

Keeyask Transmission Project Environmental Effects Monitoring Plan Technical Reports

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KEEYASK TRANSMISSION PROJECT

ENVIRONMENTAL EFFECTS MONITORING PLAN

PRIORITY PLANT MONITORING IN 2016



Prepared for Manitoba Hydro

By ECOSTEM Ltd. May 2017 This report should be cited as follows:

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SUMMARY

This report provides results for the priority plant monitoring conducted in 2016/2017 for the construction power line of the Keeyask Transmission Project (the Project).

Priority plants are defined as those plants that are particularly important for ecological and/or social reasons (Manitoba Hydro 2012). The priority plant species included in the priority plant monitoring were generally those which the Manitoba Conservation Data Centre has classified as being provincially very rare to rare.

The only priority plant species identified in or near the Project right-of-way during pre-clearing surveys was muskeg lousewort (*Pedicularis macrodonta*). Individuals or patches of plants were found at four locations situated in wet fens that overlapped the cleared right-of-way.

All of the known priority plant locations that may have been affected by the Project construction were surveyed in summer 2016. At the time of these surveys, healthy, living plants were found at all four locations. At the plant locations, the vegetation and substrate within the right-of-way was minimally disturbed. In a few locations, other impacts were limited to localized ruts and/or tree removal. No additional provincially very rare to rare plants were incidentally observed during 2016 priority or invasive plant surveys.

Overall, Project construction had very low effects on the known priority plant locations as of 2016. Mitigation recommendations provided in the Project Environmental Protection Plan, and after preclearing surveys, were successfully implemented. Further monitoring of the known priority plant locations is not recommended given that the plants appear healthy and that future indirect effects are unlikely. Additionally, invasive plant monitoring results to date are consistent with the prediction that the Project is not substantially increasing the rate at which invasive plants are introduced and/or spread in the Project area.

Effects on priority plant habitat will be evaluated in 2018, which is after the field surveys for the Keeyask Generation Outlet transmission lines are conducted.

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STUDY TEAM

Dr. James Ehnes was the project manager and study designer.

Fieldwork in 2016 was conducted by Alex Snitowski and Brock Epp.

Data analysis and report writing in 2016 were completed by Brock Epp and James Ehnes. GIS analysis and cartography was completed by Alex Snitowski.

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1.0 INTRODUCTION

In 2014, Manitoba Hydro received an Environment Act Licence for construction, operation and maintenance of the Keeyask Transmission Project. Terms and conditions of the licence include monitoring the environmental impact from development of the Project as outlined in the licence conditions and the Project EA Report.

The Keeyask Transmission Project Environmental Monitoring Plan includes monitoring effects on terrestrial ecosystems and vegetation, focusing on intactness, ecosystem diversity, priority plants and invasive plants. Vegetation monitoring in the 2016/2017 year was related to ecosystem diversity, priority plants and invasive plants. This report provides results for the priority plant monitoring conducted in 2016/2017, which includes results from field surveys conducted in summer 2016.

Priority plants are defined as those plants that are particularly important for ecological and/or social reasons. Priority plants are the native plant species that are highly sensitive to Project features, make high contributions to ecosystem function and/or are of particular interest to the KCNs. A plant species is considered to be highly sensitive to human features if it is globally, nationally, provincially or regionally rare, near a range limit, has low reproductive capacity, depends on rare environmental conditions and/or depends on the natural disturbance regime.

The objectives of the priority plant monitoring are to:

- Confirm actual project effects on the known priority plant locations; and,
- Confirm actual project effects on priority plant habitat.

Monitoring activities in the 2016/2017 year included fieldwork to address the first of the two study objectives, specifically with respect to the Keeyask Construction Power lines (the Project).

2.0 METHODS

Section 4.2.2 of the Keeyask Transmission Project Environmental Monitoring Plan outlines the methods for this study. The following summarizes the activities conducted during 2016.

The priority plant species included in the priority plant monitoring were generally those which the Manitoba Conservation Data Centre had classified as being provincially very rare to rare at the time when the Project Environmental Impact Statement was written. This included species with conservation concern ranks of S1, S1?, S1S2, S2 or S2?. The two exceptions were small pondweed and Robbins pondweed, since studies for the Keeyask Generating Station EIS (KHLP 2012) concluded that, while these species are provincially rare, they are not rare in the Keeyask region.

On this basis, the plant species included at the outset of this monitoring study were elegant hawk's-beard (*Crepis elegans*), shrubby willow (*Salix arbusculoides*), rock willow (*Salix vestita*), horned pondweed (*Zannichellia palustris*), slender-leaved sundew (*Drosera linearis*), muskeg-lousewort (*Pedicularis macrodonta*) and American milk-vetch (*Astragalus americanus*). Additional provincially very rare to rare plant species found during the vegetation monitoring would also be included.

At the time of the 2016 surveys, all clearing for the Project was completed. Known priority plant locations within or adjacent to the Project right-of-way (ROW) were visited. At each location, recorded information included the condition of the priority plants, patch size of the species, the degree of site disturbance and the location size. If the target species was not found at the previously recorded location, then the surrounding habitat was searched for other individuals and, if found, a new priority plant location was recorded.

Any other provincially very rare to rare plant species that were incidentally observed during ground surveys conducted for this study or the invasive plant monitoring were recorded (ECOSTEM 2017). Uncommon plants of importance to the Keeyask Cree Nations, which included *wihkis* (sweet flag) and northern Labrador tea (Section 3 in KHLP 2012), were watched out for during field surveys.

