

ECOLOGICAL LAND CLASSIFICATION REPORT - NPD CLOSURE PROJECT

NPD DECOMMISSIONING

64-509200-REPT-005

Revision 0

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Nuclear Power Demonstration Facility – Ecological Land Classification

ECOLOGICAL LAND CLASSIFICATION

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September 2016

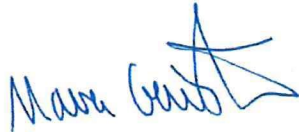


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ECOLOGICAL LAND CLASSIFICATION

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GLOSSARY of Technical Words, Acronyms and Abbreviations

AECL	Atomic Energy of Canada Limited
B	Breeding
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
ELC	Ecological Land Classification
N	Non-breeding
NAR	Not at Risk
NPD	Nuclear Power Demonstration
SAR	Species at Risk
SARA	Species at Risk Act
SARO	Species at Risk in Ontario
SC	Special Concern
S RANK	Provincial Conservation Status (NHIC)
THR	Threatened

1 INTRODUCTION

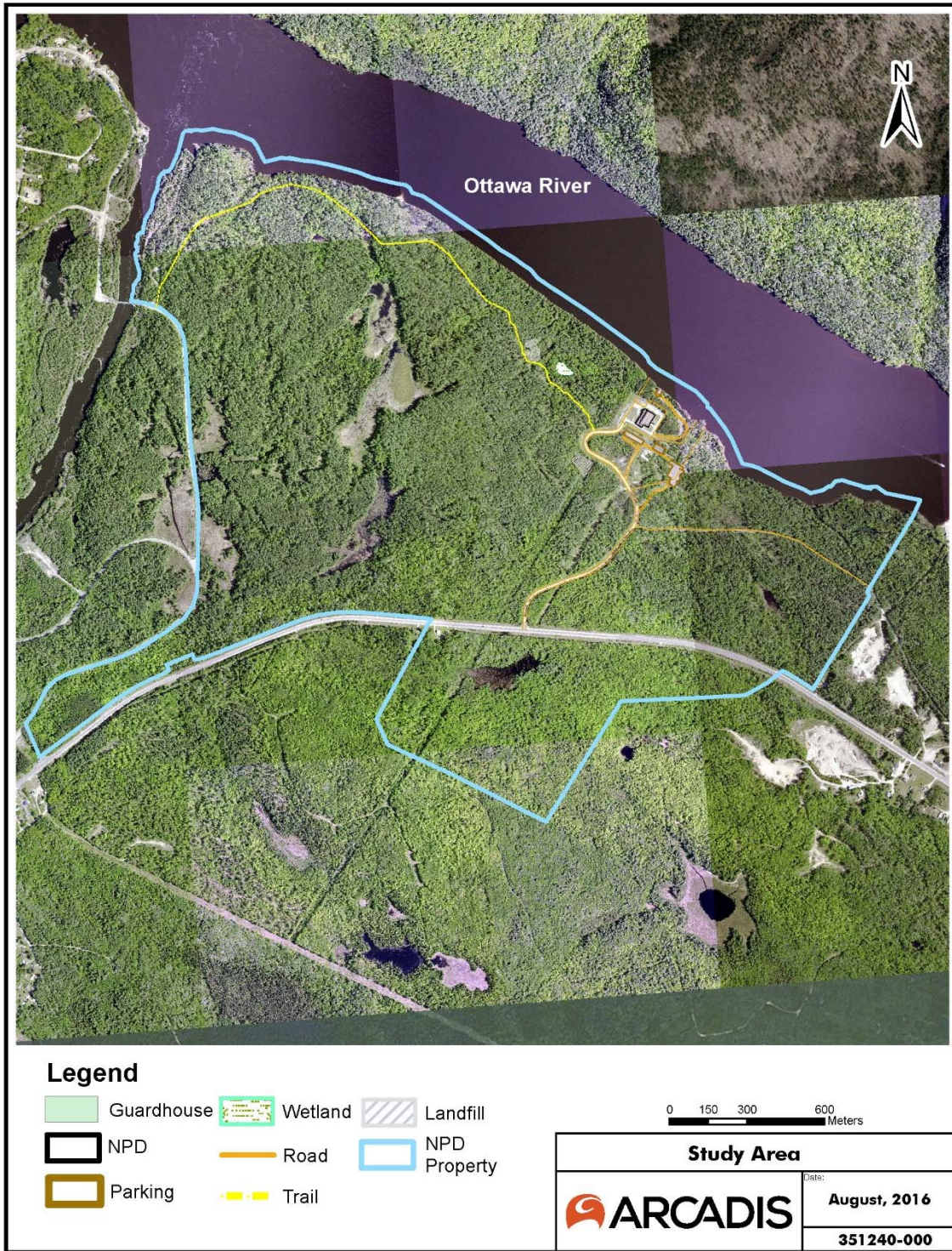
The Nuclear Power Demonstration (NPD) Nuclear Generating Station is located in Rolphton, Ontario, was operated by Ontario Hydro from 1962 until 1987. Following permanent shutdown of the NPD Nuclear Generating Station in 1987, the operating and compliance responsibilities were transferred from Ontario Hydro to Atomic Energy of Canada Limited (AECL), a federal crown corporation and the facility was renamed the Nuclear Power Demonstration Waste Facility (NPDWF) (hereafter referred to as the “Site”). This Class I nuclear facility is presently in the Storage with Surveillance (SwS) phase of decommissioning and has a Decommissioning Waste Facility License that was issued in 2014. (Titterington 2016)

