected as survey sites for field assessments.

Segments 24 (Maguire Road to South Gorham) and 27 (Three Rivers to Maguire Road) are located in southern Maine. This region of Maine is known to support numerous rare plant species that are at the northern limits of their natural ranges, and is therefore more likely than other areas of the project to support populations of such species. For this reason, Segments 24 and 27 were searched in their entirety (with only two or three minor gaps such as mowed or cultivated land) for a total linear distance of approximately 39 miles.

The results of the landscape analysis revealed that not all of the study area segments would need to be examined in the field. Rationale for not field surveying all of the study segments included:

- Low potential for harboring RTE plant species as identified during the landscape analysis
- No RTE plant species were documented during previous field surveys performed along certain segments or portions of segments
- Certain portions of the study area did not possess preferred habitat characteristics for RTE plants, as judged from inspection of adjacent portions
- As the RTE plant species surveys progressed and the project evolved, some segments were removed from the project scope as potential route options
- Some study area segments were added to the project scope too late into the RTE plant survey season

As previously mentioned, additional landscape analysis work and field surveys will be performed as needed during the 2008 growing season.

On segments that were not searched in their entirety, a large supplemental sample of the corridor was searched in addition to sites identified during the landscape analysis. Supplemental survey sites were located at each accessible road crossing of the corridors. Collectively, the directed and supplemental searches on these segments totaled nearly 167 miles.

Furthermore, previous experience with the Maritimes and Northeast Pipeline Phase II project, which shares the CMP corridor on Segments 1, 4, 6, 17 (in part), 18, and 21, was drawn upon in choosing some additional survey sites on these particular segments.

Survey Methodology

The identified survey sites were searched in their entirety, as was access to them along the corridor from state or local roads. The searches were conducted with a 'wander' methodology, which is a visual inspection of the entire corridor width and closer inspection of any potential microhabitats within the corridor that might support populations of any rare species known from the region.

For the supplemental sites, a visual habitat assessment was performed from each accessible road crossing along the segments. In most cases, the corridor was inspected on foot in both directions from the road for a reasonable distance, often one mile or more. Inspection of the local terrain and habitats in this manner greatly augmented the searches that were planned from the landscape analysis, and resulted in the discovery of numerous populations of rare species.
Plants were identified using standard references including Fernald (1950); Gleason and Cronquist (1992); Haines and Vining (1999); Flora of North America (1993 et seq.), and other technical publications (see Literature Cited).

Collections were made to document occurrences of listed species and for future reference. These are available for inspection and duplicates will be deposited at the University of Maine herbarium at Orono. Photographs were obtained for most species and are included in Appendix A of this report.

All observed locations of listed species were recorded to submeter accuracy using GPS Trimble Geo-XT units and subsequently mapped on the project's representative survey results maps; the data are stored in TRC's GIS database. Single plants or small, discrete populations were mapped as points, representing a circle with a radius of ca. 5m (15 ft). For larger populations, the boundaries of the population were mapped as a polygon. The number of individuals within each discrete population was estimated (e.g., one plant, few plants, > 50 plants, etc.). Note, however, that the density of a listed species within the mapped polygon may vary from species to species, from relatively dense to relatively sparse.

Weekly memoranda were submitted to TRC, detailing the observations of the previous week.

RESULTS

A total of approximately 206 linear miles of corridor (39 miles on segments 24 and 27, plus 167 collective miles on other segments) plus substation sites and other involved lands were searched on foot during an effort of approximately 70 days.

With respect to federally listed species, small whorled pogonia is the only enumerated species known to occur in the region of Maine in which the project is located. This plant occurs as far north as Readfield; however, because the corridors are mostly cleared, little potential habitat is available for this forest species. One area with habitat and community composition similar to known sites for the species was observed in Livermore Falls, but the entire area of potential habitat was thoroughly searched without result. As noted above, other federally listed species do not occur in the region of the project. No federally listed threatened or endangered species were observed.

A total of 32 rare species tracked by MNAP were observed. These include 8 species listed as Endangered, 10 listed as Threatened, 11 listed of "Special Concern," and two that are formally listed as "Possibly Extirpated," although it is now apparent that these two are, in fact, extant. One species (tall path rush, *Juncus anthelatus*) that is tracked by the MNAP and included in this summary has no formal status.