If a new priority plant location was found, the location was marked with a GPS. Information including attributes such as location, plant species, plant vigor, site conditions and surrounding habitat was recorded. The location was also flagged off to prevent disturbance. The locations and sizes of the plant patches were later mapped in a GIS (a "patch" could consist of one or a few individual plants). Any newly recorded priority plant locations were reported to Manitoba Hydro.

3.0 RESULTS

The 11 known priority plant sites had all been identified during pre-clearing rare plant surveys (Map 3-1). All 11 sites were for a single species, muskeg lousewort (Photo 3-1).

The abundance of muskeg lousewort plants at these sites ranged from one or a few individuals, to larger patches with sparse muskeg lousewort cover. Since the sites were clustered near each other, they were combined into four locations.

One location, which was near the switching station, had two plants. The remaining 10 sites were concentrated in a general area further south along the transmission line ROW (Map 3-1). These sites were found to be part of three larger patches with sparse to very sparse muskeg lousewort cover (<10% of area), covering just over 1 ha combined. These patches were mapped and subsequently evaluated as three distinct locations (Table 3-1; Map 3-1). All three locations were in a large horizontal fen (Photo 3-2). Two patches, including one that covered 10,125 m², occurred within open, wet fens with sedges and bog-bean. The other two locations occurred in sparsely treed tamarack-dominated fens with similar ground cover.

During the 2016 surveys, the four known locations (Table 3-1) were visited. Healthy, living plants were found at all of the locations, and there was either no or minimal impacts within each location (Table 3-1).

Where impacts were present, they were confined to the ROW and limited to localized ruts from machinery, or tree removal. There were no other impacts to the low vegetation or ground in the location, both within and outside of the ROW.

Location ID	Location Type	Habitat Type	Status	Patch Size (m ²)	Percentage of location disturbed	Disturbance Type
1	Individual	Tamarack- black spruce on wet peatland	Intact	n/a	-	None
2	Patch	Low vegetation on wet peatland	Intact	10,125	5	Machine track
3	Patch	Tamarack- black spruce on wet peatland	Intact	76	100	Tree clearing
4	Patch	Low vegetation on wet peatland	Intact	71	-	none

Table 3-1:	Muskeg lousewort locations in the Project footprint, and their status in 2016.
	muskey lousewort locations in the roject lootprint, and then status in 2010.

No other priority plant species or uncommon species of importance to the Keeyask Cree Nations were found within or adjacent to the Project footprint during the 2016 priority plant surveys. No additional locations were found incidentally during invasive plant surveys.



Source: ECOSTEM Ltd. 2016





Source: ECOSTEM Ltd. 2016





Muskeg lousewort locations and patches within or adjacent to the cleared Project ROW Map 3-1:

ENVIRONMENTAL EFFECTS MONITORING PRIORITY PLANTS

4.0 SUMMARY AND CONCLUSIONS

The EA Report predicted that Project effects on priority plant species during construction were expected to be low (Manitoba Hydro 2012). The rarest species were not known to occur in the Project footprint. For the remaining species, Project effects were expected to be nil or low, depending on the species, because from nil to less than 1% of their known locations and habitat would be affected by the Project.

Post-construction monitoring is confirming that recommended mitigation for the known priority plant locations was implemented, and that the Project is not further spreading invasive plants.

Priority plant monitoring during 2016 revisited the known priority plant locations within or adjacent to the Project ROW. Each of the known four locations had included only one priority plant species, muskeg lousewort, when it was initially recorded. Other priority plants were recorded if found during the 2016 priority and invasive plant surveys. The four locations ranged in size from two plants to patches of plants up to approximately 1 ha in area.

All of the muskeg lousewort plants at each of the four known locations appeared healthy. Additionally, their habitat was unimpacted at two locations, and minimally impacted at the other two. Project impacts at the two locations consisted of localized tree removal or ruts from machinery.

There was no indication that the Project was creating indirect effects (*e.g.*, alterations to groundwater conditions) that would eventually adversely affect these plants.

Project effects on muskeg lousewort plants during construction were absent, primarily for the following related reasons:

- The vegetation in these patches already was limited to low growth forms due to site conditions, which meant that vegetation clearing was not required;
- Mitigation recommendations outlined in ECOSTEM (2014) were successfully implemented. These measures included:
 - Place towers outside of the muskeg lousewort avoidance zones (shown in a map provided to Manitoba Hydro);
 - Clear during the winter, after the ground is solidly frozen and there is a protective cover of snow; and,
 - Restrict trails and vehicle traffic within the mapped muskeg lousewort avoidance zones to the same trail used to pull the conductors.

Based on the results of the 2016 surveys, the known muskeg lousewort populations experienced virtually no or very low Project effects.

In conclusion, development of the Project has had very low effects on priority plants at the known locations as of August 2016. Further monitoring of these locations is not recommended given that the plants appear healthy and that future indirect effects are unlikely. Additionally, invasive plant

monitoring results to date are consistent with the prediction that the Project is not substantially increasing the rate at which invasive plants are introduced and/or spread in the Project area (ECOSTEM 2017).

5.0 LITERATURE CITED

- ECOSTEM 2014. Rare plants found on Keeyask Transmission Power right-of-way. A memorandum prepared for Manitoba Hydro by ECOSTEM Ltd., October 2014. 6pp.
- ECOSTEM Ltd. 2017. Keeyask Transmission Project: Environmental Effects Monitoring Invasive Plant Monitoring in 2016. A report prepared for Manitoba Hydro by ECOSTEM Ltd., May 2017.
- Keeyask Hydropower Limited Partnership (KHLP). 2012. Keeyask Generation Project Environmental Impact Statement: Terrestrial Environment Supporting Volume, Winnipeg, Manitoba. June 2012.
- Manitoba Hydro. 2012. Keeyask Transmission Project environmental assessment report. November 2012.

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