The proposed in-situ decommissioning activities include removing the above ground structure and placing contaminated materials into the below grade structure. The below grade structure, reactor vessel and systems and components will be sealed by grouting. The structure will then be capped with concrete and covered with an engineered barrier. In-situ decommissioning will isolate the contaminated systems and components inside the below grade structure. (Titterington 2016)

The Site is approximately 403 hectares in size, with under 10% of the site having undergone development (Morin 2015).

Ecological Land Classification

Figure 1-1. NPD Site



Reference: ESRI ArcGIS Online Base Layer and NPD Closure Project Description

Ecological Land Classification

A vegetation survey and Ecological Land Classification (ELC) was completed for the Site to obtain environmental baseline data. Proposed decommissioning activities are likely limited to the NPD facility and immediate surrounding areas, as well as access roads, former parking lots and building foundations. The vegetation and ELC was completed for the entire Site. The classification of vegetation communities on the Site was completed to:

- Identify vegetation communities that may be affected by potential decommissioning activities;
- Determine wildlife species likely to be found on the site;
- Determine significance and sensitivity of vegetation communities;
- Identify suitable areas for decommissioning-related activities (e.g. laydown areas for equipment and materials).

The ELC survey identified fifteen distinct vegetation communities on the Site. The bulk of the Site consists of coniferous forests, with predominant canopy of a mix of red pine (*Pinus resinosa*) and white pine (*P. strobus*) and jack pine (*P. banksia*). Wetlands on the Site consist mostly of cattail (*Typha latifolia*) marshes, forb marshes or open water wetlands. Various cultural communities dominate the immediate vicinity of the NPD facility.

2 ECOLOGICAL LAND CLASSIFICATION

The ELC survey and designation followed the hierarchy set out in the field guide for Ecological Land Classification for Southern Ontario (Lee *et al.* 1998). Due to the warm microclimate of the area (Wills 2013), and the previously disturbed nature of the Site (i.e. logging and NPD construction and operation), the guide for Southern Ontario was deemed most applicable for the Site.

Field work for the ELC survey was conducted on July 27-28, 2016 by Arcadis biologists, led by a biologist certified in Ecological Land Classification. Classifications were derived from observed dominant vegetation and soil types on the site, as well as wetness. Distinct areas were identified from aerial photographs and knowledge of the site (e.g. forest, wetlands, disturbed areas, etc.) and ground truthed in the field.