The locations of these survey observations, i.e., the mapped points and polygons representing the locations of the rare species, are shown on the project's environmental basemaps and the data are stored in the MPRP GIS database. The rank, status, segment, and number of locations for each of the 32 rare species are given by species in Table 1, and by segment in Table 2. RTE plant species rarity rank explanations are provided in Appendix A. Photos and/or other images are provided in Appendix B.

Overall, the rare species that were encountered were ones that were anticipated, based on known habitats, nearby rare plant species locations, and personal knowledge of the region.

Some populations of rare species that had been previously observed (during field work on the Maritimes & Northeast / Portland Natural Gas "Joint Pipeline Project" in 1996) on Segment 27 were not relocated, despite efforts to do so, although they may still be extant. Specifically, these were populations of pale green orchis, swamp saxifrage, Muhlenberg's sedge, and scarlet oak (one tree). The circumstances surrounding these records are as follows:

- Pale green orchis: An occurrence of this species near Knight's Pond was previously documented. The habitat is a wet meadow and when visited in 2007 had been closely mowed. The habitat is essentially the same as observed in 1996 and the plants likely still occur within the habitat. Other (i.e., additional) populations of pale green orchis were observed on other project segments.

- Swamp saxifrage: One location for this species observed in 1996 was not relocated; however, the habitat is still extant and the plants may occur in the vicinity. As with pale

green orchis, other (i.e., additional) populations of swamp saxifrage were observed on other project segments.

- Muhlenberg's sedge (*Carex muhlenbergii*): was documented in 1996 at one site, near the Three Rivers substation, but was not relocated in 2007 despite a very thorough search. It is possible that the plants were impacted during pipeline construction near the Three Rivers substation. The species was not observed elsewhere.

- Scarlet oak (*Quercus coccinea*): A single scarlet oak was previously documented at the edge of the CMP corridor on segment 27, but was not observed and may have been overlooked; if present, it is likely outside any potential work area. The species was not observed elsewhere.

One unanticipated discovery was that of red-stemmed gentian (*Gentiana rubricaulis*), which has not been observed in Maine since 1923 (Coburn 1925). Four populations were discovered, each in a separate township. All of these newly discovered populations were within the managed CMP corridors. The main range of the species is in the Midwest and these are the only populations known to occur in the northeastern United States. Other outlying populations are known to occur in New Brunswick.

In addition to the species currently tracked by the MNAP, six species with some other listing status were observed (Table 3). These are briefly explained here:

- White wood aster (*Aster divaricatus*): This species is currently listed as Threatened in Maine, but is not tracked by MNAP as of January 2006 due to a "high number [of] populations." This species was encountered in one area where it had been previously documented.

- Ground-fir (*Diphasiastrum sabinifolium*). This is currently listed as Endangered in Maine, but is also not tracked by MNAP as of January 2006 because it is now considered to be of hybrid origin. This plant was encountered in four areas. It was not mapped, but specimens were collected and will be deposited at the University of Maine herbarium at Orono.

- Wiegand's sedge (*Carex wiegandii*) and Michaux's blue-eyed grass (*Sisyrinchium mucronatum*), are listed "of special concern," but are not tracked by MNAP. The locations of these species were noted, but they were not mapped in all cases. Wiegand's sedge was encountered in one area, and a collection was made. Slender blue-eyed grass was encountered in several areas; these were mapped and the data were forwarded to MNAP.

- Macoun's Canada blue-joint grass (*Calamagrostis canadensis* var. *macouniana*): This variety of common blue-joint grass, which has not previously been reported in Maine, was encountered in one location. The location of this grass was mapped and a specimen was collected for deposit at the University of Maine herbarium at Orono.

- Southern bulrush (*Scirpus georgianus*): This species is not tracked by MNAP but has recently been reported as "rare" in Maine (Haines 2002). This bulrush was mapped in three locations.

DISCUSSION

As anticipated, the greatest diversity and density of rare species was documented on Segments 24 and 27 in extreme southern Maine. In particular, there is a significant concentration of rare species (Indian grass, slender reed grass, upright bindweed, northern blazing star, white-topped aster, and hairy boneset) in the general Kennebunk Plains – Wells Barrens area, between Wires Road (Wells) and Alfred Road (Kennebunk). This is a well-known area that is generally considered botanically significant; the current effort reinforces that conclusion.

Furthermore, significant concentrations of rare species (Eatons' bur-marigold, estuary bur-marigold, yellow pond-lily, estuary monkeyflower, and Parker's pipewort) were identified in the freshwater tidal marshes on Segment 16, at the Cathance River, Abagadasset River, Kennebec River, and Chops Creek. Estuary bur-marigold and Parker's pipewort also occur on the shores of the Kennebec River on Segment 15. MNAP also reports additional rare aquatic plants (e.g. Long's bittercress and spongy arrowhead) from these areas, especially in the Kennebec River off Abagadasset Point (an area that was not visited). These plants all occur below the normal high tide and would therefore not be affected by MPRP.

Finally, some species were found in sufficient numbers and locations within the study area along the powerline corridors to bring into question the necessity of tracking, especially as they appear to benefit from the level of activity associated with powerline construction and maintenance. Slender reed-grass and tall path rush in particular are found rather commonly along the corridors in southern Maine, with at least 40 locales for slender reed-grass and more than 20 locales for tall path rush. Both species thrive on damp to wet soils, especially where disturbed such as along the small powerline access roads and on the pipeline corridors where the soils were dug up during construction. Pendulous bulrush also seems to thrive in these semi-disturbed conditions, although it only occurs in two areas.

In general, the species documented during this effort are typically associated with habitat types that are consistent with current management practices for the powerline corridor. Although some forested areas occur within the study area and were surveyed during field efforts, no rare species that are dependent on forested habitat were encountered. The open corridors can be seen as providing good, in some cases, exemplary, habitat for species that were observed. In a generally forested landscape, they provide sunny openings, often with soil types and hydrologies different than other natural sunny openings (e.g., "beaver ponds"), 'edge' habitat, etc., that are not otherwise available for these species . Furthermore, the level and frequency of disturbance within powerline corridors can promote disturbance-adapted species, for example, slender reed-grass and tall path rush, which may require small patches of bare soil.

For other species occurring in natural habitats that happen to lie within a corridor but are not 'managed', for example, streambanks, the freshwater tidal marshes where several species occur, and shrub swamps, there are no apparent conflicts as the areas currently exist. Obviously, for

planning purposes, it is well to avoid such areas with pole placements, access roads, etc, where practicable.

The instance of the Kennebunk Plains and Wells Barrens, where several rare species occur, the habitat management necessary for safe operation of the powerlines is consistent with the continued health of the populations, as it promotes a dry, open condition with low, slow-growing vegetation. Obviously here as well, a major goal during the design phase of any project should be the avoidance of plant populations and minimization of impacts from pole placements and access roads, where practicable.

Table 1. Rare plant species observed, by plant name.

Scientific Name	Common Name	Rank[2]	Status[3]	Segment(s)	Number of locales[4]
Allium tricoccum	Wild leek	S3	SC	12	1
Aureolaria pedicularia	Fern-leaved false foxglove	S3	SC	38	1
Bartonia paniculata	Screwstem	S1	T	27	1
Bidens eatonii	Eaton's bur-marigold	S2	T	16	2
Bidens hyperborea	Estuary bur-marigold	S3	T	16	4
Bolboschoenus novae-angliae	Marsh bulrush	S1	SC	40A	1
Calamagrostis cinnoides	Small reed-grass	S2	SC	18, 24, 27	40+
Calystegia spithamaea	Upright bindweed	S2	T	24	1
Carex atherodes	Awned sedge	S1	E	15	2
Carex laxiculmis	Spreading sedge	S1	E	24, 27	4
Carex siccata	Dryland sedge	S2	T	16, 17	2
Eriocaulon parkeri	Parker's pipewort	S3	SC	15,16	2
Eupatorium dubium	Eastern Joe-Pye weed	S2	T	27	4
Eupatorium fistulosum	Hollow Joe-Pye weed	S2	SC	37	2
Eupatorium rotundifolium	Hairy boneset	SH[5]	PE	27	2
Fimbristylis autumnalis	Dwarf bulrush (Fall fimbry)	S2	T	14	1
Gentiana rubricaulis	Red-stemmed gentian	SH[6]	PE	8, 10, 12	4
Juncus anthelatus	Tall path rush	SU		8, 16, 18, 27, 29, 37	24
Liatris scariosa	Northern blazing star	S1	T	24, 27	5
Lonicera dioica	Mountain honeysuckle	S1?	E	21	1
Mimulus ringens var. *colpophilus*	Estuary monkeyflower	S2	SC	15	5
Nuphar advena	Yellow pond-lily	S1	SC	16	3
Platanthera flava	Pale green orchis	S2	SC	15, 24, 35	4
Quercus bicolor	Swamp white oak	S1	T	35	2
Sagittaria rigida	Stiff arrow-head	S1S2	T	9, 10	2
Saxifraga pensylvanica	Swamp saxifrage	S3	T	24, 27	3
Scirpus pendulus	Pendulous bulrush	S1	E	24,27	2
Selaginella apoda	Creeping spike-moss	S1	E	24, 27	4