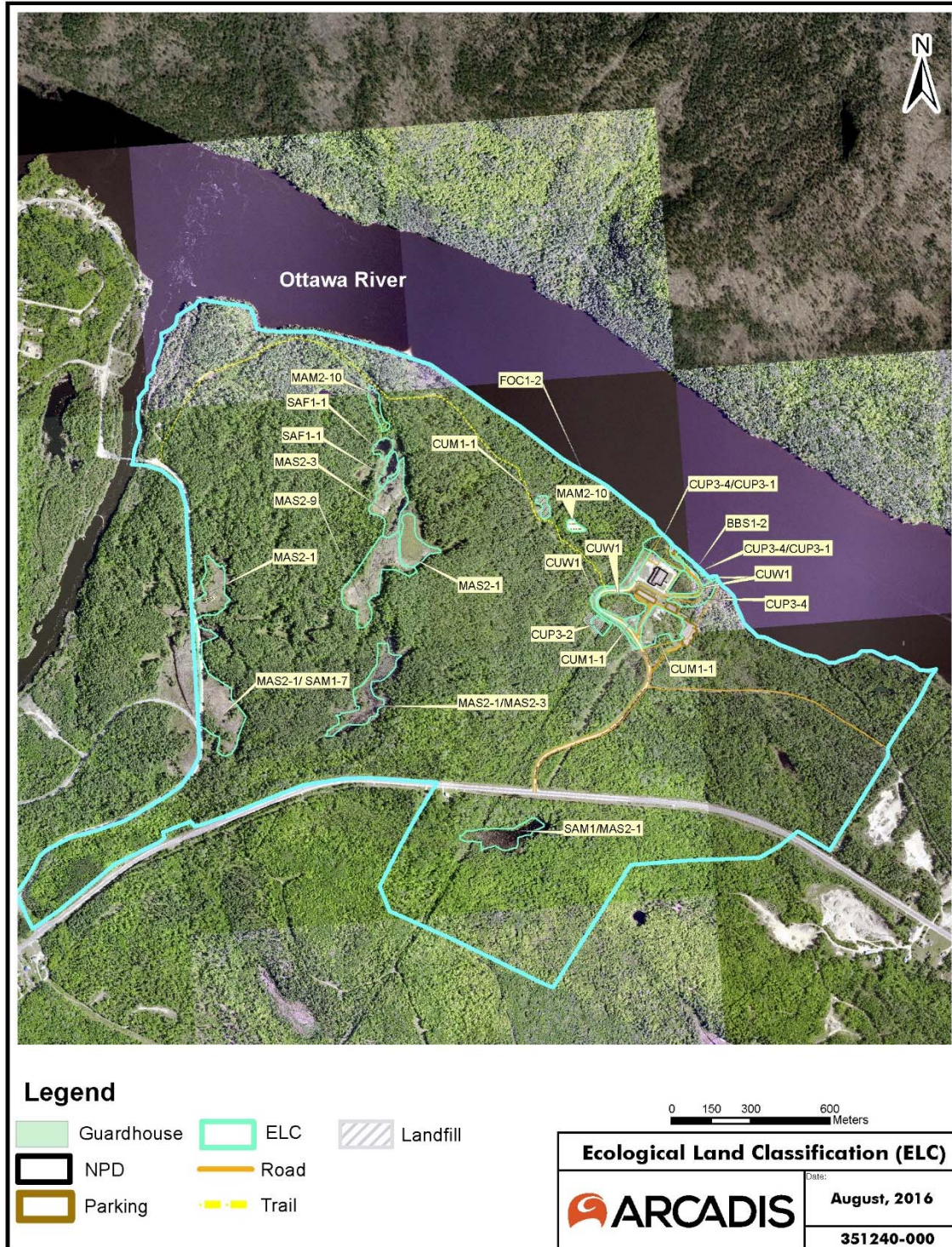
The ELC mapping is shown in Figure 2-1, and the designations are listed in Table 2-1. Representative photographs for ELC designations are in Appendix A.

Table 2-1. ELC Communities present at the Site

ELC	Description
Forest	
FOC1-1	Dry Jack Pine Coniferous Forest Type
FOC1-2	Dry-Fresh White Pine-Red Pine Coniferous Forest Type
Cultural	
CUM1-1	Mineral Cultural Dry-Moist Old Field Meadow Type
CUP3-1	Red Pine Coniferous Plantation Type
CUP3-2	White Pine Coniferous Plantation Type
CUP3-4	Jack Pine Coniferous Plantation Type
CUW1	Mineral Cultural Woodland
Shoreline	
BBS1-2	Willow Gravel Shrub Beach/Bar Type
Wetlands	
MAM2-10	Forb Mineral Meadow Marsh Type
MAS2-1	Cattail Mineral Shallow Marsh Type
MAS2-3	Narrow-leaved Sedge Mineral Shallow Marsh Type
MAS2-9	Forb Mineral Shallow Marsh Type
SAF1-1	Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type
SAM1	Mixed Shallow Aquatic Ecosite
SAM1-7	Water Milfoil Mixed Shallow Aquatic Type

Ecological Land Classification

Figure 2-1. NPD ELC Mapping



2.1 Coniferous Forest Dry Jack Pine Coniferous Forest (FOC1-1)/Dry Fresh White Pine-Red Pine Coniferous Forest (FOC1-2)

The forest, which comprises the majority of the Site, consists of varying combinations of jack pine (FOC1-1), and red pine and white pine (FOC1-2) as the predominant canopy (Figure 2-1). While some areas of the forest fall into one of these distinct classifications, other areas may fall somewhere between the two, hence they are shown together here as one area. The sub-canopy is variable dependent on local factors (i.e. shade, slope, moisture), however red maple (*Acer rubrum*), black spruce (*Picea mariana*), white birch (*Betula papyrifera*), balsam fir (*Abies balsamea*), white spruce (*P. glauca*), Eastern hemlock (*Tsuga canadensis*) and sugar maple (*A. saccharum* ssp. *saccharum*) are present throughout the Site. Understorey consists primarily of grasses, ferns (*Comptonia peregrine*, *Onoclea sensibilis*), blueberry (*Vaccinium angustifolium*), blue bead lily (*Clintonia borealis*), wild sarsaparilla (*Aralia nudicaulis*), false Salomon's seal (*Maianthemum racemosum*), Canada mayflower (*M. canadense*) and Indian pipe (*Monotropa uniflora*).

The forest is mature and the proportion of fallen trees is indicative of a healthy forest. Lichen are common on trees and rocks throughout the Site, indicative of good air quality.

Potential Impact

This community is considered significant and sensitive to disturbance, however given the availability of previously disturbed sites for decommissioning activities, the only likely impacts to the surrounding forest include a short-term decrease in air quality, and an increase in dust and noise. The surrounding forest is similar and appears to be of sufficient capacity to accommodate wildlife temporarily displaced by decommissioning activities.

2.2 Shrub Beach/Bar (BBS1-2)

The shoreline is a willow gravel shrub beach community (BBS1-2) (Figure 2-1). Willows (*Salix* spp.) are present throughout. On the shoreline that extends out from the NPD facility there is a cultural woodland (CUW) where the land had previously been clear cut during construction of the facility. Elsewhere the vegetation is consistent with the surrounding forest. The beach is made of up of river rocks of various sizes. Along the beach and in the river, no aquatic macrophytes or suitable fish nursery habitat were observed.

A common loon (*Gavia immer*), ring-billed gull (*Larus delawarensis*), pileated woodpecker (*Hylatomus pileatus*), turkey vulture (*Cathartes aura*), and an unidentified hawk species were spotted close to the shoreline.

Potential Impact

The shoreline is a significant and sensitive feature, though it is unlikely to be impacted directly by decommissioning activities, however, silt fencing is recommended during decommissioning activities to avoid run off entering the river.

2.3 Forb-Mineral Meadow Marsh (MAM2-10)

Adjacent to the trail leading northwest from the site is a forb mineral meadow marsh (MAM2-10) near landfill #2 (Figure 2-1). No obvious surface water source was observed, thus the wetland is likely groundwater-fed. Sedges (*Carex* spp.), hairy goldenrod (*Solidago hispida*), white meadow sweet (*Spiraea alba*), and broad-leafed meadow sweet (*S. latifolia*) and alder (*Alnus incana*) are present. Moose (*Alces alces*) tracks were observed at this wetland, and numerous dragonflies and damselflies were seen during the Site visit. A bald eagle (*Haliaeetus leucocephalus*) nest was observed northwest of this site.

A wetland complex is present which spans nearly the entire north-south length of the property. At the north end of the wetland complex a forb mineral meadow marsh (MAM2-10) (Figure 2-1) is located. This meadow marsh has a small creek which channelizes through the wetland. There are both dead and living trees standing in the wetland. Predominant species include alder, willow, sedges, hairy and Canada goldenrod (*S. canadensis*), spotted jewelweed (*Impatiens capensis*), spotted joe-pye weed (*Eupatorium maculatum*), boneset (*E. perfoliatum*), blue vervein (*Verbena hastata*), meadow rue (*Thalictrum pubescens*), ferns, white meadow sweet, and broad-leafed meadow sweet. At the south end of the meadow marsh, there is a dried creek bed which leads to two open shallow water bodies with floating-leaved macrophytes (SAF1-1) (Figure 2-1), described in Section 2.5 below.

Potential Impact

Wetlands are considered significant and sensitive features. Despite this, and the proximity of the meadow marsh along the trail to landfill #2 there is little or no impact expected on either marsh, since there are no active forest operations expected with the decommissioning.

2.4 Cattail Mineral Shallow Marsh (MAS2-1), Narrow-leaved Sedge Mineral Shallow Marsh (MAS2-3) and Forb Mineral Shallow Marsh Type (MAS 2-9)

Shallow marshes are characterized by shallow water for much or all of the growing season, and contain mainly emergent vegetation. Much of the wetland complex is comprised of mineral shallow marshes, alternating between sections with broadleaf cattail (MAS2-1) and narrow-leaved sedge (MAS2-3) dominance (Figure 2-1). Jewelweed is another common plant in these areas. In sections there is open water, in others the water is channelized. Individual trees and shrubs are scattered throughout the sedge marsh, primarily comprised of speckled alder, white pine, white meadow sweet, and broad-leafed meadow sweet.

A wetland is present at Swisha Road on the western boundary of the Site. The wetland is a mineral shallow cattail marsh (MAS2-1) which is intersected by the road with a species composition similar to those described above. (Figure 2-1).

Along the western edge of the cattail marsh of the wetland complex, the soil gets slightly drier and the vegetation is dominated by flowering plants (MAS 2-9) such as fireweed (*Chamerion angustifolium*), white meadow sweet, broad-leafed meadow sweet, and meadow rue, with alder and white pine interspersed. At the edge of the bordering forest, there is sphagnum moss and tamarack.

Potential Impact

Although wetlands are considered significant, the shallow marshes on the site are far enough from decommissioning activities that no impact is expected. The western marsh has been disturbed by the intersection of Swisha road.

2.5 Water Lily- Bullhead Lily Floating-leaved Shallow Aquatic (SAF1-1)

There are two shallow water ponds (SAF1-1) with floating-leaved macrophytes near the north end of the wetland complex (Figure 2-1). At the time of observation, the water level had reduced considerably, as there are fragrant white water lilies (*Nymphaea odorata*) present which were fully emerged at the roots. Other floating-leaved macrophytes include yellow pond lily, also known as bullhead pond lily (*Nuphar variegata*) and watershield (*Brasenia schreberi*). At the periphery of the water body, the community shifts to cattail shallow marsh, as discussed in Section 2.4 above. At this site, tracks were observed for raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), and a turtle. Green frog (*Rana clamitans*) and American bullfrog (*Lithobates catesbeianus*) were observed. Minnow species were present.