[2] Complete definitions of ranks as assigned by the Maine Natural Areas Program are appended.
[3] Per Maine statute; no federally listed species were observed.
T = Threatened
E = Endangered
SC = Special Concern
PE = Possibly Extirpated
[4] Locations separated by at least one pole-span between populations.
[5] Per the MNAP website listing as of 3 August 2007; however, this rank is inaccurate, it should be S1.
[6] Per the MNAP website listing as of 3 August 2007; however, this rank is inaccurate, it should be S1

Table 1, (cont.). Rare plant species observed, by plant name.

Scientific Name	Common Name	Rank[7]	Status[8]	Segment(s)	Number of locales[9]
Sericocarpus asteroides	White-topped aster	S1	E	24, 27	3
Sorghastrum nutans		S1	E	27	1
Triosteum aurantiacum	Wild coffee	S1	E	10	1
Wolffia Columbiana	Columbia watermeal	S2	SC	15	1

[7] Complete definitions of ranks as assigned by the Maine Natural Areas Program are appended.
[8] Per Maine statute; no federally listed species were observed.
T = Threatened
E = Endangered
SC = Special Concern
PE = Possibly Extirpated
[9] Locations separated by at least one pole-span between populations.

Table 2. Segment by segment observations of rare plant species.

Segment	Common Name	Rank	Status	Number of Locations and Comments
1	None			
3	None			
4	None			
6	None			
8	Red-stemmed gentian	SH[10]	PE	2; each ca. 100+ plants
	Tall path rush	SU		1; scattered along an access road
9	Stiff arrow-head	S1S2	T	1; abundant on shores of Sebasticook River
10	Stiff arrow-head	S1S2	T	1; scattered on shores of Seabsticook River
	Wild coffee	S1	E	1; 2 large clumps
	Red-stemmed gentian	SH[11]	PE	1; >150 plants scattered over a wide area
11	None			
12	Wild leek	S3	SC	1; small population on terrace of the Carrabassett River
	Red-stemmed gentian	SH[12]	PE	1; ca. 100+ plants
14	Dwarf bulrush (Fall fimbry)	S2	T	1; scattered in damp area, floor of a borrow pit
15	Awned sedge	S1	E	2; two large groups in shallow marsh wetlands
	Estuary monkeyflower	S2	SC	2; both shores of the Kennebec River
	Columbia watermeal	S2	SC	1; abundant in Cobbosseecontee Stream
	Pale green orchis	S2	SC	1; about 35 plants in wet meadow area
16	Eaton's bur-marigold	S2	T	2; shores of Abagadasset River and Chops Creek
	Estuary bur-marigold	S3	T	3; shores of Cathance River, Abagadasset River, and Chops Creek
	Parker's pipewort	S3	SC	1; shore of Abagadasset River
	Estuary monkeyflower	S2	SC	3; Cathance River, Abagadasset River, and Chops C
	Tall path rush	SU	--	9; all along access road and/or wet pastures
	Dryland sedge	S2	T	1; small population on dry bank near Androscoggin River
	Yellow pond-lily	S1	SC	3; Cathance River, Abagadasset River, and Chops Creek.
17	Dryland sedge	S2	T	1; small population on dry bank near the Androscoggin River
18	Tall path rush	SU	--	1; scattered along an access road
	Small reed-grass	S2	SC	1; large population, north of Royal River
19	Tall path rush	SU	--	1; small group along an access road
21	Mountain honeysuckle	S1?	E	1; 3-4 small, depauperate individuals, rough corridor
24	Small reed-grass	S2	SC	>20, Scattered in numerous areas, primarily along access roads

[10] Per the MNAP website listing as of 3 August 2007; however, this rank is inaccurate, it should be S1
[11] Per the MNAP website listing as of 3 August 2007; however, this rank is inaccurate, it should be S1
[12] Per the MNAP website listing as of 3 August 2007; however, this rank is inaccurate, it should be S1

Table 2 (cont.). Segment by segment observations of rare plant species.

Segment	Common Name	Rank [13]	Status [14]	Number of Locations and Comments
24	Upright bindweed	S2	T	1; 2 large clones, very dry soil
	Spreading sedge	S1	E	1; large population; streambank under shrubs
	Northern blazing star	S1	T	3; mostly concentrated near Maguire Road with single outlying plants in dry soil at 2 other sites
	Pale green orchis	S2	SC	3; small populations in wet soil
	Swamp saxifrage	S3	T	2; small populations (< 50) at two sites, swamps
	Pendulous bulrush	S1	E	1; abundants, 100's of stems in wet meadow and scattered along access roads in wet area at one large site
	Creeping spike-moss	S1	E	Few plants at margin of large marshy area, headwater of Nonesuch River
	White-topped aster	S1	E	1: Kennebunk Plains area
27	Small reed-grass	S2	SC	+++, Scattered in numerous areas, primarily along access roads
	Spreading sedge	S1	E	3; small populations; streambanks and clay banks
	Northern blazing star	S1	T	2; common at Kennebunk Plains and scattered at W Barrens
	Screwstem	S1	T	1; few plants in disturbed area
	Tall path rush	SU	--	3; scattered along access roads
	Swamp saxifrage	S3	T	2; small populations (< 50) at two sites, swamps
	Pendulous bulrush	S1	E	1; small population in wet meadow
	Creeping spike-moss	S1	E	Few plants at margin of large marshy area, headwater of Nonesuch River
	Eastern Joe-Pye weed	S2	T	4; difficult to separate from common Joe-Pye weed
	Hairy boneset	SH[15]	PE	2; one large population S of Wells Barrens and a Second smaller population in wetland S of Wires Road
	White-topped aster	S1	E	2: small and scattered populations a at Kennebunk Plains and Wells Barrens
	Indian grass	S1	E	1: 4 large clumps, Wells Barrens
29	Tall path rush	SU	--	6; associated with access roads
34	None			
35	Swamp white oak	S1	T	2; banks of Sheepscot and St. George Rivers
36	None			
37	Hollow Joe-Pye weed	S2	SC	3; large populations (>25 plants each) in two areas near Stroudwater River
	Tall path rush	SU	--	3; wet meadow and along access road
38	Fern-leaved false foxglove	S3	SC	1; small population (<100 plants) on dry bank near substation
39	Marsh bulrush	S1	SC	1; large clone, upper limit of brackish marsh

[13] Complete definitions of ranks as assigned by the Maine Natural Areas Program are appended.

[14] Per Maine statute; no federally listed species were observed.

T = Threatened
E = Endangered
SC = Special Concern
PE = Possibly Extirpated

[15] Per the MNAP website listing as of 3 August 2007; however, this rank is inaccurate, it should be S1.

Table 3. Exceptions; other species noted (see text for explanations).