At the south end of the wetland complex, a shallow water wetland (SAF1-1) (Figure 2-1) is present which is dominated (>50% coverage) by fragrant white water lily and watershield. There are dead standing trees occurring in equal density throughout. Several trees have been felled by beaver (*Castor canadensis*), and there are two potential lodges in the water body. Hairy woodpecker (*Leuconotopicus villosus*), green frog and American bullfrog were observed. Dragonflies (*Anisoptera spp.*) were also present.

Potential Impact

Due to distance from the proposed decommissioning activities, no impact is expected on the ponds.

2.6 Water Milfoil Mixed Shallow Aquatic (SAM1-7) and Mixed Shallow Aquatic (SAM1)

A wetland comprised of a pondweed mixed shallow aquatic community (SAM1) on the Site south of Highway 17 (Figure 2-1). Watershield is a common floating macrophyte, and emergent vegetation, primarily sedges, are predominant in clusters throughout. There is intermittent shallow cattail marsh throughout. There are many dead standing trees, and along the edges many living pines are submerged at the base, indicating recent flooding. Bullfrogs and green frog were observed at this site.

The southern section of the wetland at the western boundary of the Site is a shallow water body dominated by floating vegetation (SAM1-7) (Figure 2-1), which is intermittent with a shallow cattail marsh, discussed in Section 2.4 above. In addition to watershield, water milfoil (*Myriophyllum* spp.) is present as submerged vegetation.

Potential Impact

As mentioned previously, wetlands are considered significant and sensitive to disturbance, however it is unlikely that any wetlands would be impacted by future decommissioning activities due to the distance from decommissioning activities.

2.7 Dry-Moist Old Field Meadow (CUM1-1)

Cultural communities are either the result of, or maintained through cultural or anthropogenic disturbance. Cultural meadows which often are established after significant disturbance and consist of a mixture of non-native weeds and grasses with native species mixed in, are less significant and are not considered sensitive to disturbance. Given their proximity to the NPD facility these areas are most likely to be affected by project activities as they provide suitable areas for construction equipment and material laydown.

To the southeast of the facility, there are vacant areas associated with foundations of former buildings and parking lots. These vacant areas are considered old field cultural meadows (CUM1-1) (Figure 2-1) with common native and non-native species including grasses, milkweed (*Asclepias syriaca*), staghorn sumac (*Rhus typhina*), largetooth aspen (*Populus grandidentata*), ragweed (*Ambrosia artemisiifolia*), black eyed Susan (*Rudbeckia hirta* var. *pulcherrima*), white-sweet clover, Queen Ann's lace (*Daucus carota*), red and white clover (*Trifolium pratense*, *T. repens*), vetch (*Vicia americana*, *V. gracca*) and curled dock (*Rumex crispus*).

The area of former landfill #2 along the trail within the forest to the northwest of the facility is also an old field cultural meadow (CUM1-1) (Figure 2-1). Species present at the former landfill include grasses, vetch, lamb's quarters (*Chenopodium album*), goldenrod and bird's foot trefoil (*Lotus corniculatus*).

Potential Impact

The clearings and former building foundations and parking lots around the facility have been identified as potential laydown areas given their openness, disturbed nature and proximity to the facility. For this reason, the cultural meadows are most likely to be impacted as a result of decommissioning activities. If these vacant areas are used for laydown, effort should be made to avoid areas with milkweed during active decommissioning, if possible.

2.8 Mineral Cultural Woodland (CUW1)

The roadside along the main access road leading to the building and in the vicinity of the buildings on either side of the road are cultural woodlands consisting of a mixture of saplings and small and mature trees including white pine, white cedar, black spruce, largetooth aspen, red oak (*Quercus rubra*), staghorn sumac, and willow species (CUW1) (Figure 2-1). The cultural woodland occurs on the roadside berm, and was part of the revegetation effort after construction of the facility.

Potential Impact

Cultural woodlands can provide habitat for wildlife and, since they are well established, may be significant and sensitive to disturbance. No physical disturbances are expected from decommissioning activities. Due to proximity to the main access road, it is likely that there will be a short-term decrease in air quality, and an increase in dust and noise.

2.9 Jack Pine Coniferous Plantation (CUP3-4), Red Pine Coniferous Plantation (CUP3-1) and White Pine Coniferous Plantation (CUP3-2)

Between the facility and the shoreline, there is a steep grade with a red and jack pine plantation (CUP3-4/CUP3/1) (Figure 2-1). Plantations typically consist of one species of tree planted in rows. In one section the slope has failed, bringing down the trees in that area. The remaining pines appear unhealthy, perhaps due to the steepness of the slope, or the planting density.