Scientific Name	Common Name	Rank[16]	Status[17]	Segment(s)	Number of locales
Aster divaricatus	White wood aster	S3	T	27	1
Calamagrostis canadensis var. macouniana	Macoun's Canada blue-joint grass	--	--	14	1
Carex wiegandii	Wiegand's sedge	S3	SC	24	1
Diphasiastrum × sabinifolium	Ground fir	S1	E	3, 8, 40A	4
Scirpus georgianus	Southern bulrush	--	--	24	3+
Sisyrinchium mucronatum	Michaux's blue-eyed grass	S2	SC	24, 27	>10

[16] See Attachment +++ for complete definitions of ranks as assigned by the Maine Natural Areas Program.
[17] Per Maine statute; no federally listed species were observed.
T = Threatened
E = Endangered
SC = Special Concern
PE = Possibly Extirpated

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Appendix A: RTE Species Rank Explanations

Rank Explanations

State Rarity Ranks

- **S1** Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- **S2** Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- **S3** Rare in Maine (on the order of 20-100 occurrences).
- **S4** Apparently secure in Maine.
- **S5** Demonstrably secure in Maine.
- **SH** Occurred historically in Maine, and could be rediscovered; not known to have been extirpated.
- **SU** Possibly in peril in Maine, but status uncertain; need more information.
- **SX** Apparently extirpated in Maine (historically occurring species for which habitat no longer exists in Maine).

Note: State Ranks determined by the Maine Natural Areas Program.

Global Rarity Ranks

- **G1** Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- **G2** Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- **G3** Globally rare (on the order of 20-100 occurrences).
- **G4** Apparently secure globally.
- **G5** Demonstrably secure globally.

Note: Global Ranks are determined by The Nature Conservancy. T indicates subspecies rank, Q indicates questionable rank, HYB indicates hybrid species.

State Legal Status

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's endangered and threatened plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

- **E** Endangered; Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.
- **T** Threatened; Rare and, with further decline, could become endangered; or federally listed as Threatened.
- **SC** Special Concern; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
- **PE** Possibly Extirpated; Not known to currently exist in Maine; not field-verified (or documented) in Maine over the past 20 years.

Federal Status

- **LE** Listed as Endangered at the national level.
- **LT** Listed as Threatened at the national level.

Please note that species names follow Flora of Maine: A Manual for Identification of Native and Naturalized Vascular Plants of Maine, Arthur Haines and Thomas F. Vining, 1998, V.F. Thomas Co., P.O. Box 281, Bar Harbor, Maine 04069-0281.

Where entries appear as binomials, all representatives (subspecies and varieties) of the species are rare in Maine; where names appear as trinomials, only that particular variety or subspecies is rare in Maine, not the species as a whole.

Appendix B: RTE Survey Photographs

Wild leek (*Allium tricoccum*) was found at one location on Segment 12, on a terrace of the Carrabassett River. Shown here in fruit in late September, no leaves are evident at this season.

Screwstem (*Bartonia paniculata*) was found at one locality on Segment 24. Normally a wetland plant, it was found as a small population in disturbed soil along an access road.

Eatons bur-marigold (*Bidens eatonii*) occurs on Segment 16 in the Freshwater Tidal Marshes of Abagadasset River. All plants are within the intertidal zone.

Estuary bur-marigold (*Bidens hyperborea*) also occurs on Segment 16, in several locations in the Freshwater Tidal Marshes of the Cathance River, Abagadasset River, and Chops Creek. All plants are within the intertidal zone.

Marsh bulrush (*Bolboschoenus novae-angliae*) is shown here on Segment 40A, in a brackish marsh in Prospect. It forms a large patch near the upper limit of saltwater influence. It is a tall, robust grasslike species with rusty-reddish spikelets.

Slender reed-grass (*Calamagrostis cinnoides*) was found on Segments 18, 24, and 27, in numerous locations. It thrives in wet areas of the open powerline corridor, especially on disturbed soils along the edges of the existing access roads.

Awned sedge (*Carex atherodes*) occurs on Segment 15 in two areas; it is a robust, tall sedge of open wet grasslands and forms large, dense stands in this habitat.

Spreading sedge (*Carex laxiculmis*) was found on Segments 24 and 27, typically on clay soils on steep stream-banks or ravines, and usually more or less shaded by other vegetation.

Dryland sedge (Carex siccata) was found on Segments 16 and 17, as small patches on sandy soil near the Androscoggin River. [Photo: USDA-NRCS Plants Database, not copyrighted].

Parker's pipewort (*Eriocaulon parkeri*) is restricted to tidal shores; it was found on Segment 15 at the Kennebec River (shown here) and on Segment 16 at the Cathance and Abagadasset Rivers and at Chops Creek (it probably also occurs at Abagadasset Point on the Kennebec River as well).