A small white pine plantation (CUP3-2) has been planted on former landfill #1, southwest of the facility near the access road (Figure 2-1).

It is recommended that if construction/demolition activities are taking place, silt fencing be placed at the top of the steep grade between the facility and the shoreline to prevent runoff down the slope, potential slope failure, and impact on the shoreline.

Potential Impact

Cultural plantations can provide habitat for wildlife, though to a lesser extent than cultural woodlands. They are not considered significant or sensitive to disturbance. Due to proximity to the facility, there may be a short-term decrease in air quality, and an increase in dust and noise.

2.10 Species at Risk (SAR) Habitat

The following is a discussion of SARs observed during the ELC survey. A comprehensive list of potentially present SARs can be found in the NPD Biodiversity Report (Morin 2015).

The chimney stack on the Site provides habitat for an active colony of chimney swift (*Chaetura pelagica*), a Species at Risk. Chimney swift are listed federally and provincially as threatened. As part of decommissioning, CNL investigated alternative habitat designs to replace the chimney stack in the event that it was removed, as well as the feasibility of chimney stack retention. Chimney stack retention is the preferred option, considering the risk of rejection of the replacement habitat by the chimney swifts.

Bald Eagle is listed as species of Special Concern in Ontario. The Bald Eagle nest was observed in the west portion of the Site, approximately 1 km from the NPD facility along the trail. It is unlikely that decommissioning of the facility will have negative effects on Bald Eagle using the existing nest. The MNRF guidelines for bald eagle habitat identify a 400m buffer zone for human activity around nesting sites. Since decommissioning activities are expected to be limited to the vicinity of the facility, no impact on the bald eagle's nest is expected (Morin 2015).

3 FLORA AND FAUNA

A list of plant species observed during the ELC field survey at the Site is provided in Appendix B.

Observed animal species are listed in Table 3-1, which includes direct (i.e. animal sightings), and indirect (i.e. tracks, nest sightings, etc.) observations.

Table 3-1. Wildlife Observed on the Site during the ELC Field Survey. (Conservation statuses queried in August 2016)

Common Name	Scientific Name	S Rank	COSEWIC	SARO	SARA Status
Mammals					
Moose	<i>Alces alces</i>				
Beaver	<i>Castor canadensis</i>				
White-tailed Deer	<i>Odocoileus virginianus</i>				
Raccoon	<i>Procyon lotor</i>				
Eastern Chipmunk	<i>Tamias striatus</i>				
Birds					
Turkey Vulture	<i>Cathartes aura</i>				
Chimney Swift	<i>Chaetura pelagica</i>	S4B, S4N	THR	THR	THR
Blue Jay	<i>Cyanocitta cristata</i>				
Common Loon	<i>Gavia immer</i>				
Bald Eagle	<i>Haliaeetus leucocephalus</i>		NAR	SC	
Pileated Woodpecker	<i>Hylatomus pileatus</i>				
Ring-billed Gull	<i>Larus delawarensis</i>				
Hairy Woodpecker	<i>Leuconotopicus villosus</i>				
Reptiles and Amphibians					
American Bullfrog	<i>Lithobates catesbeianus</i>				
Green Frog	<i>Rana clamitans</i>				
Insects					
Dragonfly	<i>Anisoptera spp.</i>				
Deerfly	<i>Chrysops spp.</i>				
Mosquito	<i>Culicidae spp.</i>				
Damselfly	<i>Zygoptera spp.</i>				

Legend:

SARO= Species at Risk Ontario

SARA= Species at Risk Act

COSEWIC= Committee on the Status of Wildlife in Canada

SC= Special Concern

THR= Threatened

NAR=Not At Risk

S Rank: Provincial Conservation Status (NHIC)

S4= apparently secure

B= breeding

N= non breeding

4 SUMMARY

The Site consists largely of natural areas, such as forest and different wetland types and these areas have remained untouched. The vegetation communities are healthy, and impact from anthropogenic activities was not observed.

The shoreline, although partly planted and partly naturally vegetated appears healthy without signs of stress. Vegetation communities, consisting of a mixture of trees and shrubs are well established and have naturalized over the years.

Areas in the vicinity of the facility were cleared during construction and revegetation with native trees and shrubs was successful, resulting in healthy, mixed vegetation communities. Plantations of pine on the east side of the facility and the slope on the north side appear to be less healthy and somewhat stressed. Slope failure and lack of space may be contributing factors.

For the decommissioning activities, in order to minimize impact to the environment it is recommended to utilize existing paved areas (former parking lots/building footprints) or the cultural meadows for laydown areas for equipment and materials.

During site restoration, it is recommended that, where possible, cultural areas should be replanted with native tree species, including white pine, red pine, black spruce, red maple, and balsam fir using local plant stock.

5 LIMITATIONS

The Ecological Land Classification (ELC) was carried out by Arcadis Canada Inc. (Arcadis), for Canadian Nuclear Laboratories (CNL). It is intended for the sole and exclusive use of CNL, its affiliated departments, agencies, companies and partners and their respective insurers, agents, employees and advisors.

Any use, reliance on or decision made by any person other than CNL based on this report are the sole responsibility of such other person. CNL and Arcadis make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The study undertaken by Arcadis with respect to this report and any conclusions or recommendations made in this report reflect Arcadis' judgment based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information available at the time of the preparation of this report. This report also relies upon data collected by others as noted in Section 1. CNL and ARCADIS make no representation or warranty to anyone with regard to these data or information from others which are presented in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on these data referred to in this report. None of these data have been verified and they are subject to the limitations outlined in the reports by others.

This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than CNL, copying and distributing this report, or use of or reliance on the information contained herein, in whole or in part, by any other party is not permitted without the express written permission of Arcadis. Nothing in this report is intended to constitute or provide a legal opinion.

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APPENDIX A

Representative Photos



APPENDIX A

Figure 1 Coniferous Forest (FOC1-1, FOC1-2)



Appendix A – Representative Photos

Figure 2 Old Field Cultural Meadow (CUM1-1)



Figure 3 Cultural Woodlot (CUW1)



Figure 4 Willow Gravel Shrub Beach/Bar (BBS1-2)



Figure 5 Forb Mineral Meadow Marsh (MAM2-10)



Appendix A – Representative Photos

Figure 6 Cattail Mineral Shallow Marsh (MAS2-1)



Figure 7 Shallow Aquatic Mixed Vegetation (SAM1)



Figure 8 Shallow Aquatic Floating Vegetation (SAF1-1)



APPENDIX B

Vegetation Table



APPENDIX B

Table 1 Vascular plant species observed on the Site during the ELC field survey. (Conservation statuses queried in August 2016)

Common Name	Scientific Name	S Rank	MNR	SARA Status	Introduced (non-native)
Balsam Fir	<i>Abies balsamea</i>	S5			
Red Maple	<i>Acer rubrum</i>	S5			
Silver Maple	<i>Acer saccharinum</i>	S5			
Sugar Maple	<i>Acer saccharum ssp. saccharum</i>	S5			
Common Yarrow	<i>Achillea millefolium</i>	S5			
Speckled Alder	<i>Alnus incana</i>	S5			
Ragweed	<i>Ambrosia artemisiifolia</i>	S5			
Wild Sarsaparilla	<i>Aralia nudicaulis</i>	S5			
Spreading Dogbane	<i>Apocynum androsaemifolium</i>	S5			
Swamp Milkweed	<i>Asclepias incarnata</i>	S5			
Common Milkweed	<i>Asclepias syriaca</i>	S5			
White Birch	<i>Betula papyrifera</i>	S5			
Watershield	<i>Brasenia schreberi</i>	S5			
Sedge	<i>Carex spp.</i>	N/A			
Fringed Sedge	<i>Carex crinita</i>	S5			
Fireweed	<i>Chamerion angustifolium</i>	S5?			
Lamb's Quarters	<i>Chenopodium album</i>	SNA			I
Canada Thistle	<i>Cirsium canadensis</i>	SNA			I
Bull Thistle	<i>Cirsium vulgare</i>	SNA			I
Blue Bead-lily	<i>Clintonia borealis</i>	S5			
Sweet Fern	<i>Comptonia peregrina</i>	S5			
Orchard grass	<i>Dactylis glomerata</i>	SNA			I
Queen Ann's Lace	<i>Daucus carota</i>	SNA			I
Common Viper's Bugloss	<i>Echium vulgare</i>	SNA			I
Fireweed	<i>Epilobium angustifolium</i>	S5			
Meadow Horsetail	<i>Equisetum pratense</i>	S5			
Philadelphia Fleabane	<i>Erigeron philadelphicus</i>	S5			
Spotted Joe-Pye Weed	<i>Eupatorium maculatum</i>	S59.			
Common Boneset	<i>Eupatorium perfoliatum</i>	S5			
White Ash	<i>Fraxinus americana</i>	S4			
Green Ash	<i>Fraxinus pennsylvanica</i>	S5			
Eastern Teaberry	<i>Gaultheria procumbens</i>	S5			
Fowl Manna Grass	<i>Glyceria striata</i>	S5			
Foxtail Barley	<i>Hordeum jubatum</i>	S5			
St. John's Wort	<i>Hypericum perforatum</i>	SNA			I
Spotted Jewelweed	<i>Impatiens capensis</i>	S5			
Tamarack	<i>Larix laricina</i>	S5			
Oxeye Daisy	<i>Leucanthemum vulgare</i>	SNA			I