Eastern Joe-Pye weed (*Eupatorium dubium*) occurs on Segment 27. It is very similar to, and seems to intergrade with, common Joe-Pye weed (*E. maculatum*), and grows in similar habitats – sunny wet areas

Hollow Joe-Pye weed (*Eupatorium fistulosum*) was found on Segment 37; it is like a very tall, very robust common Joe-Pye weed (*E. maculatum*). [Photo: USDA-NRCS Plants Database, not copyrighted].

Hairy boneset (*Eupatorium rotundifolium*) occurs on Segment 27, at sites both north and south of Wires Road. It grows at the margins of wetlands on sandy soil. This is the only known location in Maine for this species, which was recently (2006) re-discovered by the MNAP.

Dwarf bulrush or fall fimbry (*Fimbristylis autumnalis*), an annual species, occurs on Segment 14, in a borrow pit.

Red-stemmed gentian (*Gentiana rubricaulis*) was found at four locations on the project, on Segments 8, 10, and 12 (here on Segment 10). Prior to the MPRP searches, it was known from only two sites in Maine and had not been observed in Maine since 1923. All four populations are relatively large (>50 plants) and thrive on damp soils in the sunny powerline corridors.

Tall path rush (*Juncus anthelatus*) was encountered in numerous locations, on Segments 8, 16, 19, and 24, and may occur elsewhere as well. It occurs especially on damp to wet, clay soils along the powerline access roads and in shallow ditches, although in some areas it was also observed in wet pasture-like areas. It appears to be tolerant of a high level of disturbance and trampling.

Northern blazing star (*Liatris scariosa*) is common the Kennebunk Plains and Wells Barrens areas on Segments 24 and 27, with a few scattered outliers just north and south of these areas. It requires dry, sunny habitats.

Estuary monkey-flower (*Mimulus ringens* var. *colpophilus*) is restricted to the intertidal zone of the Kennebec River and the same habitat on Segment 15 at the Cathance River, Abagadasset River, Kennebec River, and Chops Creek.

Yellow pond-lily (*Nuphar advena*) occurs on Segment 16 in the Freshwater Tidal Marshes of the Cathance River, Abagadasset River, and Chops Creek. It differs from the common yellow cow-lily in that the leaves are not floating, but are held upright above the water's surface.

Pale green orchis (*Platanthera flava*) was observed at scattered locations on Segments 24, 11, and 15, typically in small populations in wet meadow habitats.

Stiff arrow-head (*Sagittaria rigida*) occurs in a band on the shore of the Sebasticook River on Segment 9. The plants are below the ordinary high water mark. This species also occurs on Segment 10.

Another view of **stiff arrowhead (*Sagittaria rigida*)** showing the leaves with small basal lobes and a characteristic crook in the flowering stem.

Southern bulrush (*Scirpus georgianus*), occurs on Segment 27 in York County. It is much like common bulrush (*S. atrovirens*) and can only be distinguished on technical characters of the achene (seed).

Pendulous bulrush (*Scirpus pendulus*) occurs as a large population, with scattered outliers, in a field south of the Louden Substation on Segment 24. It prefers wet meadows and appears to be thriving in this location. [Photo: USDA-NRCS Plants Database, not under copyright].

White-topped aster (*Sericocarpus asteroides*) occurs on dry soils at the Kennebunk Plains and Wells Barrens, Segments 24 and 27.

Creeping spike-moss (*Selaginella apoda*) was found in several locations on Segments 24 and 27. It is a tiny plant best looked for on bare, wet soil (as here), but also occurs hidden among grasses in wet meadows.

Indian grass (*Sorghastrum nutans*) occurs at one site on Segment 27 at the Wells Barrens. Interestingly, despite much botanical survey of the Wells Barrens, it has not been previously reported from this area. Other localities for the species in Maine are on shores of large rivers.

Wild coffee (*Triosteum aurantiacum*) occurs as two large clones, on Segment 10.

Columbia watermeal (*Wolffia columbiana*) is an aquatic species that occurs in Cobbosseecontee Stream on Segment 15. It is the world's smallest flowering plant and in the photo, it is seen as extremely small dots between the larger ovals of common duckweed (*Lemna minor*).