Appendix B – Vegetation Table

Common Name	Scientific Name	S Rank	MNR	SARA Status	Introduced (non-native)
Tartarian Honeysuckle	<i>Lonicera tatarica</i>	SNA			I
Honeysuckle sp.	<i>Lonicera sp.</i>	SNA			I
Bird's foot Trefoil	<i>Lotus corniculatus</i>	SNA			I
Canada Mayflower	<i>Maianthemum canadense</i>	S4?			
False Salomon's Seal	<i>Maianthemum racemosum</i>	S5			
White Sweet-clover	<i>Melilotus alba</i>	SNA			I
Yellow Sweet-clover	<i>Melilotus officinalis</i>	SNA			I
Indian Pipe	<i>Monotropa uniflora</i>	S5			
Water Milfoil	<i>Myriophyllum spp.</i>	S4/S5			
Yellow Pond Lily (Bullhead Lily)	<i>Nuphar variegata</i>	S5			
Fragrant White Water Lily	<i>Nymphaea odorata</i>	SU			
Common Evening Primrose	<i>Oenothera biennis</i>	S5			
Sensitive Fern	<i>Onoclea sensibilis</i>	S5			
Timothy	<i>Phleum pratense</i>	SNA			I
White Spruce	<i>Picea glauca</i>	S5			
Black Spruce	<i>Picea mariana</i>	S5			
Jack Pine	<i>Pinus banksiana</i>	S5			
Red Pine	<i>Pinus resinosa</i>	S5			
Eastern White Pine	<i>Pinus strobus</i>	S5			
English Plantain	<i>Plantago lanceolata</i>	SNA			I
Common Plantain	<i>Plantago major</i>	S5			
Grass spp.	<i>Poa spp.</i>	N/A			
Christmas Fern	<i>Polystichum acrostichoides</i>	S5			
Hairy Salomon's Seal	<i>Polygonatum pubescens</i>	S5			
Large-tooth Aspen	<i>Populus grandidentata</i>	S5			
Trembling Aspen	<i>Populus tremuloides</i>	S5			
Bracken Fern	<i>Pteridium aquilinum</i>	S5			
Heal-All	<i>Prunella vulgaris</i>	S5			
Red Oak	<i>Quercus rubra</i>	S5			
Staghorn Sumac	<i>Rhus typhina</i>	S5			
Common Blackberry	<i>Rubus allegheniensis</i>	S5			
Smooth Blackberry	<i>Rubus canadensis</i>	S4?			
Flowering Raspberry	<i>Rubus odoratus</i>	S5			
Black Raspberry	<i>Rubus occidentalis</i>	S5			
Black-eyed Susan	<i>Rudbeckia hirta var. pulcherrima</i>	S5			
Curled Dock	<i>Rumex crispus</i>	SNA			I
Willow	<i>Salix spp.</i>	N/A			
Bebb's Willow	<i>Salix bebbiana</i>	S5			
Pussy Willow	<i>Salix discolor</i>	S5			
Shining Willow	<i>Salix lucida</i>	S5			
Slender Willow	<i>Salix petiolaris</i>	S5			
Common Elderberry	<i>Sambucus canadensis</i>	S5			
Wool-Grass	<i>Scirpus cyperinus</i>	S5			

Appendix B – Vegetation Table

Common Name	Scientific Name	S Rank	MNR	SARA Status	Introduced (non-native)
Bladder Campion	<i>Silene vulgaris</i>	SNA			I
Hemlock Water-parsnip	<i>Sium suave</i>	S5			
Canada Goldenrod	<i>Solidago canadensis</i>	S5			
Hairy Goldenrod	<i>Solidago hispida</i>	S5			
Common Burreed	<i>Sparganium emersum</i>	S5			
White Meadow Sweet	<i>Spiraea alba</i>	S5			
Broad-leaved Meadow Sweet	<i>Spiraea latifolia</i>				
Common Blue-eyed Grass	<i>Sisyrinchium montanum</i>	S5			
Common Dandelion	<i>Taraxacum officinale</i>	SNA			I
Meadow Rue	<i>Thalictrum pubescens</i>	S5			
Marsh St. John's-Wort	<i>Triadenum fraseri</i>	S5			
Red Clover	<i>Trifolium pratense</i>	SNA			I
White Clover	<i>Trifolium repens</i>	SNA			I
Eastern Hemlock	<i>Tsuga canadensis</i>	S5			
Eastern White Cedar	<i>Tsuga occidentalis</i>	S5			
Broad-leaved Cattail	<i>Typha latifolia</i>	S5			
Low Sweet Blueberry	<i>Vaccinium angustifolium</i>	S5			
Common Mullein	<i>Verbascum thapsus</i>	SNA			I
Blue Vervein	<i>Verbena hastata</i>	S5			
Nannyberry	<i>Viburnum lentago</i>	S5			
American Vetch	<i>Vicia americana</i>	S5			
Cow Vetch	<i>Vicia gracca</i>	SNA			I

Legend:

I: Introduced (non-native)

NA: Not applicable

S4: Apparently secure

S5: Secure

SU: Unrankable

SNA: Conservation status not applicable (Non-native species)

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